

**TRANSITION FROM SUBSISTENCE FARMING TO  
COMMERCIAL AGRICULTURE IN QUANG BINH  
PROVINCE, VIETNAM**

---

**A Thesis  
submitted in partial fulfilment  
of the requirements for the Degree of  
Doctor of Philosophy**

**at**

**Lincoln University**

**by**

**Truong Tan Quan**

---

**Lincoln University**

**2009**

## **DECLARATION**

This work has not previously been submitted, either in whole or in part for a degree at this or any other university. To the best of my knowledge, the thesis is original and contains no materials previously published or written by any other persons except as acknowledged in the text.

Truong Tan Quan

Abstract of a thesis submitted in partial fulfillment of the  
requirements for the Degree of Doctor of Philosophy

**Transition from Subsistence Farming to Commercial Agriculture  
in Quang Binh, Vietnam**

By

Truong Tan Quan

*The purpose of the study was to investigate how farmers in Quang Bing Province, Vietnam have been making the transition from subsistence farming to commercial agriculture. This process began in 1986 when the Vietnam economy changed from central planning to a market orientation.*

*The research strategy was based on case study analysis of two communes in each of three agro-ecological zones, defined as coastal, plains and mountains. Within each commune there were six embedded household case studies, i.e 36 in total. Case studies were selected purposively to capture diversity of agro-ecological zones, market access and communications, wealth and income status, and ethnic communities. Households were interviewed twice; first in either late 2006 or early 2007, and again in late 2008. The study was approached using a constructivist paradigm and a lens of livelihood analysis, focusing on resources, institutions, interventions and the dynamics of change. Particular attention was given to the development of markets (inputs, outputs, land, labour and credit) and supply chain factors. Separate measures of commercialisation were constructed based on outputs and inputs, and at the level of both individual activities and the overall household. Investigations were informed by existing theory, but no hypotheses were tested. Instead, the research focused on emergent patterns and insights, and the enrichment and modification of existing theory.*

*A review of literature indicated that the transition from subsistence farming to commercial agriculture in Vietnam was different from other countries on account of the specific combination of low technology agriculture, typical of much of developing Asia, combined with the transformation from a centrally planned economy to a market orientation as occurred in Central and Eastern European countries.*

*At commune level, the key determinants of commercialisation were strong physical connections to markets, with good road access being paramount. Once all weather road access for motorised vehicles was available, then rapid commercialisation occurred. Supply chains typically developed faster for outputs than inputs. New technologies that increased the yield of basic food crops, and facilitated by Government and NGO programs, led to the release of land resources no longer required for meeting food security needs. Households retained their production of food crops that provided food security, and added additional cash earning activities.*

*At the level of individual households, the commercialisation process was led by entrepreneurial families who perceived opportunities relating to profitable activities, and combined this with hard work. Often these opportunities were linked to what they had observed or learnt elsewhere. Once first movers took up a new technology, others observed and followed. There were many enabling factors, such as access to land, access to capital, and access to credit. However, none of these could be considered a determinant, in that the absence of any one factor did not by itself preclude successful commercialisation.*

*Absence of an active male worker was a major constraint to commercialisation, as was lack of necessary crop and livestock skills. There was evidence that income disparities were increasing between the wealthy and the poor.*

*Output commerciality across all households averaged 88 % in 2008 and was higher for wealthy households (95 %) than poor households (83 %). All households still produced their own food crops, but these crops had low market values and hence had a low impact on the output commerciality index. Output commerciality measured in percentage terms obscured that wealthy families had net incomes almost 13 times greater than poor households.*

*A major theoretical insight was that key commercialisation factors are multiple and context dependent. Accordingly, there is a need in any investigation for a holistic approach, based on a livelihood framework that incorporates the complexities associated with the development of markets, as well as giving consideration to the range of interventions and institutional policies that impact on livelihood development.*

## ACKNOWLEDGEMENTS

This study is the result of a long journey with challenges of capacity, endurance and family life. The study might not have been completed without the assistance, support and encouragement I received from others. Therefore, I would like to acknowledge their contributions.

I greatly thank NZAID for providing financial support for my study at Lincoln University. I thank Lincoln University, staff of the Commerce Faculty and International Office, for offering warm and friendly assistance. I also thank Hue College of Economics, Vietnam, for giving me opportunities to study in New Zealand. I also would like to express my sincere thanks to all farmers and staff in Quang Binh, who contributed valuable information to my study.

I would like especially to express my appreciation and deep gratitude for the guidance, support and motivation of Professor Keith Woodford, my supervisor. I really owe him a lot, not only for his expertise but also for his way of supervising, promoting and sharing. Without him I may not have had the opportunity to study in New Zealand and without him this thesis might not have developed in the way it did.

I also express my sincere thanks to Dr Petter Nuthall, my associate supervisor, who read and gave valuable comments on my writing. I also received a lot of comments from other academic staff at Lincoln University during my study so I would to thank all of you.

I also would like to express my special thanks to Keith's family, particularly Annette, who gave me a lot of the assistance when I first came to New Zealand, and during the period of my study gave me a lot of opportunities to know about New Zealand.

I really owe my wife and my two lovely sons who had to sacrifice too much for my study. I also owe my parents, my parents in law, my brother, my brother and sisters in law, who had to take over some duties that should be mine during my study. I would like to express my sincere thanks to all of you.

## TABLE OF CONTENTS

### CONTENTS

<i>Abstract</i>	<i>ii</i>
<i>Acknowledgements</i>	<i>iv</i>
<i>Table of contents</i>	<i>v</i>
<i>List of tables</i>	<i>x</i>
<i>List of figures</i>	<i>xii</i>
<i>List of abbreviations</i>	<i>xiii</i>

### CHAPTER ONE

<b>Introduction</b>	<b>1</b>
1.1. Preview	1
1.2. Research questions	2
1.3. Analytical framework	3
1.4. Thesis structure	4
1.5. Thesis terminology	5

### CHAPTER 2

<b>Agriculture in Vietnam, the Central Region and Quang Binh Province</b>	<b>6</b>
2.1. Introduction	6
2.2. The Research Location	6
2.2.1. Vietnam and the Central Region	6
2.2.2. Quang Binh Province	8
2.3. Land tenure in Vietnam and the Central Region	12
2.4. Agricultural industries in Vietnam and the Central Region	15
2.4.1. Crops	15
2.4.1.1. Annual and short cycle crops	16
2.4.1.2. Perennial crops	19
2.4.2. Livestock	20
2.4.2.1. Cattle production	21
2.4.2.2. Pig production	21
2.4.2.3. Poultry Production	22
2.4.3. Fisheries	22
2.4.4. Forestry	22
2.5. Agricultural organizations or institutions in Vietnam and the Central Region	23
2.5.1. Administration of agriculture and rural development	23
2.5.2. Agricultural extension	23
2.5.3. Commune and village	24
2.5.4. Agribusiness enterprises	25
2.5.5. Agricultural co-operatives	25
2.6. Agriculture in Quang Binh Province	27
2.7. Conclusions	29

<b>CHAPTER 3</b>	
<b>The transition from subsistence farming to commercial agriculture: reviews from previous studies</b>	<b>30</b>
3.1. Introduction	30
3.2. Definitions of subsistence farming and commercial agriculture	30
3.3. The process of transition	32
3.4. Determinants of agricultural commercialization	34
3.4.1. The internal farm/household factors	34
3.4.2. Factors external to the farm	35
3.4.3. Some conclusions	38
3.5. Patterns of food consumptions and commercial agriculture	39
3.5.1. Pattern of food consumption	39
3.5.2. Changes to the food retailing distribution system	41
3. 6. Decision making process of farmers	41
3.7. Conclusions	43
<b>CHAPTER 4</b>	
<b>A commercial-based approach to sustainable livelihoods</b>	<b>45</b>
4.1. Introduction	45
4.2. Sustainable livelihoods approach	45
4.2.1. Main features of conventional sustainable livelihoods	45
4.2.2. Adoption and application of sustainable livelihoods approach	49
4.3. Market, livelihoods and linkages	49
4.4. Commercial-based /market- based sustainable livelihoods	51
4.5. Conclusions	54
<b>CHAPTER 5</b>	
<b>Research methodologies and methods</b>	<b>55</b>
5.1. Introduction	55
5.2. Case study strategy	55
5.3. Case design and case selection	57
5.3.1 Case study design	57
5.3.2. Communes selection	58
5.3.3. Household case selection	60
5.3.4. Agricultural cooperative case selection	61
5.3.5. District staff, provincial staff, and related information	61
5.4. Data collection	62
5.5. Data analysis	64
5.5.1. Units of analyses	64
5.5.2. Comparisons across cases	67
5.6. Summary	68
<b>CHAPTER 6</b>	
<b>The transition from subsistence-based rice farming to commercial agriculture in Cam Thuy Commune, Le Thuy District, Quang Binh Province, Vietnam</b>	<b>69</b>
6. 1. Introduction	69
6.2. Natural and social economic background of the commune	69
6.2.1. Location and infrastructure	69
6.2.2. Land and land use	70

6.2.3. Socio-economic background	72
6.2.4. Institutional arrangements for agriculture	75
6.3. Case studies of agricultural co-operatives	76
6.4. Household case studies	79
6.4.1. Socio-economic structure	80
6.4.2. Production and income	81
6.4.3. Agricultural commercialisation	82
6.4.4 Dynamics of change	84
6.5. Discussion	92

## **CHAPTER 7**

### **Sea fishing and coastal livelihoods in Ngu Nam Commune, Le Thuy District, Quang Binh Province, Vietnam** **95**

7. 1. Introduction	95
7. 2. Natural and social economic background of the commune	95
7.2.1. Location and infrastructure	95
7.2.2. Land and land use	97
7.2.3. Socio-economic background	98
7.2.4. Institutional arrangements within the commune	104
7.2.5. Market supply chains	105
7.3. Household case studies	105
7.3.1. Socio-economic structure	106
7.3.2. Production and income	107
7.3.3. Agricultural commercialisation	108
7.3.4 Dynamics of change	110
7.4. Discussion	120

## **CHAPTER 8**

### **Market led development of vegetables and flowers in Quang Long Commune, Quang Trach District, Quang Binh Province, Vietnam** **123**

8. 1. Introduction	123
8. 2. Natural, social and economic background of the commune	123
8.2.1. Location and infrastructure	123
8.2.2. Land and land use	124
8.2.3. Socio-economic background	125
8.2.4. Institutional arrangements	128
8.2.5. Market development	130
8.3. Household case studies	130
8.3.1. Socio-economic structure	131
8.3.2. Production and income	132
8.3.3. Agricultural commercialisation	134
8.3.4 Dynamics of change	135
8.4. Discussion	144

## **CHAPTER 9**

### **The development of commercial agriculture in a plains commune with poor infrastructure** **146**

9. 1. Introduction	146
9. 2. Natural and socio economic background of the commune	146
9.2.1. Location and infrastructure	146



9.2.2. Land and land use	147
9.2.3. Socio-economic background	148
9.2.4. Institutional arrangements	150
9.2.5. Market development	152
9.3. Household case studies	153
9.3.1. Socio-economic structure	153
9.3.2. Production and income	154
9.3.3. Agricultural commercialisation	157
9.3.4. Dynamics of change	159
9.4. Discussion	169

## **CHAPTER 10**

### **Market-led cropping and forest based livelihood in Trung Hoa Mountainous Commune, Minh Hoa District, Quang Binh Province, Vietnam**

	<b>171</b>
10. 1. Introduction	171
10. 2. Natural and socio economic background of the commune	171
10.2.1. Location and infrastructure	171
10.2.2. Land and land use	172
10.2.3. Socio-economic background	173
10.2.4. Institutional Structures.	177
10.2.5. Market development	178
10.3. Household case studies	178
10.3.1. Socio-economic structure	179
10.3.2. Production and income	180
10.3.3. Agricultural commercialisation	181
10.3.4. Dynamics of change	183
10.4. Discussion	193

## **CHAPTER 11**

### **Livelihoods in a Remote Mountainous Commune with Ethnic Diversity**

	<b>195</b>
11. 1. Introduction	195
11. 2. Natural and socio-economic background of the commune	195
11.2.1. Location and infrastructure	195
11.2.2. Land and land use	196
11.2.3. Socio-economic background	198
11.2.4. Institutional arrangement	201
11.2.5. Market development	203
11.3. Household case studies	203
11.3.1. Socio-economic structure	204
11.3.2. Production and income	205
11.3.3. Agricultural commercialisation	206
11.3.4. Dynamics of change	208
11.4. Discussion	220

## **CHAPTER 12**

### **Discussion**

	<b>222</b>
12.1 Introduction	222
12.2. Natural and socio-economic background at the communes	222
12.2.1. Land	222

12. 2.2. Infrastructure development	223
12.2.3. Socio-economic development	224
12.2.4. Farming systems	224
12.2.5. Market development	226
12.2.6. Institutional arrangements	227
12.3. Household case studies comparisons	229
12.3.1. Production resources	229
12.3.2. Production and income	233
12.3.3. Commercial orientation	233
12.4. Dynamics of change	238
12.5. Linking findings to theory	245
<b>CHAPTER 13</b>	
<b>Summary and conclusions</b>	<b>254</b>
13.1. Introduction	254
13.2. Research questions and answers	255
13.3. Limitations	259
13.4. Further Research	259
<b>REFERENCES</b>	<b>261</b>
<b>APPENDIX A</b>	<b>295</b>

## LIST OF TABLES

Table 2.1: Some main indicators of the Vietnam economy from 2004 to 2008	8
Table 2.2: Land and land use in Quang Binh province in 2008	9
Table 2.3: Some indicators of the Quang Binh Economy from 2004 to 2008	11
Table 2.4: Structure and tenure of agricultural land in 2000	13
Table 2.5: Planted area of crops by crop group	15
Table 2.6: Landholding, rice production and rice use at agricultural households by national regions in 1998	16
Table 2.7: Cultivated area and production of vegetable crops in Vietnam	17
Table 2.8: Planted area of some short cycle industrial crops in Vietnam	18
Table 2.9: Planted area of some main perennial crops in Vietnam	19
Table 2.10: Livestock population in Vietnam	20
Table 2.11: Population of cattle including buffaloes in Vietnam	21
Table 2.12: Number of co-operatives by regions in Vietnam	27
Table 2.13: Output value of agriculture, fishery and forestry of Quang Binh Province	28
Table 2.14: Planted area of major crops and populations of major animals in Quang Binh from 2000 to 2007	28
Table 6.1: Land use at the commune in 2005 and 2008	71
Table 6.2: Main indicators of Cam Thuy Commune from 2004 to 2007	72
Table 6.3: Main resources of household case studies at Cam Thuy Commune in year 2006	81
Table 6.4: Production and income of household case studies at Cam Thuy Commune in year 2006	82
Table 6.5: Commercial orientation of household case studies at Cam Thuy Commune in 2006	83
Table 7.1: Land use at Ngu Nam Commune in 2005 and 2008	98
Table 7.2: Social economic indicators of Ngu Nam Commune from 2005 to 2007	99
Table 7.3: Commune Income in 2005	99
Table 7.4: Main resources of household case studies at Ngu Nam Commune in year 2006	106
Table 7.5: Production and income of household case studies in 2006 at Ngu Nam Commune	107
Table 7.6: Commercial orientation of household case studies at Ngu Nam Commune	109
Table 7.7: Productive Capital of Household NN5 in 2006	118
Table 8.1: Land use at Quang Long Commune in 2005 and 2008	124
Table 8.2: Socio-economic indicators of Quang Long Commune from 2004 to 2007	125
Table 8.3: Main resources of household case studies at Quang Long Commune in year 2006	131
Table 8.4: Production and income of household case studies at Quang Long Commune in year 2006	133
Table 8.5: Commercial orientation of household case studies at Quang Long Commune in 2006	134
Table 9.1: Land use at Quang Thach Commune in 2005 and 2008	148
Table 9.2: Socio-economic indicators of Quang Thach Commune from 2004 to 2007	149
Table 9.3: Main resources of household case studies at Quang Thach Commune in 2006	154
Table 9.4: Production and income of household case studies at Quang Thach Commune in year 2006	155
Table 9.5: Commercial orientation of household case studies at Quang Thach Commune in 2006	158
Table 10.1: Land use at Trung Hoa Commune in 2005 and 2008	173
Table 10.2: Socio-economic indicators of Trung Hoa Commune from 2004 to 2007	174
Table 10.3: Main resources of household case studies at Trung Hoa Commune in 2006	180

Table 10.4: Production and income of household case studies at Trung Hoa Commune in year 2006	181
Table 10.5: Commercial orientation of household case studies at Trung Hoa Commune in 2006	182
Table 11.1: Land use at Hoa Son Commune in 2005 and 2008	198
Table 11.2: Socio–economic indicators of Hoa Son Commune from 2005 to 2007	199
Table 11.3: Main resources of household case studies at Hoa Son Commune in 2006	204
Table 11.4: Production and income of household case studies at Hoa Son Commune in year 2006	206
Table 11.5: Commercial orientation of household case studies at Hoa Son Commune in 2006	207
Table 12.1: Natural and socio-economic indicators at investigated communes in year 2006	223
Table 12.2: Some main production indicators per capita of investigated communes in year 2006	225
Table 12.3 (a): Production resources at case studies	231
Table 12.3 (b): Production resources at case studies	232
Table 12.4: Net income per household and per capita at case studies	236
Table 12.5: Commerciality at household and per capita at case studies	237

## LIST OF FIGURES

Figure 2.1: Vietnam and the Central Region	8
Figure 2.2: Soil and topography at three ecological regions of Quang Binh	10
Figure 2.3: Quang Binh Province	11
Figure 2.4: Agricultural land per household in Vietnam and Central region in 1998	14
Figure 2.5: Share of main products in total agricultural output value in 2000	19
Figure 3.1: Determinants of subsistence versus commercial orientation	38
Figure 4.1: DFID's sustainable livelihood framework	46
Figure 4.2: Modified sustainable livelihoods framework	52
Figure 4.3: Modified commercial based-sustainable livelihood framework	52
Figure 5.1: Location of selected communes at Quang Binh Province	60
Figure 5.2: Case study design	61
Figure 6.1: Some farming activities at the commune	74
Figure 7.1: Some main activities at the commune	101
Figure 8.1: Some main livelihood activities at the commune	127
Figure 9.1: Some main farming systems at households at Quang Thach Commune	156
Figure 10.1: Farming activities at Trung Hoa Commune	176
Figure 11.1: The road, topography and free cattle raising at the commune	197

## LIST OF ABBREVIATIONS

ADB	Asian Development Bank
CIE	Centre for International Economics
DARD	Department of Agriculture and Rural Development
DFID	Department for International Development
DSO	District Statistics Office
FAO	Food and Agriculture Organizations of the United Nations
GDP	Gross Domestic Product
GSO	General Statistical Office
HH	Household
ICCO	Interchurch Organisation for Development Cooperation
ICTSD	International Centre for Trade and Sustainable Development
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IISD	International Institute for Sustainable Development
IUCN	International Union for Conservation of Nature
JBIC	Japan Bank for International Cooperation
MARD	Ministry of Agriculture and Rural Development
NAPA	Non Agricultural Production Activities
NGO	Non Governmental Organization
QBSO	Quang Binh Statistical Office
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organizations
USD	United State Dollar
VND	Vietnamese Dong (1USD about 16000 VND in 2006)

# CHAPTER 1

## Introduction

### 1.1. Preview

Agriculture in Vietnam is in transition from subsistence agriculture to commercial agriculture. This transition has been occurring alongside institutional change from a centrally planned to a market-economy. Although urbanisation is increasing, most Vietnamese still gain their livelihoods from agriculture. Farms are small, there is surplus rural labour, and rural incomes are on average less than urban incomes. However, poverty levels have been declining and Vietnam has become a major exporter of rice and other agricultural products.

Quang Binh is one of 63 provinces within Vietnam. Situated on the North Central Coast, it is one of the poorest regions within Vietnam. In 2007 the official poverty rate in Quang Binh was 26% compared to 14.8% for all of Vietnam.

Quang Binh has three major agro-ecological zones, these being the coastal zone, the wetland plains and the mountains. Many coastal and mountain communities within Quang Binh have until recently been isolated from towns and markets by a lack of roads and telecommunications. The majority of the people of Quang Binh are ethnic Kinh which is the predominant group within Vietnam, but there are also substantial ethnic minorities with their own languages and cultures, especially in the mountain regions.

The purpose of the study is therefore to investigate both the extent and the processes by which, communities and farm families in Quang Binh Province are making the transition from subsistence farming to commercial agriculture. The aims include identifying enabling and constraining factors, and the extent to which, and the reasons why, some communities and families might be being left behind in the commercialisation process.

Within this thesis, agricultural commercialisation is viewed as a multi faceted process with potential to be influenced by a broad range of social, economic, physical and biological factors. These factors include national economic and social policies as they affect physical

input and output markets, labour markets, land tenure and land markets, land use regulations, regional and commune infrastructure programs, and availability of credit. At the regional, district and commune levels there are issues of bio-physical resources and local governance. At the household level there are issues of resource endowments (physical, social and economic) and entrepreneurship, and the implications thereof for both efficiency and equity.

The investigations within this thesis are informed by prior theory but no specific hypotheses are tested. Rather, the thesis builds on a philosophy of documenting empirical situations within a holistic framework, and then seeking emergent insights and understandings which can be compared to existing theory, so as to thereby further build and modify that theory. It is also intended that the results will provide reference and guidance to policy makers as to how the transition from traditional subsistence agriculture to modern commercial agriculture can be facilitated both, in Vietnam in general and Quang Binh Province in particular.

This introductory chapter is developed in five sections. Following this preview, the research questions are presented. The analytical framework is presented in the third section. The fourth section provides an outline of the thesis structure. The final section presents some issues of terminology.

## **1.2. Research questions**

There are four key research questions:

1. How is the transition from subsistence to commercial agriculture affecting the livelihoods of communities and farm households in Quang Binh Province?
2. What are the bio-physical, economic and institutional factors influencing the transition from subsistence farming to commercial agriculture in Quang Binh Province?
3. How do the emergent insights obtained from the Quang Binh case studies compare and contrast with existing theory?
4. What are enabling strategies for effective transition and sustainable commercial agriculture?



### **1.3. The analytical framework**

The study is conducted within a framework of theory building and enrichment. As such, the study is informed by existing literature and theories. The aim is to draw meaning from contextual evidence, and thereby obtain theoretical insights as to the transition process as it is occurring within Quang Binh Province. This may lead to either development or modification of existing theory. The aim does not include the testing of specific hypotheses. Given this emphasis on theory building, the dominant research paradigm can be described as qualitative and inductive, with an emphasis on seeking answers to questions of the ‘what, why and how’ type. Although the dominant research paradigm is qualitative in relation to the questions that are asked, much of the specific data is numeric. This numeric data is summarized and presented using descriptive statistics such as means and standard deviations, but consistent with the research philosophy, inferential statistical analysis is not undertaken. Accordingly, the generalisations that are made are to theory which has local and potentially broader application, rather than to broader populations *per se*. Consistent with this philosophy, there is a focus on first finding patterns within the data (an inductive emergent process), then seeking explanations and interpretations in relation to existing theory (a deductive process), and then, as appropriate, modifying and further developing theory that can explain the new findings (a mix of induction and deduction). The research strategy, within which all of the above is undertaken, is case study analysis.

Six commune case studies are undertaken with six embedded household cases in each commune. The case studies were selected to capture the diversity of agro-ecological zones, market access and communications, farm and farmer resources, ethnic communities, and institutional factors. The commercial orientation is explored in relation to both inputs and outputs at the level of both individual activities and the overall household. The case study households were first interviewed in 2006 and then again in 2008. During the first interview respondents were asked to describe how their livelihoods had changed over the preceding ten years or in some cases, where appropriate, going back even further. The second interview focused on changes that had occurred since the first interview. Cross-case comparisons are conducted to explore common and contrasting patterns of transition.

## **1.4. Thesis structure**

The thesis is structured into 13 chapters. Following this introductory chapter, Chapter 2 describes and reviews agriculture related issues relevant to the study.

Chapter 3 reviews concepts of subsistence farming and commercial agriculture, the need for transition, the determinants of transition and decision making theories related to transition.

Chapter 4 reviews the sustainable livelihoods framework and then further develops the framework to capture the complexities of markets and commercial transition.

Chapter 5 develops the case study strategy including case selection, units of analysis, data collection, and data analysis.

Chapters 6 to 11 provide the results of six commune case studies with six embedded household cases in each commune. Chapter 6 analyses a coastal commune with good access to markets, in which the traditional farming systems are rice-based. Chapter 7 analyses a coastal commune with historically poor market access where the traditional livelihoods are based on sea fishing. Chapter 8 analyses a wetland plains commune with good market access, where the traditional rice-based farming livelihoods are being modified to include commercial production of vegetables and flowers. Chapter 9 analyses a plains commune with some upland regions and historically poor market access. Chapters 10 and 11 analyse two mountain communes, one with good access relative to most mountain communes, and the other with historically very poor access. The majority of the households at the second commune are classed as comprising people from an ethnic minority.

In Chapter 12, case studies are compared according to regions, market accessibility and wealth levels to develop common and contrasting patterns in transition. These comparisons lead to study findings that are compared and contrasted with existing transition theories.

In the final chapter, the answers relating to the research questions are presented, conclusions are drawn, and both study limitations and future research are identified.

## 1.5. Thesis terminology

Land areas are measured in hectares for large areas and sao for small areas. There are 20 sao in 1 ha.

The Vietnamese unit of money is the dong (VND). Given the small size of the unit, these are usually presented in terms of thousand or million VND. Although the precise figure fluctuates on a daily basis, in 2006 one United States dollar was worth on average about 16,000 VND. In 2008 this figure was 16,200 VND.

Poverty figures presented in this thesis are, unless stated otherwise, calculated as per the official Vietnam Government benchmark as decreed in 2005 of 200,000 VND per person per month for rural areas and 260,000 VND per person per month for urban areas. Prior to 2005, the official poverty benchmarks were 80,000 VND per month in mountain areas, 100,000 VND in other rural areas, and 150,000 VND in urban areas.

A commune is the smallest unit of local government. Communes in Quang Binh typically have 1500-6000 residents. A commune typically includes a number of villages which may be contiguous. A commune in modern Vietnam no longer has connotations of collectivised organisation.

Food crops are staple crops, typically high in carbohydrates, which underpin food security. The main ones are rice, maize, cassava, and sweet potatoes. Vegetables are predominantly green crops, and by common Vietnamese usage, including in this thesis, are not considered as food crops.

One of the important cash crops in upland and mountain areas is groundnuts (*Arachis hypogaea*). Groundnuts are a legume and are often called peanuts in western countries.

\*\*\*\*\*

## CHAPTER 2

### Agriculture in Vietnam, the Central Region and Quang Binh Province

#### 2.1. Introduction

The purpose of this chapter is to review and describe agriculture in Vietnam in general, and the Central Region and Quang Binh Province in particular. The chapter is structured into seven sections. Following this introduction, the next section focuses on bio-physical and socio-economic indicators. The third section describes land tenure. Agricultural industries are reviewed and analysed in the fourth section. The fifth section analyses agricultural institutions. In the sixth section, the situation of agriculture in Quang Binh Province is placed in the context of the research questions of this thesis. Finally, the discussions are summarized as a lead-in to the analytical frameworks developed in Chapters 3 and 4.

#### 2.2. The Research Location

##### 2.2.1. Vietnam and the Central Region

Vietnam is located in South East Asia (Figure 2.1) with 329,560 sq km of land area, 3260km of coastline, and 86.16 million people in 2008 (GSO, 2008). The population density was 261 persons per sq km in 2008.

Before 1986, the whole economy, as well as the agricultural sector, operated under central planning such that almost all production and trading of commodities were conducted by state-owned enterprises or co-operatives. During this period, the government placed a strong focus on supporting and subsidising sectors that were inefficient. Poverty, budget deficits, hyperinflation, and poor economic performance were prevailing phenomena (Hoa and Grote, 2004).

In 1986, the Vietnamese Government began to implement the “Doi Moi” (innovation) reforms whereby the economy, including agriculture, changed away from central planning to a market orientation. There were three critical changes. The first was de-collectivisation, whereby

households were recognized as independent economic units to whom land was allocated. The second was that households were given land use certificates for long term use (JBIC, 2003). The third change was a move to trade liberalisation which was promoted as an “open economy”.

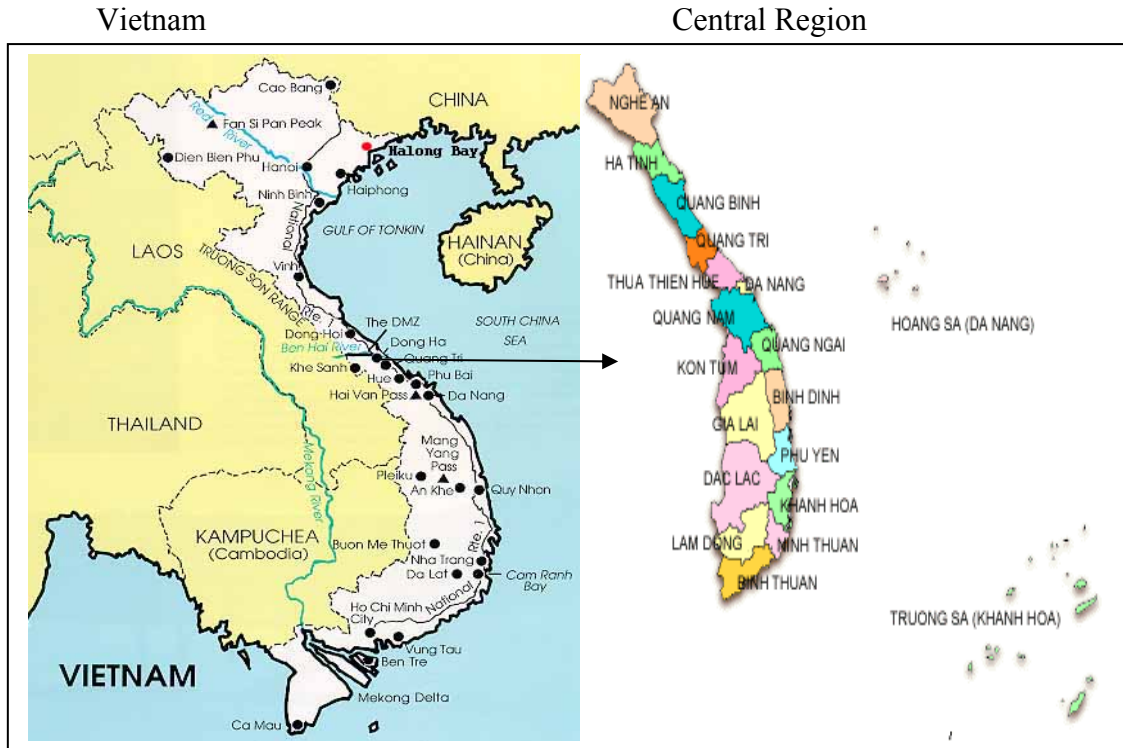
After more than 20 years of implementation of the “Doi moi” policy, the economy has achieved significant progress in several aspects. The average rate of economic growth in the period from 1986 to 1997 was about 8.5% per year (Bautista, 2000). More recently, the annual growth rate has ranged between 6% and 8.5% (Table 2.1).

The agricultural sector has experienced rapid progress during this period. From a non self-sufficient country with food shortages in the early 1980s, Vietnam has become the second largest rice exporter in the world and is also a large scale exporter of many other crops and agricultural commodities including cashew nuts, coffee, green pepper, and rubber (Que, 1998; Tuyen *et al*, 2003). The poverty rate reduced from 58% in 1993 to 37% in 1998 and 29% in 2002 (UNDP, 2005). It further reduced to 14.8% in 2007 and 13.5% in 2008 (GSO, 2008).

Although the rural population has been decreasing as a proportion of total population, in 2008 about two thirds of the Vietnamese population were still living and working in rural areas (Table 2.1). The broad agriculture sector, including agriculture, forestry and fisheries accounted for one fifth of GDP in 2008. Agricultural exports comprised about 29% and 23% of exports in 2000 and 2007 respectively (GSO, 2007).

The Central Region (North Central Coast, South Central Coast and Central Highlands) of Vietnam is one of the poorest and most disadvantaged regions in Vietnam. According to CIE (2002) and The *et al* (2004), the North Central Coast and the Central Highlands are two of the three poorest sub-regions in Vietnam. These sub-regions have poorly developed infrastructure, a harsh climate, and low development of manufacturing industries. The people and economy of this Central Region are even more dependent on agriculture than most other regions of the country.

**Figure 2.1: Vietnam and the Central Region**



(Source: [www.asiatravel.com/vietmap.html](http://www.asiatravel.com/vietmap.html), [www.angelfire.com/co/hongnam/vnmap.html](http://www.angelfire.com/co/hongnam/vnmap.html))

**Table 2.1: Some main indicators of the Vietnam economy from 2004 to 2008**

Indexes	2004	2005	2006	2007	2008
Annual GDP growth rate (%)	7.8	8.4	8.2	8.5	6.2
Population growth rate (%)	1.4	1.3	1.2	1.2	1.2
Rural population (%)	73.5	73.1	72.9	72.6	72.1
GDP percentages:					
Agriculture, forestry and fisheries	21.8	21.0	20.4	20.3	22.0
Industries and construction	40.2	41.0	41.5	41.6	39.9
Services	38.0	38.0	38.1	38.1	38.1

Source: GSO, various years, 'Socio-economic report of Vietnam Central Government'

### 2.2.2. Quang Binh Province

Quang Binh Province is situated in the North Central Coast of Vietnam (Figure 2.1), around 500km south of Hanoi and 170km north of Hue City. It has an area of 8065 km<sup>2</sup> and a 2008 population of 857,818 people.

In terms of topography, Quang Binh is characterised by its narrowness combined with altitudinal sloping from the west (mountains) to the east (coastline). The narrowest width from the Lao border to the coastline is just 50km. The ecological zones include mountains, hills, plains, wetlands and coastal sandy areas. The ecological zones can be broadly grouped as mountains, plains and coastal (Figure 2.2). However, given the narrowness of the plains, some communes cover multiple ecological zones. More than three quarters of the total area is forest, with agricultural land less than 9% (Table 2.2). The rivers are short and with high gradient (Gruebler *et al*, 2006). Quang Binh is typically affected by floods in the rainy season from September to December, and by droughts in the summer season from June to August.

Within Quang Binh Province there are six districts and one city administrative unit. Two districts (Minh Hoa and Tuyen Hoa) are mountainous. The other four districts of Quang Trach, Bo Trach, Quang Ninh and Le Thuy all include mountainous, plains and coastal areas. Dong Hoi City contains both plains and coastal areas (Figure 2.3).

Quang Binh has diversity of ethnic groups. These include Bru van Kieu, Malieng, Sach, Kua, May, Ruc, Ma Coong and Arem.

The broad agriculture sector, including forestry and fisheries, is declining as a proportion of GDP (Table 2.3). However, more than 85% of the population still live and work in the rural regions as of 2008.

**Table 2.2: Land and land use in Quang Binh province in 2008**

<b>Index</b>	<b>Area (ha)</b>	<b>%</b>
1. Agricultural land	71,529	8.9
2. Forest land	623,378	77.3
3. Aquatic water surface	2,645	0.3
4. Residential land	5,047	0.6
5. Land for special uses	24,292	3.0
6. Other non-agricultural land	20,937	2.6
7. Unused land	58,699	7.3
<b>Total natural area</b>	<b>806,527</b>	<b>100</b>

*Source: Quang Binh statistical year book 2008*

**Figure 2.2: Soil and topography at three ecological regions of Quang Binh**



Coastal region



Plains region



Mountainous region



**Figure 2.3: Quang Binh Province**



(Source: <http://www.wompom.ca/vietnam/vnprovinc403.htm>)

Economic growth, ranging from about 9% to 12% per year (Table 2.3), is higher than the figures for the whole country reported earlier in this chapter. However, Quang Binh remains one of the poorest provinces in the Central Region and in Vietnam. According to CIE (2002), the poverty rate in Quang Binh Province was 49.1% in 2001, compared with 36.5% for the whole country. At this time, rural poverty was 53.25% and urban poverty was 13.2%. The overall figure subsequently reduced rapidly but it was still high 19% at the end of 2008 (QBSO, 2008).

**Table 2.3: Some indicators of the Quang Binh Economy from 2004 to 2008**

Indexes	2004	2005	2006	2007	2008
Annual GDP growth rate (%)	9.6	10.3	11.4	11.6	11.4
Population growth rate (%)	0.9	0.9	0.9	1.1	0.3
Rural population (%)	86.2	86.0	89.0	85.6	85.5
GDP structure (%):					
Agriculture, forestry and fisheries	32.5	29.7	27.9	25.8	24.2
Industries and construction	29.9	32.1	33.6	35.3	36.6
Services	37.6	38.2	38.5	38.9	39.2

*Source: Quang Binh statistical year book 2004, 2005, 2006, 2007, 2008*

### **2.3. Land tenure in Vietnam and the Central Region**

Land tenure is a complex and sensitive issue in Vietnam. There are several contributing reasons. First, most Vietnamese people derive a living from agriculture, and although land is the essential factor of agricultural production, this land resource is limiting relative to the large number of people and the high population density. Secondly, there are many ethnic groups in Vietnam and their relationships with land differ, depending on their cultures, customs, locations and other socio-economic conditions. Third, Vietnam has a diverse history in relation to institutional changes and political philosophies relating to land tenure. Land tenure and agricultural reform in Vietnam are closely related (Dzung, 2001; Que, 2001; Marsh and MacAulay, 2002).

From 1954 to 1981 in the North and from 1975 to 1981 in the South (following unification of the nation), private land was collectivised. This meant that productive land was allocated to agricultural production co-operatives, state-owned enterprises or state-owned plantations. Farmers worked as employees and received low wages based on equal shares of commune income. By the end of 1960, 68% of the land in the north was allocated to co-operatives (Do and Iyer, 2003, 2004), increasing to 95% by 1975 (Kirsch, 1997). In the south, and commencing after collectivisation began in 1975, the process was slower and by 1980 only 36% of agricultural land had been allocated to agricultural co-operatives (Kirsch, 1997). It is widely accepted that the collective mechanism discouraged investment in production and was a factor leading to regular food shortage in many areas (Dzung, 2001).

From 1981 to 1988, land began to be distributed to households. This process was facilitated by Decision 100 issued in 1981 that permitted implementation of the 'output contract mechanism' (Dzung, 2001; Do and Iyer, 2003, 2004). Under this mechanism, the co-operatives provided land and other inputs, including fertilisers, irrigation, land preparation, plant protection and coordination to households whereas, households contributed labour. Households received residual output after they had provided a given output to co-operatives as per the contract. During this time, land use rights were still under the control of co-operatives and there was no security of tenure.

From 1986 to 1993, but particularly from 1988 in accordance with Resolution 10, agricultural land was allocated to households. Although land use rights were transferred from co-

operatives to families, these rights could not be traded and hence agricultural land markets did not exist (Do and Iyer, 2003; 2004).

From 1993 until 2009, with the promulgation of the 1993 Land Law and the further revision of land law in 1998, 2001 and 2003, the land use rights of farmers have been developed and guaranteed. Government Decree No 64 (dated 27/9/1993) allowed agricultural land to be allocated to households and individuals for up to 20 years, whereas Decree No 2 (dated 15/1/1994) allowed allocation of forest land to organizations, households and individuals for up to 50 years. Based on this Land Law, the land belongs to the state (people) but individuals have use rights including the rights of transfer, exchange, lease, inheritance and mortgage. Land-use certificates were issued to households during this period. This provided incentives for farmers to invest and also facilitated some rudimentary development of land markets (Marsh and MacAulay, 2002; Do and Iyer, 2003).

By 2000, almost all annual cropping land and approximately two thirds of the perennial cropping land had been allocated to households, whereas most of the pasture land was still held communally (Table 2.4). Allocations of annual cropping land per household have been limited to 2ha per household in the North and the Central regions and 3ha in the Mekong Delta. Perennial crop land is limited to a maximum of 10ha per household (Dzung, 2001; Marsh and MacAulay, 2002). The limitation of annual cropping land was reset at 3ha per household for whole country in the 2003 Land Law.

**Table 2.4: Structure and tenure of agricultural land in 2000**

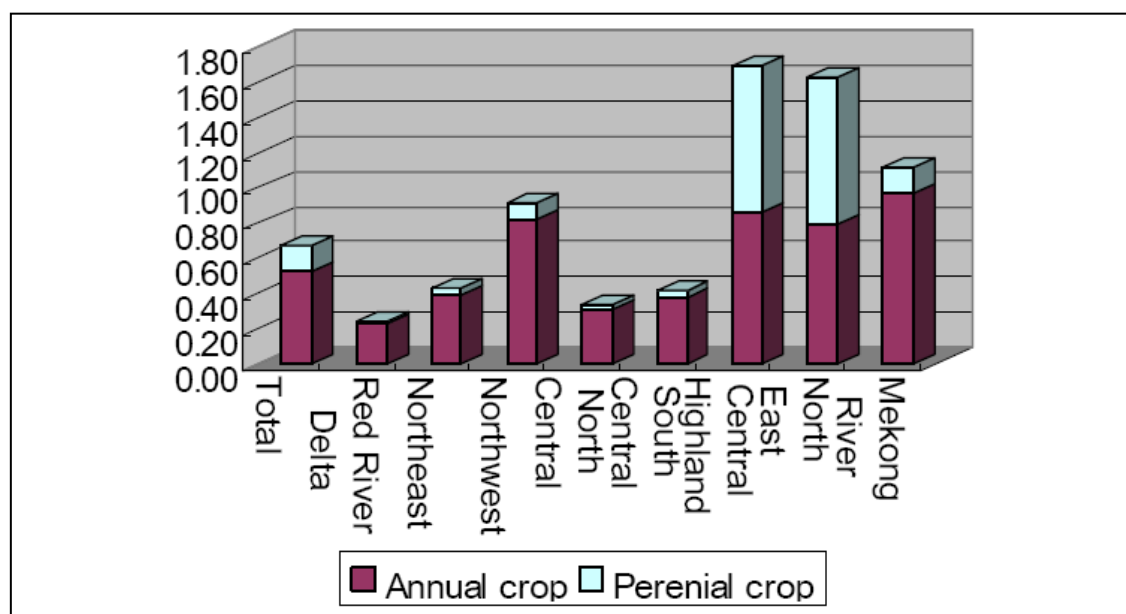
Types of land	Land area (1000 ha)	Ratio of agricultural area (%)	Allocated to individual HHs (% area)	Communal land (% area)	Allocated to organizations /enterprises (% area)
<b>Total agricultural land</b>	<b>9,345.3</b>	<b>100.0</b>	<b>85.7</b>	<b>3.9</b>	<b>10.4</b>
Total paddy rice land	4,267.8	45.7	94.4	3.4	2.2
<i>3-crop paddy rice land</i>	465.9	5.0	98.3	1.5	0.3
<i>2-crop paddy rice land</i>	2,681.3	28.7	94.9	3.1	2.0
<i>one-crop paddy rice land</i>	1,069.2	11.4	91.6	4.6	3.8
<i>Rice nursery land</i>	51.4	0.6	93.2	6.0	0.8
Burnt-over paddy upland	199.9	2.1	93.9	4.1	2.1
Other annual crop lands	1,661.7	17.8	85.9	6.2	7.9
Garden land	628.5	6.7	98.1	0.7	1.3
Perennial crop land	2,181.9	23.3	68.7	1.4	30.0
Pasture land	37.6	0.4	1.3	76.1	22.6
Water surface land	367.8	3.9	69.0	12.6	18.4

*Source: Tuyen et al, 2003*

The generic land allocation criterion has been equity rather than efficiency, with the specific distribution mechanisms varying between communes (Ravallion and Walle, 2002; Kerkvliet, 2006). Typically, land has been allocated either per person or per worker (Marsh and MacAulay, 2002). The average agricultural land per household in Vietnam has variously been reported as 0.74ha (JIBC, 2003), and 0.57ha (Kerkvliet, 2006). Based on earlier data (Figure 2.4), this figure is much smaller in the Central Region, with 0.6ha per household in the North Central and 0.44ha per household in the South Central. However, in the Central Highlands there is a relative abundance of land for industrial crops compared with the rest of the country so the agricultural land was more than 1.6ha per household.

Land has typically been allocated in non-contiguous plots, often no larger than 200-500 square metres. Hung *et al* (2004) report that, on average, farms in the Red Delta River comprise eight or nine non-contiguous plots. In the Central region, the situation is similar. Hung (2005) reported that in the LeThuy District of Quang Binh Province there were about 10 plots per household and that in some households the figure was as high as 15. Land consolidation based on swapping of plots has been occurring.

**Figure 2.4: Agricultural land per household in Vietnam and Central Region in 1998**



Source: JIBC, 2003

The situation in regard to land use certificates requires further clarification. According to Do and Iyer (2003), 90% of rural households had been granted land use certificates by 2000, whereas this figure was only 16% in urban area. However, this study did not separate between residential land (house and garden) and agricultural land. This distinction is fundamental

given that land users typically received land use certificates for their residential land but not their agricultural land during this period. According to Smith *et al* (2007), land use certificates for agricultural land had by 2004 been granted to just over 70% of households at 10 of 12 districts surveyed, with the remaining two districts being 54% and 43%. However, these data come from only three provinces and high issue levels of land use certificates was a purposive selection criterion in choosing the provinces, districts and communes for analysis of land markets.

According to Kerkvliet (2006), 7% of Vietnamese farming households purchased other people's land-use rights between 1993 and 1998. In 1998, 9% were renting land use rights and 7% had borrowed land without payment. Smith *et al* (2007) reported that the land market in Northern and Central regions was mainly for residential land use rights with very few transactions in agricultural land.

## 2.4. Agricultural industries in Vietnam and the Central Region

### 2.4.1. Crops

There are two general types of crops in Vietnam. Annual crops accounted for about 80% of total planted area in 2008, whereas perennial crops accounted for less than 20% (Table 2.5). The total area of crops increased approximately 10% between 2000 and 2008, with most of this increase being for perennial crops. The relative importance of annual and perennial crops varied according to region, and also according to agro-ecological zones within regions.

**Table 2.5: Planted area of crops in Vietnam by crop group**

*Unit: 1000 ha*

Year	Total	Annual crops			Perennial crops		
		Total	Cereals	Industrial crops	Total	industrial crops	Fruit crops
2000	12644.3	10540.3	8399.1	778.1	2104.0	1451.3	565.0
2001	12507.0	10352.2	8224.7	786.0	2154.8	1475.8	609.6
2002	12831.4	10595.9	8322.5	845.8	2235.5	1491.5	677.5
2003	12983.3	10680.1	8366.7	835.0	2303.2	1510.8	724.5
2004	13184.5	10817.8	8437.8	857.1	2366.7	1554.3	746.8
2005	13287.0	10818.8	8383.4	861.5	2468.2	1633.6	767.4
2006	13409.8	10868.2	8359.7	841.7	2541.6	1708.6	771.4
2007	13555.6	10894.9	8304.7	846.0	2660.7	1821.7	778.5
2008	13873.9	11157.8	8542.0	805.8	2716.1	1886.1	775.3

*Source: GOS 2008*

### 2.4.1.1. Annual and short cycle crops:<sup>1</sup>

#### Food crops

The term ‘food crop’ refers in Vietnam to staple crops and excludes vegetables. Vegetables are regarded as supplements rather than staples and are considered separately.

Both in the whole country, and within the Central Region, the main crops are rice, maize, cassava, groundnuts, and soybeans, with rice crops being dominant. According to JBIC (2003) “agricultural households in most regions mostly engage in paddy farming; the shares of paddy field area in the total agricultural land area that is cropped to annual crops are: 93% in Red River Delta, 67% in Northeast, 76% in North Central Coast and 59% in South Central Coast” (p 56). According to Tuyen *et al* (2003), “66.9% of Vietnamese households grow rice, 99.9% consume rice”. Of rural households, they report that about 95% grow rice and almost half of them produce a surplus for sale.

Within the North Central Coast sub-region, within which Quang Binh province is located, about 80% of rice is consumed within the farm household and about 20% is marketed (Table 2.6). In contrast, in the Mekong Delta nearly 70% is marketed and much of this is exported.

**Table 2.6: Landholding, rice production and rice use at agricultural households by national regions in 1998**

Region	Land holding (ha/hh)	Annual crop land (%)	Rice production per capita in agri. sector (kg)	Family Consumption (% rice production)	Rice traded or bartered (% production)	Value of rice sold per capita (1000 VND)
<b>Whole country</b>	<b>0.90</b>	<b>52.0</b>	<b>577</b>	<b>55.2</b>	<b>44.8</b>	<b>444</b>
North Uplands	0.96	44.1	300	88.2	11.8	70
Red River Delta	0.85	29.5	435	75.9	24.1	133
North Central Coast	0.60	51.8	330	79.8	20.2	126
South Central Coast	0.44	80.4	453	64.9	35.1	333
Central Highland	1.51	33.6	223	85.3	14.7	84
South East	1.37	45.9	661	43.2	56.8	712
Mekong River Delta	1.03	80.4	1,338	31.9	68.1	1,575

*Source: Tuyen et al (2003)*

Within the Central Region, it is typical to grow two crops per season in the same field. The specific crop calendar varies depending on climate and agro-ecological conditions but can be briefly described as follows. The winter-spring crop is planted in January and harvested in late April or early May. The summer-autumn crop is planted in June and harvested in early

<sup>1</sup> Some short cycle crops such as sugar cane are also classified within the annual crops category by the Vietnam Statistical Office.

September. Floods are common from October to December so no crop is cultivated at this time. However, in some areas of the South Central Coast, it is possible to grow three rice crops per year in situations where the irrigation system is good and flooding can be prevented.

Sweet potato, cassava, and maize are other food crops (beside paddy crop) in the Central Region, but according to Bautista (2000) they only accounted for 3.2% of total agricultural value added at that time. Maize and cassava crops are more common in upland areas where the wetland rice crops are limited due to topography and poor irrigation systems. Maize is important as a source of poultry feed as well as income (Ha *et al*, 2004). Both Que (1998) and Goletti *et al* (2000) reported that maize production was gradually replacing cassava and sweet potatoes because of low yields of cassava and sweet potatoes combined with technological advances in maize production. Cassava is also changing from a food to an industrial crop.

#### *Vegetable crops*

According to Khiem *et al* (2000), more than 70 plant species are grown or processed as vegetables in Vietnam, of which about 19 species are of economic importance. These include cabbage, carrot, cauliflower, chayote, chilli, cucumber, garlic, mustard, onion, and tomato. Traditionally, vegetables were grown for self-consumption in gardens within the residential land. However, vegetable growing for commercial purposes has been increasing rapidly. The statistics suggest that the production increase has been driven by crop area rather than yield (Table 2.7). According to Minot (2002), 66% of rural households were producing vegetables at that time, with poorer farmers being the most likely to produce vegetables. In 2008, vegetables accounted for 8.6% of total crop value (GSO, 2008).

**Table 2.7: Cultivated area and production of vegetable crops in Vietnam**

<b>Year</b>	<b>Cultivated area (1000 ha)</b>	<b>Production (1000 ton)</b>
1991	197.5	3213.4
1999	459.1	5792.2
2000	464.6	5732.1
2001	514.6	6777.6
2002	560.6	7485.0
2003	577.8	8183.8
2004	605.9	8876.8
2005	635.1	9640.3

*Source: Fruits and vegetables of Vietnam (www.rauquaviệtnam.vn)*

Specialised vegetable growing areas have developed in peri-urban areas surrounding big cities such as Ha Noi, Ho Chi Minh, Da Nang, and Vung Tau (Khiem *et al*, 2000). An *et al* (2003)

reported that more than 95% of the lettuce sold in Ha Noi comes from less than 20km away. Son *et al* (2003) and Son and Anh (2005) reported that the total area of vegetables in districts surrounding Ha Noi increased from about 4000ha in 1990 to 8100ha in 2005. Specialist vegetable growing for export is mainly limited to Lam Dong Province (Da Lat City) where temperate crops can be grown. In contrast, within the Central Region, the vegetable crops are mainly small scale and often for consumption within the farm household.

#### *Annual and short cycle industrial crops*

Sugar cane, groundnuts and soybean are the three most important short-cycle crops in Vietnam (Table 2.8). Within the Central Region, sugar cane was formerly of importance, but the Quang Binh mill was closed following economic failure in 1999-2000. According to the World Bank (2001), contributing causes included low prices and inadequate production in relation to mill capacity. The Quang Binh mill was one of 44 sugar mills set up by the Vietnamese Government in 1994.

**Table 2.8: Planted area of some short cycle industrial crops in Vietnam**

*Unit: 1000 ha*

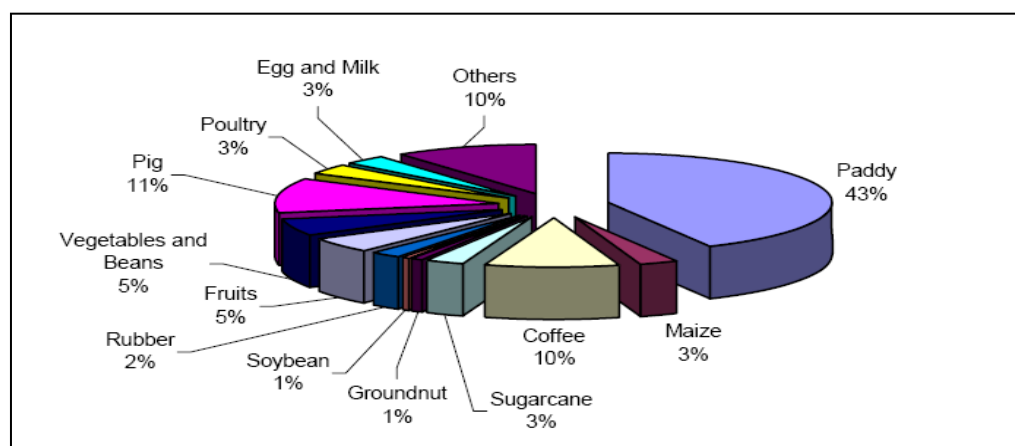
<b>Crops</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Cotton	27.8	28.0	25.8	20.9	12.1	5.2
Jute	4.8	4.9	5.6	6.3	11.0	3.4
Sedge	14.0	13.0	12.5	12.3	13.8	11.7
Sugar-cane	313.2	286.1	266.3	288.1	293.4	271.1
Groundnut	243.8	263.7	269.6	246.7	254.5	256.0
Soybean	165.6	183.8	204.1	185.6	187.4	191.5
Tobacco	23.0	16.3	16.8	26.7	19.2	16.4

*Source: GSO, 2008*

Groundnuts and soybean crops are grown in most regions of the country including the North Central Coast where Quang Binh Province is located (Que, 1998). Groundnuts have been increasing in importance and in 2000 accounted for 1% of total agricultural output value (Figure 2.5)



**Figure 2.5: Share of main products in total agricultural output value in 2000**



Source: Hoa and Grote (2004)

#### 2.4.1.2. Perennial crops:

In contrast to annual and short cycle crops, long cycle perennial crops in Vietnam are mainly produced in concentrated areas and for commercial purposes. The main perennial crops in Vietnam are rubber, coffee, cashew nuts, tea and pepper. Most of the perennial crops have been increasing in area except for coconut which has been decreasing and coffee which has fluctuated but with no clear trend (Table 2.9).

**Table 2.9: Planted area of some main perennial crops in Vietnam**

*Unit: 1000 ha*

Year	Tea	Coffee	Rubber	Pepper	Cashew nuts	Coconut
2000	87.7	561.9	412.0	27.9	195.6	161.3
2001	98.3	565.3	415.8	36.1	199.2	155.8
2002	109.3	522.2	428.8	47.9	240.2	140.4
2003	116.3	510.2	440.8	50.5	261.5	133.6
2004	120.8	496.8	454.1	50.8	295.9	133.1
2005	122.5	497.4	482.7	49.1	348.1	132.0
2006	122.9	497.0	522.2	48.5	401.8	133.9
2007	126.2	509.3	556.3	48.4	439.9	135.3
2008	129.3	530.9	631.5	50.0	402.7	138.3

Source: GSO, 2008

Coffee is mainly grown in the Central Highlands (Goletti and Rich, 1998). Only small areas are grown within the North Central Coast. Coffee is grown by both state-owned enterprises and households, but households and small-scale coffee farms are dominant.

Until recently, rubber trees mainly belonged to state-managed farms, with farmers given specific tasks of planting and maintaining the trees, and gathering the rubber latex (Hoa and Grote, 2004). More recently, some rubber tree crops have been allocated to households to manage and then sell the latex to rubber companies on contract. Within the Central Region, the area of rubber trees grown by households or farms has dramatically increased, often linked to governmental or NGO supported programs.

Tea and pepper crops are other important industrial perennial crops grown in the Central Region and other parts of Vietnam. These crops are mainly grown by farmers but they are processed by both farmers and processing companies (Hoa and Grote, 2004). Whereas tea is mainly processed by companies, pepper is mainly processed by households using traditional technologies.

Fruit crops accounted for 7.4% of total crop output value in 2008 (GSO, 2008). These include mangoes, litchi, longan, bananas, and pineapples. Although grown in the Central Region, production is small and fragmented, with household consumption a dominant feature.

#### **2.4.2. Livestock**

According to Bautista (2000), livestock accounted for 14.1% of agricultural GDP in 1997. By 2008, the value of livestock had increased to 27% of total agricultural output value, with cattle, pigs and poultry being the most important (Table 2.10, figure 2.5)

**Table 2.10: Livestock population in Vietnam**

*Unit: 1000 heads*

<b>Year</b>	<b>Cattle</b>	<b>Pigs</b>	<b>Horses</b>	<b>Goats, sheep</b>	<b>Poultry (mill. head)</b>
2000	7025.1	20193.8	126.5	543.9	196.1
2001	6707.6	21800.1	113.4	571.9	218.1
2002	6877.4	23169.5	110.9	621.9	233.3
2003	7229.3	24884.6	112.5	780.4	254.6
2004	7777.5	26143.7	110.8	1022.8	218.2
2005	8462.9	27435.0	110.5	1314.1	219.9
2006	9431.9	26855.3	87.3	1525.3	214.6
2007	9721.1	26560.7	103.5	1777.7	226.0
2008	9235.4	26701.6	121.0	1483.5	247.3

*Source: GSO, 2008*

#### 2.4.2.1. Cattle production

Cattle raising in Vietnam provides both meat and draught power for cultivation. For this reason, the number of households involved with cattle raising is very high, including in the Central Region where land area per household is both small and fragmented, hence limiting the ability to use machines. In addition, in many areas in Vietnam, including the Central Region, cattle are considered a very important household asset which can be used to overcome difficult events such as natural disasters and illness, or to provide finance for important events such as weddings, house building or sending children to university.

The number of cattle in the North Central Coast region accounted for more than 20% of total cattle in Vietnam in 2008 (Table 2.11) even though the cattle population is very small. Approximately 40% of the cattle on the North Central Coast are actually buffaloes (GSO, 2008).

Dairy farming is not well developed in Vietnam. A few dairy farms have been established near big cities like Ho Chi Minh and Ha Noi in recent years (MARD, 2006). There is no dairying within the Central Region.

**Table 2.11: Population of cattle including buffaloes in Vietnam**

*Unit: (1000 head)*

Regions	2003	2004	2005	2006	2007	2008
<b>Whole country</b>	<b>7229.3</b>	<b>7777.5</b>	<b>8462.9</b>	<b>9430.9</b>	<b>9721.1</b>	<b>9235.4</b>
North Uplands	2394.8	2479.4	2579.3	2758	2882.3	2683.2
Red River Delta	707.3	759.1	831.7	913.6	903.5	901.6
<b>North Central Coast</b>	<b>1605.9</b>	<b>1709.7</b>	<b>1854.2</b>	<b>1984.7</b>	<b>2036.5</b>	<b>1913.9</b>
South Central Coast	974.0	1052.2	1146.8	1356.2	1382.1	1268.7
Central Highland	541.8	615.9	688.8	826.9	841.0	809.9
South East	640.6	705.0	785.4	872.9	948.0	901.5
Mekong River Delta	364.9	456.2	576.7	718.6	727.7	756.6

*Source: GSO, 2008*

#### 2.4.2.2. Pig production

Pig production is the biggest livestock industry in Vietnam, accounting for 60% of total livestock value (Hoa and Grote, 2004). The technologies used and the scale vary between regions and households (Goletti *et al*, 2000). Small scale production (from 2 to 5 pigs at a time) is the dominant pig raising method at households. Household pigs are fed agricultural

waste and use otherwise spare household labour. In contrast, commercial and large scale pig farms are mainly in the South.

#### *2.4.2.3 Poultry Production*

Chickens and ducks are raised in all regions of Vietnam. The traditional free-raising method in household gardens and rice fields is dominant throughout the country. According to Goletti *et al* (2000), 85% of poultry output is from households. Large scale commercial farms have been developed in some areas but they are facing many challenges and difficulties since the emergence of bird flu, which has not only created regulatory issues but also affected consumer demand.

#### *2.4.3. Fisheries*

Fish are an important and high growth primary industry in Vietnam. According to Nhan *et al* (2005), the annual growth rate of fisheries (aquaculture plus sea fishing) was 12% from 1999 to 2003. In 2002, the export returns from fish were 1.8 billion USD, accounting for 12% of national exports. According to Ruckes and Dang (2004), the fishery products of Vietnam were consumed by 50 countries.

#### *2.4.4. Forestry*

Until the early 1990s, forestry mainly depended on natural forest exploitation. This led to a dramatic reduction in forest cover. According to Goletti *et al* (2000), the forest cover reduced from 45% in 1945 to 26% in 1994. In contrast, from the late 1990s until 2009, planted forests have been developing rapidly. From 1992 to 1998 this was largely under the 327 Program. Since then it has largely been under the 661 Program which has a target of 5 million hectares of reforestation. Although much of the reforestation has been government led, there have also been considerable forest plantings undertaken independently in recent years by households using either subsidised or purchased inputs.

## **2.5. Agricultural organizations or institutions in Vietnam and the Central Region**

### ***2.5.1. Administration of agriculture and rural development***

At the central government level, the Ministry of Agriculture and Rural Development (MARD) governs all activities related to agriculture and rural development. At the provincial level, the institutions impacting on agriculture and rural development are the Department of Agriculture and Rural Development (DARD), including the agricultural extension office, and some state run agribusiness enterprises. At the district level, the administrative and extension functions are undertaken by the Department of Agriculture which was renamed the Economic Department in 2007. These Economic Departments are under the authority of the District People's Committees but work closely with, and under the guidance of, DARD. In addition, agricultural co-operatives and commune authorities play an important role and work closely with farmers.

The functions of the Department of Agriculture and Rural Development (DARD) can be classified into two main groups: providing administration services and providing specific agricultural services such as extension through its subsections.

The provincial departments of agriculture and rural development provide policy, administration and instruction at the provincial and district levels for agricultural land registration, land allocation, the overall development plan for agriculture and rural development, and the general cropping calendar for rice growing. Prior to 2007, fisheries activities were administered by a separate Department of Fisheries, but this was then merged within DARD. Funding for the operation of these organisations, including salaries, comes from the central or provincial government budget, depending on the provincial income.

### ***2.5.2. Agricultural extension***

The agricultural extension section at provincial level is directly under the administration of the provincial DARD (Tran and MacAulay, 2004). At the district level, the structure is similar but this section is called the extension station. The extension station staff are assigned to communes and villages, with one staff typically taking responsibility for several communes.

The functions of extension organizations as set out in Decree 13 (1993) are as follows: to disseminate advanced technology in cultivation, animal husbandry, forestry, fisheries,

processing industry, storage and post-harvest technology; to develop economic management skills and knowledge among farmers for effective business production; and to co-ordinate with other organizations in order to provide farmers with market and price information so that they can organize their production and business in an economically efficient way (Beckman, 2001).

In relation to Vietnam in general, most of the current work undertaken by the extension services focuses on the dissemination of farming technologies (Beckman, 2001; Tran and MacAulay, 2004). According to Tran and MacAulay (2004), 60% of the budget is used for administration and only 20% is used for demonstrations. According to Beckman (2001) 70% of provincial extension staff at that time had a university degree although this will vary between regions. Extension workers are allowed to charge some fees for their services, but in reality, most of the budgets come from government, because the cost of advice would be too expensive relative to the small scale of individual farm activities. In some parts of Vietnam, private extension providers have a role in specific areas, often in association with agribusiness enterprises who usually provide other inputs to farmers.

As well as the provincial agricultural extension offices and the district extension stations, there are some other organisations involved with extension activities. These are the Plant Protection Office, the Veterinary Office, and the Forest Extension Office. These are part of DARD but separate from the extension stations.

Mass organizations such as farmers' associations and women's unions also have an important extension role (Beckman, 2001). They operate under the guidance of both the Communist Party and the provincial and district authorities, and also work in association with NGOs.

### ***2.5.3. Communes and villages***

Communes are the lowest governmental administrative units in Vietnam. A commune is usually a homogeneous community in terms of topography and livelihood activities. The concept of a modern commune relates more to the term 'community' than to the term 'collective ownership'. Typically, there are between 15 and 35 communes in a district.

Within a commune there are typically 5 to 10 villages or ‘hamlets’. These villages are the traditional community of the Vietnamese people. Modern villages are often adjacent and effectively contiguous.

Communes are administered by Commune People’s Committees that are selected by the Commune People’s Council. The Council is directly selected by local people. These processes are guided by the Communist Party. The Commune People’s Committee has responsibility for many issues, including developing socio-economic plans for submission to the Commune People’s Council and then to higher governmental level, and then providing instruction for the implementation of both these plans and higher governmental policies. These functions are supported by specialist sections within the Commune People’s Committee and staff at village level. Therefore, commune authorities are closely involved with households and also have a large influence on economic development including agricultural development at the commune.

#### ***2.5.4. Agribusiness enterprises***

Agribusiness enterprises include both state-owned and private enterprises. State-owned enterprises are controlled by the provincial DARD, or, where appropriate, by another department or ministry. They provide services such as provision of seeds, pesticides and fertilisers to farmers, or they purchase agricultural outputs at harvest time either for processing and/or export, or to regulate the price. In addition, they sometimes work as government representatives to implement socio-economic development programs. These state-owned enterprises receive funds from the government and traditionally were not profit motivated. However, profit making has become more important in recent years.

Private large scale agribusiness enterprises may operate either as input suppliers or as processors. They are mainly located in the Central Highlands and South of Vietnam where agriculture is more developed. They are not a common feature of agriculture on the North Central Coast where Quang Binh is located.

#### ***2.5.5. Agricultural co-operatives***

Agricultural co-operatives were established in the North as part of the collectivisation that commenced in the 1950s. The purpose was to encourage farmers towards large-scale farming

in which economies of scale and mutual assistance would be exploited (Kirsch, 1997). As a result, there were over 41,000 agricultural production co-operatives in the North at the end of 1960 (Kirsch, 1997; Wolz, 2000). By 1975, 95% of Northern rural households were members of agricultural production co-operatives (Wolz, 2000). These co-operatives were cultivating 95.5% of agricultural land and producing 92% of total agricultural output. In the South, the collectivisation was implemented after the 1975 unification, but the process was different than in the North and the number of co-operatives was not as large.

In the collectivisation process, the membership of the co-operatives was compulsory rather than voluntary and the co-operatives operated under the instructions of the central plans (Wolz, 2000). Farmers were paid by the method of average distribution so they lacked a personal incentive to work hard. According to both Kirsch (1997) and Wolz (2000), many co-operatives did not operate efficiently, a few co-operatives were dissolved, and many existed only on paper.

After decades of inefficient operations, the Government of Vietnam enacted a New Law on Co-operatives in 1997. Old co-operatives were required to transform based on the new law. By March 2005, all but 284 out of 8595 remaining co-operatives had completed the transformation (Wolz and Duong, 2008).

Under the new mechanism, co-operatives are service providers to farmers and they work as business enterprises. The operating principles of the new co-operatives are: (1) the price of services is required to cover all costs; (2) services will be available for members and non-members alike; and (3) the respective services offered are managed by specialized groups comprising several members of a co-operative (Wolz, 2000).

Under the new mechanism, co-operatives are able to undertake any activities they wish, depending only on their financial and managerial abilities. However, in reality, co-operatives just focus on providing services that farmers are not efficient in providing separately. According to both Wolz (2000) and Wolz and Duong (2008), the main services of new co-operatives are the management of the irrigation systems, the management of the electricity facilities, the supply of farm inputs, field preparation, extension and the marketing of outputs. However, the marketing of outputs only occurs in the South and only for some co-operatives.



The number of co-operatives that remain is much higher in northern regions than in the South (Table 2.12). In part this is a consequence of history with collectivisation being more institutionalised in the North than the South. The location of co-operatives is also linked to agro-ecological conditions and the need for collective action in the management of wetland rice. It is notable that the number of co-operatives as officially recorded fluctuates between years, with some indication of increasing numbers in the Mekong Delta, but decreasing numbers in the North.

**Table 2.12: Number of co-operatives by regions in Vietnam**

*Unit: (1000 head)*

<b>Regions</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
<b>Whole country</b>	<b>8090</b>	<b>7879</b>	<b>8068</b>	<b>7237</b>	<b>7677</b>	<b>7592</b>
North Uplands	1042	815	873	700	735	725
Red River Delta	3588	3584	3575	3444	3485	3487
<b>North Central Coast</b>	<b>1662</b>	<b>1660</b>	<b>1702</b>	<b>1519</b>	<b>1555</b>	<b>1533</b>
South Central Coast	723	697	713	666	666	643
Central Highland	168	162	193	138	197	230
South East	251	263	254	203	264	221
Mekong River Delta	656	698	758	567	775	753

*Source: GSO, 2008*

## **2.6. Agriculture in Quang Binh Province**

The purpose of this section is to focus specifically on Quang Binh Province within the context of the research questions of this thesis, as they relate to the process of commercialisation.

As mentioned in Section 2.2.2, livelihoods in Quang Binh Province are characterised by both a dominance of rural industries (agriculture, forestry and fisheries) and a diversity of ecological conditions. Quang Binh rural activities are also diverse in relation to both crops and livestock. It is notable that the proportion of people engaged in rural livelihoods (85% in 2008) is much higher than the proportion of provincial GDP which is coming from these activities (24.2% in 2008) (Table 2.3). The implication is that rural incomes continue to lag behind urban incomes.

Although it is apparent that the proportion of overall agriculture in total local GDP has decreased (Table 2.3), the overall rural-based inflation-adjusted output value has increased considerably (Table 2.13). In addition, it is clear that there has been a proportionate shift away from rice and exploitation forestry to non rice crops, fisheries and livestock production. The physical allocation of land to various production activities (Table 2.14) also tends to confirm

that livelihoods have been moving from a focus on food security towards other objectives, and presumably including commercial production. However, it is particularly notable that rice cropping, which underpins food security, but in commercial terms is a low value crop, remains a dominant activity.

There is also evidence of an increasing emphasis on agricultural exports. According to Gruebler and Steingrube (2006), the total value of exports from Quang Binh in 2004 was 24.4 million USD, of which 15.9 million USD came from agricultural products. QBSO (2007) reported agricultural exports of 44.2 million USD in 2007 rising from 25.5 millions USD in 2005.

**Table 2.13: Output value of agriculture, fishery and forestry of Quang Binh Province**

*Unit: constant value VND million*

Index	2000	2004	2005	2006	2007
<b>1. Agriculture</b>	<b>635,750</b>	<b>770,744</b>	<b>806,513</b>	<b>851,689</b>	<b>864,754</b>
All Crops	422,930	506,273	514,203	536,005	526,524
Rice	268,029	304,699	299,365	313,421	291,638
Animal	206,417	258,057	284,808	309,084	329,255
Service	6,403	6,414	7,500	6,600	8,975
<b>2. Forestry</b>	<b>91,723</b>	<b>92,903</b>	<b>93,501</b>	<b>94,597</b>	<b>95,817</b>
Planted	20,044	13,856	19,368	19,822	18,831
Exploitation	68,500	71,627	66,005	67,468	70,936
Service	3,179	7,420	8,128	7,307	6,050
<b>3. Fisheries</b>	<b>148,518</b>	<b>202,917</b>	<b>218,500</b>	<b>236,508</b>	<b>264,860</b>
Exploitation	128,257	145,110	152,930	165,116	178,452
Aquaculture	19,549	55,139	62,858	68,081	82,916
Service	712	2,668	2,712	3,311	3,492

*Source: Quang Binh statistical Yearbook, 2007*

**Table 2.14: Planted area of major crops and populations of major animals in Quang Binh from 2000 to 2007**

Index	2000	2004	2005	2006	2007
1. Planted area of crop (ha)	83,454	88,938	89,672	92,926	96,019
1.1. Annual crops (ha)	73,954	77,686	77,621	80,308	82,059
All food crops (ha)	49,582	52,280	52,400	54,020	54,903
Rice (ha)	46,276	48,255	48,189	49,188	49,995
Industrial crops (ha)	6,596	5,879	5,722	5,997	6,249
1.2. Perennial crops (ha)	9,500	11,297	12,051	12,618	13,960
Industrial crops (ha)	6,918	8,465	8,613	9,084	10,235
Fruits (ha)	2,407	2,560	2,680	2,780	2,912
2. Planted forest (ha)	43,432	53,186	57,277	63,777	69,055
3. Cattle (head)	160,992	143,680	146,982	162,479	171,171
4. Pigs (head)	278,502	317,698	332,811	347,343	359,865
5. Poultry (1000 heads)	1,711	2,151	1,393	1,261	1,382

*Source: Quang Binh statistical Yearbook, 2007*

What is not clear from any of these statistics is the extent to which, or the processes by which, commercialisation is occurring, and whether this is occurring across all agro-ecological zones. Nor is it evident as to how, within particular communities, the benefits and costs of commercialisation are being shared.

## **2.7. Conclusions**

Agriculture in the Central Region in particular, and also in Vietnam in general, is characterised by land fragmentation and small scale activities. As a result of economic and agricultural reforms, the sector has experienced significant changes in land tenure, and farming systems. However, Quang Binh Province continues to lag behind most parts of Vietnam in terms rural poverty. Major questions exist as to the drivers of, and constraints to the agricultural commercialisation process, and how it is affecting livelihoods. In the next chapter, the global literature relating to these drivers, constraints and the overall transition process from subsistence to commercial agriculture will be reviewed.

