The Impact of A National Poverty Reduction Program on Ethnic Minorities in Vietnam: The Lens of Baseline and Endline Surveys

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15 November 2012

The Impact of A National Poverty Reduction Program on Ethnic Minorities in Vietnam: The Lens of Baseline and Endline Surveys

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Abstract

To increase the opportunities for poor ethnic minorities to benefit from economic growth the government of Vietnam implemented one of the biggest poverty reduction programs entitled 'Socio-economic Development for the Communes Facing Greatest Hardships in the Ethnic Minority and Mountainous Areas' during 2006-2010. This paper provides empirical evidence of this program's impacts on households in the project areas. We find that the program had positive impacts on several important outcomes of the ethnic minority households, including productive asset ownership, household durables ownership, and rice productivity. Among higher-order outcomes, they enjoyed positive impacts in income from agriculture, household total income, and household per-capita income. A particularly important result is that poverty among minority households in treatment communes declined significantly more than it declined in comparison communes. Finally, ethnic minority households enjoyed a reduction in travel time to health facilities, relative to households in control communes.

Keywords: Poverty reduction, ethnic minority, household survey, Vietnam.
JEL Classification: I38; H43; O11.

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Contents

ABBREVIATION

BLS	Baseline Survey
CEMA	Committee for Ethnic and Mountainous Area
CSB	Commune Supervision Board
DID	Difference in Difference
ELS	Endline Survey
HEPR	the Hunger and Poverty Eradication Program
HERP	The Hunger and Poverty Eradication Program
IRC	Indochina Research and Consulting
NTP-PR	National Target Program for Poverty Reduction
P135-I	Program 135 Phase I
P135-II	Program 135 Phase II
PMU	Project Management Unit
UNDP	United Nations Development Programme
VBSP	Vietnam Bank for Social Policies
VHLSS	Vietnam Household Living Standard Survey
WB	The World Bank
WHO	World Health Organization

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ACKNOWLEDGEMENTS

The team of authors would like to express their greatest gratitude to numerous organizations and individuals who have provided tremendous help in completing this study.

Special thanks are given to Finland Government for funding this project, to UNDP Office in Vietnam, and CEMA for their continual support of this study. This report cannot be completed without valuable support and technical advice from Mr. Nguyen Tien Phong (UNDP) and Ms. Vo Hoang Nga (UNDP) from the very beginning of the project until the completion of the report. Constructive comments and support from CEMA are greatly appreciated. Experts and officers from CEMA include Mr. Trinh Cong Khanh, Mr. Vo Van Bay, Mr. Nguyen Van Tan, Ms. Nguyen Thi Nga, and Mr. Tran Kien.

Sincere thanks from the team of authors also go to CEMA at provincial and district levels of 43 provinces included in the study for their huge administrative support during the planning and implementation stages of the field survey. The authors would like to express great appreciation towards 6,000 interviewed households for their cooperation and 120 enumerators for their participation in the data collection process during an intensive two-month period. This survey would have not been a success without their dedication and enthusiasm.

EXECUTIVE SUMMARY

Vietnam is one of the most successful countries in the world in terms of poverty reduction and economic achievement over the past twenty years. The poverty rate fell from 58 percent in 1993 to around 14 percent by 2008. Land and trade reforms are the major factors that contributed to high and sustained economic growth; these are the main reasons three of every four poor people escaped from poverty during this period. However, the rate of poverty reduction has slowed down over time.Most of the remaining poor households live in remote rural areas which are mainly populated by ethnic minorities.

To increase the opportunities for poor households to benefit from economic growth, the government introduced Program 135-II (P135-II):the largest and most important poverty reduction program targeted on the ethnic minorities and remote areas. The main objectives of P135-II are: (i) to reduce the poverty rate in the target areas to below 30%; (ii) to ensure that more than 70% of the households in the target areas have annual income per capita higher than 3.5 million VND; (iii) to improve agricultural productivity of the main crops; and (iv) to increase the net primary and net secondary school enrollment rates to at least 95% and 75%, respectively.

To achieve these objectives, P135-II was designed with four major support components: (i) agricultural production support through improving skills and training the ethnic minorities on new production practices; (ii) support to develop local infrastructure and to increase the households' access to that infrastructure; (iii) improvement of the socio-cultural life and access to public services; (iv) strengthening the administrative and professional capacity of local officials and enhancing their knowledge of investment and operations management. The total budget allocated for P135-II was about US$ 1.1billion for 2006- 2010 period.

Baseline Survey and End-line Survey

In a substantial effort to evaluate the effectiveness of P135-II and to enhance the designs of future programs, the Committee for Ethnic Minorities (CEM), with the support of UNDP, conducted a baseline survey in 2007 (BLS 2007) and an end-line survey in 2012 (ELS 2012). The large sample size (6000 households in 400 communes in 42 provinces), sound methodology in survey design, and systematic

and professional evaluation procedure, these surveys provide the most comprehensive view of the socio-economic circumstances of ethnic minority peopleswho face persistent poverty and other difficulties. In particular, these data sets (i) support measurement of the progress in poverty reduction and advances in socio-economic status of ethnic minority communities in remote mountainous areas of Vietnam over the past 5 years; (ii) allow rigorous analysis of progress in the socio-economic development of ethnic minority communities participating in P135-II; (iii) allow measurement of changes in key outcomes attributable to P135-II; and (iv) provide reliable quantitative baseline data for designing and measuring the progress of future government poverty reduction programs.

Implementation and Decentralization of P135-II

The program has **succeeded in encouraging households to participate in local projects**. In 2010 around 85 percent of P135-II projects involved local selection meetings.The proportions of households aware of the meetings were 56.1 percent and 79.3 percent in 2007 and 2010, respectively. These figures first show an improvement in household awareness over the period 2007 – 2010, indicating better information dissemination at the village level. Nevertheless, there is still scope to improve the level of household awareness.

While the percentage of households who voice their opinions during project selection meeting nearly tripled from 2007 to 2010, the figure remained low at 36.1 percent in 2010. Most ethnic minority groups use their native language during group discussion while written guidance and relevant documents are written in the Kinh language. This language barrier prevents the ethnic minorities from feeling that they are able to express their opinions in a clear manner.

The program **fell far short of the target of 100 percent of the communes being investment owners** at the end of the program. However, with rigorous capacity building at the commune level, the number of commune-owned projects doubled by 2010, which demonstrates a significant improvement in the ability of communes to become investment owners. The percentage now stands at 45.9 percent. The majority of investment-owning communes did not encounter any serious problems during the implementation process. The biggest problem encountered was slow disbursement of funds.

There was a **large improvement in households' involvement in Supervisory Boards**. The better-off groups and majority ethnics were more likely to be Supervisory Board members. Non-poor household members are 50 percent more likely to join Supervisory Boards than poor household members, and male-headed households were more likely to join than female-headed households. This phenomenon indicates the importance of engaging the most disadvantaged groups in every community-driven activity. In addition, the administrative capacity of the Supervisory Boards appears to be rather limited. More than 60 percent of respondents think that the members of the Supervisory Boards are not qualified for their tasks.

P135-II has done **a good job in attracting more local workers**. The percentage of households having members working for local infrastructure projects was around 30 percent in 2007 and in 2010. While the percentage of households getting paid doubled over the period 2007– 2010, it remains low (4.4 percent in 2007 and 9.1 percent in 2010). Most local workers work informally for infrastructure projects. This lack of formal responsibility by either the contractor or workers might affect the quality as well as the progress of any project. The number of households making contributions to infrastructure projects increased significantly (by 14.2 percent) over the period 2007 – 2010. The average value of household contributions to projects also increased greatly – by ten times. Thus, households have demonstrated their responsibility as well as their recognition of the importance of these infrastructure projects to their living conditions and livelihoods. However, one concern is that contributions could constitute a kind of direct taxation on poor households or might reduce the time they have available for other income-generating activities. This concern does appear to be valid as the contribution rate of the poor is relatively higher than that of the non-poor.

The potential impact of P135-II depends on the degree to which it enhances resource availability to target communes. This issue may be particularly crucial in the current study, in light of the possibility that the authorities at the province and district levels reallocate non-P135 funds from P135 communes to non-P135 communes to compensate the latter. While the P135-II communes did receive substantially more P135 funds than non-P135 communes, they also received much less non-P135 funds. As result, **the P135-II communes did not receive more funding than other communes**. This undermined the goals of P135: to reduce the widening gap between P135-II communes and other communes, the gap

between poor and non-poor households, and the gap between ethnic minorities and Kinh households.

The level of **satisfaction with project quality increased, with respect to both households and commune officers**. At the project inception in 2007, households and commune officers expressed different viewpoints regarding P135-II project quality. In 2007, commune officials were more positive about project quality than households were. The percentage of commune officials satisfied with project quality was 15.6 percent higher than that of households. By 2010, this gap had diminished to 4 percent; there occurred a convergence of opinions between households and officers with both groups having more than 80 percent expressing satisfaction with project quality.

Poverty and Living Standards of Ethnic Minorities

The poverty incidence among ethnic minorities decreased but still remains high. Nung, H'Mong and Tay were most successful in poverty reduction. However, the living conditions of the remaining poor households, especially the poor households of Thai and Muong groups, improved less. The majority of poverty reduction was achieved by income growth, butthe rate of growth tended to decrease overtime. In addition, poverty reduction at the household level appears not to be sustainable, as a large proportion of poverty is transient: households may graduate from poverty, but then fall back into poverty over time. Kinh households are more likely to be transiently poor, while other ethnic households are more likely to be persistently poor.

Households incomes in the target areas increased by around 20 percentage points from 2007 to 2010,which is a much lower growth rate than the national average (about 50%). Households at low income levels experienced lower income growth rates than households at high income levels income. As a result, income inequality among households in the Program 135-II communes increased. The Gini index increased from 43.0 in 2007 to 47.0 in 2012. Inequality among Kinh households as well as among ethnic minority households also increased during this period.

Households in the P135-II communes **rely largely on agricultural income**. Nearly 60 percent of total income of the households is from agricultural activities. However, we begin to see a transition from farm to non-farm activities. The share

of income from wage tends to increase overtime, albeit at a slow rate. The share of non-farm income in total income was very limited, at around 5 percent. The proportion of households having wages increased from 47.7 percent in 2007 to 53.7 percent in 2012. Kinh and non-poor households were more likely to have wages than ethnic minority and poor households.

The typical housing conditions improved for all types of households. The per capita living area increased from 13 m^2 to 18 m^2 during the period 2007-2012. The proportion of households living in permanent houses also increased. However, **access to clean water and hygienic latrines remains very limited**, which is a serious problem. Only 13 percent of ethnic minority households have tap water, while the corresponding figure at the national level was 27 percent in 2010. Only about 30% of households had access to hygienic latrines.

There was an **improvement in the access to electricity** in the Program 135-II communes. The proportion of households with electricity increased from 68.6 percent in 2007 to 83.6 percent in 2012. However, compared with the figure of 98 percent of households nationwide, the electricity coverage in the Program 135-II communes remains low. Access to electricity varies substantially varies across ethnic minority groups.

The living standards of both Kinh and ethnic minority households have been improved by increased ownership of durables: 70.9 percent of households had a telephone in 2012 and nearly 70 percent of households had a television. The percentage of households having a motorbike increased from 43.8 percent to 66.2 percent. Both the poor and non-poor, and all the ethnic minority groups are experienced increases in motorbike ownership.

Impact of P135- II on Outcomes

P135-II has **had positive impacts on several important outcomes of the ethnic minority households**, including productive asset ownership, household durables ownership, and rice productivity. Among higher-order outcomes, they enjoyed positive impacts in income from agriculture, household total income, and household per-capita income. A particularly important result is that poverty among minority households in treatment communes declined significantly more than it declined in comparison communes. Finally, minority households enjoyed a

reduction in travel time to health facilities, relative to households in control communes.

Statistically significant positive impacts were recorded for non-minority households for their household durables index and for their corn, cassava, and industrial crops productivities. While industrial crop productivity increased, the share of land allocated to industrial crops decreased. Perhaps both results were driven by taking the least-productive land out of industrial crops production.

Non-minority households are better off than minority households in several very important respects. In particular, non-minority households have higher incomes and higher school enrollments. For both of these, there is evidence of improvement for minorities. Minorities' incomes increased, but not as much as non-minorities. Minorities school enrollments also increased, and by larger percentages than for non-minorities.

School enrollment is critically important to households and their communities. Enrollment rates of minority children are lower than those of non-minorities, especially for upper-secondary school. However, enrollments improved among households in treatment and in comparison communes. In all cases but one, enrollments in treatment communes increased more than in comparison communes, but the impacts were not statistically significant.

Conclusion and recommendation

The budget allocations of P135-II communes and other communes were not statistically significantly different. While P135-IIcommunes did receive substantially more P135 funds than the other communes received, they also received substantially less non-P135 support. The reallocation non-P135 funds created a major difficulty for identifying P135 impacts and very likely resulted in underestimating the program impacts. These issues should be addressed and monitored in **future programs to ensure that the funds will be allocated to target groups and that future programs do not affect the decisions of local authorities on other resource allocations**.

P135-II **achieved significant success in fostering a participatory approach to implementation**, with remarkable corresponding progress in decentralization. These changes represent large improvements compared to the first phase of P135

and other programs. Beneficiary households participated in every stage of the project including selection, implementation, supervision, and contributions to the operation and maintenance funds. Financial transparency also improved to a certain extent.

The target of 100 percent of communes becoming investment owners has not been achieved and this is still considered a highly challenging task. In addition, commune-owned projects still face problems such as slow funds disbursement and weak capacity. Participation in project supervision and operations and maintenance activities received the least attention. Thus, the need remains for **local communities to be equipped with sufficient information, knowledge, and understanding to execute each activity**. These issues should be considered and addressed in designing future programs.

The living standards of households in P135-II improved in every measured respect for all ethnic groups. Housing and sanitation conditions also improved for most ethnic groups. However, poverty remains high, and the living standard of the households in these communes is still very low compared to the national average. The poorer households experienced lower income growth rates than the better-off households, thus the **gap between poor and non-poor households in these communes continues to widen. Therefore, further support for poverty reduction in these communes is still needed in the coming years.**

P135-II significantly improved the living standards of certain beneficiary households in the targeted communes. While the program impact on income and poverty of the Kinh & Hoa ethnic groups is neither large nor statistically significant, it has large and statistically significant impacts on the income and poverty rates of ethnic minority groups. Thus, the **program successfully targeted the most disadvantaged groups in the P135-II communes**. The P135-II communes were generally worse off than non-P135-II communes in 2007, indicating that the program targeting was accurate.

P135-II only **partly achieved its targets**. It reduced the poverty rate from 57.5% to 49.2%, though the target rate was 30%. Only 41% of households have annual income per capita of over 3.5 million VND, while the target is 70%. Net primary enrollment and lower secondary enrollment in the targeted communes did improve but are still far behind the goals (85.4% compared to 95% and 70.9% compared to 75%, respectively). In addition, progress toward achievement of the

targets varies among different ethnic groups. While sustained improvements in income and poverty were found in Tay, Nung, Dao, and H'mong groups, less improvement was seen among other ethnic groups, especially the Thai. The fact that program benefits were not equally distributed among different ethnic groups suggests that **future support to these communes should be better designed to account for the specific conditions, needs, and culture of each ethnic group**.

CHAPTER 1

INTRODUCTION

Vietnam is one of the most successful countries in the world in terms of poverty reduction and economic achievement over the past twenty years. The poverty rate fell from 58 percent in 1993 to around 14 percent by 2008[1]. Land and trade reforms are the major factors that contributed to high and sustained economic growth; these are the main reasons three of every four poor people escaped from poverty in this period.