\*\*\*\*\*

## **CHAPTER 3**

### **The transition from subsistence farming to commercial agriculture: reviews from previous studies**

#### **3.1. Introduction**

The purpose of this chapter is to review previous studies on the transition from subsistence farming to commercial agriculture. The chapter is developed in seven sections. Following this introduction, the next section provides a review of the meaning of subsistence farming and commercial agriculture, and discusses the measures thereof. The third section discusses the need for the transition from subsistence farming to commercial agriculture. This supports why transition is a common trend in agriculture. The determinants of the transition are reviewed in the fourth section. In the fifth section, changes in food consumption patterns are analysed to explore the important driving factors that determine the changes in food demand. The sixth section focuses on reviewing theoretical and empirical studies of the decision making process associated with commercialisation. In the final section some conclusions are drawn.

#### **3.2. Definitions of subsistence farming and commercial agriculture**

There is no consensus or common definition of subsistence farming (Wharton, 1970; Mathijs and Noev, 2002). The definition can be approached from the perspective of either consumption or production (Wharton 1970, Kostov and Lingrad, 2002a; Kostov and Lingard, 2004a; Balint, 2004). From the point of view of consumption, subsistence farming is farming “in which crop production, livestock rearing and other activities are conducted mainly for personal consumption, characterized by low productivity, risk, and uncertainty” (Todaro, 1997, p: 722). From the perspective of production, one definition is that it is farming in which less than 50% of production is sold (Wharton, 1970; Bruntrup and Heidhues, 2002; Kostov and Lingard, 2004a; Balint 2004). Other definitions consider subsistence as an indicator that can move from 0% to 100% (Wharton, 1970; Kostov and Lingard, 2002a; Mathijs and Noev, 2002; Bruntrup and Heidhues, 2002; Balint, 2004; Kostov and Lingard, 2004a). In another approach, subsistence is also used as a concept for measuring the living standard (Wharton,

1970; Bruntrup and Heidhues, 2002). Accordingly, it can be concluded that there is no clear definition of subsistence farming and that definitions tend to be situation specific.

Commercial agriculture is widely seen as the alternative to subsistence farming. Definitions relate not only to the marketing of agricultural products (output) but also include concepts of product choice and input use decisions based on the principle of profit maximization. According to Braun *et al* (1994), commercialisation can occur on the output side with an increase in the marketable surplus, but it can also occur on the input side with increased use of purchased inputs. The concept relates not just to the so-called 'cash crops', but also to the marketing of basic food crop surpluses (Braun *et al*, 1994; Balint, 2004). In some studies, the decline in the share of on-farm income relative to total income of the family is also considered as commercialisation of agriculture (Pingali, 1997; Timmer, 1997; Balint, 2004). A key issue is that commercialisation of agriculture means not only an increase of traded inputs and outputs, but also is related to changes in agricultural production systems, institutions, scale of activity, opportunities for choice in decision making and an exchange mechanism. All of these are widely assumed to be for the purpose of improving the livelihood of people.

The diversity of approaches and definitions leads to diversity of measures relating to both inputs and outputs. Conceptually, these can be applied at the level of individual activities, the household, the region or the nation.

Potential indicators on the input side include the ratio of purchased inputs to total inputs used, the ratio of hired labour to total labour used and the level of technology (Wharton, 1970). Other potential measures include the work time allocated to household agriculture in a year (Thoseeth *et al*, 1998), the allocation of labour of peasant households to non-farm work (Keister and Nee, 2001), the ratio of land allocated to individual farming to total agricultural land (Sarris *et al*, 1999; Rizov *et al*, 2001), or the ratio of the value of inputs acquired from market to the agricultural production value (Braun *et al*, 1994; Balint, 2004).

The most common output measure is the sale of production relative to the value of production (Braun *et al*, 1994; Balint, 2004; Govereh *et al*, 1999; Minot *et al*, 2006). Lerman (2004) used both the percentage of families who sold some product and the percentage of output sold as complementary commercial indices. Another measure is the absolute level of total farm sales and total sales per hectare (Matthias and Noev, 2002; Balint, 2004; Nepal and Thapa, 2009).

Some previous empirical studies have focused on agricultural production rather than all of household production or income (Mathijs and Noev, 2002; Balint, 2003, Minot *et al*, 2006; and Nepal and Thapa, 2009). However, as pointed out by Singh *et al* (1986) and Ellis (1988, 1993), understanding the interrelationships between agricultural and non-agricultural activities is fundamental understanding to the behaviours of households.

Wharton (1970) also defined a range of non-economic, socio-cultural and developmental criteria that could be used to measure subsistence or commercialisation. These included the extent of contact external to the farm, the nature of interpersonal relationships, and the nature of changes that were occurring.

In practice, many of the above measures are difficult to quantify on account of data difficulties. Most empirical studies have focused on the output side. Arguably, the lack of focus on the input side is a contributing factor as to why the process of transition from subsistence farming to commercial agriculture is not fully understood, leading to inefficient or ineffective policy interventions.

### **3.3. The process of transition**

The concept of subsistence farming as an efficient strategy for poor people was hypothesised by Theodore W. Schultz (Wharton, 1970. p 364). Similarly, Kostov and Lingard (2002a) argued that, for poor people, subsistence farming may be efficient with their own utility function. Subsistence farming can also be considered as a strategy to cope with environmental uncertainty and instability. For example, Bruntrup and Heidhues (2002) showed that, in Eastern European countries in transition from communist systems, subsistence agriculture is often the way for farmers and rural people to survive under extremely difficult conditions such as inefficient and uncertain input, output, credit, and labour markets. They emphasised that subsistence agriculture is not only a passive adaptation but that it can also play an important role in stabilising fragile economies. Similarly, Kostov and Lingard (2002a, 2004a) found in Hungary that subsistence was a strategy to cope with unstable macroeconomic situations, changes of land tenure, change of technologies, low market access and lack of finance. A similar situation was found to exist in Romania (Balint 2004, Balint and Wobst 2004), Russia (Thoseeth *et al* 1998), and Bulgaria (Kostov and Lingard 2002a, Kostov and

Lingard 2004a). In all of these cases, a move back to subsistence agriculture was a coping response as the centrally planned economic system broke down.

In contrast to these positive aspects, subsistence farming is usually perceived as having characteristics of low efficiency of resource use (Rogers, 1970), limited choices (Wharton, 1970), and backwardness, inefficiency, low income, and low inputs (Bruntrup and Heihues, 2002). It is commonly accepted, particularly in Asia and Africa, that subsistence farming relates to low development and low living standards. As a consequence, commercialisation is widely perceived as being desirable, and is a dominant trend across the developing world.

With commercialisation, the purpose of the farming system changes from meeting food self-sufficiency to generation of cash incomes and profit (Pingali and Rosegrant, 1995; Pingli, 1997; McCalla, 1997). The income is used for diverse purposes including education, health and leisure. The change affects choice of farm activities, input levels and other resource choices. The studies of Delgado (1995), Dorsey (1999), FAO (2001), Barret *et al* (2001), Abdulai and CroleRees (2001), Block and Webb (2001), Deb *et al* (2002), Thanh *et al* (2005), and Minot *et al* (2006) all support the perspective that, commercialisation, household incomes increase and sector performance improves during this process.

Braun (1994), Bouis (1994) and Braun (1995) have all found, based on reviews of empirical studies in a range of countries (Guatemala, Philippines, Zambia, and India), that commercialisation of agriculture not only increases farmer incomes, but also has a positive impact on food security and nutrition. The commercialisation also reduced the work load of women, except in Guatemala.

There is a common assumption that commercialisation leads to diversification of the sector at the national but to specialisation of on-farm activities and regional level so as to achieve economies of scale in production and marketing (Pingali and Rogerant, 1995; Timmer, 1997; Pingali, 1997; Ellis, 1998; Ellis, 2000a, 2000b). Where diversification occurs at the level of the household, then it is assumed to be through the development of non farm activities. Linked both to diversification and specialisation, Davis (2006) has argued that the development of high value agricultural (HVA) products is an important part of the commercialisation process and the development of sophisticated agribusiness chains. Development of HVA products usually requires specialised inputs of seeds, fertilisers,

pesticides, animal feeds, livestock services and irrigation, and all of these needs create new business opportunities.

Empirical studies from Malawi, Uganda, Zambia, Mozambique, Bangladesh, Philippines and Indonesia show that trade liberalisation, which can be closely related to commercialisation of agriculture, generally increases income and reduces poverty (Huvio *et al*, 2005). Several studies conducted in Vietnam also report that trade liberalisation can have positive impacts on economic growth and poverty reduction but increases inequality (Que, 1998; Minot and Goletti, 1998; Goletti *et al*, 2000; Minot and Goletti, 2000; Benjamin and Brandt, 2002; Tuyen, 2003). Globalisation creates new opportunities for some, but leaves behind those who are unable to respond to the increasing sophistication and food safety standards that are required.

Negative aspects of commercialisation can include risks associated with price fluctuations that are of little concern to subsistence farmers (Timmer, 1997). In addition, commercial farmers face increased risks associated with yield fluctuation when production becomes specialised. Various authors have argued that commercial agriculture can lead to overuse of fertilisers, pesticides and land degradation (Pingali and Rosegrant, 1995; Pingali 1997; and Pingali, 2001).

### **3.4. Determinants of agricultural commercialization**

Based on frameworks in Bruentrup and Heidhues (2002), Braun *et al* (1994), Braun (1995), Vanslebrouck *et al* (2002) and Chilonda and Huylenbroeck (2001), the factors influencing the transition to commercial agriculture at the farm or household level can be divided into the following groups.

#### ***3.4.1. The internal farm/household factors***

Internal endowed factors include farm characteristics of land, labour availability, capital, technology, and location. Family characteristics include farmer age, education, experiences, gender, leisure preferences, risk preference, family structure, and social relations. The endowed factors and initial conditions create different transition paths (Mathijs and Noev, 2002).



In reviewing empirical studies in Central European countries, Lerman (2004) showed that land area had a positive impact on commercial orientation. This is supported by Minot *et al* (2006) and Cimpoies *et al* (2009). Other authors have found land fragmentation and land ownership to be important (Mathijs and Swinnen, 1998; Mathijs and Noev, 2002; Marsh and MacAulay, 2002).

Lerman (2004) found that household size and the number of workers was larger in the more commercial households. In contrast, Minot *et al* (2006) found in Vietnam that household size had a negative impact.

The impacts of farmer characteristics on commercial versus subsistence orientation have been studied by many authors, with a particular focus on age, education, experiences, objectives and attitudes to risk. Mathijs and Noev (2002) found that increasing age had a negative impact on the commercial index on households in most Central European countries whereas Balint (2004) and Minot *et al* (2006) found no clear impact. Nepal and Thapa (2009) showed a positive age relationship in a Nepalese study. Perhaps surprisingly, a number of studies based on econometric analysis have found no statistically significant relationship between years of education and commercial transition (Mathijs and Noev, 2002; Balint, 2004; Lerman, 2004; and Minot *et al*, 2006). It has been widely found, particularly in Eastern and Central Europe, that risk averse farmers are likely to resort to subsistence farming as a response to an uncertain environment (Kostov and Lingard (2002a, 2003, 2004b).

### ***3.4.2. Factors external to the farm***

#### ***Input markets (factors markets):***

Input and output market development can be explained in terms of transaction costs (Williamson, 1979). High transaction costs can explain low participation or low commercial orientation (Balint and Wobst, 2004; Pingali *et al*, 2005). These high transaction costs and hence low development of input markets can be related to poor infrastructure, unsystematic market information, low bargaining power, and a monopoly of suppliers.

### *Land market, land accumulation, and land consolidation*

Hung *et al* (2007) and Cimpoies *et al* (2009) both show that technical efficiency of cropping increases with farm size and that land fragmentation reduces technical efficiency. However, legal frameworks and poorly defined property rights are typically not favourable in transition countries for the development of land markets (including buying, selling and leasing). Empirical studies show that land markets in Central European countries often have small and infrequent transactions (Lerman, 2004; Mathijs and Noev, 2002). The situation in Asia varies between countries in accordance with land reform legislation and rules on land accumulation (Pingali, 1997).

### *Labour market and non-farm work*

Labour typically has a very low or even zero opportunity cost within subsistence agriculture. As urban labour markets develop, rural labour is transferred to non-agricultural and urban employment. This leads to the share of agricultural income decreasing as a share of total family income. In addition, as the opportunity cost of labour increases, then labour saving technologies within the farm are developed (Pingali and Rosegrant, 1995; Pingali, 1997). However, there is some debate as to the extent to which farmers engage in off-farm work as a consequence or determinant of commercialisation (Braun *et al*, 1994; Braun, 1995; Rizov *et al*, 2001; Balint, 2004).

### *Capital markets and access to credit*

There is widespread acknowledgement that credit markets are important both for the purchase of inputs and to access new technology (Pingali and Rosegrant, 1995; Pingali, 1997; Mathijs and Noev, 2002). In the Vietnam context, Duong and Izumida (2002) and Barslund and Tarp (2006) both show that access to credit impacts directly on crop productivity and income. There is also recognition in other contexts that small farmers have special needs (Rizov *et al*, 2001; Ray, 2002). According to Bruentrup and Heidhues (2002), credit constraints can often be explained by lack of collateral and high real transaction costs (the cost of screening and small loans per transaction).

Kostov and Lingard (2002a) contend that preferential provision of credit to large farms can constrain medium and small farms from commercialisation. Delgado (1995) shows that in an African context distorted credit markets can be the result of policy interventions. Leman (2004) shows that in a Central and Eastern European context the demand for credit in transition countries varies between countries, but that farmers tend to wait until they can

accumulate savings rather than rushing to obtain commercial credit. He says that subsidised credit programs can lead to over-borrowing.

#### *Other input markets and extension services*

Factor inputs include fertilisers, pesticides, seeds, animal breeds, machinery and extension services. Although there is widespread acceptance that all of these are relevant to commercialisation, there is a lack of empirical studies of the direct relationships between the supply and use of these factors and the commercialisation process.

In many Central and Eastern European countries there was a disruption in the delivery of extension following the breakdown in the centrally planned economy and, according to Lerman (2004), farmers suffered from this change. In many developing Asian countries, including Vietnam, the extension services are supplied by governments, but with emphasis on technical knowledge supplied in isolation from management or marketing contexts (Tran and McAulay, 2004, Beckman, 2001). This raises questions as to the appropriateness of the extension services in relation to the new institutional framework.

#### *Output markets*

At the macro level, output markets are driven by changing patterns of food consumption, with production systems then responding to meet the new demand. Households and communities that have better access to markets have lower transaction costs and can more easily commercialise their production (Bruentrup and Heidhues, 2002; Mathijs and Noev, 2002). According to Timmer (1997), over time, market demand becomes more diverse, but production on individual farms can be expected to become more specialised in meeting this demand. Small farmers face particular challenges relating to low price, low bargaining power and finding buyers (Lerman, 2004; Balint and Wobst, 2004).

#### *Institutional factors (legal system, organizational structure, and infrastructure)*

Institutional factors include property rights, transport and communication systems, organisation of agricultural institutions, and the legal framework for commercial agriculture. In the Vietnam study of Marsh and MacAulay (2002), it was found that land tenure affects both farm investment and land accumulation. In an Eastern European context, Rivo *et al* (2001) suggest that the transfer of land to private ownership is itself commercialization.

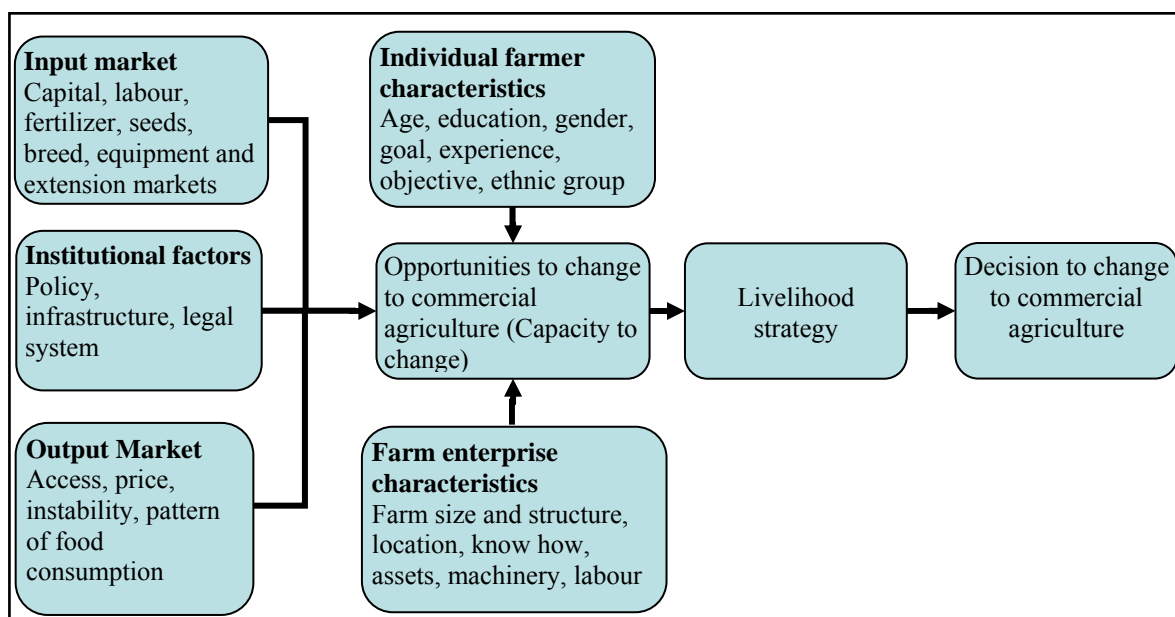
A number of studies have found that road access and closeness to markets impact on the commercialisation process (Mathijs and Noev, 2002; Balint, 2004; Balint and Wobst, 2005; Minot *et al*, 2006), but there has been a lack of consideration given to the role of telecommunications.

Within a Central and Eastern European context, consideration has been given as to the impact of co-operatives on commercialisation at the farm level (Mathijs and Noev, 2002; Leman, 2004; Balint, 2004; Balint and Wobst, 2005). However, the role of local authorities has not been explored.

### 3.4.3. Some conclusions

The factors influencing subsistence farming versus commercial agriculture are complex. How these factors interact to determine specific outcomes can depend on the institutional context. In general, there are considerable differences in the transition pathways between Central and Eastern European countries compared to Asian countries. Vietnam has some institutional features in common with both Central and Eastern Europe (a transition from central planning to a market economy) and with many Asian countries (a transition from a low developed economy with recent traditions of peasant agriculture). Despite the different pathways determined by institutions and different starting points, it can be concluded that there is a common set of determinants, as set out in Figure 3.1, that need to be considered when analysing a specific context.

**Figure 3.1: Determinants of subsistence versus commercial orientation**



### **3.5. Patterns of food consumptions and commercial agriculture**

#### ***3.5.1. Pattern of food consumption***

According to many authors, economic growth and trade liberalisation lead to diversity in food consumption patterns and a shift from starchy staple foods to higher value foods such as vegetables, fruits, meat and dairy (Pingali and Rosegrant, 1995; Timmer, 1997; Pingali, 1997; Huang and Bouis, 2001; Pingali, 2004; Pingali, 2006). Globalisation and urbanisation also lead to changes in food style, from self-prepared to fast foods, processed foods and western foods (Pingali, 2006). These shifts impact on the demand for agricultural products.

According to Pingali (2006), per capita consumption of high-value agricultural products increased sharply in Asian countries from 1979 to 2001. For example, per capita milk consumption increased from 26.1 kg in 1979-1981 to 41.6 kg in 1999-2001. Similarly, per capita vegetable consumption more than doubled during this period from 57.1 kg to 124.4 kg. Similar trends have been reported by Huang and Bouis (2001), Joshi *et al* (2007), and Gulati *et al* (2007).

According to Gulati *et al* (2007), the changing pattern of food consumption from staple food to high-value agricultural products is occurring in Vietnam at an even faster pace than many other Asian countries. They report that per capita cereal consumption increased at only 1.2% per annum from 1990 to 2000 whereas the annual increase was 4.3% for meat, 3.7% for fish, 4.9% for vegetables and 13.5% for milk. These figures are higher than Bangladesh, India, Pakistan, Indonesia, Philippines, and Thailand, but slightly lower than China.

According to Weinberger and Lumpkin (2005a), although the worldwide supply of vegetables increased continuously from 1961 and reached 112 kg per capita in 2000, it had still not reached recommended levels of 146 kg per year. In addition, the distribution of vegetables was unequal between regions and countries, so many regions and large populations were consuming much less than the recommended levels. Weinberger and Lumpkin (2005b) showed that per capita vegetable supply in Asia increased from 41 kg to 137 kg between 1972 and 2002. A similar increasing trend in vegetable consumption was found in South Asia by Joshi *et al* (2007).

There is a range of data on vegetable consumption in Vietnam but all sources show increasing consumption. According to both Figuié (2003) and Ali *et al* (2006), vegetables are the second most important food after rice in terms of quantity, even though the value of consumption is only 6% to 8% of total food expenditure. Data from the National Institute of Nutrition shows that per capita consumption of leafy vegetables increased from 45.5 kg per year in 1987 to 53.7 kg per year in 2000, whereas according to FAO data this figure increased from 48.4 kg in 1987 to 71.2 kg in 2000 (Figuié, 2003). Minot and Goletti (2000) reported that the expenditure elasticity of vegetable consumption to income was very high, 0.8 in the North and 1.01 in the South of Vietnam, whereas this elasticity for staple foods was negative. Ali (2000) reported that the annual increase in vegetable demand was 6.2% whereas domestic supply was increasing at just 3.3%. Ali *et al* (2006) reported higher per capita consumption of vegetables in urban and richer groups compared to rural and poor groups.

Rice consumption has been declining in the more developed Asian countries. Huang and Bouis (2001) cite FAO data showing that Japanese per capita consumption of rice declined from 131 kg in 1962 to 74 kg in 1992. They also reported a declining per capita trend in rice consumption in Taiwan. Across all of Asia, Pingali (2006) found that rice consumption per capita increased from 82 kg in capita in the period 1979 to 1981, to 89 kg per capita in period 1989 to 1991, then reduced to 86 kg from 1994 to 1996, and to 84 kg in period of 1999 to 2001.

In Vietnam, rice remains as the main food staple, accounting for about 75 % of caloric intake (Tuyen *et al*, 2003) and 29.6% of the family budget (Minot and Goletti, 2000). According to Thang and Popkin (2004), “the average Vietnamese person reached the dietary adequacy of 2,100 kcal per day per capita in the early 1990s” (p146). Hence, any food shortages are an issue of distribution and inequality rather than an issue of aggregate availability. According to Minot and Goletti (2000), rural people in year 1993 consumed 162.8 kg per year while urban people consume 126.9 kg of rice per year. Amongst the poorest quintile (20%) of the population, rice consumption per capita per year in year 1993 was 148.2 kg compared to 164.8 kg for the third quintile, 144.7 kg for the richest quintile and 155.6 kg average whole across all groups.

### **3.5.2. Changes to the food retailing distribution system**

Along with the transformation in patterns of food consumption, the retail distribution system in developing and transition countries is experiencing a significant transformation away from traditional wet markets, street markets and fairs, and towards supermarkets (Dries *et al*, 2004; Reardon *et al*, 2003 (a, b, c)); Hu *et al*, 2004). On the demand side, the main drivers are urbanisation, increasing incomes, and more involvement of women in the labour force. On the supply side the main drivers are foreign investment and restructuring of state investment in the retail sector.

The rapid rise of supermarkets is found in Central and Eastern European countries (Dries *et al*, 2004; Dies and Reardon, 2005), Latin America (Reardon and Berdegue, 2002), Africa (Weatherspoon and Reardon, 2003), and Asia (Reardon *et al*, 2003a). Reardon *et al* (2003a) report that the supermarket share of total food sales was 33% in Indonesia, Malaysia and Thailand, but 63% in the Republic of Korea, Taiwan and the Philippines. In China, the share of supermarket food sales increased from 0.18% in 1994 to 11.20% in 2002 (Hu *et al*, 2004). In Vietnam there is no official data but Gulati *et al* (2006) estimated it at below 2% in 2003. The Vietnam retail sector was opened to foreign investment in 2009. It is notable and readily observable that supermarkets in Vietnam are developing rapidly, led by the large cities such as Ha Noi, Ho Chi Minh, Da Nang, and Hue.

The share of supermarkets in the fruit and vegetables retailing sector is usually lower than other food sectors. According to Weinberger and Lumpkin (2005b), the shares of fruit and vegetable sold through supermarkets in year 2004 were 60% and 35% respectively in Malaysia, 40% and 30% in Thailand, 15% for both fruit and vegetables in the Philippines and below 10% in China. Challenges that farmers face associated with the growth in supermarkets are increasing standards of quality and safety, the need for large quantities per transaction, and consistent supply, all of which disadvantage small farmers (Dries *et al*, 2004; Gulati *et al*, 2006).

### **3. 6. Decision making process of farmers**

The purpose this section is to briefly review the literature that is relevant to the decision making processes of farmers, and of farmer behaviours, with a particular focus on the

commercialisation process. These decision making processes are of interest to researchers in a range of disciplines including agricultural economics, farm management and psychology. Relevant theories include the theory of real life choice (Gladwin, 1980), personal construct theory (Kelly, 1955), ethnographic decision tree modelling (Gladwin, 1989) and theory of planned behaviour (Ajzen, 1991). There are many studies that apply these theories to explain individual behaviour in the agricultural sector (Murray-Prior, 1998; Sambodo 2007).

From a psychological perspective, the focus is on explaining processes, individual behaviour and learning phenomena, and to thereby study variations in behaviour (Nuthall, 2001). From this viewpoint, individual behaviour is explained by mental processes like habits, attitudes, motivation, and perceptions (Antonides, 1996).

In contrast, agricultural economists and farm management researchers typically focus on predicting outcomes, aggregate behaviours, and equilibrium solutions (Nuthall, 2001), or the allocation of scarce resources and the consequences of economic decisions (Antonides, 1996), or the way to make money (Nuthall, 2001). However, there is no single unifying theory that has emerged across disciplines to describe, explain and predict the behaviours of farmers.

Many studies of farmer decision-making focus on single technical aspects or the adoption of specific technologies. These include irrigation (Karami, 2006), crop management (Dounias *et al*, 2002), economic aspects of biological control (Jetter, 2005), crop choice (Huylenbroeck and Damasco-Tagarino, 1998). Risk management is another popular topic (Pannell, 1991; Muller, 2001; Kostov and Lingard, 2003; Adesina & Ouattara, 2000). Other studies have focused on particular facets such as the role of decision makers and their interactions with other actors involved in farming decisions (Solano *et al*, 2001). Still other studies have looked at attitudes towards environmentally friendly and sustainable farming systems (Wilson, 1997; Vanslebrouck *et al*, 2002). The behavioural rationale for the existence or re-emergence of subsistence farming in a Central European context has also been studied (Mishev and Kostov, 2001; Kostov and Lingard, 2002a, 2003). A generalised finding is that farmers adopt technologies in accordance with the perceived benefits relative to costs, the availability of required resources, their personal objectives and risk profiles.

From the above, it can be concluded that adoption theory and associated decision making processes as they relate to particular decisions are clearly relevant. However, there is no evidence on which to draw specific conclusions that there are specific decision making



processes used by farm families when considering a path from subsistence to commercialisation, or that there are distinguishing characteristics of the the proceses used by the more entrepreneurial decision makers. A challenge arises from the reality that commercialisation decisions are multifaceted and multiple, and occur over an extended time period. They relate to a large range of productive activities, production systems and stages of production. They also embody diverse attitudes to risk, initial conditions, resource endowments and livelihood strategies.

### **3.7. Conclusions**

Although there is diversity of concepts, approaches, and measures, the transition from the subsistence farming to commercial agriculture is a common trend in much of the developing world, including Vietnam. Whereas in Eastern and Central Europe subsistence agriculture has been a new coping strategy to cope with the uncertainties and difficulties associated with the transition from central planning to capitalism, in Asia subsistence agriculture is a strategy associated with poverty and a lack of alternatives. Despite the importance of the topic, insights and understandings as to the processes and determinants are incomplete. This is because the transition process is influenced by complex and multiple factors that range from personal farmer characteristics to endowed resources to the institutional and macro environment. Specific outcomes are determined by how the many factors interact, and hence the specific context is fundamental. It is notable that most of the studies reviewed in this chapter that relate specifically to commercialisation are either conceptual studies, or econometric analyses of cross sectional survey data, or investigations of just one factor such as land tenure or credit. Where detailed case study analyses have been undertaken they relate to adoption of specific technologies and ignore the wider context in which commercialisation takes place. In the Vietnam context, the major sources of data used by authors for econometric analyses are either secondary data from the General Statistics Office (GSO) or the Vietnam Living Standards Surveys of 1992/3, 1997/8 and 2002/3 (Minot *et al* 2006). These studies measure quantitative relationships at a point of time but do not take into account land capability, human behaviours or the dynamics of change within a livelihood framework. All have considered specific issues such as land tenure (Do and Iyer, 2004; Marsh and MacAulay, 2002), credit (Deininger and Jin, 2008; Barslund and Tarp, 2006) or diversification (Minot *et al*, 2006) and none have undertaken a holistic analysis. It is to deal

with this complexity that the next chapter explores incorporation of a commercial focus within a framework of sustainable livelihoods.

\*\*\*\*\*

## CHAPTER 4

### **A commercial-based approach to sustainable livelihoods**

#### **4.1. Introduction**

The purpose of this chapter is to develop the framework that will be used to explore the transition of household livelihoods from subsistence farming to market-based production. The framework is required to accommodate complex influencing factors that were developed in Chapter 3. The chapter is structured into five sections. Following this introduction, the second section discusses the conventional sustainable livelihoods framework and its relevance to household behavior. The third section discusses the linkage between livelihoods and markets in a market focused system. A commercial-based sustainable livelihood framework is then developed by integration of traditional sustainable livelihoods theory and supply chains analysis. Finally, some conclusions are drawn.

#### **4.2. Sustainable livelihoods approach**

##### ***4.2.1. Main features of conventional sustainable livelihoods***

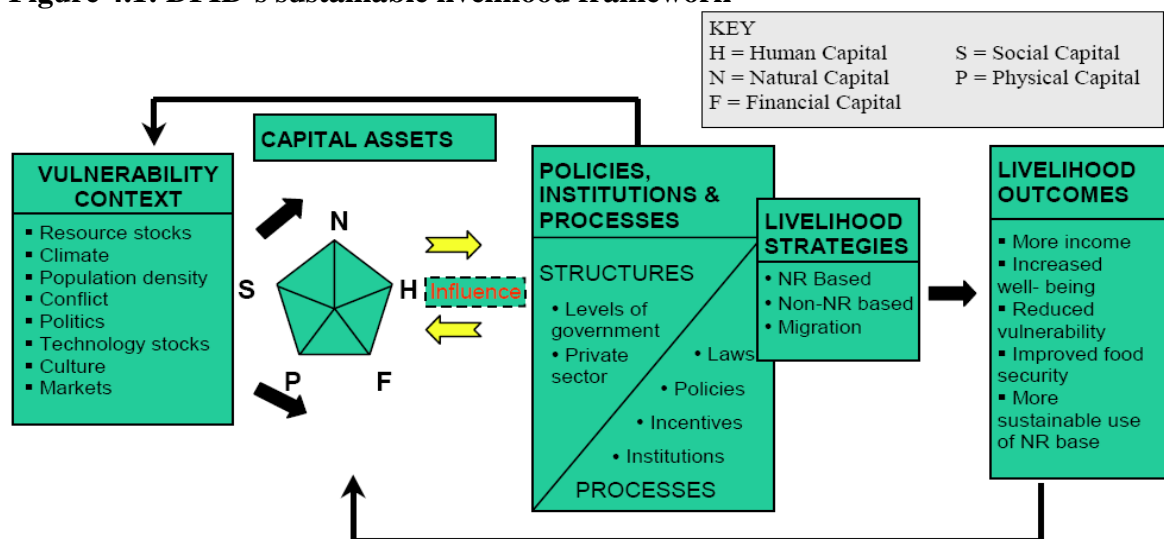
Sustainable livelihood (SL) concepts have been widely used by many researchers, organizations and agencies after being first introduced at the World Commission on Environment and Development in 1987. At first, the thinking on sustainable development was mainly focused on the macro level, and then it developed to address the wellbeing of individuals and households (Solesbury, 2003). Subsequently, many organizations and agencies such as the International Institute for Environment and Development (IIED), United Nations Development Program (UNDP), Oxfam, Care, International Institute of Sustainable Development (IISD), Department of International Development (DFID), Institute of Development Studies (IDS) and some other agencies have adopted the concepts to meet their goals, foci, and priorities (Carney, 2002; Solesbury, 2003). Accordingly, the SL approach has become diverse in terms of both users and uses.

Although the concepts of SL have been adapted considerably by users, there are common components of the SL framework that are widely recognized and accepted. These components are described within DFID’s sustainable livelihood framework as follows (Figure 4.1).

**Capital assets** and capacity to access these resources has a major impact on sustainable livelihoods. These assets include human, natural, financial, physical and social capital (Carney, 1998, Soussan *et al*, 2001; Hussein, 2002; Sida, 2003; Odero, 2003).

According to DFID (2001), these assets can be defined as follows. *Human capital* is the skills, knowledge, capacity to work, and good health that together enable people to pursue different livelihood strategies and achieve their livelihood outcomes. *Natural capital* is the bio-physical elements such as water, air, soils, sunshine, woodland, minerals. It reflects the natural resource stock. *Financial capital* is defined as the financial resources that people use to achieve their livelihood objectives. *Physical capital* is the basic infrastructure and physical goods that support livelihoods. *Social capital* is the formal and informal social relationships (or social resources) from which various opportunities and benefits can be drawn by people in their pursuit of livelihoods.

**Figure 4.1: DFID’s sustainable livelihood framework**



Source: DFID (2001), Sida (2003)

The second component of the framework is the transforming **structures and processes**. This component includes institutions, organizations, policies, and legislation that determine capacity to access capital, the terms of exchange between assets, and the returns on different livelihood strategies (DFID, 2001). Accordingly, insights into sustainability at different levels (micro, meso and macro), together with the constraints and restrictions imposed on different

livelihood strategies, can be obtained through understanding these structures and processes. The understanding also clarifies opportunities to improve livelihoods of people through transforming the structures and processes.

The third important component of the livelihood framework is the **livelihood outcome**. It is defined as the goal or the result of livelihood strategies (DFID, 2001). The outcome is generally to improve the wellbeing of people but its emphases or focus will be diverse, including both physical and emotional aspects such as poverty reduction, increased income and sustainable use of natural resources.

In order to achieve the livelihood outcome, the livelihoods have been built from a range of choices, based on their assets, transforming structures and processes (DFID, 2001; Soussan *et al*, 2001; Cahn, 2002). **Livelihood strategies** are the combination of activities and choices that people make to achieve their livelihood goals or the set of decisions to best employ the assets available. This is a continuous process but there are always key decision-making points that impact on the success or failure of the strategy (Soussan *et al*, 2001). These points can include crop selection, selling time, involvement in a new activity, changing to other activities, and adjusting the scale of activities.

According to Scoones (1998), there are three main livelihood strategies for rural households: agricultural intensification or extensification, livelihood diversification, and migration. An alternative perspective known as Khanya's framework focuses on the relationship with natural resources and categorises the three main livelihood strategies as natural resource based, non-natural resource based and migration (Hussein, 2002). Based on other criteria, in particular the relationship to external threats, Rennie and Singh (1996), and Soussan *et al* (2001) divide strategies into two categories of adaptive (long term change in behavior patterns) and coping (short term responses to immediate shocks and stresses).

Clearly, there is no unique livelihood strategy but rather a range of livelihood strategies. Therefore, the important issue is how to select or introduce the strategy that is most relevant to the situation of particular households and which maximizes utility of both the individual and society.

The final major component of the sustainable livelihood framework is the **vulnerability context**. This reflects the shocks, trends and seasonality. These factors can not controlled by

people in the immediate or medium terms (DFID, 2001). Therefore, analysis of sustainable livelihoods not only focuses on how people use assets to achieve their goals, but addresses the vulnerability context that they may face, and the means by which people can cope and recover from shocks and stresses (Chambers and Conway, 1992; Soussan *et al*, 2001; Cahn, 2002).

These core components work together, and interact with each other within a dynamic livelihood system (DFID, 2001; Soussan *et al*, 2001; Carney, 2002). As a result, the issues can be viewed holistically.

The SL approach is people-centred, participatory and operates at multi levels across sectors. Given its emphasis on sustainability, it is useful in addressing poverty reduction, rural development, responses to emergencies, and community based planning where the issues or problems are usually multi-dimensional (Hussein, 2002; Cahn, 2002; Carney, 2002). Also, according to a range of authors, the sustainable livelihood approach, by focusing and building on strengths that people have rather than on what they do not have, is forward looking and positive (Norton and Foster, 2001; Hussein, 2002; Cahn, 2002).

There is also a range of concerns that have been raised relating to the sustainable livelihoods approach and its application. The first concern is that the framework does not focus sufficiently on the relationships between the factors (Cahn, 2002). Therefore, the importance of one or more factors can be underplayed. Linked to this, Carney (2002) claims that because of existing viewpoints and user experiences, unfamiliar aspects may be omitted, despite these aspects being crucial to livelihood. In addition, although the SL approach was developed to be used holistically across sectors, the reality is that most governmental organizations and agencies are operated and funded in relation to a specific sector. Consequently, the application of this framework can be very difficult in reality (Carney, 1999; Cahn, 2002).

Another concern is that although the framework is intended to put people at the centre, some components such as political capital, gender, and a range of other power issues, are not emphasized or considered sufficiently (Hussein, 2002). Similarly, Carney (2002) claims that insufficient attention is given to the need to increase the power and rights of the poor.

Another important concern is that markets, economic issues and the private sector are given insufficient attention. This concern comes from the fact that although the framework encourages researchers to understand the complexity of livelihoods and to take local

contextual factors into account, its use as an analysis framework has largely been undertaken by non-economist, social scientists (Carney, 2002).

#### ***4.2.2. Adoption and application of the sustainable livelihoods approach***

Based on the main framework as described, the SL approach has been widely applied and adopted by governmental organizations, non-governmental organisations, researchers and practitioners. The most intensive and frequent use of the approach has been in relation to poverty reduction and rural development. The applications include project design, implementation, monitoring and evaluation at both macro and micro levels. Organisations to have used the SL approach include DFID, the World Bank, the IMF, FAO, International Fund for Agriculture and Development (IFAD), Save the Children (UK), Society for International Development (SID), European Commission (EC), Swedish International Development Cooperation Agency (SIDA), UNDP, CARE and Oxfam. Reports on these applications have been widely published (Turton, 2000; DFID, 2001; Hussein, 2002; Carney, 2002; Sida, 2003).

Besides poverty reduction purposes, the SL approach has been widely applied to different sectors like natural resource management and fishing development (Allison and Ellis, 2001; Allison and Horemans, 2006) or tourism development and livelihoods (Simpson, 2007; Tao and Wall, 2009). Market factors have begun to be exploited for livelihoods improvement, particularly in tourism studies, but only relating to particular aspects rather than the overall market system.

#### **4.3. Market, livelihoods and linkages**

Hussein (2002, p 36) refers to Oxfam's belief that "*improved access and or power in markets [is] critical to the livelihood of the poor producers and improve[ment in] wages and employment conditions for women*". However, it seems that the linkages between markets and livelihoods have not been widely explored. Important issues include both input and output markets, and both commodity and non commodity products.

According to Dorward and Kydd (2005), there are three main exchange mechanisms. These are gift exchange, hierarchical exchanges and market exchange. These mechanisms may exist together in a livelihood system.

The gift exchange is based on shared values and reciprocity. Hierarchical exchange is based on allocation of resources through command and control. In contrast, market exchange is based on voluntary participation and a 'win win' relationship which is precise in terms of quantity, quality, space and time. This market relationship normally has a supporting requirement of a monetary currency and an enforceable legal system.

Globalisation and trade liberalisation are the dominant tendencies across most countries of the world. As part of this trend, commercialisation of agriculture is also occurring in most countries, although the rate of change varies across regions and sectors. As a consequence, it is contended here that the livelihoods of people, including the poor, cannot be separated from the development of both input and output markets.

Subsistence agriculture may have elements of gift exchange and reciprocity, where surpluses are gifted to others. In contrast, commercial agriculture operates under a market exchange system. This market can be a highly efficient mechanism for allocating resources, goods and services, but markets do not always operate well (Dorward, Poole, Morrison, Kydd and Urey, 2002). Accordingly, it is contended here that an understanding of market opportunities, constraints, and mechanisms, together with their limitations, is very important for improving the livelihoods of people.

If markets are to function efficiently there is a need for an institutional and infrastructure framework that allows all parties open access combined with transparency of information. Markets of relevance include land markets, physical input markets, labour markets, credit markets and output markets. The development of these markets impacts not only on the accessibility and accumulation of assets, but also on selection of livelihood strategies. The converse also applies, in that poor people are often constrained from participating in these markets because of their lack of financial, social and human capital (Barrett *et al*, 2001; Dorward *et al*, 2003).

Labour markets are of particular significance in the Vietnamese context. This is because population density in rural areas is high and there is typically a surplus of labour. Labour markets are important for transforming the labour force both between sectors and regions.



A number of authors, including Carney (2002) and Dorward *et al* (2003) have identified that the development of markets can increase the vulnerability of some groups within society. Typically this can occur when some groups are either excluded or disadvantaged by power and institutional relationships that create asymmetry of information and bargaining power. Dorward *et al* (2003) also contend that over emphasis on non-farm activities relative to agricultural development can negatively impact on the poorest groups. Accordingly, it is contended here, and in relation to this study, that markets and livelihood analysis should be combined together in analyzing the constraints and opportunities for better livelihoods of the poor, particularly in the context of trade liberalisation and commercialisation.

#### **4.4. Commercial-based /market- based sustainable livelihoods**

Although the role of markets in relation to livelihoods has been increasingly recognized by researchers and policy makers, questions remain as to the best way to bring markets and livelihoods together within an analytical framework. One way would be to analyse markets and associated supply chains alongside livelihood analysis as separate but complementary analyses. An alternative is to consider market development and associated supply chains as a specific factor that can be a transforming process within the livelihoods framework. Within this approach, markets can be considered positive in that they lead to increasing living standards. They can also be negative in that they may increase vulnerability either through encouraging non sustainable practices or through further marginalization of specific groups within society.

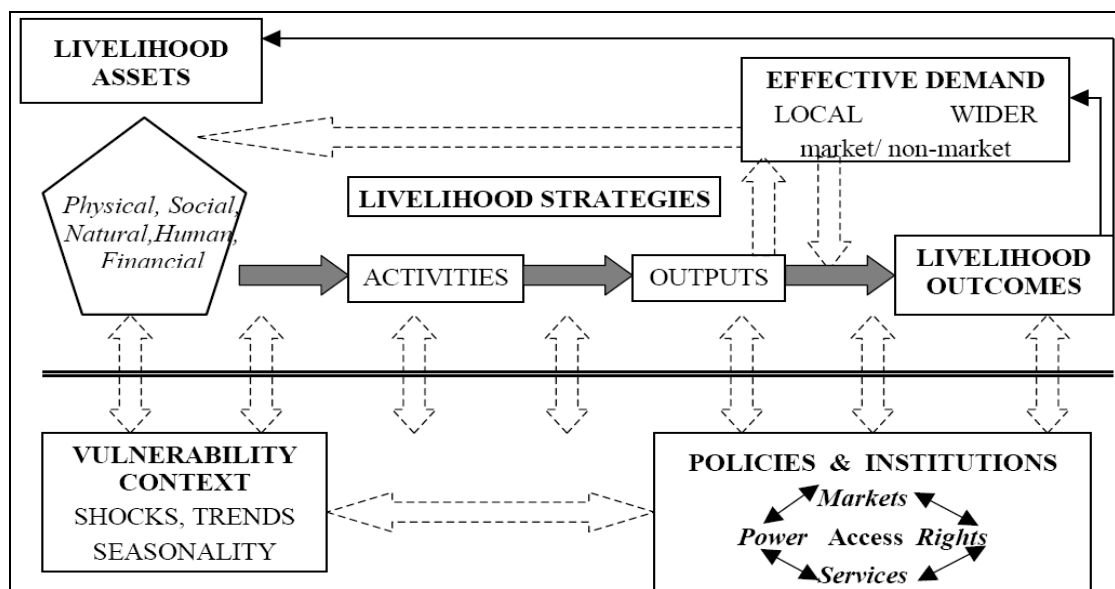
The risk with undertaking value chain analysis separately from livelihoods is that there will be undue emphasis on products and relations between actors within the chains, rather than exploring how people can use their assets or capital to create these products, and on the overall impact on livelihoods.

According to Kanji *et al* (2005), the combination of livelihood analysis and value chain analysis can complement each other. The livelihood analysis can allow an assessment of possible trade-offs between choices (strategies and outcomes) while supply chain analysis can provide the essential picture of how the local market interacts with the global market. This combination also provides a more comprehensive understanding of both the structure of markets and the way in which markets for particular commodities interact with livelihood

strategies. Both analyses can be conducted in a participatory way in which quantitative and qualitative elements can be used to complement each other. Thereby, interventions can be more effective in improving the livelihood of the poor.

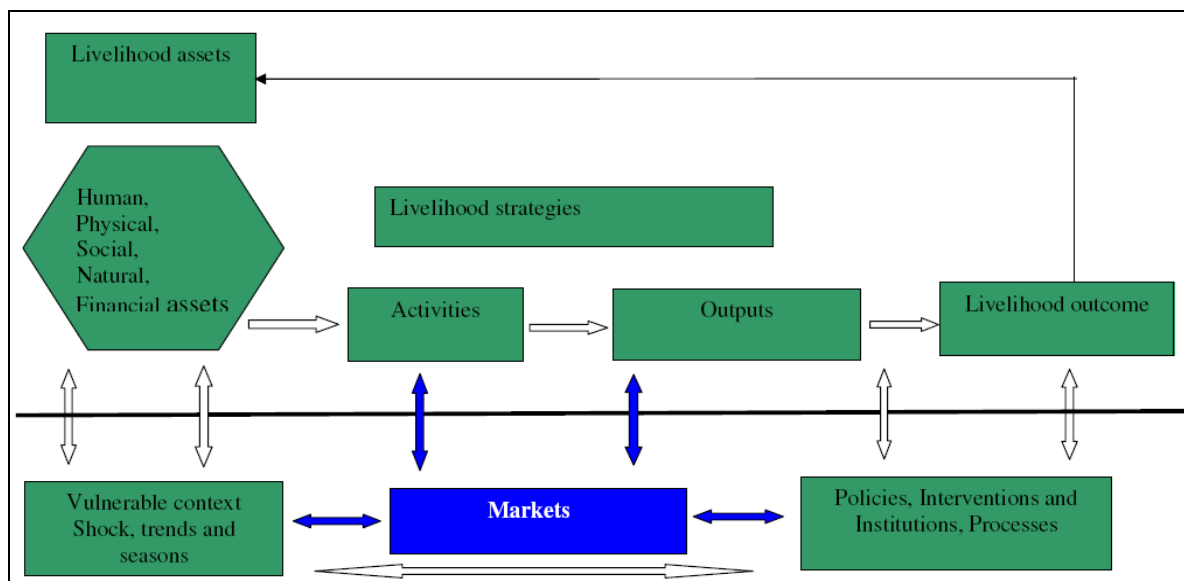
Although the idea of integrating sustainable livelihoods and supply chain analysis has been introduced within this section, the application of this integrated approach is still not well developed. Accordingly, the framework of Dorward *et al* (2003) (Figure 4.2) is modified here to explicitly include markets and their interrelationships within the livelihood framework (Figure 4.3)

**Figure 4.2: Modified sustainable livelihoods framework**



Source: Dorward *et al* (2003)

**Figure 4.3: Modified commercial based-sustainable livelihoods framework**



Within this framework, the livelihood is still the centre of analysis as it is within the conventional sustainable livelihoods framework. However, the interaction between livelihoods and markets is explicitly explored. In particular, consideration is given to different types of markets together with the possibility that these markets will impact in differing ways. The enabling factors (required interventions) such as transport systems and roading infrastructure for different types of markets, and the way that each market interacts with other elements of the livelihood system, become important elements of this framework. This includes fundamental elements such as changes in the pattern of household food consumption, and changes in production activities. The interaction between markets and policies, institutions and processes is also emphasized in this commercial based sustainable livelihood framework.

Markets include inputs and output markets and their respective input and output chains. Input markets include land, labour, credit, and physical inputs. Output markets include commodity and value-add outputs. The benefits from the development of these markets and agribusiness chains can include direct employment creation, facilitation of new technologies and hence increased production, and reduced transaction costs thereby increasing economic efficiency. Market developments can be both facilitated and constrained by government policies, interventions and institutions. Market developments can themselves lead to new policies and institutions. Similarly, markets are not only impacted by shocks and trends, but can themselves generate shocks, create new risks, and thereby increase the vulnerability context.

Land markets create opportunities for aggregations through both sales and leasing. These markets can also facilitate consolidation to reduce fragmentation, which itself impacts on commercialisation opportunities (Hung *et al* 2007).

Labour markets include local, regional, national and also international markets in the context of globalisation. The efficient operation of labour markets facilitates the transition of labour out of the agricultural and rural sectors. This process not only creates more non-farm income but also creates opportunities to apply new labour saving technology.

Physical input markets include machinery, seeds, livestock, fertilisers, pesticides, and weed killers. Accessibility influences not only transaction costs, but also creates new production opportunities. The consequent increase in production are enabling for further development of output markets.

Output markets are driven by changes in patterns of food consumption that are caused by increases of income, globalisation, and westernisation as discussed in Chapter 3. However, traditional eating habits, culture, seasonal events and festivals also influence demand. Output agribusiness chains include information flows that link price, quality and volume, thereby helping to shape livelihood opportunities and behaviours.

#### **4.5. Conclusions**

The sustainable livelihood framework is a holistic and contextualised approach. The framework is widely used by both researchers and development agencies at multiple levels and with diverse emphases. However, the role of markets has not received sufficient emphasis.

The sustainable livelihood framework can be integrated with supply chain analysis. This provides a necessary commercial focus to livelihood analysis. It also adds a holistic perspective to supply chain analysis that gives consideration to broader issues of empowerment, vulnerability and equity. These conclusions are now taken forward to Chapter 5 and the subsequent commune analyses as a key element of the inquiry framework.

\*\*\*\*\*

## **CHAPTER 5**

### **Research methodologies and methods**

#### **5.1. Introduction**

The purpose of this chapter is to describe the research strategy and methods that are appropriate to investigate the research questions that were raised in Chapter One. The selection of the research strategy is also discussed in relation to the research frameworks that were developed in Chapter 3 and Chapter 4.

This chapter is structured into six sections. Following this introduction, the next section discusses the case study strategy and why it was selected in this study. In the third section, the case selection is discussed. In the fourth and fifth sections, data collection and data analysis are discussed. The final section is a brief summary.

#### **5.2. Case study strategy**

Although there are debates on research paradigms between scholars, there is an increasing recognition that there is a range of alternative research paradigms that can be used (Guba and Lincoln, 1994; Sechrest and Sidani, 1995; Johnson and Onwuegbuzie, 2004). The selection of research paradigm depends primarily on the issues to be investigated, which in turn reflect the philosophy and worldview of the investigator.

The purpose of this study is to obtain information and insights as to how farmers and associated households in Quang Binh Province have been moving towards a market orientation in their production activities and livelihoods. As outlined in chapter 1, the study does not aim to test any hypotheses or theories, but rather to enrich and where appropriate modify existing theories, and also, where appropriate, to develop new theory. It is this fundamental feature that influences the selection of the research strategy for the study. In particular, the aim is to capture as much diversity as possible.

Agricultural households are complex organisations. This complexity relates not only to the linkage between production and consumption decisions, but also to internal household relationships as they affect livelihoods (Singh *et al*, 1986; Ellis, 1988; Taylor and Ademan, 2003). Accordingly, the decision-making motivations of households are much more complex than textbook profit maximisation or cost minimisation (Sterns *et al*, 1998).

The commercial-based/market-focused sustainable livelihood (SL) framework that is used in this study, as discussed in Chapter 4, is the first step to deal with the complexities of farming households in transition. The application of this framework permits these households to be investigated from a holistic and dynamic perspective.

According to Feagin, Orum, and Sjoberg (1990) as cited in Tellis (1997), the case study is an ideal methodology for holistic in-depth investigation. In addition, Meyer (2001) and Yin (2003) show that case study strategy is relevant to investigate a contemporary phenomenon within its real-life context. Ragin *et al* (2003,) also show that “the case study strategy is well suited for close examination of complex empirical processes, for assessing the meaning actors attach to their actions” (p323). Case study research emphasises detailed contextual analysis of limited numbers of events or conditions and their relationship (Dooley, 2002) or focuses on understanding the dynamics present within case settings (Torraco, 2002). Therefore, a case study strategy is suitable for exploring complexities, dynamics and contextualisation of transition.

The case study strategy is also relevant to the research questions in the study. According to Yin (1994:7), “the first and most important condition for differentiating among the various research strategies is to identify the types of research questions” He states that “how” and “why” questions are likely to favour the use of case studies, and these questions follow on from exploratory “what” questions that may be used in either case study or other strategies. Similarly, Dooley (2002) showed that the purpose of most case study research is to answer the why and how questions. In this study, the overall type of research questions are “what”, “how”, and “why” questions relating to behaviours of farmers in the transition process.

The case study strategy permits different methods to be used to investigate the issues. According to Dooley (2002), the major strength of the case study strategy is the ability to use multiple sources and techniques. It can use both qualitative and quantitative analyses (Dooley,

2002; Torraco, 2002; Yin, 2003). It also permits use of different data collection tools such as interviews, document analysis, and observation (Dooley, 2002; Yin, 2003).

In this study, four main methods are used to investigate different aspects of the transition. These include in-depth interviews of farmers at various stages of the transition process, interviews of key informants, secondary data analysis, and analysis of relevant supply chains in their influence on the farm level commercial process.

As discussed above, the case study strategy also allows a combination of quantitative and qualitative analyses. The combination of the quantitative and qualitative methods can complement each other, verifying and triangulating results (Sechrest and Sidani, 1995; Sells *et al.*, 1995). Although quantitative analysis is not used to test hypotheses and theories in this study, the quantitative analysis is necessary to evaluate commerciality, income, cost of existing situations, and also alternative strategies.

### **5.3. Case design and case selection**

#### ***5.3.1. Case study design***

According to Yin (1994), “An important step in all of these replication procedures is the development of a rich theoretical framework. The framework needs to state the condition under which a particular phenomenon is likely to be found as well as the conditions when it is not likely to be found. Theoretical frameworks later become the vehicle for generating to new cases” (p: 46).

As discussed in Chapter 3, the existing global literature shows that agricultural commercialisation is affected by several factors. Market accessibility and ecological conditions have been found to be theoretically and empirically important in influencing the transition. In addition, because the focus of this study is the transition at household levels, endowed resources are also important factors to be considered. Therefore, case selection is needed to ensure diversity of households in relation to the above factors.

Quang Binh is not a large province but all three ecological regions as defined in Chapter 2 are available within the province. Multiple embedded cases were therefore used to ensure the

diversity in relation to ecological regions, market accessibility, and households. Two communes were selected for each ecological region. Within each region, the communes were chosen to ensure diversity of market access conditions. Within each commune, six household case studies were selected based on diversity in their socio-economic conditions and farming activities. All cases were purposively selected to meet these criteria.

### ***5.3.2. Communes selection***

The selection of communes was based on discussions with provincial and district authorities. The width of Quang Binh province from the Lao-Vietnam border to coastalline is relatively narrow (narrowest width is 50km). In addition, the plains region is very narrow between the mountains and the coast, and some communes overlap between ecological regions.

Cam Thuy and Ngu Nam communes, both in Le Thuy district, were selected as coastal communes. Cam Thuy commune is located along National No 1 Road, and is only 2 to 3km from the centre of the district and the district market. Its topography includes sandy dunes in the east and rice fields in the west. This commune was selected to permit investigation of a rice-farming-based commune with good market accessibility. In contrast, Ngu Nam commune is the farthest commune in the south-east of Quang Binh province, about 30 to 35km from the Centre of Le Thuy district. This commune is characterised by not only high dependence on sea fishing livelihoods, but also by historically poor connections with outside regions. This commune was selected to help clarify how sea fishing livelihoods were transitioning to a market orientation with improving market accessibility.

Quang Long and Quang Thach communes, both in Quang Trach district, were selected as plains communes. Quang Long commune was selected because it is adjacent to Ba Don town. Ba Don town (centre of Quang Trach district) is the second biggest of the urban regions in Quang Binh province, following after Dong Hoi City. Ba Don Town and Ba Don Market are also the linkages that connect the mountainous districts of Tuyen Hoa and Minh Hoa with the plains region (through National Road 12 A).

Quang Long commune is highly dependent on rice farming but vegetable growing and flower growing have been rapidly developing. The selection of this commune allowed investigation of how households with good market access in the plains region were changing to commercial agriculture, particularly in regard to vegetables and flowers. In contrast, Quang Thach



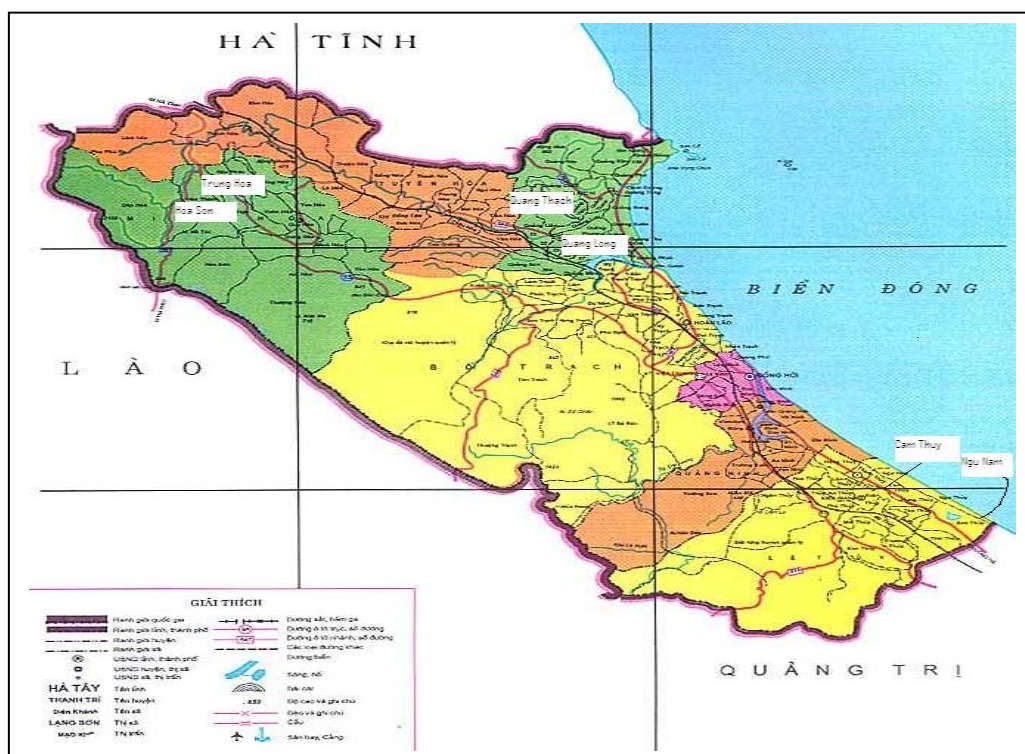
commune is 15 to 20km from the centre of the district. It is not totally a plains commune as it is on the edge of the Tuyen Hoa mountainous district. Given that the plains region is very narrow, there is a considerable number of communes with similar mixed topography as this commune. The selection of this commune allowed investigation of how a plains commune adjacent to the mountains and with poor market access was transitioning to commercial agriculture.

There are two mountainous districts (Tuyen Hoa and Minh Hoa districts) in Quang Binh province. The Tuyen Hoa district is adjacent to the plains region and more developed than Minh Hoa district. Minh Hoa district is the main place where ethnic minorities live within this province. Accordingly, Trung Hoa and Hoa Son communes from within Minh Hoa district were selected.

Trung Hoa commune is located at the intersection of the New Ho Chi Minh Highway and National Road No 12A. The commune is about 10km from Qui Dat Township, centre of the district via National Road 12A. In addition, after the new Ho Chi Minh Road was built in 2004, the district established good connections with Dong Hoi City through this road. Therefore, the commune is an example of good market access, not only in terms of good location relative to the centre of the district but, also in terms of good access to the plains region and the provincial capital. In contrast, Hoa Son commune is located 40km from the centre of district. In addition, the Hoa Son is characterised by poor internal roads and transportation system. The majority of the people at Hoa Son commune are from ethnic minorities.

The location of selected communes can be seen from Figure 5.1

**Figure 5.1: Location of selected communes at Quang Binh Province**



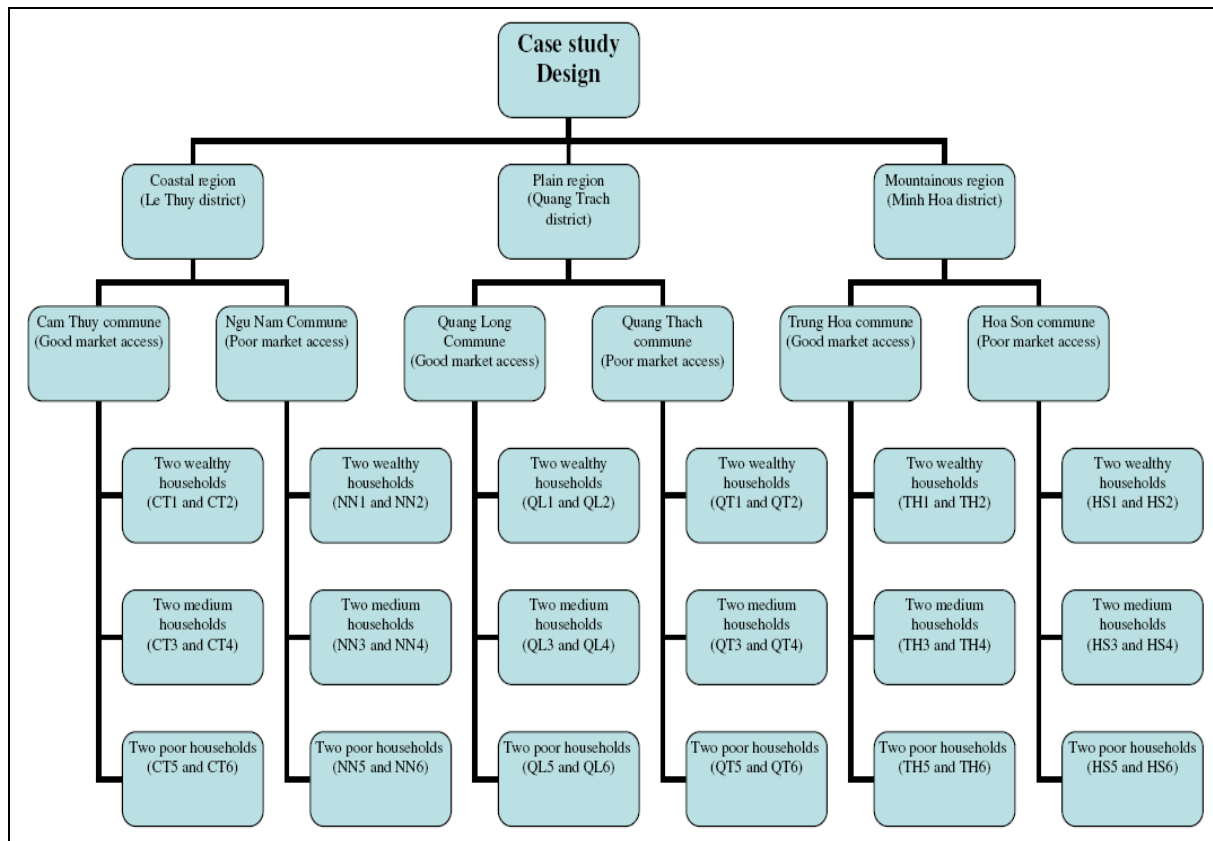
(Source: modified from [www.quangbinh.gov.vn](http://www.quangbinh.gov.vn))

### 5.3.3. Household case selection

Embedded household cases are a major focus of the study. These were selected to capture diversity of both socio-economic conditions (the primary requirement) and diversity of farming activities (a secondary requirement). The diversity of socio-economic conditions of households is expressed by wealth of production resources and income levels.

The multiple embedded cases were selected as shown in Figure 5.2. Poor families were defined as those below the official poverty line as defined by the Government. In 2005, the new poverty line was defined as 200,000 VND per person per month for rural regions and 260,000 VND for urban regions. Although a list of poor households was available at each commune, these lists were estimates based on the judgement of commune authorities and acceptance by the households. Inaccuracies can arise because the authorities do not have income records for each household. In the case of medium and wealthy households there is no official classification and selection therefore had to be made on the subjective judgement of commune officials. Issues of bias avoidance are discussed in the data collection section.

**Figure 5.2: Case study Design**



#### **5.3.4. Agricultural cooperative case selection**

Besides the above communes and households, two case studies of agricultural cooperatives were selected to explore the role of cooperatives in the transition. Both were from Cam Thuy Commune in the Le Thuy District where rice cropping was the dominant land use. One operated across multiple villages at Cam Thuy Commune, and the other operated in just one village.

#### **5.3.5. District staff, provincial staff, and related information**

Although the major focus of the study was the household level, 12 officials and staff at district and provincial level were selected as key informants to obtain general supporting and triangulated information. For each district these included one agricultural official and one extension official. In addition, two district seed station officials, one district veterinary official, one provincial seed company official, one provincial extension official and one agricultural provincial official were interviewed.

Six traders and retailers were also interviewed in regard to supply chains. These included pig supply chains, vegetable chains, a flower chain and fish chains. These interviews were to triangulate supply chain information obtained from farmers. Market observations were undertaken in each commune.

#### **5.4. Data collection**

There were two main sources of information. One was general information on the communes, districts and province. This information was collected from district yearly statistical books, provincial yearly statistical books and commune reports. The second source was in-depth interviews in two periods of field work.

The first fieldwork was conducted from November 2006 to April 2007. The second fieldwork was conducted in October and November of 2008. Most of the information was collected during the first period of fieldwork. The second fieldwork focused on changes that had occurred since the first fieldwork.

The procedure for the first fieldwork began with a meeting with a provincial agricultural official at the Department of Agriculture and Rural Development (DARD) to discuss the selection of districts and communes. Apart from in the mountain areas, the districts span multiple ecological zones. Therefore, the major focus of selection was the communes within a district rather than the district itself. The selections of Cam Thuy and Ngu Nam communes at Le Thuy district was based on criteria of being coastal, with one having good market access and the other having poor market access. The selections of Quang Long and Quang Thach communes at Quang Trach district were based on criteria of being plains communes, once again with good and poor market accessibility. Similarly, the selection of Trung Hoa and Hoa Son mountain communes were based on good and poor market access, with all of Minh Hoa district being mountainous.

The selection of households was discussed with commune authorities. The first brief discussion with commune officials (chairman and/or vice chairman and/or statistician) was to obtain general information. These discussions also determined what the main livelihood activities at each commune were, and how they had changed over time and the reasons why.

The discussions then focused on selecting households from each wealth level that covered as many as possible of the livelihood activities that had previously been identified.

Fundamental to the selection process was the notion that the purpose of the household case studies was not to calculate an average, but rather to obtain in-depth understandings of the diversity of household outcomes. Accordingly, if it was found that a household lacked diversity relative to the other case study household for that wealth level within the same commune, then the interview was not continued with. This happened on two occasions, once at Ngu Nam and once at Quang Long. In addition, at Trung Hoa commune it became apparent that one of the medium wealth households was more like a wealthy household, however there was no opportunity to replace this household.

Household information was collected through semi structured in-depth interviews that were led by the interview guideline (Appendix A). The guideline ensured interviews covered the inquiry themes, but the open structure facilitated information gathering as to the reasoning behind farmers' behaviour. All interviews were voluntary, and the interviewees gave informed consent. Prior approval was obtained from the Lincoln University Human Ethics Committee.

Interviews at the four coastal and plains communes were recorded on tape recorders. Owing to equipment failure, interviews in the mountain communes were hand recorded. Most interviews were conducted at the farmers' residence, but some were conducted at their farms (often distant from their residence) or in their gardens (typically adjacent to their residence), depending on whether they were working or not.

The respondents were usually both the husband and wife, but in some cases only the husband or wife. The availability of both husband and wife, and also on occasions other family members, allowed triangulation of information between members. It also minimised, within practical limits, any gender biases in information collection.

Following the household interviews, in-depth interviews were conducted with commune staff, district staff, provincial staff, extension staff, seed station staff, and traders, to explore and clarify related issues and to triangulate information.

In the second fieldwork, the same cases and some of the same officials were interviewed again, but the interviews focused on what had changed in the households and communes compared with previous interviews.

## **5.5. Data analysis**

### ***5.5.1. Units of analyses***

The use of multiple embedded cases as a case selection strategy led to multiple units of analysis.

#### Commune analysis

The communes were the higher level cases. These were analysed commune by commune. The analyses covered the natural conditions, infrastructure, socio-economic conditions, market development and institutional arrangements at the commune, and how these had changed over time.

Location and infrastructure were analysed in relation to road, telecommunications, electricity, and transportation systems, together with distance and travelling conditions to the nearest markets, central markets and centres of districts. Land was analysed in terms of area, land use and land tenure. The analysis also focused on changes to these conditions over time.

The socio-economic conditions of each commune were analysed in relation to population, population structure, poverty, and main production activities. Market developments were analysed in terms of accessibility to markets, plus the presence or otherwise of input and output supply chains and their development.

The institutional arrangements were explored in relation to the commune administrative systems. These analyses were also conducted for co-operatives.

The analyses of communes were developed both as higher level cases and also to provide contextual information for the embedded household cases.

### Household analyses

The household cases were embedded cases within the commune cases. The major focus was on aspects of socio-economic conditions, production activities and their commerciality, income, and the dynamics of changes.

### Socio-economic conditions:

The socio-economic conditions of households were analysed in relation to family size, number of workers, active workers, migrated workers, number of production activities, land resources, and value of productive capital. The baseline information was calculated as of 2006.

The number of available workers was calculated based on governmental official criteria of working ages from 16 to 55 for women, and 16 to 60 for men. Available workers included those people who had temporarily migrated to other regions and provinces but who were still considered as commune members. Active workers were workers who regularly contributed their labour in some form and excludes migrants that were absent from the commune.

The value of production equipment included the assessed value of all equipment which they had in 2006. This excluded the value of allocated and reclaimed land because of the lack of a market price for this land. However, it did include the value of any purchased land, and investments to improve that land. The values of breeding cattle and sows were included.

### Production and income:

Household production and income were analysed in relation to the number of production activities, total gross income, total net income per household, net income per active worker, net income per family member, net income for each production activity, and non-farm income.

The total gross income per household per year was calculated by summing the gross income of each activity. The gross income of each activity was calculated by multiplying production of the activity with its price (the selling price for marketed products or the market opportunity cost for self-consumed products). The gross income of each activity includes the value of by-products from the activity.

Similarly, total net income per household was calculated by summing the net income of all activities. The net income per activity is the result of extracting total cost from gross income. The total cost of activities excludes labour costs for reasons discussed below, but includes all other costs including internal transfers. Inclusion of internal inward transfers between activities as costs is necessary to avoid double counting, given that outward transfers between activities are included as gross activity income.

Surplus household labour is common so it is rare for households to hire workers. Households do not place a monetary value on their labour and family labour cost is excluded from input cost. In cases where labour is hired, the cost is included.

Net non-farm income is the net income from non-farm activities such as trading, pensions, hired employment income, and handicrafts. In contrast, net farm income is net income from activities that relates to plants or animals.

#### Commerciality:

As mentioned in Chapter 3, there are several measures for commerciality. Commerciality of households in this study is analysed for each activity and also for the whole household. It is analysed on both the input side and output side.

Commerciality for each activity on the input side is calculated by dividing the values of purchased inputs by the total value of inputs for each activity. Input commerciality for whole households is calculated by dividing the sum of all purchased inputs from each activity by the sum of total inputs from each activity. Clearly, a high input commerciality index is indicative of considerable purchased inputs. However, given that unpaid family labour is excluded from all input calculations, the full interpretation to be placed this ratio is more complex. Indeed, this input commerciality ratio is measuring the level of purchases relative to internal input transfers between complementary activities. Accordingly, a low ratio could be indicative of ecological synergism between complementary activities rather than being indicative of a subsistence non-commercial system. These issues are further explored in Chapter 12.

Commerciality for each activity on the output side is calculated by dividing the value of sales by the gross value of production from each activity. The value of sales is calculated by multiplying sold production by sold price, whereas the gross value is calculated by multiplying production and sold price if it is sold, or by the opportunity cost, i.e. the market



price if it had been sold. The commerciality for the whole household is calculated by dividing the sum of all market sales from the total production value (cash or opportunity cost) of all activities.

Given the complexities of interpretation associated with the input commerciality ratio that arise as a consequence of their being no clear opportunity cost for household labour, an alternative index of input commerciality was constructed at the overall level of the household. This was calculated as the ratio of household net income (cash plus opportunity cost for all activities summed) divided by total gross income (cash plus opportunity cost for all activities summed). A low ratio is indicative of a low proportion of gross income being value-added by household labour and a high proportion of the output value being attributed to purchased inputs. In contrast, if the ratio is high, then a small proportion of gross income is expended on purchased inputs, and a large proportion is value added by family labour. A more detailed discussion of the interpretations to be placed on input commerciality measures is left to Chapter 12

#### The dynamics of change:

A key objective of the study was to gain insights as to dynamics of change and the reasons why some families were much further advanced than others in the transition to commercial agriculture. Given the lack of records kept by most households, quantitative data was in general restricted to the current situation at the times the fieldwork was undertaken. However, all households were able to explain in qualitative terms the livelihood changes that had occurred since 1993 when Decree No 64 was passed by the Vietnam Government and individual use rights over land were legislated. The drivers and motivations for these household livelihood changes were then explored with interviewees.

#### ***5.5.2. Comparisons across cases***

Comparisons between cases were conducted at both the commune and household levels and included quantitative and qualitative aspects. The focus in these comparisons was to identify differences, to enrich existing theory, and also to build new theory as appropriate in regard to bio-physical and socio-economic drivers. Means, standard deviations and coefficients of variation were calculated to explore trends and variation of measures between wealth levels and communes. In some cases, correlation coefficients were calculated between measures (variables) to support the comparisons. Accordingly, and consistent with Yin's (1994; p30)

distinction between analytical and statistical generalisation, the findings and relationships are analytical in relation to factors and not statistical in relation to populations. Statistical generalisations to wider populations were not undertaken.

## **5.6. Summary**

The study is based on a case study strategy to address questions of ‘what’, ‘how’ and ‘why’ at the level of both communes and households. The aim was to enrich existing theory and build new theory as appropriate. Statistical testing of existing theory was not undertaken. Cases were chosen purposively according to defined criteria. Both quantitative and qualitative information was obtained by in-depth interviews of 36 households and 21 interviews of key informants. Cross case comparison was undertaken at the level of both communes and households.

The results of these case studies are now developed in Chapters 6 to 11.

\*\*\*\*\*

## CHAPTER 6

### **The transition from subsistence-based rice farming to commercial agriculture in Cam Thuy Commune, Le Thuy District, Quang Binh Province, Vietnam**

#### **6. 1. Introduction**

The purpose of chapter is to explore how farmers with rice-based farming systems can move to commercial agriculture. Six case studies of families and two case studies of co-operatives were conducted at Cam Thuy commune, located in the coastal region of Quang Binh province. The commune is characterised both by its wetland rice farming systems and also by good access to markets in terms of location and infrastructure.

The wetland rice farming system is one of the most important farming systems in both Quang Binh Province and Vietnam in general. This production system is characterised by inundated wetlands that are not easily converted to other crops. This characteristic constrains the opportunities of farmers to make the transition to commercial agriculture.

The chapter is structured into five sections. In the next section, the characteristics of the commune are described. These include the location, natural endowments, and social endowments. The current and changing institutional arrangements at this commune for agricultural development in general, and the transition to commercial agriculture in particular, are also described. In the third section, two case studies of agricultural co-operatives are analysed to explore the role of co-operatives in the transition process. In the fourth section, six case studies of households are explored to explore the transition in the above context. The final section provides a discussion on a range of issues, and the findings are then carried forward to Chapter 12 for a between-commune comparison..

#### **6.2. Natural and social economic background of the commune**

##### ***6.2.1. Location and infrastructure***

Cam Thuy commune is a coastal commune located on No 1 National Road some 2-3 kilometres from the town centre and central market of the Le Thuy District. Cam Thuy is one

of five communes that are geographically contiguous. There are seven contiguous villages within the Cam Thuy commune and these are administrative rather than geographic structures. There are no markets within Cam Thuy commune itself but small markets operate at the two adjacent communes (Mai market at Hung Thuy commune in the South, and Cui market at Thanh Thuy commune in the North).

The transport system is well developed. Beside the National Road No 1 going through the commune, the road west from the commune to the centre of the district (which is off National Road No1) is also very good (classed as an 'Alpha' road). Regular coaches travel through the commune to the centre of the province and also to other provinces and cities. In 2007 there were more than 600 motorcycles owned by commune members, equivalent to 16 motorcycles per 100 people.

The landline telecommunication system to the commune was developed in about 1999. In 2004, the number of landline telephones at the commune was 3 per 100 people, increasing to 4.7 in 2005, 5.5 in 2006 and 7 in 2007. In addition, a mobile network has covered the whole commune from 2002. Statistics on mobile phones are not available but numbers are likely to be small on account of cost. The electricity network had reached all households and most households had television by 2003.

### ***6.2.2. Land and land use***

The land resource is of four main types.

The first land type is wetland located away from the residential area. This is the main agricultural land in the commune. This type of land is inundated for much of the year, particularly in the winter season. In addition, it is seriously affected by floods each year from September to November and no crops (including rice) can be grown at this time. The only options for this land apart from rice are either aquaculture or a combination of rice cropping and aquaculture. Article 36 of the Land Law 2003 states that the conversion from rice land to perennial crops or aquaculture must be approved by authorised organizations. Therefore, the transition of this wetland rice must be facilitated by both farmers and local authorities.

The second type is dry and sandy land located between sand dunes. This includes gardens and dry land outside the gardens. This land is of naturally poor fertility but it can be suitable for

vegetable crops. This land may also be used for food crops such as sweet potatoes, cassava and maize.<sup>2</sup> Farmers may change the land use of this land without approval as long as the conversion does not affect other farmers.

The third type of land is sandy dunes. This land is not suitable for cultivation because of low water holding capacity. However, in order to protect the movement of the sands and sandy dunes, *Casuarina sp* trees has been planted in some of this area. Although this land belongs to the Forest Protection Board, farmers can access it for cattle raising. Management of this land was transferred from the Forest Protection Board to the commune in 2004.

The fourth land type is classed as ‘other land’ and includes residential land, roads and irrigation canals.

More than half of the commune land is sandy dunes allocated to forest conservation (Table 6.1). In broad terms, about one half of the remaining land is used for housing and infrastructure. This leaves less than one quarter of the land available for agricultural purposes, and nearly 70% of this is used for rice growing.

**Table 6.1: Land use at the commune in 2005 and 2008**

	2005		2008	
	Quantity (ha)	%	Quantity (ha)	%
<b>Total area</b>	<b>1380.0</b>	<b>100.0</b>	<b>1380.0</b>	<b>100.0</b>
<u>Agricultural land</u>	300.0	21.7	288.4	20.9
-Rice crop land	218.0	15.7	206.4	15.0
-Other food crop land	45.0	3.3	26.0	1.9
-Vegetable crop land	32.0	2.3	51.5	3.7
-Other crops	5.0	0.4	4.5	0.3
Aquaculture land	15.0	1.1	39.7	2.9
Forestry and forest land	736.3	53.4	702.5	50.9
Other land	328.7	23.8	349.5	25.3

*Source: Yearly commune statistical books, 2005 and 2008, and annual commune reports*

It is also evident (Table 6.1) that residential and infrastructure land has been increasing while agricultural land has been decreasing. Forest land has also been decreasing with conversion to residential and agricultural land. Within the agricultural land, there has been a decrease in the

<sup>2</sup> In the Vietnamese context there is a distinction between vegetable crops and food crops. Vegetable crops are predominantly green crops and are regarded as supplements to the base diet. Food crops are carbohydrate based crops such as rice, cassava, maize and sweet potatoes. In general, the Vietnamese prefer rice as their staple food, and the area of other food crops has historically been influenced by the extent of food security concerns.

area of rice and a small increase in aquaculture. There has also been a trend away from food crops, such as cassava, sweet potato and maize, towards vegetable crops.

### 6.2.3. Socio-economic background

In 2007 there were 848 households with 3872 people in the commune (Table 6.2). Population growth was approximately 0.4% per annum between 2004 and 2007. During this period the number of households increased by 19, mainly through separation of young families from their parents. On average, there are about 7 sao (0.35ha) of agricultural land per household. More than 80% of the commune population depend on agriculture. Rice cropping, vegetable cropping, aquaculture, cattle raising, pig raising and poultry raising are the main livelihood activities at the commune.

**Table 6.2: Main indicators of Cam Thuy Commune from 2004 to 2007**

Year	2004	2005	2006	2007
Population	3827	3849	3860	3872
Households	829	842	845	848
Percentage of poor households in total	9.1	37.0	31.1	28.8
Estimated migrant workers	250-300	250-300	250-300	250-300
Total area of rice crop (ha)	436	434	419	415
Area of regenerating rice crop (ha)	45	60	80	107
Cultivated area of vegetable crops(ha)	27	32	37.5	39.7
Number of buffaloes	155	142	148	145
Number of cows	440	433	459	461
Number of pigs	2725	2785	2788	2828
Number of poultry	13,140	14,000	20,300	18,770

*Source: District yearly statistics books, annual commune reports and estimation of commune staff.*

Rice cropping is both the main crop and also the major livelihood activity at the commune. There have been significant changes in the way this crop is grown in recent years. Prior to 1986, the rice wetlands were farmed collectively by the commune but in 1992 the land was allocated to households. In the last ten years the transplanting method has been replaced by direct sowing based on improvement of the irrigation and drainage systems. The development of the irrigation system has also led to change in the number of crops per year, increasing to two crops per year on most of the land. In recent years, the replanted crop (i.e. second crop) in summer-autumn has been gradually replaced by a naturally regenerating crop. In 2008, the total area of second rice crop was grown by the regenerating method. This regenerating

method typically leads to reduced yields but there are reduced costs of production. Perhaps more importantly, the regenerating crop, which grows from the existing plants, takes only 45-60 days to grow compared to more than four months for a sown crop. This is of particular importance in this commune where the second crop is susceptible to flood risk. About 20% of the second rice crop in Quang Binh Province is grown in this way.

Another important change with the rice farming has been the use of new varieties such as IRR38, Khang Dan, Lai, and X23. Previous varieties such as NN8, VN20, and VN10 were mainly selected based on their high yields rather than eating quality. However, these new varieties are better in both yield and quality (softness and taste). In addition, weed control chemicals and threshing machines have been used for several years at the commune. These changes have enabled farmers to improve their food supply and enhance their food security, but they have also decreased the labour requirement. Further labour is saved when the second crop is by regeneration. Typical rice yields in the commune are 200 to 250kg per sao for the first crop and 100 to 200kg per sao for the second crop, depending on growing methods.

Cattle raising activities have been undertaken at the commune for many years, both for draught power and for cash income. The cattle raising activity is characterised by its small scale and the grazing of both natural pastures under forest and rice fields after harvesting. There is a lack of suitable land to allow expansion of cattle raising.

In contrast to cattle, the pig and poultry industries are very important both in terms of the number of people involved and also their contribution to livelihoods. Most households undertake pig and poultry raising activities to use waste and by-products from agricultural activities. However, in recent years some households have moved out of pig raising because of other livelihood opportunities and a relative lack of profitability. This has been balanced by other households developing large scale pig raising. Accordingly, although the total number of pigs has not changed greatly, the nature of the industry has changed.

Poultry farming has been increasing with a trend to larger individual units. However, duck raising has reduced since 2006 because free range ducks are incompatible with the regeneration method for second-crop rice.

Since 2003, aquaculture has been expanding through conversion of both the poor rice land and subsidiary cropping land and it has become an important activity at the commune. In the

five year period to 2008, about 40ha of aquaculture was developed and it has become one of the main income sources for some households (Figure 6.1).

**Figure 6.1: Some farming activities at the commune**



Fish raising



Sow raising near fish pond



Duck raising beside fish pond



Vegetable crops have been grown for a long time but have only become significant cash crops in recent years. This activity is mainly undertaken in household gardens rather than in fields. Although the scale of the activity is limited, it has become an important income source for some households.

Agricultural and other commune-based activities do not create enough employment for the local people. Therefore, migration to cities and other provinces is an important livelihood strategy, particularly for young people. Although there are no official statistics, it is estimated by commune officials that about one fourth of workers (about 250 to 300 workers) have migrated to find jobs at other provinces. These people are still classed as commune members. It is only if they marry and settle permanently in another district or province that they are no longer counted.

In general, livelihood activities have begun to diversify away from rice farming. These changes, together with improvements in rice farming, significantly contribute to poverty reduction and increase household incomes. However, the livelihood systems at the commune are still dependent on rice farming.

#### ***6.2.4. Institutional arrangements for agriculture***

The Commune People's Committee and two agricultural co-operatives are the two main institutions that influence agricultural development at the commune.

The Commune People's Committee is selected by the Commune People's Council that is itself elected by local people. These elections are overseen by the Communist Party of Vietnam. The Commune People's Committee has duties to develop social-economic development plans for the commune and to submit these to upper governmental institutions and to the Commune People's Council for approval before implementation. These functions are guided by the Law of the People's Committee and the People's Council. Therefore, the Commune People's Committee plays an important role in determining both the economic development in general and agricultural development in particular at the commune.

There have been remarkable changes in term of staff capacity during recent years. In 2005, there were no university graduates working at the commune but by 2008 seven out of 19 staff were university qualified through in-service training. However, most of these graduates are

trained in politics rather than economics or other specializations (5 of 7 graduates). There are no graduates in agriculture or aquaculture. These staff are paid a salary of about 1.1 million VND (approximately \$US68) per month. However, in at least some cases this salary is not sufficient to convince staff to focus on their duties. Additional village staff are employed part time to instruct local people in their village to implement plans and policies from the commune and upper government. These people are not professionally trained.

Agricultural co-operatives are important institutions that impact on agricultural development at the commune. Their role has changed greatly since families were allocated their own land in 1993. At that time, the co-operatives were transformed from administrative structures that managed the land, to business structures that undertook various functions at the request of their shareholder members. These new-styled co-operatives operate as input service providers, focusing on services that farmers individually have difficulty in undertaking, typically because of lack of scale. There are two co-operatives at the commune. One covers three villages and another covers five villages.

### **6.3. Case studies of agricultural co-operatives**

#### **Case study 1:**

Agricultural Co-operative A is a village co-operative with 987 members. It transformed in 1997 to a new style co-operative and operates under the Law of Co-operatives.

Membership of the new style co-operative is voluntary but previous members and agricultural households at the time of transformation automatically became members of the new co-operative. New households to the commune can also join the co-operative. The initial share of each member (131,000VND) was determined based on the value of assets at the time of transformation. Through accumulation, this figure reached 200,000 VND in 2006.

The co-operative is divided into four production units based on physical boundaries. Each unit has a head of production who co-ordinates activities.

Since transformation, the co-operative has focused on providing seven main services: (1) land preparation, (2) irrigation, (3) fertilizers, weed killers and seeds, (4) field security, (5) plant

protection, (6) electricity, and (7) production coordination. In 2005, responsibility for electricity provision was transferred to the Electricity Company. All services are charged to recover full costs.

The land preparation service is conducted by the co-operative contracting with individuals who have tractors and buffaloes, based on competitive bidding. However, a ceiling price for the land preparation service is previously determined by the meeting of representatives of co-operatives members. There was a significant decrease in the price of land preparation after four small tractors (12 CV) were bought at four production units to replace one big tractor (50 CV).

The irrigation service is provided in part by the co-operative (90ha) and in part by a state-owned irrigation company. This is because some specific rice fields (48ha) cannot be controlled logistically by the co-operative. The price of irrigation services provided by the state company is set by the company (through a government standard), whereas the price of this service provided by the co-operative is set by the meeting of co-operative members.

For services such as fertilizers, weed control chemicals, pesticides and seeds, the co-operative uses its capital to buy the inputs based on advance bookings from farmers from each production unit. This occurs at the beginning of each rice crop. The price to farmers of these inputs is determined based on the buying price plus a service cost, but the total price must be lower than the open market price.

Farmers pay the costs for land preparation and irrigation services after the crops are harvested, but they can select to pay for fertilizers, weed killer and other inputs either when they obtain the inputs or for a slightly higher price at the time of harvest. In addition, the co-operative charges coordinating fees per land unit for general management.

The cropping calendar is coordinated by the co-operative based on the general cropping calendar framework developed by the district economic department. The specific cropping calendar also depends on weather conditions, irrigation and land preparation. The co-operative also predetermines rice variety selection for different plots, based on the general plan for the whole district. Within the rice fields, the higher land is planted first to ensure efficient use of water and to avoid conflicts between plots.

All important issues are determined collectively by voting of co-operative members. Members select the executives (three year term) and also approve or reject proposals such as price, variety selection, executive wages, and profit distribution. The co-operative executives then implement the approved plans.

Individual farmers do not have the right to convert rice fields to aquaculture without permission from the co-operative. Before permission can be granted, the co-operative will itself have to present a proposal to the district economic department, which may accept or reject the plan.

Staff capacity and staff payment systems are major issues at the co-operative. Of the six staff in 2006, none had a university degree, three staff had intermediate professional certificates, and the other three had completed high school. By 2008, one staff member had graduated from university through in-service training. All staff are on fixed wages independent of performance.

According to the co-operative executives, although the co-operative has transformed to a new style co-operative, it still retains elements of a social institution rather than a business enterprise. The agricultural co-operative not only provides services to make money; it also solves most other social issues at the village. This includes funding of festivals and undertaking general village work.

### **Case study 2:**

Agricultural Co-operative B is an inter-village co-operative (5 villages) with 696 members in 2006. Since transformation in 1997, the co-operative has provided all services and operated in a similar way to Co-operative A. However, provision of a seed service was stopped in recent years because the maximum price they could charge made them non competitive with the government seed station.

In this co-operative there were only two farmers who had tractors. In 2006 one had two large (50 CV) tractors and the other had a newly acquired small tractor (12 CV). In practice they accepted the price offered by the co-operative and shared the production area relative to their capacity.

In this co-operative all irrigation services were controlled logistically by the co-operative. In 2006 the price of irrigation was set by co-operative members at 13kg of paddy per sao, and then the co-operative contracted people to operate the irrigation equipment and deliver the service. In theory the co-operative had decision making power over crop husbandry and management decisions, but in practice these decisions were made at higher levels given the need for co-ordination between communes to optimise both irrigation and pest management.

Commune executives were selected by members for three year terms. None of the executives has university degrees, two had intermediate training in accounting, two had intermediate certificates in politics and one had a primary certificate in politics. The current chairman had been elected in 2005 when the previous chairman was promoted to become a commune official. In this co-operative the plans were implemented through village leaders and not through production units.

After paying costs and salaries, various amounts were transferred to the social account and the emergency reserve account. The residual was transferred to an accumulation account which in 2006 held 1,554,000 VND per farmer.

#### **6.4. Household case studies**

Six case studies of households were undertaken to obtain insights as to how commune households were making the transition to commercial agriculture. The six case studies were chosen to span poor, medium and high wealth households. The selection criteria were outlined in Chapter 5. The households are first compared in relation to their socio-economic structure, land resources, non-land capital, and number of farming activities. The productive activities of each family were then analysed in terms of their contribution, net of cost, to total family income. Costs include all externally purchased items and an imputed cost for internal transfers. Subsequently, each activity was analysed in relation to the extent to which outputs were sold for cash or used within the farm household, either for consumption or as inputs to other activities. Similarly, each activity was analysed for the extent to which inputs were obtained externally to the farm. Given the marked contrasts between households, the individual case studies were then analysed to obtain insights as to the dynamics of change which had allowed some families to progress to high relative wealth whereas others had stayed in a state of poverty.

#### ***6.4.1. Socio-economic structure***

Household size ranged from three to seven, of whom two to five were of worker status (Table 6.3). Four of the six households had family members living and working away from the commune. These migrant workers are still included both as household members and available workers, but not included as active workers. Although the wealthy households were larger than the other households in terms of their number of members, they did not have more active workers.

Education level of the heads of households (including both husbands and wives) ranged from 5-12 years, with a tendency for education to increase with wealth level. One of the high-wealth head of households had intermediate (post secondary) veterinary training. Five of the six family heads received their education at a time when the total primary and secondary education program was ten years. This system was subsequently changed to a 12 year education system.

Total land resources per household ranged from 7.5 to 39.6 sao with a tendency for land area to increase with wealth level.<sup>3</sup> When expressed per household member, the area ranged from 2.5 - 5.7 sao, with most of the variation relating to non-rice land. This situation is linked to the 1993 allocation of agricultural land for 20 years under Land Decree No 64 in proportion to the number of household members (adults plus children), but taking account of differing land quality. In general, the allocation was 1.5 to 2 sao of agricultural land per person. In contrast, allocation of residential land and adjacent gardens was based on surveying and documenting the area of land for which the family had existing use rights, and then giving permanent title to this land. Typically, the residential and garden land was one to three sao per household. The pathways by which four of the six families have changed their available land area are explored in Section 6.4.4.

There are remarkable differences in household productive capital ranging by a factor of more than 80. This capital is exclusive of land, which does not have a defined capital value, but does include improvements to the land such as fish ponds and piggeries. There was a tendency for the wealthy families to be more diversified in their production activities. All families were members of a co-operative.

---

<sup>3</sup> One sao equals 500 square metres equals 0.05ha.

**Table 6.3: Main resources of household case studies at Cam Thuy Commune in year 2006**

Index	Case CT1 R	Case CT2 R	Case CT3 M	Case CT4 M	Case CT5 P	Case CT6 P	Range
Family size (persons)	7	6	5	6	5	3	3-7
Age of household heads (h/w)	45/43	36/36	49/47	53/49	49/46	63/55	36-63
Education of hh heads(h/w)(yr)	10/8	12/7	10/9	8/7	7/7	5/6	5/10-12/12
Professional training	No	Yes	No	No	No	No	Yes/No
Available labour (persons)	4	2	2	5	4	2	2-5
Migrating workers (person)	1	0	0	1	2	1	0-2
Active workers (person)	3	2	2	4	2	1	2-5
Land per hh (sao)	39.6	14.4	18.0	17.0	13.0	7.5	7.5-39.6
-Allocated rice land	12.0	10.0	9.0	9.0	11.0	4.0	5.5-15.6
-Allocated other land	3.6	4.4	2.0	3.0	2.0	1.5	1.5-4.4
-Auction & reclaimed land	24.0	0.0	7.0	5.0	0.0	2.0	0.0-24.0
Capital per hh (million VND)	172.0	88.8	7.7	36.6	2.0	6.6	2.0-172.0
Number of activities	7	7	5	4	3	5	3-7
Co-operative members	Yes	Yes	Yes	Yes	Yes	Yes	Yes

R= Rich, M=Medium, P=Poor; h/w: husband/wife; hh: household

#### **6.4.2. Production and income**

The total net income per family in 2006 varied by a factor of almost 60 (Table 6.4). This income includes both cash income and the value of production consumed by the household. The income is net of inputs (cash and internal transfers) but labour is not costed. Income per active worker varied by a factor of almost 20 while income per person varied by a factor of almost 25.

Although rice was the dominant land use for all households, rice provided only a small source of income in absolute terms. One of the wealthy households (CT1) was clearly an outlier in terms of rice income and this was associated with this household having obtained additional land (discussed further in Section 6.4.4.). The importance of rice as a proportion of total income was much higher in the poor families (37- 42%) than for the wealthy families (1-5%), despite being of lower value in absolute terms.

It was apparent that there were a number of production activities that provide much higher incomes than rice. These include vegetable cropping, pig raising, fish, chickens, duck meat, duck eggs, and service activities. In contrast, cattle raising and food crops such as cassava, sweet potato and maize provide only modest incomes. In general, the high income activities either have limited or no requirements for agricultural land (e.g. pigs and poultry) or else provide high returns to agricultural land (fish and vegetables). In contrast, the lower income

producing activities tend to have a comparatively high demand for agricultural land relative to their income, but these were important activities for food security.

It was apparent that non-farm activities were only developed at the two wealthy households. Non-farm activities included land preparation by CT1 and trading activities by CT2.

**Table 6.4: Production and income of household case studies at Cam Thuy Commune in year 2006**

*Unit: 1000 VND*

Index	Case CT1 R	Case CT2 R	Case CT3 M	Case CT4 M	Case CT5 P	Case CT6 P	Range
Total gross income per hh	668,881	1,088,686	37,945	78,934	41,229	9,742	9,742-1,088,686
Total net income per hh	331,366	212,198	20,020	36,133	18,637	5,741	5,741-331,366
Total income per active worker	110,455	106,099	10,010	9,033	9,318	5,741	5,741-110,455
Total income per person	47,338	35,366	4,004	6,022	3,727	1,914	1,914-47,338
Net farm income per hh	302,816	159,998	20,020	36,133	18,637	5,741	5,741-302,816
Net non farm income per hh	28,550	52,200	0	0	0	0	0-52,200
<b>Net income from each activity</b>							
1. Rice	16,821	2,264	5,327	5,980	7,737	2,150	2,150-16,821
2. Cassava	0	0	0	0	0	480	480
3. Sweet potatoes	0	1,500	1,200	0	800	230	230-1,500
4. Vegetables	0	5,352	0	22,680	0	0	5,352-22,680
5. Pig	3,575	52,340	7,316	4,130	10,100	500	500-52,340
6. Fish	121,835	64,967	5,087	3,343	0	0	3,343-121,835
7. Chicken	26,470	24,340	0	0	0	0	24,340-26,470
8. Meat duck	56,375	9,235	0	0	0	0	9,235-56,375
9. Egg duck	77,740	0	0	0	0	0	77,740
10. Cows	0	0	1,090	0	0	2381	1,090-2,381
11. Services	28,550	52,200	0	0	0	0	28,550-52,200

#### **6.4.3. Agricultural commercialisation**

As mentioned in Chapter 3, the commercial orientation can be viewed and analysed in relation to both inputs and outputs. In these case studies this orientation is explored both at the level of the overall household and for different production activities.

#### Outputs

There are clear patterns in relation to particular production activities (Table 6.5), with some activities (rice, sweet potatoes, and cassava) mainly providing for home consumption or used as intermediate products for feeding to animals, and all other activities being either totally or



almost totally commercial. There are also patterns between the households, with the more wealthy households having opportunities to undertake commercial activities that require investment capital.

The situation with rice is different to other activities in that it is only the poor families who sell any rice. This is necessary for them to acquire the necessary inputs to grow the rice crops. Case study CT1 stands out in that this family grows rice of much greater value than the other families, and clearly more than is needed for home consumption. The reason is that this family uses rice as inputs to animal raising activities.

**Table 6.5: Commercial orientation of household case studies at Cam Thuy Commune in 2006**

*Unit: (%)*

Commerciality for each activity	Case CT1 R	Case CT2 R	Case CT3 M	Case CT4 M	Case CT5 P	Case CT6 P	Range
<b>Input side</b>	<b>87</b>	<b>99</b>	<b>56</b>	<b>69</b>	<b>82</b>	<b>58</b>	<b>58-99</b>
1. Rice	80	100	96	100	100	94	80-100
2. Cassava	-	-	-	-	-	17	17
3. Sweet potatoes	-	50	50	-	50	71	50-71
4. Vegetable crops	-	85	-	86	-	-	85-86
5. Pig	47	97	29	30	79	39	29-97
6. Fish	100	100	36	44	-	-	36-100
7. Chicken	100	100	-	-	-	-	100
8. Meat duck	70	65	-	-	-	-	65-70
9. Egg duck	89	-	-	-	-	-	89
10. Cows	-	-	100	-	-	100	100
11. Services	100	100	-	-	-	-	100
<b>Output side</b>	<b>94</b>	<b>99</b>	<b>57</b>	<b>87</b>	<b>75</b>	<b>71</b>	<b>57-99</b>
1. Rice	0	0	0	0	20	25	20-25
2. Cassava	-	-	-	-	-	58	58
3. Sweet potatoes	-	0	0	-	0	0	0
4. Vegetable crops	-	100	-	99	-	-	99-100
5. Pigs	100	100	93	100	100	100	93-100
6. Fish	100	100	70	90	-	-	70-100
7. Chickens	100	100	-	-	-	-	100
8. Meat ducks	100	100	-	-	-	-	100
9. Egg ducks	100	-	-	-	-	-	100
10. Cattle	-	-	100	-	-	100	100
11. Services	100	99	-	-	-	-	99-100
<b>The ratio of net to gross income per hh</b>	<b>50</b>	<b>19</b>	<b>53</b>	<b>46</b>	<b>45</b>	<b>59</b>	<b>19-59</b>

### Inputs

A key issue in relation to inputs is household labour. In rural Quang Binh, and indeed in general throughout much of Vietnam, there is a surplus of rural labour. Accordingly, at a political level there is a focus on generating employment. At the level of the household, labour is regarded as a free resource and is not costed. Consequently, households do not take

particular note of labour inputs or indeed attempt to use labour efficiently, and there is no reliable data for allocating labour between different production activities. In Cam Thuy commune the normal practice is for households to use their own workers, and it is rare that farmers employ workers from outside their family, even for temporary periods. Consistent with this situation, no attempt has been made here to allocate labour between activities, and production inputs are measured exclusive of household labour.

Given this situation, the input indices measured here (Table 6.5) are a measure of the extent to which non-labour inputs are sourced externally to the farm in contrast to being sourced internally as a transfer from another production activity. A low input commerciality index can be interpreted as indicative of an integrated multi activity production system. If a value were placed on family labour then this would considerably reduce the input commerciality values.

In the case of rice, the case study households predominantly source their inputs (such as seed, fertiliser, and land preparation) from external to the farm. The exception is that three of the farmers source some of their fertiliser as a by-product from their pig raising activities. Although all externally sourced inputs are included here, not all of these inputs are necessarily paid for in cash, as farmers have the option of paying for some of them 'in kind' at the time of harvest.

For most other activities, there is an apparent relationship between input commerciality and scale, with small scale producers being able to supply more of their fertiliser requirements with manure, and to supply a greater proportion of animal feedstuffs from crops and crop by-products. However, these relationships are complex, with CT1 being in a unique situation because of access to more land resources, and CT5 having overall high input commerciality indices driven by the importance of rice in the overall system and the necessity for key rice inputs to be externally accessed.

#### ***6.4.4 Dynamics of change***

In above sections, the analysis and discussion has focused on cross-case comparisons as of 2006. The focus in this section is to explore the underlying drivers and events that created the highly contrasting situation between the six case study households. The section draws on historical information collected during the first interview in November and December 2006 and on updated information collected in November 2008.

### **Case CT1**

Household CT1 had a status in 2006, as considered by commune leaders, of being a rich household. The available production capital was in excess of 170 million VND (approximately \$US10600), and they had use rights to 39.6 sao (almost two hectares) of land. Relative to other households, they were characterised by being both resource and income rich. They were undertaking a diverse set of production activities which complemented each other through internal transfers of intermediate outputs and by-products.

The economic growth path of this household can be traced in broad terms from 1993. At that time they were allocated 12 sao of rice land and 3.6 sao of garden land.

The key event was the institutional change associated with the co-operative. In 1990, the co-operative stopped its own commercial duck raising activities. CT1 then managed these activities under the “output contract method” and then took them over as a private commercial activity from 1994. Although land had by then been allocated to households, the ducks were able to run freely on other people’s rice land for periods of the year not only in their commune but also adjacent commune. This activity brought them information on the opportunity to have more land through their when they access commune staff to have permission on using rice field after harvesting.

A key opportunity arose in 1996 when 20 sao of rice land became available from an adjacent commune. They became aware of this opportunity through their duck raising activities that took them to this commune. This other commune had some land which was difficult to manage as they did not have control of the irrigation, and so use rights, initially for 5 years, were auctioned off with CT1 being the successful bidder. They have subsequently renewed these use rights for further periods.

Then in 2000 the co-operative ceased operating the land preparation system. CT1 purchased a second hand tractor from the co-operative in 2000 and then another tractor in 2002 to provide these services. The capital investment of 150 million VND came from their own funds (largely from the duck raising activity) plus borrowed funds from relatives and the bank. Initially, they were the only provider of these services and the returns were very high, but subsequently they have had to compete with other providers.

In 2005, CT1 used some of the capital it had built up to successfully bid at auction for 4 sao of poor rice land that had been re-allocated for aquaculture. The development cost plus stocking of fish cost 34 million VND. The use of manure from chickens, ducks, and pigs was a key element in the profitability of this enterprise.

Household CT1 was not always successful. At one stage they lost their ducks to disease and were faced with bankruptcy. At this time they had to sell their house to repay debts.

A further interview with this household in November 2008 indicated that they had made considerable further progress in terms of entrepreneurial activities, including major investments in some areas and contraction where necessary of other activities.

Their most significant investment in 2007 was in fish farming, with the area increasing from 4 sao to 20 sao. This had been achieved in part by swapping 5 sao of allocated rice cropping land for another 5 sao of poor rice land held by other farmers. This poor rice land had approval for conversion into aquaculture. In addition, they had successfully bid for 5 years use rights of a further 5 sao of land that was part of a commune farm development program. They then spent 25 million VND on building ponds and another 12.5 million VND on stocking the ponds.

A small pig raising activity purchasing and growing-out five weaner pigs per cycle was expanded in 2007 to 70 pigs. However, on account of a subsequent price decline this enterprise was reduced in 2008 to 30 pigs. Despite being of limited profitability, the manure was important for the fish raising.

The duck raising enterprise was reduced in 2007 and 2008. This was in part because, with the shift towards the second rice crop being a regenerative rather than a planted crop, there were reduced opportunities for ducks to feed in the paddocks. In addition, the family now had less rice land on which to run the ducks.

In 2008, one of their sons returned from Malaysia where he had been working as part of a labour export program. The family invested in land and developed an auto garage and shop for auto parts. The investment was 270 million VND.

It is apparent that the economic development path of household CT1 was triggered by institutional change associated with the co-operative and initial opportunities starting about 1996 with the gaining of use rights over 20 sao of additional land. More importantly, the family had the skills and knowledge to accumulate capital through duck raising in association with this additional land, and then to use this capital to underpin a range of new activities. They showed an ongoing pattern of entrepreneurship, moving in and at times out of activities as economic conditions changed, and at times taking considerable risks. Their own capital was augmented with borrowed funds. Arguably, it was the initial knowledge and skill set in duck raising, combined with an entrepreneurial attitude, and an ability to identify and grasp new opportunities, that allowed them to stand out from the other households. They were also able to develop relationships with commune leaders who might otherwise have constrained the development path.

### **Case CT2**

The family of CT2 is classified as a rich household even though they are still young, with the husband and wife both born in 1971. The two main workers are the husband and wife with some support from the husband's parents. They have two children born in 1994 and 1997.

This family were allocated 10 sao of rice land in 1993 for 20 years, based on 5 family members at that time. The rice land was in 9 plots. They were also given permanent title to 4 sao of residential and garden land.

The husband has an intermediate veterinary certificate and was trained in pig insemination. From this work with pig farmers, the family identified that there were commercial opportunities to raise pigs and in 1999 they used their savings plus some borrowed money to build a pigsty at a cost of 20 million VND. This allowed them to then raise 40 pigs per four month cycle.

Given the scale of their pig raising enterprise, they had to purchase industrial pig feed. They were purchasing this from outside the local district, and identified an opportunity to purchase additional feed from their providers and then sell this feed to other farmers in the commune. Accordingly, in 2001 they purchased 200 sq metres of residential land alongside National Highway No1 for 40 million VND and spent another 10 million VND constructing a shop on this land.

In 2005, the CT2 family swapped 6 sao of their rice land for 6 sao of other rice land that could be developed for fish farming. Then in 2008 they swapped their remaining 4 sao of rice land for another 6 sao of land that could be used for rice-fish intercropping. This agreement included paying 200kg per sao of rice to farmers who had swapped rice land. Associated with this, they shifted their pigsty from old garden close to the fish ponds because manure from the pigs is a key input to their fish farming.

This family also developed duck raising and chicken activities about this same time. More recently the duck raising has been replaced by swan raising.

From 2005 through to 2008 their trading activities expanded to include fish feed. Given that they had to purchase their own piglets, fingerling fish and chickens from outside the district, they also subsequently moved into supplying these services to other members of the commune.

By 2008 they had expanded to become wholesalers as well as retailers, selling 1.5 tonnes of feed per day at a daily profit of about 250,000 VND. Associated with these changes, the financial complexity of their operations had also increased. Typically they were carrying about 300 million VND of credit owed to them by their customers. They themselves had debts of about 200 million VND to the bank and to their suppliers. In 2008 they built a house for 250 million VND. The family had also further developed their fish ponds to eliminate the flood risk. Their total capital was estimated at this time at about 400 million VND.

By 2008 the family was employing one full time worker to deliver the feedstuffs to farmers. All other work was undertaken by the family, who were very busy. The produce from their own farm production activities was normally sold at the farm to collectors, mainly from Quang Binh Province, but in the case of pigs also to a large scale buyer from Hue City which is about 130km distant.

As with CT1, the development path of household CT2 can be characterised as being driven by entrepreneurial activities and early identification of investment opportunities. Their production activities remain diverse, but there are increasing elements of specialisation with much of the focus by late 2008 being on the non-farm trading business.

### **Case CT3**

The CT3 family is a middle income household according to the commune's classification. They have three children but all of them are still being educated. The husband and wife are the two main workers in their family. For considerable parts of the year they are underemployed.

In 1993 this family was allocated 9 sao of rice land in 14 plots. In 2004 this was consolidated, as part of provincial program, into 4 plots with no overall change in area. In addition they have 2 sao of residential and garden land.

The family were able to acquire two additional areas of land. These were 3 sao of reclaimed land near the sand dunes of poor quality and 4 sao of auction land. This auction land is under the authority of the commune and comprises 5% of total agricultural land within the commune. It is land that was purposefully not allocated in 1993 to individual families under Decree No 64, but retained to be subsequently allocated, typically for periods of about 3 years, as the commune saw fit. Given the limited availability but high demand for this land, the rent was high at 60kg per sao. In 2008 the family lost access to this land and so their available rice land reverted to 9 sao.

Although the CT3 household had a diverse range of activities, these were all undertaken with limited scale and using traditional methods. In 2006 they had a small pigsty (10 sq metres), three sows and one cow. By 2008 the number of sows had declined to one. They had a small fish pond, first developed in 2001, but it was not well managed and they had suffered significant losses. They had never borrowed any money. They consumed all of the rice that they produced. The pig production relied on feed that they grew themselves. Similarly, no industrial feeds were purchased for the fish. The income from pigs and fish was in part used to pay for the inputs for their rice crop. Their one cow was fed on natural grasses. They had owned cattle since 1998 but had not been able to expand their cow numbers because of the need to sell progeny for their children's education.

The CT3 family was struggling to maintain their financial position, and were at risk over time of becoming a poor family.

#### **Case CT4**

According to the Chairman of the commune, the CT4 family was an upper middle household. They had 5 adults in their family but one was a university graduate and had employment at the district radio station. Therefore, there were 4 workers in their family in 2006. This is a large number of workers for one family. In 2008, their two daughters married and left the household. However, they still assisted with some work.

Under Decree No 64, 9 sao of rice land were allocated to this family. One sao of poor rice land was converted to a fish pond in 2005. In addition, they were able to use 5 sao of rice land allocated to another family. Their informal lease was on an annual basis and was rent free. Being able to access land in this way was unusual in this commune.

The key characteristic of this family was that they obtained most of their income from growing vegetables. They did this on 2 sao of garden land that was previously used for sweet potatoes and cassava crops. They began this conversion to vegetable crops in about 1996 but it was only in 2001 that the vegetable growing became commercial. The conversion of the land from carbohydrate-based subsistence food crops was linked to increasing productivity from the rice and hence increased food security. This allowed the family to take advantage of an opportunity to grow vegetables for the market. They have further invested in a net closure system for pest protection.

The crops that they grew include coriander, shallot, mint, houttuynia, Chinese cabbage, bitter melons, cucumber and some other herbs. Most crops took 30-45 days to grow but others such as Chinese cabbage could be as little as 7-10 days. Increasingly, they were trying to grow crops 'out of season' to get increased prices. However, the choice of crops is determined not only by profitability but the need to supply their buyers with a range of crops.

There were three main types of buyers of their vegetables. One was nearby restaurants on National Road No 1. These restaurants required fixed volumes and high quality standards. The CT4 family delivered directly to these restaurants using their motorbikes. The second group of buyers were middle men who made their purchases at the garden. The third source of buyers were local market retailers. The family was aware that prices were higher in the larger urban markets but they had not yet established relationships with buyers in these markets.



A key input to the vegetable operation was pig manure. Although they made little profit from the pigs, they continued with them as a small scale operation of four porkers per four month cycle, with the pigs fed mainly on crop wastes.

### **Case CT5**

The CT5 family were officially classified as a poor household in 2005 but they escaped from of poverty to become a middle level household in 2006. They had three children but two of them could not find jobs at the commune, so in 2004 one went to Lao and the other went to Ho Chi Minh City to find jobs.

Rice is the traditional livelihood activity of this family based on an allocated area of 11 sao. However, their situation changed in 2005 when one of their absent children was able to remit 10 million VND. They used this to develop a pigsty of 20 sq metres and this gave them the capacity to raise 24 porkers per annum. They achieved high growth rates and high profitability using a combination of industrial feed, and also sweet potato and cassava from their garden land. Previously, these crops were used for their own consumption.

The profits from the pig raising allowed them to commence growing spring onions in 2007, and from this they were able to earn a net income of 6 million VND from 4 sao. A further important change occurred in 2007 with the allocation of 7 sao of aquaculture land from the commune under the 'big farm development program'. This land was allocated to them for 50 years. Developing fish ponds cost 20 million VND and stocking with fish another 16 million VND. Linked to this, they also expanded their pig raising by building new facilities close to the fish ponds, and with a capacity of 160 porkers per year.

A further major development was the commencement in 2008 of a feed trading activity. This enterprise was developed based on capturing opportunity when they expand pig raising and buy feeds for their pigs. By October 2008, they were trading 1 tonne of feed per day and earning 400,000 VND per day from this. To finance these operations, for which they typically had receivables (money owing to them) of 100 million VND, they borrowed 150 million VND, in part from the Bank for Agriculture and Rural Development and with support from the provincial 'big farm development program'. During 2008 their two children came back to the commune to assist with the various production and business activities.

The development path undertaken by CT5 between the first interview in 2006 and the second interview 22 months later was remarkable. It is apparent that the development was triggered by the initial remittance of 10 million VND from one of their children.

### **Case CT6**

The CT6 family comprises a husband born in 1944 and a wife born in 1952. Their family includes one unmarried son who had moved to Vung Tau city in search of work. For many years they had been classed as a poor family.

The family was allocated 9 sao of rice land in 1993 under Decree No 64. However, some of their family subsequently married and 5 sao was been separated off for them, leaving only 4 sao of rice land. They farmed this with the support of their children. They also had 2 sao of reclaimed land near the sand dunes and 1.5 sao of garden. In 2006 most of their productive capital was two cows worth 6 million VND. Their original female calf was purchased in 2000 using a loan of 1 million VND plus some funds of their own.

This family lived a very simple lifestyle. They grew cassava and sweet potato to increase their food security as sometimes they had insufficient rice. They raised four pigs per year using food grown in their garden. They wished to improve their house which was very basic but they had no funds to do so. They were having difficulty meeting the medical costs for an illness of the husband. They do not know what they could do to improve their situation. Under Vietnamese custom, their children have a responsibility to support them. The local and central governments also provide some limited assistance to families such as this. This includes support for health insurance, and a small amount of money for special days such as New Year Festival and Independence Day.

## **6.5. Discussion**

The livelihood systems in this commune are based on rice production. The first priority in the commune, at least in recent decades, has always been to ensure food security. However, over time the food security situation has improved. This is largely because of higher yielding rice varieties, improved rice farming practices, and improvements in flood security of the rice lands. This has allowed much of the garden land to be taken out of human food crops such as

sweet potato, cassava and maize, which are less preferred than rice. These have been replaced either with the same crops for animal feed, or with vegetables as commercial crops. For the same reasons, it has become feasible to transform some of the poorer rice lands into fish ponds.

At the overall level of the commune, there is a scarcity of both land and capital but a surplus of labour. Much of this labour is unskilled except in traditional farming practices. Also, the supply of land is fixed apart from some limited opportunities to reclaim new agricultural lands. This has meant that opportunities to create significant wealth have been dependent on either access to capital, or else a special skill set that has allowed 'early mover' advantage into a new activity for an initial period of low competition, or a combination of both. These new commercial systems have included fish, pigs, ducks, chickens, and trading activities.

A key feature of the farming systems in the commune is the diversity of enterprises within each household. It is also apparent that there is a high degree of complementarity between these enterprises, with outputs from one becoming inputs to another. Pigs in particular play a key role in transforming crop and other wastes into manure that becomes a key input into the fish farming systems.

Given the community-based approach to rice farming, and the necessity for farmers with adjacent plots to use the same rice farming system, it is apparent that most rice farmers have benefitted from the new rice growing technologies. However, given the constraints on available land, there has been very little opportunity for individual households to achieve significant accumulation of wealth through rice growing. Accordingly, those families that have accumulated significant wealth have done so through activities other than rice.

Three alternative methods were identified for obtaining the initial finance needed to 'kick start' the development. One such method was to commence a new enterprise in advance of other people in the commune. On occasions, this resulted in quick profits during an initial period of minimal or no competition and these funds were then re-invested. A second method was to invest remittances from family workers who migrated temporarily to cities or other countries. Notably, this option appeared to be open mainly to young people who were more highly educated than their parents and who also had less family commitments. The third method was through loans either from a bank or from extended family. Once the initial

development had been ‘kick started’ then profits and further borrowing finance were able to sustain the development process, which often proceeded at a remarkably high rate.

It is apparent that there is increasing span of wealth levels developing within the commune. Clearly, there are some families who lack the resources and skills to break out of a cycle of poverty, and are being left behind in relative if not absolute terms.

Input and output supply chains have been developing rapidly. It is likely that this has been facilitated by the location features of this commune, being adjacent to National Road No 1 and also being in close proximity to the district centre. It is apparent that these supply chains involve both traders who come from outside the commune, and also the development of trading operations from within the commune.

Most of the farming systems are a mix of externally purchased and internally generated inputs. The institutional systems, in particular the role of the co-operative in relation to rice farming, means that most of the rice inputs come from external to the farm. However, lifestyle considerations and land constraints lead to most of the rice being consumed on the farm. In contrast, for the livestock and fish farming activities a considerable proportion of the inputs are generated within the farm, particularly for the smaller scale activities. The outputs from these activities, apart from the manure from pigs, are almost totally sold.

It is apparent that a significant farm labour market has yet to develop within this commune. Case study farms that were succeeding in the development process were doing so by employing more capital, and in the process using under-employed family labour, rather than generating cash employment.

\*\*\*\*\*

## CHAPTER 7

### **Sea fishing and coastal livelihoods in Ngu Nam Commune, Le Thuy District, Quang Binh Province, Vietnam**

#### **7. 1. Introduction**

The purpose of this chapter is to explore how rural people have been making the transition to commercial livelihoods in a coastal commune that has until recently had poor infrastructure. The case study commune is Ngu Nam in Le Thuy District of Quang Binh Province. The commune is characterised by dependence on sea fishing activities.

Vietnam has 3260km of coastline, of which 116km are in Quang Binh Province. Within Ngu Nam commune, there is 10.6km of coastline. The topography of the commune is characterised by sand and sandy dunes, and there is limited opportunity for agricultural activities. As with many coastal communes, there are major challenges associated with poverty, vulnerability and pressure on natural resources.

The chapter is structured in four sections. Following this introduction, the second section presents the natural, social and economic conditions of the commune. This includes how these conditions have been changing in recent years. The third section comprises six case studies of individual households of different wealth levels. In the final section, a discussion of the findings is presented. These findings then become input to the between-commune comparisons undertaken in Chapter 12.

#### **7. 2. Natural and social economic background of the commune**

##### ***7.2.1. Location and infrastructure***

Ngu Nam commune is at the south-east corner of Quang Binh province, and adjacent to Quang Tri Province. It is 50km north of the former demilitarised zone separating the former North and South Vietnam. It is bordered by the sea in the east, by Ngu Trung commune in the North, by Sen Thuy commune in the West, and by Vinh Thai commune within Quang Tri

Province in the South. The centre of the commune is 8km from National Road No 1 and about 35km from the district centre.

The commune is isolated from the outside by a long range of sandy dunes. Prior to 2000, the main route out of the commune was through 4-5km of untracked dunes and then 3km of foot path to reach National Road No 1. An alternative but more difficult route was to travel along the shore for 3- 4km to Vinh Thai commune in Quang Tri Province and from there to the National Road No1. Both routes could be travelled by motor bike but not if the motor bike was laden with commodities.

Until 2008, Ngu Nam was designated a disadvantaged commune by the national government and therefore eligible for government infrastructure support under Program 135. This program supports development projects such as irrigation, dams, roads, schools and electricity.

In 2000, a gravel road was constructed connecting the commune with National Road No1. An internal road system within the commune was then developed. This new road system permits motorbikes, cars and trucks to go anywhere in the commune. However, motorbikes and non motorised cycles are the main means of transport for local people. There is no public transport system within the commune. Many people still walk to reach National Road No 1 from where there is a public transport system.

The landline telecommunication system reached the commune in late 2004. By 2006, some 8% of households had a landline phone at a capital cost to the household of about 1 million VND, and many more families were planning to install one. By 2006 there was also mobile phone coverage for parts of the commune and some people were beginning to use these. In addition, a commune post office had been established.

Electricity first reached the commune in 2001. By 2005 it had reached all villages and hamlets within the communes, and most households had electric lighting.

The first commune market was built in 2006. In 2008 this remained small and only traded daily commodities such as vegetables and pork. Some of the villages within the commune had small convenience stores which sold a small range of non perishable items (for example cigarettes, salts, sweets, and beer). There were two district markets 25-30km distant and the provincial capital Dong Hoi is 60km distant.

There were no fish processing facilities within the commune apart from micro scale fish sauce processing and shrimp drying (natural sun). There was a minor processing factory about 25km from Ngu Nam at Cam Lien, but most fish were processed in factories that are 60-100km distant.

### ***7.2.2. Land and land use***

The topography of the commune is characterized by sand and sandy dunes. Arable land comprises only 6.1 % of the area (Table 7.1). This arable land has poor fertility and low water holding capacity. Accordingly, of the 60ha of agricultural land, 45ha is suitable only for crops such as sweet potato and cassava (typically one crop of each per year), leaving only 15ha adjacent to springs that can be used for crops such as groundnuts. According to the Chairman of the commune, the ability to expand the cultivatable area is limited to about 10ha. Also, this area is of very poor fertility and with current cultivation techniques it is difficult to convert and cultivate this land effectively. In 2007, the arable land available to the commune decreased when 36ha of mainly non arable land, but which also included 3ha of arable land suitable for groundnuts, was withdrawn from the commune by the government and allocated to the Titan company for titanium mining.

Most of the remaining land is sand dunes. Some of this has been planted in poplars (Duong Xi) to prevent movement of the sand dunes but these plantings are scattered and of various qualities. These were under the management of a government forest protection agency, but in late 2006 180ha of poplar forest was reallocated to commune. It was planned that about 137ha of this would be reallocated to households as production forestry and the remainder used for residential and conservation purposes.

Some cattle grazing was also occurring within the forest land, although the natural pastures were poorly developed. Cattle were also fed crop wastes.

In recent years, some households have built small fish ponds. These areas are located near springs.

As of 2008, land use certificates had not been issued to households, even for residential land.

**Table 7.1: Land use at Ngu Nam Commune in 2005 and 2008**

	2005		2008	
	Quantity (ha)	%	Quantity (ha)	%
<b>Total area</b>	<b>970</b>	<b>100</b>	<b>970</b>	<b>100</b>
<u>Agricultural land</u>	60.0	6.2	57.2	5.9
(-Rice crop land)	(0.0)	(0.0)	(0.0)	(0.0)
(-Other food crop land)	(45.0)	(4.7)	(45.0)	(4.6)
(-Other crops)	(15.0)	(1.6)	(12.2)	(1.3)
Aquaculture land	1.4	0.1	3.3	0.3
Other land	908.6	93.7	911.6	94.0

*Source: Yearly statistical books, 2005 and 2008 and annual commune reports*

In contrast to the land resource, the sea resources are more favourable. It is on these sea resources that the livelihoods are based. The coastal seas are shallow and so all fishing is classed as in-shore although it may be up to 30km from the coast. The fish migrate in and out of this area and fishing is therefore seasonal. The sea resource is common property and all local people have the right to use it without restriction. The local people believe that the stock of fish is declining. A previous attempt some years ago to promote off-shore fishing, facilitated by low interest government loans, was unsuccessful. These larger vessels could not land at the commune or even nearby communes because of the shallow water. The need to use distant ports led to management problems, cost problems, and business failure.

### **7.2.3. Socio-economic background**

In 2007 there were 558 households and 3018 people at the commune (Table 7.2). Data on age structure is not available. Most adults are only educated to primary level (5 years of education) or secondary level (7 years of education). In 2001, a secondary school for Grades 6-9 has been operating but there are no high school facilities (Grade 10-12) within the commune. The labour force (male and female) is approximately 900.

On many indicators there was a marked improvement between 2005 and 2007 (Table 7.2). In particular, the percentage of poor households reduced to less than half of the 2005 figure. Poor families were determined by the commune using the official poverty level for lowland rural communities of less than 200,000 VND (approximately \$US13) per month per person. There are contradictions between district and commune records as to the quantities of caught fish. The district records are the official figures. District records indicate that harvests increased from 515 tonne in 2002 to 741 tonne in 2007. The increase can be assumed to be largely due to more efficient harvesting methods.



The number of pigs and poultry increased markedly between 2005 and 2007 and there was also a considerable increase in the number of fishing boats

Fishing made up approximately 43% of the commune income in 2006 (Table 7.3). Cropping and animal activities were less than 20%. The ‘other’ category is predominantly wages earned by community members working and living outside the commune. Therefore fishing comprised more than 70% of the internally generated commune income.

**Table 7.2: Social economic indicators of Ngu Nam Commune from 2005 to 2007**

Year	2005	2006	2007
Population	2715	3014	3018
Households (hh)	532	557	558
Percentage of poor households in total	53.9	43.3	24.0
Workers in fishing	272	300	320
Estimated migrated workers	300	300	300
Area of cassava crop (ha)	45	45	45
Area of sweet potato (ha)	30	30	30
Cultivated area of groundnut (ha)	15	15	12
Number of buffaloes	0	0	0
Number of cows	253	300	354
Number of pigs	1800	2200	4254
Number of poultry	2263	2600	2990
Number of boats	164	166	231
Number of wooden boats	23	13	13
Caught fish production (tonne) –district records	680	679	741
Caught fish production ( tonne) –commune records	435	450	453

Source: District yearly statistics books, annual commune reports and estimation of commune staffs.

**Table 7.3: Commune Income in 2005**

CATEGORY	Value (million VND)	Percentage
Fisheries	3,443	43.4
Agriculture	310	3.9
Animal raising	1,150	14.5
Services	100	1.3
Fish sauce processing	13	0.2
Other income	2,923	36.8
<b>TOTAL</b>	<b>7,939</b>	<b>100</b>

Source: Ngu Nam Commune Annual Report in 2005

There are no commune records of income prior to 2005. However, prior to the road being built in 2000 there would have been minimal internally generated commune income, with the only external sales being small quantities of fish carried out on foot.

### Fishing Livelihoods

The sea fishery is common property, accessible to all families. However, custom dictates that fishing is only undertaken by men. There were 166 bamboo boats and 13 small wooden boats in 2006. Bamboo boats are preferred because of their maneuverability in shallow water and ease of storage in poor weather, but they have a life of only about five years (Figure 7.1). In 2006 there were five bamboo boat builders in the commune. Traditional propulsion was by rowing but by 2006 some boats were powered by 8-15 horsepower motors. Approximately 300 men were working as fishermen, often in pairs, and sometimes in larger groups, depending on the type of fishing.

There are no restrictions on methods of catching except that explosives are banned. Fishing occurs throughout the year but more intensively during the summer months when the weather is more settled. Fishermen depart for the fishing grounds in the late afternoon and return the next morning. Times of full moon are not favoured.

One type of traditional fishing net, called a 'bottom fishing net', looks like a funnel. It is used to catch squid, small shrimps and some other low value fish. The net is 20-30 meters in length, 6-10 meters in width, and 4-8 meters in height. It is fixed to the ocean floor at right angles to the ocean current and the fish are entrapped as they swim with the current. The second type of traditional net is a small gill net. It is used to catch small low-value fish such as anchovies, white herring, sole, and flying fish. It is 100 meters in length and 4 -8 meters in width. It is dropped and floated on sea and fish are trapped when they swim into it. The net would typically be hauled in after about two hours and reset for the changing currents. A bamboo boat costs about 5-8 million VND (US\$310-\$500) and an outboard motor (a recent innovation) another 7 million VND. The net costs about 2 million VND.

The small fish caught in the traditional way are consumed locally either within the commune or elsewhere within the district (i.e. sold to consumers in adjacent non-coastal communes), or else used for fish sauce processing, or as animal feed. The fish are typically worth 2000-5000 VND (US\$0.12-0.30) per kg, depending on season and species.

**Figure 7.1: Some main activities at the commune**



Fish sauce processing



Bamboo boats for fish catching

A more recent development is to fish for higher value larger species such as codfish, pomfret and 'Ho' fish. These are processed mainly for export to China although there is also a market in the larger Vietnamese cities. These species are seasonal and each has a different sized net requirement. Each net is typically about 1000 metres long and costs 3-4 million dong. This 'export fishing' has expanded rapidly since the road was constructed but many fishermen have been unable to make the necessary investment in nets. Also, motor propulsion of the boats is necessary. Fishing for these higher valued export fish is heavy work and it is necessary for the men to work in teams of two or three. The fish only migrate into the in-shore fishery for short periods and often this is associated with bad weather.

Prior to road access there were no specialist fish traders in the commune. Surplus fish were shouldered in a bamboo frame and transported by foot and then local bus to district markets. Volumes were very limited. Since the road availability there has been emergence of specialist traders from within the commune who purchase and transport traditionally caught fish to adjacent markets for a margin of about 1000 VND per kg.

The supply chain for the much higher value 'export' fish is more sophisticated and linked to credit provision by fish collectors. These collectors typically provide loans of about 2 million VND to set up groups of fishermen with the necessary equipment. All of these loans carry no interest, but there is an obligation to give the credit-providing collector first right to purchase the fish at the going price for the day. Telephone communication allows instant communication of changes in factory prices. Prices for pomfret range from 100,000 - 160,000 VND per kg, and for codfish 20,000-60,000 VND per kg depending on season, size and quantities, with minimal price differences between collectors. These fish must be transported as quickly as possible to the distant factories, typically by motorbike, but for larger quantities a truck may be hired from the destination city. By 2008 two collectors had set up refrigeration facilities within the commune.

### Animal Raising

Pigs are the main animal raising activity and this is undertaken by most households as a small scale activity. Most families buy weaners weighing 8-10kg and then grow these out over a period of four to six months. Some families have begun to raise weaners for their own use, or for part sale to neighbours. However, pigs are also sold to middlemen for slaughter outside the commune. In 2006 there were only 40 sows within the commune and this satisfied one third of the demand for weaner pigs, with the remainder purchased in from other communes.

Mainly local feeds such as sweet potato, cassava, low value fish products and food waste are used.

There were only 300 cattle in the commune in 2006, in herds of 1-10 animals. These are a small-sized Vietnamese breed known as 'Coc'. During the day they are grazed on natural pastures held in common. Animals have to be tended at all times to avoid crop damage and this tending is often undertaken by children. Cattle are mainly sold to generate cash for special needs or in emergencies. Most cattle are sold outside the local district. The price of beef is more than twice that of pork and is expensive relative to the income of local people.

### Fish Sauce Processing

Commercial fish sauce processing is a new activity with five women's groups commencing in 2005 and another three groups in 2006 (Figure 7.1). Each group has 5-10 members. Some groups have received financial support from the Women's Union and there is technical and marketing assistance through an international NGO project.

### Crop growing

Most crops are grown for consumption within the commune as either human food or animal feed. A small groundnut growing project has been developed under the guidance of an NGO. Although rice is the preferred staple food for the local people, there is no rice grown within the commune. Accordingly, commune members either purchase this from outside the commune or else rely on cassava and sweet potato. A typical consumption of rice in Vietnam is 0.5kg per day per person costing about 2000 VND (4000 VND per kg).

### Migrant Labour

There is insufficient work for people within the commune. This is particularly a problem for women who by custom do not partake in the fishing which is heavy work. Commune officials estimated that 300 workers have migrated to find jobs in the cities, particularly in southern provinces. Many of these are female and most are from the younger generation. Lack of education and training is a major problem and jobs can be difficult to obtain. Many of the migrant jobs are seasonal. These workers return home periodically.

A recent innovation has been for people to invest money to obtain long term use rights to gardens of perennial crops in other provinces. For rich people, the investment money for these gardens typically comes from savings from the fishing activity. Poor people can borrow

special funds for this purpose as part of a special programme directed at disadvantaged communes. In 2008, 123 households (more than 20% of the total commune households) had gardens at other provinces. These gardens are typically in southern or uplands and some of them have been purchased from ethnic minorities. Given that this was a new program, no information on its success or otherwise was available.

#### ***7.2.4. Institutional arrangements within the commune***

The commune is administered by the Commune People's Committee. The members are selected by the Commune People's Council, which itself is elected by local people. The Commune People's Committee is the organization that develops socio-economic development plans at the commune to submit to the Commune People's Council and upper levels of government. The Committee also supervises the implementation of these plans.

In 2006 there were 19 full time staff at the commune paid for by the Government. Professional skills and salaries are the two main issues that these staff face. Two staff received university degrees in 2008 through in-service training. Eight staff had intermediate certificates but mainly in politics, with only one in accounting and one in veterinary studies. The other staff had either primary certificates or no professional training. The average salary of these staff was 1 to 1.5 million VND per month.

The commune is divided into 5 villages and there are village staff who work as part time officials. Their duties are mainly to inform and instruct villagers in government policies and commune plans.

There are no cooperatives at the commune. Many years ago there was a cooperative but it was disbanded because it was not effective. However, voluntary work groups are popular at the commune. Fishing is mainly conducted by work groups of two to three people who are typically family members or relatives. In 2006, seven work groups had been established in fish sauce processing projects supported by an NGO.

In 2007, the provincial 'big farm development program' began to apply at the commune. This program supports farmers to establish larger scale of production activities through land allocation and credit. The program is administered by the commune with funding from district

and provincial budgets. Criteria relate to assessment of capability by commune officials and appear to be somewhat arbitrary.

### **7.2.5. Market supply chains**

Since the development of the roading system, there has been substantial development of supply chains for fish products. Some commune members act as collectors either for or independent of major agents<sup>4</sup>. In both 2006 and 2008 there were three main agents from outside the commune who focused on the export products. However, the only agent supplying inputs sold only petrol and diesel. To obtain fertilisers, breeding animals and seeds, farmers had to travel long distances to neighbouring communes or to the centre of the district, or else they had to work through middlemen. Similarly, they had to travel long distances to Dong Hoi City or other districts or provinces to buy fishing equipment.

### **7.3. Household case studies**

Six case studies of households were undertaken to obtain insights as to how commune households were making the transition to commercial agriculture. The six case studies were chosen to span poor, medium and high wealth households. The selection criteria were outlined in Chapter 5. The households are first compared in relation to their socio-economic structure, land resources, non-land capital, and number of farming activities. The productive activities of each family are then analysed in terms of their contribution net of cost to total family income. Costs include all externally purchased items and an imputed cost for internal transfers. Subsequently, each activity was analysed in relation to the extent to which outputs were sold for cash or used within the farm household, either for consumption or as inputs to other activities. Similarly, each activity was analysed for the extent to which inputs exclusive of labour were obtained externally to the farm. Given the marked contrasts between households, the individual case studies were then analysed to obtain insights as to the dynamics of change which had allowed some families to progress to high relative wealth whereas others had stayed in a state of poverty.

---

<sup>4</sup> Agents have fixed shops where they sell or buy products whereas collectors travel to farms to collect products.

### 7.3.1. Socio-economic structure

Household size for the six households ranged from four to six persons, of whom two to three were of worker status (Table 7.4). Two of the six households had family members living and working away from the commune for at least part of the year. Household NN6 had no adult male member. There was no obvious association between family size and wealth status. Education levels were consistently low in all households.

The capital measured in Table 7.4 is productive capital including boats and fishing nets, the purchase price of long term use rights to land in other provinces, motorcycles, breeding animals, pig containment facilities, cash for fish trading, and, in the cases of NN1 and NN2, credit supplied to trading customers. However, it does not include the values of allocated and reclaimed land as these values are not defined by markets. Some of the fishing equipment is owned jointly between households and only the household share of common capital is included. The variation of productive capital is more than 200 times between poor and wealthy and this clearly affects livelihoods. Wealthy households not only have superior productive equipment but also have cash to provide credit to other households to ensure priority of buying rights, and working capital to buy and store dry products.

**Table 7.4: Main resources of household case studies at Ngu Nam Commune in year 2006**

Index	Case NN1 R	Case NN2 R	Case NN3 M	Case NN4 M	Case NN5 P	Case NN6 P	Range
Family size (persons)	5	5	6	4	6	5	4-6
Age of household (hh) heads (h/w)	43/41	45/43	44/44	73/63	44/41	-/40	40-73
Education of hh heads (yr)(h/w)	7/7	7/7	7/7	7/7	7/7	-/7	7
Professional training	No	No	No	No	No	No	No
Available labour (persons)	2	2	3	2	2	2	2-3
Migrating workers (persons)	0	0	0	1	0	2	0-2
Active workers (persons)	2	2	3	1	2	1	1-3
Land per hh (sao)	7.6	4.4	1.0	2.0	1.6	5.4	1-7.6
-Allocated land	0.6	0.4	1.0	1.0	0.6	0.4	0.6-1.0
-Reclaimed land	7.0	4.0	0.0	1.0	1.0	5.0	0.0-7.0
Value of capital per hh (million VND)	202.2	73.4	32.6	30.3	14.2	1.0	1-202
Number of activities	8	6	4	4	4	4	4-8
Member of work group	Yes	Yes	Yes	Yes	Yes	No	Yes/No
Provider of loans to others	Yes	Yes	No	No	No	No	Yes/No

R= Rich, M=Medium, P=Poor; h/w: husband/wife; hh: household

The allocated land is primarily residential land. Although there is considerable variation in reclaimed land available to these families, this has only minor significance in terms of livelihood provision on account of its low quality.



### 7.3.2. Production and income

Gross income per household in 2006 varied by a factor of more 70 and net household income varied by more than 20 (Table 7.5). In terms of gross income, the two rich households (NN1 and NN2) and one of the medium households (NN3) stand apart from the other households on account of their fish trading activities. These differences are less pronounced in their net incomes because of the high cost structure associated with the fish trading. Net incomes for each activity are after allowing for imputed returns and costs where the outputs are transferred internally between production activities, and also for imputed values where the products are consumed rather than sold. The ‘other’ income includes income from a pension, from hired employment in southern provinces, and from gardens at other provinces.

There is a difference in scale in the fish trading activities of NN1 and NN2 relative to NN3. Both NN1 and NN2 provide interest free credit of 2 million VND to between 10 and 15 other households and this gives them preferential rights to the fish catch of these families at the current market price. The members of the NN2 household have given up fishing themselves because it is hard work and they can make more profit in other ways.

**Table 7.5: Production and income of household case studies in 2006 at Ngu Nam Commune**

*Unit: 1000 VND*

Index	Case NN1 R	Case NN2 R	Case NN3 M	Case NN4 M	Case NN5 P	Case NN6 P	Range
Total gross income per hh	602,838	688,767	238,200	76,550	25,467	9,500	9,500-688,767
Total net income per hh	137,320	120,159	71,941	63,400	14,760	6,230	6,230-137,320
Net income per active worker	68,660	60,079	23,980	63,400	7,380	6,230	3,115-68,660
Net income per family member	27464	24032	11990	15850	2460	1246	1246-27,464
Net farm income per hh	79,579	32,112	57,974	58,400	14,760	2,030	2,030-79,579
Net non-farm income per hh	57,741	88,047	13,967	5,000	0	4,200	0-88,047
<b>Net income from each activity</b>							
1. Fish trading	53,460	76,007	13,967	0	0	0	13,967-76,007
2. Fish catching	43,173	0	51,080	48,740	10,005	0	10,005-51,080
3. Porkers	6,983	12,810	6,494	0	1,515	750	750-12,810
4. Breeding sows	6,214	5,931	0	0	0	0	5,931-6,214
5. Cattle	0	0	0	9,060	2,640	0	2,640-9,060
6. Fish sauce	4,281	12,040	0	0	0	0	4,281-12,040
7. Sweet potato	1,200	600	400	600	600	730	400-1,200
8. Cassava	0	0	0	0	0	550	0-550
9. Groundnut	9,009	12,771	0	0	0	0	9,009-12,771
10. Other	13,000	0	0	5000	0	4,200	4,200-13,000

It is notable that both of the rich families have a range of income earning activities that the other households do not have. Their pig raising activities include breeding sows, whereas the other families buy their pigs as weaners. Also, both of the rich families have become established in fish sauce processing and groundnut production, whereas the other families have not achieved this. These are activities that have been facilitated through international NGOs. The failure of the poor families to become involved in these projects is likely to be through lack of capital and expertise, thereby not meeting the selection criteria of local authorities and NGOs who want to make sure their projects are successful.

The two medium wealth families are characterised by a substantial proportion of their income being earned from fish catching. In contrast, one of the poor families (NN5) earns only a modest income from fish catching and this is linked to poor productive equipment. The other poor family is excluded from fish catching by the absence of a male member.

Sweet potato crops are small scale and mainly provide feed for pigs. However, one poor household (NN6) relies on sweet potato as the main food.

### ***7.3.3. Agricultural commercialisation***

As explained in Chapter 5, commercialisation can be measured in terms of both outputs and inputs. The output factors reported here are a measure of the extent to which outputs are sold for cash rather than used within the household, either for direct human consumption or as inputs to other production processes. In regard to inputs, land does not in general have a market value and hence there is no imputed land cost. Also, labour is a non scarce resource and is neither measured by households with any accuracy nor costed. A high input commerciality factor is therefore indicative of high cash inputs relative to internal transfers from other production activities.

#### **Outputs**

The overall level of output commerciality is very high for all farmers (Table 7.6). The reason it is high even for the poor farmers is linked to their need for cash to purchase rice as the staple food.

The output from fish catching has a relatively low commerciality factor for two of the households but is high for other households. This is because two of the families both catch

and trade fish, and some of their own fish are therefore internally transferred. Similarly, the reason that the pig breeding activity (sows) has a relatively low commerciality index is because some of the weaners are sold, and some are transferred to the household porker raising activity. The only other crop with low commerciality is sweet potato and this is because it is grown in small areas for animal feed. With poor families it is also a significant human food.

### Inputs

On the inputs side it is only NN6 that has low commerciality (Table 7.6). This is because production activities in this household are all small scale and many of the inputs are internally generated.

**Table 7.6: Commercial orientation of household case studies at Ngu Nam Commune**

*Unit: %*

Commerciality for each activity	Case NN1	Case NN2	Case NN3	Case NN4	Case NN5	Case NN6	Range
<b>Inputs</b>	<b>91</b>	<b>98</b>	<b>85</b>	<b>100</b>	<b>88</b>	<b>40</b>	<b>40-100</b>
1. Fish trading	91.8	100	85	-	-	-	85-100
2. Fish catching	100	-	100	100	100	-	100
3. Porker	73	57	51	-	41	40	40-73
4. Sow	74	75	-	-	-	-	74-75
5. Cow	-	-	-	100	100	-	100
6. Fish sauce	100	100	-	-	-	-	100
7. Sweet potato	67	50	50	85	70	71	50-85
8. Cassava	-	-	-	-	-	40	40
9. Groundnut	79	60	-	-	-	-	60-78
10. Others	100	-	-	-	-	-	100
<b>Outputs</b>	<b>95</b>	<b>99</b>	<b>93</b>	<b>97</b>	<b>95</b>	<b>85</b>	<b>85-99</b>
1. Fish trading	100	100	100	-	-	-	100
2. Fish catching	60	-	70	98	97	-	60-98
3. Porker	100	100	100	-	100	100	100
4. Sow	55	67	-	-	-	-	55-67
5. Cow	-	-	-	100	100	-	100
6. Fish sauce	92	98	-	-	-	-	92-98
7. Sweet potato	0	0	0	0	0	0	0
8. Cassava	-	-	-	-	-	0	0
9. Groundnut	92	91	-	-	-	-	91-92
10. Others	100	-	-	100	-	100	100
<b>The ratio of net to gross income per hh</b>	<b>23</b>	<b>17</b>	<b>30</b>	<b>83</b>	<b>58</b>	<b>66</b>	<b>17-83</b>

The input commerciality index for porker raising is broadly similar for all households but the causal reasons are different according to scale of operation. The small operators have to buy the weaners but then provide most of the feed themselves from household waste or sweet potato crops. The larger operators transfer the weaners from their pig breeding activity but then have to purchase most of the feed given the larger number of animals.

### *7.3.4 Dynamics of change*

In the above sections, the analysis and discussion has focused on cross-case comparisons as of 2006. The focus in this section is to explore the underlying drivers and events that created the highly contrasting situation between the six case study households. The section draws on historical information collected during the first interview in November and December 2006 and on updated information collected in November 2008.

#### **Case NN1**

The NN1 household is classified at the commune as a rich household. The husband and wife each have seven years of education. In 2006 the husband was 43 years and the wife was 41 years. They had three school age children. The husband and wife were the two main workers. The husband and wife have lived as a family since 1990.

The original livelihood activity of this family was fish capture using traditional means. However, in 1997 they borrowed 20 million VND to replace their old boat and purchase a new fishing net to capture 'export' fish which could be sold for high prices to agents of seafood export processing factories. They were one of the first families in the commune to do this. Subsequently, this became their main fish catching activity, although they also maintained catching of low value fish for local consumption because of the different catching seasons.

This family began fish trading in 1990. Prior to 2000, they mainly traded fish in small quantities at the district market, 35km from their home. The fish were carried in simple containers (baskets and bamboo frame). When the road was built they bought a motorbike to transport products. They would also rent a small truck when needed.

The export fish market was very limited until the road was built and export processing factories established. Even then there were difficulties because the processing factories were located 60-100km distant. Once the telephone system was established in 2005 it became possible to get current price information from the various factories. Also, if volumes were sufficient the factory would send a truck. However, the supply of export fishes was limited and there was competition from other traders, so they have had to provide loans of 2 million VND to 10 -15 households in return for the right to buy their products.

Family NN1 had also been involved in dried small shrimp trading since the road was built in 2000. This development was also affected by increasing demand for dried shrimps as aquaculture feed. They purchased and traded about 15 tonnes per year. They were one of three shrimp traders (collectors) who were in competition. However, they admitted to colluding on a daily basis with the other traders to set a common price. This business required about 40 million VND of working capital as the dried shrimps needed to be accumulated for one to six months before on-selling. Even then, part of the payment to the supplying fishermen was delayed. The shrimps were sold *in situ* at the commune and collected by truck.