However, the rate of poverty reduction has slowed down overtime and the gap between the rich and poor is continuing to rise. Poor households in some regions gain much less from economic growth than the better off households. Most of the remaining poor households live in the remote rural areas which are mainly populated by ethnic minorities. The share of ethnic minorities in the poorest 10 percent of the population has risen to 65 percent.[2]

To increase the opportunities for poor households to benefit from economic growth, the government has introduced many poverty reduction programs for specific targeted poor household groups and regions. These programs include P-135 and P30a (improving the living conditions of ethnic minorities), P-132 and P-134 (targeted mainly at the Central Highlands to increase access to land and improve housing conditions), the Hunger and Poverty Eradication Program (HEPR), and later NTP-PR (health insurance for the poor). These programs and policies have increased the opportunities for poor households to secure the benefits of economic growth, resulting in improve living standards and increased chances to escape to poverty.

However, the most important question "What are the impacts of these programs on the expected outcomes" has not yet been answered in detail. The main reason

[1] 2008 Vietnam Household Living Standards Survey (VHLSS)

[2] "Well Begun, Not Yet Done: Vietnam's Remarkable Progress on Poverty Reduction and the Emerging Challenges", The Work Bank, 2012.

is that we have limited data. Plans for impact evaluations were not incorporated into the program designs. Thus, we do not have the Baseline and Endline surveys that would have collected required information for impact evaluation. A few impact evaluations have been conducted using qualitative methods, but these are unable to provide concrete answers to the questions "what percentage of the poverty reduction is contributed by the program and how much household income growth is contributed by the program?"[3]

With the lessons learnt from P135-I and other poverty reduction programs, and with the technical support of UNDP, P135-II is the first large and ambitious program has been targeted on the ethnic minorities and remote areas. Moreover, the design of P135-II incorporated sound methodology for impact evaluation. The main objectives of P135-II at the end of the program in targeted areas are: (i) to reduce the poverty rate to less than 30%; (ii) to ensure that more than 70% of households have annual income per capita higher than 3.5 million VND; (iii) to improve agricultural productivity of main crops;(iv) increase the net primary enrollment rate to at least 95%; (v) to increase the net lower secondary enrollment rateto at least 75%.

In order to achieve these ambitious objectives, P135- II was designed with four major components: (i) agricultural production support through improving skills and training the ethnic minorities on new production practices; (ii) support to develop the infrastructure and then increase the accessibility to basic infrastructure of the households in the targeted area; (iii) improvement of the socio-cultural life and increase the accessibility to public services; (iv) capacity strengthening by providing local officers with skills and knowledge on professional and administrative management as well as enhancing their knowledge on investment management and skills of operation management. Led by CEMA, P135-II was implemented in about 1,600 of the poorest communes; thetotal budget from 2006 to 2010 was about US$ 1.1billion.

The major aim of this *"Impact of Program 135-phase II through the Lens of Baseline and Endline Surveys"* report is to measure the impact of the program on the expected economic outcomes of the households, mainly the poverty, income, agriculture production, housing conditions, and access to the basic public services.

[3]Design, Monitoring, and Evaluation System for Program 135 Phase II, Design of Baseline Survey, Tung Phung Duc, 2007.

In addition, the report analyses the current situation of all aspects of living conditions of the ethnic minority households living in the remote and poorest communes. The findings and lesson drawn from this report could help the government and donors to design and implement better programs in the future.

While this chapter gives readers an overview of the trend of poverty, poverty reduction programs, the necessity of impact evaluation work, the brief content of P135-II, Chapter II provides details of the impact evaluation design, focusing on the two most important surveys: the baseline and endline surveys (BLS 2007 and ELS 2012). It first gives the concrete description of the sampling design for both surveys, including the method to select the control and treatment groups, data used for the sampling frame, and the method used to select the survey villages and households. Second, it discusses the questionnaire design for both household and commune questionnaires in comparison with the questionnaires administered by the Vietnam Living Standard Surveys. The survey implementation for both BLS 2007 and ELS 2012 is then discussed in detail, including the survey organization, quality control, and data entry and cleaning, as well as the comparison between BLS 2007 and ELS 2012. The lessons learned and quality evaluation of these surveys is then discussed in the Conclusion.

Chapter III reviews the implementation process of P135-II and describes the methodology used to measure the impacts of the program. It analyses the implementation process, the issues that arise during the implementation time that could affect the methodology used for measuring the impacts of the program on the expected outcomes. Fund allocation and administrative decisions that changed communes' control or treatment status during the study period are discussed. The views of the beneficiary households on the impact of P135-II are also analysed in order to have a better view on which outcomes we should focus on. The last section of this chapter presents the Difference in Difference (DID) method that was proposed to measure the impact of the program at the design stage and its limitations. The actual methodology used to measure the impacts is then discussed in detail, and the limitations of the methodology are addressed.

Chapter IV analyses the current poverty and living conditions of the ethnic minorities in the P135-II communes. It first analyses the overall poverty trends among the ethnic minorities in comparison with BLS 2007 and the national average and then it disaggregates the inequality in income between Kinh and other ethnic groups to determine the main factors that affect this inequality. The

characteristics of the ethnic minorities are also presented in this chapter, including living conditions, endowments of productive assets, education, and access to basic public services and infrastructure. Poverty dynamics of ethnic minorities also addressed in this chapter; this allows us to have a clear view on the degree to which poverty in these communities is transient and on the sustainability of poverty reduction in these communes.

Chapter V includes two major parts. The first part provides a comprehensive analysis of the extent to which capacity strengthening has been enforced at the local level. This goal is assessed through the perspective of both local authorities and the beneficiaries. It describes in-depth capacity building at the local level through assessment of local training activities and then provides an insight into project management capacity and decentralization at the local level. In addition, it analyses the outcomes of commune investment ownership and measures household participation in planning and implementation stages. The second part concentrates on measuring the impacts of the Program on the key outcomes, including agricultural production, household income, household poverty status, and access to education and health services, which are important elements of P135-II targets.

The key findings, conclusions, policy recommendations, and challenges for poverty reduction are addressed in Chapter VI.

CHAPTER 2

BASELINE SURVEY 2007 AND ENDLINE SURVEY 2012

2.1 Objectives of the Surveys

Vietnam hasmade impressive achievements in economic growth and poverty reduction over the past 20 years. Part of this achievement is due to the big efforts of the Government through introducing many poverty reduction programs. However, recent studies show that it is impossible to measure the impacts of certain programs, such as the National Target Program and Program 135 Phase I. The reason is that there was no plan for impact evaluation prior to the implementation of these programs and therefore no baseline survey was conducted to collect information needed for impact evaluation.

Program 135 Phase II (P135-II) is a major poverty alleviation program that was implemented during the period of 2006- 2010 for the poorest areas where the main inhabitants are ethnic minorities. Ina substantial effort to evaluate the effectiveness of P135-II and to enhance the designs of future programs, the Committee for Ethnic Minorities (CEM), with the support of UNDP, conducted a baseline survey in 2007 (BLS 2007) and endline survey 2012 (ELS 2012). The objectives of these surveys were to provide the most comprehensive data sets focusing on ethnic minorities that face the deepest poverty and other difficulties. In fact, the baseline data set is widely cited in the most recent government and donor documents and publications related to poverty and ethnic minorities.

The availability of current and comprehensive data about these groups is essential for the government and donors to develop evidence-based policies for continuing poverty reduction. In particular, these data sets (i) measure the progress in poverty reduction and advances in socio-economic status of ethnic minority communities in mountainous, remote areas of Vietnam over the past 5 years; (ii) allow rigorous analysis of progress in the socio-economic development of ethnic

minority communities participating in P135-II; (iii)allow measurement of changes in key indicators (poverty rate, income, agricultural productivity, access to basic infrastructure, etc.)attributable to P135-II; and (iv) provide reliable quantitative baseline data for designing and measuring the progress of future government poverty reduction programs.

This is the first large government program that has adopted a systematic and professional evaluation procedure. It meets the highest professional standards, not only for the sake of the P135-II, but also as an illustration of the value added that good evaluations can provide and can draw the good lessons for upcoming government programs.

2.2 Survey Design

2.2.1 Sampling Design

Selection of treatment and control communes

The most difficult part of impact evaluation design is to develop the appropriate sampling design for selection of control and treatment groups. The main reason is that the treatment groups are often not randomly selected because most development projects and programs deliberately target the most disadvantaged groups. The target communes in P135-II are the poorest and most remote communes and their selection was based on their poverty rates and lack of key necessary infrastructure for agricultural production. The quantifiable criteria for identifying P135- II communes were based on the following indicators. First, lack of atleast 4 of 7 key items: roads suitable for cars to travel to central communes; at least 50% of agricultural land irrigated; presence of a health center; presence of a school presence of a market; availability of electricity; at least 50% of villages in the commune have access to clean water. Second, the poverty rate of the commune is higher than 30% using the poverty line for 2000 or the poverty rate of the commune is higher than 55% using the new poverty line of 2006. Based on these criteria (in practice, mainly on the poverty rate), 1,632 communes were selected from among the 2,359 communes of P135-I for P135-II.

Based on the availability of resources and the data requirements for testing for changes of the key indicators (poverty and income), we determined that a sample of 6,000 households would be adequate. Sample households were selected from

400 communes, of which 266 were defined as treatment communes and 134 as control communes. From the list of 1,632 communes in P135-II provided by CEMA, 266 treatment communes were randomly drawn. This selection process ensured that the sample treatment communes were selected from all over the provinces included in P135-II. In fact, 42 out of 45 P135-II provinces were included in the sample. The selection of control communes was rather more complicated and it was the most challenging task. We need to find communes which are as similar as possible to the sampled treatment communes. Thus, we used the 727 communes that had 'graduated' from the P135as the population of control communes from which the sample would be drawn.[4] A probit regression model was used to estimate the probability of being selected for P135-II using data for 727 graduated communes and 266 selected treatment, based on key characteristics of each commune (poverty, key infrastructure, and population). The graduated communes with estimated selection probabilities higher than the average were identified as potential communes for the control group. From among these, 134 communes for the control group were selected randomly.

A simple t-test was used to examine the quality of sample selection. The results show that the control and treatment communes displayed no significant differences in key indicators of that had been used as the criteria for selection into P135-II. This provides evidence that the sampling design is good for measuring the impact of the Program.

Selection of survey households

The Agriculture Census of 2006 was used as the sampling frame for selecting the survey households. Using this data set ensures that we have the most updated list of households in the 400 selected communes. There are two steps in the selection process of the survey households. The first step is to select the villages. Based on the list of villages in 400 selected communes, one village was randomly selected from each commune using the probability proportional to population sampling method (PPS). This selection method was applied for both control and treatment groups.

[4]'Graduated' communes were the P135-I communes that advanced sufficiently that they were not eligible for P135-II.

The second step is to select households to interview. To ensure that the survey covers 6000 households, we first selected randomly 20 households from the list of all households in each selected village and then we selected randomly 15 households out of 20 households for official interview. The remaining households (5) are used as the reserve for replacement in cases that the initially selected households were not available for the official interview for any reason.

2.2.2 Questionnaire Design

Two questionnaires were used in these surveys: one for the household and the other for the commune. Both the household and commune questionnaires were developed based on the questionnaires of VHLSS 2006 with some substantial modifications to reflect the content and implementation process of P135- II(see Nguyen and Phung, 2007 for details of the VHLSS).

The household questionnaire collects information about various aspects of each household's socio-economic conditions.. It includes demographic attributes, migration, education, health, agriculture, off-farm and non-farm employment, borrowing and saving, remittances, insurance and assets. Questions relevant to P135-II were included. A special module was designed to collect information that mainly reflects the implementation of the Program at the grass-root level, including awareness, participation of the households in the selection, supervision and implementation of the projects, and the household's assessment of the quality, transparency, and benefit of the projects supported by the P135-II

The VHLSS' sections on general information, infrastructure conditions, and access to public services (i.e., schools and healthcare services) are simplified in the commune questionnaire. New sections to collect information about the administrative capacity of the commune management board and commune officers, and the training for capacity building, as well as details about the commune-level projects carried out over the past 12 months were added to collect all needed information for evaluating the implementation of P135-II.

Using the same questionnaires produces consistency across the two data sets (2007 and 2012) that is essential for comparison over time. Therefore, the questionnaires used for BLS 2007were used in the ELS 2012 with only a few modifications based on lessons learned from BLS 2007and for capturing other impact factors.For example, some questions about shocks households experienced

since the survey time in 2007were added to the household questionnaire. This information is very important for modeling the impact process, especially when the shocks are not randomly distributed among surveyed households in the control and treatment groups. Shocks could affect estimated program impacts if they are not included in the model. The questionsthat appeared inBLS 2007 whose information remains unchanged overtime are excluded. For instance, questions on educational background of people who were no longer enrolled in school at the time of the 2007 interview, age, date of birth, gender, and race for the household members who were interviewed in the BLS 2007 were excluded. These questions were only used for new household members. The same approach was used to revise the commune questionnaire: information that was unchanged overtime was eliminated. Questions related to projects implemented in the commune were revised to reflect appropriate recall periods.

Consultation workshops were organized with policy makers, donors, and researchers to get comments on the draft questionnaires of both surveys. The final draft questionnaires were then pilot tested in the field before the completed and final versionswere released for the data collection stage.

2.3 Survey implementation

2.3.1 Baseline 2007

BLS 2007 was implemented by General Statistics Office (GSO). The Social and Environmental Statistics Department, which is the implementing agency of VHLSS, was assigned to conduct BLS 2007.The interviewers were recruited from Provincial Statistics Offices and they are experienced in conducting VHLSS interviews. Two training courses for interviewers and supervisors were held in Hanoi and Ho Chi Minh cities. The participants were trained about the purposes of the survey, the content of the questionnaires, the interview methods, and the solutions to problems that might occur in the field.

Lessons learned from Vietnam Living Standard Survey 1998 and VHLSS indicated that the best way to conduct this survey is to organize the interviewers by teams. BLS 2007 had 21 survey teams. Each team included 1 team leader and 4 interviewers to collect information from about 300 households in 2 or 3 provinces. The data collection started on 4th September 2007 and finished on 25th November 2007. To ensure the quality of the data, 10 supervision teams were organized and

each supervision team supervised 2 or 3 interview teams. A supervisor attended each interview, re-checked the data in the completed questionnaires, and discussed with the team any problems or issues that occurred in the field; these discussions produced solutions for improved data collection. The sample included 5,965 households which completed the interviews. A very small number of households (35) could not be interviewed because they had moved to other places or refused to cooperate with the team.

Data entry was implemented by the Statistics Information Center (SIC) in Hanoi. In order to reduce non-sampling errors at the data entry stage, double data entry was applied for this survey. The raw data was then converted to STATA format and data cleaning was implemented by the Social and Environment Statistics Department. The first data set was delivered to CEMA on the 6th of March 2008 (about 4 months after completion of the fieldwork). The final data was ready for analysis by August 2008 (one year later).

During the fieldwork implementation, some issues emerged that might have affected the quality of the data[5]. First, the long delay between training and fieldwork resulted in loss of10 interviewers, and GSO had to recruit and train 10 replacement interviewers. This delay might also have resulted in interviewers forgetting what they had learned from the training, which might have affected the quality of the data. Second, most of the survey locations were in remote areas, and were very difficult to travel to (some of the survey communes were only accessible by foot); this made communication between teams and supervisors difficult. Third, the time for conducting the survey was not suitable, as it extended into the rainy season. That delayed data collection and disrupted the workplan of the teams. Fourth, respondents were mainly ethnic minorities with limited knowledge about the content of the survey; moreover, many of them can not speak Vietnamese fluently. Many interviews were conducted with the help of local interpreters. If interpretation was poor, that might also have affected the quality of the interviews.