Their pig raising activity began in year 1985, initially with 2-3 porkers per 7-8 month cycle, that were fed on waste and by-products. Then in 2000, under the support of an NGO project, they commenced a pig breeding activity to provide piglets for both their and other families at the commune. At this stage they began raising five pigs per cycle, still using local feed. Then in 2005 they invested 2 million VND to build a new pigsty and expanded to 15 porkers per 4 month cycle. With this change they had to use industrial feeds. They maintained this production through into 2008. At that time they had no plans for further expansion because the prices they were receiving were volatile and they had been losing money on this activity in 2008.

A fish sauce processing activity was developed by the family in 2005. The family had some previous experience of fish sauce processing but it was small scale and the product was only consumed within their family. The new activity was conducted by a working group of eight women with technical support from a NAPA project<sup>5</sup>. Marketing, including bottling, labelling, registration and selling, was facilitated by a UNIDO project, which also facilitated establishment of the working group. The project also provided a loan of 5 million VND for the group to buy materials. The members of the group also contributed 0.6 million VND each to build 17 cement basins (Figure 7.1). In 2007 and 2008 their fish sauce was bottled and labelled under support of the UNIDO project but they had experienced difficulty in selling their products.

Similarly, the groundnut crop had been grown by the family for some years but the income of the activity was low because yield was low. In 2005, under support of the NAPA project, this crop was developed by new techniques and new varieties. Under this new system, yields were

---

<sup>5</sup> NAPA: Non Agricultural Production Activities project funded by ICCO

higher and there were two crops per year. In 2008, they were continuing to develop the groundnut crop.

They used to have several cattle but they were sold in 1999 when the children went to school and were no longer available for tending the cattle.

In 2005, 120 million VND were used to buy a cashew garden in a southern province. This activity brought them about 30 and 34 million VND of income per year in 2006 and 2007 respectively.

It is apparent that the economic development of NN1 was triggered by development of the transportation system in 2000. This initially opened opportunities for their low value fish trading. Then new demands for export fish and dried shrimps for aquaculture became drivers for the development of export fish catching and then fish trading. With support of NGOs, some non fishing activities were developed and these become considerable income sources. Income from these activities was then used to buy an industrial crop garden at a southern province providing further diversification.

### **Case NN2**

As of 2006, the NN2 family was classified as a rich household at the commune. They had three school age children. The husband and wife were aged 45 and 43 in 2006. They each had seven years of education. The wife had attended several workshops held by the district Women's Union and also by some NGOs. From these, she gained both technical knowledge and an understanding of basic business principles.

In 2006 they had 4.4 sao of which 0.4 sao was residential land and four sao was reclaimed land. In 2007, two sao of land that they had been using for groundnuts was withdrawn by the authorities and allocated to the Titan mining company who were developing a titanium mine. However, in 2007, under the big farm development program, which is a provincial program administered by the district and the commune, they were allocated 0.6 sao for the construction of a large scale piggery. This land was allocated to the family for 50 years.

The main productive resources held by the family in 2006 were a piggery, a motorcycle, fish sauce basins, three sows, cash for fish trading and credit provision. Their value in 2006 (before construction of the major piggery) was 73.4 million VND.

In 1990 the wife commenced trading fish from the commune to local markets, either in the Le Thuy district of Quang Binh or in the adjacent Vinh Linh district of Quang Tri. In about 2000, following construction of the road, the family gave up fish-catching to focus on new opportunities trading export fish. They used saved money to buy a motorcycle for 10 million VND and this made their trading activities much easier. Despite the focus on export fish, they still traded low value fish in the local markets. For the low value fish, if they had sufficient quantity, they would hire a small truck. For the export fish, the telephone became a key factor in communicating with the processing factories. However, competition for export fish increased with the arrival of traders from outside the commune. From 2003, to ensure a supply of export fish, they provided a total of about 15 million VND of credit to 7-10 households.

Pig raising had been undertaken since the 1980s, initially at a scale of 4-5 pigs per six month cycle using waste and by-products. In 2004, they invested 5 million VND to build a cement piggery to develop pig breeding and expand the raising of porkers. They developed the breeding (three sows) in 2003 following attendance at some pig raising workshops and because it was hard for them to obtain good pigs at the commune. The number of porkers was increased to 30 per annum with surplus weaners sold to other farmers. At this time they began using industrial pig feeds for some of their requirements. These were purchased from an adjacent commune 15km distant. In 2007, they were allocated 0.6 sao under the provincial 'big farm development program' to establish a large piggery. They also accessed 30 million VND of loan money and spent 45 million VND to build the piggery. In 2008, they had 10 sows and raised 100 porkers as well as selling weaners. By this time they were skilled in pig insemination techniques, which they had learned from attending a course run by NAPA, and they were achieving 12 piglets per sow. In 2008, they also changed their method of purchasing feed. Although it was still supplied by the same agent, they began purchasing by the truck load and paying half as cash and the remainder on credit, with the remainder paid after they sold their porkers. In 2008, their pigs were still sold to the same collector at a nearby commune, but this collector was now taking the porkers for slaughter to Hue City (approximately 130km south) rather than slaughtering in the district. Price fluctuations remained a challenge and in 2008 they lost money from their pig raising.

Fish sauce processing had been carried out in their family since the early 1990s but prior to 2005 it was only for their own use and of poor quality. In 2005 the wife attended some

training workshops on fish sauce processing techniques and marketing as part of a new project by UNIDO. Then a working group of 6 women was established, with each participant family investing 1 million VND. In 2007 and 2008, under the guidance of the UNIDO project, the bottling and labelling were undertaken but they still faced difficulties selling their product.

In 2006 they developed 3 sao of groundnuts (at different plots). This crop was developed with the support of an NGO project. The support included technical training and provision of high yielding varieties. This crop was developed on land that had been used to grow sweet potatoes. They developed the crop using plastic sheets to cover the land to maintain humidity. Although this activity created considerable income for their family, two of the three sao of the land was withdrawn by local authorities in 2007. The remaining one sao was converted to sweet potato so they could raise more pigs.

In 2007, they invested 110 million VND to buy a coffee garden in the upland Khe Sanh district of Quang Tri. This earned 30 and 50 million VND of income per year in 2007 and 2008 respectively.

It is clear that the initial movement in their economic development was focus on fish trading activity and gave up fish catching activity. This was supported by development of new road, telecommunication and then increase of demand on export fish and feeds for aquaculture. The income from these activities began to allow them to diversify activities beside supports from NGOs and government.

### **Case NN3**

The NN3 family was classified as an upper middle household at the commune in 2006. There were six members in the family, with three of the children at school. The working members were the husband, wife and one daughter. Women are not involved in fish catching and the husband could not fish by himself, so he was working with two of his younger brothers who were married and had their own families.

The land resource of this family was very limited. They had one sao of garden of which nearly half was used for their house, ground and entrance (path) and the remaining 0.5 sao was used to grow sweet potatoes. They could borrow garden land from other people to grow additional sweet potatoes but this was poor quality land.



The value of shared capital between the three families for fish catching was 32.6 million VND in 2006. In 1999 they began to build up their supply of nets for the export fish, using savings over time to increase their range of nets. After the road was built in 2000, the NN3 family decided to buy a motorcycle to support their travelling and fish trading. Their brothers' families also bought motorcycles in 2003 and 2004. A new bamboo boat was built in early 2006.

Fish catching was the traditional activity in this family. However, during one period in the late 1990s they stopped catching fish because they could obtain more income from fish trading. They recommenced fish catching in 1999 but with a focus on export fish. However, fish catching is hard work, and so in 2008 the NN3 family transferred all of their equipment to the brothers' families and opened a shop. This was in response to observations that people from other regions were starting to come to the commune for swimming and relaxation at the beach.

The NN3 family were the first family in the commune to open a shop for tourists. In their first summer (2008) they achieved a net income of between 100,000 and 200,000 VND per day from selling food and drinks. The drinks were obtained from outside the commune and the meals they provided were local fish. Local people also purchased some food and drinks. However, income was very low in the winter season.

This family commenced fish trading in 1993 and until 1999 this was undertaken by the husband and wife together. When they recommenced fish catching in 1999 the trading was undertaken by the wife and the brothers' wives. During the period they traded alone they mainly traded fish from the commune to local markets. Thereafter, they combined the trading of low value fish and export fish, with the main focus on export fish. Unlike some of their competitors, they did not provide credit to other households who undertook fish catching. This limited their ability to obtain an adequate supply of fish for trading.

Pig raising was a traditional activity for this household but for many years it was only 2-3 pigs per 6 month cycle. In 2004, their daughter left high school and became available as a worker, so they invested 1.3 million VND to develop a cement pigsty to increase the scale to 4-5 pigs per cycle. The growing cycle was reduced to 4 months using mainly local feeds they produced. They were having difficulty obtaining good piglets, so in 2008, they began pig

breeding with two sows and support from the decentralized poverty reduction project funded by IFAD. However, they were still developing their insemination techniques and one sow only achieved six and the other ten piglets in their first litters.

#### **Case NN4**

The NN4 household was classed in 2006 as being of medium wealth. The husband was aged 73 at that time and his wife was 63. The husband was a commune officer from 1965 to 1983. They had three children. Their daughter (nine years of schooling) had migrated to a southern province because she could not find a job at the commune. The oldest son was married and lived separately. The second son was therefore the main worker in their family.

The NN4 household had two sao of land in 2006 but the quality was not good. According to the husband, there were no opportunities to increase their land as almost all arable land had already been reclaimed.

Fish catching was the traditional livelihood activity in this family. In 2005, they invested 30 million VND to buy a new bamboo boat and fishing net. To finance this they borrowed 15 million VND and sold some of their cows. This was in conjunction with both his sons who then worked together. However, in 2007 the younger son decided he wanted a change of lifestyle and left for Saigon where he commenced work in a fish processing factory. The father had by this time stopped all fishing himself except for some hook fishing which was light work. Accordingly, the older son then had to work with other fishermen. By 2008, the family had repaid their loans.

Cattle raising in this household began in the 1990s, when the price of cows was high, and was based on natural grass growing amongst the sand dunes. The activity expanded by natural increase until the herd reached 12 head. However, their children who provided the labour grew up and the supply of natural grass available decreased. Also, they needed capital for the bamboo boat and fishing net, so in 2006 their herd was decreased to seven. Cattle prices had declined because of the presence of foot and mouth disease in some nearby communes and this restricted cattle transportation to and from Ngu Nam commune. By 2008 the herd had been further reduced to three.

In 2008, they invested two million VND to build a piggery, but with planned production of only two pigs per cycle and all feed being produced by the family.

This family had additional income from several sources. The husband had a pension of 4.8 million VND per year from his time spent as a commune officer. He was also entitled to free health care. In 2006 the daughter was sending back 0.5 to 1 million VND per annum to assist the family. By 2008 she was married and not in a position to send further money. The son had also married and was not able to support his parents.

Living expenses for food were about 18 million VND per year (50,000 VND per day). In addition, they spent between 7 and 8 million VND per year on weddings, parties and ceremonial offerings. It was only recently that they had been able to afford this and it had created much closer relations with neighbours and friends.

### **Case NN5**

In 2006 the NN5 family were classified as a poor household. The husband and wife were aged 44 and 41 respectively and there were four children aged between Grade 2 and Grade 9. At that time they had 1.6 sao of land of which 0.6 sao was garden and residential, and one sao was reclaimed sand dune land.

In 2006, they had 14.2 million VND of productive capital, most of which was associated with fishing (Table 7.7). They also had substantial debts. These included a 4 million VND loan taken out in 2005 from the Womens' Union for health expenses. This loan carried an interest rate of 5.5% per annum. They also had a debt of 3 million VND from neighbouring farmers for the purpose of purchasing a fishing net. This loan carried interest at 2.5% per month.

Although fish catching was their main income activity, the income returns were low. This was linked to an inadequate supply of nets. In 2005 they joined with two other households to buy a one third share in a Ho fishing net. It is only at some times that the Ho fish appear and so they used this net about 10 days per annum over a four month period. By 2008 this family had ceased Ho fishing because the husband said that the work was too hard, and also that it had to be undertaken in bad weather. Instead, he was now focusing on squid fishing (by fishing poles not by net) which was lighter work, which occurred in good weather, and which he could do by himself. He had purchased a new bamboo boat for 8 million VND. He was also undertaking, as part of a group of 5 people, some night fishing using lights to attract the fish. This occurred from February to August.

**Table 7.7: Productive Capital of Household NN5 in 2006**

<b>Equipment</b>	<b>Value ( million VND)</b>
Fishing boat	3.0
Bottom fishing net	2.0
Boat motor	2.3
Ho fishing net (1/3 share)	2.3
Cow barn (10 sq m)	0.2
Cattle	4.0
Piggery	0.3
<b>Total value</b>	<b>14.2</b>

In 2001 NN5 commenced raising cattle, initially through a share farming method where another family supplied the cattle (initially one animal) and NN5 contributed the labour for a 50% share in the progeny. By 2006 they owned one cow and two progeny, and by 2008 the total was four. The cattle raising had accumulated capital wealth rather than income, except for 1 million VND for a slow-growing calf sold to a neighbouring commune. Their children played a key role in looking after the cattle both before and after school.

Pig raising was also a traditional activity of this family. However, they only raised two pigs per cycle using local feedstuffs, with two cycles per year. In 2008, they spent 0.7 million VND on improving the pigsty with a cement floor but did not change the scale or method of their operations.

This family sometimes struggled to have enough money to purchase rice and had to rely at times on sweet potato. In 2006, they were spending about 20,000 VND per day on basic foodstuffs (approximately 7.2 million VND per annum), comprising about 50% of their family income. They had electricity for lighting at 36,000 VND per annum but not for rice cooking which would be an additional 192,000 VND per annum. Instead they cooked using leaves and dead branches of poplars.

Education expenses were 2 million VND per year. Social obligations within the community, relating to worship and partying, were costing about 1.1 million VND per annum, including 500,000 VND at the time of the TET festival. The remainder of their income was used primarily for interest and debt repayment. In recent years they had not purchased any furniture for their house, or undertaken other discretionary expenditure apart from their social obligations.

### **Case NN6**

The NN6 family used to be a middle level income family but following the death of the husband in 2000 their economic position declined. This was linked to the family being excluded from fishing because this is only undertaken by males. By 2006 NN6 was classified as a poor household. Their cattle had been sold for income and their fishing equipment had also been sold.

In 2006 the household comprised one adult female aged 40 and her four children. The oldest daughter (16 years) did not go to school because there was a lack of money. She undertook housework for relatives. Another child had been sent to a government orphanage in the provincial capital for children without parents. This too was because of inadequate money to support the child. The mother retained responsibility for looking after her remaining two children aged 7 and 13 years. A key difficulty faced by this family was that the mother was the only potential income earner but she had to combine this with child rearing responsibilities.

In 2006 they had 5.4 sao of land, of which 0.4 sao was residential and 5 sao was reclaimed. This reclaimed land was located amongst sandy dunes that were far from their house and in several separate plots. Half of this land was only suitable for cassava and sweet potato crops, and the other half was suitable for groundnuts and spring onions. However, it was difficult maintaining security over the crops from animals and theft, given the distance from the house.

The main income source was from casual hired employment in southern provinces, undertaken by the mother, usually for about 3 months per time, and twice per year. The work was weeding and harvesting cashew and coffee crops. The mother was able to earn 700,000-800,000VND per month in this way. During this time her sister looked after her children.

When back at the commune the mother attempted to earn income through growing cassava and sweet potato, and raising 2-3 pigs per cycle. Because she was away from the commune for much of the year, there was usually only one pig-growing cycle per year.

In 2006, with support from an NGO project, she started growing one sao of groundnuts. These had the potential to earn about 1.6 million VND per crop, with 2-3 crops per year. These returns were more than tenfold what could be earned from sweet potato and cassava.

However, there were considerable challenges, not only in securing the crop from theft and animals, but also in the requirement for new agricultural knowledge.

In 2006, NN6 was spending about 7 million VND per year (20,000 VND per day) on basic family expenses. Education costs were 309,000 VND per annum for one child. The other child was disabled and did not attend school. There was no surplus money for discretionary expenditure such as purchasing furniture. In addition, the mother had borrowed 3 million VND in 2005 for an operation and this still had to be repaid. Electricity was available but they only used it for lighting. The mother was hesitant to borrow for productive purposes because of the risk.

In 2008, NN6 borrowed 15 million VND from the bank through a special fund for disadvantaged communes, and borrowed an additional 15 million VND from her brother. This money was used to purchase a small garden in Khe Sanh district in Quang Tri province. Khe Sanh is an upland area close to the Lao border, and the land would probably have been purchased from an ethnic minority group. She had a relative in this area who would help look after the garden when she was back at Ngu Nam. As a consequence of the purchase, she was no longer travelling to the southern provinces for casual work.

#### **7.4. Discussion**

The commune is characterised by poor natural resources and distance from markets. The key development has been the building of the road linking the commune to National Road No 1, and the subsequent building of internal roads within the commune. Provision of telecommunications has also been important. Electricity has improved household livelihoods and also allowed refrigeration for the export fish industry. These infrastructure developments have been accompanied by a range of institutional policies, including financial support and loans from the provincial and central governments, together with several NGO projects, and more recently by facilitation of the purchase of perennial crop gardens in distant upland communities.

The infrastructural developments have led to the development of supply chains linking the commune to the outside world. These are more developed on the output than the input side.

The income activities of the commune fall into three broad categories. The first is fishing, and it is on this that the sustainability of the commune depends. Livestock and agricultural activities have been increasing in importance but are heavily constrained by land and fresh water limitations. Migrant worker incomes are a major source of commune income.

The overall commerciality indices for both outputs and inputs are high. These indices reflect the fundamental resource conditions of the commune, and the nature of the fishing industry, rather than the state of development of the commune. However, there is still a tendency for wealthy households to have higher commerciality indices than poor families.

Given the inability to grow rice in this commune, there are considerably higher cash needs for basic living than would be the case in a rice-growing commune. This income is mainly obtained from selling fish and pigs. Sweet potato and cassava are essentially non-cash crops used for feeding animals or for human food. Whereas pig farming is highly commercial on the output side, it is low on the input side. This is explained by the purpose in using non scarce labour, the small scale, and poor access to input markets.

The infrastructure and institutional policies have created an environment in which entrepreneurial activities have flourished. However, the rewards have been very unevenly distributed within the commune. Given the common property access to the fishing resources, the major determinant of fishing income has been access to capital to purchase the range of nets required for catching the high value export fish, together with the presence of an adult male member of the household. Both cases studies of rich families (NN1 and NN2) indicated that they had been early movers in becoming fish traders. They had also scaled up their pig activities early on. In contrast, the two poor households (NN5 and NN6) had struggled to break out of a cycle of poverty. In the case of NN5, a limiting factor may have been a lack of technical skills and poor decision making to make the best use of limited opportunities. However, for NN6 it was clearly a case of family misfortune linked to the death of the only male member. The two medium wealth families appeared to be on contrasting development paths. NN3 was a young family who had found a new entrepreneurial activity (operating a shop for tourists) whereas NN4 was an older family in a strong financial situation but in danger of slipping backwards.

A fundamental issue for this commune is that the fishery resource appears to be close to fully exploited and there may be significant issues related to sustainability even of current off-

takes. Therefore, major questions arise as to the next development steps for this commune. The NGO project related to fish sauce is clearly one example of value adding, but this is likely to be relatively minor. Expanding the groundnut activity is another possibility but natural resource constraints will be a major limiting factor. Similarly, there may be scope for high value crops of water lemon, cucumber, spring onion (as compared to sweet potato and cassava), but this too will be constrained by water resources to irrigate the sandy soils. Whether the commune has scope to become a significant beach attraction is unclear at this stage. Access to fresh water may be a constraint to all development activities unless ground water sources can be accessed. The potential of the titanium mining project is unclear but at this stage there is no evidence that it will be a major development.

It is notable that the NGO projects have been mainly associated with the medium and high wealth families rather than the poor families. This appears to be linked to the poorer families not having the capital resources to participate.

Migrant labour has been a key issue in relation to the capital resources brought in to this commune, and in dealing with a structural problem of underemployment. Until recently, this migrant labour went to the cities and southern provinces. The major constraint has been the lack of education and professional skills of the migrants and hence the difficulty in obtaining jobs. The more recent purchase of gardens in adjacent provinces, typically in upland areas where ethnic minorities are of importance, brings a new set of social issues to be considered. The long term implications of this are unclear.

\*\*\*\*\*



## CHAPTER 8

### **Market led development of vegetables and flowers in Quang Long Commune, Quang Trach District, Quang Binh Province, Vietnam**

#### **8. 1. Introduction**

The purpose of this chapter is to explore the transition to commercial agriculture in a plains commune that has good access to markets and is adjacent to an urban community. The chosen commune is Quang Long, which is adjacent to Ba Don town. Ba Don had approximately 8200 citizens in 2006 and is the second largest urban community in Quang Binh Province. The traditional farming systems in Quang Long were predominantly wetland rice. However, the commune is now also characterised by the production of vegetables and flower crops.

The chapter is structured in four sections. Following this introduction, the second section presents the natural, social and economic conditions of the commune. This includes how these conditions have been changing in recent years. The third section comprises six case studies of individual households of different wealth levels. In the final section, a discussion of the findings is presented. These findings then become input to the between-commune comparisons undertaken in Chapter 12.

#### **8. 2. Natural, social and economic background of the commune**

##### ***8.2.1. Location and infrastructure***

Quang Long commune is a plains commune in Quang Trach District in the north of Quang Binh Province. It borders Ba Don town and Quang Phong commune in the South, Quang Hung commune in the North, Quang Phuong commune in the West, and Quang Tho and Quang Xuan communes in the East. The commune is 0.5 to 1km from Ba Don Market.

Ba Don Market is one of biggest markets in the province after Dong Hoi City Market. Not only does it serve the surrounding plains region, it is also connected to, and serves, the upland region of Tuyen Hoa and Minh Hoa districts via National Road No 12A.

The internal road system within the commune is good. Cars and trucks can travel to all villages and hamlets of the commune. In addition, there are daily coaches that travel from Dong Hoi city to Ba Don town, and then on to Tuyen Hoa and Minh Hoa districts.

The telephone and electricity networks within the commune have been well developed for a considerable time. In 2006, the number of telephones per 100 people was more than 25 and 100 % of households had access to electricity.

### 8.2.2. Land and land use

More than half the commune land is unused sandy wasteland (Table 8.1). An additional area comprising almost 8% of the commune land is non productive conservation forestry. Approximately 15% of the commune land is used for residential purposes and associated gardens. This leaves less than 25 % of the land (approximately 200ha) which is used for agriculture. This agricultural area has been decreasing due to urbanisation pressures.

**Table 8.1: Land use at Quang Long Commune in 2005 and 2008**

	2005		2008	
	Quantity (ha)	%	Quantity (ha)	%
<b>Total area</b>	<b>907.0</b>	<b>100</b>	<b>911.6</b>	<b>100</b>
Agricultural land	202.8	22.4	195.0	21.4
-Rice crop land	94.0	10.4	90.0	09.9
-Other annual crop land	108.8	12.0	105.0	11.5
Forestry land	70.0	7.7	70.0	7.7
Aquaculture land	2.5	0.3	2.0	0.2
Non Agricultural land	134.7	14.9	145.4	15.9
Unused	497.0	54.7	499.2	54.8

*Source: Quang District yearly statistical books, 2005 and 2008, and annual commune reports*

The agricultural land is of three main types. Some of the rice land is too wet for other crops. This land also floods regularly in winter making it unsuitable at this time even for rice. A second category of rice land could be used either for rice or other crops. The third category of agricultural land can only be used for crops other than rice because of its sandy nature and lack of sufficient water.

### 8.2.3. Socio-economic background

In 2007 there were 1330 households and 5226 people at the commune (Table 8.2). The population pressure was therefore particularly high at more than 25 people per hectare of productive land. However, by 2007 only 40% of the households and 52% of the workers were fully dependent on agricultural activities. These figures had declined from 64% and 58% respectively since 2004. The decrease of agricultural households and workers was the result of development of industrial and service businesses.

A major source of employment is the trading sector in Ba Don. There are also two cement factories some 10km and 20km distant where some commune members work. Also, there have been an increasing number of labouring and factory jobs at Hon La Port which is approximately 30km distant.

**Table 8.2: Socio-economic indicators of Quang Long Commune from 2004 to 2007**

<b>Index</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Population (person)	5127	5139	5172	5226
Number of households	1206	1208	1271	1330
Number of agricultural households	774	763	548	539
Poverty rate of households (%)	-	23.4	16.2	13.1
Total workers (persons)	2619	2625	2670	2697
Workers in agriculture (persons)	1531	1470	1432	1416
Area of food crops (ha)	226	240	212	209
Area of vegetable crops(ha)	-	89	70	78
Area of groundnut (ha)	-	5	8	9
Number of buffaloes	64	89	43	45
Number of cattle	292	315	410	432
Number of pigs	2428	2539	2938	3003
Number of poultry	-	7150	6538	8348

*Source: Quang Trach district statistics 2005, 2006, 2007, annual commune reports*

Hired employment in cities or other provinces has been another strategy for local workers when they have not had enough employment at the commune. There are no official statistics of migrating workers, but commune leaders estimated that that by 2007 more than 300 commune workers had migrated to southern provinces in search of jobs. In addition, 14 workers left the commune to find employment in foreign countries in 2008.

The rapid reduction in poverty rate from 23% in 2005 to 13% in 2007 is indicative of the generally improving livelihoods in recent years.

Until about 1998, agriculture in the commune was dominated by rice and sweet potato crops which were grown for consumption within the commune. In more recent times increased rice yields have reduced the pressure to grow food crops. These increased yields have been due to improved irrigation which has allowed more multiple rice cropping, combined with better yielding and higher quality (better tasting) varieties such as B4, B6, AT77 and 540. Labour requirements have also been greatly reduced due to direct sowing, weed killers and machine threshing,

Reduced pressure for basic food crops of rice and sweet potato has allowed for the development of vegetable crops (cabbage, salad, coriander, tomatoes, cucumber, and spring onion), groundnuts and flowers. Statistics for vegetables have only been collected since 2005. Fluctuations in the area of vegetables between 2005 and 2007 are believed due to weather factors rather than indicative of a trend. Some of the vegetable growing occurs on land previously used for rice and some occurs within the residential gardens.

Flowers have been grown at the commune since 1995 but it is only in recent years that they have become important (Figure 8.1). There are no official statistics, but commune officials estimated the area of flowers at 3-4ha in 2007. Although the total area is small, flower growing is a highly intensive land use and by 2007 between 100 and 150 families were estimated to be participating in this activity, typically using considerably less than 1 sao per family.

The demand for flowers is for two purposes, and is concentrated in short and specific periods. One purpose is for worship and this is mainly for three days at the middle and three days of the end of each lunar month. The second purpose is for decoration and gifts. This demand focuses on teachers' day, women's day, and the lunar New Year festival.

Given the specificity of demand, considerable skill and technique is required to control the time of flowering. This is achieved through cropping calendars and artificial light. Accordingly, growing flowers is much more difficult than growing vegetables and not all flower growers are successful.

Animal raising activities are small scale. Although the number of cattle increased by almost 50% between 2004 and 2007, this number is limited by lack of pasture. Similarly, pig and poultry industries have expanded significantly at the commune but they remain small scale.

**Figure 8.1: Some main livelihood activities at the commune**



Vegetables



Flowers



Transporting

Most pig farming activity involves purchase of weaners and growing these out to porkers. A smaller number of families have breeding sows, with this requiring more technical skills than are required for porker production.

#### ***8.2.4. Institutional arrangements***

##### Commune Management

The Commune People's Committee (CPC) is the lowest level of governmental administration. The CPC is elected by the People's Council which is elected by commune members with guidance from the Communist Party. The functions of the CPC are to develop social and economic plans for the commune and to submit these to the Commune People's Council. The CPC also organizes, instructs, and implements plans, programs, and projects at the commune. Specialised staff are employed to help the CPC implement its functions. In addition, there are some social organisation units at the commune including a Youth Union, a Women's Union, a Farmers' Association and a Veterans Association.

The commune includes four villages (Truong Son, Thuy Son, Chinh Truc and Tien Phong). Each village has a head of village who takes responsibility for instructing people to implement tasks and plans (general management) that are assigned by the commune authorities. These village staff (heads of villages) are concurrently also agricultural co-operative staff.

In 2008, there were 19 full time and 7 part time staff at the commune level and 15 part time staff at the village level. Amongst the commune staff, four had university degrees by in-service training undertaken in 2006 and 2007. An additional four staff were pursuing university education in 2008. These qualifications are mainly in politics and none of the commune staff had a degree in agriculture. The salary of staff was on average 1.4 million VND per month in 2008.

##### Co-operatives

There are three agricultural co-operatives at the commune. Two co-operatives operate in one village each, and the third operates across two villages. Their main role is in managing the rice crops which require agronomic and irrigation co-ordination amongst the farmers.

Transformation of the co-operatives to work within the new co-operative law occurred in 2002. In the first period of transformation, the co-operatives provided seeds, fertilisers, pesticides, field security, land preparation, irrigation, electricity, and general management. However, according to the Chairman of one of these co-operatives, they no longer provide fertilisers and pesticides, and they have reduced the provision of seed services. These changes occurred because fertilisers and pesticides are now sold by many private agents at the nearby Ba Don town. In the case of seeds, the co-operative has remained involved in some cases when new seed varieties have been introduced to the district.

The co-operatives are also involved in determining the cropping calendar and rice variety selection, but it is more of a guidance role. The cropping calendar is initially developed by the District Economic Department (which includes agricultural functions) and then adjusted by the co-operative depending on weather conditions. Farmers can select a different cropping calendar if they wish, but for most of the wet land rice crops this would lead to poor outcomes because of interdependence between adjacent plots of land. Accordingly, any modifications by individual farmers are slight.

The co-operatives are also involved in developing plans for non rice crop and annual crop choices. These plans are subject to being approved by a meeting of the co-operative members, and also by the District Economic Department. Although farmers can make decisions about crop selection without permission from the co-operatives, this could expose them to lack of co-operative services such as irrigation that they might need.

### Land Tenure

The agricultural land was allocated to households in 1993 for 20 years under Decree No 64 of the Viet Nam Government. The area of land allocated depended on the number of people in households at the time of allocation and ranged from 1 to 1.2 sao per person, depending on quantity available at each village. The residential land, including adjacent gardens, was allocated for an unlimited time based on existing use rights and was typically less than 2 sao per household

Although the rice land was allocated to individual households, there has been a tendency for this to be considered as the property of the co-operatives. Hence, when some farmers have moved out of agriculture the land has reverted to the co-operative which has then leased it out

to other farmers. In some cases no rental has been charged. In other situations farmers leased their land directly to other farmers and have charged rental.

#### ***8.2.5. Market development***

Although there is no market at the commune, local farmers have good access to markets for their inputs and outputs. Agents for fertilisers, feeds, seeds, and pig sperm are available at Ba Don town. However, the nearest large scale pig breeding factory or station is 15-20km from the commune. Similarly, unlike some communes, there are no large scale chicken or duck breeding factories or stations (public or private) at the commune. Accordingly, some breeding of piglets and chickens is undertaken by individual farmers at the commune and some piglets and chickens are transported in from further away.

Given the proximity of Ba Don town, combined with the location of Ba Don relative both to Dong Hoi City and upland regions, there is strong consumer demand for farm products.

### **8.3. Household case studies**

Six case studies of households were undertaken to obtain insights as to how commune households were making the transition to commercial agriculture. The six case studies were chosen to span poor, medium and high wealth households. The selection criteria were outlined in Chapter 5. The households are first compared in relation to their socio-economic structure, land resources, non-land capital, and number of farming activities. The productive activities of each family are then analysed in terms of their contribution net of cost to total family income. Costs include all externally purchased items and an imputed cost for internal transfers. Subsequently, each activity was analysed in relation to the extent to which outputs were sold for cash or used within the farm household, either for consumption or as inputs to other activities. Similarly, each activity was analysed for the extent to which inputs exclusive of labour were obtained externally to the farm. Given the marked contrasts between households, the individual case studies were then analysed to obtain insights as to the dynamics of change which had allowed some families to progress to high relative wealth whereas others had stayed in a state of poverty.



### 8.3.1. Socio-economic structure

Household size ranged from 4-6 to six, of whom 1-4 were of available worker status (Table 8.3). Two of the six households had family members living and working away from the commune. These migrant workers are included both as household members and available workers, but not included as active workers. There was no obvious relationship between wealth status and either family size or number of workers.

The education level of the heads of households (both husbands and wives) ranged from 2-7 years, with a tendency for education to increase with wealth level. None of the household members had professional training.

Total land resources per household ranged from 2.9-12 sao. Land resources were lowest for the two poor families, both of whom also had only one active worker. None of the families had a high level of productive capital. One poor family had no significant productive resources, and the other poor family had only one sow and a basic pigsty.

**Table 8.3: Main resources of household case studies at Quang Long Commune in year 2006**

Index	Case QL1 R	Case QL2 R	Case QL3 M	Case QL4 M	Case QL5 P	Case QL6 P	Range
Family size	5	5	5	6	4	5	4-6
Age of hh heads (h/w)	43/37	48/39	26/21	69/68	61/59	-/49	20-68
Education of hh heads (h/w) (yrs)	7/7	7/7	3/7	5/5	3/7	-/2	2-7
Professional training (y/n)	No	No	No	No	No	No	No
Available labour (persons)	2	3	4	1	1	3	1-4
Migrating workers (persons)	0	0	1	0	0	2	0-2
Active labour (persons)	2	3	3	1	1	1	1-3
Land per hh (sao)	4.5	12.0	5.0	9.6	3.2	2.9	2.9-12
-Allocated land	4.5	8.0	3.0	6.5	3.2	2.9	2.9-8
-Rental & reclaimed land	0.0	4.0	2.0	3.1	0.0	0.0	0-4
Value of equipment per hh (million VND)	24.5	24.0	18.4	12.9	0.0	1.3	0-24.5
Number of activities	4	6	7	6	4	3	3-7
Co-operative member	Yes	Yes	Yes	Yes	Yes	Yes	Yes

R= Rich, M=Medium, P=Poor; h/w: husband/wife; hh: household

There was a tendency for the more wealthy families to be more diversified in their business activities, except QL1 who mainly focused on flower crops. All households were members of a co-operative.

### ***8.3.2. Production and income***

The total net income per family in 2006 varied by a factor of approximately 14 (Table 8.4). This income includes both cash income and the value of production consumed by the household. The income is also net of inputs (cash and internal transfers) but labour is not costed. For most families the family net income comprised 65%-80% of gross income. However, for two families this figure was less than 50% and this was linked to the particular activities that they undertook. For family QL1 this was caused by high inputs associated with sophisticated flower production, plus trading activities. For QL3 this was linked to high inputs for their thin-rice-pancake business. These activities are further discussed in Section 8.3.4. Net income per active worker varied by a factor of more than eight, and net income per family member by a factor of more than 17.

All six families were involved in rice production but at a low scale ranging from 2-6 sao. The market value of the rice was only 0.9-2.5 million VND per household. However, the production of rice is very important because it underpins the food security situation in the commune.

Given the low market value of rice, farmers have to develop other activities to support livelihood activities other than basic food security. The particular crops and activities selected depended on the capital, knowledge and experience of the family.

Pork raising was undertaken by three families, but only at a small scale of 2-5 head per production cycle, and earning only 0.4-1 million VND per household per year. One of the poor families had a single breeding sow.

All six families grew either vegetables or flowers or both. However, there were major differences in the strategy and methods of the two rich families compared to the medium wealth and poor families. The poor and medium wealth households selected vegetables that were easily grown, whereas the rich households tried to develop vegetables that were high priced in the markets. In addition, the rich farmers had much larger scale and used intensive methods of production with higher inputs. In regard to flower production, the rich farmers had invested in water pumps for irrigation and also in artificial lighting systems to control time of flowering. None of the farmers had glasshouses to assist production during poor

weather. All of the farmers grew their vegetables and flowers either in residential gardens or in fields close to their houses.

**Table 8.4: Production and income of household case studies at Quang Long Commune in year 2006**

*Unit: 1000 VND*

Index	Case QL1 R	Case QL2 R	Case QL3 M	Case QL4 M	Case QL5 P	Case QL6 P	Range
Total gross income per hh	239,480	98,800	125,343	39,720	10,763	9,920	9,920-239,480
Net income per hh	110,211	75,899	55,530	32,032	8,156	6,570	6,570-110,211
Net income per active worker	55,106	25,299	18,510	32,032	8,156	6,570	6,570-55,106
Net income per person	22,042	15,180	11,106	5,339	2,039	1,314	1,314-22,042
Net farm income per hh	92,411	75,899	8,490	25,432	4,556	6,570	4,556-92,411
Net non-farm income per hh	17,800	0	47,040	6,600	3,600	0	0-47,040
<b>Net income from each activity</b>							
1. Rice	1,061	2,192	826	2,517	958	900	900-2,517
2. Fish raising	0	4,211	0	10,725	0	0	4,211-10,725
3. Porker raising	0	970	570	400	0	0	400-970
4. Pig breeding	0	0	0	0	0	150	0-150
5. Cattle raising	0	2,690	0	5,310	0	0	2,690-5,310
6. Flowers	91,350	12,246	2,318	0	2,318	0	2,318-91,350
7. Vegetables	0	53,590	0	6,480	1,280	5,520	1,280-53,590
8. Groundnuts	0	0	1,020	0	0	0	0-1,020
9. Threshing service	7,000	0	0	0	0	0	0-7,000
10. Rice-wine refining	0	0	3,756	0	0	0	0-3,756
11. Thin-rice-pancake	0	0	37,540	0	0	0	0-37,540
12. Other	10,800	0	9,500	6,600	3,600	0	3,600-10,800

The fish raising, cattle raising and rice-wine refining activities were secondary activities developed in conjunction with other complementary enterprises. For example, QL1 raised fish in a pond created as water storage for irrigation. Cattle were raised primarily for preparing the land for crops. The rice wine processing activity of QL3 was linked to feeding the brewer's grains to their pigs.

The development of manufacturing and marketing thin-rice-pancake was the major income source for one medium wealth household. This activity used otherwise surplus labour and had helped this household to escape out of poverty.

There were diverse sources of other income. The QL1 household earned income from trading. The husband in QL3 earned 9.5 million VND from bricklaying whereas QL5 earned 3.6 million VND from hired employment. The husband in QL4 was a retired commune officer and had a pension of 6 million VND per annum.

### 8.3.3. Agricultural commercialisation

Commercialisation is measured here in terms of both outputs and inputs (Table 8.5). The output factors are a measure of the extent to which outputs are sold for cash rather than used within the household, either for direct human consumption or as inputs to other production processes. In regard to inputs, land does not in general have a market value and hence there is no imputed land cost. Also, labour is a non scarce resource and is neither measured with any accuracy nor costed. A high input commerciality factor is therefore indicative of high cash inputs relative to internal transfers from other production activities. In addition, the ratio of total net income to total gross income per household is measured. This indicator expresses the value created by the household in comparison with total gross income, with a high ratio being indicative of low purchased inputs.

**Table 8.5: Commercial orientation of household case studies at Quang Long Commune in 2006**

*Unit: %*

Commerciality of each activity	Case QL1	Case QL2	Case QL3	Case QL4	Case QL5	Case QL6	Range
<b>Inputs</b>	<b>100</b>	<b>72</b>	<b>88</b>	<b>67</b>	<b>96</b>	<b>41</b>	<b>41-100</b>
1. Rice	92	94	98	79	90	94	79-98
2. Fish raising	-	18	-	94	-	-	18-94
3. Porker raising	-	30	61	19	-	-	19-61
4. Pig breeding	-	-	-	-	-	2	2
5. Cattle raising	-	100	-	100	-	-	100
6. Flowers	100	99	96	-	100	-	96-100
7. Vegetables	-	84	-	58	100	50	50-100
8. Groundnuts	-	-	100	-	-	-	100
9. Threshing service	100	-	-	-	-	-	100
10. Rice-wine refining	-	-	100	-	-	-	100
11. Thin-rice-pancake	-	-	100	-	-	-	100
12. Others	100	-	-	-	-	-	100
<b>Outputs</b>	<b>99</b>	<b>94</b>	<b>89</b>	<b>79</b>	<b>85</b>	<b>77</b>	<b>77-99</b>
1. Rice	0	0	0.0	0	20	0	0-20
2. Fish raising	-	80	-	90	-	-	80-90
3. Porker raising	-	100	100	100	-	-	100
4. Pig breeding	-	-	-	-	-	100	100
5. Cattle raising	-	100	-	89	-	-	89-100
6. Flowers	100	100	100	-	100	-	100
7. Vegetables	-	99	-	96	99	95	95-99
8. Groundnuts	-	-	85	-	-	-	85
9. Threshing service	100	-	-	-	-	-	100
10. Rice-wine refining	-	-	92	-	-	-	92
11. Thin-rice-pancake	-	-	99	-	-	-	99
12. Others	100	-	-	100	100	-	100
<b>Ratio of total net to gross income per hh</b>	<b>46</b>	<b>77</b>	<b>44</b>	<b>80</b>	<b>76</b>	<b>66</b>	<b>44-81</b>

### Outputs

Output commerciality tends to increase with wealth level. This is largely because rice is the only activity where the output is largely consumed by the household. Because the rice crop makes up a much greater proportion of total income for poor rather than rich families, this becomes the key determinant of the overall link between commerciality and wealth levels. This is despite one poor family selling some rice to fund essential inputs. For the other families, any surplus rice tends to be used for feeding of animals.

Associated with pig raising there are people who specialise in slaughtering, who then sell the products within the commune. Hence, although households consume pork it is not necessarily from their own animals. With other activities the high level of commerciality is facilitated by the closeness of the commune to the Ba Don market.

### Inputs

On the input side most crops have high commerciality. Exceptions are pig raising for all four households that undertake pig raising, fish raising for one of the two households that undertake fish raising, and vegetable growing on two of the three households that grow vegetables. Input commerciality is linked to both scale of the particular activity and also to complementarity with other activities undertaken by the household, rather than by wealth level. A common reason for this index being low is the availability of surplus feed or crop by-products from one activity becoming an input to another. A second reason is animal manure being an input to crop activities.

The ratio of total net income to gross income varied from 44% to 81 % with QL1 and QL3 much lower with other households. This was caused by major input purchases for intensive flowers (QL1) and processing costs for the thin-rice-pancakes (QL3).

### ***8.3.4 Dynamics of change***

In the above sections, the analysis and discussion has focused on cross-case comparisons as of 2006. The focus in this section is to explore the underlying drivers and events that created the highly contrasting situation between the six case study households. The section draws on historical information collected during the first interview in February 2007 and on updated information collected in November 2008.

### **Case QL1**

Household QL1 was considered by the commune in 2007 to be a rich household. At that time the husband was aged 44 and the wife was aged 38. They had three children aged from 2-13 years. The husband and wife both had seven years of schooling to secondary level and no further education. As a young man, the husband spent several years in Da Lat (a southern highland city 800km distant) working as a hired hand where he learned aspects of flower growing.

The QL1 household had limited land resources. In 1993 they were allocated only 3 sao of rice land under Decree No 64, as at that time they had only one child. In addition, their existing use rights to 1.5 sao of garden and residential land were confirmed. In 2008, they invested 50 million VND to buy an additional sao of garden from another family to further develop their flower cropping activity.

Rice was the traditional livelihood activity in this household. Then in 1991 they began developing flower growing using the techniques the husband learned in Da Lat. They were the first household in the commune to grow flowers, starting initially with just a small area of their garden, but then increasing it to 1 sao.

When they commenced growing flowers, food shortage was still a big issue and the demand for flowers was very low. Some people thought he was a 'mad man'. They mainly grew Taiwan chrysanthemum in a range of colours, chosen because of its suitability for a range of purposes related to worship and festivals. Also, it was a plant they knew from Da Lat from where they purchased the seedlings and pesticides. The crop took 2-6 months to grow, depending on the season and artificial lighting. Initially they sold their flowers in the Ba Don Market.

In 2002 they began to convert 1 sao of rice land to flowers. They invested 1 million VND in a small irrigation pump, and subsequently purchased a motor bike to assist with marketing. In 2005 they invested 1 million VND in a telephone line to assist with their trading. Then in 2008 they further expanded their operation to 3 sao using the garden land purchased that year. By 2008 they were selling their flowers in Dong Hoi Cy as well as Ba Don, and also selling in some upland districts.

Over time other households in the commune copied their flower growing activity. This provided competition and at times led to lower prices. However, many of the new growers had difficulty with the technology required to produce flowers at the specific times of high prices. The QL1 family investigated growing alternative flower crops but in 2008 had yet to find an alternative that grew well in their conditions.

The entry of these new growers also created new opportunities for the QL1 household in supplying seedlings and pesticides purchased from Da Lat, and in trading the flower production from these households. They combined flower and vegetable trading using vegetables purchased from commune growers, and also from small local markets, and then selling these in larger markets.

In 2006 they purchased a rice threshing machine for 13.5 million VND with the expectation that they would use it for delivering service on about 40 days per year and receive a profit of about 3.5 million VND. However, in 2008 they sold this machine which they found to be insufficiently profitable, and invested 20 million VND in a half share of a tractor for land preparation.

It is apparent that the entrepreneurial path undertaken by this family was triggered by their first mover status into flower production. They were able to do this with limited initial capital but relying on their special knowledge obtained from previously working on flower production in Da Lat in the south. They built their business from a small base, and showed ongoing willingness to expand into other businesses such as trading and machinery contracting.

### **Case QL2**

Household QL2 comprised a husband, wife and three children. The husband was 49 years old in 2007 and the wife was 40 years old. The oldest daughter was aged 19 in 2007 and had stopped her schooling after 11 years. At that time she was working with her parents on their farm. However by 2008 this daughter had moved to Ha Noi for language training prior to becoming a foreign country migrant worker. The two youngest children were aged 9 and 1.

The QL2 household were considered by the commune leaders in 2007 to be rich in terms of both resources and income.

Besides 3 sao of garden that was allocated to their family after they got married and lived separately from their parents, in 1993 their family were allocated 5 sao of rice land under Decree No 64. Initially they struggled to produce enough rice for food as they had to sell some to pay for inputs. They quickly recognised that they could earn much more from growing and selling vegetables than from rice, and immediately commenced vegetable growing in their garden. Although they were allocated only 5 sao of rice land based on a family size of only three at that time, their allocation of 3 sao of garden and residential land based on existing use rights was more than for many households. Accordingly, they were able to rapidly develop 2 sao for vegetables. They were subsequently able to develop another sao of vegetables using rice land that was of poor quality for rice because of lack of suitable irrigation, but which was suitable for vegetables. Then in 2000 they were able to borrow another 4 sao of poor rice land from other farmers who had moved away from agriculture to trading activities. They did not have to pay any rental for this because of its poor quality. However, it was located near their garden, and some of it was suitable for vegetables. Accordingly, by 2007 they were growing 5 sao of vegetables, typically with two crops per annum. This was a large area compared to most vegetable growers in the commune.

The major vegetables being grown by household QL2 were Chinese cabbage, coriander, cucumber, shallots mint, tomatoes and houத்துynia ('fish mint'). About half of the vegetable income was from cabbage. They were selling all of their vegetables to about 20 retailers at Ba Don.

The QL2 household was able to develop their vegetable business with limited productive equipment. In 2003 they purchased a small irrigation pump and pipes for 1 million VND. Their most valuable productive asset was a motor bike valued at 12 million VND. They attributed their success to working very hard, and using their own labour which would otherwise have been underused. This is because rice growing requires little labour whereas vegetables are labour intensive.

This family commenced flower growing in 2000 following the observation that demand was increasing and that another household in the commune was making a good income from flowers. They used artificial lighting to control the timing of flowering. Initially they faced many challenges, but by 2006 regarded this activity as successful. However, it was of much less importance to them than vegetable growing.



Pig raising has been undertaken by this family since the early 1990s. Prior to 1996 they raised 2 -3 pigs per 6 month cycle. Then in 1996, they invested 3 million VND in a cement piggery to accommodate 10-15 pigs per cycle. However, in 2004 they reduced this activity to 3-4 pigs per cycle because of low profitability and competing demands on their time for vegetables and flowers. The reason for still maintaining some production was that they wanted pig manure for their vegetable crops. Also, pigs were able to be fed on waste and by-products from vegetable and rice crops. Similarly, cattle and fish raising activities were undertaken because of their complementarity with vegetable cropping rather than for their own profitability.

By 2008 this family had sufficient income to make two social visits to the husband's brother in a southern province, costing 4 million VND, as well as spending another 4 million VND on festivals. They were also saving 1.5 million VND each year for the proposed future university education of their younger children. They believed that demand for vegetables would continue to grow, and were investigating opportunities to develop an agency business for seeds, fertilisers and pesticides. They were also interested in further expanding their vegetable production activities. They recognised that this would mean hiring local workers.

It is evident that the success of the QL2 household was linked to their access to residential garden land that could be used for commercial vegetable production. The key attributes that they brought to this activity were foresight as to the nature of the opportunity and hard work. They then built on this by gaining free access to poor quality rice land that could be used successfully for vegetables and which other farmers did not want. They were able to achieve success with very limited initial capital. Their most significant early investment was in pig raising, and this helped initially to build their income, but they subsequently reduced this due to the increasing opportunity cost of their own labour.

### **Case QL3**

The QL3 household comprised three generations. In 2007 there was a grandmother aged 52, a son aged 27 and his wife aged 22, his younger brother who was working in a southern province, and a grandson aged 2. Although the grandmother looked after the grandson, she was also involved in pig raising and rice-wine refining activity. Therefore, the three active workers were the husband, wife and grandmother. However, in 2008, with their child now old enough for kindergarten, the grandmother moved to another son's family to look after a newly born baby.

In 2007 the family were classed by commune officials as being of medium wealth in terms of resources and income.

This family had only 2 sao of rice land under Decree No 64. This was because 6 sao of rice land held by the grandmother and her now deceased husband were split three ways between three brothers and their families. They also only had 1 sao of residential and garden land. However, in 2004 they were able to gain access to another 2 sao of rice land from farmers who had moved out of agriculture. Then in 2007 they obtained long term access to another 5 sao of rice land from the co-operative as a result of some farmers moving away from agriculture to work at the district cement factory.

The major income for this family in 2006 was from making and selling thin-rice-pancake. This was a handicraft activity his wife had learned from her family. They commenced this immediately after their marriage in 2003, initially making about 5kg of rice material per day but then increasing this to 14kg. This required an investment of 2 million VND for the pancake making equipment. From Monday to Friday the pancakes were sold direct to consumers at Ba Don Market, and on Saturday and Sundays at the slightly higher paying but more distant Hong Doi Market. The distant travelling was facilitated by purchasing a motorbike in 2006 from their savings in previous years. However, by 2008 they had stopped making the pancakes due to difficulty of accessing a reliable source of energy for running the small grinding motor, and instead had shifted to trading pancakes manufactured by the wife's family.

The second major source of income was from the husband working as a bricklayer for 20 days per month, and earning about 9.5 million VND per year from this activity. The family also had diverse but minor sources of income from rice, pig raising, flower production and rice wine refining.

In 2007 the family were developing 3 sao of bean production as part of a commune vegetable development project which provided free seeds. However by 2008 they had changed to spring onions when the bean project stopped providing seeds and other support. The change was also driven by the high price of spring onions.

Pig raising and rice wine refining supported each other to bring considerable income for the family. The development of these activities was driven by the free time of the grandmother. These activities stopped in 2008 when the grandmother was no longer available.

It is evident that the economic position this family achieved was based on specialist skills associated with thin-rice-pancake production and trading, and on the bricklaying skills of the husband. This was a young family. It was unclear as to whether in future they would be able to use these existing skills as a platform to raise their living standards further, or whether they would develop a new set of skills such as in vegetable production that would provide even better returns.

#### **Case QL4**

The QL4 household comprised three generations in 2007. The oldest generation were a couple, with the husband aged 70 and the wife aged 69. The husband was a former commune officer. There was a daughter aged 35 and three grand children, one aged 16 and the others of pre-school age. In 2007 the household was considered by the commune leaders to be a medium wealth household.

The main worker in the family was the 35 year old daughter. The older couple also contributed to gardening activities, and a grandson helped tend the buffaloes.

This family had 6 sao of rice land which was more than many families. Originally they only had 0.5 sao of garden, but in 2000 they gained access to another 3 sao of land which was suitable for reclamation as garden land, and they shifted their house to this location.

This family had a diverse set of production activities including rice, fish, pigs, cattle raising and vegetables. Although all of these activities contributed to household income, they were undertaken with modest success. As a former commune officer, the grandfather had a pension from the commune of 6 million VND per annum. The household lacked any particular skills that might assist them to achieve a higher income.

The family was vulnerable on account of the family structure. In 2008, the grandfather had health problems and had an operation costing 14 million VND. Half of this came from household savings and the other half came from his other children. The family had household furniture worth about 2 million VND. Their main productive assets were two buffalo worth

12 million VND. By 2008 the oldest grandson had left school and joined the army. There was some risk of this family drifting downwards into poverty.

### **Case QL5**

This family comprised a husband and wife aged 61 and 59 years of age in 2007. They had five children but only one daughter aged 16 was still part of their household. There was also a grandchild who in 2006 had just completed Year 2 at school. This family was officially classified by the commune as a poor family living in poverty.

The husband and wife were officially past working age (60 for men and 55 for women). The husband was also in poor health with a kidney disease. However, he was working 10 days a month for 30,000 VND per day. This provided approximately 3.6 million VND per year and was their largest individual source of income.

The household had only 2 sao of rice land plus 1.2 sao of residential and garden land. Previously they had 6 sao of rice land but 4 sao was given to the families of two of their children. They had no productive capital. Their education levels were low, with none of their children having completed secondary school. The youngest daughter who was still living with them had left school after 5 years of education. The husband had only three years of education and the wife had seven years of education.

The family had several production activities including vegetables and flowers on land previously used for subsistence crops of sweet potatoes. However, the cropping was conducted at a small scale, they lacked appropriate technologies, and productivity was low. In 2006, they began to develop a buffalo raising activity whereby they contributed labour and another family contributed a breeding buffalo. However, after some months the buffalo injured someone, so they returned the buffalo to the owner and did not develop this activity any more.

In 2008, another married daughter came to live with them. They then commenced a small vegetable trading operation where they would buy vegetables from other households and then sell to local markets at other communes in the district. This was creating regular employment but it was a very small scale subsistence type operation.

Any money earned by this family from production activities was used to purchase basic food items. They were unable to participate in social activities such as festivals because of their inability to contribute financially.

It was evident that this family was lacking in resources and the necessary skills to lift themselves out of poverty without external assistance.

### **Case QL6**

This household comprised Mrs X, aged 49 in 2007, and her four sons. At that time the two oldest sons were in Ho Chi Minh City seeking employment. However, their low education made it difficult to get work. Her two youngest sons were still at school. This family was classified as a poor household at the commune. They used to be a medium level household but they gradually got poorer after her husband died in 1996.

The family had only 2.9 sao of land in total, of which 2.4 sao was allocated agricultural land under Decree No 64 and 0.5 sao was garden. There were opportunities to rent additional garden land but Mrs X said that the rent was too high. The only productive capital that they had was a basic pigsty and a sow valued at 1.3 million VND.

Rice was the most important crop in her family and this was grown on 2 sao. Although Mrs X followed the co-operative procedures for cropping calendar, irrigation, and land preparation, she mainly used her own seeds from the previous crop. She did not sell any rice because she had not enough rice for consumption in her family.

The household had one sow and there were two farrowings per year. They had been raising pigs since 1980s but they changed to breeding sows in 1996. The technology was basic and all inputs except for insemination and veterinary services were supplied by the family. The chosen breed was also the local Mong Cai because it was easy to raise. All piglets were sold as weaners.

In about 2000 Mrs X converted her garden from sweet potato cropping for home consumption to vegetable crops for cash. In 2004, she also converted some poor and insufficiently watered rice land to vegetable crops. Therefore, she had 0.9 sao of vegetables in 2006. These included spring onion, mustard green, salad, and coriander. Mrs X was earning about 15,000 VND per

day from direct selling of these vegetables at the Ba Don Market and this was her main income.

By 2008 Mrs X's third son had left school because of the expense and was working as a bricklayer's assistant. He was earning 50,000 VND per day and was working 20 days per month.

It was evident that the poor economic situation of Mrs X was linked to her family structure consequent to the death of her husband. In the future, the ability of her sons to obtain and retain work outside of agriculture will be an important issue. Lack of education of her children may create further barriers to escaping from poverty.

#### **8.4. Discussion**

There are two key resource issues at Quang Long Commune that have shaped the development of agriculture and its commercial transition. The first is the location adjacent to Ba Don town. This has created markets for commune produce and also led to good transportation systems to places further afield, including Dong Hoi City. Perhaps more importantly it has allowed many commune households to obtain off-farm employment, either in trading or as labourers and artisans. This in turn has facilitated some consolidation of productive land within the commune amongst families still reliant on the land.

The second resource issue has been the inherent characteristics of the land at Quang Long Commune. The area of productive land has been small and the land itself has a range of limitations. Much of the land is only suitable for rice, being too wet for other crops. However, there are other areas of poor rice land, with inadequate water, that can be converted to vegetables. Much of the development of vegetables and flower crops has occurred on garden land which has the advantage of being close to the houses.

Various external force and events have influenced the pattern of development within the commune. Improved rice growing technology, including new varieties and better growing methods, has eliminated food shortages both within the commune and throughout Vietnam in general. Elimination of food shortages has led to some land being able to be released for

alternative purposes. Economic growth throughout the country has led both to greatly increased demand for a range of crops including vegetables and, to a lesser extent, flowers.

Within the commune households have responded in a range of ways. Household QL1 responded by being entrepreneurial and using a special set of expertise relating to flower production to develop what was, for Quang Long commune, a totally new and profitable business. Household QL2 used its good access to garden land, together with other entrepreneurial skills, to develop what was, by the standards of the commune, a large and profitable vegetable enterprise. In both cases, the enterprises had high requirements for labour, plus a requirement for modern technology, but only required modest capital inputs. The QL3 household were considerably younger than the other case study families, but had drawn on existing artisan skills in producing and then marketing thin-rice-pancakes to set themselves on a promising development path. The other three families were not entrepreneurial. In the case of QL4 and QL5 this may have been linked to the advanced age of key decision makers within the family. None of the households QL4, QL5 or QL6 had a male member within the family of normal working age.

The net income differences between the case study families varied by a factor of more than 14 on a per family basis and 17 on a per person basis. It is likely that, without external intervention to help the poor families, the existing development paths undertaken by the various families will in future lead to even greater income ranges.

It was evident that it was only from moving away from rice production as the main income earner that families could hope to achieve a major improvement in their livelihoods. However, rice retained a key place within the livelihood systems as it underpinned food security.

The future of a number of families is likely to depend on the ability of the young generation currently entering the workforce to obtain employment outside the commune. Low educational levels, linked in some cases to non completion of secondary school education, are likely to be a constraint.

\*\*\*\*\*

## **CHAPTER 9**

### **The development of commercial agriculture in a plains commune with poor infrastructure**

#### **9. 1. Introduction**

The purpose of this chapter is to explore the transition to commercial agriculture in a plains commune that has poor infrastructure. The chosen commune is Quang Thach Commune in the Quang Trach District in the north of Quang Binh Province. The commune lies at the interface between the lowland and mountain regions, and is 15-20km from Ba Don Town.

The chapter is structured in four sections. Following this introduction, the second section presents the natural, social and economic conditions of the commune. This includes how these conditions have been changing in recent years. The third section comprises six case studies of individual households of different wealth levels. In particular, the input and output commerciality of each family is investigated, together with the dynamics of change that has been occurring in each family. In the final section, a discussion of the findings is presented.

#### **9. 2. Natural and socio economic background of the commune**

##### ***9.2.1. Location and infrastructure***

Quang Thach commune is located between the lowland and mountainous regions in the northeast of Quang Binh Province. It includes both flat and sloping land. It borders Quang Luu commune in the east, Quang Hop commune in the north, Quang Lien and Canh Hoa communes in the south, and Ngu Hoa and Tien Hoa communes of Tuyen Hoa upland district in the west. It is 15-20km far from the centre of the district (Ba Don town).

The connection to Ba Don town is through inter-commune roads. There are no regular buses. The main transport is by bicycle or motorcycle though many farmers cannot afford a motorcycle.



The internal commune roading system is limited. Of the nine villages in the commune, there are four villages that have difficult connections with the centre of the commune and beyond. In 2006, a road connecting these villages with the centre of the commune was commenced. This road was completed in 2007 but was of poor quality.

Since 1998, infrastructure has been improving significantly as a result of investment funded through the 135 program. This is a national program that targets infrastructure development in poor communes. The electricity system had reached all villages by 2004. In 2006, 97.4 % of households had electricity. This electricity was used almost totally for living activities rather than for production purposes. Telecommunication facilities were connected to the commune in 2002, but by 2005 only 22 commune households had a phone line. This figure had increased to 31 in 2006, 40 in 2007, and 95 in 2008.

### ***9.2.2. Land and land use***

The total area of land is 4670ha. This is very high compared to many communes in Quang Binh. However, some 55% of this is forest land. An additional 34% is bare land, currently unused, which has major capability constraints as it is largely of gravels and poor quality soil. Accordingly, agricultural land is very limited. Officially, there are about 180ha of agricultural land (Table 9.1). In addition, 80 to 90ha of forest land can be used for crops such as cassava and sweet potatoes. This forest crop land has diverse locations within the commune rather than being concentrated. There are also 23ha of garden land which is suitable for perennial crops. The total area that can be used for agricultural crops is about 300ha. There may also be scope for agricultural development of additional forestry and bare land.

Considerable changes in land use as officially recorded were occurring between 2005 and 2008 (Table 9.1). The increase in agricultural land was due to an additional area of irrigation being developed for rice, and some further land being developed for other crops. The increase in forest land was mainly due to production forest land being reclaimed from bare unused land. The increase in non agricultural land was caused by the increasing number of residences and increasing infrastructure. There may have been additional changes in the forest land, either through exploitation of the native timber, or conversion of land to production forestry with exotic species, that is not captured in these statistics.

**Table 9.1: Land use at Quang Thach Commune in 2005 and 2008**

	2005		2008	
	Quantity (ha)	%	Quantity (ha)	%
<b>Total area</b>	<b>4670.0</b>	<b>100</b>	<b>4685.1</b>	<b>100</b>
Agricultural land	168.0	3.6	180.4	3.9
-Rice crop land	82.0	1.8	89.3	1.9
-Other annual crop land	64.0	1.4	68.0	1.5
-Perennial crop land	22.0	0.5	23.1	0.5
Forestry land	2510.6	53.8	2608.6	55.7
Aquaculture land	1.0	0.0	1.0	0.0
Non Agricultural land	268.4	5.7	282.5	6.0
Unused	1723.0	36.9	1612.6	34.4

*Source: District yearly statistical books, 2005 and 2008, and annual commune reports*

### **9.2.3. Socio-economic background**

Quang Thach is one of poorest communes in the Quang Thach district. According to decision 170/2005 of the Prime Minister (issued 8/7/2005), the new poverty line increased to 200,000 VND and 260,000 VND per person per month in rural and urban regions respectively. The previous figures were 80,000 VND, 100,000 VND and 150,000 VND in mountainous, rural and urban regions respectively. Based on the new poverty line, the poverty rate of households at the commune was over 60% in 2005 but trending downwards thereafter (Table 9.2).

In 2007 the population density at Quang Thach commune was 81 people per km<sup>2</sup> compared with 332 people per km<sup>2</sup> for the Quang Thach district. At that time 89% of households depended on agriculture and 76% of workers were agricultural. The number of agricultural workers was declining slowly. However, there was a shortage of employment at the commune, with the main jobs being in house construction and some limited trading. There are no official statistics on migration, but commune leaders estimated that by 2007 more than 200 workers had left the commune to find jobs in other provinces.

Food crops for consumption within the household (rice, cassava, maize and sweet potato) are the dominant crops at the commune, with greater reliance on non-rice crops than for typical lowland communes. This is linked to there only being approximately 2 sao of rice-land per family. Two crops of rice are grown, with typical yields of 225kg/sao (4.5 tonnes/ha) for the first crop and 200kg/sao (4 tonnes/ ha) for the second. These crop yields are broadly similar to the Quang Binh average yields, being somewhat lower for first crop and somewhat higher for

the second crop than the provincial average. Given the limited available area, total production is insufficient to satisfy the food requirements of many families, and this forces reliance on alternative food crops.

**Table 9.2: Socio-economic indicators of Quang Thach Commune from 2004 to 2007**

Year	2004	2005	2006	2007
Population (person)	3736	3767	3798	3820
Households (hh)	821	828	861	864
Agricultural household (hh)	701	691	784	771
Total workers in working ages	1787	1802	1833	1851
Workers in agriculture (person)	1478	1466	1428	1412
% of poor households in total (%)	-	62.1	54.4	44.5
Cultivating area of rice crops(ha)	163.2	162.5	161.5	161.5
Cultivating area of maize crop(ha)	8.0	8.0	13.0	17.0
Cultivating area of cassava crop(ha)	80	90	100	120
Number of buffaloes (head)	83	71	80	84
Number of cattle (head)	1106	1254	1399	1473
Number of pigs (head)	1708	1859	2033	2078
Number of poultry (head)	-	9745	6864	7887

*Source: Quang Thach district statistics 2005, 2006, 2007, annual commune reports*

Apart from rice, cassava is the most important of the food crops. Prior to 2004, cassava was grown solely as a food crop for consumption within the commune. Since then, cassava has also been produced as a processing crop for its starch content, with 15ha of processed crop in 2004 and increasing to 50ha in 2007. The factory is approximately 30km distant in Bo Trach District, with limited capacity to take further increases in volume. The processing cassava is mainly grown on land that was previously developed for a failed sugar cane project. This project failed because the processing factory, which would have required cane from a range of communes, had insufficient supply and was relocated to a southern province.

Most households have large gardens in which they grow a range of fruit crops and green pepper. In 2005, there were 22ha of fruit and pepper crops, increasing to 23ha in 2007.

Production forestry is a new and rapidly developing industry at the commune. In 2005, the planted production forest was 774ha, increasing to 834ha in 2006, and 972ha in 2007. This forestry activity has the potential to become the main income for some families but as of 2008 there had only been limited quantities harvested. Some of this area was part of a German-Vietnam forest restoration project using native species of pine trees. The trees are tapped for

their resin, in a similar way that rubber latex is harvested from rubber trees, from about 8 years of age and then harvested at about 20 years. The resin is sent for processing. This project will be discussed in Section 9.2.4. Outside this project, the major species are *Eucalyptus sp* and *Acacia sp* both of which can be harvested after 5-7 years. The *Eucalyptus sp* will then regrow from the stumps allowing a subsequent cycle of about 3 years, whereas the *Acacia sp* have to be replanted. Both species remove nutrients from the soil, although the *Acacia sp* are leguminous and hence provide their own nitrogen. A major uncertainty relates to volatile prices and uncertain demand. A second challenge relates to land tenure, with much of the plantings being on land that has been occupied but for which the occupiers held no land use certificates as of 2007.

Cattle raising is an important industry based on grazing of natural pastures and forest land. This industry expanded by more than 30% between 2004 and 2007. However, it is facing challenges. The first is the development of planted forest which has led to reduction of natural pasture. Secondly, the cattle industry is based on the small-bodied local Coc breed. Under the ICCO (NGO-based) project and the Decentralised Poverty Reduction Project (IFAD-ODA project), cross breed bulls have been introduced. However, difficulties have been encountered with the introduced bulls adapting to local conditions. In addition, foot and mouth disease has been endemic in this region. A foot and mouth disease outbreak in 2004 led to cattle prices dropping from about 6 million VND per cow to 3 million VND. By 2008 prices were increasing again although foot and mouth disease was still endemic in the region.

Pigs are another important industry although recent industry growth has been limited (Table 9.2). The main purpose of the pigs is to use waste and by-products from agricultural activities rather than to make a profit. There are no large scale pig farms at the commune. Similarly, poultry is important but it is mainly small scale and of a subsistence character.

#### ***9.2.4. Institutional arrangements***

##### Commune Administration

The commune is administered by the Commune People's Committee that is selected and approved by the Commune People's Council. The council members are directly selected by people at the commune. According to the Law of the People's Committee and People's Council, the Commune People's Committee take responsibility for developing plans, and submits strategies to the Commune People's Council. The Committee also takes responsibility

to organize, instruct and implement these plans and strategies together with district, provincial, and central government plans and policies. To help the Commune People's Committee fulfil its functions and duties, there are specialized offices including an administrative office, a land office, a judicial office, a police office, a youth union, a women's union, and a farmers' association. The commune is divided into 9 villages and each village has a head who instructs, organizes and to implements policies and activities at village level.

The electricity service in the commune is managed by an electricity service co-operative. It has no other functions beyond the electricity service.

Prior to 2005 there was an agricultural cooperative. Its services were land preparation, irrigation, field security, determination of the cropping calendar, cropping coordination, provision of seeds, and provision of fertilisers. After dissolution, the services of irrigation, field security, cropping coordination and cropping calendar services were transferred to the commune and its villages. The Commune People's Committee took responsibility for the irrigation service through contracting with an irrigation company and individual farmers. Rice variety selection and cropping calendar were coordinated by the Commune People's Committee based on the general cropping calendar and variety selection of the whole district. The Commune People's Committee also took responsibility for buying seeds for the local people. The transport cost for the seeds was supported by the Government and the Commune People's Committee were not allowed to make a profit on the price of seeds. In contrast, farmers have to buy fertilisers for themselves and prepare land for their own families. The reason the land is managed by individual households, whereas in other rice growing communes on the plains this is done communally, is that in this commune the rice plots are not contiguous.

Commune officials are not well educated. In 2006, there were 19 full time staff, none of whom had a university degree. Most staff held primary or intermediate political certificates. Two of the staff had intermediate professional certificates. In 2008, one staff had a university qualification by the in-service training method. The average salary of staff was about 1 million VND per month (about \$US55 per month) in 2006. The village heads were part time and received 400,000 VND per month.

## Land Tenure

The land tenure arrangements are complex. The allocated land as reported in Table 9.1 includes two main types. Allocation of residential land and gardens was based on historical land use and subsequent surveying, documentation and issuing of land use certificates. Families consider themselves as the owner of these lands which are typically of 3 to 10 sao per family. The second type is rice land which was allocated in 1993 for 20 years based on family size. Households do not consider their tenure of these rice lands to be secure. Rice-land allocations were limited to 1 -2 sao per household. In addition to the allocated land reported in Table 9.1, there is some forestry land which was allocated to households when they participated in a reforestation project. This forest is in exotic pine forest with seeds and fertilisers provided, together with wages paid to farmers for planting and the initial tree protection. Funding was from German foreign aid (German-Vietnam Forest Restoration Program 327). Households have land use certificates for this land for 50 years, but they do not really control this land which must remain in pine forest. Many households are unsure as to how they will benefit from this forest land, and what share the government will take, although the formal documentation states that farmers will get 90% and 10% will go to the commune budget (Prime Ministerial Decision 178/2001/QD-TTg). A fourth category of land is occupied land for which households have no formal use rights. This land includes both poor forest and bare land. Responsibility for the protective forest land supposedly lies with the forestry guards and some households have been fined for illegal slash and burn activities. However, it is apparent that forest guarding has not always been applied consistently. The land tenure is further complicated in that in some situations land titles can be issued for occupied land where there is no conflict in relation to either other farmers or in relation to protection forestry. The Land law has set a limit of 60 sao (3ha) of annual cropping land and 600 sao (30ha) of forest land per household in the Central Region.

### ***9.2.5. Market development***

A small market was established in 2003 but it only operates on every second day. It only trades basic foodstuffs and some other cheap groceries. In the next commune (Quang Luu commune, 3km distant), there is another small market where some vegetables are sold. For all other items, commune residents must travel to the Ba Don Town market. This can be difficult given the lack of transport.

In 2006, only three households were trading fertilisers at the commune. These traders were charging high prices. Farmers could purchase fertiliser on credit but then had to sell their production to the credit provider at a disadvantageous price. Other input services were poorly developed. Seed purchases were organised through the commune administration. Pig insemination services were available but the commune veterinary staff were educated only to secondary school level, supplemented by a few weeks of specific training.

### **9.3. Household case studies**

Six household case studies were undertaken to obtain insights as to how commune households were making the transition to commercial agriculture. The six case studies were selected based on classification by commune officials as to poor, middle and wealthy households. First, the households are compared in relation to socio-economic structure, land resources, human resources, and number of activities. Then productive activities are analysed in terms of their contribution to total net family income. This includes the role of net farm and net non-farm income in total household income. Subsequently, each activity was analysed in terms of cash inputs to total inputs exclusive of labour. Similarly, the relationship between cash outputs and total outputs were analysed to obtain insights relating to market orientation both for each activity and the whole household. Finally, the dynamics of changes are analysed to obtain insights as to factors that facilitated or constrained households from progressing their wealth situation.

#### ***9.3.1. Socio-economic structure***

The size of household ranged from one to six people (Table 9.3). Five of the six households ranged from four to six persons, with the outlier being one old woman who lived alone. The number of active workers per household ranged from zero to three, with the zero being the same outlier. Two of the six households had migrant workers who were currently working in other provinces. These migrant workers are classed as available workers but not as active workers. Neither of the poor families had an adult male of working age. There were no obvious demographic differences between the medium and high wealth families apart from the previously mentioned outlier. None of the active workers in any of the six families had more than seven years of education.

Land resources ranged from 3 to 228 sao per household (Table 9.3), with the major differences being between the poor and the high wealth families. Land per person varied from 0.9 to 57 sao. Simple comparisons between households as to land area can be misleading because of the complexity of the various tenure arrangements as previously described in Section 9.2.4. However, it is clear that disparities between households are very great. Detailed investigation of the situation for each household will be reported in Section 9.3.4.