[5] Survey Report of Baseline Survey 2007- General Statistics Office- Survey Steering Committee of P135-II

2.3.2 Endline 2012

This project represents the first time an independent agency has been assigned to conduct anendline survey and evaluate the impact of a large government program. The endline survey 2012 (ELS 2012) was implemented by Indochina Research and Consulting, an independent consulting firm, which was charged with conducting an absolutely objective impact evaluation. Implementation of the ELS 2012 was quite similar to implementation of BLS 2007, but benefitted from the lessons learned from the BLS 2007. Certain modifications and improvements were adopted to avoid any problems that had occurred in the BLS 2007. Details of interview team selection and training, and interview implementation are provided in the next paragraphs.

First, 30% of the BLS 2007 interviews were implemented with the support of interpreters. Therefore, interviewers for ELS 2012were recruited from among Kinh and ethnic minorities represented in the sample communes. The ethnic minority interviewers received the same training as the other team members. Thus, when they interviewed the non-Vietnamese-speaking respondents, the time taken for the interviews and the possibility of non- sampling errors were both reduced.

Second, the training method emphasized developing the skills of the interviewers and gaining trust from the sample households. At the end of training, an exam was given and only interviewers who passed the exam were selected to conduct data collection.

Third, the basic information from BLS 2007was extracted, including the household member list, key information of household members such as age, sex, education, occupation, etc. The interviewers reviewed this information before doing the interview. Having this information on hand in advance was very helpful for interviewers to identify and check doubtful answers and thereby improve the quality of the data.

Fourth, a detailed work plan with assigned tasks for each team memberwere well-developed in advance and sent to each team as well as the CEMA officers at all levels two weeks before the teams went to the field. Logistical preparationswere supportedby CEMA at all levels to ensure the survey was conducted according tothe workplan and interviewers were able to reach the right respondents.

Fifth, strict supervision was carried out throughout the data collection process. Apart from attending the interviews, supervisors conducted random checks on households to make sure that all interviewers followed the interview procedures and recorded accurate information. Supervision work was circulated from one team to another. A "hotline" was set up and available at all times for interviewers to contact when they had questions relating to technical or logistical issues.

Sixth, ELS 2012 used tablet PCs for data entry during the interviews. This was the first time the new survey technique was applied on such a large and complicated survey in Vietnam. Each survey team had two tablets for conducting the surveys; they rotated among the team members during each survey. With high-technology design, the application of tablets ensured high-quality data and minimized non-sampling errors normally associated with data entry. The tablet technology incorporated survey software applications, GPS, and internet capabilities to ensure that the data were collected in the most accurate possible fashion, in the shortest time under the best quality control. The data were entered directly during the interview instead of using a paper questionnaire. With 3G-internet capability, the entered data was transmitted directly back to an online server for immediate data checking. This procedure eliminated the data entry stage and increased the efficiency of data cleaning. As the survey software was programmed to implement logical checking, data cleaning could be done simultaneously during the fieldtrip period. The survey managers could provide feedback to enumerators for data correction in a timely manner. With this feature, non-sampling errorswere greatly reduced. Application of tablet technology with GPS and internet capabilities ensured quality control throughout the process. This technology also enabled us to monitor the enumerators' work as the application automatically recorded the interview's starting and ending times, so we were informed of whether the survey was properly done in terms of timing. The application also recorded the coordinates of the location where the interview took place. This technology helped survey managers and supervisors to monitor each team and to ensure that the teams arrived in the field according to plan. The map below shows the locations at which teams completed interviews from the beginning to the mid-point of the survey time.

Figure 2. 1: Locations at of P135-II Endline survey interviewers

Last, the ELS 2012 was conducted from early April to the end of May 2012 so as to avoid the rainy season. The timing reduced problems related to logistical arrangements and travel time for the survey teams.

Applying the new survey techniques and solutions for improvement of the survey implementation, ELS 2012 field work took about two months to interview 5,668 households. The attrition rate from BLS 2007 was about 5.2% after 5 years, which was much lower than the attrition rate experienced by VHLSS, partly reflecting of the careful logistical arrangements and lower rates of migration in the remote areas. While data entry and cleaning for BLS 2007 took more than 5 months, for ELS 2012 it took only one month to complete the data cleaning and disseminates initial findings.

Despite careful planning, several issues still arose during the fieldwork for ELS 2012. In particular, travel to several communes was quite difficult: teams sometimes had to walk or go by boat to the survey communes. Also, in some communes, the knowledge of respondents was so limited that it might have affected the quality of the interview.

2.4 Conclusion

This is the first time that an important poverty reduction program in Vietnam has been exposed to a sound and professional impact evaluation.The value added of this impact evaluation consists largely of the lessons that can be drawn for future government and donor programs.

BLS 2007 and ELS 2012 were well-designed and implemented, and they provide rich and high quality data that support impact evaluation of P135-II and analysis the program implementation. These data sets are the most complete and comprehensive data sets on ethnic minorities and on the poorest communes in Vietnam. As such, they provide a thorough understanding of ethnic minorities' socioeconomic situations. The data sets are large enough to disaggregate ethnic minorities into at least 10 different groups. Therefore, they help us to understand the differences in many aspects of living conditions and livelihood among these ethnic groups.

The BLS 2007 showed that treated communes (i.e., those chosen for P135-II) are a bit poorer and less likely to have car roads, electricity, and cultural houses than the control communes. This constitutes evidence that P135_II targeted the right communes; however, it also indicates the need to control the impact of other factors in estimating the program impact. In other words, the simple Difference in Difference method must be augmented by appropriate econometric control methodology.

CHAPTER 3

REVIEW THE IMPLEMENTATION OF P135-II AND METHODOLOGY TO MEASURE THE IMPACT

3.1 Introduction

This chapter analyses the implementation process of P135- II, focusing on the budget allocation from Program and from other projects or programs between P135- II communes and non- P135- II communes. In addition, evaluation of beneficiary households about the impact of the Program on expected outcomes and the important of different projects provided by different components of the Program is analysed. We develop the hypothesis about the impact of different components of the Program for the whole process from output, outcome, to impact. The results of these analysis helps to identify the outcomes that Program might have impacts and to consider and re- evaluate the impact evaluation methodology proposed at the design stage of the Program and Baseline Survey. Thus, we could develop the appropriate impact evaluation method and identify the indicators that could measure the impact of the Program in the econometric models. This chapter mainly focusses on the description of impact evaluation methodology. Therefore, there are several statistical and econometrical terms as well as econometric models that require the readers have a basic econometric to fully understand the measurement method. We try to present in the most simple way about methodology. However, it might be still hard for readers who do not have basic statistic knowledge. For those readers, they could skip the methodology section and it does not affected the major contents of the report.

3.1.1 Control and Treatment Communes

Table 3.1 show that the authorities switched a comparison commune into treatment commune status and vice-versa from 2006 to the end of the Program. Thus, some communes transitioned from comparison to treatment status or graduated from treatment status between the two surveys.

Table 3. 1: Transition Matrix between Control and Treatment Communes

Status in Each Year							n	Code	T1	T2	TP
2006	2007	2008	2009	2010	2011	2012					
C	C	C	C	C	C	C	98	1	0	0	0
C	T	T	T	T	T	T	1	2	0	1	…
C	C	T	T	T	T	T	30	3	0	1	…
C	C	C	T	T	T	T	1	4	0	1	…
T	T	T	T	T	T	T	247	5	1	1	1
T	T	C	C	C	C	C	17	6	1	0	…
T	T	T	T	C	C	C	2	7	1	0	…
T	T	T	T	T	C	C	2	8	1	0	…

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

The fact that some communes switched status complicated the assignment of treatment indicators for the impact evaluation. Three possibilities were explored in preliminary analysis: an indicator for treatment status in 2006 (T1); an indicator for treatment status in 2012 (T2); and a conventional treatment indicator for the subset of communes that never switched status (TP). From 2006 to the end of the Program, there are about 21 graduated communes and 30 control communes at the beginning of the P135- II became to Treatment communes. Therefore, we have only 98 purely control communes and 247 purely treatment communes. Therefore, These communes are cleanest definition of control / treatment status and they are most appropriate communes used for impact measurement.

3.1.2 Comparison of Funds Allocation Across Treatment and Control Communes

The potential impact of P135-II depends on the degree to which it enhances resource availability to target communes. This issue may be particularly crucial in the current study, in light of the possibility that the authorities reallocate non-P135 funds from P135 communes to non-P135 communes to compensate the latter because they were not included in P135.

Section 5 of the commune questionnaire records data on commune economic development projects and their funding. Comparison and treatment communes all receive P135 funding. The data do not distinguish between P135-I and P135-II, but projects undertaken in more recent years are likely to have been funded by

P135-II, thus we focus on projects undertaken during 2006 – 2012. We calculated cumulative net funding for 2006 – 2012; funds for projects ending after 2012 were pro-rated to estimate the expenditures up to 2012.6 Average funding is displayed in the following table 3.2.

Table 3. 2: Budget allocation between control and treatment communes

Fund Source	Comparison Communes Average		Treatment Communes Average	
	000 VND	n	000 VND	n
P135	2,047,862	98	3,322,755	245
Other	5,845,986	98	4,586,976	245
All Sources	7,983,848	98	7,909,731	245

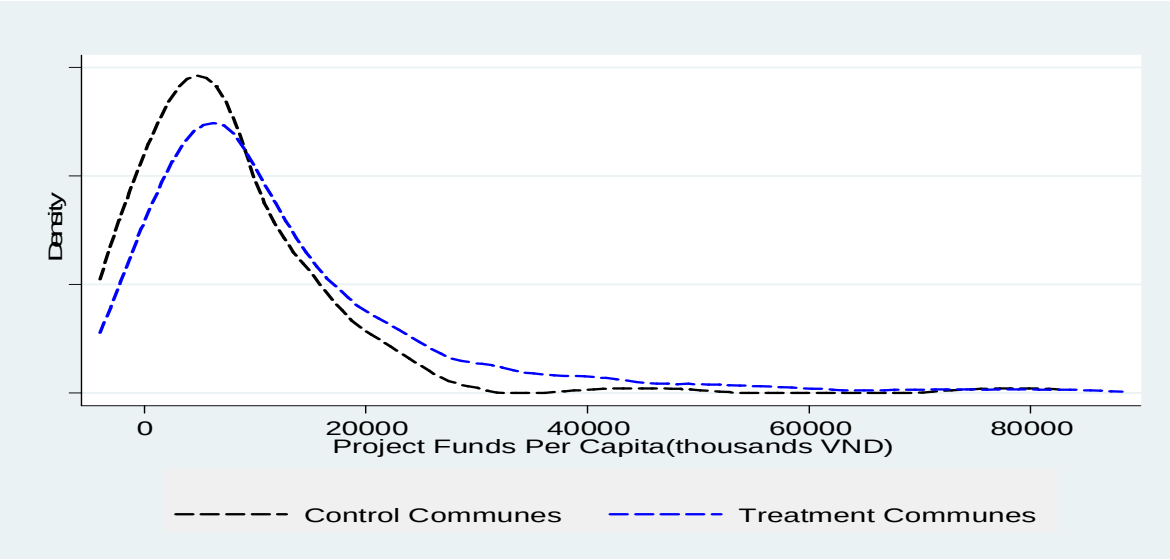
Source: Analysis Team calculations based on 2007 and 2012 household surveys.

While the treatment communes did receive substantially more P135 funds than comparison communes, they also received less non-P135 funds. The averages of funds received by comparison and treatment communes from all sources are statistically indistinguishable. This pattern is consistent with the hypothesis of compensatory reallocation of non-P135 funds by the authorities. The vast majority of projects recorded for section 5 of the commune questionnaire are infrastructure projects. Under the assumption that the impact of infrastructure funding is independent of funding source, statistically identifying the impact of P135-II on household response variables may be difficult.

Figure 3.1 presents the budget allocation per capita and it shows that P135- II received not considerable higher fund per capita than non- P135- II communes. Figure 3.1 also shows the unequal budget allocation among the communes and the average fund per capita in 5 years of Program is small (about VND 1 million).

Figure 3. 1: Distribution of Fund allocation per capita

[6] Amounts were net of local contributions; ten outliers were omitted.



Source: Analysis Team calculations based on 2007 and 2012 household surveys.

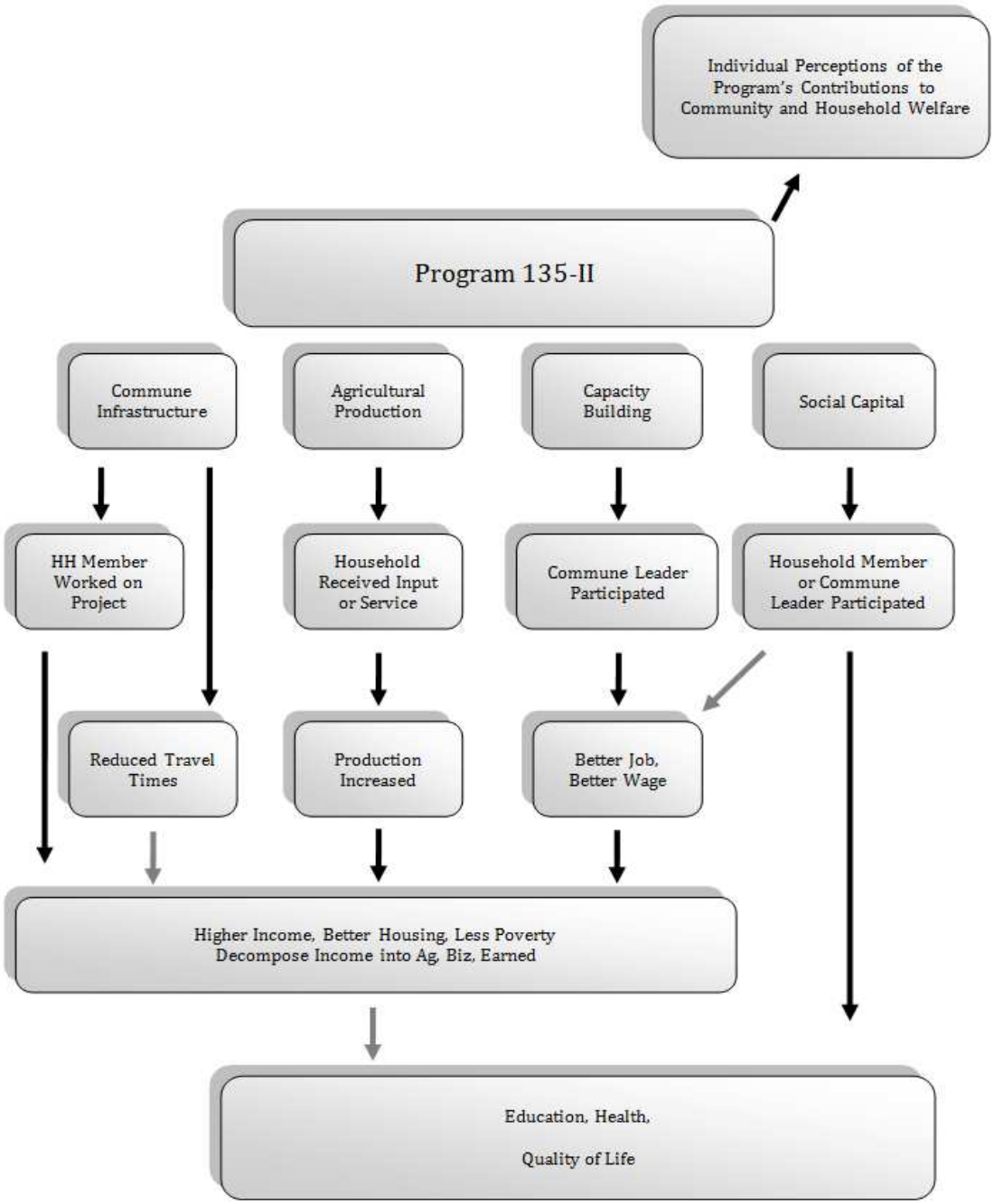
The vast majority of projects recorded for section 5 of the commune questionnaire are infrastructure projects. Under the assumption that the impact of infrastructure funding is independent of funding source, statistically identifying the impact of P135-II on household response variables may be difficult.

3.2 Methodologies to Measure Impacts

Some elements of the impact evaluation framework are illustrated by the simple causal chain hypothesis on the next page. Clearly, outcomes like household income and the educations of household members are determined by much more complex mechanisms than indicated here. Nonetheless, the simple causal chain helps organize our work.

Commune leader and household member perceptions are readily available from the commune and household surveys. Four elements of P135-II are given in the third row of the figure: commune infrastructure, agricultural production, capacity building, and social capital. Accounting for those inputs is straightforward. Many variables might affect outcomes like production, income, and education. It is for this type of outcome that the econometric impact evaluation is deployed.

Figure 3. 2: Causal Chain Hypothesis



Source: Analysis Team.

3.2.1 Views of the Beneficiaries

Assessing the degree to which survey respondents are aware of P135-II and the activities it supports, and the degree to which survey respondents perceive P135-II is beneficial to them is straightforward.

Commune Leaders were asked, both in 2007 and in 2012 to indicate changes in quality of life of people in their communes compared to 5 years previous. Virtually all communes experienced improvements in their residents' quality of life according to their leaders.

Table 3. 3:Evaluation of commune leaders on living standard of people in their commune

	Response	Percentage	
		Control	Treatment
2007	Better	95.52	94.33
	Worse	1.02	1.62
	No Change	3.06	4.05
	Total	100.00	100.00
2012	Better	97.94	99.19
	Worse	1.03	0.40
	No Change	1.03	0.40
	Total	100.00	100.00

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

The changes were attributed to the following reasons. The Commune Questionnaires provided twelve potential responses.

Table 3. 4: Main reasons of improvement

	2007		2012	
	Control	**Treatment**	**Control**	**Treatment**
Main Reason				
Better Agricultural Income	65.26	80.08	68.09	69.67
Better Commune Infrastructure	22.11	14.41	21.28	19.67
Second Most Important Reason				
Better Agricultural Income	12.63	8.47	18.60	15.52
Better Business Opportunities	14.74	4.66	18.60	9.05
Better Employment Opportunities	10.53	7.63	8.14	8.19
Better Commune Infrastructure	38.95	42.37	41.86	46.55
Third Most Important Reason				
Better Commune Infrastructure	14.29	9.09	19.05	19.19
Better Educational Opportunities	13.19	16.75	17.46	21.51
More Favorable Prices	7.69	10.53	9.52	4.65
Better Social Services	3.30	4.31	11.11	9.88
Better Training Opportunities	8.79	6.70	11.11	13.37

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Better commune infrastructure is frequently cited as a reason for improvement. If the improvements in commune infrastructure can be tied to P135-II, that provides some evidence of the program's impact.

Commune leaders were asked to enumerate the types of programs conducted in their communes in order of their importance. Commune leaders frequently mentioned P135. Among most important and second most important programs P135 is always more prominent in treatment communes than in comparison communes. In fact, P135 was mentioned as most important by 60% of treatment

communes in 2012; at that date, it is clear they must have been referring to P135-II.

Table 3. 5: Most important programs conducted in commune

	2007		2012	
	Control	**Treatment**	**Control**	**Treatment**
Most Important Programs				
Poverty Reduction	34.83	28.94	26.88	18.75
Economic Development	10.11	6.81	15.05	6.67
P135	12.36	42.98	35.48	60.42
Culture and Education	13.48	5.96		
Second Most Important Programs				
Poverty Reduction	14.77	15.02	17.28	31.53
Economic Development	15.91	12.02	17.28	13.06
P135	3.41	22.75	13.58	19.82
Culture and Education	15.91	15.02	11.11	12.61
Environmental	10.23	7.73	2.15	1.67
Health	6.82	3.00	13.58	2.70
Third Most Important Programs				
Poverty Reduction	2.94	7.77	11.48	13.71
Economic Development	5.88	3.88	16.39	13.71
P135			18.03	8.57
Culture and Education	10.29	13.59	24.59	20.57
Environmental	17.65	15.53	8.20	16.57
Health	17.65	15.53	2.94	7.77

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Turning attention to household heads' perceptions, and classifying households by poor /non-poor status, we find 35% of the poor and 46% of the non-poor were aware of P135 in 2012. When asked to identify the specific activities P135 supported, most of those who were aware of P135 were aware that it provides infrastructure investment. On the other hand, over all, very few respondents are aware of the activities P135 supported in 2012.

Table 3. 6: Awareness of the households on P135- II components

	Percent of Those Aware of P135	Percent of All Respondents
Infrastructure Investment	63%	25%
Support for Production	31%	12%
Agricultural Extension Services	25%	10%
Capacity Building	5%	2%
Improving Cultural Life	14%	6%

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Finally, individual household heads were asked to list any benefits their households directly experienced. The results for 2012 are given in the following table. The differences between comparison and treatment households are very small so we do not sohow them separately.

Table 3. 7: Major benefits of P135-II

Benefit Experienced by Household	Percent of Those Aware of P135	Percent of All Respondents
Improved Income	38%	15%
Employment Creation	8%	3%
Improved Market Access	27%	11%
Improved Agricultural Productivity	33%	13%
Improved Access to Education / Health Care	41%	16%
Vocational Training	1%	0.5%

Material / Machines for Agricultural Production	10%	4%
Other Benefit	6%	2%
No Benefit	18%	7%

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

It seems fair to say that a program which 15% of all respondents credit for increased income has had a positive impact; similarly for the 11% that perceive improved market access, 13% that perceive improved agricultural productivity, and 16% that link improved access to education and health care to the program.

We close this section with a summary of the working-age adults directly employed in commune-level infrastructure projects. Table 3.8 shows that about 12% of working age adults work on infrastructure projects in comparison communes and 11% of working age adults work on infrastructure projects in treatment communes. This similarity is not surprising given the fact that average infrastructure spending is the same among comparison and treatment communes. The proportions of those working on infrastructure projects who belong to poor households reflect the proportions of poor households in comparison and treatment communes.

Table 3. 8: Working on Infrastructure Projects

Group	ControlCommunes	Treatment Communes	P-value for Difference	Sample Size
% of Working-age Adults Who work on Infrastructure Projects	12.05	11.46	0.06	49,354
% of Working-age Adults of Poor HH Who Work on Infrastructure Projects	11.52	11.11	0.36	28,006
% of Working-age Adults Who Belong to Poor HH	46.32	61.96	0.00	52,865
% of Working on Infrastructure Projects Who Belong to Poor HH	43.50	59.27	0.00	5,737

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

3.2.2 Econometric Impact Evaluation for Higher-Level Outcomes

Econometric impact evaluation requires a model to link each outcome with a set of explanatory variables and an estimation strategy that exploits the panel data feature of the data set. We begin with the model.

Model

The model is summarized by the equation given below. The subscripts have the following designations: c = commune, i = household, t = time period. Notice that the treatment is at the commune level, not at the household level. The question of self-selection at the household level does not arise in this case. Self-selection might occur at the commune level if communes lobby for inclusion or embrace P135-II with varying degrees of enthusiasm. Certainly, we have non-random assignment of treatment at the commune level: if assignment is on exogenous regressors (but not on unobservables), then that is easily controlled by including those exogenous regressors.

$$Y_{cit} = \beta_0 + \alpha_1 T_{ct} + \beta X_{cit} + \gamma Z_{ct} + \mu_c + \mu_{ci} + \tau Year_t + \varepsilon_{cit} \quad (1)$$

Where as:

Y_{cit} Outcome variable

T_{ct} Treatment indicator

X_{cit} Vector of *time-varying* observable household characteristics

Z_{ct} Vector of *time-varying* observable commune characteristics

μ_c *Time-invariant* commune characteristics (may include unobservables)

μ_{ci} *Time-invariant* household characteristics (may include unobservables)

τ *Time-specific* effect

ε_{cit} Idiosyncratic household deviations from expectation

α_1 Impact of Treatment on households with $S_i = 0$

Difference in Differences

The conventional Difference in Differences (DID) estimator to estimate the impact of $T_{ct} = 1$ is given by

$$DID = (Y_{2012}^T - Y_{2012}^C) - (Y_{2007}^T - Y_{2007}^C)$$

or $$DID = (Y_{2012}^{T} - Y_{2007}^{T}) - (Y_{2012}^{C} - Y_{2007}^{C}) .$$

The *DID* estimator of the program impact is valid if the time-varying characteristics X_{cit} and Z_{ct} are uncorrelated with treatment $T_{ct} = 1$. This would be the case if assignment to P135-II had been random. However, the treatment communes were not randomly selected, so that assumption is highly questionable. We may control for characteristics X_{cit} and Z_{ct} by running the regression specified by equation (1), using the panel data nature of our data to control for the unobservables in $\mu_c$andμ_{ci}.

Fixed Effects Transformation

The fixed-effects (FE) transformation sweeps out all time-invariant characteristics listed in equation (1), including those that are unobservable. Re-write the equation as:

$$\ddot{Y}_{cit} = \alpha_0 + \alpha_1 T_{ci} + \beta \ddot{X}_{cit} + \gamma \ddot{Z}_{ct} + \tau Year_t + \ddot{\varepsilon}_{cit}, \qquad (2)$$

where

$$\ddot{Y}_{cit} = Y_{cit} - \frac{1}{2}\sum_{t=1}^{2} Y_{cit}$$

illustrates the transformation that is applied to each variable. Pooled OLS on the transformed model yields consistent estimators of the coefficients. Notice that the transformation does not sweep out the time-specific effects, so fixed-effects estimation must include a time-dummy.

The *impact estimate*, is the estimated partial regression coefficient on the dummy variable that represents treatment:

$$\frac{\partial Y}{\partial T} = \alpha_1.$$

Estimation

A set of plausible control variables is selected for each response variable under consideration. The set of control variables is narrowed-down by stepwise deletion: the least significant variable is deleted and the model re-estimated until all remaining controls are significant at the 40% level. The high significance level is used to guard against Type II error, which would lead to omitted variables bias.

Limitations

The primary limitation of fixed-effects panel data estimation is the fact that the differenced regressors often have much less variation than the regressors in level form. As a result, the estimated coefficients may be estimated with poor precision and may therefore be statistically insignificant.

3.3 Conclusion

During the implementation process, there are some communes graduated and moved out of the Program, while some control communes become treatment communes. This switched status created the difficulty and complication for developing the appropriate impact measurement methodology and accuracy of estimations. It reduces the sample size of both control and treatment groups thus reduces power of testing and affects measurement of impacts considerably.

Budget allocation between P135- II commune and non- P135- II commune are insignificant difference. While the P135- II commune tends to receive more fund from Program compared to non- P135- II, it receives much less fund from other programs, projects and government budget than non- P135- II. Local authority (district and provincial levels) often reallocate other funds from P135- II to non-P135- II for compensation is the major reason. Potential impact of P135- II depends on the budget enhancement for these communes so the reallocation of budget for non- P135-II communes could create the constraint for measuring the impact of the Program and might under estimate of Program's impact.

Perception of local authority and beneficiary household shows that the Program improved clearly accessibility to basic infrastructure, market and then increased agriculture productivity, non- farm job opportunity. Thus, it increased the income and improved the livelihood of the beneficiary households living in P135- II communes.

The implementation of the Program is inconsistence overtime so the Difference in Difference Method (double differences) is not suitable to measure the impact of the Program. Results from analysis of the implementation of the Program, perception of the local authority and beneficiary households in this chapter helps us to develop the most appropriate impact measurement method and identify the impact outcomes.

CHAPTER 4

POVERTY PROFILE OF ETHNIC MINORITIES

With a high economic growth rate during the past two decades, Vietnam has become a middle-income country. Poverty incidence and poverty severity index have been decreasing. In middle 1990s, half of the population were below the consumption poverty line. In 2008, the poverty rate is around 14 percent (according to the 2008 Vietnam Household Living Standard Survey - VHLSS). Although there is a high economic growth and fast poverty reduction, not all households can benefit from the economic growth. Poverty remains high in the mountain and highland, where there are a large population of ethnic minorities. Ethnic minorities account for around 14 percent of the Vietnam's population, but account for 50 percent of the poor population (according to the 2010 VHLSS). Economic growth and poverty reduction is not very successful in ethnic minorities. Many studies show that chronic poverty is now a phenomenon of ethnic minorities (Pham et al., 2012; World Bank, 2012).

To reduce poverty in difficulty areas, the Government has launched Program 135 which was targeted at the poor and ethnic minorities in the most difficult and poorest communes of Vietnam since 2000. This chapter examines poverty pattern and characteristics of households in the poorest areas of Vietnam – communes benefitted from Program 135 phase II (2006-2010). This chapter also investigates poverty dynamics of these households, and examines the relation between income growth, inequality and poverty of the households. This analysis relies on panel data from the Baseline Survey of P135-II conducted in 2007 and the Endline Survey of P135-II conducted in 2012.

This chapter is structured into five parts. The second part examines poverty status and inequality pattern of households in P135-II communes through decomposition of change in poverty into change due to growth and change in inequality. The third part examines characteristics of the poor including living conditions, livelihood and assets of households. The forth part analyses poverty dynamics of ethnic minorities and estimates the determinants of persistent and transient poverty. The fifth part concludes.

4.1 Poverty and inequality of ethnic minorities

4.1.1 Poverty trend

The most widely used poverty measures are three Foster-Greer-Thorbecke (FGT) poverty indexes. In this study, we examine poverty of households in the poorest communes using the three FGT indexes[7]. Table 4.1 presents poverty indexes of households in P135-II communes. Per capita income of households in these poorest communes increased by 20 percent from 6,039 to 7,295 thousand VND/year/person during 2007-2012. This ratio is lower than the income growth rate of the national level. According to VHLSS 2006 and 2010, real per capita income of households increased by around 50 percent during the period 2006-2010 and per capita income of household in 2010 is 16,644 thousand VND.

Among the households in P135-II areas, Kinh households have substantially higher income than those of the ethnic minorities. Huge income gap between the Kinh and ethnic minorities is found in most studies on poverty in Vietnam (e.g., World Bank, 2012). Except Thai and Muong, the other ethnic minorities in P135-II experienced an increase in per capita income. In 2010, H'Mong and Thai are ethnic minority groups who had the lowest per capita income.