**Table 9.3: Main resources of household case studies at Quang Thach Commune in 2006**

Index	Case QT1 R	Case QT2 R	Case QT3 M	Case QT4 M	Case QT5 P	Case QT6 P	Range
Family size	5	4	6	5	4	1	1-6
Age of hh head (h/w)	38/36	49/46	44/38	42/34	-/43	-/68	38-68
Education of hh head(h/w)(yr)	7/7	7/7	7/7	4/7	-/6	-/2	2-7
Professional training	No	No	No	No	No	No	No
Available Labour (person)	2	3	3	2	2	0	0-3
Active labour (person)	2	2	3	2	2	0	0-3
Migrating workers (person)	0	1	0	1	0	0	0-1
Land per hh (sao)	87.6	228.0	132.0	55.0	3.6	3.0	3-228
-Residential and garden	10.0	7.0	3.0	5.0	0.6	3.0	0.6-10
-Other allocated land	67.6	61.0	114.0	22.0	1.0	0.0	0-114
-Reclaimed land	10.0	160.0	15.0	28.0	2.0	0.0	0-160
Value of productive capital per hh (million VND)	23.4	38	11.5	7.7 (0.7)	0.5	0	0-38
Number of activities	8	10	6	8	5	1	3-10
Agricultural cooperative member	No	No	No	No	No	No	No

R= Rich, M=Medium, P=Poor; h/w: husband/wife; hh: household

The value of productive equipment ranged from 0 to 38 million VND per household. Poor households had no productive equipment of significant value. Household QT3 had access under a sharing arrangement to two cows worth 7 million VND but had only 0.7 million VND of their own capital. Even the high wealth families had very limited productive equipment, this being worth between one and just over two thousand US dollars. However, in the case of QT2 there was an additional sum of liquid cash, not able to be documented as to quantity, used to fund their trading activities, and also to provide short term credit (in kind) to farmers who they traded with. There was a clear tendency for wealthy households to be more diversified in their production activities than poor households.

### **9.3.2. Production and income**

There is an increasing trend from poor to wealthy households in all three criteria of total net income per household, net income per active worker and net income per person (Table 9.4). The total net income per household in 2006 ranged from 0.8 to 128 million VND whereas



income per worker ranged from 3 to 64 million VND. Similarly, the income per person ranged from 0.8 to 32 million VND. Household QL6 was a special case where the woman was living solely on support from the government plus what she could grow in her garden. Apart from household QT2 which was an extreme outlier at the high end, the highest net income per family was only about \$US1140 per annum and income per person per day was no more than US 65 cents.

The contribution of non-farm income in total income likely has a tendency to increase from poor to wealthy households, with QT2 standing out in both volume and proportion.

Rice is the most important crop underpinning food security and this rice is almost totally consumed within the household rather than being sold. The assessed monetary value of this activity if it were sold is low, ranging from 194 - 695 thousand VND per year.

**Table 9.4: Production and income of household case studies at Quang Thach Commune in year 2006**

*Unit: 1000 VND*

Index	Case QT1 R	Case QT2 R	Case QT3 M	Case QT4 M	Case QT5 P	Case QT6 P	Range
Total gross income	22,873	470,990	14,267	17,205	6,480	790	790-470,990
Net income per hh	18,262	128,186	11,083	13,442	5,944	790	790-128,186
Net income per active worker	9,131	64,039	3,694	6,721	2,972	-	2,972-64,039
Net income per person	3,652	32,046	1,847	2,688	1,486	790	790-32,046
Net farm income per hh	15,022	48,645	11,083	7,442	5,944	250	250-48,645
Net non-farm income per hh	3,240	79,541	0	6,000	0	540	0-79,541
<b>Net income from each activity</b>							
1. Rice	510	417	0	695	194	0	194-695
2. Cassava crop	3,570	14,170	1,788	1,075	250	0	250-14,170
3. Nén Crop	850	284	430	80	100	0	80-850
4. Pig raising	1,120	1,040	-120	397	0	0	-120-1,120
5. Sow raising	0	2,381	0	0	0	0	0-2,381
6. Cattle raising	1,170	7,340	3,232	0	0	0	1,170-7,340
7. Gardening	3,394	7,790	3,838	4,859	0	250	250-4,859
8. Tea crop	900	0	0	0	0	0	900
9. Planted forest	1,109	15,224	1,915	336	0	0	336-15,224
10. Natural Forest exploitation	2,400	0	0	0	5,400	0	2,400-5,400
11. Trading	0	71,000	0	0	0	0	0-71,000
12. Others	3,240	8,541	0	6,000	0	540	540-8,541

**Figure 9.1: Some farming systems at households at Quang Thach Commune**



Nen crop



New green pepper



*Eucalyptus sp*

The sources of income amongst the case study households are particularly diverse. Cassava, gardening activities, and cattle raising are major sources of income. Much of the cassava income comes from crops sold to the cassava starch factory. Gardening activities include green pepper and sweet potato crops. Although cattle raising can provide a high income relative to other activities, the poor households find it difficult to participate in this activity because of the high capital of the animals.

Forest activity is another important source of income for the case study households, but there can be fundamental differences between wealthy and poor households. Wealthy households are creating assets and some income from wage payments for planting activities whereas poor households tend to focus on exploiting the natural forests as a livelihood survival strategy.

Income listed in Table 9.4 as 'other' included a part time job working at the commune for the Red Cross organisation (QT1), rice refining (QT2), seasonal employment in other provinces (QT4), and special poverty alleviation support (QT6) .

The nen crop growing activity was first developed at this commune from 2005. Nen is a type of spring onion and its growth is labour intensive. Further development of this activity was occurring in 2008. Some main farming system at households at commune can be seen as Figure 9.1.

### ***9.3.3. Agricultural commercialisation***

Commercialisation is measured here in terms of both outputs and inputs (Table 9.5). The output factors are a measure of the extent to which outputs are sold for cash rather than used within the household, either for direct human consumption or as inputs to other production processes. In regard to inputs, land does not in general have a market value and hence there is no imputed land cost. Also, labour is a non scarce resource and hence does not have a clearly defined market value. A high input commerciality factor is therefore indicative of high cash inputs relative to internal transfers from other production activities.

#### Outputs

Overall output commerciality was high for all households except QT6 which was 100% subsistence. The commerciality of perennial crops, forestry and animal raising activities were higher than for annual crops. Rice was totally subsistence, consistent with its role in

underpinning food security at the household level. However, two of the households did not produce any rice at all and either had to purchase it (QT5) or rely on other subsistence crops (QT6).

The commerciality of the cassava crop varied between households depending on the extent to which households were growing this crop for self consumption or for processing. The low commerciality of the Nen crop was linked to this being a first crop, with the crop being used to provide seed for the following year. Gardening activities included green pepper, sweet potato and fruit, with the fruit being purely subsistence. The green pepper was almost totally commercial in relation of output, whereas the sweet potato was used purely for pig raising. Hence, the overall commerciality for garden activities in each household was influenced by the relative balance of these crops.

**Table 9.5: Commercial orientation of household case studies at Quang Thach Commune in 2006**

*Unit: %*

Commerciality for each activity	Case QT1 R	Case QT2 R	Case QT3 M	Case QT4 M	Case QT5 P	Case QT6 P	Range
<b>Input side</b>	<b>53</b>	<b>95</b>	<b>44</b>	<b>53</b>	<b>92</b>	-	<b>44-95</b>
1. Rice	80	0	-	68	100	-	0-100
2. Cassava crop	0	59	0	81	0	-	0-81
3. Nen Crop	67	100	86	75	29	-	29-100
4. Pig raising	45	5	48	39	-	-	5-48
5. Sow raising	-	4	-	-	-	-	4
6. Cattle raising	91	38	10	-	-	-	10-91
7. Gardening	30	65	32	41	-	-	32-65
8. Tea crop	-	-	-	-	-	-	-
9. Forest planting	-	-	-	-	-	-	-
10. Forest exploiting	-	-	-	-	-	-	-
11. Trading	-	100	-	-	-	-	100
12. Others	-	91	-	-	-	-	91
<b>Output side</b>	<b>86</b>	<b>97</b>	<b>89</b>	<b>81</b>	<b>87</b>	-	<b>81-97</b>
1. Rice	0	0	-	0	0	-	0
2. Cassava crop	55	90	85	88	45	-	45-90
3. Nen Crop	90	0	82	0	90	-	0-90
4. Pig raising	100	100	100	100	-	-	100
5. Sow raising	-	90	-	-	-	-	90
6. Cattle raising	100	100	100	-	-	-	100
7. Gardening	97	78	72	75	-	-	72-97
8. Tea crop	94	-	-	-	-	-	94
9. Forest planting	100	100	100	100	-	-	100
10. Forest exploiting	100	-	-	-	100	-	100
11. Trading	-	100	-	-	-	-	100
12. Others	100	86	-	100	-	-	86-100
<b>The ratio of total net to gross income</b>	<b>80</b>	<b>27</b>	<b>78</b>	<b>78</b>	<b>92</b>	<b>100</b>	<b>27-100</b>

### Inputs

The overall level of input commerciality, relative to that measured in some previous communes in this study, is low for three of the six case study households (QT1, QT3, QT4). However, QT2 is an outlier on the high side resulting from trading activities which have 100% input commerciality. QT5 is also an outlier on the high side but for quite different reasons. In this case, the overall ratio is dominated by the rice crop for which inputs are provided collectively to households by the commune, and paid for in cash or kind. The reason that rice dominates the overall index for QT5 is because the major income earner for this household (forest exploitation) has no measured inputs (either cash or non cash) and hence does not enter the equation. Accordingly, it could be considered that high overall input commerciality for QT5 is an artefact of the mathematics. Similarly, QT6 has no measured inputs for any activities and hence the measured ratio of input commerciality for QT6 is undefined. In reality, there are no commercial inputs for QT6 and this single person household can be considered to be totally subsistence in character.

The low input commerciality for QT1, QT3 and QT4 is driven by two factors. One is the poorly developed state of the input markets which in turn can be linked to poor roading infrastructure. The second is that outputs from some activities become inputs into other activities in the diversified livelihood systems practiced in this commune. The input commerciality would be even lower if a value were to be placed on household labour.

A complementary perspective on input commerciality is provided by noting that in Table 9.4 the ratio of net income to gross income is high for QT1, QT3 and QT4, but much lower for QT2. This reflects the relative importance of purchased inputs, in particular related to trading, for QT2 relative to the value added from on-farm inputs.

#### ***9.3.4. Dynamics of change***

In the above sections, the analysis and discussion has focused on cross-case comparisons as of 2006. The focus in this section is to explore the underlying drivers and events that created the highly contrasting situation between the six case study households. The section draws on historical information collected during the first interview in November and December 2006, and on updated information collected in November 2008.

### **Case QT1**

Household QT1 was classified as a better-off household at the commune by the commune leaders. In 2006 they had 87.6 sao (4.3ha) of land but only 23.4 million VND (approximately \$US1500) of productive capital apart from their land. Although better off than most commune households, their net household income in 2006 was only 18.2 million VND. They had 10 sources of household income and considerable transfers of products between the activities.

The livelihood of this household began to change when rice land was allocated in 1993 for a 20 year period, but changes took place slowly. The initial improvements were from improvements in rice yield which improved their food security.

In 1996 they shifted their house to a more convenient location. They then had two gardens. As from 2000 they grew green tea in the old garden. This was not very high income but it was easy to develop because they did not need to apply fertiliser and they used seeds from a previous crop. At the new garden they developed different types of fruit trees, green pepper, and sweet potato. The sweet potato mainly provided feeds for pigs. The main income from this garden was from green pepper. By 2008 they had more than 100 trees of green pepper in their garden but only half of these were crop bearing. Some trees were still too young, but there had also been problems with stem rot and consequent loss of trees. Another issue had been that because of price fluctuations for green pepper they did not invest money and labour on the crop in some years.

In 2000, they had an opportunity to develop forest planting by becoming involved in a reforestation program. They grew 3.3ha of pine trees under this program, with the provision from the project of seedlings, fertilisers and wages for their planting and protection labour. Their motivation was to have the wages from this program rather than to achieve benefits from the trees. So far all of the income benefits have been from payments for their labour as no products have been harvested. According to this family, the forest belongs totally to their family but they have no right to convert to other types of forest or crop. However, according to regulations of this program and also according to the local authorities, the benefits of this forest will be shared 90% by the family and 10% by the commune.

In 2007, household QT1 grew 2ha of *Eucalyptus sp* on land reclaimed from bare hills and including some land carrying poor quality bushes. In 2008 they tried to develop a further two



hectares of land on poor forest on which to plant new productive forests. However, this was illegal as it was a protected area and they were fined 0.5 million VND by the forest guards.

Cassava cropping activities are traditional in this family. Prior to 2004 they used this for both human food and animal feed. In 2004 they began to grow cassava for the cassava starch factory established at Bo Trach district. For this purpose they used industrial varieties (H34 and KM94) that have a high percentage of starch. In 2006, they had 0.5ha of cassava crop and most of this was industrial varieties. They obtained the seedlings through exchange labour with other farmers and they did not apply fertilisers. They sold their cassava to collectors who then transported and resold it to the factory. They chose this method of sale because they did not have enough quantity of cassava to hire a truck and they had no previous contact with the factory.

Pig raising was also a longstanding activity for this family. The main purpose was to use by-products from cropping activities and generate employment for workers in the households rather than income and profit. The negative net income recorded in Table 9.4 is consistent with this information. The main issue was that they had to buy piglets at a high price, whereas the price of porkers was low and fluctuated. They also had problems with disease and deaths. They stopped raising pigs at the end of 2006.

Cattle raising commenced prior to 1996 but was small scale. In 2006 they had one breeding cow and two bulls. They had not been able to build up a larger herd because they had to sell cows to fund other expenditure. They raised the cattle for both income and draught power using natural grass and forest land. Hence the operating cost was very low. However, all their cows were local breeds with small body size so the price was not high. Breeding was by uncontrolled natural mating. The appearance of foot and mouth disease in 2005 and 2006 led to a drop in the price of cows from 6 million VND per head in 2003 to 3 million VND in 2006.

Detailed information on forest exploitation, involving cutting down of the natural forest, was not available. This activity contributed considerable acknowledged income to their family (Table 9.4) but it was illegal.

In 2006, they developed 1 sao of Nen crop (a type of spring onion, with a short crop cycle) through intercropping with cassava. This decision was driven by the high market price for

Nen. The crop is labour intensive but does not require high capital. Because of its high potential income, and based on their initial experience, they expanded to 3 sao in 2008.

It is apparent that household CT1 have obtained security of their livelihood systems by undertaking a diverse range of activities. They were early movers into both industrial cassava and Nen, and both of these developments can be linked to improving road infrastructure and improving communications. They also showed in their decision making that they were responsive to price signals. Although their livelihoods have been improving, they were still achieving only very modest incomes, and some of this was through illegal logging. Some of the activities involving perennial crops, including production forest, have long cycles and there has been insufficient time for these to create significant livelihood transformation.

### **Case QT2**

The family of QT2 was classified by commune officials as a household rich in both resources and income. Their gross family income of 479 million VND in 2006 was approaching \$US30,000 and the net income per active worker was about \$US4000. This family was clearly an outlier in relation to income, compared not only to the medium and poor families, but also to QT1 which was the other case of a wealthy family. Accordingly, the focus of this case is to understand the path undertaken by this family to achieve these incomes.

The family began cattle raising in 1982 when they first established their own family away from the husband's parents. By 1985 they had 10 breeding cows as a result of retaining calves. Subsequently the income from this activity provided capital for investment in other activities.

Under Decree No 64, 1 sao of rice land was allocated to this family for 20 years from 1993. However, this did not create significant change in their family because the scale of the activity was small.

Pig raising was a traditional activity in their family. Initially they raised porkers but in 2002 shifted to weaner production from three sows. They were able to produce two litters from each sow per annum, with 10 pigs per litter. Most of these were sold at about 8kg liveweight for 18,000 – 20,000 per kg. This produced a gross income of about 9 million VND. In 2007 they grew-out one of their male piglets as a breeding boar, both for their own sows and for provision of semen to other farmers.



In association with the pig raising activity they also developed rice wine refining. Although the direct income was low, it complemented the pig enterprise in which the brewer's grains were used.

This family began forest planting in 2000 when they developed 3ha of pine trees under a German foreign aid reforestation project. This forest was developed with free seedlings and fertilisers, and also paid labour for planting and protection. In addition, over the period 2002-2006 they reclaimed more than 7ha of bare hills and forest land for the development of eucalyptus and acacia forest. This activity was based on observation of what was happening at some other communes. The development approach was to slash, burn and occupy. Their major cost was 150 VND each for 50,000 seedlings. As of 2008 they still did not have land title for this development. However, they were still able to sell about 1ha of young forest trees for harvesting in 2006 for 15 million VND.

The QT2 family began growing industrial cassava for starch on 20 sao of reclaimed land in 2004 when sugar cane stopped because of factory closure. After one year of using local food varieties they purchased seedlings of new specialist varieties and multiplied these up. Unlike many other families, they applied artificial fertilisers (phosphorus and nitrogen) and achieved higher yields (approx 2000kg/sao) than other farmers. They bought additional quantities of cassava from other farmers. They hired a truck to transport this plus their own cassava to the Bo Trach factory, and thereby achieved a higher price.

Gardening was another activity. Although they grew a range of different crops such as sweet potatoes, banana, orange and green pepper, their main crop was green pepper. They commenced growing green pepper in 1996. By 2006 they had 300 green pepper trees of which about half were fruiting. Well developed trees can yield 3 to 4kg per tree, with each kg selling for 25,000 to 60,000 VND. However, the quality of their trees was not good, having been affected both by disease and storms.

The QT2 household developed 0.3 sao for nem (spring onion) in 2006, having observed the high price for this product. In 2008 they expanded to 2 sao intercropped with cassava. In 2006 they also grew 1 sao of chilli crop but the price was insufficient to persist.

In 2005 they reduced their cattle herd to three animals as a result of more competition for the natural pasture and low cattle prices associated with an outbreak of foot and mouth disease.

The main activity that changed their livelihood was the commencement of trading in 2003. They were able to fund this business with profits from their land-based activities. They traded fertilisers, rice, and daily living requirements such as sugar, tobacco, and spices. They also commenced purchasing products from farmers for trading outside the commune. By 2006 they were purchasing and selling about 1 million VND per day and making a net profit on this of about 200,000 VND. They were also providing short term credit to farmers for their purchases such as fertiliser, with the farmers then having to sell their product back to QT2. In 2008 they invested money to establish a rice husking machine so that they could buy paddy rice, husk it, and then sell the rice to consumers.

Throughout all of this period the main workers were the husband and wife. By 2006 their oldest son had left school but he did not wish to work on the land and had left for Ho Chi Minh City. The lack of family workers was not a concern to the husband and wife as they considered they could easily employ workers if they needed to. By 2008 they still only had a motor cycle for transport but had the networks to be able to hire trucks as needed.

It is evident that the QT2 family were both entrepreneurial and hard working. They had early mover status in relation to a range of activities. At an early stage they managed to build up a cattle herd using natural pastures and forest land. This provided a platform for further investment. They then diversified into a broad range of agricultural activities. As product prices changed, and new opportunities arose, they changed the mix of activities. They tended to use more advanced technology than many of the commune households but there was further scope for improved crop and animal husbandries beyond the level they were achieving. They had no initial resource advantage relative to other families. Rather, their success was built on the way they had managed and augmented their livelihoods over a long period from a low initial resource status.

### **Case QT3**

The family of QT3 was classified by commune leaders as a middle household. Although they had four children, three of them were at school. Therefore, the husband, wife and first daughter were the three main workers. In 2006, the total value of productive capital was 11.5 million VND comprising mainly three breeding cows and a pigsty.

The total land area available to them was 6.55ha (131 sao). Of this, 113 sao was part of the German-Vietnam Forest Restoration Program discussed previously. The main area of land for which they had total control was 3 sao of garden and 15 sao of reclaimed land. They did not hold a land use certificate for the reclaimed land.

In 2000 they commenced developing the 5.7ha (113 sao) of pine forest as part of the German-Vietnam Forest Restoration Project 327. Over seven years they were paid 2.1 million VND per ha for planting and protection. The idea of forestry was new to them and they would not have undertaken it without this level of support. In 2001 they commenced growing about 1000 acacia and eucalyptus trees between blocks of pine trees.

This family undertook the same range of production activities as QT1 and QT2 including cattle, pigs, cassava, nen and green pepper. However, their technical skills were of a lower standard and so were their achievements. They tried to respond to market signals but lacked good information. Input levels were lower than required for good crop and animal production.

It is evident that this family was struggling to make the transition to commercial agriculture. The limitations appear to relate primarily to the existing skills and knowledge of the family.

#### **Case QT4**

The family of QT4 was classified in 2006 as middle income at the commune. The husband and wife were the two main workers because their children were still at school. However, they had insufficient employment so the husband travelled for part of each year to Dac Lack province to work as a temporary migrant worker. The main issues facing this family were a lack of professional training and poor productive resources.

The total value of non-land productive capital was 7.7 million VND in 2006. However most of this, comprising two breeding cows, belonged to another household with whom they had a calf sharing arrangement. They had 55 sao of land of which 40 sao was forest land, 8 sao was reclaimed land used for cassava, 5 sao was garden and 2 sao was rice land.

In 2000, they developed 1ha (20 sao) of pine trees under support of the reforestation project, which provided seedlings and fertilisers, and paid the labour for planting and protection for seven years. They obtained a land use certificate for this land, but were not permitted to

change the land use. They became involved in this activity because of the wage payments for their labour. They had no knowledge as to when their trees would be harvested. They were also growing 5000-6000 Eucalyptus trees (estimated area about 1ha) on reclaimed hilly land located near their garden. They had not yet obtained a land use certificate for this land. These trees were planted from 2003 to 2005 with seedlings purchased from other communes for 140-150 VND each. No fertiliser was applied. In 2008, they sold the trees from about 0.7ha of this forest for 10 million VND. This price was adversely affected because the trees were still small and the location of their forest was far from the road. The trees were sold as standing timber to be harvested by the purchaser, and then on-sold to the Vung Ang wood processing factory in Ha Tinh Province about 70 to 80km distant.

Cassava was a traditional crop in this family for both human food and pig feed. Then in 2004 they also began to grow cassava for cash income. In 2006, they grew 8 sao of cassava, mainly of industrial varieties for starch. They applied both pig manure and chemical fertiliser. Seeds for the industrial varieties were obtained from other households. The cassava was sold for 350-400 VND per kg to a collector. Although this provided a good income, yields were not maintained due to declining soil fertility and during 2007 and 2008 5 sao were converted back to forestry (both *Acacia sp* and *Eucalyptus sp*)

Under Decree 64, about 2 sao of rice land was allocated to their family for 20 years from 1993. This was an important food crop for this family. As for other households in the commune, there had been considerable changes since that time in rice production resulting from new varieties and increased inputs. These changes led to improved food security but did not bring large changes to their livelihoods because the scale of the activity was small.

In 2006, they began to develop new crops on about 0.2 sao of cassava land. In the first year they retained all of the seed and in 2008 expanded their production to 1.5 sao.

They had 5 sao of garden where they grew a range of trees including jar fruit, oranges and green pepper. However, the fruit trees did not bring significant income to their family. Green pepper was the main garden crop starting in 1995. By 2006 they had 200 trees but many were still young. They developed this crop from seedlings collected from the forest or from their own early plantings. However, their technical knowledge relating to seedling selection, tree shaping and disease control was very limited. Their yields fluctuated as they relied on natural rainfall and the prices also fluctuated considerably from 25,000 to 60,000 VND per kg. They

sold the product to collectors immediately upon harvest because they needed the money, despite prices often being low. Despite all of these difficulties, their returns were sufficient that they developed an additional 100 trees in 2007.

Pig raising had been undertaken for many years in this family using by-products and crop wastes. The activity was only profitable because labour was not costed. They raised two pigs per cycle and two cycles per year. Pigs were reaching 50kg after 6 months. The high price of piglets, modest growth rates, and fluctuating prices constrained the development of this activity.

They began raising cattle in 2003 when they borrowed 2 million VND from the bank to purchase a cow. However, this cow died in 2004 and in 2007 they were still indebted to the bank. Then in 2005 they commenced raising two breeding cows using the 50/50 sharing method with another family. This other family had capital but no workers. By 2008 their share of the progeny was 2.5 calves. They planned to continue expanding this activity using the natural pastures surrounding the commune.

Until 2007 the husband used to spend about six months each year in seasonal hired employment at Dac Lack, which is 700-800km distant in the Central Highlands. From this work he earned about 1 million VND per month over and above the cost of food and accommodation. In 2008 he did not travel to Dac Lack because he wanted to develop the family's own activities and the income from their own farming was sufficient.

It is evident that the main livelihood strategy of this family was diversity of farming activities. They were making some progress, as evidenced from the husband no longer undertaking seasonal work each year in the distant Central Highlands. However, this household was constrained by poor resources combined with inadequate technical skills to provide a strong basis for rapid livelihood improvement.

### **Case QT5**

The family of QT5 comprised a mother and three children. They had been classified as a poor household for many years since her husband left the family. In 2006 they had 3.6 sao of land. The main productive equipment was two bicycles used for transporting firewood to the local market.

The main worker in this household was the mother. The oldest child left school in 2006 aged 16, but could not find a job and was helping by collecting firewood. By 2008 this son was working for an uncle, assisting with forest planting and bricklaying. He was self supporting, but not able to provide any support back to his family.

Initially when the husband left, the mother lived with her husband's parents but then they moved to the mother's parents who then gave her 300 sq metres of their garden on which to establish a small cottage. Subsequently, under a temporary house elimination program, the government built a small cement house for her family. However, there was an ownership dispute between her and the adjacent kindergarten and she could not grow any crops on it.

Her family was allocated one sao of rice land under Decree 64. Rice was a major food source for their family. Cassava growing was the second important food crop for this family. In 2000, the mother developed cassava on 2 sao of reclaimed hilly land provided by her parents. They grew local varieties and if there was a surplus they sold it. They had no land use certificate for this cassava land. In 2007 they ceased growing cassava here because of soil erosion and converted 1.5 sao to 400 Eucalyptus trees.

In 2006 they began to develop a new crop on 0.25 sao of their cassava land. They were unable to further develop this crop because of lack of available land.

In 2005, the mother's parents gave her a female calf. Like other households, they raised this on natural pasture so the only costs were labour and a small cost for compulsory vaccination under a government program. In 2008 this cow had two calves 10 months apart. Her plan was to further build up the herd.

The main source of cash income in 2006 was from collecting firewood. Each person could earn 15,000 VND per day from this activity but it required long hours for collecting, transporting and selling firewood. In 2008, with her son now working for her uncle, and she herself having health problems, firewood collecting had been reduced.

In 2008, the government had a program for the most disadvantaged families providing 120,000 VND per month to support primary school age children who were attending school. However, she was not receiving this allowance and did not know why this was so.

It was evident that CT5 was resource poor and there were no obvious means, apart from government support, by which this family could raise itself from poverty.

### **Case QT6**

This case comprised a woman, aged 68 in 2006, who was living by herself and classified as living in poverty. Her husband had died five years previously. She had one married son but could not live with him because of family disharmony. Her family had been allocated 0.5 sao of rice land under Decree 64 in 1993 but her son was now using this land and did not give her any of the product.

Although she had a garden it was small and infertile. She grew some bananas and other types of fruit. Each month she obtained about 10,000 VND (less than \$US1) from selling bananas. She also grew some vegetables for her own use, valued at about 10,000 VND per month. Her main income was 45,000 VND per month from the government. In 2008 she became sick and died.

## **9.4. Discussion**

This commune is characterised by diverse farming systems, including rice farming, cassava cropping, gardening, forestry, pig raising and cattle raising. Although the area of land is considerably more than other communes analysed so far in this thesis, there are issues with land quality. In particular, there are major constraints on the land that is suitable for rice farming. Most of the non rice land is sloping, lacks irrigation, and is subject to erosion. Education levels are low, technical skills are low, unskilled labour is surplus to demand, and there is a scarcity of capital. Land tenure issues are complex and many families are dependant for their livelihoods on land over which they have no formal use rights.

Improving rice yields, linked to superior varieties, increased inputs and improved irrigation, have underpinned improved food security and hence helped to set a platform for economic development based on new crops. Apart from rice and some garden crops, most farming activities have a cash focus.

Distance from markets, poor roads, and until recently poor telecommunications, have been major constraints to development. Commercial supply chains have therefore been slow to develop. Farmers are connected to markets through collectors and traders but farmers have limited alternatives for purchasing inputs and selling their products. Those families, such as QT2, who have had the resources and skills to become traders, have been able to earn considerable entrepreneurial profits in an environment of limited competition.

Despite many constraints, it is apparent that livelihoods have been improving as indicated by the declining percentage of households below the official poverty levels. Improving commune infrastructure has helped link farming households to markets. In addition, there have been institutional interventions involving the Government of Vietnam and some foreign assistance aimed at both developing and protecting the forests.

Forest planting has been driven by two separate forces, one a government intervention and the other market driven. At an early stage, starting in 2000, the development of forests was driven by a reforestation program aimed at increasing the forest coverage. This included free seedlings, fertilisers and paid labour for planting and protection. Up to 2008, the benefits to commune incomes from this development had been predominantly limited to subsidised inputs, although sales from tapping the resin were commencing by that time. The second force was perceived market demand starting in 2002 for eucalyptus and acacia forests. This development occurred on occupied forest land and bare hills. This led to conflict between production and protection. Entrepreneurial early-moving households with available capital and labour were able to acquire this land, while poorer households without basic resources needed to develop the land were in effect excluded. As of 2008, there were few opportunities for households to acquire further forest land because most forest land was either already occupied or designated as protective forest. As of 2008, most of the benefits from forest occupation and development related to future income rather than present income. Major challenges remain, including erosion, declining fertility and enforcement of regulations.

\*\*\*\*\*



## CHAPTER 10

### **Market-led cropping and forest based livelihood in Trung Hoa Mountain Commune, Minh Hoa District, Quang Binh Province, Vietnam**

#### **10. 1. Introduction**

The purpose of this chapter is to explore the transition to commercial agriculture in a mountain commune that has good market access. The chosen commune is Trung Hoa Commune in the Minh Hoa District in the north west of Quang Binh Province (Fig.5.1). Prior to 2004, road access to this commune was very poor, but the new Ho Chi Minh Highway linking North to South Vietnam via the uplands passes through this commune, and then connects to Dong Hoi City. This has transformed market access.

The chapter is structured in four sections. Following this introduction, the second section presents the natural, social and economic conditions of the commune. This includes how these conditions have been changing in recent years. The third section comprises six case studies of individual households of different wealth levels. In particular, the input and output commerciality of each family is investigated, together with the dynamics of change that has been occurring in each family. In the final section, a discussion of the findings is presented.

#### **10. 2. Natural and socio economic background of the commune**

##### ***10.2.1. Location and infrastructure***

Trung Hoa commune is located at the intersection of the Ho Chi Minh Highway and National Road 12A that connects Quang Trach district to the Cha Lo border gate between Vietnam and Lao. The centre of the commune is 10km from the centre of the district town of Qui Dat via National Road 12A.

The commune has borders with Hoa Hop, Xuan Hoa, Minh Hoa and Tan Hoa communes in the North, Thuong Hoa commune in the South and East, and Hoa Son commune in the West.

Prior to 2004 the only access from the commune to towns and more distant cities was via National Road 12A. Prior to 2003 this road was of very poor quality. It was 30km to Dong Le township, and 90km to Ba Don town, from where there was a good road (National Road No 1) to Dong Hoi City (150km distant). There was also a daily train from Dong Le (30km distant) to Dong Hoi.

Road access from the commune to major markets was transformed by the opening of the Ho Chi Minh Highway in 2004. The distance to Dong Hoi City was reduced from 150km to 80km, and there were several coaches each day that then passed through the commune. This was because Trung Hoa Commune was now on the direct route between the centre of the district (Qui Dat township) and Dong Hoi City.

In 2006 there was an internal road system to all hamlets but the quality was poor, and some families had difficulty in travelling within the commune. The scattered distribution of the population remained a challenge for internal infrastructure improvement. By 2008 major improvements had been made.

By 2006 the electricity network extended to all villages and hamlets in the commune, and about 90% of households had electricity. Although most households were using electricity for living rather than production activities, there was good potential for the electricity network to be used for business.

The telephone network reached the centre of the commune in 2004 but there was initially only one phone line to the office of the Commune People's Committee. In 2006 there were no households with telephone access. By 2008, a few households who lived near to the centre of the commune and the market were beginning to establish telephone lines.

### ***10.2.2. Land and land use***

The topography of the commune is characterized by mountainous and dry land. Although the total area of the commune is large, 9453ha in 2008, more than two thirds of this is forest (Table 10.1). Unused land is typically sloping land carrying limited vegetation. Rice land and annual cropping land is very limited (5.3% of total land). Accordingly, food security was the key issue prior to the commune becoming integrated with the outside region through

improved roads, and food security still remains of importance. The large area of non-rice land creates potential for the development of perennial crops, fruit, gardens, livestock and forestry.

**Table 10.1: Land use at Trung Hoa Commune in 2005 and 2008**

	2005		2008	
	Quantity (ha)	%	Quantity (ha)	%
<b>Total area</b>	<b>9440.0</b>	<b>100</b>	<b>9453.9</b>	<b>100</b>
Agricultural land	924.6	9.8	1016.4	10.8
-Annual crops	597.5	6.3	500.8	5.3
-Perennial crops	327.1	3.5	515.5	5.5
Forestry land	6657.0	70.5	6818.5	72.1
-Production forest	3230.0	34.2	2761.5	29.2
-Watershed forest	3427.0	36.3	4057.0	42.9
Aquaculture land	15.5	0.2	12.3	0.1
Other land	-	-	0.7	-
Non-agricultural land	280.6	2.9	368.7	3.9
Unused land	1562.4	16.6	1237.3	13.1

*Source: Minh Hoa district Yearly statistical books, 2005 and 2008*

There were major changes in land use between 2005 and 2008. Although unused land remained a large area (Table 10.1), it had reduced by 325ha. This was the result of rapid development of production forest and perennial crops. At the same time a considerable amount of forest land, including some production forest, had been designated as watershed forest for Phong Nha-Ke Bang National Park. This created additional pressure on land use at the commune. Another change was the reduction of annual cropping land and an increase of perennial crops. This included an increase of rubber, green pepper, and fruit trees. The area of pasture was considerably reduced. In general, these land use changes were in response to demands of the markets and market development. The exception to this was the increase in watershed forest caused by institutional change.

### ***10.2.3. Socio-economic background***

Minh Hoa District, comprising a small township and 15 communes including Trung Hoa Commune, was classified in 2008 as one of the 61 poorest districts in all of Vietnam. However, Trung Hoa Commune was undergoing rapid economic transformation that was directly linked to the new roading infrastructure.

In 2007, the total population of the commune was 5156 people in 1038 households. There were 90 people and 16 households from the Sach and Arem ethnic minorities. The population was increasing at about 1% per annum (Table 10.2).

Poverty was the most important issue at the commune. According to the new poverty line of the Government, set in 2005 at 200,000VND per person per month for rural communes (Decision 170/2005/QDTTg of the Prime Minister), the poverty rate of households was 77% in 2005, dropping to 54% in 2007. In broad terms, the poverty line identifies families who still face food security concerns.

**Table 10.2: Socio-economic indicators of Trung Hoa Commune from 2004 to 2007**

<b>Year</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Population (persons)	5012	5065	5110	5156
Number of households	924	951	1018	1038
Total workers in working age	2446	2517	2543	2595
Poverty rate of households (%)	-	77	60	54
Cultivated area of wetland rice (ha)	57	54	61	45
Cultivated area of dry land rice (ha)	50	50	59	49
Cassava cultivated area (ha)	140	135	135	143
Sweet potatoes cultivated area (ha)	25	20	18	22
Maize cultivated area (ha)	141	149	139	142
Groundnut cultivated area (ha)	156	137	142	155
Rubber trees (ha)	18	40	47	50
Green pepper (ha)	10	12	13	14
Number of buffaloes	350	423	484	658
Number of cattle	2100	2254	2552	2732
Number of pigs	2000	1782	1856	2167

*Source: Minh Hoa district 2006, 2007 statistical year book, social economic report of Trung Hoa commune, 2006, 2007.*

Food crops are dominated by cassava, sweet potato and maize crops rather than rice, whereas rice is normally the main food of Vietnamese people. The rice crop is limited not only in terms of area but also in yield. Wetland and dryland rice yielded 2.6 and 0.52 tonne per ha respectively in 2007. This compares to average wetland rice yields of 4.3 tonne per ha for Quang Binh Province in 2007 (QBSO, 2007) and 5.0 tonne per ha for all of Vietnam in 2007 (GSO, 2007).

Before 2004, the main purpose of the cassava crop was to provide food for local people. Thereafter it became both a food and cash crop, with product sent 70km via the new Ho Chi Minh Highway to a cassava starch processing factory at Bo Trach.

By 2006, cash crops such as green pepper and rubber were expanding in response to market prices. However, rubber trees were still new so they were not contributing to household income.

Cattle and buffalo raising were important activities, with on average more than three animals per family in 2007. They were not only a source of cash income, but also a source of wealth to be drawn on for weddings, education of children, and in times of sickness. However, these livestock activities were facing challenges relating both to competition for pasture and low animal productivity. Crossbred bulls had been introduced to the district through development projects (both NGOs and government) but according to commune sources, the natural matings between the big bulls and little 'Coc' cows were not successful. Cattle raising is difficult for poor farmers because of the livestock investment. It is also a high risk activity due to animal health issues.

Most families have for a long time had small scale pig and poultry activities. The pigs are fed waste products from the crops and use labour that would otherwise not have a productive use. Some of the pigs are bred at the commune but most pigs are purchased as weaners from traders who obtain the piglets from other districts. Poultry are typically free range and scavenge the feed they can find.

Illegal logging has been a practice in this commune for a long time and still exists (Figure 10.1). Prior to the new road, logistical constraints limited the scale of activity. Since the new road, there has been a need for stronger policing. However, the nature of the forest industry has also been rapidly changing, with forest plantings increasing rapidly since 2003 and more than 400ha planted by 2007. This activity has become the main economic activity for many households (Figure 10.1).

There are no official statistics on the number of workers who have left the commune to find jobs in other provinces (usually in the south) but these numbers are considerable. They are mainly young workers who have just finished secondary school and have no family responsibilities. According to the commune leaders, some of these workers can find jobs but others cannot.

In summary, there is a diverse range of productive activities at the commune but most activities are at a low level of development. Some activities are newly developed and this is

linked to new commune infrastructure and market access. Despite the considerable development that is occurring, this is coming off a very low base. Therefore, economic conditions at the households and the overall commune were still very low in 2008.

**Figure 10.1: Farming activities at Trung Hoa commune**



Maize crop in dryland



Pepper and illegal wood



Nursery activity

#### ***10.2.4. Institutional Structures.***

##### Commune Management

Similar to other communes, Trung Hoa is administered by the Commune People's Committee with support from staff in the 10 villages and hamlets. In 2007 there were 19 full time officers including officers of the Communist Party. In addition, there were 30 part time staff at commune and village levels. Some of the staff had intermediate or primary political certificates but none had university training. None were trained in economics, management, marketing, or agriculture. Their main function was commune administration rather than commune development. There was no agricultural cooperative so cropping coordination of wetland rice was undertaken by the Commune People's Committee and village staff. According to the Commune Chairman, the average salary for full time staff was just above 1 million VND per month in 2006. By 2008, the salary had increased to about 1.3 million VND.

##### Government Support Programs

There were a range of important central government programs being implemented at this commune.

Program 134 supported poor ethnic minority families to access production land, residential land, house and drinking water (134/2004/QĐ-TTg). A particular focus was provision of permanent houses for poor ethnic minority families who were reliant on temporary shelter. Normally the program provided the materials and expertise and households were expected to provide the labour. If the family had no members of working age, then the labour was also provided. The maximum sum provided by the Government was about 15 million VND per house in 2008.

Program 135 develops infrastructure in disadvantaged communes, including roads, clinics, schools, electricity, dams, and irrigation systems (Decree 135/1998/QĐ-TTg). At this commune, the program has provided a health clinic, two schools and internal roads. These projects are undertaken by professional workers who are brought in from outside the commune. Once complete, the infrastructure is handed over by the government to the district and commune authorities.

Program 327 was a reforestation project sponsored by the government and also supported with overseas development assistance that commenced in 1992 (Decree 327/CT/15-9-1992).

The aim was to protect and maintain natural forest and reduce shifting cultivation. It fostered the planting of both forest and perennial crops. From 1998 it was replaced by Program 661 called the 'five million hectares program' (Decree 661/QĐ – TT).

#### ***10.2.5. Market development***

At the commune there is a small fair known as Thon which is held in the mornings on every fifth day. There are also some shops in the centre of the commune which sell basic groceries such as sugar, salt, species, cigarettes, sweets and others. An agent sells fertilisers but this shop only operates for some periods of the year related to the cropping calendar.

The next market is at Qui Dat some 10km from the centre of the commune. Prior to 2004 there were no coaches and there were also few motor bikes in the commune. Since 2004 there has been good access using coaches that travel each day on the Ho Chi Minh Road and National Road 12A and also more household can afford motorbikes. Households can buy and sell commodities including pigs, poultry, and fertilisers at the Qui Dat market. To purchase any high valued productive equipment, commune members would need to travel to Ba Don or Dong Hoi (80km).

To improve the situation of food security, local and central governments have subsidised programs for provision of seedlings to upland disadvantaged communes such as Trung Hoa. Sometimes these programs provide the seedlings free and at other times the seeds are sold at a cost which excludes transport and any marketing costs. This has also facilitated the early introduction of new varieties.

In summary, although market development has been very considerable since 2004, and there is greatly improved market access, input and output markets remain basic.

### **10.3. Household case studies**

Six household case studies were undertaken to obtain insights as to how commune households were making the transition to commercial agriculture. The six case studies were selected based on classification by commune officials as to poor, middle and wealthy households. First, the households are compared in relation to socio-economic structure, land resources,



human resources, and number of activities. Then productive activities are analysed in terms of their contribution to total net family income. This includes contribution of farm and non farm income in total net income. Subsequently, each activity is analysed in terms of cash inputs to total inputs exclusive of labour. Similarly, the relationships between cash outputs and total outputs are analysed to obtain insights as to market orientation both for each activity and the whole household. Finally, the dynamics of changes are analysed to obtain insights as to factors that facilitated or constrained households from progressing their income and wealth situations.

### ***10.3.1. Socio-economic structure***

Household size ranged from four to nine persons, of which two to five were classed as available workers. For TH5 this included three grown up children who had migrated to Ho Chi Minh City but for which the commune was still considered the permanent place of residence. These migrants are excluded from the active worker category. The TH2 household comprised two brothers, both married with children, and their elderly parents. The only adult male in the TH6 household was too old to be an active worker. There was no clear relationship between wealth status and education level. All families were diversified in terms of production activities.

There was major variation in land resources per household, ranging from 6 to 165 sao per household (0.25 to 8.25ha) (Table 10.3). Most of the variation related to reclaimed and garden land. The large area of garden land held by household TH3 was an outlier relative to other households, and this too was predominantly reclaimed land that was occupied rather than allocated. The amount of annual crop land allocated under Decree No 64 was small. Ability to acquire reclaimed land was linked to having labour to occupy and clear this land. This will be further discussed in Section 10.3.4 on the dynamics of change. Opportunities to occupy land had largely been exhausted by 2008.

The value of non-land productive equipment ranged from 1 to 55.5 million VND. Although there was a tendency for this to increase from poor to wealthy households, it was more associated with the particular activities of wood processing and cattle raising undertaken by TH2 and TH3. Other households relied on very simple equipment for their production activities.

**Table 10.3: Main resources of household case studies at Trung Hoa Commune in 2006**

Index	Case TH1 R	Case TH2 R	Case TH3 M	Case TH4 M	Case TH5 P	Case TH6 P	Range
Family size	5	9	5	6	7	4	4-9
Age of hh head (h/w)	45/47	45/43	43/44	45/44	46/42	-/48	43-48
Education of hh head(h/w)(yr)	7/7	7/8	7/7	7/10	10/7	-/7	7-10
Professional training	No	Yes	Yes	No	No	No	No/Yes
Available Labour (persons)	3	4	2	2	5	2	2-5
Active labour (persons)	3	4	2	2	2	2	2-4
Migrating workers (persons)	0	0	0	0	3	0	0-3
Land per hh (sao)	124	61	165	82	50	6	6-165
-Residential and garden	20	6	160	20	4	2.5	2.5-160
-Other allocated land	4	15	4	2	6	3.5	2-15
-Reclaimed land	100	40	1	60	40	0	0-100
Value of equipment per hh (million VND)	8.5	55.5	29.5	4.8	1.0	3.1	1.0-55.5
Number of activities	7	8	10	8	7	7	7-10
Cooperative member	No	No	No	No	No	No	No

R= Rich, M=Medium, P=Poor; h/w: husband/wife; hh: household

### ***10.3.2. Production and income***

Total net income per household varied by a factor of almost 13 (Table 10.4). Net income per active worker varied by a factor of almost seven, and per person varied by a factor of six.

Maize and cassava were important food crops that underpinned food security. Only two of the six households grew rice. Despite being of fundamental importance to food security, the assessed cash value of these food crops was low.

It is apparent that the agricultural income earning activities amongst the case study farmers were diverse, with a mix of crop and livestock activities. Given this diversity, the specifics of individual cases are left to section 10.3.4., where the dynamics of each case is considered.

Although forest development activities have been of major importance, for most households in 2007 this was yet to be reflected in household income.

Non agricultural activities were major contributors to total income for these case study farms. For two of the case study farms this income exceeded 50%, and for another two it was between 35% and 39%. The major non-agricultural income categories included wood processing and carpentry for TH2 and TH3, and a pension for TH6.

**Table 10.4: Production and income of household case studies at Trung Hoa Commune in year 2006**

*Unit: 1000 VND*

Index	Case TH1 R	Case TH2 R	Case TH3 M	Case TH4 M	Case TH5 P	Case TH6 P	Range
Gross income per hh	98,065	244,425	77,400	70,090	38,867	10,710	10,710-44,425
Net income per hh	66,328	121,830	40,384	44,571	18,936	9,168	9,168-121,830
Net income per active worker	22,109	30,458	20,192	22,286	9,468	4,584	4,584-30,458
Net income per person	13,266	13,537	8,077	7,429	2,705	2,292	2,292-13,537
Net farm income per hh	66,328	58,130	26,094	34,564	11,562	3,168	3,168-66,328
Net non-farm income per hh	0	63,700	14,290	10,007	7,374	6,000	0-63,700
<b>Income from each activity</b>							
1. Rice	0	0	1,900	0	630	0	630-1,900
2. Cassava	0	0	0	1,300	0	350	350-1,300
3. Maize	498	2,430	1,850	436	609	743	436-2,430
4. Pig raising	0	32,880	0	14,828	2,460	330	330-32,880
5. wine refining	0	0	0	6,007	7,374	0	6,007-7,374
6. Cattle raising	6,160	12,990	3,340	1,830	0	-20	-20-12,990
7. Gardening	4,800	4,880	0	3,500	5,294	1,000	1,000-5,294
8. Groundnut	1,770	4,950	4,100	0	0	765	765-4,950
9. Forest planting	23,100	0	0	-1,400	1,232	0	-1,400-23,100
10. Rubber	0	0	11,304	0	0	0	11,304
11. Trading	0	0	3,600	0	0	0	3,600
12. Chicken	0	0	0	14,070	0	0	14,070
13. Others	30,000	63,700	14,290	4,000	1,337	6,000	1,337-63,700

### ***10.3.3. Agricultural commercialisation***

Commercialisation is measured here in terms of both outputs and inputs (Table 10.5) using measures discussed in Chapter 5. The output factors are a measure of the extent to which outputs are sold for cash rather than used within the household, either for direct human consumption or as inputs to other production processes. In regard to inputs, land does not in general have a market value and hence there is no imputed land cost. Also, labour is a non scarce resource and hence does not have a clearly defined market value. A high input commerciality factor is therefore indicative of high cash inputs relative to internal transfers from other production activities.

#### **Outputs**

The commerciality of rice and cassava was zero, with all product consumed within the household (Table 10.5). Most households would also have purchased rice for consumption, with this rice having been grown outside the district. In contrast, the commerciality of non-

food crops, including livestock activities, was high. Overall output commerciality was high for all households, with some tendency for this to increase from poor households to wealthy households.

**Table 10.5: Commercial orientation of household case studies at Trung Hoa Commune in 2006**

*Unit: %*

Commerciality for each activity	Case TH1 R	Case TH2 R	Case TH3 M	Case TH4 M	Case TH5 P	Case TH6 P	Range
<b>Input side</b>	<b>95</b>	<b>96</b>	<b>93</b>	<b>75</b>	<b>82</b>	<b>31</b>	<b>31-96</b>
1. Rice	-	-	0	-	0	-	0
2. Cassava	-	-	-	0	-	0	0
3. Maize	100	100	81	64	100	30	30-100
4. Pig raising	-	93	-	82	69	34	34-93
5. wine refining	-	-	-	100	100	-	100
6. Cattle raising	29	100	100	47	-	100	29-100
7. Gardening	0	90	-	20	100	0	0-100
8. Groundnuts	70	100	38	-	-	28	28-100
9. Forest planting	11	-	100	0	0	-	0-100
10. Rubber	-	-	75	-	-	-	75
11. Trading	-	-	100	-	-	-	100
12. Chicken raising	-	-	-	50	-	-	50
13. Others	98	100	100	-	100	-	98-100
<b>Output side</b>	<b>98</b>	<b>97</b>	<b>93</b>	<b>93</b>	<b>91</b>	<b>81</b>	<b>81-98</b>
1. Rice	-	-	0	-	0	-	0
2. Cassava	-	-	-	0	-	0	0
3. Maize	50	0	89	0	0	25	0-89
4. Pig raising	-	100	-	100	100	100	100
5. wine refining	-	-	-	94	93	-	93-94
6. Cattle raising	95	100	82	100	-	-	82-100
7. Gardening	90	100	-	50	100	36	36-100
8. Groundnut	83	90	74	-	-	62	61-90
9. Forest planting	100	-	-	-	100	-	100
10. Rubber	-	-	100	-	-	-	100
11. Trading	-	-	100	-	-	-	100
12. Chicken raising	-	-	-	97	-	-	97
13. Others	100	96	100	100	37	100	37-100
<b>The ratio of total net to gross income</b>	<b>68</b>	<b>50</b>	<b>52</b>	<b>64</b>	<b>49</b>	<b>86</b>	<b>50-86</b>

### Inputs

Unlike previous communes studied in this thesis, the input commerciality for rice was low. This reflects that farmers take responsibility for their own crops rather than the crop management being collective. The high input commerciality for maize was influenced by subsidised seed and fertilisers that were supplied by the government. These inputs were assessed here as being commercial.

The overall level of input commerciality was high, with a tendency for this to increase from poor to wealthy households. Given that labour is excluded from the input calculations because of its lack of either a cash or opportunity cost, these high input commerciality indices indicate that most of the non-labour inputs are purchased rather than being internal transfers.

A complementary perspective on input commerciality is provided by noting that in Table 10.5 the ratio of net income to gross income is lower for TH2, TH3 and TH5 than the other households. In the cases of TH2 and TH3 this is linked to high costs for purchased wood for their wood processing and carpentry businesses. For TH5 this linked to the purchase of rice for their rice wine refining (which also provides brewer's grain for their pigs) together with other purchased inputs of piglets and feed for their pig enterprise.

#### ***10.3.4 Dynamics of change***

In the above sections, the analysis and discussion has focused on cross-case comparisons as of 2006. The focus in this section is to explore the underlying drivers and events that created the highly contrasting situation between the six case study households. The section draws on historical information collected during the first interview in January 2007, and on updated information collected in November 2008.

##### **Case TH1**

The TH1 family was classified by commune leaders as a better off household in terms of both resources and income. In 2006 there were five members of this family including three workers (two parents and an adult son) and two school age children. Although they had no professional training, the parents participated in training workshops that were held in 2000 and thereafter. These were part of poverty reduction projects run both by the government and NGOs.

In 2006 their main assets were 124 sao (6.2ha) of land of various types. They had 4 sao of dry land allocated under Decree No 64 in 1994. Until 2002 they used this mainly for maize grown for their own consumption. They also had 20 sao of garden land for which, based on their long time occupation, they had been granted a land use certificate. This garden land was reclaimed in the 1980s. In addition, from 2002 they began to reclaim some forest land and bare hills for cassava and production forest planting. By 2006, they had 5ha of reclaimed land for forest planting, but they did not have a land use certificate for this. Apart from land, the

only productive assets held by this household in 2006 were two breeding cows and a small irrigation pump used for irrigating a nursery.

Until 2002, food security was the main issue facing this family. Their maize and cassava crops did not provide enough food for them, and other cash crops and activities had been not developed. Cash income was important so they could purchase rice. The livelihood situation started to change when the road system was improved and new production activities were developed.

In 2003 they were able to convert 2 sao of maize to groundnuts. The aim was to increase their cash income for the purchase of rice. As from 2004, new maize varieties and fertilisers were provided at a subsidised price leading to significantly increased maize yields. This in turn led to more land being able to be allocated to other cash crops such as groundnuts.

The livelihood activities of this family changed considerably from 2002 when they began to clear land and plant production forest. Their decisions were based on observations in other communes and from a NGO-organised study tour of other northern provinces. In 2002, they developed one ha of *Eucalyptus sp.* Then from 2003 to 2006 they developed a further 4ha of mainly *Acacia sp.* In 2006, they sold 1ha of standing timber for 24 million VND. Then in 2008 they sold another 1ha for the same price.

In 2003 they began to develop a nursery in their garden. They invested 0.5 million VND in a small water pump. Seedlings were purchased from the Bo Trach district and plastic bags from the central district market. By 2005 they were a major supplier of seedlings at the commune, and they had to employ temporary workers during the seasonal period of peak demand. In 2006 they earned 30 million VND (nearly 2000 USD) from the nursery. This activity created remarkable changes in their livelihood.

Given the large size of their garden, as from 2002 they were also able to invest in fruit trees. By 2006 they had about 200 trees of mango, litchi (lychee), longan, persimmon and sapodilla plum and they were beginning to harvest the fruit.

It is apparent that the success of this household was linked to their ability to acquire considerable land resources. This in turn was linked to their entrepreneurial attitudes and early mover status based on what they observed in other communes and districts. All of their

business developments commenced after the year 2000 and until 2002 their most important challenge was food security. By 2008 they had built a platform of income activities that gave the potential for further investments.

### **Case TH2**

The TH2 household was considered by the commune leaders to be a better off household in terms of both income and production resources. At nine people, this household was unusually large, comprising two brothers, their wives and their children, plus the parents of the brothers. Although their formal education was not high, the two brothers had carpentry skills that they had learned from their father.

Their carpentry began a long time ago whereas wood processing activities started in 1996 when electricity reached their house and they were able to purchase a circular saw. Initially the saw was to assist with their carpentry but then they used it to provide a service to other families. However, over time as they increased their carpentry skills, the carpentry became more important than the wood processing. In 2006 they earned 6 million VND from the wood processing whereas they earned 60,000 VND per day per person from furniture making. In 2006 they earned 6 million VND from the wood processing whereas they earned 60,000 VND per day per person from furniture making. Although their sources of income were diverse, the carpentry became the most important.

This household had 6 sao of garden for which they held a land use certificate. They also had 15 sao of dry land allocated in 1994 under Decree No 64. In addition, they reclaimed 2ha (40 sao) of forest from 2004 for production forestry planting. By 2008 they still had no land use certificate for this land. Their production assets apart from land were breeding buffaloes, cows, a large cement pigsty, and carpentry equipment. The total value of this equipment was 55.5 million VND in 2006, with the buffaloes and cattle being the most important.

Maize was the traditional food crop in this family, for which they used the 15 sao of dry land. With increasing yields, they were able to progressively reduce the crop area to 6 sao in 2006, when they used the new C888 variety and applied chemical fertilisers to achieve the relatively high yield of 250kg/sao (5 tonne/ha). However, the cash value of maize cropping was not competitive with crops such as groundnuts and so they only grew enough maize to satisfy their own needs for food and animal feed.

Cattle raising was a traditional activity for this family. Originally, cattle were raised as draught animals but by 2000 breeding was the main purpose. By 2006 they had two buffalo and four cross-bred cows which were much larger than the indigenous Coc breed. They had to be managed carefully to avoid matings by the Coc bulls.

Pig raising was another traditional activity in their family but there were significant changes from 2004 when they invested 8 million VND to build a large cement pigsty. This allowed them to expand from 3-4 pigs per business cycle to 30 pigs per business cycle. This decision was linked to the two wives being underemployed, and pig prices being reasonable at that time. With this expansion they had to purchase both local feed from other families and also some industrial feed from Qui Dat Market. Piglets were purchased from Ba Don town and transported by coach. Pigs were sold at 70-80kg at home for slaughter at Qui Dat. They had up to four cycles per year, but their level of production varied depending on costs and returns.

Groundnuts became a crop of significance starting in 2003 and by 2006 they were growing 9 sao. They were buying seeds of a new and high yielding variety from both the commune and Qui Dat Central Market. They were also applying fertilisers but the yields were not high at 110kg per sao. In part this may have been due to damage from free ranging cattle. However, this activity still provided a high income because of high prices for groundnuts (7500 VND per kg in 2006 and 13,000 in 2008)

The family developed a range of perennial crops. Initially, prior to 2000 they grew just a few green pepper trees for their own use. By 2006 they had 500 trees despite considerable losses from disease in earlier years. They also had a small green pepper seedling activity and they sometimes sold these seedlings to other farmers. Despite some irrigation and the use of both pig and chemical fertiliser, they only managed about 1kg per tree. However, their trees were no longer dying. The price of green pepper ranged from 20,000 to 60,000 VND per kg, which meant the profits were highly volatile, ranging from unprofitable to highly profitable.

In 2003, they developed 2ha of acacia (5000 plants) on cassava crop land. They no longer needed this land for food security and they were able to do the development using their own labour. By 2008 they had not commenced harvesting these trees but they hoped to earn 30 million VND per ha.



In 2004 they developed 350 aloe trees (*Aquilaria Agallocha*) in their garden. The seedlings were purchased from a nursery in Bo Trach. They lacked knowledge as to how to grow these trees but they had heard that after 8-10 years these trees can be highly profitable. They also developed some cinnamon trees but the death rates were too high and they did not persist with these.

One of the brothers was also working as a part time commune security officer for 200,000 VND per month. In 2008 he was planning to quit this job and focus on carpentry.

It was apparent that this family were early movers in developing small business activities, starting with carpentry and then the purchase of a circular saw in 1996. The income they earned from carpentry and wood processing placed them in a strong position to then develop a range of agricultural activities when the commune became better linked to external markets. Their investment in pigs earned them cash profits and their investment in perennial crops built up their asset base. They based their business decisions in part on what they saw happening in other communes, and also on their own judgements as to profitability. They showed a willingness to move out of activities, sometimes on just a temporary basis, if those activities were unprofitable due to either disease or market conditions.

### **Case TH3**

The TH3 household was considered by commune leaders to be middle income in 2006. The household comprised a married couple and three school age children.

This family set up their own household in 1997. They had a particularly large garden area of 8ha but initially it was very isolated. However, the new Ho Chi Minh Highway (basically following the old Ho Chi Minh footpath made famous by what in Vietnam is called the American War) passed by their garden, which then gave them exceptionally good access. They also had 4 sao of allocated land under Decree No 64, and another 1 sao which they had obtained by auction from the commune, with use rights for two years.

The key activity that underpinned economic development of this family was wood processing. The husband learned technical skills in wood processing while working as a migrant worker in Dac Lak prior to 1997. On setting up his own household in 1997, he purchased a mobile circular saw for 11 million VND using 5 million VND of credit from the commune authorities under a Government 'credit for the poor' scheme, and another 6 million VND from the State

Agricultural Bank. For several years he was able to earn about 1 million VND per month from wood processing, net of employed labour, based on working one week in each month. In 2004 they invested 21 million VND of their own savings to buy a small tractor for which the main use was to facilitate moving the mobile saw, and hence reduce labour costs. This tractor was also used for land preparation for about 15 days per year, but the income earned from this was minor. After 2004 the processing of wood became less profitable due to increased competition.

In 2004 the wife also opened a food shop (a roof providing shelter but no walls) at the Tho market (fair). This was at the time the Ho Chi Minh road was built, and more coaches travelled through the commune. This operated six days per month and earned 50,000 VND per day.

The agricultural developments of this household, which were both diverse and complementary to each other, were facilitated by their earnings from the wood processing. Their traditional crops were maize and rice, both of which were grown as dryland crops and hence only one crop per year. In 2003 and 2004, they replaced local seed varieties of maize with new varieties (CP888 and 919) under a program subsidised by the Government. Subsidised fertiliser was also provided. Yields increased considerably and this meant that less maize area needed to be planted. With increasing availability of cash, combined with better market connections, they were also able to purchase additional rice to supplement about 900kg of rice they grew themselves on 2ha. This in turn meant they were consuming less maize.

In 1998 they began planting rubber trees with subsidised seedlings and fertilisers under what was known as Government Program 327. They planted 1500 rubber trees in their garden on land that had previously been used for a coffee crop. This coffee plantation had failed due to insufficient water. However, they paid insufficient attention to these trees until 2005, and many were destroyed by cattle. As from 2005 they began to appreciate the income potential and took much greater care. Thereafter they were able to obtain a substantial income of about 20,000 to 40,000 VND per day for 10 months each year from the surviving 200 rubber trees. Because of the high income, they replanted 700 rubber trees in 2007 and 2008.

In 2003 and 2004 they also reclaimed some forest land next to their garden to plant 1ha of *Eucalyptus sp.* and 1ha of *Acacia sp.*, both at high density of about 4000 trees per ha. This was

in response to observations as to what other households were doing both at this commune and other communes. This coincided with easy availability of seedlings at the commune. Until 2008, they had not harvested any products from these forests but they were aware that other households were beginning to sell these trees and were obtaining considerable income from them.

In 2005, and because of their large garden, they were selected for a district project to develop fruit crops with guidance from the Fruit and Vegetable Research Institute in Hanoi. Planted species included grapefruit, orange, mango, longan, and litchi (lychee) on an area of 1.5ha. As of 2008 they had not earned income from these.

It was apparent that livelihood changes at this household were initially facilitated by the technical skills in wood processing and the ability to borrow funds for a mobile circular saw. The household was also particularly fortunate in that they had a large area of previously isolated garden that subsequently was adjacent to the new highway. Despite some of their initial agricultural endeavours being failures, such as the initial large scale rubber plantation, this family was making strong progress to develop diversified land-based income streams.

#### **Case TH4**

The TH4 household was considered to be a middle level household in terms of income and productive resources, according to leaders of the commune. The family comprised two parents and four children. Two of the children were studying at vocational school in Ha Noi for intermediate certificates in Education and Library, and the other two were still at secondary school. The wife had worked for several years as a co-ordinator for a poverty reduction project and this gave her a monthly cash income of 800,000 VND.

This family had 1ha of garden, originally reclaimed from hilly and poor forest, for which they had a land use certificate. They also had reclaimed 3 to 4ha of hilly land from 2004 to develop production forest. They had no land use certificate for this and because it had not been surveyed did not know the precise area. They also had 2 sao of allocated land under Decree No 64 from 1993. Their productive equipment comprised a small cement pigsty, one breeding sow, and rice wine refining equipment valued at 4.8 million VND. They had borrowed a total of 50 million VND from banks. Although loaned for productive investments, in fact they were using this mainly to support the education of their children.

The transition to commercial agriculture for this family was through diversification of their farming activities and the development of cash crops. However, the transition only commenced in about 2001 and most of it was still at an early stage.

Rice, maize and cassava, all grown as dryland crops, used to be the three main food crops in this family. However, with better varieties and higher yields they had been able to reduce the area allocated to these crops. This allowed them to allocate 7 sao of land to cassava for animal feed.

Pigs were a traditional activity in this household but prior to 2001 they only reared two to three pigs per cycle. In 2001 they invested 1 million VND in a small pigsty that allowed them to raise eight pigs per cycle. They fed these pigs mainly on local feedstuffs such as cassava that they grew and purchased, together with brewer's grain from a complementary rice wine refining operation that they undertook. Mixing the brewer's grain with the cassava and allowing it to ferment prior to feeding to the pigs, avoided the need to cook the cassava. They achieved 3 cycles per year and liveweights of 80kg for sale pigs.

Silkworms were raised using leaves of cassava. The silkworms were sold for human consumption and earned about 3 million VND per annum. The scale of this enterprise was limited by the seasonality of the cassava production. They also grew chickens which they incubated naturally from the eggs of ten hens. The chickens were kept in their garden and fed supplementary maize, cassava and rice.

Some parts of their garden were not used effectively. They had a range of fruit trees but of poor quality. In 2003 and 2004, they tried to develop 100 green pepper trees but these had died.

In 2004, they began to develop production forest activities when they observed the development of forest activity at other households and communes. This activity occurred on reclaimed land that had been either bare or carrying scarce vegetation of trees and bushes. In the first year, they grew 1ha and by 2006 they had 3 to 4ha (about 7000 plants). In the first year they bought seedlings from another nursery at the commune but then developed their own nursery for their own use. They selected acacia trees because they developed fast and because this was what other people were doing. As of 2008 they had not sold any product.

It was apparent that this family was in general following the activities undertaken by other families. They had limited technical skills but were achieving a moderate income from a diverse range of complementary activities. The monthly wage of 800,000 VND earned by the wife as a project co-ordinator made a significant contribution to family income. This family were also making a major investment in the professional education of their children.

### **Case TH5**

The TH5 family was classified as living below the poverty line in 2005. However, in 2006 their income was just above the poverty line. In 2007 and 2008 they increased their income further.

This family comprised two parents and five children. By 2006, three of the children had left for southern provinces seeking work. One child was still at school, and the remaining child was working with the two parents.

This family had 4 sao of garden for which they had a land use certificate. They had 6 sao of dryland allocated under Decree No 64 in 1994 for 20 years. They also had 2ha (80 sao) of reclaimed land for which they obtained a land use certificate in 2008. Apart from land, their productive assets comprised a simple wooden pigsty, a small water pump and rice wine refining equipment.

The first objective of this family had always been to obtain food security. Beyond that, they tried to diversify their livelihood activities and develop cash income. The food crops were rice and maize. They also had a small pig raising enterprise. Until 2004 they grew two pigs per three month business cycle. Thereafter they expanded to six pigs per business cycle. They funded this expansion through remittances from their children who were working in the southern provinces. They used mainly local feeds but also fed brewer's grain from a complementary rice wine refining activity. In 2006 they were achieving pig liveweights of 55kg and a price of 10,000 to 13,000 VND per kg.

The TH5 household grew 6 sao of dryland rice each year for a yield of about 50kg/sao (1 tonne per ha). They used their own seed and did not use fertiliser. Despite the low yield, this crop was of considerable importance to their food security. They also grew maize using improved varieties and fertiliser supplied under a government subsidised scheme, and achieved yields of about 200kg/sao. In 2005, they tried to develop 4 sao of groundnuts but

with a yield of only 50kg per sao and a price 6500 VND per kg, the activity did not cover costs. They did not continue with the groundnuts in 2006.

The activities that allowed this family to move out of poverty were related to forestry plus some remittances from their children. In 2001 they planted 500 acacia trees in their garden. Then between 2003 and 2006 they planted another 7000 acacia trees (2ha) on reclaimed land. They also developed a small nursery both for their own needs and for selling to other farmers. In 2006 they received a net income of 4.6 million VND from 30,000 seedlings. In 2006 they also sold 70 large trees for 1.26 million VND. In 2006, their children sent back 8 million VND to help them to repair their house and pay back loans. In 2007 and 2008 they sold, in total over the two years, about 1ha of trees for 30 million VND.

### **Case TH6**

The TH6 family was classified as living below the official poverty line according to the leaders of the commune. There were four members of this family, comprising an old man who was sick and two daughters, one of whom had a 2 year old child. Effectively there was only one worker and no male workers.

The family had 2.5 sao of garden land for which they had a land use certificate and 3.5 sao of dry land allocated under Decree No 64. They had no forest land. They said that they could not develop any forest land because they lacked a male worker. Their only productive asset apart from land was one cow.

The main food crop was maize. As from 2004, they grew the new high yielding variety VN10. Although they could not afford chemical fertiliser they did apply pig manure. They achieved increased yields of 200kg/sao. This allowed them to reduce their maize area from 3.5 sao to 2 sao. They used this freed up land to develop 1.5 sao of groundnuts. The groundnuts yielded about 80kg/sao. Some of this was consumed and some was sold.

The household had several small complementary activities involving growing cassava for feeding to pigs (the roots) and silkworms (the leaves). They produced just one cycle of pigs per year with two pigs per cycle and achieved a liveweight of 70kg. Approximately 15kg of silkworms were produced of which two thirds were sold for about 20,000 VND per kg. They had one cow. When the father was healthy they had owned two cows plus several calves, but they lost these either to disease or snake bites.

The major income source in this family was an army pension of 500,000 VND per month received by the old man. However, much of this was required for treating his illnesses.

It was apparent that this family was struggling to improve their livelihoods. Their major constraints were no male worker, poor capital and poor technical skills. All of their activities were undertaken at small scale and using simple technologies.

#### **10.4. Discussion**

The livelihood systems in this commune are diverse, including food crops, cash crops, animal raising activities, and forestry. Food crops include rice, maize and cassava. The preferred food crop is rice but wetland rice is very limited in area and dryland rice is limited both by cropping area and yield. Food security has been a key issue at this commune and a considerable proportion of the population remain focused on meeting the basic necessities of life.

There have been two major types of interventions that together are transforming livelihoods in this commune. One type is a range of assistance programs aimed at introducing improved agricultural methods for both food and cash crops. These have been successful in raising yields. Another type has been provision of infrastructure, including targeted provision of housing, internal roading, and external roading. The roading has linked the commune much more effectively with external markets.

Although all of these interventions have been important, it can be argued that it has been the improved physical connection to markets that has been the most important in creating opportunities for individual households to move out of poverty. The assistance with improved varieties of seed and fertiliser has then complemented and further facilitated this process.

The more innovative families were quick to respond to new opportunities, and other households then copied them. Households that were able to occupy larger areas of forest land had a considerable advantage over those that either could not clear land through lack of male labour, or did not move quickly enough through lack of early perception as to the emerging opportunities.

Education levels were low in all case study families. However, two families with technical skills in wood processing and carpentry were able to use these to provide an income base that then underpinned other developments.

Input supply chains and output supply chains were both developing, but more so for output chains than input chains. The major inputs were seeds and fertilisers, for which the government was playing a significant role. In contrast, output supply chains were based on private enterprise and managed by collectors and traders. Most households had limited information as to market prices and sold directly to collectors and traders who visited them at their farms.

There were a number of unresolved issues relating to land tenure for forest production, and the sustainability of some forestry activities. There were also unresolved issues relating to common property use of land for grazing, and increased pressure on this land. Although the poverty levels in this commune were rapidly declining during the period 2005 to 2008, it appeared that there were some families who were being left behind, and this was driven by lack of access to resources. The existing institutional structures meant that there was potential for inter household inequality of living standards to further increase.

\*\*\*\*\*



## CHAPTER 11

### **Livelihoods in a Remote Mountainous Commune with Ethnic Diversity**

#### **11. 1. Introduction**

The purpose of the chapter is to explore the transition to commercial agriculture in a remote mountainous commune characterised by poor market access. The commune is Hoa Son in the north west of Quang Binh Province (Figure 5.1). The commune is also characterised by a diverse ethnic structure.

The chapter is structured in four sections. Following this introduction, the second section presents the natural, social and economic conditions of the commune. This includes how these conditions have been changing in recent years. The third section comprises six case studies of individual households of different wealth levels. In particular, the input and output commerciality of each family is investigated, together with the dynamics of change that have been occurring in each family. In the final section, a discussion of the findings is presented, including issues related to ethnicity.

#### **11. 2. Natural and socio-economic background of the commune**

##### ***11.2.1. Location and infrastructure***

Hoa Son commune is located about 40km from the centre of Minh Hoa district (Qui Dat Township) in the north west of Quang Binh Province. It has borders with Dan Hoa Commune in the West, the Lao border in South-West, Thuong Hoa Commune in the South-East, Trung Hoa Commune in the East and Hoa Hop Commune in the North.

From the centre of the commune it is approximately 15km to National Road 12A. Prior to 2000 there was no connecting road to national Road 12A. A basic road was built at that time but vehicles could still only get through to the commune in dry weather. In 2006 the road was sealed and thereafter trucks could get through in most times despite a steep pass that had to be crossed. By 2008 there was still no public transport to the commune and the local people had

to travel either by foot or motorcycle the 15km to National Road 12A. However, very few people owned motorcycles. Between 2006 and 2008 some internal roads were being constructed in the commune as part of the National Program 135 for disadvantaged communes.

National Road 12A was itself also very poor until 2003. Thereafter, once people reached National Road 12A there was public transport to the centre of the district (Qui Dat). Completion of the Ho Chi Minh Highway in 2004 further improved access through to Ba Don town and Dong Hoi City. Thereafter there was increasing public transport passing through the district to and from the Cho La Border Gate with Lao.

According to the Chairman of the commune, in 2006 it cost 400,000 VND to rent a truck (3 cubic meters) to transport goods from the commune to the centre of the district. In 2008 this figure was 700,000 VND per trip, despite significant improvement in the road. When buffaloes or cows were sold to collectors or traders they were led on foot by local people to the neighbouring communes of Hoa Hop or Trung Hoa (12-15km) for a cost of 30,000 to 50,000 VND per head, depending on location and numbers.

The first telephone line to the commune was established in 2005 to the office of the People's Commune Committee. However, the quality was not stable. A telecommunication network to households was still not available in 2008.

Electricity had reached all villages within the commune by 2006. Approximately half the households had television in 2006. Cement-based buildings for primary and secondary schools were built in 2007, and a two-level commune health clinic was built in 2008.