Table 4. 1: Per capita income and the poverty rate of households in P135-II communes

Groups	Per capita income (thousand VND)			Poverty rate (%)		
	2007	2012	Change	2007	2012	Change
All households	6,039.2***	7,294.6***	1,255.4***	57.5***	49.2***	-8.2***
	180.3	193.5	264.5	1.3	1.3	1.8
Ethnicity						
Kinh	9,273.6***	11,377.7***	2,104.2**	34.3***	32.0***	-2.3
	659.4	716.2	973.1	3.7	4.0	5.4
Ethnic minorities	5,210.4***	6,293.7***	1,083.3***	63.4***	53.5***	-10.0***
	140.3	169.7	220.2	1.3	1.3	1.8
Ethnic minority groups						
Tày	5,915.5***	7,353.4***	1,437.9***	57.9***	43.7***	-14.3***
	270.9	373.7	461.2	2.8	2.9	4.0
Thái	5,180.7***	5,101.5***	-79.2	59.6***	62.9***	3.3
	267.0	288.8	393.0	3.3	3.3	4.6
Mường	6,787.1***	7,455.8***	668.6	48.3***	48.3***	0.0
	431.2	529.4	682.1	3.9	3.9	5.5
Nùng	5,800.8***	7,722.7***	1,921.9**	59.8***	41.5***	-18.3***
	510.9	611.9	796.1	4.4	4.3	6.2

[7] Refer to Appendix for detailed explanation of FGT indexes

Groups	Per capita income (thousand VND)			Poverty rate (%)		
	2007	2012	Change	2007	2012	Change
H'Mông	3,305.5***	5,001.3***	1,695.9***	83.5***	59.2***	-24.3***
	96.2	191.9	214.6	2.1	3.0	3.6
Dao	5,021.8***	5,775.7***	753.9**	63.0***	55.9***	-7.1*
	195.1	261.8	326.3	2.9	3.1	4.2
Other ethnic minorities	5,863.0***	7,110.9***	1,247.9**	58.1***	50.7***	-7.3*
	406.4	487.3	634.3	3.0	2.8	4.1
Gender of household head						
Male	5,762.8***	7,024.2***	1,261.4***	58.8***	50.5***	-8.4***
	141.7	175.3	225.4	1.3	1.3	1.9
Female	9,101.2***	10,118.7***	1,017.6	42.8***	36.6***	-6.1
	1,362.8	1,112.9	1,758.2	4.5	4.3	6.2
Age of household head						
Below 25	5,890.5***	6,666.7***	776.1	71.7***	56.9***	-14.7**
	1,659.4	1,066.8	1,971.1	5.0	4.8	6.9
26-35	5,035.0***	6,283.7***	1,248.7***	65.1***	57.4***	-7.7***
	171.1	272.4	321.6	2.1	2.1	3.0
35-45	5,684.3***	7,307.7***	1,623.4***	56.2***	45.3***	-10.9***
	206.9	271.1	341.0	2.2	2.2	3.2
46-60	7,445.3***	8,740.7***	1,295.4**	48.5***	40.2***	-8.4**
	421.2	479.7	638.2	2.8	2.6	3.8
Above 60	6,323.1***	7,005.4***	682.3	55.4***	57.1***	1.7
	489.7	745.9	891.4	5.4	5.2	7.5
Regions						
North	5,083.7***	6,551.1***	1,467.3***	65.2***	50.7***	-14.6***
	118.4	152.3	192.9	1.3	1.4	1.9
Central	6,131.5***	7,283.9***	1,152.5***	56.1***	54.3***	-1.8
	233.9	331.4	405.5	2.0	2.0	2.9
South	8,712.6***	9,608.3***	895.7	36.7***	38.2***	1.5
	776.2	824.6	1,131.2	4.7	4.7	6.6

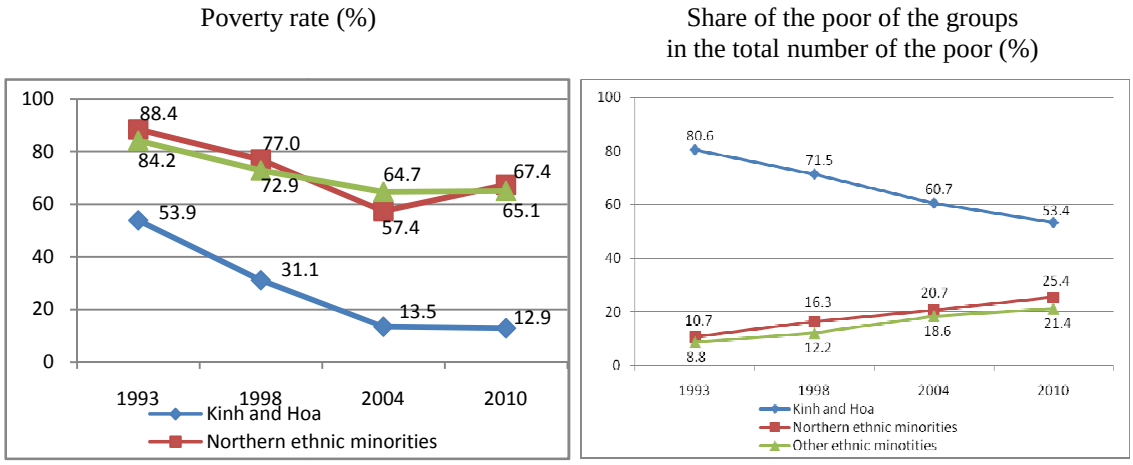
Note: significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Income per capita is measured in the price of January 2012.
Standard errors in the second line below the estates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

In this study, poverty is defined based on per capita income and income poverty line. The income poverty line is 2,400 thousand VND/person/year in the price of 2006. This is the national poverty line set up by the government for the period 2006-2010. We adjust this poverty line to the price of 2007 and 2012. Table 4.1 shows that poverty rate decreased from 57.5 percent to 49.2 percent during the period 2007-2012. Poverty mainly decreased among ethnic minorities. The Kinh has much lower poverty incidence, but its poverty rate does not increase substantially over the years. This finding is different from the national trends, which shows Kinh households experiencing a faster rate of poverty reduction during the last decade than ethnic minorities; and as a result the ethnic minorities account a larger proportion of the poor (Figure 4.1). Possibly, most of poverty

reduction programs are mainly targeted at the ethnic minorities in difficult communes; therefore the ethnic minorities can benefit more from these programs than the Kinh. Nung, H'Mong and Tay groups experience the highest poverty reduction rates during the past five years. *By regions*, households in Northern Mountain are poorer than those in the Central and the South. There are more poor ethnic minorities such as Nung, Tay and H'Mong in Northern Mountain. However, poverty was reduced faster in the Northern region than the Southern region.

Figure 4. 1: Poverty rate and the share of the poor by Kinh and ethnic minorities



Note: The poor in this figure are those who have per capita expenditure below the expenditure poverty rate. The nominal expenditure poverty lines in 1993, 1998, 2004 and 2010 are 1160, 1790, 2077 and 7836 thousand VND/person/year.

Source: Analysis Team calculations based onVLSS 1993, 1998, and VHLSS 2004, 2010.

While poverty incidence simply demonstrates rate of people who live below a poverty line in a given population, poverty gap index measures the intensity of poverty. Poverty gap and severity indexes[8], presented in Table 4.2 give a more in-depth poverty picture of the targeted population. Table 4.2 indicates slight changes in these poverty indexes during the period 2007-2012 except for significant increases in poverty gap and poverty severity indexes of Thai and Muong households while H'Mong experienced significant reduction in all poverty indexes. This phenomenon indicates that for Thai and Muong households, poverty

[8] Poverty gap index measures the extent to which individuals fall below the poverty line (the poverty gap) as a proportion of the poverty line. Poverty severity index is the squared poverty gap index, which averages the squares of the poverty gaps relative to poverty line (Introduction to Poverty Analysis, WB 2005).

becomes more severe and poor households live even lower than the poverty line. The income gap between poor H'Mong households and the poverty line is narrowed by 2012. *By ethnicity*, there is a large variation in the poverty gap and poverty severity among ethnic minorities. *By regions*, poverty gap and severity decreased for Northern region, but increased for Central region. These indexes imply that poverty is more severe for Central households while becomes less severe for Northern households.

Table 4. 2: Poverty gap and severity indexes by demographics and regions

Groups	Poverty gap index (%)			Poverty severity index (%)		
	2007	2012	Change	2007	2012	Change
All households	23.5***	22.4***	-1.1	12.5***	13.4***	0.9
	0.7	0.8	1.0	0.4	0.6	0.8
Ethnicity						
Kinh	11.7***	13.3***	1.5	6.0***	8.0***	2.1
	1.5	2.3	2.7	0.8	2.0	2.2
Ethnic minorities	26.5***	24.6***	-1.9*	14.2***	14.7***	0.5
	0.7	0.8	1.1	0.5	0.6	0.8
Ethnic minority groups						
Tày	22.3***	18.1***	-4.3*	11.5***	10.2***	-1.3
	1.5	1.6	2.2	1.1	1.2	1.6
Thái	26.0***	32.1***	6.1**	14.2***	20.9***	6.7***
	1.9	2.2	2.9	1.4	1.7	2.2
Mường	16.8***	23.5***	6.7**	7.4***	15.2***	7.9***
	1.6	2.4	2.8	0.8	1.9	2.1
Nùng	22.2***	17.8***	-4.4	10.9***	9.9***	-1.0
	2.1	2.0	2.9	1.4	1.3	1.9
H'Mông	37.8***	26.0***	-11.8***	20.4***	14.5***	-5.9***
	1.4	1.7	2.2	1.1	1.2	1.6
Dao	22.7***	24.0***	1.2	11.4***	13.5***	2.1
	1.5	1.7	2.2	1.0	1.2	1.6
Other ethnic minorities	24.9***	23.8***	-1.1	14.0***	14.4***	0.4
	1.6	1.8	2.4	1.1	1.6	1.9
Gender of household head						
Male	23.9***	23.0***	-0.9	12.7***	13.8***	1.2
	0.7	0.8	1.1	0.5	0.7	0.8
Female	18.5***	15.3***	-3.3	10.5***	8.7***	-1.8
	2.4	1.9	3.1	1.6	1.2	2.0
Age of household head						
Below 25	30.0***	26.4***	-3.5	15.8***	15.1***	-0.8
	2.6	2.6	3.7	1.7	1.7	2.4
26-35	27.2***	25.5***	-1.7	14.5***	15.4***	0.9
	1.2	1.4	1.9	0.8	1.3	1.5
35-45	23.8***	21.0***	-2.7	12.8***	12.3***	-0.5
	1.2	1.2	1.7	0.8	0.8	1.1
46-60	18.5***	17.8***	-0.8	9.6***	10.7***	1.1
	1.3	1.3	1.8	0.8	1.0	1.3
Above 60	21.0***	27.6***	6.5	11.5***	17.8***	6.3
	2.6	4.7	5.4	2.1	4.8	5.2
Regions						

Groups	Poverty gap index (%)			Poverty severity index (%)		
	2007	2012	Change	2007	2012	Change
North	27.1***	22.0***	-5.1***	14.4***	12.5***	-1.9**
	0.8	0.8	1.1	0.5	0.6	0.8
Central	23.5***	27.3***	3.8**	12.7***	17.5***	4.7***
	1.1	1.3	1.7	0.8	1.0	1.3
South	12.9***	17.0***	4.0	6.8***	10.8***	4.0
	1.9	3.0	3.6	1.2	2.7	2.9

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%. Standard errors in the second line below the estimates.*

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

There is a small change in distribution of the poor by different ethnic minority groups. The share of Thai households in the total poor increased, while the share of H'Mong households decreased during the period 2007-2012.

Table 4. 3: Share of the poor

Groups	Share of the poor (%)			Share of the population (%)		
	2007	2012	Change	2007	2012	Change
Kinh	12.2	12.8	0.6	20.4	19.7	-0.7
	1.54	1.85	2.41	1.30	1.27	1.82
Ethnic minorities	87.8	87.2	-0.6	79.6	80.3	0.7
	1.54	1.85	2.41	1.30	1.27	1.82
Ethnic minority groups						
Tày	10.1	9.0	-1.1	10.0	10.2	0.2
	0.78	0.79	1.11	0.58	0.59	0.82
Thái	13.3	16.3	3.0*	12.8	12.7	-0.1
	1.13	1.35	1.76	0.82	0.83	1.17
Mường	5.7	6.6	0.9	6.8	6.8	0.0
	0.62	0.71	0.94	0.52	0.52	0.74
Nùng	3.7	3.1	-0.6	3.5	3.6	0.1
	0.41	0.41	0.58	0.32	0.32	0.45
H'Môn g	24.8	21.2	-3.6*	17.1	17.6	0.6
	1.41	1.45	2.02	0.93	0.96	1.33
Dao	8.0	8.3	0.3	7.3	7.4	0.0
	0.64	0.71	0.95	0.46	0.46	0.65
Other ethnic minorities	22.3	22.7	0.4	22.1	22.0	-0.1
	1.43	1.50	2.07	1.14	1.08	1.57
Regions						
North	63.9	58.8	-5.1*	56.3	57.1	0.8
	1.76	1.93	2.61	1.35	1.33	1.90
Central	23.8	26.9	3.1*	24.4	24.4	0.0
	1.22	1.44	1.88	0.95	0.95	1.34
South	12.3	14.3	2.0	19.3	18.5	-0.8
	1.83	2.08	2.77	1.50	1.43	2.08
Total	100.0	100.0	0.0	100.0	100.0	0.0
	0.00	0.00	0.00	0.00	0.00	0.00

Groups	Share of the poor (%)			Share of the population (%)		
	2007	2012	Change	2007	2012	Change

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

4.1.2 Inequality analysis

Gini coefficient

Poverty gap index and poverty severity index overlook inequality factor among the poor. These indexes do not capture differences in the severity of poverty amongst the poor. Therefore, Gini coefficient[9] and generalized entropy index are used in this part to measure level of inequality among targeted households. Table 4.4 presents the estimates of Gini index and ratios of different percentiles of per capita income distribution. Gini index (measured in 100) increases from 43 in 2007 to 47 in 2012. Accordingly, the 2012 Lorenz curve moves further from the diagonal line as compared to 2007 Lorenz curve (Figure 4.2). The ratio of the $90^{th}/10^{th}$ income percentile increased from 7.2 to 10.3. This situation implies that income inequality among targeted households intensifies in 2012. As Gini index increases from 2007 to 2012 for every ethnic group, inequality within Kinh households as well as within ethnic minority households also increases over the period 207 – 2012.