### ***11.2.2. Land and land use***

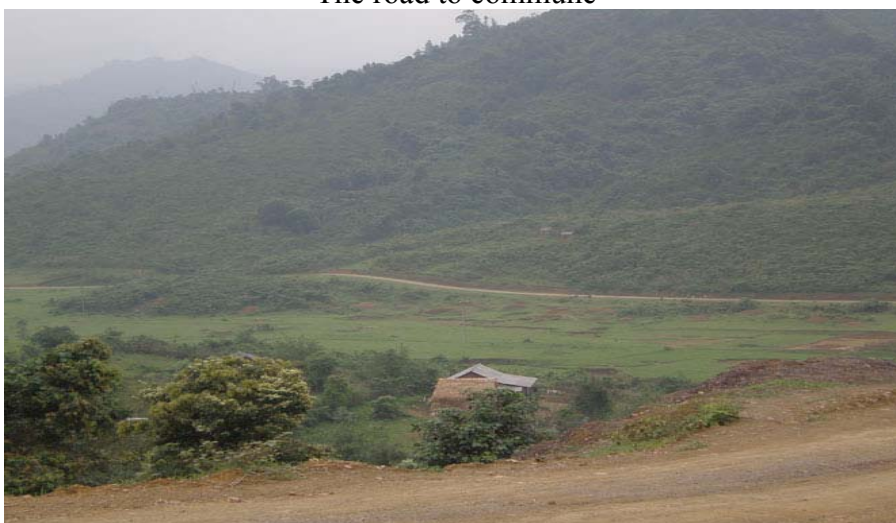
The topography of the commune is characterized by steep mountains and forestry (Figure 11.1). The total natural area of the commune was 18,031ha in 2008, making it one of the largest communes in the district. However, agricultural land was very limited (Table 11.1). In 2005, this 'agricultural' land was 690ha but most of this was natural grassland grazed in common and unsuitable for cultivation. By 2008 the agricultural land had reduced to 682ha due to floods destroying some land and also the transfer of some land to special purposes such as

roads and residential land. Cropping land (annual and perennial) was only 93ha in 2008 but had increased considerably from 55ha 2005.

**Figure 11.1: The road, topography and free cattle raising at the commune**



The road to commune



Land use



Free cattle grazing

More than 80% of the total natural area is forest. Although the total area of forest did not change between 2005 and 2008, there were considerable changes in classification. The ‘special purpose’ land was formerly watershed forest that in 2007 became part of Phong Nha-Ke Bang National Park. Additional watershed forest was transferred to production forest in 2007. The commune also includes more than 2500ha of unused land, comprising bare or scarcely vegetated hills and mountains.

**Table 11.1: Land use at Hoa Son Commune in 2005 and 2008**

	2005		2008	
	Quantity (ha)	%	Quantity (ha)	%
<b>Total area</b>	<b>18,007.0</b>	<b>100</b>	<b>18,030.7</b>	<b>100</b>
Agricultural land	689.7	3.8	682.1	3.8
-Pasture	635.0	3.5	588.7	3.2
-Annual crops	38.6	0.2	65.9	0.4
-Perennial crops	16.1	0.1	27.4	0.2
Forestry land	14,712.1	81.7	14,712.1	81.6
-Production forest	2,785.4	15.5	4,985.1	27.7
-Watershed forest	11,926.7	66.2	805.0	4.5
-Special purposes	0.0	0.0	8,922.0	49.4
Aquaculture land	0.00	0.00	0.0	0.0
Non-agricultural land	47.9	0.3	66.0	0.4
Unused land	2,557.3	14.2	2,570.5	14.2

*Source: Minh Hoa District yearly statistical books, 2005 and 2008*

In general, the land resources are characterised by limited areas of cropping and large areas of forests together with some grazing land. A complication in regard to obtaining accurate statistics is that some of the cultivation is based on shifting cultivation of sloping land (‘slash and burn’ techniques) where crops are grown for three or four years and then the farmers move to new land.

### ***11.2.3. Socio-economic background***

Hoa Son held a classification in 2008 of being one of the most disadvantaged and poorest communes in Vietnam. It had therefore received assistance under both the 135 program (infrastructure development program) and the 134 program (eliminating temporary houses for poor households).

According to district statistics (Table 11.2) the number of ethnic minority households increased considerably between 2005 and 2007. This was in part due to reclassification

changing from being based on the ‘head of household’ to either spouse. However, the number of ethnic individuals also increased greatly from 45% to 73% of the total commune population. This was linked to government and NGO assistance becoming available to communes with high ethnic minorities, and hence an incentive for more accurate recording.

There were six Vietnamese ethnic minority groups at the commune, plus the Kinh people who are the majority ethnic group in Vietnam. The Vietnamese minority groups in this communes included Sach (233 households with 1042 people), Khua (2 households with 5 people), May (2 households with 9 people), Ruc (3 households with 17 people), and Tho and Arem (5 households with 30 people). The Vietnamese minority groups have their own languages and in general have lower education levels than the Kinh. The traditional livelihoods of the minority groups have been based on the forests, a semi nomadic lifestyle, and a lack of markets. Many of the ethnic minority people have only a basic understanding of the Vietnamese language.

The poverty level in this commune, as measured by the Government of Vietnam poverty line of 200,000VND per person per month for rural communes (Decision 170/2005/QDTTg of the Prime Minister), declined from 73% in 2005 to 62% in 2007. In broad terms, the poverty line identifies families who still face food security concerns.

**Table 11.2: Socio-economic indicators of Hoa Son Commune from 2005 to 2007**

Year	2005	2006	2007
Number of households	272	297	309
Number of ethnic households	117	185	245
Population (persons)	1476	1487	1517
Number of ethnic people	656	917	1103
Total workers (persons)	715	776	791
Poverty rate (% of households)	72.7	68.3	62.1
Wetland rice cultivation area (ha)	6.8	12.0	11.2
Dry land rice cultivation area (ha)	0.0	11.0	11.0
Cassava (ha)	48.0	49.0	47.0
Sweet potatoes (ha)	3.0	4.7	8.0
Maize (ha)	39.0	43.0	48.0
Groundnuts (ha)	80.0	80	80
Number of buffaloes	453	409	411
Number of cows	948	1122	1145
Number of pigs	1356	643	1063

*Source: Minh Hoa District 2005, 2006, 2007 statistical year books, and commune reports*

Many people at the commune were underemployed. Although a small number of commune members had migrated to southern provinces to find work, this was difficult given their unfamiliarity with urban lifestyles and their low education levels.

As of 2007, the farming systems were dominated by cattle raising, groundnut cropping, cassava cropping, maize cropping, rice cropping and pig raising. In addition, forestry was very important, although it was illegal because none of the harvesting was coming from planted forests.

Cassava was a traditional crop at the commune, and a major food for households. This was grown on cleared hillsides and on land that was not necessarily officially classified in Table 11.1 as agricultural land. Farmers tended to leave the crop in the ground and harvest it throughout the year as they needed it. Maize cropping was another traditional activity and together with cassava was one of the two most important food crops.

Rice cropping, particularly wetland rice, was a new crop subsequent to development of a small irrigation system. However, the irrigation system was affected by land slides, soil erosion and floods, so the quality degraded very fast. About 7.5 of wetland rice was grown in winter-spring, together with 4.5ha of wetland rice and 10ha of dryland rice in the summer-autumn season. Even for this area, water was limited and yields were low. The area of dryland rice may have been under-reported as it was partly grown on forest land that had been 'slashed and burnt'.

Groundnuts were the main cash crop at the commune. This crop was expanding rapidly in response to increasing prices (7000 VND per kg in 2006 to 12,000 VND per kg in 2008). The 2008 area of production as reported by the commune was 160ha, which is double the area reported for 2007 (Table 11.2). Groundnuts are a very suitable crop for this commune because they have a high value per kg, which is important given the transport constraints. However, commune yields in 2007 of 15 quintal per ha (1.5 tones per ha) were low. Likely factors causing this poor performance were low natural fertility, poor seed quality and an unreliable water source.

Cattle raising, including buffaloes, was a major and increasing livelihood activity at the commune, with on average five head per household in 2007. About one third of these would be buffalo, raised mainly as draught animals for pulling wood from the forests. The cattle

were allowed to range free and on occasions might graze with no herding for a period of months. Despite a government vaccination program for foot and mouth and other diseases, many cattle remained unvaccinated. Until 2006, all cattle were of the local Coc breed and were worth, according to the Chairman of the commune, 3 to 4 million VND for a bull and 2.5 million VND for a cow. A one-year-old calf, sometimes slaughtered at festivals, was worth 0.5 to 1 million VND. In 2006, under an ADB project poverty reduction project, seven crossbred bulls were distributed to the commune to improve the size and quality of the cattle. By late 2008 there were only six crossbred calves. This low success rate was believed due to the small local cows avoiding the large bulls.

Households typically raised one to three pigs at a time, with one or two business cycles per year, using by-products from other farming activities together with surplus labour. There were no breeding sows at the commune. Other constraints included low final demand combined with high prices of weaners, high transport costs, and poor technical skills.

Commune members are permitted to harvest subsidiary forest products such as rattan, bees, bamboo, and dead wood, but they are not allowed to harvest logs. However, logging activity was occurring. Forest planting activities were beginning in 2006 and 60ha were planted in 2008.

#### ***11.2.4. Institutional arrangement***

##### Commune Management

The institutional arrangements at Hoa Son commune for economic and agricultural development are similar to other communes. The district agricultural department (called the 'Economic Department') deals with specialised agricultural issues. However, they only visit the commune when crops or animals are affected by diseases or pesticides, or when district and higher levels of government have plans or activities at the commune.

All economic plans including agricultural plans are developed by the Commune People's Committee and approved by the Commune People's Council. The staff of the Commune People's Committee are the bridge between farmers at the commune and staff at the district level.

In 2006 there were 19 full time commune staff of whom one had a university degree. Most staff had primary or intermediate certificates, but some only had high school or even secondary school qualifications. Most important positions at the commune were held by people who had intermediate certificates in politics. In 2006 there were no staff with a degree or certificate in agriculture or business. In 2008, there were two staff who had graduated from university with part time training. This was the start of a programme to increase the capacity of commune staff. However, they were not trained in business, economics or agriculture. Commune staff received on average 1.2 million VND per month in 2006, depending on the position they held.

There was a commune veterinarian who worked full time and 5 village veterinarians who assisted with vaccination programs. Their training was of only a few weeks.

In recent years selected young people have been sent from the commune for training at vocational college (15 people) and university (16 people). As of 2008, none had completed their training. There was uncertainty as to whether they would return to the commune.

#### Special Credit

As one of the most disadvantaged communes in Vietnam, this commune could access funds through the Bank for Social Issues. The total amount available varied between years but was typically about 500 million VND for the commune. The funds were allocated by the commune to the five villages. The villagers would then have a meeting to decide which families could borrow in that year, with each loan being 5-10 million VND. The loans could be used for a broad range of productive purposes or to ensure food security following drought, flood, or other misfortune. On occasions, poor households used the loans to fund special events. Not all households sought these loans as they did not have a way to use the funds productively.

Depending on types of funding, the loans were administered through the Women's Union, the Farmers' Union or Commune People's Committee. The only interest was to cover monitoring and management. The term of the loan was typically two to three years, with any interest and a proportion of principal paid quarterly.



### ***11.2.5. Market development***

There were no markets at the commune. In 2006 there were four small shops that sold basic items such as salt, sugar, sweet, tobacco, and alcohols. They did not sell any production inputs such as fertilisers or pesticides. In 2008, the number of these shops increased to about 10 but there were still no shops selling inputs.

The nearest market was 12-15km distant at Hoa Hop commune. At this small market there was a fertiliser shop, but it only operated during the cropping season. Other markets were the Tho market at Trung Hoa commune (30km from the commune) and Qui Dat market (40 to 45km from the commune).

Input supplies for seed and fertiliser were mainly handled through the Commune People's Committee. In some cases, these inputs were supplied by the Government and then allocated by the Commune People's Committee. In other cases, farmers ordered the fertiliser they needed at the start of the crop cycle and the Commune People's Committee contracted the supply to the Quang Binh Fertiliser Company who also organised transport. Farmers typically paid some proportion of the cost at delivery and the remainder at harvest. Farmers paid the cost net of government subsidies and any bulk discounts.

Given the lack of local markets, collectors (traders) were playing a role in connecting households to markets. These collectors used either their own motor cycles or hired trucks. In general, these collectors come from outside the commune but they worked with local people to facilitate the collection process. Despite the improved roading system, isolation and cost remained as barriers to market development.

### **11.3. Household case studies**

Six household case studies were undertaken to obtain insights as to how commune households were making the transition to commercial agriculture. As with previous chapters, the six case studies were selected based on classification by commune officials as to poor, medium and wealthy households. In this section, the households are first compared in relation to socio-economic structure, land resources, human resources, and number of activities. Productive activities are then analysed in terms of their contribution to total net family income as well as

the contribution of net farm income and non-farm income to total net income. Subsequently, each activity is analysed in term of cash inputs to total inputs exclusive of labour. Similarly, the relationships between cash outputs and total outputs are analysed to obtain insights relating to market orientation both for each activity and the whole household. Finally, the dynamics of changes are analysed to obtain insights as to the range of factors, including ethnicity, that facilitated or constrained households from progressing their income and wealth situations.

### 11.3.1. Socio-economic structure

Household size ranged from three to eight members of which two to five were classed as available workers (Table 11.3). There was a tendency for both available and active workers to increase from poor to wealthy households. The two migrant workers from HS2 were young people who had left after completing secondary school. Poor households tended to have a lower education level. There was a clear relationship between wealth level and both access to land resources and availability of non-land productive capital. This non-land productive capital was mainly cattle. The Kinh people tended to have more education than those of Sach ethnicity.

**Table 11.3: Main resources of household case studies at Hoa Son Commune in 2006**

Index	Case HS1 R	Case HS2 R	Case HS3 M	Case HS4 M	Case HS5 P	Case HS6 P	Range
Family size	7	8	7	7	5	3	3-8
Age of hh head (h/w)	59/56	46/46	40/39	45/43	-/50	24/27	24-59
Ethnic group (h/w)	Kinh /Kinh	Kinh /Kinh	Sach /Sach	Sach /Sach	-/Kinh	Sach /Kinh	Kinh /Sach
Education of hh head(h/w)(yr) <sup>1</sup>	7/7	10/7	5/8	6/6	4/-	5/9	4-10
Professional training	No	No	No	No	No	No	No
Available Labour (person)	3	5	2	3	2	2	2-5
Migrating workers (person)	0	2	0	0	0	0	0-2
Active labour (person)	3	3	2	3	2	2	2-3
Land per hh (sao)	114	81	26	17	9	15.5	9-114
-Allocated land (sao)	2	1	2	2	1	0.5	0.5-2
-Reclaimed land (sao)	112	80	24	15	8	15	8-112
Value of equipment per hh (million VND)	41.5	33.7	3.0	19.3	3.0	0.0	0-41.5
Number of activities	7	7	6	7	6	4	4-7
Co-operative member	No	No	No	No	No	No	No

R= Rich, M=Medium, P=Poor; h/w: husband/wife; hh: household

The allocated land varied from 0.5 to 2 sao per household. This was mainly residential land and wetland. In contrast, reclaimed land was dominant at all households, comprising between

89% and 98% of their total land area. This land had largely been acquired by ‘slash and burn’ activities dependent on having a male worker.

There was a tendency for wealthy households to be more diversified in their production activities than poor households.

### ***11.3.2. Production and income***

Total net income per household, per active worker and per person varied by a factor of about nine, six and six respectively (Table 11.4). However, most of this difference related to household HS1.

The dominant crops were dry rice, cassava, maize and groundnut. Cattle and pigs were the two main animal raising activities. In addition, forest exploitation was important. Given the illegality of such activities it may have been under-reported. Groundnut crops were grown by all households and were a particularly important source of cash for the poor families. Cattle raising was particularly important for the wealthy families.

In all six families food security was dependent on maize. Cassava and rice were also grown by most households. Only one household (HS4) had wetland rice and then only 1 sao. The value of these food crops ranged from approximately 2% to 24% of total net household income.

Other sources of income included a monthly pension of 2 million VND for the HS1 father together with a monthly wage of 1 million VND earned by the son as a commune officer. In fact the father had two pensions, one as a former commune officer and the other as a former soldier.

The proportion of income from non-farm activities ranged from 0 to 49%. For wealthy household HS1, the non-farm income was from pensions and salary, whereas for medium household HS3 and poor household HS5 it was from hired employment at the commune. There was some difficulty in separating farm from non-farm income for cases HS3 and HS5, because the hired employment related to forest exploitation.

**Table 11.4: Production and income of household case studies at Hoa Son Commune in year 2006**

*Unit: 1000 VND*

Index	Case HS1 R	Case HS2 R	Case HS3 M	Case HS4 M	Case HS5 P	Case HS6 P	Range
Gross income per hh	91,910	43,700	11,220	22,538	9,815	9,908	9,815-91,910
Net income per hh	79,858	36,187	10,672	18,546	9,275	9,265	9,265-79,858
Net income per active worker	26,619	12,062	5,336	6,182	4,638	4,633	4,633-26,619
Net income per person	11,408	4,523	1,525	2,649	1,855	3,088	1,525-11,408
Net farm income per hh	40,768	36,187	7,072	18,546	7,275	9,265	7,072-40,768
Net non farm income per hh	39,090	0	3,600	0	2,000	0	0-39,090
<b>Income from each activity</b>							
1. Rice	0	2,870	1,305	548	0	480	480-2,870
2. Cassava	0	0	1,150	300	390	0	300-1,150
3. Maize	1,302	208	119	716	165	537	165-1,302
4. Pig raising	5,430	2,760	0	1,390	0	0	1,390-5,430
5. wine refining	3,090	0	0	0	0	0	0-3,090
6. Cattle raising	32,590	13,239	2,980	7,820	2,080	0	2,080-32,590
7. Groundnut	1,446	11,110	1,518	3,960	2,640	3,248	1,518-11,110
8. Forest planting	-	0	0	0	0	0	0
9. Forest exploitation	0	6,000	0	0	2,000	5,000	2,000-6,000
10. Chicken raising	0	0	0	3,813	0	0	3,813
11. Others	36,000	0	3,600	0	2,000	0	2,000-36,000

Although HS1 had forest planting expenses in 2006 (essentially a capital expense), this was covered by borrowings and no net operational expense is therefore recorded here. However, this activity is included for measuring input commerciality in the next section.

### ***11.3.3. Agricultural commercialisation***

Commercialisation is measured here in terms of both outputs and inputs (Table 11.5) using measures discussed in Chapter 5. The output factors are a measure of the extent to which outputs are sold for cash rather than used within the household, either for direct human consumption or as inputs to other production processes. In regard to inputs, land does not in general have a market value and hence there is no imputed land cost. Also, labour is a non scarce resource and hence does not have a clearly defined market value. A high input commerciality factor is therefore indicative of high cash inputs relative to internal transfers from other production activities.

#### Outputs

There was a clear distinction between the food crops and other activities. All rice and cassava were consumed within the households. However, two households did sell maize. Groundnuts

were predominantly sold for cash by all households, although all households also consumed a small part of this crop. All other activities were almost totally for cash. The three households with lower income (HS3, HS5 and HS6) were also the households with lower output commerciality.

**Table 11.5: Commercial orientation of household case studies at Hoa Son Commune in 2006**

*Unit: %*

Commerciality for each activity	Case HS1 R	Case HS2 R	Case HS3 M	Case HS4 M	Case HS5 P	Case HS6 P	Range
<b>Input side</b>	<b>87</b>	<b>82</b>	<b>50</b>	<b>58</b>	<b>31</b>	<b>88</b>	<b>31-88</b>
1. Rice	-	0	0	100	-	0	0-100
2. Cassava	-	-	0	0	0	-	0
3. Maize	100	100	100	100	100	100	100
4. Pig raising	72	59	-	71	-	-	59-72
5. wine refining	100	-	-	-	-	-	100
6. Cattle raising	26	74	100	26	100	-	26-100
7. Groundnut	100	100	58	51	29	100	29-100
8. Forest planting	100	-	-	-	-	-	100
9. Forest exploiting	-	-	-	-	-	-	-
10. Chicken raising	-	-	-	0	-	-	0
11. Others	-	-	-	-	-	-	-
<b>Output side</b>	<b>98</b>	<b>89</b>	<b>72</b>	<b>90</b>	<b>85</b>	<b>85</b>	<b>72-98</b>
1. Rice	-	0	0	0	-	0	0
2. Cassava	-	-	0	0	0	-	0
3. Maize	0	0	0	50	0	67	0-67
4. Pig raising	100	100	-	100	-	-	100
5. wine refining	95	-	-	-	-	-	95
6. Cattle raising	100	100	100	100	100	-	100
7. Groundnuts	83	92	77	93	71	80	71-83
8. Forest planting	-	-	-	-	-	-	-
9. Forest exploiting	-	100	-	-	100	100	100
10. Chicken raising	-	-	-	87	-	-	87
11. Others	100	-	100	-	100	-	100
<b>The ratio of net to gross income per hh</b>	<b>87</b>	<b>83</b>	<b>95</b>	<b>82</b>	<b>94</b>	<b>94</b>	<b>82-95</b>

### Inputs

It is apparent from Table 11.4 that net income comprises a very high proportion of gross income, from 82% to 95 %, particularly at two poor households (HS5 and HS6). This suggests that purchased inputs are of minor importance.

Dryland rice and cassava were grown as totally subsistence crops based on natural fertility and local seeds. The one farmer with wetland rice used seeds and fertiliser supplied through the commune.

Maize had 100% commerciality but all inputs were obtained either free or at a subsidised rate through the commune rather than from the market. The supply of these inputs was part of a government food security program. These inputs have been valued in the commerciality calculations at their market value.

The input commerciality of groundnuts depended on whether local varieties of seed (own supply from harvest) or new varieties (purchased) were used, and also whether or not purchased fertiliser was used. For pigs, all weaners were purchased, with feed being from their own crops. The input commerciality for cattle varied according to whether calves were bred or purchased.

It is apparent that, particularly on the input side, this commune was not well connected to markets. Most of the inputs are non costed labour plus natural (and possibly non sustainable) fertility. Most of the limited external inputs were subsidised and related to food security programs. It is this low level of external inputs that causes very high ratios of net income to gross income.

#### ***11.3.4 Dynamics of change***

In the above sections, the analysis and discussion has focused on cross-case comparisons as of 2006. The focus in this section is to explore the underlying drivers and events that created the highly contrasting situation between the six case study households. The section draws on historical information collected during the first interview in March 2007 and on updated information collected in November 2008.

#### **Case HS1**

According to commune officers, the family of Case HS1 is classified as a 'better off' household at the commune in terms of both production resources and income. The HS1 household belonged to the Kinh group (the majority Vietnamese ethnic group). In 2006, the size of household was 7, including 4 children studying at high school and professional schools. The active workers were the husband, wife and one son. Three of their sons were selected to attend professional schools with Government support.

In 2006, HS1 had 114 sao (5.7ha) of land. They had a land use certificate for 2 sao of residential land where they had lived for a long time. They also had 12 sao of annual crops

grown on 'slash and burn' land for which they did not hold a land use certificate. The specific area and location of these crops grown under 'slash and burn' shifting agriculture varied between years. They also had no land use certificate for the remainder of their land that had been developed in late 2005 and early 2006.

The total value of non-land productive equipment was 41.5 million VND in 2006. Most of this value was in breeding buffaloes and cattle. Other equipment was a simple and low value pigsty and cow cage. They had borrowed 60 million VND with interest of 0.45% per month from the Bank for Social Issues and 30 million VND with interest of 0.8% per month from the Agriculture and Rural Development Bank. The approved purposes were for productive investment but in reality they had been used mainly for their children's education.

Until 2006, food security was a priority of this household. However, with the support of new crop varieties from the government and increasing yields, they were able to convert to cash crops. This process was also facilitated by the development of the roading system and market access. The cash income also provided food security as it could be used to purchase basic foods such as rice.

Cassava, dry rice and maize were traditional food crops in this family. These crops were grown on 'slash and burn' land using male labour. After 2003, and as their sons left the household for their education, they reduced the cassava and dry rice crops but they still maintained the maize crop for home consumption and animal feed. From 2003, all maize seeds were provided free and fertiliser was subsidised by the Government. The yield in 2006 was still low at 80kg per sao (1.6 tones per ha) but this was considerably higher than in 2003. The market price was only 2000 VND per kg in 2006 and 7000 VND per kg in 2008, so this crop was not attractive as a cash crop.

They began to develop a small area of groundnut crop from 1998 to provide food for their family. By 2006 they had 5 to 6 sao of groundnuts. By using freely supplied seeds of the new MD7 together with subsidised fertiliser, the yield increased to 60kg per sao in 2006. The price of groundnut was high, being 6000 to 7000 VND per kg in 2006 and 12000 VND per kg in 2008, and this crop generated a high income of 300,000 VND per sao in 2006. By 2008 they had increased the area of groundnuts to 20 sao.

Cattle and buffalo raising had been undertaken in this family for a long time but until 2000 it was mainly to provide draught power using buffaloes. As from 2000, the focus became the breeding of cattle for income. Mating of cattle was natural and uncontrolled, and grazing was communal. As from 2005 when one of their children attended veterinary training at a vocational school, they implemented a regular vaccination program each summer. Cattle and buffaloes were readily sold to collectors from outside the commune. Prices fluctuated from 6 million VND per head in 2002 to 3 million VND in 2006 and 5 million VND in 2008. In 2006, cattle raising was the main on-farm economic income activity in this family, with about 33 million VND. Total cattle and buffaloes in 2006 were 31, including 7 breeding cows and 2 breeding buffalo.

In 2002 the HS1 household invested 1.5 million VND to build a small pigsty which allowed them to expand their pig raising from 2 pigs to 6 pigs per business cycle. This was facilitated by a poverty reduction project where they were trained to use brewers' grains, left over from rice wine refining, as pig feed. The piglets were purchased and all feeds were either self grown or purchased from other villagers. Local feeds were combined with brewers' grains to further ferment. After 4 months, the pigs were sold at 60 to 70kg live weight per head.

Planting of production forest by this family began in 2006. They decided to develop this activity based on observations from other communes in the district. They planted 9000 seedlings of *Acacia sp.* on about 5ha of reclaimed land for which they did not have a land use certificate. Given that the land had not been surveyed, this area was approximate. It was easy for them to have a large area because they were the first family to begin forest planting at the commune. Besides the cost of the plants (200 VND per plant), they also paid a considerable cost to transport the plants to the commune (400,000 VND). In addition, they spent money on buying barbed wire to fence out the cattle. The total cost was 10 million VND, which was high compared to other communes where the trees were not fenced. All of these capital costs were covered from a loan from the Bank for Social Issues and have not been included in the expenditure recorded in Table 11.4. In 2008, they were developing a further 5000 plants. Although this forest planting activity has high potential income, there may also be economic risks from potentially high log transportation costs.

It was apparent that this household had achieved a privileged economic position from a combination of factors. Their monthly income of 2 million VND from pensions and 1 million VND from commune salary provided substantial non-farm income. They had then been able



to build a substantial herd of cattle and buffalo. They had also benefitted considerably from Government programs to reduce poverty through free seeds of improved varieties and subsidised fertiliser, and also through infrastructure programs that had linked them to markets, especially for their cattle. In terms of assets, they had also benefitted from early mover status in relation to forest planting although income benefits from this had yet to be realised. Their ability to access resources was also evidenced by the Government support provided for three of their sons to attend education outside the commune.

### **Case HS2**

The HS2 family was classified by commune leaders as a ‘better off’ household in terms of income and production resources. They were of Kinh ethnicity. Two of their six children had left home to find jobs in Ho Chi Minh City. One child was studying at university, one was at high school at the district centre, and one was at secondary school in the commune. They had three active workers in 2006 (husband, wife and one daughter). The quantity of workers was not an issue in this family but they had no professional training in any field and their general education was not high.

In 2006, the total value of non-land productive equipment was 34 million VND (about 2000 USD) with most of this being breeding cattle and a motor bike. Other productive equipment (pigsty and cow cage) accounted for only 2% of the total productive equipment. They borrowed 20 million VND for productive purposes from the Bank with interest at 0.5% per month

Until 2006, they had 81 sao (4.05ha) of land but only one sao of residential land, where they have lived for a long time, for which they had a land use certificate. They grew about 1ha of annual crops each year under the ‘slash and burn’ system of moving agriculture. In 2006 they reclaimed and additional 3ha of land for forestry.

Although food security was the first concern of household HS2, they were moving from food to cash crops. This was facilitated by development of the road system and the introduction of new varieties of maize. However, in 2006 they remained highly dependent on food crops and natural forest.

Dryland rice, grown in sequence with maize, was the traditional crop that provided food security for this family. Until 2006, they grew 1ha of rice based on slash and burnt shifting

agriculture with 100% subsistence for both inputs and outputs. They did not invest anything except their own local 'red rice' seed for the crop. Although the yield of the crop was low at 60kg per sao (1.2 tonnes per ha), it was successful and underpinned their food security. However, they had limited opportunities to expand this activity because it was forbidden by forest guards.

In 2003 they began to reduce the scale of the maize crop and replaced it with groundnuts. By 2006 the area of maize had reduced to 1 sao but with an increased yield of 100kg per sao. None of this crop was sold.

Groundnuts were grown from 2000, initially at a low level and for home consumption. They expanded the area in 2003 and 2004 as a cash crop in response to increasing market prices. From 2005, when they planted the new variety MD7 and used subsidised fertilisers, the yield increased significantly to 120kg per sao. The crop was easy to sell because several collectors were available to buy products at the commune. The price was 6000 VND per kg in 2006 and 12,000 VND in 2008. Groundnuts provided 30% of total family income in 2006 with most sold for cash.

Cattle raising, including buffaloes, was an important activity both for cash income and draught power for pulling forest logs. The buffaloes were originally just for draught power. The breeding purpose for cash income was first considered from 1996 and became important in 2000 when the road development began. By 2006 they had 12 cattle including 4 buffaloes. As with other families, the cattle were grazed on natural pastures and in the forest. Natural mating was uncontrolled. Although there had been a governmental vaccination program for some years, participation levels in the commune were not high and this created risks for everyone. For example, a foot and mouth disease outbreak in 2005 led to a drop in price from 7 million VND per head in 2004 to 3 million VND per head in 2006 because of restrictions on transportation of animals from the affected zone. However, it remained a major source of income for this family in 2008 at 13.2 million VND (800 USD).

Pig raising was developed initially to use wastes, by-products, and free labour time, and this continued through to 2006 with 2 pigs per cycle. In 2006 they began supplementing with a small amount of weight gain powder and also commenced fermenting their feed. The cycle was thereby reduced to 6 months and liveweights of 80kg were being achieved. However, the income from this activity was small.

In late 2006, they began to reclaim about 3ha of land to plant trees but with no significant costs until 2007. They developed this activity from observation of farmers at other communes in the district and also other farmers at their own commune. Challenges that they faced included lack of a nursery at the commune, high transport costs, and the high cost of building a barbed wire fence to protect the trees from cattle. They planted 5000 trees in 2007 and 4000 in 2008.

Forest exploitation (wood logging) was an important source of income in their family even though it was illegal. The acknowledged income was 6 million VND (370 USD) in 2006 but this may have been a considerable under-estimate given its illegal nature. The logs were carried by male workers and buffaloes.

In summary, it was apparent that although the HS2 household had made considerable progress in moving towards cash based livelihoods, they were still at an early stage of development. Some aspects of their livelihood practices could be considered non sustainable, and the financial returns from planting production forests in this remote area remain unconfirmed.

### **Case HS3**

The family of HS3 was from the Sach ethnic minority. They were considered by commune officers to be of medium level resources and income. However, they were officially classified as a poor household in relation to Decision 170/2005/QD-TTg of the Prime Minister setting the poverty line at 200,000 VND and 260,000 VND per month per capita in rural and urban regions respectively. Their 2006 income was consistent with this poor classification.

In 2006, there were 7 members in their family, including 2 active workers, two old parents and three young children. The active workers had low education (Table 11.3), no professional skills, and a customary lifestyle of dependence on the forest. Although they had 24 sao (1.2ha) of land in 2006, only 2 sao of garden and 4 sao of agricultural land located near their garden were formally allocated to them. All the other land use was based on slash and burn shifting agriculture. Although development of new slash and burn activities was illegal, they continued because of need. However, they had to travel long distances because the nearby locations were occupied by other households. Their non-land production equipment was very simple apart from one cow (3 million VND in 2006) that was purchased with borrowed money.

Although cash crops and cash income were beginning to develop in this family, food crops were still dominant. Their main livelihood activities were cassava, dry rice, maize, groundnut, cattle, groundnuts and hired employment.

Cassava was a traditional crop in this family and they grew about 10 sao per year. As of 2006, the crop was purely subsistence, based on the use of their own planting materials, shifting agriculture and natural fertility. The crop was left in the field throughout the year until it was needed for consumption. It took them 2 hours to walk from their home to the field.

Dryland rice cropping was also traditional in this family and it too was purely subsistence in both inputs and outputs. The crop required considerable time to be spent on weeding. Before 2000, they had a higher dependency on rice cropping but they found it difficult to develop new plots because of increasingly strict regulations on forest clearing. Therefore, their dry rice crop reduced to 10 sao (0.5ha) in 2006. Although the yield was only 50kg per sao (1 tonne per ha), the crop was important to their livelihood.

Maize was the third traditional crop in this family. However, they reduced the area to 1 sao in 2003 to start growing groundnuts. Although they accessed a new improved variety in 2003, they grew the crop on natural fertility and the yield was only 60kg per sao. This crop had high apparent commercial degree of inputs, but this was relative to a low overall level of measured (non-labour) inputs and the inputs depended on support from the government. Despite the low economic value of this crop it was an important food crop for the family.

Groundnut cropping was developed from 1996 to provide food for the family. As from 2003, they also grew the crop for cash income on land close to their home that was previously used for maize, and by 2006 they were growing 4 sao. At first they used local variety L14 and natural fertility, but in 2005 they began to use the new variety MD7 with support from the government. However, this support was limited so they still used some of the old variety. In 2006 they could not afford sufficient fertilisers and part of the crop was destroyed by cattle, so the yield was only 70kg per sao. Nevertheless, this crop was an important source of cash income to buy rice and livelihood needs.

Cattle raising began in 2003 when they borrowed 1 million VND from the bank to help buy a female calf to develop for breeding. Like other households, the cow was grazed naturally and

for much of the year led back home every day by their children. However, this breeding cow died after producing one calf. They did not know why it died but they thought it was caused by bad weather. As of 2008, they had not been able to repay the loan.

Hired employment was a very important activity in this family. The main task was carrying wood for other people at the commune. Without logging equipment of their own (chain saw and buffaloes), they had to work for other people carrying wood from remote locations back to the commune. In addition, this family collected honey from the forest.

In summary, HS3 were beginning to develop cash income as a result of market signals, in particular from groundnuts. However, their progress out of poverty was impeded by a lack of knowledge, skills, capital and land resources.

#### **Case HS4**

Household HS4 was of the Sach ethnic minority. Their family was classified by commune officials as a medium level household in terms of productive resources and income, but in 2006 they were officially classified as a poor household according to the official poverty line. In fact their 2006 income (Table 11.4) appears to place them just above the poverty line. However, commune officials do not have access to full income data as was collected in this study. They had 7 members in 2006, including one son who was in the army. There were three young children, and the active workers were a husband, wife and daughter. The daughter was underemployed but she did not migrate to find a job at another province because she was not familiar with the urban and predominantly Kinh lifestyles.

The total value of non-land productive resources was 19.3 million VND in 2006, mainly comprising cattle. Other equipment was a motorcycle and a simple wooden pigsty.

Household HS4 had 17 sao (0.85ha) of land, of which one sao was residential land. They also had 1 sao of permanent wetland rice with irrigation developed in 2002 as part of the 135 Program. The remainder of their land was shifting cultivation and varied between years.

Cash crops and cash income activities had begun to develop in this family by 2006. These changes were driven by development of the roads, the irrigation system that serviced their rice land, and an increase of food crop yields which allowed land to be diverted to cash crops.

However, the growing of food crops were still the most important livelihood activities for this family.

Maize was a traditional food crop developed under slash and burn shifting agriculture. They began reducing this area in 2003 when groundnut prices increased. However, 2 sao of maize was still grown in 2006 to provide food for their family. They accessed the new VN10 maize variety through the commune from 2003 but they did not apply any fertilisers because they considered the natural fertility was adequate. The yield was 100kg per sao in 2006. The price was only 1800 VND and 5000 VND per kg in 2006 and 2008 respectively, so this crop had little value as a cash crop.

Household HS4 began developing groundnuts in 1996 to provide food for their own family. In 2003, they began to expand the activity as a cash crop due to the price increase. In 2006, they had 10 sao in total. In 2004, they were still using the local variety but with the subsidy support from the government, they began to use the new MD7 variety from 2005. The yield was 70kg per sao in 2006. The price was 6500 VND per kg and 12,500 VND per kg in 2006 and 2008 respectively. Although they continued to keep some production for food and seeds for the next season, most production was sold. The income of the activity was nearly 4 million VND in 2006. In 2008, they wanted to further expand the area but they were constrained to 17 sao of groundnut because it was forbidden to slash and burn new land.

Cassava was a traditional crop in this family, and in 2006 they were continuing to grow it as a food and animal feed crop, using traditional practices but on a reduced scale of 2 sao. The fields were far from their home. It was their habit to leave the crop in the ground for the whole year and to harvest daily, which took considerable time.

The key productive asset of household HS4 was their one sao of wetland rice. Although they grew rice on this land before 2002, the water resource was insufficient so the yield was low and variable. Following development of the irrigation system in 2002 under the 135 Program, and with the new B4 variety of rice and fertilisers, yields increased to 250kg per sao (5 tones per ha). The rice seeds were either freely provided or subsidised by the Government, depending on the year. Although the scale of the activity was small, there were two crops per year, and so it was an important food supply for the family alongside maize.

Cattle raising was a traditional and important activity in this family. Buffaloes were raised initially to provide draught power for forest activities but from 1999 they began breeding animals for cash. By 2006, they had 11 cattle including 5 buffaloes. All of their cows were the local small bodied breed (Coc breed), although they did have access to a crossbred bull introduced as part of an ADB poverty reduction project in early 2006. However, this was not successful because the local bulls out competed the crossbred bull and until 2008 this family had no crossbred calves. Natural grazing without close herding, monitoring, and with non controlled mating, were similar to other households. In 2006, cattle provided 7.8 million VND of income which was more than 40% of the total family income (Table 11.4).

In 1996 this family started pig raising to generate income, using wastes, by-products and free time. The scale of the activity was small, two pigs per business cycle, with weaner pigs purchased from Qui Dat township and all other inputs supplied by the family. In 2008 there had been no significant change in the activity.

Chicken raising became commercial in 2004, with 5-6 hens and natural incubation. Chickens were raised free-range in the garden without supplements or purchased feeds. At the commune, the price was high because of limited supply, and collectors were willing to pay a high price because it was organic chicken. The income from this activity was considerable, being 3.8 million VND in 2006.

In late 2007 and early 2008, based on observation of other households at the commune and other communes, they began to develop 6000 plants of production forest. Similar to other households, they paid a considerable amount for transport and fence building.

It was apparent that the factors contributing to the progress that the HS4 household were making were the land on which they could grow wetland rice, combined with improved maize yields which created opportunities for improved food security and the consequent diversion of land to cash generating activities such as groundnuts. These key developments were greatly facilitated by the improved commune access.

#### **Case HS5**

According to the commune officers, the HS5 family were classified as a poor household on the basis of both income and resources. They belonged to the Vietnamese majority ethnic group (Kinh ethnicity). They used to be a medium household but their situation began to

change from 1994 when the husband died, leaving a mother with four young children. Therefore, they faced a shortage of workers until 2002 when the first son began to participate as an active worker. In 2006, they had two active workers in their family (the mother and first son).

Their total area of land was 9 sao (0.45ha) in 2006, of which one sao was residential land and 8 sao was reclaimed land. According to the mother, at the time when good land was being occupied and developed by other families, her son was not able to assist her. Subsequently, more restrictions were imposed on clearing forest for cultivation and it became hard for them to develop new plots. Their only non-land productive asset of significant value in 2006 was a breeding cow given by her parents.

The food crops grown in this family were maize and cassava. Maize was a traditional crop but as with other households, they began to substitute groundnuts as a cash crop for home-consumed maize in 2003, when the price of groundnut increased. In 2006, they had 1 sao of maize on reclaimed land. From 2003, they accessed new varieties of maize together with some artificial fertilisers through the support of the Government. They also used manure from bats which they collected from caves. The maize yield was 100kg per sao in 2006 and all production was used as food in their family. Similarly, they maintained 3 sao of cassava, mainly on slash and burn hilly land with some also in their garden, but it was purely subsistence. As of 2008, there was no significant change in the cassava crop growing practices.

Groundnuts were grown in their family from about 1995 but only a very small area to provide food for their family. From about 2003 there was also a commercial purpose, as they converted maize and cassava land to groundnuts as their food security situation allowed. From 2005 they used the new variety MD7, and fertilisers were applied with support from the Government. Yields increased and reached 90kg per sao in 2006. In 2006, they had 5 sao of groundnuts, and in 2008 they borrowed about 6 sao from another household, who were not using the land, to expand the activity.

Buffaloes used to be raised in this family to pull wood from the forest when the husband was alive but they were subsequently sold to provide funds for the education and upbringing of the children. In 2000, the mother's parents gave her a calf to develop this activity again, because



by then her children could help to look after cattle. As of 2006, they had not sold any cattle because she wanted to reserve them to finance her children's weddings.

Both the mother and oldest son undertook hired labour. The mother mainly undertook farm work and the son worked in the forest carrying wood. In 2006, they earned 4 million VND in this way, with half being farm-related and half being for forest exploitation.

In summary, this family was seriously disadvantaged by not having a male worker at the time land was being occupied and reclaimed. With the growing up of the children their labour situation was changing, but they were constrained by lack of suitable land. Food security was still an issue and they were both directly and indirectly, through hired labour, dependent for their livelihoods on the forest.

### **Case HS6**

The HS6 family were of mixed ethnicity with a Sach husband and a Kinh wife. At the time of the 2006 interview, the HS6 family had only been established as an independent household for three months. They were a young couple in their mid twenties with a one-year-old child. According to commune officers, they were classified as a poor household in terms of both income and resources. The husband was the main worker in the household. In addition, they had low education and no professional skills (Table 11.3).

The HS6 household had 15.5 sao (0.8ha) of land which included 0.5 sao of recently reclaimed land for a residence. They did not have a land use certificate for this but the reclamation had been allowed by the commune authorities. However, there was no cultivated land in this residential land. All of the remaining 15 sao was slash and burn land located far from their home. Although it was illegal to clear and burn new land in this way, they had no alternative.

In 2006, 5 sao of dry rice was grown on newly developed slash and burn land. The crop was purely subsistence. They used local seeds (red rice) from the previous season when they worked with their parents, and they relied on natural fertility. The yield was only 40kg per sao and insufficient for their own needs. In 2008, they were continuing to develop this activity which took a lot of time for weeding and travelling. In addition, they also developed 3 sao of maize. The seed was provided free by the Government. They did not apply any fertilisers. The yield was 100kg per sao. According to them, this was the first crop on this land so the

soil was rich enough for a high yield. Despite the low price of 1800 VND per kg they sold two thirds because they wanted to eat rice.

Based on experiences when they lived with their parents, in 2006 they grew 7 sao of groundnuts. They accessed some seeds of the new variety of seed MD7 but it was not sufficient so they had to use some local seed. They applied no fertilisers. The yield was 80kg per sao and the price was 6250 VND per kg in 2006. This provided approximately 80% of their on farm income. In 2008, they reclaimed more land and expanded the area of groundnut to 15 sao.

Farming activities were insufficient to generate income for their family so they had to depend on forest exploitation. The husband purchased wood from other people who had logging equipment at the forest and carried it home to sell to other people. This was hard work but he was of strong health and he could earn 100,000 VND per day in 2006. In 2008, it was still the major income source for this family.

In summary, it was apparent that this family had poor resources apart from the youthful strength of the husband. Their farming practices based on lack of fertiliser were non sustainable, and their only alternative income was from illegal forest exploitation. Accordingly, their livelihoods were highly vulnerable.

#### **11.4. Discussion**

The livelihood systems in this commune were diverse, including food crops, cash crops, animal raising activities and forest exploitation. Food crops included dry rice, wetland rice, maize, and cassava. Rice was the preferred food but the wetland rice area was limited and dryland rice was of low yield. Therefore, households had to depend on maize and cassava. In general, food security had been improving significantly but some households were still vulnerable to issues of basic food shortage.

There was evidence that the better performing households were of Kinh ethnicity. However, the Sach households were receptive to new techniques and new crops which required major changes to their traditional forest livelihoods based on shifting cultivation.

Given the commune status as one of the most disadvantaged communes, considerable external interventions had been undertaken. These included infrastructure such as dams, roads, some irrigation, and buildings. The roading in particular had led to greatly improved connection to markets, although isolation and transport costs remained as a constraint. Interventions in new agricultural technology, including new seed varieties and subsidised fertilisers, led to considerable yield increases for both food and cash crops. The increased yields from food crops allowed increasing quantities of land to be released to cash crops.

The dependence on forest and reclaimed land creates a very important role for male workers. Families without male workers have been strongly disadvantaged in accessing livelihood resources and appear to have become trapped in poverty.

Cattle raising is an important activity at the commune but there are inefficiencies associated with the common property nature of the resource and the herding systems. In addition, poor households are often excluded on account of insufficient capital or herding labour.

Changes in the food crops have been mainly driven by governmental support to facilitate food security, whereas changes to cash crops and cash income activities have largely been driven by market signals, facilitated by improved connections to markets. Technology transfer between households based on observation of new techniques and opportunities was rapid. However, many activities remained small scale and poverty was still a major challenge at the commune.

Input supply chains developed more slowly than output supply chains, which developed rapidly once the transport system was developed. Most of the output chains have been led by traders from outside the commune. The slower development of input supply chains can be explained by farming systems that rely heavily on exploitation of natural resources, including both forests and natural fertility, rather than on purchased inputs, together with the role of the Government in supplying and subsidising key inputs. Despite the considerable improvements in livelihoods that have been occurring, concern remains as to the inherent sustainability of many of the livelihood practices, including some that are illegal.

\*\*\*\*\*

## CHAPTER 12

### Discussion

#### 12.1 Introduction

The purpose of the chapter is to compare and contrast the findings from previous chapters, focusing on communes and households in different ecological regions and with different market access conditions.

The chapter is structured into five sections. Following this introduction, similarities and differences between communes in their natural and socio-economic conditions are compared to clarify the contexts under which households undertake the transition from subsistence to commercial agriculture. The third section focuses on patterns of transition at the household level. The fourth section discusses the patterns in the dynamics of change. In the fifth section, the findings are discussed relative to previous studies of agriculture in commercial transition.

#### 12.2. Natural and socio-economic background at the communes

##### *12.2.1. Land*

The upland and mountainous communes have considerably more land than coastal and plains communes, with the natural land area per household varying between communes by a factor of more than 80 (Table 12.1). Many of these gross differences are due to inclusion of forest and wasteland in these figures. In all communes the area of agricultural land is only a small proportion of total land (4-23%). However, even the differences in agricultural land per household, which still varied between communes by a factor of 20, can be misleading.

One of the two coastal communes (Cam Thuy) and both plains communes (Quang Long and Quang Thach) had considerable areas of irrigation suitable for wetland rice, and it was this land which underpinned traditional livelihoods. In contrast, most of the agricultural land in the mountain communes (Trung Hoa and Hoa Son) was pastoral rather than cropping, and nearly all of the cropping land in these mountain communes, and also in one of the coastal

communes (Ngu Nam), lacked irrigation. Quality agricultural land was a constraining resource in all communes and, particularly in the lowland communes, the area tended to be decreasing due to residential and other infrastructure developments.

### ***12.2.2. Infrastructure development***

Prior to about 2000, only two of the six communes (Cam Thuy and Quang Long) had good physical connections to major markets. In the ensuing years, there were remarkable improvements both to external and internal commune roads as part of a range of Government programs. By 2006, all communes had sealed road access. Remaining access differences related to distance from towns, traffic conditions and internal commune roads. These internal roads remained constraining in some communes, but particularly so for the mountain communes.

**Table 12.1: Natural and socio-economic indicators at investigated communes in year 2006**

<b>Index</b>	<b>CT</b>	<b>NN</b>	<b>QL</b>	<b>QT</b>	<b>TH</b>	<b>HS</b>
Population (persons)	3860	3014	5172	3789	5110	1489
Percentage of ethnic minority population (%)	0.0	0.0	0.0	0.0	1.5	61.7
Average size of hh <sup>1</sup> (persons)	4.6	5.4	4.1	4.4	5.0	5.0
Natural land per hh (ha)	1.6	1.7	0.7	5.4	9.3	60.6
Agricultural land per hh (ha)	0.36	0.11	0.16	0.20	0.93	2.3
Poverty rate in 2006 (%)	31.1	43.3	16.2	54.4	59.7	68.3
Distance to central district market (km)	3-4	30-35	0.5-1	25-30	10	35-40
Year of establishing telephone network	1999	2004	1997	2002	Not yet	Not yet
Number of phones per 100 people	5.5	1.5	25.0	0.8	0.0	0.0
Percentage of hhs using electricity (%)	100	98	100	97	90	82

1. hh = household

*Source: calculations based on district statistics, commune annual reports in 2006, and interviews of the author*

The time of establishment of telecommunication networks was related to location, with well-located coastal and plains communes having an advantage (Table 12.1). As of 2008, households in the two mountain communes still did not have access to a commercial network, with there being only one line of poor reliability to the Commune Office. At one of these mountain communes (Trung Hoa) a network that would be available for households was being developed in 2008. Apart from Quang Long Commune, where 25% of households had

a telephone, only a small number of households had telephone connections (Table 12.1). Absence of telephones in the mountain communes remained a barrier to the efficient operation of commercial supply chains.

The electricity network was developed earlier than the telephone network and had reached all communes, including an internal distribution system to all villages, by 2006. Most households used electricity only for lighting, and used wood for cooking. Those households in the mountain communes who were still not using electricity were doing so because of cost rather than lack of physical access.

### ***12.2.3. Socio-economic development***

The average household size varied between communes from 4.1 to 5.4 persons (Table 12.1), with higher averages being found in the remote communes, and lower averages in coastal and plains communes with good access. This can be explained in terms of access to family planning information, traditional customs and issues of ethnicity.

Official poverty levels were considerably lower in the two coastal and plains communes that had good access to markets than in other communes. These poverty levels had been declining in all communes, but particularly so in the mountain and poor access communes. (See Tables 6.2, 7.2, 8.2, 9.2, 10.2, and 11.2.). This faster reduction in the mountain communes and those with previously poor physical connection to markets, provides circumstantial evidence that the range of interventions implemented in these disadvantaged communes were having a considerable impact.

It was apparent that a considerable proportion of workers at most communes were migrating to find either temporary or permanent jobs at urban regions or southern provinces. This is explained by high underemployment at most households, with labour a non scarce resource. The exception was the remote Hoa Son Commune where the population was mainly ethnic people with a different culture and language.

### ***12.2.4. Farming systems***

Although the per capita agricultural land at the mountain communes was much higher than other communes, the rice cultivation area per capita was much higher at the plains and coastal

communes, with the exception of Ngu Nam Commune where livelihoods were highly dependent on sea fishing (Table 12.2). The rice cropping activity, where available, provided a basis for food security during times when trade and markets were still poorly developed. In contrast, where the rice cultivation area was either limited, or non-existent, or rainfed rather than irrigated, then food security was of particular importance. However, given that the largest area of rice crop per capita, including multiple crops, was only 2.2 sao (in Cam Thuy Commune, with other communes all less than 1 sao), there were limited opportunities for commercialising the rice farming activity. Most families retained their allocation of wetland rice cropping land, and only very limited accumulation of rice land took place. Because of the wet nature of this land, there are many challenges in converting the land use of the rice-lands to other crops, although aquaculture is often an option.

**Table 12.2: Some main production indicators per capita of investigated communes in year 2006**

Index	CT	NN	QL	QT	TH	HS
Agricultural land (sao)	1.6	0.4	0.8	0.9	3.7	9.2
Rice cultivation area (sao)	2.2	0.0	0.8	0.9	0.5	0.3
Other annual crop cultivation area (sao)	0.4	0.5	0.5	1.1	1.9	2.5
Perennial crop cultivation area (sao)	0.0	0.0	0.0	0.3	0.3	0.0
Number of cattle (heads)	0.2	0.1	0.1	0.4	0.6	1.0
Number of pigs (heads)	0.7	0.7	0.6	0.5	0.4	0.4
Number of poultry (heads)	5.3	0.9	1.3	1.8	1.4	3.0

*Source: calculation based district statistics and communes annual reports in 2006.*

The cultivation area for crops other than rice has a reverse trend between communes to that for rice (Table 12.2). Traditionally, these other crops were dryland maize and cassava with a considerable proportion grown under various forms of shifting agriculture. In the two mountain communes, a proportion of this land has been moving to cash crops of groundnuts due to increasing yields in maize and cassava, and hence a declining area needed for basic food security. With increasing access to markets, it has also been possible for the mountain communes to more easily purchase rice for their own consumption, and this has further reduced the need for maize and cassava as basic food crops. In the non-mountain communes, the non-rice crops are typically grown in gardens and on other land that is free from flooding, with an increasing emphasis on vegetables. Perennial crops were of increasing importance in Quang Thach and Trung Hoa communes which had suitable and available land, but this growth was off a low base. These low base levels were linked to poor technical skills and a previous lack of connection to markets.

Cattle, pigs and poultry were raised in all communes (Table 12.2). Cattle numbers were higher in the mountain communes where there was natural pasture and forest land. Cattle raising was also linked in the mountain communes to draught power for hauling logs from the forest. Pigs were mainly raised using crop by-products and numbers tended to be highest in the plains and coastal communes.

#### ***12.2.5. Market development***

Most output chains were privately managed by traders and collectors. Rapid development of these chains was facilitated by development of road systems and telecommunications.

There were two main types of output supply chains. One type connected households to district or provincial markets. These supply chains were typically managed by small scale local traders from within the commune or district. Traders from the district centres often worked in associations with collectors at the commune level.

The second type of supply chain was for processed products such as export fish, green pepper, wood, and cassava starch. These products were typically transported beyond the district, and the purchasing and logistics were handled by traders and agents specialising in the particular product.

In contrast, input chains developed less rapidly than output chains. This was in part because the major inputs were labour, solar energy, and natural fertility rather than purchased inputs. A second factor was that, particularly in the mountain communes, there were subsidised seeds and fertiliser as part of various government programs. The supply of these inputs was managed by the commune authorities. Another key factor was that in communes where wetland rice was grown, the crop management had to be co-ordinated between farmers. This was typically undertaken by co-operatives who purchased inputs in bulk. In the more isolated communes, the first input chains to develop were more for the retailing of basic livelihood goods and foodstuffs, rather than farm inputs.

Provision of finance by traders was a key factor leading to integration between input and output supply chains in some communes. Traders would often supply inputs on credit in return for having rights to market the output.



### ***12.2.6. Institutional arrangements***

#### *Land tenure*

All land in Vietnam is owned by the State with specific land use rights varying between regions and agro-ecological zones. The strongest use rights are for residential and associated garden land, which in all six communes were predominantly allocated based on traditional long term occupation. Families in some communes held a form of title, recorded in a ‘red book’ which they are given, which has no stated time limitation. This is the strongest form of tenure available.

In the plains and coastal regions where rice land is dominant, this rice land was allocated to households through Decree No 64 for a period of 20 years as part of the implementation of the 1993 Land Law. This land was usually allocated on a per capita basis including all members of the family (adults and children). Typically, a family would have between 8 and 15 non contiguous plots. Given the changes in size of individual families, there are increasing inequalities of land area per capita. Families typically regarded their rights to this land as being tenuous. Although they have documentation as to the amount of rice land that they have rights to, the specific areas are not surveyed and documented, and there are no permanent boundary markings that persist during the flood season. Crop management decisions have to be co-ordinated across large areas and linked to the availability and timing of irrigation. In addition, cultivation is undertaken communally and obliterates temporary markers as to individual plots. Efficiency driven land re-assignment programs, implemented by commune management to reduce the amount of land fragmentation by re-assigning land as a smaller number of larger plots, has further reinforced a perception that individual land rights are tenuous.

Much of the agricultural land in the mountain communes has been occupied rather than allocated. For occupied land there is often no accurate documentation and there are no formal use rights, although at the commune level the occupation is often approved. Land allocated for perennial crops has use rights for 50 years.

Conversion of land from annual cropping to aquaculture or perennial cropping requires approval from district and provincial authorities. This is because of concern that food security should not be threatened by land use changes. Accordingly, whether or not a commune

transforms significant areas of rice land to aquaculture is largely determined by local government rather than by individual households.

Under Article 70 of the 2003 Land Law, there are national limits on the amount of land for which a household may have use rights. These are 3ha for each of annual crops, aquaculture and salt production, 10ha for perennial crops in the plains region, 30ha for perennial crops in the upland and mountain regions, and 30ha for forest production planting. None of the case study households had reached this limitation.

#### *Commune Administration*

The administrative structure of the communes, which are the lowest governmental administrative level, was similar between all communes. The Commune People's Committee (CPC) is selected by Commune People's Council with this selection overseen by The Vietnamese Communist Party. The CPC has duties to develop social-economic development plans for the commune, and to submit these to upper governmental institutions or the Commune People's Council for approval before implementation. These functions are guided by the Law of the People's Committee and the People's Council. Therefore, the Commune People's Committee plays an important role in determining both the economic development in general, and agricultural development in particular, at the commune.

Each commune had approximately 19 full time staff and a common organisational structure. Most staff had primary and intermediate certificates in professional training and a few staff had commenced university degrees in professional training through in-service training. In all communes the training was in politics rather than specialised skills in agriculture, economics and management. This raises questions as to their capacity to deliver these specialised services. There was a tendency for staff at the mountain communes to have lower qualifications than at the coastal and plains communes. Staff were paid 1-1.5 million VND per month. Staff in remote communes tended to receive somewhat more than those at plains communes on account of more difficult working and living conditions. There are questions as to whether the salaries are adequate to ensure the full time dedicated commitment of staff.

#### *Agricultural Co-operatives*

The role of co-operatives changed remarkably following transformation under new co-operative laws in 1996 and 2003, requiring them to act as financially self supporting shareholder-owned organisations. By 2006 these agricultural co-operatives only operated at

Cam Thuy and Quang Long communes, where their focus was on co-ordinating and delivering services relating to the rice crops that required collective action. At Quang Thach Commune the agricultural co-operative was disbanded in 2005, and the rice co-ordinating activities were taken over by the commune and individual villages, with some services contracted to private individuals. Quang Thach retained a co-operative for the provision of electricity. In Ngu Nam commune there were no co-operatives but many households belonged to voluntary work units to achieve production efficiencies. In all communes the key economic units were individual households rather than collective institutions.

### **12.3. Household case studies comparisons**

This section compares and contrasts households across the six communes and for different wealth levels. The comparisons are developed from material presented in Section 3 of Chapters 6-11.

#### ***12.3.1. Production resources***

The area of land resources per household varied both by wealth levels and by communes (Table 12.3a). The differences between communes were expected *a priori* from the differences in agro-ecological zones. Of more importance is the overall finding that wealthy families have more than six times the land area of poor families. In this regard, substantial differences were found for all communes except Ngu Nam where the livelihoods are sea-based rather than land-based. The differences between poor and wealthy were greatest in the mountain communes where much of the land has been occupied rather than allocated, and where occupation required active male workers, and was further enhanced by ownership of buffaloes and a chain saw. In contrast, household land resources in the plains communes were much more influenced by household size in 1993 at the time rice land was allocated under Decree 64, and by longstanding occupation of residential and associated garden land. Some households at plains communes had obtained additional land through leasing or purchase.

In contrast with land resources, the available labour had less variation both between wealth levels and between communes. Although there was an overall tendency for labour availability to increase with wealth level, this was not consistent for individual communes and was influenced by outliers. This lack of clear patterns is consistent with the observation

throughout this thesis that labour is in general a non scarce resource, but that lack of healthy male workers can prevent access to other resources.

There is overall evidence that education levels increase with wealth levels but this is not consistent within communes. Accordingly, caution would be needed in drawing any conclusions as to the importance that education has been as a historical driver of wealth accumulation.

The value of non-land productive capital per household is 24 times greater for wealthy than poor households and the strength of this relationship holds across all communes (Table 12.3b). It is likely that there is two-way causation, with capital being acquired as a result of successful commerciality, and then this capital further enhancing productive operations. The form that this capital takes varied between communes. In the mountain communes it was mainly cattle. On the plains and lowland communes it related to fishing equipment, aquaculture and trading activities. Rice and vegetable farming on the plains did not require high value equipment.

There is a clear trend for the number of production activities to increase with wealth level (Table 12.3b). This diversification can be explained by the more commercial households retaining their production activities that relate to food security, and then taking on additional activities to produce income. In contrast, the poor families were constrained by lack of resources from taking on the additional activities. Despite the clear evidence for diversification as a commercialisation strategy, there is also evidence that most of the wealthy families were earning much of their income from either one or two activities such as fishing, vegetables, flowers, forestry, groundnuts and trading. This is consistent with the notion that diversification is an early-stage commercialisation strategy that may be followed by subsequent specialisation. It is also notable that there is more specialisation in the lowland than the upland and mountain communes. This is likely to be linked to three distinct factors. These are stage of development, diversity of land type, and ecological synergies between a range of complementary activities, some of which are undertaken at low intensity.

**Table 12.3 (a): Production resources at case studies**

Index	CT		NN		QL		QT		TH		HS		M	SD	CV (%)
	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2			
<b>Land (sao)</b>															
Wealthy HHs	39.6	14.4	7.6	4.4	4.5	12.0	87.6	228.0	124	61	114	81	<b>64.8</b>	<b>64.5</b>	<b>99</b>
Middle HHs	18.0	17.0	1.0	2.0	5.0	9.6	132.0	55.0	165	82	26	17	<b>44.1</b>	<b>52.2</b>	<b>118</b>
Poor HHs	13.0	7.5	1.6	5.4	3.2	2.9	3.6	3.0	50	6	9	15.5	<b>10.1</b>	<b>12.7</b>	<b>126</b>
<b>M</b>	<b>18.3</b>		<b>3.7</b>		<b>6.2</b>		<b>84.9</b>		<b>81.3</b>		<b>43.8</b>				
<b>SD</b>	<b>10.1</b>		<b>2.4</b>		<b>3.4</b>		<b>78.4</b>		<b>51.5</b>		<b>39.5</b>				
<b>CV (%)</b>	<b>55</b>		<b>64</b>		<b>55</b>		<b>92</b>		<b>63</b>		<b>90</b>				
<b>Labour (persons)</b>															
Wealthy HHs	4	2	2	2	2	3	2	3	3	4	3	5	<b>2.9</b>	<b>1.0</b>	<b>33</b>
Middle HHs	2	5	3	2	4	1	3	2	2	2	2	3	<b>2.6</b>	<b>1.0</b>	<b>40</b>
Poor HHs	4	2	2	2	1	3	2	0	5	2	2	2	<b>2.3</b>	<b>1.2</b>	<b>55</b>
<b>M</b>	<b>3.2</b>		<b>2.2</b>		<b>2.3</b>		<b>2.0</b>		<b>3.0</b>		<b>2.8</b>				
<b>SD</b>	<b>1.2</b>		<b>0.4</b>		<b>1.1</b>		<b>1.0</b>		<b>1.2</b>		<b>1.1</b>				
<b>CV (%)</b>	<b>38</b>		<b>17</b>		<b>47</b>		<b>50</b>		<b>38</b>		<b>38</b>				
<b>Educations of (h/w) (years)</b>															
Wealthy HHs	10/8	12/7	7/7	7/7	7/7	7/7	7/7	7/7	7/7	7/8	7/7	10/7	<b>7.5</b>	<b>1.3</b>	<b>17</b>
Middle HHs	10/9	8/7	7/7	7/7	3/7	5/5	7/7	4/7	7/7	7/10	5/8	6/6	<b>6.8</b>	<b>1.6</b>	<b>24</b>
Poor HHs	7/7	5/6	7/7	-7	3/7	-2	-6	-2	10/7	-7	-4	5/9	<b>6.0</b>	<b>2.1</b>	<b>35</b>
<b>M</b>	<b>8.0</b>		<b>7.0</b>		<b>5.5</b>		<b>6.1</b>		<b>7.6</b>		<b>6.7</b>				
<b>SD</b>	<b>1.9</b>		<b>0.0</b>		<b>1.9</b>		<b>1.6</b>		<b>1.2</b>		<b>1.7</b>				
<b>CV (%)</b>	<b>23</b>		<b>0</b>		<b>34</b>		<b>27</b>		<b>15</b>		<b>25</b>				

M= Mean; SD= Standard Deviation; CV =Coefficient of Variation

**Table 12.3 (b): Production resources at case studies**

Index	CT		NN		QL		QT		TH		HS				
	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2			
<b>Value of non-land equipment (million VND)</b>													<b>M</b>	<b>SD</b>	<b>CV (%)</b>
Wealthy HHs	172.0	88.8	202.2	73.4	24.5	24.0	23.4	38	8.5	55.5	41.5	33.7	<b>65.5</b>	<b>58.8</b>	<b>90</b>
Middle HHs	7.7	36.6	32.6	30.3	18.4	12.9	11.5	7.7	29.5	4.8	3	19.3	<b>17.9</b>	<b>11.3</b>	<b>63</b>
Poor HHs	2.0	6.6	14.2	1.0	0.0	1.3	0.5	0	1.0	3.1	3	0	<b>2.7</b>	<b>3.9</b>	<b>143</b>
<b>Mean</b>	<b>52.3</b>		<b>59.0</b>		<b>13.5</b>		<b>13.5</b>		<b>17.1</b>		<b>16.8</b>				
<b>SD</b>	<b>61.3</b>		<b>67.8</b>		<b>9.9</b>		<b>13.5</b>		<b>19.6</b>		<b>16.2</b>				
<b>CV (%)</b>	<b>117</b>		<b>115</b>		<b>73</b>		<b>100</b>		<b>115</b>		<b>96</b>				
<b>Number of activities</b>															
Wealthy HHs	7	7	8	6	4	6	8	10	7	8	7	7	<b>7.1</b>	<b>1.4</b>	<b>20</b>
Middle HHs	5	4	4	4	7	6	6	8	10	8	6	7	<b>6.3</b>	<b>1.8</b>	<b>29</b>
Poor HHs	3	5	4	4	4	3	5	1	7	7	6	4	<b>4.4</b>	<b>1.7</b>	<b>37</b>
<b>M</b>	<b>5.2</b>		<b>5.0</b>		<b>5.0</b>		<b>6.3</b>		<b>7.8</b>		<b>6.2</b>				
<b>SD</b>	<b>1.5</b>		<b>1.5</b>		<b>1.4</b>		<b>2.9</b>		<b>1.1</b>		<b>1.1</b>				
<b>CV (%)</b>	<b>28</b>		<b>31</b>		<b>28</b>		<b>45</b>		<b>14</b>		<b>17</b>				

M= Mean; SD= Standard Deviation; CV =Coefficient of Variation

### ***12.3.2. Production and income***

Income per household increased rapidly from poor households to wealthy households by a factor of almost 13 (Table 12.4). Clear differences between wealth levels were to be expected given the basis on which cases were selected, but it is the extent of the differences that is notable. In addition, it is notable that the scale of the differences was broadly similar for all communes, indicating that there are very poor people in even the more developed communes, and relatively wealthy people in even the most disadvantaged communes. This suggests that a key issue is not just the macro level of resources within a commune that is important, but the way in which some households manage to acquire resources and then use those resources.

No conclusions between communes can be drawn from the income data. This is because the sampling criteria determined that there would be two cases from each wealth criteria from each commune, irrespective of the actual (but unknown) frequency of each wealth level in a commune. Data presented earlier (Table 12.1) indicated that there are indeed substantial differences between communes in poverty levels.

The income per capita is consistent with the household data although the differences between wealth levels are somewhat less. This is because several of the poor households had small families linked to the death or absence of an adult male.

### ***12.3.3. Commercial orientation***

The commercial orientation had an increasing trend from poor to wealthy households for both inputs (66% to 89%) and outputs (83% to 95%), with the overall commercial orientation being higher for outputs than inputs (Table 12.5). Similarly, the ratio of net income to gross income was lower for wealthy than poor families, and this is indicative of purchased inputs making up a higher proportion of total inputs as wealth levels increases.

The evidence that output commerciality increased with level of household wealth, which in turn has been shown earlier in this chapter to be associated with both household income and the number of production activities, is readily explained in terms of subsistence type activities making up an increasingly small proportion of total production activity. The relationship between increasing output commerciality and increasing wealth levels was broadly consistent across all communes.

The overall average level of output commerciality was particularly high at 88% across all 36 household cases, with 34 of 36 cases exceeding 70%. The exceptions were one family in Cam Thuy Commune (CT3) which had an index of 56% as a consequence of a considerable subsistence focus in most of their activities, and one poor household in Quang Thach where no production activities were undertaken, and for whom an index could not be calculated. Accordingly, it could be concluded that there is a predominant high level of commercial orientation that transcends wealth levels and locations. However, a necessary qualification is that food security remains a major issue that shapes agricultural systems and rural livelihoods within Quang Binh Province. Apart from situations such as in Ngu Nam, where the agro-ecological conditions prevent many households from growing their own crops for home consumption, almost all households continued to grow rather than purchase their staple needs. The high apparent commerciality of outputs, when measured as the proportion of total output value that is sold, was also affected by the low market values of the staple food crops of rice, maize and cassava, despite their fundamental importance to livelihoods.

Differences in output commerciality between communes were minor. The highest index was for Ngu Nam Commune where fishing livelihoods predominated and there were major constraints to the growing of staple food crops. The lowest index was for Cam Thuy but this was influenced by an outlier case (CT3) that had a considerable subsistence focus in most of its activities, and was in danger of slipping into poverty.

There was no obvious relationship linking output commerciality with market access. However, that is not to suggest that market access is not of major importance in terms of being a key facilitator of economic development. Also, by 2006 all communes had road access to markets. Qualitative data indicated that if numeric data were available for years prior to 2003, then the output commerciality of communes with poor market access would have been much lower.

The commercial orientation of inputs is not only lower compared to outputs but is also more variable. Given the lack of labour records kept by families, and the lack of a market price or opportunity cost for labour, there is no inclusion of labour in either the numerator or denominator of this index. Hence, it can be argued that the indicator is artificially inflated. The input indicator can therefore be considered as a measure of the extent to which inputs are purchased relative to the extent that inputs are internal transfers from other production



activities. From this perspective, a low input index can be indicative of a farming system where there is integration between complementary production activities.

An alternative perspective on input commerciality is provided by the ratio of net household income after deduction of expenses relative to gross family income before expenses (Table 12.5). A high index is indicative of low cash inputs relative to output value and a low index is indicative of high cash inputs. A high index also indicates that a high proportion of gross income is coming from value-adding by the household rather than from purchased inputs. The observed outcome whereby this ratio is higher amongst poor families than wealthy families is logical on *a priori* grounds, indicating that the poor households are less connected to input markets. It is also notable that this index is particularly high for the remote Hoa Son commune, which is consistent with output markets being much better developed than input markets at this commune. The reason that this index is particularly low at Cam Thuy and Ngu Nam is in part because of the influence of trading which requires substantial cash purchases and where trading sales are margin-based.