Table 4. 4: Inequality in per-capita income distribution

	Bottom half of the Distribution		Upper half of the Distribution		Interquartile Range	Tails	
	p25/p10	p50/p25	p75/p50	p90/p75	p75/p25	p90/p10	Gini
Total							
2007	1.51	1.64	1.64	1.78	2.68	7.22	43.00
	0.04	0.03	0.04	0.08	0.09	0.43	1.45
2012	1.76	1.88	1.81	1.73	3.40	10.34	47.03
	0.07	0.05	0.05	0.06	0.12	0.59	1.21
Kinh							
2007	1.79	1.37	1.93	1.78	2.64	8.38	42.77
	0.11	0.10	0.14	0.14	0.28	1.04	3.07
2012	1.89	1.82	1.90	1.73	3.45	11.25	45.43
	0.24	0.20	0.15	0.14	0.35	2.11	2.93
Ethnic minorities							
2007	1.46	1.60	1.62	1.55	2.58	5.84	40.30

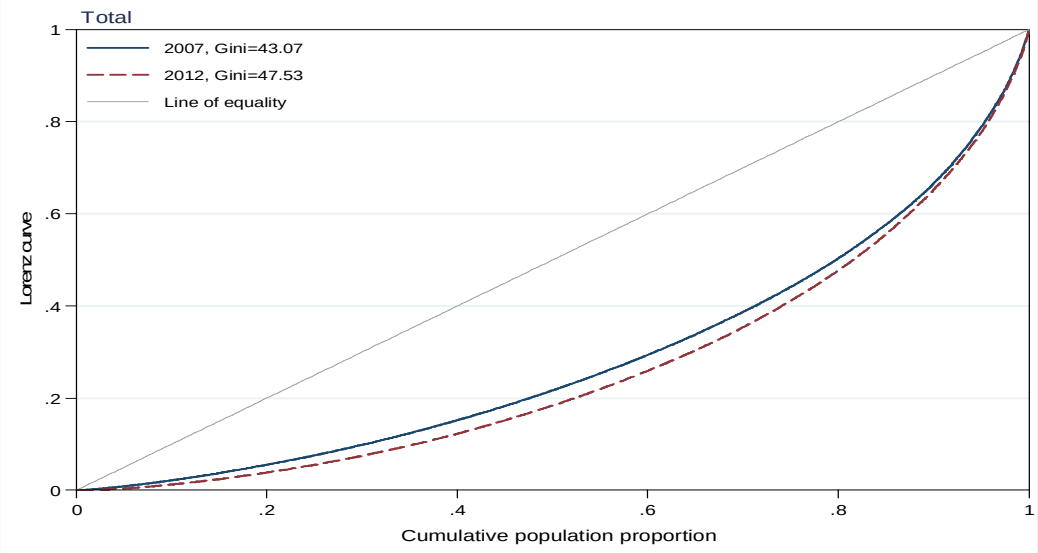
[9] Refer to Appendix for detailed explanation of Gini coefficient

	Bottom half of the Distribution		Upper half of the Distribution		Interquartile Range	Tails	
	p25/p10	p50/p25	p75/p50	p90/p75	p75/p25	p90/p10	Gini
2012	0.04	0.03	0.04	0.04	0.08	0.23	1.38
	1.72	1.83	1.72	1.68	3.16	9.14	44.91
	0.06	0.05	0.05	0.05	0.11	0.46	1.30

Note: Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

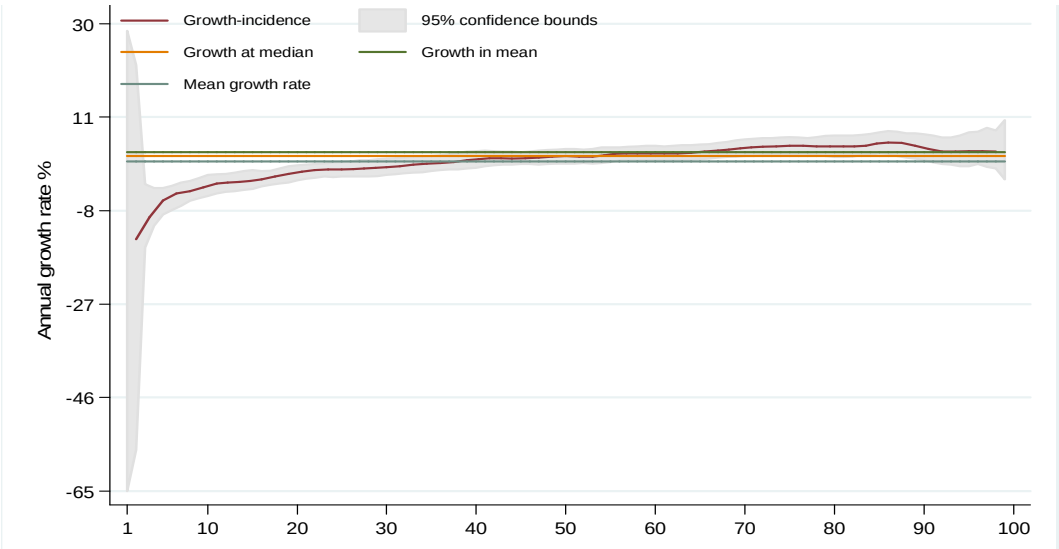
Figure 4. 2: Lorenz Curve



Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Figure 4.3 presents income growth of all the households with annual growth rate of households at different percentiles of per capita income. Households at lower levels of income experienced lower growth rate of income than households at higher levels of income. As a result, income inequality among households in P135-II increased overtime.

Figure 4. 3: Income growth-incidence curve of all households



Note: the horizontal axis is the percentiles of per capita income

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Generalized entropy measures

Apart from Gini index, three generalized entropy indexes are employed in this study to measure income inequality. An advantage of the generalized entropy measures is that the total inequality can be decomposed into within-group inequality and between-group inequality components. Similar to Gini index, the generalized entropy indexes increased over the period 2007-2012 for the whole sample, and for all ethnic groups. Table 4.5 shows decomposition of the total inequality into inequality within Kinh group and within ethnic minority households as well as inequality between Kinh households and ethnic minority households. Within-group inequality component accounts for a larger proportion of the total inequality. Between-group inequality component accounts for less than 10 percent of the total inequality. This phenomenon indicates that there is high level of inequality within Kinh group and within ethnic minority groups while inequality between the Kinh and the ethnic minorities in difficult communes of P135-II is rather low.

Table 4. 5: Decomposition of inequality by Kinh and ethnic minorities

	2007			2012		
	GE(0)	GE(1)	GE(2)	GE(0)	GE(1)	GE(2)
Total	31.1	32.8	46.6	40.0	38.6	53.8
Ethnic minorities	27.2	28.9	41.2	36.5	35.2	48.7
Kinh	31.4	30.7	38.4	37.8	34.7	42.8
Within-group inequality	28.1	29.5	42.9	36.7	35.0	49.8
Between-group inequality	3.0	3.3	3.7	3.3	3.6	4.1
Between as a share of total	9.7	10.1	7.9	8.1	9.3	7.5

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Table 4.6 decomposes the total inequality into within-region inequality and between-region inequality. Within-region inequality accounts for a larger proportion of the total inequality, while between-region inequality component accounts for a small fraction of the total inequality.

Table 4. 6: Decomposition of inequality by regions

	2007			2012		
	GE(0)	GE(1)	GE(2)	GE(0)	GE(1)	GE(2)
Total	31.1	32.8	46.6	40.0	38.6	53.8
North	26.8	29.0	41.8	33.8	33.2	45.8
Central	31.1	32.1	45.7	50.6	47.7	69.5
South	31.6	31.1	39.3	38.2	35.6	44.3
Within-group inequality	28.8	30.4	44.0	38.7	37.3	52.4
Between-group inequality	2.3	2.4	2.6	1.3	1.3	1.4
Between as a share of total	7.3	7.4	5.6	3.2	3.5	2.7

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Decomposition of change in poverty

Since inequality increased over the period 2007-2012, the effect of income growth on poverty reduction will be mitigated. The decomposition of poverty changes into "growth", and "redistribution" components can shed light on the relation between poverty and important factors that contribute significantly to poverty reduction such as growth and redistribution. Table 4.7 presents the decomposition of change in poverty into three components[10]: growth, redistribution, and residual. The growth component of change in poverty measured from 2007 to 2012 is defined as the change in poverty due to change in mean income between 2007 and 2012, holding income distribution (the Lorenz curve) constant. The redistribution component is the change in poverty due to change in income distribution from 2007 to 2012, while keeping the mean income fixed at the base year. The difference between the total change in poverty and the changes in poverty due to the income growth and income redistribution is called residual.

Table 4. 7: Growth and redistribution decomposition of poverty changes

	Incidence of poverty (%)			Change in incidence of poverty		
	2007	2012	Actual change	Growth	Redistribution	Residual
Total	57.50	49.25	-8.25	-10.56	0.49	1.83
Ethnic minorities	63.45	53.48	-9.96	-10.38	-1.02	1.44

[10] Decomposition method comes from Datt and Ravallion (1991)

Kinh	34.29	31.98	-2.31	-12.04	5.77	3.96

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Table 4.7 shows that poverty reduction in P135-II areas results from income growth. Within ethnic minority households and within Kinh households, income growth contributed mainly to poverty reduction, but income distribution had opposite effects on poverty. As total inequality within ethnic minority households increased (see Table 4.4, 4.5, 4.6), income redistribution did have a negative effect on poverty incidence despite its being a small effect. For Kinh group, the increase in unequal redistribution of income results into an increase in poverty rate.

Elasticity of poverty rate

Tables 4.8 and 4.9 present the elasticity of the poverty rate with respect to mean income and inequality (measured by the Gini coefficient), respectively. The elasticity to income is computed by shifting per capita income of all the households by a fixed amount and estimating the new poverty indexes. The elasticity is estimated using the percentage change in poverty indexes and the percentage change in mean income. The elasticity to Gini is estimated by increasing per capita incomes of all the households by the same fixed transferred income level, then normalizing incomes to bring the new mean level of income to the old mean level (tax on incomes).

Table 4. 8: Elasticity of poverty with respect to income

	Poverty Headcount Rate (P0)			Poverty Gap (P1)			Squared Poverty Gap (P2)		
	2007	2012	change	2007	2012	change	2007	2012	change
Ethnic minorities	-0.79	-0.89	-0.10	-1.30	-1.08	0.22	-1.58	-1.22	0.36
Kinh	-2.56	-0.81	1.74	-1.62	-1.28	0.35	-1.69	-1.16	0.53
Total	-1.00	-0.88	0.12	-1.33	-1.10	0.23	-1.59	-1.22	0.37

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Table 4.8 shows that poverty is relatively elastic to income growth. However, elasticity tends to decrease overtime, which means that to reduce the same percentage of poverty index, income needs to be increased more strongly than before. For 2012, elasticity of poverty gap and severity is larger than elasticity of

poverty rate, which indicates that reducing poverty gap and poverty severity requires higher income growth than reducing poverty rate.

Table 4. 9: Elasticity of poverty with respect to the inequality

	Poverty Headcount Rate (P0)			Poverty Gap (P1)			Squared Poverty Gap (P2)		
	2007	2012	change	2007	2012	change	2007	2012	change
Ethnic minorities	0.05	0.31	0.27	1.18	1.64	0.46	2.14	2.76	0.62
Kinh	2.65	2.80	0.15	3.32	3.80	0.49	4.65	5.21	0.56
Total	0.27	0.61	0.33	1.59	2.08	0.49	2.70	3.32	0.62

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Elasticity of poverty incidence with respect to inequality is relatively small, but increased quickly from 0.27 in 2007 to 0.61 in 2012. Elasticity of poverty gap and poverty severity with respect to inequality is rather high. For 2012, a one-percent decrease in Gini would lead to 2.1 percent reduction in poverty gap index and 3.3 percent reduction in poverty severity index. This finding suggests that income redistribution plays an extremely important role in decreasing poverty gap and poverty severity.

4.2 Characteristics of ethnic minorities

4.2.1 Living conditions

Housing condition

The living conditions are assessed through the study of housing condition, latrine, and source of water. Per capita living area increased from 13 m^2 to 18 m^2 during the period 2007-2012 for beneficiary groups, indicating improvement in living areas across ethnic groups and across regions. The proportion of households living in solid houses also increased. Except H'Mong group, other ethnic minority groups experience an increase in proportion of households living in solid houses.

Table 4. 10: Housing condition of households

Groups	Per capita living area (m2)			% households living in a solid house			% households living in a semi-solid house		
	2007	2012	Change	2007	2012	Change	2007	2012	Change
Total	13.0***	18.0***	5.0***	6.7***	15.7***	8.9***	53.4***	60.0***	6.6***
	0.2	0.5	0.5	0.6	0.9	1.1	1.3	1.3	1.8
Poor/Non-poor									
Poor	10.7***	15.2***	4.5***	4.4***	10.4***	6.0***	50.4***	62.5***	12.2***
	0.2	0.4	0.4	0.6	0.9	1.1	1.6	1.6	2.3
Non-poor	15.6***	21.2***	5.6***	9.4***	21.6***	12.2***	56.8***	57.1***	0.3
	0.4	0.9	1.0	1.2	1.6	2.0	2.1	2.1	2.9
Ethnicity									
Kinh	15.1***	20.6***	5.5***	10.1***	25.5***	15.3***	45.4***	47.9***	2.5
	0.8	1.0	1.3	1.8	2.5	3.1	3.2	3.3	4.6
Ethnic minorities	12.3***	17.2***	4.9***	5.7***	12.6***	6.9***	55.9***	63.7***	7.9***
	0.2	0.5	0.6	0.7	0.9	1.1	1.3	1.3	1.9
Ethnic minority groups									
Tày	14.8***	21.2***	6.4***	6.4***	9.3***	2.9	55.4***	80.7***	25.2***
	0.5	0.9	1.1	1.5	1.7	2.3	2.8	2.2	3.6
Thái	12.2***	15.6***	3.4***	8.9***	13.9***	5.0*	67.2***	71.1***	3.9
	0.4	0.6	0.7	1.9	2.2	2.9	3.0	2.9	4.2
Mường	13.5***	19.8***	6.4***	9.2***	23.4***	14.3***	52.8***	61.3***	8.5
	0.6	1.2	1.4	2.3	3.2	4.0	3.7	3.6	5.2
Nùng	14.6***	21.8***	7.2***	5.8**	16.2***	10.3**	71.5***	73.0***	1.4
	0.6	1.1	1.2	2.4	4.0	4.6	4.5	4.5	6.4
H'Mông	10.1***	14.2***	4.2***	2.8**	0.4**	-2.4**	62.8***	57.7***	-5.0
	0.3	0.5	0.6	1.1	0.2	1.1	2.8	2.7	3.9
Dao	13.7***	18.0***	4.3***	4.7***	5.2***	0.6	64.1***	84.6***	20.5***
	0.5	0.7	0.8	1.2	1.3	1.8	2.8	1.9	3.4
Others	11.5***	16.1***	4.6***	4.5***	19.1***	14.6***	41.7***	48.5***	6.8
	0.5	1.6	1.7	1.5	2.3	2.7	2.8	3.0	4.1
Regions									
North	12.4***	17.9***	5.6***	7.5***	8.3***	0.7	58.4***	72.6***	14.2***
	0.2	0.4	0.4	0.8	0.8	1.1	1.3	1.2	1.8
Central	12.5***	16.1***	3.6***	7.7***	29.4***	21.6***	62.9***	52.4***	-10.5***
	0.4	0.6	0.7	1.2	1.7	2.1	1.9	1.9	2.7
South	15.2***	20.5***	5.4***	3.7**	18.1***	14.4***	30.2***	37.7***	7.5
	0.9	1.8	2.0	1.9	3.0	3.5	3.4	4.0	5.3

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%. Standard errors in the second line below the estimates.*

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Water and sanitation

Although a large number of programs have been designed to improve water access and sanitation for the ethnic minorities, improvement in the access and the current access to clean water and sanitary latrines remain limited in P135-II areas. Only 9.1 percent, 7.4 percent and 15.5 percent of households had access to flush toilet, suilabh toilet, and double septic tank toilet, respectively. Nearly 70 percent

of households do not have access to sanitary latrines. For ethnic minority groups such as H'Mong, the proportion of households with access to sanitary latrines is extremely small, lower than 10 percent.

Table 4. 11: Latrine types

Groups	% households having flush toilet			% households having suilabh toilet			% households having double septic tank toilet		
	2007	2012	Change	2007	2012	Change	2007	2012	Change
Total	3.7***	9.1***	5.4***	2.0***	7.4***	5.3***	5.4***	15.5***	10.2***
	0.6	0.7	0.9	0.4	0.8	0.9	0.5	0.9	1.0
Poor/Non-poor									
Poor	0.8**	4.9***	4.2***	1.3***	5.6***	4.3***	3.0***	14.5***	11.5***
	0.4	0.6	0.7	0.4	0.9	1.0	0.6	1.2	1.3
Non-poor	7.0***	13.8***	6.8***	2.9***	9.3***	6.5***	8.0***	16.7***	8.7***
	1.3	1.2	1.8	0.6	1.4	1.5	0.9	1.4	1.7
Ethnicity									
Kinh	7.6***	16.4***	8.8***	4.9***	10.1***	5.2**	15.5***	22.2***	6.7**
	1.9	1.9	2.7	1.2	2.1	2.4	1.9	2.3	3.0
Ethnic minorities	2.5***	6.9***	4.4***	1.1***	6.5***	5.4***	2.2***	13.5***	11.2***
	0.6	0.7	0.9	0.3	0.8	0.9	0.4	1.0	1.0
Ethnic minority groups									
Tày	3.7***	10.0***	6.3***	0.3	6.9***	6.6***	2.6**	19.5***	16.8***
	1.2	1.7	2.1	0.3	1.4	1.4	1.1	2.3	2.5
Thái	0.3	8.8***	8.5***	0.8*	6.0***	5.2***	4.7***	12.1***	7.4***
	0.3	1.6	1.6	0.5	1.6	1.7	1.5	2.3	2.7
Mường	0.8	9.0***	8.1***	1.8*	5.5***	3.7	7.0***	28.1***	21.1***
	0.7	1.9	2.0	1.0	2.1	2.3	2.0	3.4	3.9
Nùng	0.8	7.2**	6.4**	1.2	5.3***	4.1**	1.8	14.2***	12.3***
	0.8	2.9	3.0	1.0	1.6	1.8	1.5	3.4	3.7
H'Mông	0.0***	0.7*	0.7*	1.8*	0.9***	-0.9	0.0***	0.9***	0.9***
	0.0	0.4	0.4	1.1	0.3	1.1	0.0	0.3	0.3
Dao	2.7**	8.5***	5.8***	1.8**	4.4***	2.6	2.4**	5.3***	2.9*
	1.1	1.8	2.1	0.9	1.3	1.6	1.0	1.1	1.5
Others	5.5***	6.9***	1.5	0.8	11.3***	10.5***	0.4**	16.4***	16.0***
	1.9	1.6	2.5	0.5	2.4	2.4	0.2	2.4	2.4
Regions									
North	1.5***	7.0***	5.5***	1.4***	3.2***	1.8***	4.4***	15.9***	11.4***
	0.3	0.7	0.7	0.4	0.5	0.6	0.6	1.0	1.2
Central	2.4***	11.9***	9.5***	1.4***	7.1***	5.7***	10.5***	18.9***	8.4***
	0.6	1.2	1.4	0.4	1.0	1.1	1.5	1.7	2.2
South	10.6***	11.2***	0.6	4.4***	17.7***	13.4***	1.8**	10.9***	9.1***
	2.7	2.2	3.5	1.3	3.2	3.5	0.7	2.7	2.8

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Clean water is also a serious problem with households in the poorest communes. Clean water is a crucial factor for health, especially child health. Unclean water can cause many problems to health. WHO (2004) mentions the adverse affects of

drinking contaminated water which resulted in thousands of deaths every day, mostly in under-5 children in developing countries. UNDP (2006) claims that unsafe water and shortage of basic sanitation caused 80 percent of diseases. Yet, only 13 percent of ethnic minority households in P135-II communes have tap water, while this corresponding figure for the national level is 27 percent for 2010 (according to the 2012 VHLSS). The proportion of households having tap water even slightly decreased over the period 2007 – 2012. The proportion of households with solid well increased but with a small growth rate.

Table 4. 12: Drinking water sources

Groups	% households having tap water			% households having water from solid well			% households having water from temporary well		
	2007	2012	Change	2007	2012	Change	2007	2012	Change
Total	15.0***	13.3***	-1.7	47.9***	52.2***	4.2**	26.4***	28.4***	2.0
	1.2	1.1	1.6	1.3	1.3	1.8	1.0	1.0	1.4
Poor/Non-poor									
Poor	14.7***	12.8***	-1.9	41.0***	44.1***	3.0	31.6***	35.4***	3.8*
	1.4	1.4	2.0	1.6	1.6	2.2	1.4	1.4	2.0
Non-poor	15.3***	13.8***	-1.5	55.7***	61.2***	5.6**	20.5***	20.5***	0.0
	1.9	1.7	2.5	2.0	1.9	2.8	1.3	1.3	1.8
Ethnicity									
Kinh	23.1***	21.7***	-1.4	63.9***	68.6***	4.7	10.4***	9.1***	-1.3
	3.4	3.1	4.6	3.4	3.2	4.7	1.4	1.3	1.9
Ethnic minorities	12.4***	10.6***	-1.8	42.9***	47.0***	4.1**	31.4***	34.4***	3.1*
	1.1	1.0	1.5	1.3	1.3	1.8	1.1	1.2	1.6
Ethnic minority groups									
Tày	3.2***	3.1***	-0.1	52.3***	64.6***	12.2***	39.4***	27.3***	-12.1***
	1.2	1.1	1.6	2.8	2.6	3.8	2.7	2.4	3.6
Thái	9.0***	1.1*	-7.9***	37.2***	54.2***	17.0***	29.0***	37.2***	8.2*
	1.8	0.7	1.9	3.0	3.2	4.4	3.0	3.1	4.3
Mường	2.2**	10.5***	8.3**	67.4***	47.4***	-20.0***	18.5***	34.8***	16.3***
	1.0	3.2	3.3	3.5	3.7	5.1	2.7	3.5	4.4
Nùng	7.7***	8.9***	1.2	47.4***	54.9***	7.5	36.3***	29.6***	-6.7
	2.1	2.8	3.5	4.6	4.5	6.4	4.3	3.8	5.7
H'Mông	21.9***	16.2***	-5.7**	25.4***	24.0***	-1.3	47.3***	53.3***	6.0
	2.0	1.6	2.6	2.1	2.2	3.1	2.8	2.7	3.9
Dao	5.0***	3.2***	-1.8	40.6***	33.5***	-7.1*	46.4***	57.2***	10.8***
	1.2	0.8	1.5	2.9	2.9	4.1	3.0	2.9	4.2
Others	19.2***	18.4***	-0.9	43.9***	51.9***	8.0*	17.8***	18.3***	0.5
	3.1	2.9	4.2	3.1	3.1	4.3	1.7	1.7	2.4
Regions									
North	11.5***	8.6***	-2.9***	43.2***	46.0***	2.7	36.8***	39.8***	3.0
	0.8	0.8	1.1	1.3	1.3	1.9	1.3	1.3	1.9
Central	0.9***	2.6***	1.7**	52.3***	57.3***	5.1*	25.0***	28.4***	3.5
	0.3	0.6	0.7	1.9	1.9	2.7	1.7	1.8	2.5
South	39.4***	36.8***	-2.6	54.4***	61.3***	6.9	2.7***	0.6	-2.1**
	4.3	4.1	6.0	4.3	4.2	6.0	0.9	0.5	1.0

Groups	% households having tap water			% households having water from solid well			% households having water from temporary well		
	2007	2012	Change	2007	2012	Change	2007	2012	Change

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

There is improvement in the access to electricity in P135-II communes. The proportion of households with electricity increased from 68.6 percent in 2007 to 83.6 percent in 2012. However, compared with the national figure of 98 percent households having access to electricity, electricity coverage in P135-II communes remains low. Access to electricity varies substantially across ethnic minority groups. Tay, Muong and Nung have relatively high proportions of households having electricity, while M'Mong and Dao experience much lower rates.

Table 4. 13: Boiling water and access to electricity

Groups	% households boiling water before drinking			% households having access to electricity		
	2007	2012	Change	2007	2012	Change
Total	82.2***	79.0***	-3.2*	68.6***	83.6***	15.0***
	1.2	1.2	1.8	1.1	0.7	1.4
Poor/Non-poor						
Poor	80.5***	75.7***	-4.8**	59.8***	78.6***	18.8***
	1.5	1.6	2.2	1.6	1.1	1.9
Non-poor	84.2***	82.7***	-1.5	78.4***	89.2***	10.8***
	2.1	1.9	2.8	1.6	0.9	1.9
Ethnicity						
Kinh	81.1***	79.8***	-1.2	87.7***	97.7***	10.0***
	3.3	3.2	4.6	2.9	0.7	2.9
Ethnic minorities	82.6***	78.8***	-3.8**	62.6***	79.2***	16.6***
	1.2	1.3	1.8	1.2	0.9	1.5
Ethnic minority groups						
Tày	96.8***	98.6***	1.9*	76.4***	89.6***	13.2***
	0.9	0.6	1.1	2.1	1.5	2.6
Thái	98.7***	95.1***	-3.6**	57.8***	77.0***	19.2***
	0.9	1.4	1.7	3.1	2.5	4.0
Mường	99.2***	99.2***	0.0	89.1***	99.7***	10.6***
	0.6	0.6	0.8	2.2	0.2	2.2
Nùng	94.3***	88.2***	-6.0**	76.4***	96.8***	20.5***
	1.7	2.5	3.0	3.1	1.2	3.3
H'Mông	67.5***	50.8***	-16.7***	35.1***	60.0***	24.8***
	2.6	2.8	3.8	2.7	2.6	3.7
Dao	94.3***	96.6***	2.3	40.7***	62.4***	21.7***
	1.2	1.0	1.6	3.0	2.8	4.1
Others	65.5***	64.1***	-1.4	70.8***	82.4***	11.6***
	3.3	3.2	4.6	2.6	2.0	3.3
Regions						
North	89.0***	83.5***	-5.5***	57.1***	77.3***	20.1***

Groups	% households boiling water before drinking			% households having access to electricity		
	2007	2012	Change	2007	2012	Change
	0.8	1.1	1.4	1.3	1.0	1.7
Central	90.3***	88.6***	-1.7	81.7***	87.6***	5.9***
	1.0	1.1	1.4	1.3	1.1	1.7
South	56.5***	57.2***	0.7	81.6***	94.4***	12.9***
	4.3	4.3	6.1	3.6	1.7	4.0

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Durable assets

Living standards of households in P135-II communes, for both Kinh and ethnic minorities have improved, demonstrated through the increase in durable assets (Tables 4.14 and 4.16). Around 70.9 percent of households had either landline or mobile phone in 2012. For poorest ethnic minority groups such as H'Mong and Dao, more than 50 percent of households had mobile phone. The number of households with television also increased, with nearly 70 percent of households having television by 2012.

Table 4. 14: Telephone and television

Groups	% households having a telephone			% households having a television		
	2007	2012	Change	2007	2012	Change
Total	14.0***	70.9***	56.9***	52.1***	72.7***	20.7***
	1.1	1.1	1.5	1.3	1.1	1.7
Poor/Non-poor						
Poor	4.3***	65.1***	60.8***	36.9***	65.8***	28.9***
	1.0	1.5	1.8	1.5	1.5	2.1
Non-poor	25.0***	77.4***	52.4***	69.2***	80.6***	11.4***
	1.9	1.6	2.4	1.8	1.5	2.4
Ethnicity						
Kinh	35.1***	84.0***	48.9***	77.6***	89.1***	11.5***
	3.3	2.3	4.0	2.7	1.7	3.2
Ethnic minorities	7.5***	66.9***	59.3***	44.2***	67.8***	23.5***
	0.9	1.2	1.5	1.3	1.2	1.8
Ethnic minority groups						
Tày	12.1***	77.4***	65.3***	62.6***	81.1***	18.4***
	1.8	2.3	2.9	2.6	2.1	3.4
Thái	4.3***	61.5***	57.1***	47.7***	77.7***	30.0***
	1.2	3.1	3.4	3.2	2.4	4.0
Mường	10.5***	76.9***	66.3***	68.3***	89.4***	21.0***
	2.2	3.2	3.8	3.4	2.2	4.0
Nùng	13.9***	83.9***	69.9***	54.5***	81.4***	26.9***
	4.0	3.1	5.0	4.5	3.0	5.4

Groups	% households having a telephone			% households having a television		
	2007	2012	Change	2007	2012	Change
H'Mông	1.3***	55.5***	54.2***	13.2***	39.0***	25.7***
	0.5	2.7	2.8	1.7	2.7	3.2
Dao	6.0***	81.6***	75.6***	46.1***	62.2***	16.1***
	1.4	2.2	2.6	3.0	2.8	4.1
Others	9.3***	61.0***	51.7***	42.5***	66.2***	23.7***
	2.5	2.8	3.8	3.0	2.9	4.2
Regions						
North	8.2***	70.2***	62.1***	45.7***	67.4***	21.8***
	0.7	1.2	1.4	1.3	1.2	1.8
Central	13.7***	66.9***	53.2***	56.5***	77.1***	20.7***
	1.4	1.8	2.3	1.9	1.5	2.4
South	28.8***	77.1***	48.3***	62.8***	80.9***	18.1***
	4.0	3.4	5.2	4.3	3.3	5.4

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Ownership of motorbike also increased significantly during the past five years. Specifically, the percentage of households having a motorbike increased from 43.8 percent to 66.2 percent (Table 4.15). Motorbike ownership increases across ethnic groups and across different types of households. However, the proportion of households having an electric fan just increased slightly from 44.2 percent to 48.6 percent during this period. Despite the improvement in asset ownership, H'Mong group still has the lowest percentage of households owning motorbikes and electric fans.

Table 4. 15: Motorbike and electric fan

Groups	% households having motorbike			% households having electric fan		
	2007	2012	Change	2007	2012	Change
Total	43.8***	66.2***	22.4***	44.2***	48.6***	4.4**
	1.3	1.3	1.8	1.3	1.3	1.8
Poor/Non-poor						
Poor	32.4***	60.4***	28.0***	31.5***	38.9***	7.3***
	1.5	1.6	2.2	1.5	1.6	2.2
Non-poor	56.1***	72.7***	16.6***	57.8***	59.5***	1.7
	2.1	1.9	2.8	2.0	1.9	2.8
Ethnicity						
Kinh	54.8***	71.0***	16.2***	71.5***	77.1***	5.5
	3.4	3.4	4.8	3.3	2.9	4.4
Ethnic minorities	40.3***	64.7***	24.4***	35.4***	39.6***	4.2**
	1.3	1.3	1.8	1.3	1.3	1.8
Ethnic minority groups						
Tày	49.1***	76.0***	27.0***	66.8***	53.0***	-13.8***
	2.8	2.4	3.7	2.5	2.8	3.7
Thái	42.5***	73.2***	30.7***	30.3***	41.8***	11.5***
	3.2	2.7	4.2	3.0	3.2	4.4
Mường	46.5***	70.4***	23.9***	62.7***	66.8***	4.1
	3.8	3.5	5.2	3.7	3.4	5.1

Groups	% households having motorbike			% households having electric fan		
	2007	2012	Change	2007	2012	Change
Nùng	45.4***	76.7***	31.3***	61.8***	58.4***	-3.4
	4.6	3.6	5.8	4.1	4.2	5.9
H'Môn g	21.9***	51.1***	29.2***	2.8***	7.2***	4.4***
	2.2	2.8	3.5	0.6	1.4	1.5
Dao	44.6***	70.0***	25.4***	32.8***	44.0***	11.2***
	3.0	2.7	4.0	2.9	3.0	4.2
Others	42.2***	57.4***	15.2***	29.8***	38.3***	8.5*
	3.2	3.1	4.5	3.3	3.2	4.6
Regions						
North	42.3***	67.9***	25.6***	39.4***	38.0***	-1.3
	1.3	1.3	1.8	1.3	1.3	1.8
Central	46.5***	65.6***	19.1***	45.3***	57.2***	11.9***
	2.0	1.8	2.7	2.0	1.9	2.8
South	44.4***	62.6***	18.1***	54.7***	64.5***	9.8
	4.2	4.4	6.0	4.3	4.1	6.0

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Social allowance

One of important programs that support the disadvantaged groups is cash transfers. Targeted transfers can help reduce vulnerability and protect people from falling into poverty (Alderman and Haque, 2006). Cash transfers may have persistent effects on chronic poverty if they ease liquidity constraints that inhibit the poor from investing in productive activities, generating multipliers on the cash received (Sadoulet et al. 2001; Farrington and Slater 2006; Lloyd-Sherlock 2006). In other countries, there are increasing evidences on the impact of cash transfers on poverty (Sadoulet et al. 2001; Farrington and Slater 2006; Lloyd-Sherlock 2006; Lagarde et al., 2009).