**Table 12.4: Net income per household and per capita at case studies**

*Unit: 1000 VND*

	CT		NN		QL		QT		TH		HS		M	SD	CV (%)
	Case 1	Case2	Case 1	Case2	Case 1	Case2	Case1	Case2	Case1	Case2	Case1	Case2			
<b>Per household</b>															
Wealthy HHs	331,366	212,198	137,320	120,159	110,211	75,899	18,262	128,186	66,328	121,830	79,858	36,187	<b>119,817</b>	<b>80340</b>	<b>67</b>
Middle HHs	20,020	36,133	71,941	63,400	55,530	32,032	11,083	13,442	40,384	44,571	10,672	18,546	<b>34,813</b>	<b>20097</b>	<b>58</b>
Poor HHs	18,637	5,741	14,760	6,230	8,156	6,570	5,944	790	18,936	9,168	9,275	9,265	<b>9,456</b>	<b>5197</b>	<b>55</b>
<b>M</b>	<b>104,016</b>		<b>68,968</b>		<b>48,066</b>		<b>29618</b>		<b>50,203</b>		<b>27,301</b>				
<b>SD</b>	<b>123,829</b>		<b>48,660</b>		<b>37,113</b>		<b>44425</b>		<b>36,924</b>		<b>25,313</b>				
<b>CV (%)</b>	<b>119</b>		<b>71</b>		<b>77</b>		<b>150</b>		<b>74</b>		<b>93</b>				
<b>Per capita</b>															
Wealthy HHs	47,338	35,366	27,464	24,032	22,042	15,180	3,652	32,046	13,266	13,537	11,408	4,523	<b>20,821</b>	<b>12542</b>	<b>60</b>
Middle HHs	4,004	6,022	11,990	15,850	11,106	5,339	1,847	2,688	8,077	7,429	1,525	2,649	<b>6,544</b>	<b>4337</b>	<b>66</b>
Poor HHs	3,727	1,914	2,460	1,246	2,039	1,314	1,486	790	2,705	2,292	1,855	3,088	<b>2,076</b>	<b>800</b>	<b>39</b>
<b>M</b>	<b>16,395</b>		<b>13,840</b>		<b>9,503</b>		<b>7,085</b>		<b>7,884</b>		<b>4,175</b>				
<b>SD</b>	<b>18022</b>		<b>9875</b>		<b>7440</b>		<b>11200</b>		<b>4458</b>		<b>3375</b>				
<b>CV (%)</b>	<b>110</b>		<b>71</b>		<b>78</b>		<b>158</b>		<b>57</b>		<b>81</b>				

M= Mean; SD= Standard Deviation; CV =Coefficient of Variation

**Table 12.5: Commerciality at household and per capita at case studies**

*Unit: %*

	CT		NN		QL		QT		TH		HS		M SD CV		
	Case1	Case2	Case1	Case2	Case1	Case2	Case1	Case2	Case1	Case2	Case1	Case2			
<b>Input side</b>															
Wealthy HHs	86.6	98.6	91.1	98.4	99.9	71.9	53.0	94.8	94.6	95.5	87.2	82.3	<b>87.8</b>	<b>13.0</b>	<b>14.8</b>
Middle HHs	55.6	69.3	84.5	99.8	88.2	67.0	44.4	52.6	93.4	74.9	49.8	58.2	<b>69.8</b>	<b>17.6</b>	<b>25.2</b>
Poor HHs	82.3	58.0	88.2	40.4	95.9	40.6	91.6	-	82.4	30.9	30.6	87.6	<b>66.2</b>	<b>25.0</b>	<b>37.8</b>
<b>M</b>	<b>75.1</b>		<b>83.7</b>		<b>77.3</b>		<b>67.3</b>		<b>78.6</b>		<b>66.0</b>				
<b>SD</b>	<b>15.5</b>		<b>20.1</b>		<b>20.2</b>		<b>21.4</b>		<b>22.6</b>		<b>21.4</b>				
<b>CV</b>	<b>20.7</b>		<b>24.0</b>		<b>26.2</b>		<b>31.8</b>		<b>28.7</b>		<b>32.5</b>				
<b>Output side</b>															
Wealthy HHs	93.8	98.7	95.1	99.0	99.1	94.0	85.7	97.4	98.4	96.8	97.5	88.8	<b>95.4</b>	<b>4.1</b>	<b>4.3</b>
Middle HHs	56.9	86.5	92.5	97.4	88.9	79.0	89.3	81.1	93.1	92.7	72.1	90.0	<b>85.0</b>	<b>10.8</b>	<b>12.7</b>
Poor HHs	74.9	70.7	95.1	85.3	85.0	76.8	87.3	-	91.0	80.9	84.6	84.8	<b>83.3</b>	<b>6.8</b>	<b>8.1</b>
<b>M</b>	<b>80.3</b>		<b>94.1</b>		<b>87.1</b>		<b>88.2</b>		<b>92.2</b>		<b>86.3</b>				
<b>SD</b>	<b>14.3</b>		<b>4.4</b>		<b>7.9</b>		<b>5.4</b>		<b>5.6</b>		<b>7.7</b>				
<b>CV</b>	<b>17.8</b>		<b>4.7</b>		<b>9.0</b>		<b>6.1</b>		<b>6.1</b>		<b>8.9</b>				
<b>The ratio of household net to gross income</b>															
Wealthy HHs	49.5	19.5	22.8	17.4	46.0	76.8	79.8	27.2	67.6	49.8	86.9	82.8	<b>52.2</b>	<b>25.1</b>	<b>48.1</b>
Middle HHs	52.8	45.8	30.2	82.8	44.3	80.6	77.7	78.1	52.2	63.6	95.1	82.3	<b>65.5</b>	<b>19.2</b>	<b>29.3</b>
Poor HHs	45.2	58.9	58.0	65.6	75.8	66.2	91.7	-	48.7	85.6	94.5	93.5	<b>71.2</b>	<b>17.2</b>	<b>24.1</b>
<b>M</b>	<b>45.3</b>		<b>46.1</b>		<b>65.0</b>		<b>70.9</b>		<b>61.3</b>		<b>89.2</b>				
<b>SD</b>	<b>12.4</b>		<b>24.1</b>		<b>14.7</b>		<b>22.4</b>		<b>13.0</b>		<b>5.4</b>				
<b>CV</b>	<b>27.4</b>		<b>52.3</b>		<b>22.6</b>		<b>31.7</b>		<b>21.2</b>		<b>6.1</b>				

M= Mean; SD= Standard Deviation; CV =Coefficient of Variation

## **12.4. Dynamics of change**

This section discusses the common and contrasting patterns in the dynamics of change, drawing on the 36 household case studies from six communes presented in Chapters 6 to Chapter 11, together with additional information from key informants in each commune.

### Changing food consumption patterns

Changing patterns of food consumption were evident in all communes. Amongst communes that were traditional producers of rice for household consumption, there was a move towards toward higher quality softer varieties of rice. Increasingly, diets were supplemented by vegetables, fish and meat. There was also increasing demand from urban communities for these higher value non cereal food products. In communes where food security concerns combined with lack of rice land had forced traditional reliance on dry land crops such as cassava and maize, then households were motivated where possible to purchase rice for their own consumption. Some poor families remained dependent on subsistence crops of cassava and maize through lack of cash income.

### Land tenure

Households in all communes except Hoa Son had formal title to their residential and garden lands, and this was recorded in the 'red book' which each of them held. In the case of Hoa Son, the land use certificates were only from the commune authority, and 'red book' certification from higher government authorities was yet to occur.

Titles to agricultural lands had been issued for Cam Thuy, Quang Long, Quang Thach and Trung Hoa. However, these titles relied on certificates provided by the commune and they were not recorded in the 'red book'. The certificates stated the area of land and the details of the number of plots in various fields, but the specific locations were neither surveyed nor documented, and were subject to seasonal re-pegging. Whereas householders considered they had effective security of tenure over their residences and garden land, they did not have this perception in regard to the rice lands. This was particularly evidenced in Quang Long Commune where some households who had shifted to off-farm employment had simply returned their land to the co-operative without compensation. Similarly, in Cam Thuy, Quang Long and Quang Thach communes there had been programs to reduce land fragmentation by reducing the number of plots per household by compulsory swapping of plots between households. When interviewees were asked as to what would happen to their agricultural

lands in the future they typically said they did not know. In Ngu Nam and Hoa Son communes the households held no certificates at all for their agricultural land.

The situation with forest land varied both between and within communes. Some land had been allocated as part of government and NGO development programs and was authorised even if not certificated. Other land had been occupied, developed, documented and informally authorised. Still other lands had been developed for which there was no authorisation. In general, households had a strong sense of ownership of their forest lands regardless of the formal tenure status.

#### Land resource allocation

The principles of land allocation in the plains communes are well defined by various land laws. The allocation of rice land in 1993 and thereafter under Decree 64 was implemented in each commune using equity criteria relating to family size. Given the lack of well developed land markets, most households have not been able to greatly change their initial allocated area of rice land. However, a few households have been able to obtain additional rice land through renting land, typically in situations where other households have chosen to focus on non farming activities. Some disparities have arisen as a consequence of changing household structures and sizes. In contrast, acquisition of land resources in the mountain communes has depended on the ability to occupy and develop. This has led to major disparities within communes. Given that these disparities are typically for perennial crops and production forests, which in many cases are still under development, the full impacts had not been evident within the household income figures as reported for 2006 and 2008.

#### Changing land use

Changing land use was evident in all communes and across wealth levels. On the plains, the largest changes were occurring on land classed as residential and garden land. In general, this land had security of tenure and hence householders were willing to invest. In contrast, further development of the rice lands was constrained both by the perceived lack of tenure security over specific plots of land, and by the need for specific developments to be approved by commune and district authorities. In the mountain communes, there were major changes in land use related to development of production forest and perennial crops. In some situations the traditional logging of natural forests was continuing despite regulations against this.

### The importance of infrastructure

Two of the communes (Cam Thuy and Quang Long) had markedly superior infrastructure, particularly related to roads and hence connection with nearby markets, than the other communes. Trung Hoa was also selected as a commune with good road access, but this was relative to other mountain communes, and the access was markedly inferior to either Cam Thuy or Quang Long. It was evident in Cam Thuy and Quang Long that the development process had started much earlier than other communes, and the initial development steps undertaken by the better-off families had their genesis more than 15 years ago. In contrast, for the other communes it was evident that development had been ‘kick started’ by the development of roads, and that development had then occurred very rapidly. Other important infrastructure developments included electricity, but this was used more for lighting than business activities. Lack of telephone networks in the mountain communes was clearly a constraint to the efficient operation of supply chains, but this lack did not preclude rapid development from occurring. From a social perspective, there were many other important infrastructure developments that occurred, such as health clinics and assistance with permanent housing; however, it was clearly the road access that ‘kick started’ the development of the more remote communes, including the coastal Ngu Nam.

### Development of supply chains

Supply chains were more developed in the communes with good market access. Input supply chains and output supply chains tended to develop in parallel, but output supply chains developed more rapidly.

In communes where co-operatives were operative in the management of wetland rice farming, these co-operatives also managed the input supplies for rice. However, private traders became involved at an early stage in provision of feeds for animals. In the mountain communes, where some inputs of seeds and fertilisers were subsidised, the input supply chains tended to be managed through the Commune People’s Committee. However, over time, private input supply chains developed for non subsidised inputs. Input suppliers often accepted delayed payment but in return farmers were obliged to sell their output products through these agents.

There were two main types of output supply chains. One type connected households with local markets at the district or province level. These supply chains were mainly for food and cash crops. In communes with good market access, the farmers could often supply their

output directly to the market. However, in communes with poor access they typically sold to local collectors who would then supply retailers or sell to final consumers at open markets within the district or province. Successful trading typically required access to working capital, some form of transportation, access to market information through telecommunications, and trading networks. The second type of output supply chain connected households with markets outside of the province including foreign markets. This second type included some export products such as fish, green pepper and groundnuts, and industrial products such as wood and cassava starch. These supply chains were limited in a number of ways, including lack of supply (Ngu Nam export fish), lack of processing capacity (cassava starch), still being in an early stage of development (wood from planted forests), and general supply chain opaqueness (green pepper and groundnuts).

### Education and special skills

There was no convincing relationship between wealthy and poor households in relation to years of formal education. However, it was very clear that some households were able to use special technical skills, such as advanced flower growing techniques and carpentry, and handicraft activities such as thin-rice-pancakes, to earn superior incomes. Conversely, there was also evidence across communes that many households lacked technical skills in crop and animal husbandry.

### Entrepreneurship

Many of the wealthy households stood out for their entrepreneurial characteristics. They were prepared to undertake new activities, and often obtained early mover benefits when prices were high. They were quick to respond to declining prices when there were signs of increased production from other households, and would then move to other activities. One entrepreneurial household (CT1) took risks that led to bankruptcy and losing their house, but still managed to recover. The specific entrepreneurial activities were diverse, but typically involved perceiving an opportunity to either acquire specific resources or undertake a specific activity, and then acting rapidly. Entrepreneurial activity was also linked to a willingness to work very hard.

Entrepreneurial activities included both on-farm and non-farm activities. An outstanding on-farm example was the specialised growing of flowers using advanced lighting techniques by QL1. The example of NN3 in setting up a restaurant for tourists was an outstanding example of a non agricultural activity. Several households were able to develop thriving trading

businesses, which typically started from selling their own outputs and buying their own inputs.

#### New technology

There was considerable new technology employed in all communes. This included improved varieties of crops such as rice, maize, cassava, and groundnuts, together with the use of artificial fertilisers. Many farmers reported that they followed other farmers in taking up a new technology or idea. The use of new seed varieties and fertilisers was rapid when it was encouraged by free seed and subsidised fertiliser. Not all new technologies were successful; for example attempts to introduce crossbred bulls had little impact. Also, some new technologies such as fish sauce processing at Ngu Nam under the guidance of an NGO had marketing difficulties.

#### Off-farm employment

Off farm employment was particularly evident in Quang Long which was adjacent to Ba Don Town, and which also with good access to Dong Hoi City. There was clear evidence at this commune of a significant livelihood shift away from agriculture. In other communes, people typically had to shift away from their communes on at least a temporary basis to obtain off-farm work.

#### The role of finance

There were diverse sources of finance, including banks, NGOs, traders, and family sources. Of the 12 households classified as wealthy, six had sourced bank loans and six had relied on their own savings. Medium level and poor families were also able to access finance but often did not have the other necessary resources or skills to be able to use these funds effectively. Some poor families had not taken up financing opportunities because they did not know what they could use an investment loan for.

#### Pensions and Remittances

Pensions and remittances often played a key role in both sustaining livelihoods and funding development. Most pensions were either for retired commune officers or retired soldiers. Remittances were typically from family members who had left the commune to work in southern provinces, either on a temporary or long term basis. In most cases these were young people who had no family ties. However, many people lacked the skills to work away from their commune, and for the ethnic minorities there were also cultural issues to be overcome.



### Labour and under-employment

Labour was in general a non scarce resource. As a consequence, labour markets were slow to develop although some poor people did hire themselves out. The motivation for activities such as pig raising was often linked to finding something productive for family members to do. Labour used in cattle raising was unusual in that children often looked after the cattle on the communal grazing grounds. In the absence of available children, households tended to move out of cattle raising. Some of the more successful households were beginning to make choices about activities that recognised their own labour had an opportunity cost.

Some families were seriously disadvantaged by lack of an active male worker. Females were excluded from undertaking sea fishing at Ngu Nam, and active males were needed by households who wished to occupy and develop forest lands.

### Risk factors

Risk factors can be seen as being of two types. One type relates to those who attempt to commercialise but who are then impacted upon by unexpected shocks. An example is volatile or declining prices to make sufficient income to cover costs including interest and repayment of loans. There was evidence of loss making at the level of individual activities, but not at the overall level of the household, except for CT1 in earlier times. This was probably because of the diverse set of production activities and a willingness shown by households to decrease or desist from unprofitable activities. Another example is risks relating to constraining natural resources, such as in Ngu Nam, and non sustainable practices in the mountain communes.

The second type of risk pertains to those households who fail to engage in commercialisation due to inherent household vulnerabilities. The poorest families were typically those whose family structure and lack of a necessary skill-set precluded them from participating in particular livelihood activities. Particularly in the mountain communes, the process of land occupation may have left those who failed to occupy land, when those opportunities were available, with a subsequent lack of opportunity to escape from poverty. There is strong evidence that commercialisation is increasing the range of income levels within each commune.

### Intensification, diversification, and specialisation

Most households commenced the process of commercialisation by intensifying their production of basic food crops. By using improved seed varieties and fertiliser, they were able to achieve increased yields, which then allowed the area of these crops to be reduced, and the released land to be allocated to cash crops. In addition, increased yields of the basic food crops allowed expansion of livestock activities for which the food crops were used as feed. Hence, the consequence of the initial intensification was diversification into additional activities, with these two processes then continuing alongside each other. It was notable that as families became more commercial they tended to sell a smaller portion of their rice. This was because the rice, despite being of fundamental importance to livelihoods, had a low market value. Hence, they could increase their income by using the rice for complementary activities such as for rice wine refining or as animal feed. There was also some evidence, particularly by 2008, that specialisation was starting to occur. This specialisation was evidenced not by any decline in the number of activities, but by increasing reliance on a limited number of activities for the majority of the income.

Ngu Nam was a special case in that the key resource was the in-shore fishery. However, it demonstrated the same processes of intensification, and diversification. In this case, the initial intensification related to investment in fishing equipment. There was also evidence of diversification into further processing and some limited cropping within the land constraints.

### Decision making processes

A focus in this thesis has been on documenting what farmers did and why. However, no attempt has been made to identify the specific underlying psychological processes of individual households as this would be a study in itself. Nevertheless, it is apparent that households were in general willing and indeed enthusiastic to shift their lifestyles from subsistence to commercial. Within each commune there were first movers, and then subsequent adoption by more typical households quickly followed. However, a key issue was the need to first ensure food security. Households that failed to move successfully towards large commercial activities were typically constrained by lack of a key resource. In most cases this was either the lack of an active male worker, or the lack of a skill-set that could be applied to productive purposes. At the level of the commune, there were many factors that impacted on the ability to move to a more commercial orientation, but good physical connections to markets stand out as being fundamental enablers. At the level of individual households, the ability to acquire resources, linked to entrepreneurship and efficient use of

technology, stand out as the key household enablers. In relation to rice land and associated land use change, the attitude of local officials and the need for co-ordination could be either enabling or constraining factors.

### **12.5. Linking findings to theory**

In this section the emergent findings from earlier in this chapter are discussed in the context of existing literature and theory. The purpose is to identify where the findings support existing literature and where they provide contrasts. In situations where contrasts are identified, the aim is to seek insights which modify, enrich and extend the existing theory.

The paradigm within which thesis was undertaken, and the use of a case study methodology to study household relationships within a dynamic framework across agro-ecological zones, brings a unique perspective to the issues of subsistence and commercialisation. The empirical basis of existing theory comes largely from quantitative econometric analyses which focus on cross sectional analysis of variables, collected by survey, and which can be easily quantified. These studies have focused on empirical correlations but without the accompanying qualitative analysis to understand processes and direction of causation. For example, if wealth is associated with availability of debt finance, then is finance a determinant of wealth, or has the wealth been a determinant of access to finance? In addition, most studies have focused on particular factors, such as land tenure or credit, without considering overall livelihood systems and the complex interactions.

#### Diversification, specialisation, and commercialisation

As reviewed in Chapter 3, Timmer (1997), Pingali and Rosegrant (1995) and Pingali (1997) argue that commercialisation can be expected to lead to diversity at the national level, but to lead to specialisation at the regional and farm levels to take advantage of economies of scale and agro-climatic factors. However, most studies suggest that commercialisation leads to diversification though new on-farm activities associated with non agricultural production, or with off-farm activities associated with processing, value adding and marketing (Ellis, 1998; Ellis, 2000). The studies by Dorsey (1999) in Kenya, by Barrett, Reardon and Webb (2001) in Africa, by Abdulai and CroleRees (2001) in Mali, by Block and Webb (2001) in Ethiopia, and by Deb et al, (2002) in India, all support this perspective. In Vietnam, Minot *et al* (2006) and Thanh *et al* (2005) have also found that farmers diversify into non agricultural activities but have not explicitly investigated the situation with on-farm agricultural production.

In this thesis it has been clearly shown that when farmers commercialise they initially increase the level of agricultural diversification. The reason for this is that they wish to maintain their production of food crops that underpin food security, but it is other crops and animal activities, including aquaculture, that have much greater potential to earn cash. Accordingly, they first intensify the production of basic food crops per unit of land area, so that they can then release some land resources to other activities, thereby increasing the overall number of agricultural activities. In the process they also create demand for under-employed labour. This is a different perspective to that commonly found in the agricultural economics literature whereby diversification is perceived as a risk management strategy to spread the production and economic risk across a range of activities. Further, the diversification of activities that has occurred in Quang Binh is linked to agro-ecological complementarity between activities. Specific examples include rice used for animal activities, crop by-products used for feeding pigs, pig manure used as crop manure, rice used both for rice wine and brewers' grain, and spring onions intercropped with cassava. These findings can be explained in terms of economies of scope (Panzir and Willig, 1981). In the past the economies of scope concept has been applied extensively to product bundling efficiencies and the marketing of goods and services, but not specifically to farmer behaviour related to commercialisation.

The finding that farmers in Quang Binh increase, at least initially, the number of on-farm activities as a key strategy in their commercial orientation, is a new finding in relation to agricultural commercialisation. In addition, the ability of many farmers to generate substantial commercial incomes through selection of new agricultural activities, rather than non-agricultural activities, and then to intensify these activities, is a key insight.

Using a reduced number of on-farm activities as a basis of measuring specialisation provided only negative evidence, with wealthy commercial farmers having more activities than poor farmers, and these activities increasing during the process of commercialisation. Consistent with this, there were no households which had foregone production of their own basic food needs. However, it can be argued that there was evidence in a number of cases where one activity was clearly dominant in terms of net household income, and that there was a tendency for this to be increasing. Conversely, some households were reducing the level of less profitable activities. QL1 and QL2 were examples of specialisation in flowers and vegetables respectively. This is supportive of the notion that once households exhaust the initial

economies of scope they will increasingly move to capture economies of scale in specialist activities. Over time they may gain increasing confidence to forego subsistence production of food crops and rely on purchasing these. From this perspective, the Quang Binh households are still at an early stage of commercialisation.

The Quang Binh evidence for intensification of basic food crops as a precursor to commercialisation has policy implications for how the process of commercialisation can be 'kick started' by introducing new technology (varieties, fertiliser and pest control) for the basic food crops. It is believed that this is a new finding in the literature.

#### Infrastructure and commercialisation

Previous studies in Central and Eastern Europe found econometric relationships linking distance to market and type of road to commercial orientation (Mathijs and Neov, 2002; Balint, 2004). In parts of northern Vietnam, Minot *et al* (2006) have found similarly, and the results of this thesis are consistent with their findings. However, this thesis goes further in demonstrating at the commune level that road development can be a fundamental enabler. Other infrastructure developments such as electricity and telephone are also important, but less critical as fundamental enablers. This thesis also shows that infrastructure developments have the potential to benefit some households much more than others, with some families caught in poverty traps being unaffected.

#### Land tenure and land markets

There have been numerous studies of land tenure in Vietnam (Que, 2001; Dzung, 2001; Marsh and MacAulay, 2002; Ravallion and Walle, 2002; Do and Iyer, 2003, 2004; Kerkvliet, 2006; Smith *et al*, 2007; Deininger and Jin, 2008). A common assumption has been that households have land use certificates consistent with land law that provide comprehensive use rights, long term security of tenure, and rights of sale. However, in this thesis it has been found that the tenure rights, as outlined earlier in this chapter, are considerably more complex.

Given the complexity of the land tenure arrangements in Quang Binh, there was insufficient evidence from this thesis to make any theoretical conclusions as to the impact of tenure on land markets, beyond the general observation that willingness to invest did appear to be linked to perceived security of tenure. However, the complexity of arrangements identified in this thesis does highlight the need for future studies of land tenure to be well grounded in the specifics of each situation.

### Land Resources and commercialisation

A range of authors have found that households in Central and Eastern Europe with more land have a higher market orientation (Mathijs and Noev, 2002; Balint, 2004; Lerman, 2004). Minot *et al* (2006) have found similarly in northern Vietnam. In this thesis, the results are generally supportive of this finding but some caveats are necessary. First, the situation between communes is confounded by differing land classes and it is only the within commune patterns that are useful. Second, some highly profitable activities such as intensive flowers, intensive vegetables and aquaculture rely more on capital, technical skills, and labour rather than on large areas of land. Third, value adding activities such as carpentry, rice-wine-refining and thin-rice-pancakes require no land. Accordingly, land is an enabler but not a fundamental determinant of commercialisation.

### Capital and credit markets

It is widely accepted that constraints on access to credit can keep households in subsistence (Bruentrup and Heidhues, 2002). In Eastern Europe it has also been found that low access to credit can drive medium sized farms back into subsistence. In Vietnam, Duong and Izumida, (2002) found that credit had a significant impact on household production, although this was based on econometric analysis of survey data with consequent questions as to direction of causation. In this thesis it was evident that bank finance was available across all wealth classes but with higher rate of uptake by the more wealthy families. The more remarkable changes in commercial activity were clearly associated with large loans. However, there were a broad range of alternative sources of investment finance including savings and remittances. There was no strong evidence that the overall process of commercialisation was constrained by lack of access to finance; it seemed that those who had the physical resources and skill-set to undertake an investment were able to access the capital that they needed from either the formal or informal sector.

### Education and special skills

Intuitively, it might seem reasonable to assume that education would have an important impact on the commercial orientation of households. However, previous studies in Central and Eastern Europe (Mathijs and Noev, 2002; Balint, 2004), and in Vietnam (Minot *et al* 2006), have failed to confirm this. Similarly, in this thesis the patterns between years of formal education of the household heads and commercial orientation were not strong. However, in this thesis there were clear patterns linking technical skills to household incomes

and commercial orientation. A common finding was that commercial success was linked to special skills combined with hard work and entrepreneurial motivation. Previous studies that have focused on numeric measures of education have been unable to identify these factors.

#### Migration and non-farm employment

Previous studies have shown that migration and non-farm employment are important strategies for workers during the transition. This has been found in Africa (Barrett *et al*, 2001), Central European countries (Davis *et al*, 2003), Peru (Escobal, 2001), southern Mali (Abdulai and CroleRees, 2001), and in a range of developing countries by Lall *et al* (2006). It has also been found in Vietnam (Minot *et al*, 2006; Thanh *et al*, 2005). In this thesis it has been shown that most migrant workers are young people who are often constrained by lack of skills. However, the migrant activities serve at least three purposes. They reduce under-employment in the communes; they are a source of remittances which support commune livelihoods and fund household investments; and they are a way of obtaining new skills which can then be used back in the communes.

#### Measures of commercialisation

Within the literature, as documented in Chapter 3, there has been no consistency in measures of commercialisation. Many studies have worked with simple output measures, such as the proportion of one or more crops sold, rather than focusing on household income. Similarly, no evidence has been found for empirical data on the commerciality of overall household inputs. A likely explanation for this situation is the complexity of measuring the value of non-cash inputs and outputs, except for simple measures such as crop volumes. It is only within the context of in-depth interview techniques, with probing and follow-up questions by an interviewer familiar with the farming and livelihood systems, that the value of non-costed inputs can be estimated, and the interaction between different production activities explored.

Vietnam studies of relevance include Minot and Golletti (2000), Tuyen *et al* (2003) and Minot *et al* (2006). The first two of these studies focused specifically on the rice sector. Minot and Goletti found that on the North Central Coast (of which Quang Binh is part) 29% and 33% of household rice production was sold in 1992/3 and 1995/96 respectively. Tuyen *et al* (2003) found that, in 1998, only 20% of household rice production in this region was sold. In comparison, within this thesis, it was found that households sold between zero and 20% of their rice production, with the proportion declining as wealth levels increased, and inversely to the overall level of output commercialisation.

The logic for what might seem a surprising trend of declining output commerciality for rice, both over time and also inversely to overall output commercialisation, has been explained earlier in this chapter; it is only poor households that are forced to sell some of their production for cash, due to a lack of alternatives. Wealthy families can add value to any rice that is surplus to their own requirements by feeding it to animals.

This situation with rice highlights the dangers of assessing commerciality from a narrow perspective which is separated from an understanding of overall household behaviour. These particular behaviours in relation to rice are likely to be specific to provinces which have the same demographic and agro-ecological characteristics as Quang Binh, and would be quite different for the provinces of the Mekong and Red River deltas where rice is a major export, and hence commercial, crop.

The study by Minot *et al* (2006) was based on the large scale VLSS survey data of 1993, 1998 and 2002 and included estimates of output commerciality, calculated in the same way as in this thesis, for the Central North Coast. There was an increasing trend of 74%, 80% and 82% for 1993, 1998 and 2002 respectively. This compares to figures reported in this thesis of 83%, 85% and 95% for poor, medium and wealthy families respectively in 2006. Although the same measure of commerciality was used in these two studies, there can be no certainty that exactly the same costing principles have been used. It is also unlikely that data was elicited in the same way, with the LVSS data collected as one part of a survey instrument exceeding 100 pages, whereas in this thesis data was elicited as part of an in-depth semi-structured interview. Nevertheless, the results are generally supportive of each other, and consistent with the notion that output commerciality is both high and increasing.

Given the absence of previous studies with empirical data on input measures of commerciality, it is not possible to make comparisons. However, experience within this thesis suggests that measures of input commerciality are an important component of overall understanding of the commerciality process. This measure relates only to physical inputs exclusive of labour, with labour excluded because it is largely a non scarce resource that has neither a cash value nor a defined opportunity cost. Accordingly, some caution is needed in the interpretation to be placed on this index. A high input index indicates high cash inputs relative to non cash transfers from other productive inputs. A low index implies complementarity between activities, with outputs from one activity becoming inputs to



another. Where the transferred inputs have a market price (such as whole rice fed to animals), then costing is straight forward. However, when transfer items are by-products such as manure, brewers' grain, and crop waste, then costing is inevitably less precise. Despite the limitations, it was notable that the input index did increase with wealth levels as might be expected. There was a correlation of  $r=0.6$  between input and output commerciality for the 36 household cases. Much of the value of this index is the understanding that it gives at the level of individual activities, as well as at the overall household level.

Given the limitations of the input index as described above, a further measure was constructed at the overall level of the household. This was calculated as the ratio of household net income (cash plus opportunity cost) divided by total gross income (cash plus opportunity cost). A low ratio is indicative of a low proportion of gross income being value-added by household labour and hence a high proportion of the output value being attributed to purchased inputs. In contrast, if the ratio is high, then a small proportion of gross income is expended on purchased inputs, and a large proportion is value added by family labour. It is argued here that this index complements the previous input index in providing increased understanding at the overall household level as to the level of value adding as a proportion of gross income. Households with non-farm activities that involved processing of outputs, or trading of either inputs or outputs, showed low indices which were indicative of high levels of purchased inputs.

In summary, it is argued here that the three measures of commerciality used in this thesis are complementary, and give a more comprehensive understanding of commerciality than a single measure of output. It is also argued that measures of commerciality must focus on the overall household rather than just looking at particular crops, or being limited to agriculture.

### Livelihood theory

It was contended in Chapter 4 that livelihood theory provided a lens through which the complexities of commercialisation could be analysed within a holistic framework. However, it was also contended that a deficiency within this framework, which was of particular importance to this thesis, was the inadequate consideration given in the past to markets. It is argued here that the livelihoods framework, with its emphasis on resources, interventions and institutions as enabling and constraining factors, has been particularly helpful in capturing the essence of the commercialisation issues which farmers face. However, it is essential that markets become an explicit part of the framework. In particular, it is necessary that there be

recognition that separate markets exist for physical inputs, physical outputs, labour, credit, and land. Development of these markets is shaped by a range of interventions, institutions, policies and vulnerability contexts.

#### Key factors of commercialisation

Previous studies have tended to focus on specific factors such as credit, land tenure, infrastructure, or access to resources. The danger with such approaches is that cross correlations lead to wrongly ascribing outcomes to included factors at the expense of excluded factors. Also, it is possible for reverse causation to occur. The results from this study suggest that there a number of key factors which interplay in complex ways.

It is contended that there is clear evidence that at commune level the key determinant is strong physical connections to markets, with good road access being paramount. In all cases, once all weather road access for motorised vehicles was available then rapid commercialisation occurred.

Once there were physical connections to markets then supply chains begin to develop, but typically faster for outputs than inputs. New technologies that increased the yield of basic food crops, and facilitated by Government and NGO programs, led to the release of land resources no longer required for meeting food security needs.

At the level of individual households, the commercialisation process was led by entrepreneurial families who perceived opportunities relating to profitable activities. Often these opportunities were linked to what they had observed or learnt elsewhere. Once first movers take up a new technology, others observed and followed.

There were many enabling factors, such as access to land, access to capital, and access to credit. However, none of these could be considered a determinant in that the absence of any one factor by itself necessarily precluded successful commercialisation. Commercial households followed diverse paths, with the most common element being a special set of skills combined with entrepreneurship as shown by willingness to try something new and to work hard. Despite labour being generally a non scarce resource, no family succeeded without hard work.

The major constraint to commercialisation was the absence of an active male worker. A secondary but still major constraint was absence of necessary crop and livestock skills.

The major theoretical insight relating to key commercialisation factors is that factors are likely to be multiple and context dependent. Accordingly, there is a need in any investigation for a holistic approach, based on a livelihood framework that incorporates the complexities associated with the development of markets, as well as giving consideration to the range of interventions and institutional policies that impact on livelihood development.

\*\*\*\*\*

## CHAPTER 13

### Summary and conclusions

#### 13.1. Introduction

The purpose of this study has been to explore the transition from subsistence farming to commercial agriculture in Quang Binh Province, Vietnam. The thesis has documented the situation of households and communes within a holistic framework of livelihood analysis, and with a particular focus on markets, market development, and the transition to commercial agriculture. Explicit consideration has been given to the importance of resources, institutions, and interventions as enabling and constraining factors. The research strategy has been based on case study analysis.

Six commune case studies were undertaken with six embedded household cases in each commune. The case studies were developed to capture the diversity of agro-ecological zones, market access and communications, farm and farmer resources, ethnic communities, and institutional factors. The commercial orientation was explored numerically in relation to both inputs and outputs at the level of both individual activities and the overall household. The dynamics of change relating to both commercial orientation and overall livelihoods were investigated by in-depth qualitative interviews. Cross-case comparisons were conducted to explore common and contrasting patterns of transition.

The investigations were informed by prior theory but no specific hypotheses were tested. Rather, the thesis built on a philosophy of documenting empirical situations within a contextual and holistic framework, and then seeking emergent insights and understandings which could be compared to existing theory, so as to thereby further build and modify that theory.

## 13.2. Research questions and answers

Research Question 1: How is the transition from subsistence to commercial agriculture affecting the livelihoods of communities and farm households in Quang Binh Province?

Rapid economic growth is occurring across all three agro ecological zones of Quang Binh Province. Food security remains relevant, and most rural households continue to grow their own food crops for household consumption. However, in value terms, the products that are consumed within the household comprise only a small proportion of household income. It is evident that some households are increasing their commercial activities at a rapid rate as they accumulate capital and other key resources. However, other households are caught in a poverty trap. Accordingly, income and wealth disparities are increasing. Land is a scarce resource, whereas labour is in general non-scarce. Outward migration from communes and development of off-farm employment are important strategies for dealing with under employment. Food consumption patterns are changing, with less reliance on subsistence crops of maize, cassava and sweet potatoes. Households that are unable to grow their own rice are increasingly purchasing rice as a preferred alternative to the other food crops. Vegetables other than the carbohydrate-based food crops are becoming increasingly important as is animal protein. Cash incomes are increasingly being used to finance the education of children, for health care, for social activities and entertainment, and as savings for re-investment.

Research Question 2: What are the bio-physical, economic and institutional factors influencing the transition from subsistence farming to commercial agriculture in Quang Binh Province?

At the level of the commune, good physical connections to markets are a fundamental enabler. Development of supply chains and commercial production were heavily constrained prior to the construction of all-weather roads. A telephone network further facilitated supply chain development. Physical proximity to markets and towns created opportunities for non agricultural employment. Introduction of new technologies that increased the per hectare production of basic food crops led to food security needs being met from a smaller area and hence increasing availability of land for production of cash crops. Increasing yields of food crops also led to more of these crops being diverted as animal feeds.

Agro-ecological characteristics of the irrigated rice lands meant that land use and land management decisions needed to be made on a collective basis. This could either be an enabling or constraining factor. In general, it led to rapid uptake of new technologies relating to rice, and increasing technical efficiency of production. However, it could also be a constraining factor in terms of converting rice lands to higher value activities such as aquaculture, depending on the attitudes of the relevant authorities.

Wealthy households had higher levels of commerciality than poor households. Evidence from analysing the dynamics of change in each household suggested that causation between wealth and commerciality was in both directions. More capital led to more commercial activities, which in turn led to the accumulation of further capital. Access to land and credit were enabling factors, but some households were able to embark on a rapid development path without being well endowed with either. Within-commune differences in land resources were more marked in the mountain communes than on the plains, and this was linked to differences in the implementation of land laws. On the plains, agricultural land was allocated in accordance with criteria of equity between households, whereas in the mountain communes a lot of land was simply occupied and developed by those with capability to do so. On the plains, households had superior land tenure rights for their residential and garden lands than for their agricultural lands. There was evidence that most of the intensive developments of vegetable and flower crops were occurring on this garden land which had both superior tenure and proximity to dwellings.

Differences in entrepreneurial motivation combined with hard work and first mover status often led to entrepreneurial profits. In some cases other households were then able to copy these behaviours, but in other cases households were able to protect their competitive position through special skills and knowledge that were less easily copied. Households which lacked an active male worker were prevented from some activities such as sea fishing and developing forest lands, and were particularly vulnerable to becoming caught in a poverty trap.

Research Question 3: How do the emergent insights obtained from the Quang Binh case studies compare and contrast with existing theory?

Most studies of commercialisation have relied on quantitative survey data. Although these methods provide statistical relationships, they are mainly of cross sectional data and have not captured the dynamics of change. Many of these studies have focused on particular factors

such as land tenure or credit. Others have focused on particular crops, or on agricultural activities, rather than whole of household studies. None of the previous studies has focused on empirical measurements of input commerciality. No previous studies were identified that had investigated issues of the transition from subsistence to commerciality using in-depth case studies based on a 'whole of household livelihood systems perspective. Accordingly, this study has provided a range of new insights and perspectives.

It has been found in Quang Binh that the stages and processes of commercialisation are different than is found in the literature. The first stage is often the introduction of new technologies, such as new seed varieties and fertilisers, which allow intensification of the basic food crops that provide food security. This leads both to increased overall production, some of which is fed to animals, and the release of surplus land for production of cash crops. In general, households do not sell any of the increased volume of food crops on account of their low market value. Instead, they grow new and higher value crops. Indeed the proportion of the basic food crops that are sold actually falls as households no longer need to generate income in this way for basic family needs.

The second stage of commercialisation is diversification with an increase in the number of production activities. This is because new activities are introduced but the old activities required for food security are still maintained. Economies of scope arise from by-products of one industry becoming inputs to another. Examples include animal manure being used for crops and fish feed, and crop by-products used as animal feed. Complementary products include rice wine refining and brewers' grain, and inter row cropping of spring onions and cassava. Whereas the existing literature reports diversification occurring through non-farm and non-agricultural activities, in these Quang Binh case studies it was also occurring by an increase in the number of on-farm activities.

The third stage of commercialisation is specialisation based on economies of scale. In the Quang Bing case studies, there was evidence from some households of increasing reliance on one or two particular activities, often related to particular skills, such as growing flowers under controlled lighting to coincide flowering with festivals, or carpentry skills. However, although the scale of some activities was declining, there was no indication of a decrease in the overall number of activities. It is assumed that this might occur in a later stage of the commercialisation process.

This study has shown that the implementation of land law in Vietnam is more complex than has generally been assumed in the econometric literature. There are differences between agro-ecological zones, but also between land types within communes. The perceived and in some cases actual tenure rights for the rice wetlands, as found in these Quang Binh case studies, are less than might be expected from the relevant land law. They are also much less than for residential gardens which in some cases are used very intensively. In the mountain communes, some of the development and land use has been occurring without any formal sanction. In future studies, more consideration to these issues needs to be given.

A broad finding has been the importance of analysing the transition to commercial agriculture within a holistic systems-based livelihood perspective. The specific factors are complex and interact, and therefore play out in different ways both between communes and households. Specific consideration needs to be given to issues of infrastructure, resources, institutions, interventions and markets. Single factor analyses, or those undertaken within a static framework, are unable to capture the richness and complexity of the processes at play.

Research Question 4: What are enabling strategies for effective transition and sustainable commercial agriculture?

From a policy perspective, the enabling factors are largely those which affect the environment in which individual households make the decisions. This study has shown that good physical connections to markets are a fundamental enabler. Interventions that provide new technology can also have a considerable impact by 'kick starting' the development process. In remote communes, this includes subsidised seeds of improved varieties, and subsidised fertiliser. However, many householders lacked the necessary agricultural skills. Lack of appropriate skills was also a key issue amongst commune staff, most of whom were trained in politics rather than applied fields such as agriculture and aquaculture.

The evidence from the Quang Binh case studies is that although many households are entrepreneurial and able to make considerable progress using their own initiative, there is another group of households who are caught in poverty traps without the resources or skills to escape. There are also concerns that some of the practices, particularly in the mountain communes, are non sustainable. There is no doubt that in all communes there is an imbalance between land resources and available labour which the process of commercialisation cannot



solve. Accordingly, there is an increasing need for young people to be educated and trained so as to increase their off-farm employability.

### **13.3. Limitations**

The case study approach used in this research, like all research strategies, has both strengths and limitations. The strengths, which relate to the in-depth holistic approach, have already been presented, and will not be repeated here.

Weaknesses of implementation inevitably included reliance on interviewees to recall historical detail from memory, as none of them kept written records. To the extent that it was possible, triangulation of sources, including more than one adult member of each household, was used. Another weakness was the need to use translators in one commune for assistance when interviewing ethnic households who did not speak the Vietnamese language.

Conceptual weaknesses include that the findings relate to specific communes and households. The purposive nature of the sampling, with an explicit aim of capturing the diversity in relation to factors and outcomes, means that no claims can be made as to representativeness to broader populations. Also, the holistic approach of this thesis places practical limits on the depth with which individual factors could be investigated.

### **13.4. Further Research**

Further research could be undertaken based on the limitations of the existing study. Longitudinal research could include re-interviewing the 36 case studies to gain ongoing data as to the commercialisation process. This would be of particular value given the relatively early stage of specialisation that has so far occurred. It would also allow the dynamics of change to be further investigated using information that was current at the time of data collection, rather than relying on long term recall. Similarly, extending the study to other regions of Vietnam, and potentially other countries in transition, would allow the generality of the findings to be investigated in other livelihood contexts, with consequent further theoretical enrichment.

Additional studies could be undertaken to investigate the psychological decision processes of early and late movers to commercialisation. The issue of land tenure as a constraining factor requires further study, and the efficiency of credit allocation remains unanswered. Innovation processes, including information transfer and way in which extension services could be improved, remain to be investigated. Additional studies on the role of migration and special issues affecting ethnic minorities could also inform policy.

\*\*\*\*\*

## REFERENCES

- Abdulai, A., and CroleRees, A. (2001). Determinants of income diversification amongst rural households in Southern Mali. *Food Policy*, 26, 437–452.
- Abedullah, Sokhom, S., and Farooq, U. (2002). Kingdom of Cambodia: A synthesis. In M. Ali (ed), *The vegetable sector in Indochina countries: farm and household perspective on poverty alleviation. Technical Bulletin No 27*, Bangkok: Asian Vegetable Research and Development Center-Asian Regional Center, 31-73.
- ADB. (2003). Vietnam Development Report 2004, *Poverty: Joint Donor Report to the Vietnam Consultative Group Meeting*, Hanoi.
- Aderoba, A. (1987). A Model for selective mechanisation for the small farmer. *Agricultural Systems*, 25, 229-236.
- Adesina, A. A., and Baidu-Forson, J. (1995). Farmers' perceptions and adoption of new agricultural technology: evidence from analysis in Burkina Faso and Guinea, West Africa. *Agricultural Economics*, 13, 1-9.
- Adesina, A. A., and Ouattara, A. D. (2000). Risk and agricultural systems in northern Côte d'Ivoire. *Agricultural Systems*, 66, 17-32.
- Adesina, A. A., and Sanders, J. H. (1991). Peasant farmer behavior and cereal technologies: Stochastic programming analysis in Niger. *Agricultural economics*, 5, 21-38.
- Adesina, A. A., and Zinnah, M. M. (1993). Technology characteristics, farmers' perceptions and adoption decisions: A Tobit model application in Sierra Leone. *Agricultural Economics*, 9, 297-311.
- Adger, W. N. (1998). Observing institutional adaptation to global environmental change: Theory and case study from Vietnam. *CSEERGE Working Paper GEC 98-21*. School of Environmental Sciences, University of East Anglia, Norwich, NR4 7TJ, UK. ([http://www.uea.ac.uk/env/cserge/pub/wp/gec/gec\\_1998\\_21.pdf](http://www.uea.ac.uk/env/cserge/pub/wp/gec/gec_1998_21.pdf)).
- Adger, W. N. (2000). Institutional adaptation to environmental risk under the transition in Vietnam. *Annual of Association of American Geographers*, 90(4), 738-758.
- Ahmad, A. (2000). An Institutional Analysis of Changes in Land Use Pattern and Water Scarcity in Dak Lak Province, Vietnam. *Working Paper*, Department of Economics, University of Lund (presented at the Nordic Conference on "Institutions, Livelihoods and the Environment: Change and Response in Mainland Southeast Asia", Copenhagen, 27-29 September 2000. (<http://www.sasnet.lu.se/ahmadviet.pdf>).
- Ahmadi, N. (2004). Upland rice for highland: new varieties and sustainable cropping system for food security: Promising prospects for the global challenges of rice production ? *Paper presented at the International rice conference*, Rome, Italy.
- Ahmed, N., Allison, E. H., and Muir, J. F. (2008). Using the sustainable livelihoods framework to identify constraints and opportunities to the development of freshwater prawn farming in southwest Bangladesh. *The World Aquaculture Society*, 39(5)

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I. (2006). Behavioral interventions based on the theory of planned behaviour. *Working Paper*. (<http://www.people.umass.edu/aizen/pdf/tpb.intervention.pdf>).
- Akram-Lodhi, A. H. (2001). Vietnam's agriculture: Is there an inverse relationship ? *Working Paper*, Institute of Social Studies, The Hague, the Netherlands. (<http://adlib.iss.nl/adlib/uploads/wp/wp348.pdf>).
- Akram-Lodhi, A. H. (2005). Vietnam's agriculture: processes of rich peasant accumulation and mechanisms of social differentiation. *Journal of Agrarian Change*, 5(1), 73-116.
- Ali, M. (2000). Dynamics of vegetables in Asia: A synthesis. In M. Ali (ed), *Dynamics of vegetable production, distribution and consumption in Asia*. Asian Vegetable Research and Development Center-AVRDC publication No. 00-498, 1-29.
- Ali, M. (2002). The vegetable sector in Indochina: A synthesis. In M. Ali (ed), *The vegetable sector in Indochina countries: Farm and household perspective on poverty alleviation. Technical Bulletin No 27*. Bangkok: Asian Vegetable Research and Development Center-Asian Regional Center, 1-30.
- Ali, M. (2008). Horticulture Revolution for the Poor: Nature, Challenges and opportunities. *Background Paper for the World Development Report 2008*, AVRDC-The World Vegetable Centre, Taiwan.
- Ali, M., Quan, N. T., and Nam, N. V. (2006). An analysis of food demand patterns in Hanoi: Predicting the structural and qualitative changes. *Technical Bulletin No 35*. AVRDC Publication no 06-671, Taiwan: AVRDC- The world Vegetable Centre,
- Allison, E. H., and Ellis, F. (2001). The livelihood approach and management of small scale fisheries. *Marine Policy*, 25, 377-388.
- Allison, E. H., and Horemans, B. (2006). Putting the principles of the sustainable livelihood approach into fisheries development policy and practice. *Marine Policy*, 30, 757-766.
- An, H. B., Vagneron, I., Think, L. N., Moustier, P., Dam, N. D., Nam, N. V., et al. (2003). Spatial and institutional organization of vegetable markets in Hanoi: Asian Vegetable Research and Development. International Center for Agriculture Research and Development; Research Institute of Fruit and Vegetable, Vietnam.
- Anderson, R. A., Crabtree, B. F., Steele, D. J., and Reuben R. McDaniel, J. (2005). Case study research: The view from complexity science. *Qualitative Health Research*, 15(5), 669-685.
- Antonides, G. (1996). *Psychology in Economics and Business* (2 ed.). The Netherlands: Kluwer Academic Publishers.
- Arellanes, P., and Lee, D.R. (2003). The determinants of adoption of sustainable agriculture technologies : Evidence from the hillsides of Honduras. *Paper presented at the 25th International Conference of Agricultural Economists (IAAE)*.

- Arlinghaus, R., and Mehner, T. (2003). Socio-economic characterisation of specialisation common carp (*Cyprinus carpio* L.) anglers in Germany, and implication for inland fisheries management and eutrophication control. *Fisheries Research*, 61, 19-33.
- Asfaw, A. (2007). Supermarket purchases and the dietary patterns of households in Guatemala. *Discussion Paper 00696*, International Food Policy Research Institute.
- Ashley, C. (2000). Applying livelihood approaches to natural resource management initiatives: Experiences in Namibia and Kenya. *Working Paper 134*, London, Department for International Development, UK.
- Ashley, C., and Carney, D. (1999). Sustainable livelihoods: Lessons from early experience. *Working Paper*, London, Department for International Development, UK.
- Aubry, C., Pappas, F., and Capillon, A. (1998). Modelling decision-making processes for annual crop management. *Agricultural Systems*, 56(1), 45-65.
- AusAID. (2002). Vietnam poverty analysis, *Report*, Centre for International Economics, Canberra and Sydney.
- Austin, E. J., Willock, J., Deary, I. D., Gibson, G. J., Dent, J. B., Edwards-Jones, G., et al. (1998). Empirical models of farmer behaviour using psychological, social and economic variables. Part II: linear modelling. *Agricultural Systems*, 58(2), 225-241.
- Badawi, A. T. (2004). Rice-based production system for food security and poverty alleviation in the Near East and North Africa. *Paper presented at the International rice conference*, Rome, Italy.
- Balint, B., and Wobst, P. (2004). Institutional factors and market participation: The case of Romania. *Working Paper*, Center for Development Research (ZEF), University of Bonn, Bonn. ([http://www.pasad.uni-bonn.de/Balint\\_Wobst\\_Institutional\\_Factors.pdf](http://www.pasad.uni-bonn.de/Balint_Wobst_Institutional_Factors.pdf)).
- Balint, B., and Wobst, P. (2005). Transaction costs and subsistence farming: Evidence from Romania. *Working Paper*, Centre for Development Research (ZEF), University of Bonn, Bonn. ([http://www.pasad.uni-bonn.de/Balint\\_Wobst\\_Transaction\\_Costs.pdf](http://www.pasad.uni-bonn.de/Balint_Wobst_Transaction_Costs.pdf)).
- Balint, B. E. (2004). Determinants of commercial orientation of the individual farms in Romania. *Paper presented at the Conference on International Agricultural Research for Development*. Deutscher Tropentag 2004 Berlin, October 5-7, 2004.
- Barbieri, C., and Mahoney, E. (2008). Why is diversification an attractive farm adjustment strategy? Insights from Texas farmers and ranchers. *Journal of Rural Studies*, 25, 58-66.
- Bard, S. K., and Barry, P. J. (2000). Developing a scale for assessing risk attitudes of agricultural decision makers. *International Food and Agribusiness Management Review*, 3, 9-25.
- Barrett, C. B., Reardon, T., and Webb, P. (2001). Nonfarm income diversification and household livelihood strategies in rural Africa: Concepts, dynamics, and policy implications. *Food Policy*, 26, 315-331.
- Barslund, M., and Tarp, F. (2006). Rural credit in Vietnam. *Discussion Papers 06-03*, Department of Economics, University of Copenhagen, DK-1455 Copenhagen K, Denmark.

- Batz, F.-J., Peters, K. J., and Janssen, W. (1999). The influence of technology characteristics on the rate and speed of adoption. *Agricultural Economics*, 21, 121-130.
- Bautista, R. M. (2000). Agriculture-Based Development: A Sam Perspective on Central Vietnam. *Discussion Paper*, International Food Policy Research Institute, 2033 K Street, N.W. Washington, D.C. 20006, U.S.A. Retrieved from <http://www.ifpri.org/divs/tmd/dp/papers/tmdp51.pdf>
- Beckman, M. (2001). Extension, Poverty and Vulnerability in Vietnam Country Study for the Neuchâtel Initiative. *Working Paper 152*, Swedish University of Agricultural Sciences.
- Beedell, J. D. C., and Rehman, T. (1999). Explaining farmers' conservation behaviour: Why do farmers behave the way they do? *Journal of Environmental Management*, 57, 165-176.
- Beierlein, J. C., Baker, G. A., and Starbird, S. A. (1998). Food and agribusiness management research: Advancing the theory and practice. *International Food and Agribusiness Management Review*, 1(1), 1-3.
- Bellemare, M. F., and Barrett, C. B. (2006). An ordered tobit model of market participation: Evidence from Kenya and Ethiopia. *American Journal of Agricultural economics*, 88(2), 324-337.
- Bene, C. (2003). When fishery rhymes with poverty: A first step beyond the old paradigm on poverty in small scale fisheries. *World Development*, 31(6), 949-975.
- Benjamin, D., and Brandt, L. (2002). Agriculture and income distribution in rural Vietnam under economic reforms: A tale of two Regions. *Paper presented at the World Bank conference in Hanoi, May 2001.*(<http://repec.economics.utoronto.ca/files/UT-ECIPA-BENJAMIN-02-01.pdf>).
- Bennett, E. (2005). Gender, fisheries and development. *Marine Policy*, 29, 451-459.
- Bettis, R. A., and Hall, W. K. (1982). Diversification strategy, accounting determined risk, and accounting determined return. *Academy of Management*, 25(2), 254-264.
- Birthal, P. S., P.K.Joshi, and Gulati, A. (2005). Vertical coordination in high-value food commodities: Implications for smallholders. *MTID Discussion Paper No.85*, International Food Policy Research Institute.
- Bitsch, V. (2000). Agricultural economics and qualitative research: Incompatible paradigms. *Forum: Qualitative Social Research*, 1(1)
- Bitsch, V. (2005). Qualitative research: A grounded theory example and evaluation criteria. *Journal of Agribusiness*, 23(1), 75-91.
- Block, S., and Webb, P. (2001). The dynamics of livelihood diversification in post-famine Ethiopia. *Food Policy*, 26, 333-350.
- Bougheas, S., Demetriades, P. O., and Morgenroth, E. L. W. (1999). Infrastructure, transport costs and trade. *International Economics*, 47, 169-189.

- Bouis, H. (1994). Consumption effects of commercialization of agriculture. In J. V. Braun and E. Kennedy (Eds.), *Agricultural commercialization, economic development, and nutrition*. Baltimore and London: The Johns Hopkins University Press
- Braun, J. V., and Kennedy, E. (Ed.). (1994). *Agricultural commercialization, economic development, and nutrition*. Baltimore and London: The Johns Hopkins University Press.
- Braun, J. V. (1994). Production, employment, and income effects of commercialization of agriculture. In J. V. Braun and E. Kennedy (Eds.), *Agricultural commercialization, economic development, and nutrition*. Baltimore and London: The Johns Hopkins University Press
- Braun, J. V. (2007). *Food Policy Report: The world food situation: New driving forces and required actions*: International Food Policy Research Institute.
- Braun, J. V., Bouis, H., and Kennedy, E. (1994). Conceptual framework. In J. V. Braun and E. Kennedy (Eds.), *Agricultural commercialization, economic development, and nutrition*. Baltimore and London: The Johns Hopkins University Press
- Braun, J. y. (1995). Agricultural commercialization: impacts on income and nutrition and implications for policy. *Food Policy*, 20(3), 187-202.
- Broeck, K. V. d., Newman, C., and Tarp, F. (2007). Land titles and rice production in Vietnam. *Discussion Paper, No. 07-32*, Department of Economics, University of Copenhagen,
- Brüntrup, M., and Heidhues, F. (2002). Subsistence Agriculture in Development: Its Role in Processes of Structural Change. *Discussion Paper*, University of Hohenheim, Institute of Agricultural Economics and Social Sciences in the Tropics and Subtropics, ([http://www.uni-hohenheim.de/i490a/dps/2002/01\\_2002/dp01-02n.pdf](http://www.uni-hohenheim.de/i490a/dps/2002/01_2002/dp01-02n.pdf)).
- Burton, R. F. (2004). Reconceptualising the ‘behavioural approach’ in agricultural studies: A socio-psychological perspective. *Journal of Rural Studies*, 20 359–371.
- Cadilhon, J.-J., Moustier, P., Poole, N. D., Tam, P. T. G., and Fearn, A. P. (2006). Traditional vs modern food systems? Insights from vegetable supply chains to Ho Chi Minh City (Vietnam). *Development Policy Review*, 24(1), 31-49.
- Cahn, M. (2002). Sustainable livelihood approach: Concept and practice. *Paper presented at the Contesting Development: Pathways to Better Practice*. (<http://www.devnet.org.nz/conf/>).
- Calpe, C. (2004). Rice situation update. *Paper presented at the International rice conference, Rice is life*. Rome, Italy, 2004.
- Cantrel, R. P., and Hettel, G. P. (2004). Rice-based production system for food security and poverty alleviation in Asian and the Pacific. *Paper presented at the International rice conference, Rice is life*. Rome, Italy, 2004.
- Carlson, E. D., Engebretson, J. C., and Chamberlain, R. M. (2005). The evolution of theory: A case study. *International Journal of Qualitative Methods*, 4(3).

- Carney, D. (Ed.). (1998). Sustainable rural livelihoods. Department for International Development, London.
- Carney, D. (1999). Approaches to sustainable livelihoods for the rural poor: *ODI Poverty Briefing 2*. (<http://www.odi.org.uk/resources/download/2276.pdf>).
- Carney, D. (2002). Sustainable livelihood approach: progress and possibilities for change. *Working Paper*, Department for International Development, London,
- Castella, J.-C., & Quang, D. D. (2002). *Doi Moi in the Mountains*. Ha Noi, Vietnam: The Agricultural Publishing House.
- Chambers, R., and Conway, G.R.(1992). Sustainable rural livelihood: Practical concepts for the 21st century. *Discussion Paper 296*, Institute of Development Studies, London.
- Chaudhry, M. G. (Ed.). (2003). Agrarian Reforms and Agricultural Productivity: *Report of the APO Study Meeting on Agrarian Reforms and Agricultural Productivity*. Sri Lanka, 28 May – 2 June 2001: the Asian Productivity Organization.
- Chien, D. H. (1997). Market prospects for upland crops in Vietnam. *Working Paper, The CGPRT Centre*. (<http://ageconsearch.umn.edu/bitstream/32669/1/wp970026.pdf>).
- Chilonda, P., and Huylenbroeck, G. V. (2001). A Conceptual framework for the economic analysis of factors influencing decision making of small scale farmers in animal health management. *Rev.sci.tech. Off. int. Epiz*, 20(3), 687-700.
- Chomchalow, N. (1997). Flower forcing for cut flower production. *Paper presented at the Cut Flower Production Development in Asia*, Bangkok, Thailand, 24-26 June, 1997.
- CIE. (2002). Vietnam Poverty Analysis. Canberra and Sydney, Australia.
- Cimpoieş, D., Lerman, Z., and Racul, A. (2009). The economics of land consolidation in family farms of Moldova. *Paper presented at the 111 EAAE-IAAE Seminar 'Small Farms: Decline or persistence'*. (<http://ageconsearch.umn.edu/bitstream/52837/2/062.pdf>).
- Cockburn, J., Decaluwé, B., and Robichaud, V. (Eds.). (2008). *Trade liberalization and poverty: A CGE analysis of the 1990s experience in Africa and Asia*: Poverty and Economic Policy (PEP) Research Network.
- Codron, J.-M., Bouhsina, Z., Fort, F., Coudel, E., and Puech, A. (2004). Supermarkets in low-income Mediterranean countries: Impacts on horticulture systems. *Development Policy Review*, 22(5), 587-602.
- Coffman, R., McCouch, S. R., and Herdt, R. W. (2004). Potential and limitation of biotechnology in rice. *Paper presented at the International rice conference, Rice is life*. Rome, Italy, 2004.
- Conway, T. (2004). Politics and the PRSP approach: Vietnam case study. *Working Paper 241*, Overseas Development Institute, London, UK,
- Cooman, G. D. (2005). A behavioural model for vague probability assessments. *Fuzzy Sets and Systems*, 154, 305-358.



- Culas, R., and Mahendrarajah, M. (2005). Causes of diversification in agriculture over time: Evidence from Norwegian farming sector. *Paper presented at the 11th Congress of the EAAE, 'The Future of Rural Europe in the Global Agri-Food System'*.
- Cupchik, G. (2001). Constructivist realism: An ontology that encompasses positivist and constructivist approaches to the social sciences. *Forum: Qualitative Social Research*, 2(1).
- DaCosta, E., and Turner, S. (2007). Negotiating changing livelihood: The sampan dwellers of Tam Giang Lagoon, Vietnam. *Geoforum*, 38, 190-206.
- Dadlani, N. K. (1997). Cut flower production in India. *Paper presented at the Cut Flower Production Development in Asia*, Bangkok, Thailand, 24-26 June, 1997.
- Davis, J. R. (2006). How can the poor benefit from the growing markets for high value agricultural products. *Working Paper*, Natural Resource Institute, Central Avenue, Chatham Maritime, UK.
- Davis, J. R., Bezemer, D. J., and Wandschneider, T. (2003).: *NR The rural non-farm economy in Armenia, Georgia and Romania: A synthesis of findings I Report No 2731, Rural Non-Farm Economy Project*, Natural Resource Institute, University of Greenwich, UK.
- Deb, U. K., Rao, G. D. N., Rao, Y. M., and Slater, R. (2002). Diversification and livelihood options: A study of two villages in Andhra Pradesh, India 1975–2001. *Working Paper*, Overseas Development Institute, London, UK.
- Defoer, T., Wopereis, M. C. S., Jones, M. P., Lancon, F., Erenstein, O., and Guei, R. G. (2004). Rice-based production system for food security and poverty alleviation in sub-Saharan Africa. *Paper presented at the International rice conference, Rice is life*. Rome, Italy, 2004.
- Deininger, K., and Jin, S. (2008). Land Sales and Rental Markets in Transition: Evidence from Rural Vietnam. *Oxford Bulletin of Economics and Statistics*, 70(1).
- Delgado, C. L. (1995). Agricultural diversification and export promotion in sub-Saharan Africa. *Food Policy*, 20(3), 225-243.
- Deshingkar, P., and Farrington, J. (2006). Rural labour markets and migration in South Asia: Evidence from India and Bangladesh. *Background Paper for the World Development Report 2008*. ([http://siteresources.worldbank.org/INTWDR2008/Resources/2795087-1191427986785/Rural\\_Labour\\_Markets.pdf](http://siteresources.worldbank.org/INTWDR2008/Resources/2795087-1191427986785/Rural_Labour_Markets.pdf)).
- Deshingkar, P., and Start, D. (2003). Seasonal Migration for Livelihoods in India: Coping, accumulation and exclusion. *Working Paper 220*, Overseas Development Institute, UK,
- Detlefsen, N. K., and Jensen, A. L. (2004). A stochastic model for crop variety selection. *Agricultural Systems*, 81, 55-72.
- Devendra, C., and Thomas, D. (2002). Smallholder farming system in Asia. *Agricultural System*, 71, 17-25.
- DFID. (2001). *Sustainable Livelihood Guidance Sheets*. London, Department for International Development, UK.

- Diagne, A., and Zeller, M. (2001). Access to credit and its impact on welfare in Malawi. *Research Report 116*, International Food Policy Research Institute, Washington, D.C.,
- Do, Q. T., and Iyer, L. (2003). Land rights and economic development: Evidence from Vietnam. *Working Paper No 3120*, World Bank.
- Do, Q. T., and Iyer, L. (2004). Rural Vietnam in transition. *Working Paper*, World Bank.
- Do, Q. T., and Iyer, L. (2007). Land titling and rural transition in Vietnam. *Working Paper*, World Bank.
- Dooley, L. M. (2002). Case study research and theory building. *Advances in Developing Human Resources*, 4(3), 335-354.
- Dorjee, K., Broca, S., and Pingali, P. (2003). Diversification in South Asian Agriculture: Trends and constraints. *ESA Working Paper No. 03-15*, Agricultural and Development Economics Division, the Food and Agriculture Organization of the United Nations.
- Dorsey, B. (1999). Agricultural intensification, diversification, and commercial production among smallholder coffee growers in Central Kenya. *Economic Geography*, 75(2)
- Dorward, A. (2001). Pro-poor livelihoods: Addressing the market/ private sector gap. *Paper presented at the Private Sector and Enterprise Development*, Crown Plaza Hotel, 19<sup>th</sup> November 2001 Manchester.
- Dorward, A., and Kydd, J. (2005). Making agricultural market system work for the poor: Promoting effective, efficient and accessible coordination and exchange. (*Project report*). London: Empirical College, UK.
- Dorward, A., Kydd, J., Morrison, J., and Poulton, C. (2002). Institutions for markets or markets as institutions: Theory, praxis and policy in institutional development. *Working Paper*, Imperial College, UK.
- Dorward, A., Kydd, J., Morrison, J., and Poulton, C. (2005). Institutions, markets and economic co-ordination: Linking development policy to theory and praxis. *Development and Change*, 36(1), 1-25.
- Dorward, A., Kydd, J., Morrison, J., and Urey, I. (2004). A policy agenda for pro-poor agricultural growth. *World Development*, 32(1), 73-89.
- Dorward, A., Kydd, J., and Poulton, C. (2006). Traditional domestic markets and marketing systems for agricultural products. *Background Paper for the World Development Report 2008*. The World Bank.
- Dorward, A., Poole, N., Morrison, J., Kydd, J., and Urey, I. (2003). Markets, institutions and technologies: Missing links in livelihood analysis. *Development policy review*, 21(3), 319-332.
- Dorward, A., Poole, N., Morrison, J., Kydd, J., and Urey, I. (2002). Critical linkages: livelihoods, markets and institutions. *Paper presented at the Supporting Institutions, Evolving Livelihoods*, Bradford Centre for International Development, University of Bradford 29th-30th May 2002.

- Douniasa, I., Aubryb,C.,and Capillona, A. (2002). Decision-making processes for crop management on African farms. Modelling from a case study of cotton crops in northern Cameroon. *Agricultural Systems*, 73, 233-260.
- Dries, L., and Reardon, T. (2005). Central and Eastern Europe: Impact of food retail investments on the food chain. Rome: FAO Investment Centre/ European Bank for Reconstruction and Development Cooperation Programme.
- Dries, L., Reardon, T., and Swinnen, J. F. M. (2004). The rapid rise of supermarkets in Central and Eastern Europe: Implications for the agrifood sector and rural development. *Development Policy Review*, 22(5), 525-556.
- Dries, L., and Swinnen, J. F. M. (1998). Institutional reform and labor reallocation during transition in Polish Agriculture: Katholieke Universiteit Leuven.
- Dries, L., and Swinnen, J. F. M. (2004). Foreign direct investment, vertical integration, and local suppliers: Evidence from the Polish dairy sector. *World Development*, 32(9), 1525-1544.
- DSO. (2005). Le Thuy Statistical yearbook: Le Thuy District Statistical Office.
- DSO. (2005). Minh Hoa Statistical yearbook: Minh Hoa District Statistical Office.
- DSO. (2005). Quang Trach Statistical yearbook: Quang Trach District Statistical Office.
- DSO. (2006). Le Thuy Statistical yearbook: Le Thuy District Statistical Office.
- DSO. (2006). Minh Hoa Statistical yearbook: Minh Hoa District Statistical Office.
- DSO. (2006). Quang Trach Statistical yearbook: Quang Trach District Statistical Office.
- DSO. (2007). Le Thuy Statistical yearbook: Le Thuy District Statistical Office.
- DSO. (2007). Minh Hoa Statistical yearbook: Minh Hoa District Statistical Office.
- DSO. (2007). Quang Trach Statistical yearbook: Quang Trach District Statistical Office.
- DSO. (2008). Le Thuy Statistical yearbook: Le Thuy District Statistical Office.
- DSO. (2008). Minh Hoa Statistical yearbook: Minh Hoa District Statistical Office.
- DSO. (2008). Quang Trach Statistical yearbook: Quang Trach District Statistical Office.
- Dufhues, T., and Buchenrieder, G. (2005). Outreach of credit institutes and households' access constraints to formal credit in Northern Vietnam: *Discussion Paper No. 01/2005*, University of Hohenheim – Centre for Agriculture in the Tropics and Subtropics.
- Dufhues, T., Buchenrieder, G., Heidhues, F., and Dung, P. T. M. (2003). Towards demand-driven financial services in Northern Vietnam: A participatory analysis of customer preferences: *Discussion Paper No 01/2003*, University of Hohenheim – Centre for Agriculture in the Tropics and Subtropics.
- Duong, P. B., and Izumida, Y. (2002). Rural development finance in Vietnam: A microeconomic Analysis of household surveys. *World Development*, 30(2), 319-335.

- Dyer, G. A., Boucher, S., and Taylor, J. E. (2006). Subsistence response to market shocks. *American Journal of Agricultural Economics*, 88(2), 279–291.
- Dzung, B. T. N. (2001). Agrarian reforms and agricultural productivity. In M. G. Chaudhry (Ed.), (2003) *Agrarian Reforms and Agricultural Productivity*, Report of the APO Study Meeting on Agrarian Reforms and Agricultural Productivity. Tokyo: the Asian Productivity Organization.
- Edmonds, C. (2002). The role of infrastructure in land-use dynamics and rice production in Viet Nam's Mekong River Delta. *ERD Working Paper series No. 16*, Asian Development Bank.
- Egan, T. M. (2002). Grounded theory research and theory building. *Advances in Developing Human Resources*, 4(3), 277-295.
- Eggert, H., and Ellegard, A. (2003). Fishery control and regulation compliance: A case for co-management in Swedish commercial fisheries. *Marine Policy*, 27, 525-533.
- Eguienta, Y., Martin, C., Lecomte, P., Husson, O., and Castella, J.C. (2002). Crop-livestock interactions in northern Viet Nam: Issues, diversity of farmers' responses, and alternatives for sustainable integration of animals in upland agricultural systems. *Working Paper*. ([http://www.knowledgebank.irri.org/sam/sam/pdf/chap09\\_e.pdf](http://www.knowledgebank.irri.org/sam/sam/pdf/chap09_e.pdf)).
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532-550.
- Ellis, F. (1988). *Peasant Economics: Farm Households and Agrarian Development*. Cambridge: Cambridge University Press.
- Ellis, F. (1993). *Peasant Economics: Farm Households and Agrarian Development*. Cambridge: Cambridge University Press.
- Ellis, F. (1998). Household strategies and rural livelihood diversification. *Development Studies*, 35(1), 1-38.
- Ellis, F. (2000a). *Rural livelihoods and diversity in developing countries*. Oxford: Oxford University Press.
- Ellis, F. (2000b). The determinants of rural livelihood diversification in developing countries. *Agricultural Economics*, 51(2), 289-302.
- Escobal, J. (2001). The determinants of non-farm income diversification in rural Peru. *World Development*, 29(3), 497-508.
- FAO. (2001). Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific. *Paper presented at the Crop Diversification in the Asia-Pacific Region*, Bangkok, Thailand, 4 to 6 July, 2000.
- FAO. (2005). Increasing the contribution of small scale fisheries to poverty alleviation and food security. *FAO technical guideline for responsible fisheries*. Rome. (<ftp://ftp.fao.org/docrep/fao/008/a0237e/a0237e00.pdf>).
- FAO. (2007). Food Outlook: Global Market Analysis. (<ftp://ftp.fao.org/docrep/fao/010/ah864e/ah864e00.pdf>).

- FAO. (2008). Food outlook: Global Market Analysis. (<ftp://ftp.fao.org/docrep/fao/010/ai466e/ai466e00.pdf>).
- Fatoux, C., Castell, J.C., Zeiss, M., and Manh, P.M. (2002). From rice cultivator to agroforester within a decade: The impact of Doi moi on agricultural diversification in a mountainous commune of Cho Moi District, Bac Kan Province, Viet Nam. In J. C. Castella and D. D. Quang (eds). *Doi Moi in the Mountains*, pp 73-97, The Agricultural Publishing House, Ha Noi, Vietnam.
- Feagin, J., Orum, A., and Sjoberg, G. (Eds.). (1991). *A case for case study*. Chapel Hill, NC: University of North Carolina Press.
- Fforde, A. (1998). Strategic issues in Vietnamese development policy: State owned enterprises (SOEs), Agricultural cooperatives and public administration reform (PAR). *Seminar Paper*, Political and Social Change, RSPAS, ANU
- Fielding, N., and Schreier, M. (2001). Introduction: On the compatibility between qualitative and quantitative research methods. *Forum: Qualitative Social Research*, 2(1)
- Figuie, M. (2003). Vegetable consumption behaviour in Vietnam: Asian vegetable research and development. International Center for Agriculture Research and Development, Research Institute of Fruit and Vegetable, Vietnam.
- Filho, H. M. D. S., Young, T., and Burton, M. P. (1999). Factors Influencing the Adoption of Sustainable Agricultural Technologies Evidence from the State of Espírito Santo, Brazil. *Technological Forecasting and Social Change*, 60, 97-112.
- Flyvbjerg, B. (2004). Five misunderstandings about case-study research. In C. Seale, G. Gobo, J. F. Gubrium, and D. Silverman (eds), *Qualitative Research Practice*. London and Thousand Oaks, CA: Sage. pp 420-434.
- Fontenay, P. d., and Leung, S. (2002). Managing commodity price fluctuations in Vietnam's coffee industry. *Working Paper*, National Centre for Development Studies, Australian National University,
- Fountas, S., Wulfsohn, D., Blackmore, B. S., Jacobsen, H. L., and Pedersen, S. M. (2006). A model of decision-making and information flows for information-intensive agriculture. *Agricultural Systems*, 87, 192-210.
- Frerero, A., and N.V. Nguyen. (2004). The sustainable development of rice-based production system in Europe. *Paper presented at the International rice conference, Rice is life*. Rome, Italy, 2004.
- Garnevaska, D. E., Edwards, J. R., and Vaughn, D. R. (2006). Farm diversification opportunities in Bulgaria – the perceptions of farmers in the Plovdiv region – *a preliminary analysis*, 3(2)
- Genova, C., Weinberger, K., An, H. B., Dam, D. D., Loc, N. T. T., Thinh, L. N., et al. (2006). Post harvest loss in the supply chain for vegetables: The case of Chilli and Tomato in Vietnam. *Working Paper No 18*. , AVRDC publication no 06-685. Shanhua, Taiwan: AVRDC- The world Vegetable Centre.

- Geppert, M., and Dufhues, T. (2003). Visualizing rural financial market research in Northern Vietnam through pictures: *Discussion Paper No 02/2003*, University of Hohenheim – Centre for Agriculture in the Tropics and Subtropics.
- Gerring, J. (2007). *Case Study Research: Principles and Practices*. New York, USA: Cambridge University Press.
- GFAR. (2005). Synthesis report. *Papers presented at the How can the poor benefit from the growing markets for high value agricultural products*, International Centre for Tropical Agriculture, Cali, Colombia, 3-5 October, 2005.
- Gillespie, J., Painter, M., and Warner, B. (2002). Vietnam and Australia Report of the governance sector strategic review: Prepared for AusAID.
- Gilling, J., Jones, S., and Duncan, A. (2001). Sector approaches, sustainable livelihoods and rural poverty reduction. *Development policy review*, 13(3), 303-319.
- Gladwin, C. H. (1976). A view of the plan Puebla: An application of hierarchical decision models. *American Journal of Agricultural Economics*, 58(5), 881-887.
- Gladwin, C. H. (1980). A theory of real-life choice: applications to agricultural decisions. In P. F. Barlett (Ed.), *Agricultural Decision Making: Anthropological Contributions to Rural Development*, (pp. 45–85). London: Academic Press.
- Gladwin, C. H. (1989). *Ethnographic decision tree modelling*. Newbury Park: Sage.
- Glaser, B. G. (2002). Conceptualization: On theory and theorizing using grounded theory. *International Journal of Qualitative Methods*, 1(2)
- Glaser, B. G. (2002). Constructivist grounded theory. *Forum: Qualitative Social Research*, 3(3)
- Glaser, B. G., and Holton, J. (2004). Remodeling grounded theory. *Forum: Qualitative Social Research*, 5(2)
- Glavovic, B. C., and Boonzaier, S. (2007). Confronting coastal poverty: Building sustainable livelihoods in South Africa. *Ocean and Coastal management*, 50, 1-23.
- Goletti, F., and Rich, K. (1998). Policy simulation For agricultural diversification. *Project Report for Strengthening Capacity For the Renewal of Rural Development in Vietnam (Phase 1)*, Markets and Structural Studies Division, International Food Policy Research Institute, Washington, D.C, U.S.A.
- Goletti, F., Rich, K., and Wheatley, C. (2001). The cassava starch industry in Vietnam: Can small firms survive and prosper? *International Food and Agribusiness Management Review*, 2, 345-357.
- Goletti, F., and Minot, N. (1997). Rice markets, agricultural growth, and policy options in Vietnam. *MSSD Discussion Paper No. 14*, International Food Policy Research Institute, Washington, D.C, U.S.A.
- Goletti, F., Minot, N., Dennis, J., Nguyen, N. X., Que, N. N., Lan, L. T. M., et al. (2000). Vietnam agricultural sector program, *Phase I Technical Report*: ANZDEC Limited, IFPRI and LINCOLN INTERNATIONAL.

- Govere, J., Jayne, T. S., and Nyoro, J. (1999). Smallholder commercialization, interlinked markets and food crop productivity: Cross- country evidence in Eastern and Southern Africa. *Working Paper*, The Department of Agricultural Economics and the Department of Economics, Michigan State University.
- Govere, J., and T.S.Jayne. (2003). Cash cropping and food crop productivity: synergies or trade-off. *Agricultural economics*, 28, 39-50.
- Gow, H. R., and Swinnen, J. F. M. (1998). Up- and downstream restructuring, foreign direct investment, and hold-up problems in agricultural transition. *European Review of Agricultural Economics*, 25, 331-350.
- Gruebler, B., Steingrube, W., and Thuy, N. T. T. (2006). Sustainable tourism and leisure development in Quang Binh Province, Vietnam: Feasibility Study. *Greifswald Articles*, International Edition, 3
- GSO. (2006). Statistical Yearbook of Vietnam. Statistical Publishing House, Ha Noi
- GSO. (2007). Statistical Yearbook of Vietnam. Statistical Publishing House, Ha Noi
- GSO. (2008). Statistical Yearbook of Vietnam, Statistical Publishing House, Ha Noi
- GTZ. (2005). Report on study of Vegetables and Fruits in Dak Lak, Quang Nam and An Giang provinces: Axis research.
- Guba, E. G., and Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In Denzin, N.K. and Y. S. Lincoln, *Handbook of Qualitative Research*, Thousand Oaks, CA: Sage.
- Guion, L. A. (2006). Conducting an in-depth interview. *Working Paper*, Department of Family, Youth and Community Sciences, Cooperative Extension Service, IFAS, University of Florida.
- Gulati, A., Minot, N., Delgado, C., and Bora, S. (2007). Growth in high-value agriculture in Asia and the emergence of vertical links with farmers: In J. Swinnen (ed). *Global Supply Chain, Standards, and Poor farmers*, London: CABI press.
- Ha, D. T., Thao, T.D., Khiem, N.T., Trieu, M.X., Gerpacio, R.V., and Pingali, P.L. (2002). Maize in Vietnam production systems, constraints and research priorities. *Working Paper*, International Maize and Wheat Improvement Centre, *Fifth annual workshop of the Asian maize Social economic working group*, Bangkok, Thailand, on 1-4 August 2002
- Ha, D. T., & Shively, G. (2004). Coffee Boom, Coffee Bust, and Smallholder Response in Vietnam's Central Highlands. *Working Paper*. Purdue University, West Lafayette, USA.
- Haefele, S., Atlin, G., Kam, S., and Johnson, D. (2004). Improving farmers' livelihood in rainfed rice-based lowlands of Asia. *Working Paper*, The International Rice Research Institute.
- Haen, H. d., Stamoulis, K., Shetty, P., and Pingali, P. (2003). The World food economy in the Twenty-First Century: Challenges for international cooperation. *Development Policy Review*, 21(5-6), 683-696.

- Hahn, E., D. (2006). Link function selection in stochastic multicriteria decision making models. *European Journal of Operational Research*, 172, 86–100.
- Hai, L. T. D. (2003). The organization of the liberalized rice market in Vietnam. *PhD thesis*, The University of Groningen, The Netherlands.
- Hai, N. M., and Heidhues, F. (2004). Comparative advantage of Vietnam's rice sector under different liberalisation scenarios: A Policy analysis matrix (PAM) study. *Discussion Paper No. 01/2004*, Department of Agricultural Development Theory and Policy, University of Hohenheim.
- Hannesson, R. (2003). Aquaculture and fisheries. *Marine Policy*, 27, 169-178.
- Harling, K., and Miser, E. (1998). Case writing: An art and a science. *International Food and Agribusiness Management Review*, 1(1), 119-138.
- Haroon Akram-Lodhi (Ed.). (2007). Land markets and rural livelihoods in Vietnam. In A. H Akram-Lodhi., S. Borras, and C. Kay (eds). *Land, Poverty and Livelihoods in an Era of Globalization: Perspectives from Developing and Transition Countries*. London: Routledge, 2007.
- Akram-Lodhi, A. H., Borras, S. M., and Kay., C. (Eds.). (2007). *Land, Poverty and Livelihoods in an Era of Globalization: Perspectives from developing and transition countries*. London: Routledge.
- Harte, M. (2007). Funding commercial fisheries management: Lessons from New Zealand. *Marine Policy*, 31, 379-389.
- Harte, M., and Barton, J. (2007). Reforming management of commercial fisheries in a small island territory. *Marine Policy*, 31, 371-378.
- Hau, V. T. B., Chuong, C. V., and Abedullah. (2002). Southern Vietnam: A synthesis. In Mubarik Ali (ed), *The vegetable sector in Indochina countries: farm and household perspective on poverty alleviation. Technical Bulletin No 27*. Bangkok: Asian Vegetable Research and Development Center-Asian Regional Center, 149-188.
- Haughton, J., Duc, L. T., Binh, N. N., and Fetzer, J. (2004). The effects of rice policy on food self-sufficiency and on income distribution in Vietnam. *Discussion Paper*, Department of Economics, Suffolk University, Boston, USA.
- Hayami, Y. (2001). Ecology, history and development: A perspective from rural Southeast Asia. *The World Bank Research Observer*, 16(2), 169-198.
- Hazell, P., Poulton, C., Wiggins, S., and Dorward, A. (2006). *The Future of Small Farms: Synthesis Paper*: Rimisp-Latin American Centre for Rural Development.
- Hine, S., and Umberger, W. (2002). Supply chain coordination" A case study of vegetable growers in Colorado. *Paper presented at the The WCC-72*, Las Vegas, June 25.
- Hoa, N., and Grote, U. (2004). Agriculture policies in Vietnam: Producers support estimates, 1986-2002. *MTID Discussion Paper No. 79*, Markets, Trade, and Institutions Division, International Food Policy Research Institute, Washington, D.C, U.S.A.



- Hoanh, C. T., Tuong, T. P., Gowing, J. W., and Hardy, B. (Eds.). (2006). *Environment and Livelihood in Tropical Coastal Zones: Managing agriculture-fishery-aquaculture conflict*. Wallingford, UK: CABI International.
- Hoel, A. H., and Kvalvik, I. (2006). The allocation of scarce natural resources: The case of fisheries. *Marine Policy*, 30, 347-356.
- Hop, L. T., Mai, L. B., and Khan, N. C. (2003). Trends in food production and food consumption in Vietnam during the period 1980-2000. *Mal J Nutr*, 1, 1-5.
- Hornberger, K., Ndiritu, N., Ponce-Brito, L., Tashu, M., and Watt, T. (2007). Kenya's cut flower cluster: Microeconomics of competitiveness. ([http://www.isc.hbs.edu/pdf/Student\\_Projects/Kenya\\_Cut-FlowerCluster\\_2007.pdf](http://www.isc.hbs.edu/pdf/Student_Projects/Kenya_Cut-FlowerCluster_2007.pdf)).
- Hornibrook, S., and Fearn, A. (2005). Demand driven supply chains: Contractual relationships and the management of perceived risks. *Paper presented at the 2nd European Forum on Market-Driven Supply Chains*, The European Institute for Advanced Studies in Management.
- Hossain, M., and Fischer, F. S. (1995). Rice research for food security and sustainable agricultural development in Asia: Achievement and future challenges. *GeoJournal*, 35(3), 307-324.
- Howard, A. F., and Valerio, J. (1996). Financial returns from sustainable forest management and selected agricultural land-use options in Costa Rica. *Forest Ecology and Management*, 81, 35-49.
- Howe, G., Favia, N., Lohlein, D., Haralambous, S., and Heinemann, E. (2005). Trade, trade liberalisation and small-scale farmers in developing countries: Beyond the Doha Round. In T. Huvio, J. Kola and T. Lundström (Eds.), *Small-Scale Farmers in Liberalised Trade Environment*. Haikko Finland: Proceedings of the Seminar on October 2004, Department of Economics and Management, University of Helsinki.
- Hu, D., Reardon, T., Rozelle, S., Timmer, P., and Wang, H. (2004). The emergence of supermarkets with Chinese characteristics: Challenges and opportunities for China's agricultural development. *Development Policy Review*, 22(5), 557-586.
- Huang, J., and Bouis, H. (2001). Structural changes in the demand for food in Asia: Empirical evidence from Taiwan. *Agricultural Economics*, 26, 57-69.
- Humphrey, J. (2007). The supermarket revolution in developing countries: tidal wave or tough competitive struggle? *Journal of Economic Geography*, 7, 433-450.
- Hung, P. T. (2005). Land use-existing situation and solutions for plot exchange and consolidation in agricultural land at Le Thuy District, QuangBinh Province. *Bachelor dissertation*, Hue College of Economics, Vietnam (Vietnamese)
- Hung, P. V., MacAulay, T.G., and Marsh, S.P. (2004). The Economics of land fragmentation in the North of Vietnam. *Paper was presented at 48 th Annual Conference of the Australian Agricultural and Resource Economics Society*, Melbourne, Victoria, 11 th - 13 th February, 2004, Australia.

- Hung, P. V., MacAulay, T. G., and Mash, S. P. (2007). The economics of land fragmentation in the north of Vietnam. *The Australian Journal of Agricultural and resource economics*, 51, 195-211.
- Hussein, K. (2002). Livelihoods approaches compared: A multi-agency review of current practice. *Working Paper*, Overseas Development studies, London, UK.
- Hussein, K., and Nelso. (1998). Sustainable livelihood and livelihood diversification. *Working Paper 69*, Institute of Development Studies, UK
- Huvio, T., Kola, J., and Lundström, T. (Eds.). (2005). Small-scale farmers in liberalised trade environment. Haikko Finland: *Proceedings of the Seminar on October 2004*, Department of Economics and Management, University of Helsinki.
- Huylenbroeck, G. V., and Damasco-Tagarino, D. (1998). Analysing crop choice of Philippine vegetable farmers with multicriteria analysis. *Journal of Multi-Criteria Decision Analysis*, 7, 160-168.
- ICTSD. (2006). Fisheries, international trades and sustainable development: *Policy Working Paper: International Centre for Trade and Sustainable Development*, Geneva, Switzerland.
- IFAD. (2008). Growing demand on agriculture and rising price of commodities: Opportunity for smallholders in low-income, agricultural-based countries ? *Paper presented at the The Round Table Organized during the Thirty -first session of IFAD's Governing Council*, 14, February. (<http://www.fao.org/ES/ESC/common/ecg/538/en/RisingPricesIFAD.pdf>).
- IFPRI. (2005). The future of small farms. *Paper presented at the Proceedings of a Research Workshop*, June 26-29, 2005. Washington, DC. USA
- IISD. (1999). Trade and sustainable development in Vietnam. International Institute for Sustainable Development, Winnipeg, Manitoba, Canada.
- Islam, N. (1997). The non-farm sector and rural development: Review of issues and evidences. *Discission Paper 22*, International Food Policy Research institute.
- Janvry, A. d., Fafchamps, M., and Sadoulet, E. (1991). Peasant household behaviour with missing markets: Some paradoxes explained. *The Economic Journal*, 101, 1400-1417.
- JBIC. (2003). Sector study for agriculture and rural development sector in the Socialist Republic of Viet Nam: Sanyu Consultants Inc. (<http://www.isgmard.org.vn/Information%20Service/Report/General/JBIC%20Study%20Strategy%20to%20ARD-e.pdf>).
- Jetter, K. (2005). Economic framework for decision making in biological control. *Biological Control*, 35( 348-357)
- Jha, D., and Hojjati, B. (1994). Fertilizer use on smallholder farms in Eastern Province, Zambia: International Food Policy Research Institute, Washington, D.C.
- Johnson, R. B., and Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.

- Joshi, P. K. (2005). Crop diversification in India: Nature, pattern and drivers. *Paper presented at the National Centre for Agricultural Economics and Policy Research (NCAP) Policy Retreat and Seminar on Agriculture*. International Food Policy Research Institute, IFPRI-South Asia, NASC Complex, New Delhi, India
- Joshi, P. K., BIRTHAL, P. S., and Minot, N. (2006). Sources of agricultural growth in India: The role of diversification towards high-value crops. *MTID Discussion Paper No 98*, International Food Policy Research Institute.
- Joshi, P. K., Gulati, A., BIRTHAL, P. S., and Tewari, L. (2003). Agricultural diversification in South Asia: Patterns, determinants, and policy implications. *Discussion Paper No.57*, International Food Policy Research Institute,
- Joshi, P. K., Gulati, A., and Cummings, R. (2007). Agricultural diversification in South Asia: beyond food security: In P. K. Joshi., A. Gulati., and R. Cummings (Eds.). *Agricultural Diversification and Smallholders in South Asia*: Academic Foundation, 2007.
- Joshi, P. K., Gulati, A., and Cummings, R. (Eds.). (2007). *Agricultural diversification and smallholders in South Asia*: Academic Foundation
- Kanji, N., and Barrientos, S. (2002). Trade liberalization, poverty and livelihoods: Understanding the linkages: A review for the Africa Policy and Economic Department. *IDS Working Paper 159*, Institute of Development Studies, Department for International Development, UK.
- Kanji, N., MacGregor, J., and Tacoli, C. (2005). Understanding market-based livelihoods in a globalising world: Combining approaches and methods. *Working Paper*, International Institute for Environment and Development. (<http://www.iied.org/SM/markets/documents/MethodsMarketBasedLivelihoods.pdf>).
- Karami, E. (2006). Appropriateness of farmers's adoption of irrigation methods: The application of the AHP model. *Agricultural Systems*, 87, 101-119.
- Karp, L. (2007). Managing migration from the traditional to modern sector in developing countries. *Background Paper for the World Development Report 2008*, the World Bank.
- Karppinen, H. (2005). Forest owners' choice of reforestation method: An application of the theory of planned behavior. *Forest Policy and Economics*, 7, 393-409.
- Katz, J. P. (1997). Managerial behaviour and strategy choices in agribusiness cooperatives. *Agribusiness*, 13(5), 483-495.
- Keister, L. A., and Nee, V. G. (2001). The rational peasant in China. Flexible adaptation, risk diversification and opportunity. *Rationality and Society*, 13(1)
- Kelle, U. (2001). Sociological explanations between micro and macro and the integration of qualitative and quantitative methods. *Forum: Qualitative Social Research*, 2(1)
- Kelly, G. A. (1955). *The Psychology of Personal Constructs*. Norton, New York.
- Kerkvliet, B. J. T. (2000). "Governing agricultural land in Vietnam: An overview", *An overview Paper written for ACIAR Project ANRE 1/97/92 "Impacts of Alternative Policy Options on the Agricultural Sector in Vietnam"*. Research School of Pacific and Asian Studies, the Australian National University, November 2000.

- Kerkvliet, B. J. T. (2006). Agricultural land in Vietnam: Markets tempered by family, community and socialist practice, *Agrarian Change*, 6(3), 258-305.
- Khai, N. M., Ha, P. Q., and Born, I. O. (2007). Nutrient flows in small-scale peri-urban vegetable farming systems in Southeast Asia—a case study in Hanoi. *Agriculture, Ecosystems and Environment*, 122, 192-202.
- Khiem, N. T., Tien, T. D., and Thuy, N. T. T. (2000). Vietnam in Mubarik Ali (ed) *Dynamics of vegetable production, distribution and consumption in Asia*: Asian Vegetable Research and Development Center-AVRDC publication no. 00-498.
- Kirsch, O. C. (1997). Vietnam: Agricultural cooperatives in transitional economies *Discussion Paper 59*, Diskussionschriften der Forschungsstelle für Internationale Wirtschafts- und Agrarentwicklung eV (FIA), Nr. 59, Heidelberg 1997. (<http://www.sai.uni-heidelberg.de/abt/intwep/fia/DISKUS59.htm>).
- Kostov, P. (2002). Transition, agricultural decommercialisation, and their implications for quantitative modelling. *Working Paper*, Department of Agricultural and Food Economics, Queen's University Belfast, UK, <http://129.3.20.41/eps/othr/papers/0409/0409008.pdf>
- Kostov, P., and Lingard, J. (2000). Modelling the effects of subsistence on Bulgarian agricultural performance. *Paper presented at the Agricultural Economics Society Conference*. Manchester. (<http://129.3.20.41/eps/comp/papers/0409/0409002.pdf>).
- Kostov, P., and Lingard, J. (2001). Rural development as risk management. *Working Paper*, Centre for Rural Economy, Dept of Agricultural Economics and Food Marketing, University of Newcastle. (<http://129.3.20.41/eps/othr/papers/0409/0409013.pdf>).
- Kostov, P., and Lingard, J. (2002a). Subsistence farming in transitional economies: lessons from Bulgaria. *Journal of Rural Studies*, 18, 83–94.
- Kostov, P., and Lingard, J. (2002b). Integrated rural development - Do we need a new approach? *Working Paper*, Dept. of Agricultural Economics and Food Marketing, University of Newcastle. (<http://129.3.20.41/eps/othr/papers/0409/0409006.pdf>).
- Kostov, P., and Lingard, J. (2003). Risk management: A general framework for rural development. *Journal of Rural Studies*, 19(463-476).
- Kostov, P., and Lingard, J. (2004a). Subsistence agriculture in transition economies: Its roles and determinants. *Journal of Agricultural Economics*, Volume 55, 565-579.
- Kostov, P., and Lingard, J. (2004b). Institutional foundations of subsistence agriculture in transition economies. *Working Paper*, Department of Agricultural and Food Economics, Queen's University Belfast, UK, European Union's Phare ACE Programme. (<http://129.3.20.41/eps/othr/papers/0409/0409010.pdf>).
- Kostov, P., and Lingard, J. (2004c). Risk management – managing risks, not calculating them. *Working Paper*, Department of Agricultural and Food Economics, Queen's University Belfast, UK. (<http://129.3.20.41/eps/ri/papers/0409/0409001.pdf>).
- Krauss, S. E. (2005). Research paradigms and meaning making: A primer. *The Qualitative Report*, 10(4), 758-770.

- Kruijssen, F., Keizer, M., and Giuliani, A. (2007). Collective action for small-scale producers of agricultural biodiversity products: Collective action and property rights program, International Food and Policy Institute.
- Kundu, A., Sarangi, N., and Dash, B. P. (2003). Rural non-farm employment: An analysis of rural urban interdependencies. *Working Paper 196*, Overseas Development Institute, UK.
- Kurosaki, T. (2003). Specialization and diversification in West Punjab, 1903-1992. *American journal of Agricultural economics*, 85(2), 372-386.
- Kydd, J., and Dorward, A. (2003). Implications of market and coordination failures for rural development in least developed countries. *Paper presented at the Development Studies Association Annual Conference*, Strathclyde University, Glasgow, 10-12 September 2003.
- Lall, S. V., Selod, H., and Shalizi, Z. (2006). Rural-urban migration in developing countries: A survey of theoretical predictions and empirical findings. *World Bank Policy Research Working Paper 3915*, Development Research Group, the World Bank,
- Larson, D. F., and Plessmann, F. (2002). Do farmers choose to be inefficient ? Evidence from Bicol, Philippines. *Policy Research Working Paper 2787*, the World Bank,
- Laws, K., and Mcleod, R.(2004). Case study and grounded theory: Sharing some alternative qualitative research methodologies with systems professionals. *Working Paper*, Faculty of Education, the University of Sydney, NSW. ([http://www.systemdynamics.org/conferences/2004/SDS\\_2004/PAPERS/220MCLEO.pdf](http://www.systemdynamics.org/conferences/2004/SDS_2004/PAPERS/220MCLEO.pdf)).
- Lem, A., Tietze, U., Ruckes, E., and Anrooy, R. V. (2004). Fish marketing and credit in Vietnam. Rome: FAO.
- Lemke, U., and Zarate, A. V. (2008). Dynamics and developmental trends of smallholder pig production systems in North Vietnam. *Agricultural Systems*, 96, 207-223.
- Lerman, Z. (2004). Policies and institutions for commercialization of subsistence farms in transition countries. *Journal of Asian Economics*, 15, 461-479.
- Li, S., Li, M., and Tan, J.J. (1998). Understanding diversification in a transition economy: A theoretical exploration. *Journal of Applied Management Studies*, 7, 77-95.
- Loc, V. T. T. (2006). Seafood supply chain quality management, the shrimp supply chain quality improvement; Perspective of Seafood Company in Mekong Delta, Vietnam. *Ph.D Thesis*, University of Groningen, Netherlands; Can Tho University, Vietnam.
- Luck, L., Jackson, D., and Usher, K. (2006). Case study: A bridge across the paradigms. *Nursing Inquiry*, 13(2), 103-109.
- Luttrell, C. (2001). Institutional change and natural resource use in coastal Vietnam. *GeoJournal*, 54, 529-540.
- Luttrell, C., Son, H. V., Thuan, H. L., Viet, C. T., Lan, N., Mien, V. D., et al. (2004). Sustainable livelihood opportunities and resources management in coastline communes facing special difficulties: Ministry of Planning and Investment, Vietnam.

- Lynham, S. A. (2002a). The general method of theory building research in applied disciplines. *Advances in Developing Human Resources*, 4(3), 221-241.
- Lynham, S. A. (2002b). Quantitative research and theories building: Dubin's method. *Advances in Developing Human Resources*, 4(3), 242-276.
- MacFarlane, R. (1996). Modelling the interaction of economic and socio-behavioural factors in the prediction of farm adjustment. *Journal of rural study*, 12, 365-374.
- Maguire, L. A., and Albright, E. A. (2005). Can behavioral decision theory explain risk-averse fire management decisions? *Forest Ecology and Management*, 211, 47-58.
- Makhura, M.-N., Kirsten, J., and Delgado, C. (2001). Transaction costs and smallholder participation in the maize market in the Northern province of South Africa. *Paper presented at the Seventh Eastern and Southern Africa Regional maize Conference*, 2001. ([http://www.cimmyt.org/english/docs/proceedings/africa/pdf/96\\_Makhura.pdf](http://www.cimmyt.org/english/docs/proceedings/africa/pdf/96_Makhura.pdf)).
- MARD. (2006). Overview of the agricultural sector in Vietnam: Implications of the WTO Agreement on Agriculture. Ha Noi, United Nations. (<http://www.un.org.vn/undp/projects/vie95024/agriculture.pdf>).
- MARD, and ISG. (2002). Report summary: Impact of trade liberalization on some agricultural sub-sectors of Vietnam: Rice, coffee, tea and sugar. (<http://www.isgmard.org.vn/Information%20Service/Report/Agriculture/Trade%20liberalization%20summary-e.pdf>).
- Marsh, S. P., Hung, P. V., Chinh, N. Q., and MacAulay, T. G. (2004). Farm Income and Income Diversity on Vietnam's Small Household Farms. *Paper presented at The 48th Annual Conference of the Australian Agricultural and Resource Economics Society*, 11-13 Feb 2004.
- Marsh, S. P., and MacAulay, T. G. (2002). Land reform and the development of commercial agriculture in Vietnam: Policy and issues. *Agribusiness Review*, 10.
- Marsh, S. P., MacAulay, T. G., and Anh, L. H. (2004). Credit use in Farm Households In Vietnam: Implications for Credit Policy. *Paper presented at the The 48th Annual Conference of the Australian Agricultural and Resource Economics Society*, 11-13 Feb 2004.
- Mathijs, E., and Noev, N. (2002). Commercialization and subsistence in transition agriculture: Empirical evidence from Albania, Bulgaria and Hungaria and Romania. *Paper presented at the 10th EAAE Congress "Exploring diversity in the European Agri-food System"* Zaragoza, Spain, August 28-31, 2002. (<http://ecsocman.edu.ru/images/pubs/2003/11/29/0000135300/088-209-mathijs-noev.pdf>).
- Mathijs, E. a. J. F. M. S. (1998). The economics of agricultural decollectivization in East Central Europe and the former Soviet Union. *Economic Development and Cultural Change*, 47(1), 1-26.
- McCalla, A. F. (1997). From subsistence to commercial agriculture: The need for a new development paradigm. *American Journal of Agricultural economics*, 79(n2), 643-646.

- McDonagh, J. (2002). Crop-based farming system and diverse livelihood in Malawi. *Working Paper*. (<http://www.uea.ac.uk/dev/odg/ladder>).
- McDonagh, J., and Bahiigwa, G. (2002). Crop-based farming system and diverse livelihood in Uganda. *Working Paper*. (<http://www.uea.ac.uk/dev/odg/ladder>)
- McGarvey, R. (2003). Demand side fishery management: integrating two forms of input control. *Marine Policy*, 27, 207-218.
- McGroger, M. J., Rola-Rubzen, M. F., and Murray-Prior, R. (2001). Micro and macro- level approaches to modelling decision making. *Agricultural Economics*, 69, 63-83.
- Meerta, H., Huylenbroeck, G. V., Vernimmenc, T., Bourgeois, M., and Hecke, E. v. (2005). Farm household survival strategies and diversification on marginal farms. *Journal of Rural Studies*, 21, 81-97.
- Meinzen-Dick, R., DiGregorio, M., and McCarthy, N. (2004). Methods for studying collective action in rural development. *Agricultural System*, 82, 197-214.
- Meredith, J. (1998). Building operations management theory through case and field research. *Journal of Operations Management*, 16, 441-454.
- Meyer, C. B. (2001). A case in case study methodology. *Field Methods*, 13(4), 329-352.
- Midmore, D. J., Jansen, H. G. P., Dumsday, R. G., Azmi, A. A., Poudel, D. D., Valasayya, S., et al. (1996). Technical and economic aspects of sustainable production practice among vegetable growers in the Cameron Highlands, Malaysia. *Technical Bulletin No 23*. AVRDC publication no 06-685. Shanhua, Taiwan: AVRDC- The world Vegetable Centre,
- Minot, N. (1998). Competitiveness of food processing in Vietnam: a study of rice, coffee, seafood, and fruit and vegetables subsectors. Washington: International Food Policy research institute, prepared for: Development Strategies Institute, Ministry of Planning and Investment, Hanoi, Viet Nam.
- Minot, N., and Goletti, F. (1998). Export liberalization and household welfare: The case of rice in Vietnam. *American Journal of Agricultural economics*, 80(4), 738-739.
- Minot, N. (1999). Effect of transaction costs on supply response and marketed surplus: Simulations using non-separable household models. *MSSD Discussion Paper No. 36*, International Food Policy Research Institute, Washington, D.C, USA.
- Minot, N. (2002). Fruits and vegetables in Vietnam: Adding value from farmers to consumers. *Final report for project "Development of Post-harvest Activities and Agroindustry as strategy to Improve Rural Livelihood in Vietnam"*. International Food Policy Research Institute, Washington D.C, USA.
- Minot, N., Baulch, B., and Epprecht, M. (2006). Poverty and inequality in Vietnam: Spatial patterns and geographic determinants: *Research Report 148*, International Food Policy Research Institute, Washington, D.C, USA.
- Minot, N., Epprecht, M., Anh, T. T. T., and Trung, L. Q. (2006). Income diversification and poverty in the Northern Uplands of Vietnam: *Research Report 145*, International Food Policy Research Institute, Washington, D.C, USA.

- Minot, N., and Goletti, F. (2000). Rice market liberalization and poverty in Viet Nam: International Food Policy Research Institute, Washington, D.C, USA.
- Mishev, P., and Kostov, P. (2001). Decision making pattern of subsistence farmers in Bulgaria. *Paper presented at the 76th EAAE Conference, Halle, Germany, 2001.* <http://129.3.20.41/eps/othr/papers/0409/0409012.pdf>.
- Mohd, L. H. J., Saad, R. M., and Hamir, N. A. (1997). Cut flower production in Malaysia. *Paper presented at the Cut Flower Production Development in Asia, Bangkok, Thailand, 24-26 June, 1997.*
- Mu, R., and Walle, D. v. d. (2007). Rural roads and poor area development in Vietnam. *Policy Research Working Paper, 4340.* The World Bank. ([http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2009/08/05/000158349\\_20090805163649/Rendered/PDF/wps4340.pdf](http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2009/08/05/000158349_20090805163649/Rendered/PDF/wps4340.pdf)).
- Muller, D., and Zeller, M. (2002). Land use dynamics in the central highlands of Vietnam: a spatial model combining village survey data with satellite imagery interpretation. *Agricultural Economics, 27*, 333-354.
- Muller, W. (2001). Strategies, heuristics and relevance of risk aversion in dynamic decision problem. *Journal of Economic Psychology, 22*, 493-522.
- Murray-Prior, R. (1998). Modelling farmer behaviour: A personal construct theory interpretation of hierarchical decision models. *Agricultural Systems, 57*(4), 541-556.
- Nepal, R., and Thapa, G. B. (2009). Determinants of agricultural commercialization and mechanization in the hinterland of a city in Nepal. *Applied Geography, 29*, 377-389.
- Neven, D., Reardon, T., Weatherspoon, D., and Hopkins, R. (2007). South Africa's rural poor in the era of supermarkets: The role of commercial farmers in adaptive organizational, institutional and technological responses to access and compete in dynamic markets. *Paper presented at the Mediterranean Conference of Agro-Food Social Scientists. 103rd EAAE Seminar 'Adding Value to Agro-Food Supply Chain in the Future Euromediterranean Space', Barcelona, Spain, April 23-25, 2007.*
- Ng, K., and Hase, S. (2008). Grounded suggestions for doing a grounded theory business research. *The Electronic Journal of Business Research Methods, 6*(2), 155 - 170.
- Nghiem, N. V. (2006). Agricultural cooperatives in Vietnam. *Paper presented at the 2006 FFTC-NACF International Seminar on Agricultural Cooperatives in Asia: Innovations and opportunities in the 21st Century, Seoul, Korea, 11-15 September 2006.*
- Nhan, N. T., Ut, P. V., Hong, V. T. T., and Tung, N. T. (2005). Supporting sustainable livelihood among poor aquatic resources users in Asia (EP/R03/104 output 2 Vietnamese shrimp trade: Livelihood analysis of stakeholders and market chain analysis: Posiedon Aquatic Resources Management Ltd; Network of Aquaculture Centre in Asia-Pacific(NACA); STREAM initiative.
- Niehof, A. (2004). The significance of diversification for rural livelihood systems. *Food Policy, 29*, 321-338.



- Niimi, Y., Vasudeva-Dutta, P., and Winters, A. (2003). Trade liberalisation and poverty dynamics in Vietnam. *PRUS Working Paper no. 17*, Poverty Research Unit at Sussex, University of Sussex, Falmer, Brighton.
- Ninh, L. K. (2003). Investment of rice mills in Vietnam: The role of financial market imperfections and uncertainty. *PhD Thesis*, The University of Groningen.
- Norton, A., and Foster, M. (2001). The potential of using sustainable livelihoods approaches in poverty reduction strategy papers. *Working paper*, London. Overseas Development Institute, ([http://www.odi.org.uk/pppg/publications/working\\_papers/148.pdf](http://www.odi.org.uk/pppg/publications/working_papers/148.pdf)).
- Nuthall, P. L. (2001). Managerial ability-a review of its basis and potential improvement using psychological concepts. *Agricultural Economics*, 24, 247-262.
- Odero, K. (2003). Extending the sustainable livelihood framework: *Working Paper*, Department of Rural and Urban Planning, University of Zimbabwe.
- Ohlmer, B., Olson, K., and Brehmer, B. (1998). Understanding farmers' decision making processes and improving managerial assistance. *Agricultural Economics*, 18, 273-290.
- Pandey, S. (2008). The true price of rice. Rice today, *International Rice Research Institute*, 7(1), 36-37.
- Pannell, D. J. (1991). Pests and pesticides, risk and risk aversion. *Agricultural Economics*, 5, 361-383.
- Pannell, D. J., Malcolm, B., and Kingwell, R. S. (2000). Are we risking too much? Perspectives on risk in farm modelling. *Agricultural Economics*, 23, 69-78.
- Panzar, J. C., & Willig, R. D. (1981). Economies of scope. *American Economic Review*, 72, 268-272.
- Patrick, I., Marshall, G., Abdurrahman, M., and Ambarawati, I. G. A. A. (2006). Determining the role of social capital in linking smallholders with agribusiness. *Paper presented at the the 50th Annual Conference of the Australian Agricultural and Resource Economic Society*, Manly Pacific Hotel, Sydney, Australia, February 8-10, 2006.
- Penot, E. (2004). Risk assessment through farming system modeling to improve farmer's decision making processes in a world of uncertainty. *Paper presented at the Globalization and the social transformation of family farming: Resistance and mutation*". (<http://www.irsa-world.org/XI/papers/18-6.pdf>).
- Perren, L., and Ram, M. (2004). Case-study method in small business and entrepreneurial research: Mapping boundaries and perspectives. *International Small Business Journal*, 22(1), 83-101.
- Peter Hazell, C. P., Steve Wiggins, and Andrew Dorward. (2007). The future of small farms for poverty reduction and growth. *2020 Discussion Paper 42*, International Food Policy Research Institute.
- Pinder, C., and Wood, D. (2003). The socio-economic impact of commercial agriculture on rural poor and other vulnerable groups. *Working paper*, Department for International Development – Zambia,

- Pingali, P., Khwaja, Y., and Meijer, M. (2005). Commercializing small farms: Reducing transaction costs. *Working paper*, Agricultural and Development Economics Division of the Food and Agriculture Organization of the United Nations (FAO - ESA). (<ftp://ftp.fao.org/docrep/fao/008/af144e/af144e00.pdf>).
- Pingali, P. (2006). Westernization of Asian diets and transformation of food systems: Implications for Research and Policy. *Food Policy*, 32, 281-298.
- Pingali, P. L. (1997). From subsistence to commercial production systems: the transformation of Asian agriculture. *American Journal of Agricultural Economics*, 79, 628-635.
- Pingali, P. L. (2001). Environmental consequences of agricultural commercialization in Asia. *Environment and Development Economics*, 6, 483-502.
- Pingali, P. L. (2004). Agricultural diversification in Asia: opportunities and constraints. *Paper presented at the International rice conference, Rice is life*. Rome, Italy, 2004.
- Pingali, P. L., Khiem, N. T., Gerpacio, R. V., and Xuan, V.-T. (1997). Prospects for sustaining Vietnam's reacquired rice exporter status. *Food Policy*, 22(4), 345-358.
- Pingali, P. L., and Rosegrant, M. W. (1995). Agricultural commercialization and diversification: processes and policies. *Food Policy*, 20(3), 171-185.
- Poulton, C., Dorward, A., and Jonathan. (2005). The Future of small farms: New directions for services, institutions and intermediation. *Paper presented at The Future of Small Farms Workshop, 26-29 June 2005*, Imperial College, Wye, UK.
- Poussin, J.-C., Diallo, Y., and Legoupil, J.-C. (2006). Improved collective decision making in action for irrigated rice farmers in the Senegal River Valley. *Agricultural System*, 89, 299-323.
- Pretty, J. (2008). Agroecological Approaches to Agricultural Development. *Background Paper for the World Development Report 2008*,
- QBSO. (2005). Quang Binh Statistical yearbook. Dong Hoi: Quang-Binh Statistical Office.
- QBSO. (2006). Quang Binh Statistical Yearbook. Dong Hoi: Quang Binh Statistical Office.
- QBSO. (2007). Quang Binh Statistical yearbook. Dong Hoi: Quang-Binh Statistical Office.
- QBSO. (2008). Quang Binh Statistical yearbook. Dong Hoi: Quang-Binh Statistical Office.
- Que, N. T. (1998). Effect of trade liberalization on agriculture in Vietnam: Institutional and structural aspects. *Working Paper*, The CGPRT Centre. (<http://www.uncapsa.org/Publication/cg38.pdf>).
- Que, T. T. (2001). Land reform and women's property rights in Vietnam. In K. Suryanata, G. Dolcemascolo, R. Fisher and J. Fox (Eds.), *Enabling Policy Frameworks for Successful Community Based Resource Management, The Ninth Workshop on Community-Based Management of Forestlands*, Honolulu, Hawaii, February 5- March 2, 2001. East-West Center and Regional Community Forestry Training Center, Honolulu, Hawaii.
- Quiroz, J. A., and Vald, A. (1995). Agricultural diversification and policy reform. *Food Policy*, 20(3), 245-255.

- Raakar, J., Son, D. M., Stahr, K.-J., Hovgard, H., Thuy, N. T. D., Ellegaard, K., et al. (2007). Adaptive fisheries management in Vietnam. The use of indicators and the introduction of a multi-disciplinary Marine Fisheries Specialist Team to support implementation. *Marine Policy*, 31, 143-152.
- Ragin, C. C., Shulman, D., Weinberg, A., and Gran, B. (2003). Complexity, generality, and qualitative comparative analysis. *Field Methods*, 15(4), 323-340.
- Ranaweera, N. F. C., and Desilva, G. A. C. (2000). Sri Lanka. In M. Ali (ed), *Dynamics of vegetable production, distribution and consumption in Asia*. Asian Vegetable Research and Development Center-AVRDC publication no. 00-498, 349-378.
- Rankin, M., Dunne, A. J., and Russell, I. (2008). The development of market-oriented cooperatives within the fruit industry in the Mekong Delta, Vietnam: A theory building approach to understanding rural development outcomes. *Paper presented at the Proc. IInd IS on Supply Chains in Transit. Econ.* (<http://www.actahort.org/members/showpdf?session=13488>).
- Rankin, M. K., and Russell, I. W. (2005). Building sustainable farmer cooperatives in the Mekong Delta, Vietnam: Is social capital the key? *Working paper*, School of Natural and Rural Systems Management, The University of Queensland, Australia.
- Rao, P. P., BIRTHAL, P. S., JOSHI, P. K., and KAR, D. (2004). Agricultural diversification in India and role of urbanization. *MTID Discussion paper No.77*, International Food Policy Research Institute, Washington, D.C. U.S.A.
- Ravallion, M., and Walle, D. v. d. (2002). Land-market adjustment during economic transition: A case study for Vietnam: World Bank, Washington, D.C. USA.
- Ravallion, M., and Walle, D. v. d. (2003). Land allocation in Vietnam's agrarian transition. *Policy Research Working Paper 2951*, the World Bank.
- Ray, D. (2002). *Development Economics*: Princeton University Press.
- Reardon, T., and Berdegue, J. A. (2002). The rapid rise of supermarkets in Latin America: Challenges and opportunities for development. *Development Policy Review*, 20(4), 371-388.
- Reardon, T., Timmer, C. P., Barrett, C. B., and Berdegue, J. (2003a). The rise of supermarkets in Africa, Asia and Latin America. *American Journal of Agricultural Economics*, 85(5), 1140-1146.
- Reardon, T., Vrabec, G., Karakas, D., and Fritsch, C. (2003b). The rapid rise of supermarkets in Croatia: Implications for farm sector development and agribusiness competitiveness programs, Michigan State University.
- Reardon, T., Timmer, C. P., and Berdegue, J. A. (2003c). The rise of supermarkets and private standards in developing countries: Illustrations from the produce sector and hypothesized implications for trade. *Paper presented at the International Conference on Agricultural policy reform and the WTO: where are we heading ?* Capri (Italy), June 23-26.

- Renault, D., and Facon, T. (2004). Beyond drops for crops: A system approach for assessing the values of water in rice-based system. *Paper presented at the International Rice Conference, Rice is life*. Rome, Italy, 2004.
- Rennie, J. K., and Singh, N. (1996). *Participatory research for sustainable livelihoods: A guidebook for field projects*: International Institute for Sustainable Development, Winnipeg.
- Rerkasem, B. (2004). Transforming subsistence cropping in Asia. *Paper presented at the 4 th International Crop Science Congress*, 26 September to 1 October, Brisbane, Australia.
- Rizov, M., Gavrilescu, D., Gow, H., Mathijs, E., and Swinnen, J. F. M. (2001). Transition and enterprise restructuring: The development of individual farming in Romania. *World Development*, 29, 1257-1274.
- Rogers, E. M. (1970). Motivations, values and attitudes of subsistence farmers: Toward a subculture of peasantry. In Wharton, C. R. (Ed.), *Subsistence Agriculture and Economic Development*. London: Frank Cass and Company Limited.
- Rosario, T. L. (1997). Cut flower production in Philippines. *Paper presented at the Cut Flower Production Development in Asia*, Bangkok, Thailand, 24-26 June, 1997.
- Rosegrant, M. W., Schleyer, R. G., and Yadav, S. N. (1995). Water policy for efficient agricultural diversification: Market-based approaches. *Food Policy*, 20(3), 203-223.
- Rozelle, S., and Swinnen, J. F. M. (2000). Transition and agriculture. *Working Paper*, Department of Agricultural and Resource Economics, University of California Davis. (<http://ageconsearch.umn.edu/bitstream/11948/1/wp00-021.pdf>).
- Ruckes, E., and Dang, N. V. (2004). Fish marketing in Viet Nam: Current situation and perspectives for development. In A. Lem., U. Tietze., E. Ruckes., and R.V. Anrooy (eds). *Fish Marketing and Credit in Vietnam*. Rom: FAO.
- Ruddin, L. P. (2006). You can generalize stupid! Social scientists, Bent flyvbjerg, and case study methodology. *Qualitative Inquiry*, 12(4), 797-812.
- Rudolph, D. W. (1999). Vertical organization of agribusinesses in transition economies: Hungarian production systems or agricultural franchising? *Agribusiness*, 15(1), 25-40.
- Sahavacharin, O. (1997). Cut flower production in Thailand. *Paper presented at the Cut Flower Production Development in Asia*, Bangkok, Thailand, 24-26 June, 1997.
- Saludadez, J. A., and Garcia, P. G. (2001). Seeing our quantitative counterparts: Construction of qualitative research in a roundtable discussion. *Forum: Qualitative Social Research*, 2(1).
- Sambodo, L. A. A. T. (2007). The Decision making process of semi-commercial farmers: A case study of technology adoption in Indonesia. *PhD Thesis*, Lincoln University, New Zealand.
- Sandelowski, M. (2000). Focus on research methods: Combining qualitative and quantitative sampling, data collection, and analysis techniques in mixed-method studies. *Research in Nursing and Health*, 23, 246-255.

- Sanint, L. R. (2004). Rice-based production system for food security and poverty alleviation in Latin America and the Caribbean. *Paper presented at the International rice conference, Rice is life*. Rome, Italy, 2004.
- Sarris, A. H., Doucha, T., and Mathijs, E. (1999). Agricultural restructuring in Central and Eastern Europe: Implications for competitiveness and rural development. *European Review of Agricultural Economics*, 26(3), 205-329.
- Satria, A., and Matsuda, Y. (2004). Decentralization of fisheries management in Indonesia. *Marine Policy*, 28, 437-450.
- Savage, K., and Harvey, P. (Eds.). (2007). Remittances during crises Implications for humanitarian response: Humanitarian Policy Group, Overseas Development Institute. UK.
- Schumann, S., and Macinko, S. (2007). Subsistence in coastal fisheries policy: What' s in a word. *Marine Policy*, 31, 706-718.
- Scoones, I. (1998). Sustainable rural livelihood : A framework for analysis. *Working Paper 72*, Institute of Development Studies, UK.
- Seale, C., Gubrium, J. F., Silverman, D., & Gobo, G. (2004). *Qualitative Research Practice* London and Thousand Oaks, CA: Sage.
- Seawright, J., and Gerring, J. (2008). Case selection techniques in case study research: A menu of qualitative and quantitative options. *Political Research Quarterly*, 61(2), 294-308.
- Sechrest, L., and Sidani, S. (1995). Quantitative and qualitative methods: Is there an alternative? *Evaluation and Program Planning*, 18(1), 77-87.
- Sells, S. P., Smith, T. E., and Sprenkle, D. H. (1995). Integrating qualitative and quantitative research methods: A research model. *Fam Proc*, 34, 199-218.
- Shepherd, A. W (2005). The implication of supermarket development for horticultural farmers and traditional marketing systems in Asia. Rome, FAO. ([http://www.fao.org/ag/ags/subjects/en/agmarket/docs/asia\\_sups.pdf](http://www.fao.org/ag/ags/subjects/en/agmarket/docs/asia_sups.pdf)).
- Sida, H. (2003). Agency approach to monitoring food security and livelihood. *Working Paper*. ([http://www.livelihoods.org/info/docs/FIVIMS\\_Sida.pdf](http://www.livelihoods.org/info/docs/FIVIMS_Sida.pdf)).
- Simpson, M. C. (2009). An integrated approach to assess the impacts of tourism on community development and sustainable livelihoods. *Community Development Journal*, 44(2), 186–208.
- Singh, I., Squire, L., and Strauss, J. (1986). Methodological issues. In I. Singh., L. Squire., and J. Strauss (eds) *Agricultural Household Models: Extensions, Applications, and Policy*. Baltimore, U.S.A.: The Johns Hopkins University Press. Pp 48-69.
- Singh, I., Squire, L., & Strauss, J. (1986). *Agricultural household models: Extensions, Applications, and Policy*. Baltimore, U.S.A.: The Johns Hopkins University Press.
- Siphandouang, P., Wu, M.-H., and Sanantem, K. (2002). Lao PDR: A synthesis. In M. Ali (ed), *The vegetable sector in Indochina countries: farm and household perspective on*

poverty alleviation. *Technical Bulletin No 27*, Bangkok: Asian Vegetable Research and Development Center-Asian Regional Center, 75-109.

Sirakayaa, E., and Woodside, A. G. (2005). Building and testing theories of decision making by travellers. *Tourism Management*, 26, 815–832.

Sirisup, H., and D, Kammeier. (2001). Government policy and farmers' decision making: the agricultural diversification programme for the Chao Phraya river basin (1993 – 1995). ([http://std.cpc.ku.ac.th/delta/conf/Acrobat/Papers\\_Eng/Volume%202/kammeier.pdf](http://std.cpc.ku.ac.th/delta/conf/Acrobat/Papers_Eng/Volume%202/kammeier.pdf)).

Smith, W., Williamson, I., Burns, A., Chung, T. K., Ha, N. T. V., and Quyen, H. X. (2007). The impact of land market processes on the poor in rural Vietnam. *Survey Review*, 39(303), 3-20.

Solano, C., Leon, H., Perez, E., and Herrero, M. (2001). Who makes farming decisions? A study of Costa Rican dairy farmers. *Agricultural Systems*, 67, 181-199.

Solano, C., Leon, H., Perez, E., and Herrero, M. (2003). The role of personal information sources on the decision-making process of Costa Rican dairy farmers. *Agricultural Systems*, 76, 3-18.

Solesbury, W. (2003). Sustainable livelihood: A case study of the evolution of DFID Policy. *Working paper*, Overseas Development Institute, Westminster Bridge Road, London, SE1 7JD, UK

Son, H. T., and Anh, D. T. (2005). Fruits and vegetable production, processing and commercialization in Hung Yen province: Agrarian System Department, Vietnam Agriculture Science Institute.

Son, H. T., Thai, B. T., and Moutier, P. (2003). Strategies of stakeholders in vegetable commodity chain supplying Hanoi market: Asian Vegetable Research and Development; International Center for Agriculture Research and Development; Research Institute of Fruit and Vegetable, Vietnam.

Sootsukon, B., Dechates, S., and Wu, M.-H. (2000). Thailand. In M. Ali (ed), *Dynamics of vegetable production, distribution and consumption in Asia*. Asian Vegetable Research and Development Center-AVRDC publication no. 00-498, 417-443.

Soussan, J., Blaikie, P., Springate-Baginski, O., and Chadwick, M. (2001). Understanding livelihood process and dynamics: Livelihood-policy relationship in South Asia, Department of International Development, UK.

Sowman, M. (2006). Subsistence and small scale fisheries in South Africa: A ten-year review. *Marine Policy*, 30, 60-73.

Sterns, J. A., Schweikhardt, D. B., and Peterson, H. C. (1998). Using case studies as an approach for conducting agribusiness research. *International Food and Agribusiness Management Review*, 1(3), 311-327.

Strasberg, P. J., Jayne, T. S., Yamano, T., Nyoro, J., Karanja, D., and Strauss, J. (1999). Effects of agricultural commercialization on food crop input use and productivity in Kenya. *Working Paper No. 71*, MSU International Department of Agricultural Economics, Michigan State University, East Lansing, Michigan.

- Sutater, T., and Effendie, K. (1997). Cut flower production in Indonesia. *Paper presented at the Cut Flower Production Development in Asia*, Bangkok, Thailand, 24-26 June, 1997.
- Swanson, R. A. (2003). Decision premises and their implication for developing decision-making expertise. *Advances in Developing Human Resources*, 5(4), 378-392.
- Swinnen, J. F. M., Dries, L., and Macours, K. (2005). Transition and agricultural labour. *Agricultural Economics*, 32, 15-34.
- Swinnen, J. F. M., Dries, L., Noev, N., and Germenji, E. (2006). Foreign investment, supermarkets, and the restructuring of supply chains: Evidence from Eastern European Dairy Sectors. *LICOS Discussion Papers*, Centre for Transition Economics, Katholieke Universiteit Leuven.
- Swinnen, J. F. M., Vandeplas, A., and Maertens, M. (2009). Liberalization with endogenous institutions: A comparative analysis of agricultural reform in Africa, Asia, and Europe: *Discussion Paper 233/2009*, LICOS Centre for Institutions and Economic Performance and Department of Economics, University of Leuven (KUL).
- Tachibana, T., Nguyen, T. M., and Otsuka, K. (2001). Agricultural intensification versus extensification: A case study of deforestation in the Northern-Hill Region of Vietnam. *Journal of Environmental Economics and Management*, 41, 44-69.
- Tam, P. T. G. (2004). Regoverning markets: Securing small producer participation in restructured national and regional agri-food systems: Case study of Vietnam. *Study report*, the Economics Department of Nong Lam, University in Ho Chi Minh City, Vietnam.
- Tao, T. C. H., and Wall, G. (2009). Tourism as a sustainable livelihood strategy. *Tourism Management*, 30, 90-98.
- Taylor, J. A., and Ademan, I. (2003). Agricultural household models: Genesis, evolution and extensions. *Review of Economics of the Household*, 1, 33-58.
- Taylor, J. E., and Mora, J. (2006). Does migration reshape expenditures in rural households? Evidence from Mexico. *Policy Research Working Paper 3842*, World Bank.
- Tellis, W. (1997). Application of a case study methodology. *The Qualitative Report*, 3(3).
- Thang, N., Duc, L. T., and al, e. (2006). Vietnam poverty update report 2006: Poverty and poverty reduction in Vietnam 1993-2004. Vietnamese Academy of Social Sciences, Vietnam.
- Thang, N. M., and Popkin, B. M. (2003). In an era of economic growth, is inequity holding back reductions in child malnutrition in Vietnam? *Asia Pacific J Clin Nutr*, 12(4), 405-410.
- Thang, N. M., and Popkin, B. M. (2004). Patterns of food consumption in Vietnam: Effects on socioeconomic groups during an era of economic growth. *European Journal of Clinical Nutrition*, 58, 145-153.
- Thanh, H. X., Anh, D. N., and Tacoli, C. (2005). Livelihood Diversification and Rural-Urban Linkages in Vietnam's Red River Delta. *FCND Discussion Paper 193*, International Food Policy Research Institute.

- The, B. D., Ha, D. T., and Chinh, N. Q. (2004). Rewarding upland farmers for environmental service: Experience, constraints and potential in Vietnam. Southeast Asia regional office, Indonesia: World Agroforestry Centre (ICRAF).
- Theodoulou, S. (1996). Construing economic and political reality. *Journal of Economic Psychology*, 17, 499-516.
- Thomas, H. (Ed.). (2006). Trade reforms and food security: Country case studies and synthesis: FAO. (<ftp://ftp.fao.org/docrep/fao/009/a0581e/a0581e00.pdf>).
- ThoSeeth, H., Chachnov, S., Surinov, A and Braun, J. V. (1998). Russian Poverty: Muddling through economic transition with garden plots. *World Development*, 26, 1611-1623.
- Thuan, D. D. (2005). Forestry, poverty reduction and rural livelihoods in Vietnam: Social Forestry Training Center, Vietnam Forestry University - Xuan Mai - Ha Tay.
- Thuy, N. T. T., Wu, M. H., and Lai, T. V. (2002). Northern Vietnam: a synthesis. In Ali, M. (ed), The vegetable sector in Indochina countries: farm and household perspective on poverty alleviation. *Technical Bulletin No 27.* , Bangkok: Asian Vegetable Research and Development Center-Asian Regional Center, 111-148.
- Tien, L. D. (2005). Science and Technology Policy for Sustainable Development in Vietnam. *Paper presented at the 1st Asian Science and Technology Forum.* (<http://www.jst.go.jp/astf/document/61pre.pdf>).
- Timmer, C. P. (1993). Rural bias in the East and South-east Asian rice economy: Indonesia in comparative perspective. *Development Studies*, 29(4), 149-177.
- Timmer, C. P. (1995). Getting agriculture moving: Do markets provide the right signals? *Food Policy*, 20(5), 455-472.
- Timmer, C. P. (1997). Farmers and Markets: The political economy of new paradigms. *American Journal of Agricultural economics*, 79(n2), 621-628.
- Timmer, C. P. (2005). Agriculture and pro-poor growth: An Asian perspective. *Working Paper, No 63*, Center for Global Development Washington, DC,
- Todaro, M. P. (1997). *Development economics* (6th ed). New York: Longman.
- Torraco, R. J. (2002). Research methods for theory building in applied disciplines: A comparative analysis. *Advances in Developing Human Resources*, 4(3), 355-376.
- Tran, T. B., and MacAulay, T. G. (2004). An optimizing budget model for resources allocation in a provincial extension system in Vietnam. *Paper presented at the The 48 th Annual Conference of the Australian Agricultural and Resource Economics Society*, 11-13 Feb 2004.
- Tri, L. Q., and van Mensvoort, M.E.F. (2004). Decision trees for farm management on acid sulfate soils, Mekong Delta, Vietnam. *Australian Journal of Soil Research*, 42, 671-648.
- Trondsen, T., Matthiasson, T., and Young, J. A. (2006). Toward a market -oriented management model for straddling fish stocks. *Marine Policy*, 30, 199-206.



- Tuan, N., D, A. (2000). Land use and agricultural commercialization. The case of Nam Dinh Province (Vietnam). *Working paper*, Institute of Social Studies, The Hague – The Netherlands.
- Turnbull, S. (2002). Social construction research and theory building. *Advances in Developing Human Resources*, 4(3), 317-334.
- Turton, C. (2000). The sustainable livelihoods approach and programme development in Cambodia. *Working Paper 130*, Overseas Development Institute, London, UK.
- Tuyen, T. V., Nhan, D. K., Dung, N. M., Quan, H. M., Hao, N. D., Hoa, H. T. T., et al. (2003). Integrated assessment of the impact of trade liberalization: A country study on the Viet Nam Rice Sector: *project report*, United Nation Environment Program.
- Tuyen, T. V., and Veronica, B. (1998). Toward an improved management of common property in Tam Giang Lagoon, Vietnam. *Paper presented at the 7th IASCP conference*, Vancouver, Canada.
- UNDP. (2005). The Millennium Development Goals and Viet Nam's Socio-Economic Development Plan 2006-2010. Ha Noi: United Nation Vietnam.
- Ut, T. T., and Kajisa, K. (2006). The impact of green revolution on rice production in Vietnam. *The Developing Economies*, XLIV(2), 167-189.
- Valdivia, C., Dunn, E. G., and Jette, C. (1996). Diversification as a risk management strategy in an Andean Agropastoral Community. *American Journal of Agricultural Economics*, 78(5), 1329-1334.
- Van, T. T., Pinners, E., and Truong, P. (2001). Coastal dune stabilisation in Central Vietnam. *Working Paper*, Research Institute of Geology and Mineral Resources, Hanoi, Vietnam,
- Vanslebrouck, I., Huylenbroeck, G. V., and Verbeke, W. (2002). Determinants of the willingness of belgian farmers to participate in agri-environmental measures. *Journal of Agricultural Economics*, Volume 53, 489-511.
- Vi, P. T., Karadjis, M., and Mai, H. T. (2003). Macro policy analysis on trade liberalization, agriculture and gender in Vietnam. *Paper presented at the Gender and Trade Workshop*, Phnom Penh, June 23-30, 2003.
- Wagenaar, A., and D'Haese, M. (2007). Development of small scale fisheries in Yemen: An exploration. *Marine Policy*, 31, 266-275.
- Walle, D. V. D, and Cratty, D. (2004). Is the emerging non-farm market economy the route out of poverty in Vietnam? *Economics of Transition*, 12(2), 237–274.
- Wang, H., Dong, X., Huang, J., Rozelle, S., and Reardon, T. (2006). Producing and procuring horticulture crops with Chinese characteristics: Why small farmers are thriving and supermarkets are absent in rural China. *Paper presented at the The International Association of Agricultural Economists Conference*, Gold Coast, Australia, August 12-18.
- Wann, J. J.-W., Peng, T.-K., and Wu, M.-H. (2000). Taiwan. In M. Ali (ed) *Dynamics of vegetable production, distribution and consumption in Asia*. Asian Vegetable Research and Development Center-AVRDC publication no. 00-498, 379-415.

- Weatherspoon, D. D., and Reardon, T. (2003). The rise of supermarkets in Africa: Implications for agrifood systems and the rural poor. *Development Policy Review*, 21(3)
- Weinberger, K., and Lumpkin, T. A. (2005a). Horticulture for poverty alleviation: The unfunded revolution. *Working paper No15*, Shanhua, Taiwan: AVRDC- The World Vegetable Centre.
- Weinberger, K., and Lumpkin, T. A. (2005b). High value agricultural products in Asia and the Pacific for smallholder farmers: Trends, opportunities and research priorities. *Paper presented at the How can the poor benefit from the growing Markets for High Value Agricultural Products*. 3<sup>rd</sup> to 5<sup>th</sup> October 2005, International Center for Tropical Agriculture, Cali, Colombia.
- Weinberger, K., and Lumpkin, T. A. (2007). Diversification into horticulture for poverty reduction: A research agenda. *World Development*, 35(8), 1464-1480.
- Wernett, H. C. (1997). Potential of commercial floriculture in Asia: Opportunities for cut flower development. *Paper presented at the Cut Flower Production Development in Asia*, Bangkok, Thailand, 24-26 June, 1997.
- Westmarland, N. (2001). The quantitative/qualitative debate and feminist research: A subjective view of objectivity. *Forum: Qualitative Social Research*, 2(1)
- Wharton, C. R. (1970). *Subsistence Agriculture and Economic Development*. London: Frank Cass and Company Limited.
- Wharton, C. R. (1970). Subsistence Agriculture: Concepts and Scope. In Wharton, C. R. (Ed.), *Subsistence Agriculture and Economic Development*. London: Frank Cass and Company Limited.
- Wijnands, J. H. M., Lans, K. v. d., and Hobbs, J. E. (2006). International flower networks: Transparency and risks in marketing channel choice. *Paper presented at the The 99<sup>th</sup> EAAE Seminar 'Trust and Risk in Business Networks'*, Born, Germany, February 8-10.
- Williamson, O. E. (1979). Transaction-cost economics: The governance of contractual relation. *Journal of Law and Economics*, 22(2), 233-261.
- Wilson, E. J., and Vlosky, R. P. (1997). Partnering relationship activities: Building theory from case study research. *Journal of Business Research*, 39, 59-70.
- Wilson, G. A. (1997). Factors influencing farmer participation in the environmentally sensitive areas scheme. *Journal of Environmental Management*, 50, 67-93.
- Wobst, P., Balint, B., Mduma, J. K., Seebens, H., and Tchale, H. (2005). Policy analysis for sustainable agricultural development in Central and Eastern Europe and Southern Africa. Born: Policy Analysis for Sustainable Agricultural Development in Central and Eastern Europe and Southern Africa (PASAD). Centre for Development Research, University of Bonn, Germany.
- Woldenhanna, T., and Oskam, A. (2001). Income diversification and entry barriers: evidence from the Tigray region of northern Ethiopia, *Food Policy*, 26, 351-365.
- Wolz, A. (2000). The development of agricultural co-operatives in Vietnam since transformation. *Discussion Paper N67*. für Internationale Agrar- und

Wirtschaftsentwicklung eV, Heidelberg, Januar 2000. (<http://www.sai.uni-heidelberg.de/abt/intwep/fia/DISKUS72.htm>)

- Wolz, A., and Tri, P.M. (2005). Institutional flexibility for promoting competitiveness of small-Scale farms in a globalised market environment: Evidence from Vietnam. *Research Report*, Institute of Agricultural Economics in Central and Eastern Europe (IAMO), Halle (Saale), Germany; Institute of Agricultural Economics (IAE), Hanoi, Vietnam. ([http://www.unifi.it/eaac/cpapers/20%20Wolz\\_Tri.pdf](http://www.unifi.it/eaac/cpapers/20%20Wolz_Tri.pdf)).
- Wolz, A., and Duong, P. B. (2008). The transformation of agricultural producer cooperatives – The case of Vietnam. *Working Paper*, Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO), Halle (Saale), Germany,
- WorldBank. (2001). Vietnam sugar program: Where next? Centre for International Economics, Canberra and Sydney.
- WorldBank. (2005). Vietnam: Fisheries and aquaculture sector study, *Study Report*. ([http://siteresources.worldbank.org/INTVIETNAM/Resources/vn\\_fisheries-report-final.pdf](http://siteresources.worldbank.org/INTVIETNAM/Resources/vn_fisheries-report-final.pdf)).
- Worldbank. (2007). *World Development Report 2008, Agriculture for Development*.
- Xiaohan, Y., Guangshu, L., and Lu, Z. (1997). Cut flower production in China. *Paper presented at the Cut Flower Production Development in Asia*, Bangkok, Thailand, 24-26 June, 1997.
- Xuan, N. L. (1997). Cut flower production in Vietnam. *Paper presented at the Cut Flower Production Development in Asia*, Bangkok, Thailand, 24-26 June, 1997.
- Yang, B. (2002). Meta-analysis research and theory building. *Advances in Developing Human Resources*, 4(3), 296-316.
- Yin, R. K. (1994). *Case Study Research; Design and Methods* (2th ed). Thousand Oaks, California: Sage Publications, Inc.
- Yin, R. K. (2003). *Case Study Research; Design and Methods* (3th ed). Thousand Oaks, California: Sage Publications, Inc.
- Yong, Y., Hong-Cheng, Z., Xiao-jun, H., Qi-gen, D., and Jiang, Z. Y. (2006). Characteristics of growth and yield formation of rice in rice-fish farming system. *Agricultural sciences in China*, 5(2), 103-110.
- Yuan, I. (2004). Hybrid rice technology for food security in the world. *Paper presented at the International rice conference, Rice is life*. Rome, Italy, 2004.
- Yunez-Naude, A., and Taylor, J. E. (2001). The determinants of non-farm activities and income of rural households in Mexico with Emphasis on education. *World Development*, 29(3), 561-572.
- Zeigler, R. S., and Puckridge, D. W. (1995). Improving sustainable productivity in rice -based rainfed lowland system of South and Southeast Asia. *GeoJournal*, 35(3), 307-324.

Zhang, X., Fu, X., and Yang, J. (2008). The evolution of Chinese vegetable supply chain: Agricultural Economics Institute, Wageningen University and Research Centre, The Hague, the Netherlands.

Annual reports of Cam Thuy, Ngu Nam, Quang Long, Quang Thach, Trung Hoa and Hoa Son communes in 2004, 2005, 2006, 2007.

Cooperative Law in 2003.

Decree No 02 of the Government on long term allocation of forest land to Organizations, Individuals and Households (dated 15-1-1994).

Decree No 64 of the Government on long term allocation of agricultural land to individuals and households (dated 27-9-1993).

Land Law in 1993, 1998, 2001 and 2003.

Law of organization of people's committee and people's council in 2003.

## Appendix A

### Interview Guide:

#### **The transition from subsistence farming to commercial agriculture in Quang Binh Province, Vietnam**

This guide sets out the information to be collected from 36 farming families (in-depth case studies) plus the general information to be obtained from key informants (approximately 20) relating to markets and institutions .

Interviews will typically be undertaken in the Kinh language. However some use of local translators may be required for ethnic minorities.

#### **A. Interview Guide for Farmer Case Study Information**

These interviews will focus on the decisions (historical, current and future) facing *individual farmers and farm families*, and will relate these decisions to resources, institutions (markets and governmental) and objectives.

There are 12 sections to this farmer interview guide. In line with previous rulings from the Lincoln Human Ethics Committee, Section 9 is considered to be the only section requiring Human Ethics Approval. This section has been highlighted in Bold.

The specific way that questions are asked, and the relevance of some questions, will vary between interviewees depending on where the interviewee is currently positioned in relation to the transition process.

#### **1. Family Information**

Size of family, number of dependents

Age of different people in family

Education

How long living here

Previous employment, why they do not continue with these jobs. Why they decided to change to new employment? What information they based the decision on ? How they obtained this information? Who decide this change ?

Current livelihood activities of the farm household ? What factors led to these selections ?  
Who decides ?

## **2. Land Resource**

Total area and how this has changed over time, no of fields/ponds (including changes), irrigated/dryland (including changes)

### 2.1. Sources of plots/fields

Topography ?

Land tenure (red book/certificate/years of land use still available). Allocated period ?

2.2. How land tenure relates to their investments in agricultural activities, input use, crop choice.

2.3. Do they have permission to change to other activities in their current land ? If yes, how can this change happen? What are the possibilities for change ? If not, why not ? Who can decide the change?

2.4. Did they buy some land or rent some land from other people, if yes, where does land come from, and when ? Did they have any plans to use the land they bought or rent before they buy or rent? Where they can get information for decision to buy or rent land ? Who did this ? Who decided to buy or rent ? Why did they decide to buy or rent land? What criteria did they base this on ?

2.5. If they do not buy or rent any land, do they think they can buy more land or rent more land ? Why do they not buy more or rent more ?

2.6. Are their land resource is large enough? If not why they do not try to expand?

2.7. What are the difficulties when they use current land ?

Water source ? fertility ? size ? location ?

## **3. Labour**

Number of workers, fulltime and part time, and how this has changed over time  
Convert to full time equivalents

- 3.1. How were workers allocated to different activities; why they select these ways.
- 3.2. Do they find shortage in labour ? Do they find they lack technical skills in their productive activities. What are the training courses they attended ? when? why?
- 3.3. What are the changes in labour from when you change to commercial agriculture?
- 3.4. How did workers respond changes?
- 3.5. what do farmers or family members do after farming work ? Why do they select these ways ?
- 3.6. What are the difficulties that you or your family face in term of labour force when you change to commercial agriculture?

#### **4. Capital**

Value of land

Value of improvements

Value of machinery

Value of livestock

Other assets (e.g. house)

- 4.1. How have these capitals changed when you change from subsistence farming to commercial agriculture? Why did they change?
- 4.2. Do you have any difficulties with capital when you change to commercial agriculture ?

#### **5. Current Farming System**

What are crops and animals in your farm?

5.1. Calendar of events

Expenses associated with each event, are there any changes in input expenses last years?

If yes, how does it change? Why? If no, why not ? Do these change impact on output ?

How does it impact ?

5.2. How do they decide to change input use

5.3. Labour associated with each event

5.4. How do you increase output?

Yield (average and range), how yield relates to input factors

5.5. Factors that effect number of crops or cycles in a years

5.6. Are there any change in patterns of crops and animals in your farm in recent years? If yes, what are they and why do they change? If no, why not? Is it possible to change?

5.7. How do they decide to change patterns of crops and animals? (information search, decision makers, criteria ..)

5.8. How has the calendar of events changed in recent years ?

5.9. How do these changes relate to market development?

## **6. Marketing of inputs and products**

6.1. Types of inputs use? Inputs required from markets ?

6.2. How many input suppliers are available in local community? How many substitutions are available in the local community?

6.3. Where they obtain inputs for productive activities? Why do farmers obtain from these places? Do farmers can obtain inputs from other places? why do they not use other ways ?

6.4. Are there any change in input sources during last years ? Why or why not ?

6.5. What are the difficulties they face when they obtain inputs?

6.6. How did farmers find information on inputs ? Who does this ? What criteria that farmers use to make decision to use inputs ? How do these change affect on commercial orientations, How do input supply chains change during last period ? How do they respond to these change ?

6.7. Describe how product is sold (when ? quantity, price, payment, relationship between buyers and sellers, conditions of transaction...). How have these changed during recent years? How do these changes affect crop and animal selection, investment? How do these changes affect quantity to sell ? How they decide to increase their quantity for sale ?

6.8. How many people in your community have the products like you or substitution ? How do these people affect your marketing ? Do they compete with each other to sell products? How do they compete ? Are there alternative purchasers? Why do farmers not sell products for other ?

6.9. Why farmers selected the ways they did ? Who decided ? What and where they can get market information ? Who will do this ? Are there any costs to obtain information ?



What criteria do farmers base their decisions on ? How to they make adjustments in marketing products

6.10. Identify factors that effect price (e.g quality issues and time of year)

6.11. Identify costs related to selling products, transport, maintenance or storage.

6.12. How do you increase the sale price ?

6.13. What are the constraints when farmers sell products ? How are these constraints removed

## **7. Finance**

Identify sources, amounts, and interest rates of borrowed funds. Separate long term borrowings from working capital.

7.1. When they need? What are the demand of finance when they change to commercial agriculture ? Why do they select the current source ? Why do they do not change to other sources ?

7.2. Difficulties when they access sources

7.3. How did they solve these problems, where can they get information for loans? What are criteria to decide quantity, sources? Who does this ?

## **8. Risk**

Identify important sources of biological risk and their likelihood when farmers change to commercial agriculture.

8.1. Risk when they access inputs (monopoly, quality, ...)

8.2. Risk when they sell products (price fluctuation, collusion of buyers, distortion of information..)

Identify any other sources of risk such as weather, disease

8.3. What are the big risk concerns in your family when you still involve in subsistence farming?

8.4. What are the big risk concerns to your family when you change to commercial agriculture ?.

8.5. When you change to commercial agriculture, how does load work for men and women change? How do roles of men and women change? Involvement of other members in family?

## **9. Income and Expenditure:**

The following specific questions will be asked

### **9.1. Income**

**Beside agricultural activities, what other activities do you participate in ?**

**What are the incomes from these activities?**

**What are costs for these activities?**

**How do these incomes change when you increase or move to commercial agriculture (referring to events of change in the commercial activities)?**

### **9.2. Expenditure**

**What is the average food expenditure per day in your family ?**

**What are the differences of food expenditure when you move from subsistence farming to commercial agriculture?**

**How do commercial agriculture (activities) support your food expenditure**

**How much do you spend on the education of your children and you per year?**

**How does this expenditure change when you move to commercial agriculture ?**

**How does commercial agriculture (activities) support your education expenditure?**

**How much do you spend on health care in your family per year?**

**How does this expenditure change when you move to commercial agriculture?**

**How does commercial agriculture (activities) support your health care expenditure?**

**How much do you spend on entertainment (tour travelling, movie) in your family per year?**

**How does this expenditure change when you move to commercial agriculture ?**

**How do commercial agriculture (activities) support your entertainment expenditure?**

## **10. Objectives**

10.1. What would you like to do in the future ? Why is this important for you and your family?

- 10.2. What are the activities that can help you to achieve the above objective ?
- 10.3. Why do you think these activities can help ?
- 10.4. Do you think you can do these activities
- 10.5. What are the constraints to impede you to implement these activities
- 10.6. How can these constraints be removed ?

### **11. Alternatives**

Identify and describe the commercialized decisions that the farmer has control over including increase or develop resources, locate resources, sell products. Discuss alternatives to these decisions

- 11.1. Alternatives for changes of resources?
- 11.2. Alternatives for changes of current productive system?
- 11.3. Alternatives for changes of marketing system ?
- 11.4. Identify and describe the farm decisions that the farmer has no control over (decided by others, e.g commune leaders). How these can change ?

### **12. Interview Wrap Up**

What are the goals and expectations that the farmer has in relation to the future? Are living standards expected to improve? Are the children likely to become farmers?

## **B. Interview Guide for staff in agricultural organizations**

- General information of organizations
- Duties of organization
- Current activities that he or she involves
- The ways they deliver services for farmers (service related commercialization)
- What are the constraints to implement their duties?(related to increase or change to commercial agriculture)
- Discuss some alternatives to improve quality of services
- Check information related to the transition when interview farmers

### **C. Supply chain interview**

- Actors involved in supply chain (the focus on role of farmers)
- Roles of actors, role of leader of the chain, relations between actors
- Information forward and backward through chain, how these change when farmer to start change to commercial agriculture, after periods
- Price at different points on chain
- Transportation
- Time
- Quantity
- Quality

Discuss different scenarios related to price, transport, time, quantity and quality.

- Alternative chains.
- Identify the constraints that impede farmer to enter the chain?
- Identify how these constraint can be removed or how farmers enter chain more effectively.

### **D. Writing up of Case Studies**

- Case studies should be written up as soon as possible after the interview.
- A budget should be constructed and an analysis of this budget undertaken.
- Where possible, an evaluation of alternatives should be undertaken. If this is not possible on account of data limitations, then the missing data should be identified.
- Try and identify whether there are any externalities associated with this farm that effect the livelihoods of others.