Currently, there are a number of cash transfer programs targeted at the poor, ethnic minorities and vulnerable people in Vietnam, for example Degree 67-13/2010/NĐ-CP, Decree 49/2010/NĐ-CP, Decision 82/2006/QĐ-TTg. Table 4.16 shows that the proportion of households receiving social allowances increased from 19.3 percent to 37 percent during the past five years. A larger proportion of the poor and ethnic minorities receives social allowances than the non-poor and Kinh. Although more households receive transfers, the real amount of transfers (after adjusted to inflation) did not increase substantially. In 2012, the average

amount of transfers per household is 785 thousand VND/year[11]. *By ethnicgroups*, the coverage of allowance varies significantly. Nung and Dao households have rather low proportion of receiving transfers, even lower that of Kinh households. Meanwhile, Thai and H'Mong households enjoy substantial increase in access to social allowance.

Table 4. 16: Social allowances

Groups	% households receiving social allowances			Social allowances (thousand VND)		
	2007	2012	Change	2007	2012	Change
Total	19.3***	37.0***	17.7***	662.6***	785.8***	123.2
	0.8	1.2	1.4	87.2	83.8	120.9
Poor/Non-poor						
Poor	20.8***	41.8***	21.0***	418.7***	668.3***	249.6***
	1.1	1.5	1.9	50.3	59.1	77.6
Non-poor	17.6***	31.5***	13.9***	938.0***	917.5***	-20.5
	1.2	1.7	2.1	176.5	164.7	241.4
Ethnicity						
Kinh	19.1***	31.0***	11.9***	675.2**	1,075.7***	400.6
	2.1	2.8	3.5	307.3	276.3	413.1
Ethnic minorities	19.4***	38.8***	19.5***	658.7***	695.1***	36.4
	0.8	1.2	1.5	64.3	68.2	93.7
Ethnic minority groups						
Tày	6.6***	24.9***	18.3***	520.7***	776.1***	255.3
	1.3	2.4	2.7	130.2	142.5	192.9
Thái	20.4***	53.0***	32.6***	561.3***	730.4***	169.0
	2.3	3.2	3.9	134.3	158.5	207.6
Mường	12.0***	20.1***	8.1**	760.6***	458.2***	-302.4
	2.3	2.8	3.7	215.9	100.6	237.9
Nùng	1.4*	17.7***	16.3***	178.4	271.7***	93.2
	0.9	3.5	3.6	112.7	82.0	139.2
H'Mông	10.4***	50.7***	40.3***	221.1***	545.9***	324.8***
	1.3	2.8	3.1	61.4	60.1	85.9
Dao	7.1***	19.5***	12.3***	151.1**	255.9***	104.8
	1.5	2.3	2.7	71.3	64.9	96.4
Others	39.9***	46.6***	6.6*	1,252.9***	1,019.5***	-233.3
	2.6	3.0	4.0	184.5	203.5	274.6
Regions						
North	8.5***	37.1***	28.6***	305.3***	629.2***	323.9***
	0.7	1.3	1.5	44.4	50.7	67.4
Central	53.9***	49.4***	-4.6*	1,285.0***	988.4***	-296.7
	1.9	1.9	2.7	122.4	146.6	190.9
South	5.8***	22.4***	16.6***	825.3**	935.6***	110.3
	1.4	3.2	3.5	363.0	323.2	485.5

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

[11] This amount is averaged for all households including those who do not receive any cash transfer

4.2.2 Income structure

Productive assets and income diversification plays an important role in sustainable poverty reduction. Table 4.17 shows that households in P135-II areas rely largely on agricultural income. Nearly 60 percent of total household income comes from from agricultural activities. Among farm income, crop and livestock are the main income contribution sources (Table 4.18). There is a transition from farm to non-farm activities. The share of income from wage tends to increase overtime, albeit at a low rate.

Table 4. 17: Household income structure

	Household income (thousand VND/year)			Income share (%)		
	2007	2012	Change	2007	2012	Change
Total household income	29,442.66***	34,095.74***	4,653.08***	100.00	100.00	0.00
	884.10	919.25	1,275.31			
Salary	6,402.72***	10,000.03***	3,597.31***	19.54***	23.92***	4.38***
	368.93	453.90	584.88	0.91	1.07	1.40
Agriculture, forestry and aquaculture	16,688.06***	17,464.36***	776.30	63.50***	57.47***	-6.03***
	544.95	618.14	824.00	1.04	1.15	1.55
Non-farm	2,706.65***	2,521.03***	-185.61	5.32***	4.73***	-0.59
	537.01	457.36	705.33	0.54	0.65	0.85
Others	3,645.23***	4,110.32***	465.09	11.64***	13.88***	2.24***
	260.65	232.86	349.49	0.51	0.67	0.84

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Table 4. 18: Structure of income from agriculture, forestry and aquaculture (%)

	2007	**2012**	**Change**
Agriculture, forestry and aquaculture	100.00	100.00	100.00
Cultivation development	63.85***	68.01***	4.16**
	0.78	1.65	1.82
Livestock raising	16.42***	16.27***	-0.15
	0.52	0.93	1.06
Agriculture services	0.13***	0.21***	0.08
	0.09	0.05	0.10
Forestry	15.43***	11.73***	-3.70***
	0.46	0.78	0.91
Aquaculture	4.17***	3.77**	-0.39
	0.67	1.50	1.64

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Table 4.19 examines the wage income in more detail. The proportion of households having wages (either long-term or short-term works) increased from 47.7 percent in 2007 to 53,7 percent in 2012. Kinh and non-poor households are more likely to have wages than ethnic minority and poor households. However, this gap is relatively small. Although the proportion of households having wage was rather high for most ethnic minority groups, the share of wages in total income remained low for some ethnic groups such as Tay, H'Mong, and Dao. Wages for the poor mainly come from short-term or seasonal works.

Table 4. 19: Wage income

Groups	% households having wage income			Share of wage income in total income (%)		
	2007	2012	Change	2007	2012	Change
Total	47.7***	53.7***	6.0***	19.5***	23.9***	4.4***
	1.3	1.2	1.8	0.9	1.0	1.4
Poor/Non-poor						
Poor	41.0***	51.4***	10.4***	14.9***	22.4***	7.5***
	1.7	1.6	2.3	1.1	1.4	1.8
Non-poor	55.2***	56.2***	1.0	24.9***	26.5***	1.6
	2.0	2.0	2.8	1.5	1.6	2.1
Ethnicity						
Kinh	56.5***	63.8***	7.3	27.7***	35.7***	8.0**
	3.3	3.2	4.6	2.2	2.9	3.7
Ethnic minorities	44.9***	50.5***	5.5***	17.1***	20.9***	3.7***
	1.3	1.3	1.9	1.0	1.0	1.4
Ethnic minority groups						
Tày	47.7***	46.8***	-0.9	14.4***	16.3***	1.9
	2.8	2.8	3.9	1.2	1.4	1.8
Thái	35.8***	50.4***	14.7***	11.4***	20.2***	8.8***
	3.0	3.2	4.4	1.2	1.9	2.3
Mường	59.2***	55.3***	-3.9	23.2***	25.2***	2.0
	3.6	3.7	5.1	2.1	2.3	3.1
Nùng	48.6***	47.6***	-1.0	14.2***	17.8***	3.6
	4.6	4.6	6.5	2.0	2.3	3.1
H'Mông	26.3***	44.1***	17.8***	5.4***	8.3***	2.9***
	2.7	2.8	3.9	0.7	0.7	1.0
Dao	36.9***	40.4***	3.4	8.1***	14.6***	6.5***
	2.8	2.9	4.1	0.9	1.4	1.7
Others	57.0***	58.2***	1.2	30.1***	32.4***	2.3
	2.9	2.9	4.1	2.7	2.7	3.8
Regions						
North	38.5***	46.1***	7.6***	11.2***	15.7***	4.5***
	1.3	1.3	1.9	0.5	0.7	0.9
Central	48.1***	55.8***	7.7***	19.2***	24.2***	5.0***
	1.9	1.9	2.7	1.0	1.2	1.6

Groups	% households having wage income			Share of wage income in total income (%)		
	2007	2012	Change	2007	2012	Change
South	69.6***	69.5***	-0.1	41.1***	46.4***	5.3
	3.9	3.9	5.6	3.3	3.9	5.1

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Since opportunities for long-term wage employment is limited in the poor areas, non-farm activities can be an important way to increase in productivity, income and reduce poverty. Non-farm production has been found to be an effective way to promote income and reduce poverty for rural households in developing countries (e.g. Lanjouw and Lanjouw 1995; Lanjouw 1998, Ruben and Van den Berg 2001). In Vietnam, 35 percent of households had income from non-farm activities (excluding wages) in 2010 (according the 2010 VHLSS). Yet, in P135-II communes, the proportion of households having non-farm income decreased from 23.6 percent in 2007 to 13.6 percent in 2012. The poor and ethnic minorities display an extremely low rate of non-farm production. The share of non-farm income in total income was stands at only 5 percent.

Table 4. 20: Nonfarm income (excluding wage)

Groups	% households having nonfarm income			Share of nonfarm income in total income (%)		
	2007	2012	Change	2007	2012	Change
Total	23.6***	13.6***	-10.1***	5.3***	4.7***	-0.6
	1.2	1.1	1.6	0.5	0.7	0.8
Poor/Non-poor						
Poor	15.6***	6.7***	-8.9***	2.2***	1.6***	-0.6
	1.3	1.0	1.6	0.4	0.4	0.5
Non-poor	32.6***	21.2***	-11.4***	8.9***	8.4***	-0.5
	1.9	2.0	2.8	1.0	1.3	1.6
Ethnicity						
Kinh	31.4***	28.0***	-3.4	11.3***	12.7***	1.3
	3.2	3.2	4.5	1.7	2.2	2.8
Ethnic minorities	21.2***	9.0***	-12.2***	3.5***	2.5***	-1.1*
	1.1	1.0	1.5	0.4	0.5	0.6
Ethnic minority groups						
Tày	24.2***	6.2***	-18.0***	3.8***	1.7***	-2.1**
	2.4	1.4	2.8	0.6	0.6	0.8
Thái	19.6***	9.5***	-10.1***	3.3***	1.6***	-1.7*
	2.5	1.9	3.2	0.7	0.5	0.9
Mường	19.3***	12.2***	-7.1*	3.9***	3.8***	-0.1
	3.0	2.5	4.0	0.9	1.1	1.5
Nùng	21.5***	4.1*	-17.4***	3.8***	1.5	-2.3
	3.9	2.1	4.5	1.2	1.2	1.7
H'Mông	24.7***	4.2***	-20.6***	2.1***	0.4**	-1.6***

Groups	% households having nonfarm income			Share of nonfarm income in total income (%)		
	2007	2012	Change	2007	2012	Change
	2.6	1.2	2.9	0.3	0.2	0.3
Dao	33.6***	3.6***	-30.0***	2.4***	0.8**	-1.6**
	2.9	1.3	3.2	0.7	0.3	0.8
Others	15.3***	14.6***	-0.7	4.6***	4.7***	0.1
	2.7	2.8	3.9	1.3	1.5	2.0
Regions						
North	25.9***	7.2***	-18.7***	3.5***	1.7***	-1.8***
	1.2	0.7	1.4	0.3	0.3	0.4
Central	13.0***	11.0***	-2.0	3.7***	2.9***	-0.7
	1.3	1.3	1.9	0.5	0.5	0.7
South	30.4***	31.9***	1.4	11.9***	15.0***	3.1
	4.1	4.1	5.8	2.2	2.7	3.5

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Table 4.21 present number of income sources for P135-II households, which is an indicator of income diversification. Poor households who rely mainly on farm incomes can be more vulnerable to natural and economic shocks. Having more income sources can be a strategy to reduce semi-unemployment and mitigate negative shocks. However, as the economy develops, households will move into formal sectors, and income will mainly come from wages. This phenomenon is demonstrated through a decrease in number of income sources among P135-II households from 4.3 in 2007 to 3.5 in 2012.

Table 4. 21: No. of household income sources

	2007	2012	Change
Total	4.34	3.53	-0.80
	0.03***	0.03***	0.05***
Poor/Non-Poor			
Poor	4.31	3.63	-0.68
	0.03***	0.04***	0.05***
Non-poor	4.37	3.43	-0.95
	0.06***	0.05***	0.08***
Ethnic minority			
Kinh & Hoa	4.00	3.19	-0.82
	0.09***	0.07***	0.11***
Tày	4.73	3.97	-0.75
	0.06***	0.07***	0.09***
Thái	4.82	3.73	-1.09
	0.06***	0.10***	0.12***
Mường	4.74	3.15	-1.58
	0.07***	0.09***	0.12***
Nùng	4.69	4.05	-0.64
	0.09***	0.09***	0.13***
H'Môn g	4.53	3.99	-0.54
	0.04***	0.06***	0.07***

	2007	2012	Change
Dao	4.81	3.84	-0.97
	0.06***	0.07***	0.09***
Other ethnic minorities	3.78	3.25	-0.53
	0.07***	0.07***	0.10***
Regions			
North	4.67	3.89	-0.78
	0.03***	0.03***	0.04***
Central	4.35	3.53	-0.83
	0.04***	0.05***	0.07***
South	3.49	2.65	-0.83
	0.11***	0.08***	0.14***

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Arable lands are important for income generation and productivity promotion for rural households (Lipton, 1985; Finan et al., 2005). Land areas were almost unchanged during 2007-2012. However, the average size of annual crops of the poor and Kinh households decreased. The decrease in land area for annual crops might result from the situation that Kinh households tended to move to non-farm production and business. They can also switch to perennial crops, which bring higher income than annual crops.

Compared with the Kinh, the ethnic minorities have much larger size of annual crop lands, especially for H'Mong, Dao and Thai groups since ethnic minorities remain to rely heavily on agricultural production. In addition, there are a number of programs and policies that allocate lands for ethnic minorities, e.g., Program 135 and 5-million Hectare Aforestation Programme (for a review on programs for ethnic minorities, see Pham et al., 2011). However, the perennial crop lands managed by the ethnic minorities and the poor are smaller than the Kinh and non-poor households.

Table 4.23 shows an increase in land irrigation. For all ethnic minorities as well as the poor and non-poor, the share of irrigated lands increased remarkably during the past five years.

Table 4. 22: Crop land

Groups	Annual crop land (m2)			Perennial crop land (m2)		
	2007	2012	Change	2007	2012	Change
Total	7,237.6***	6,878.6***	-359.0	1,569.4***	1,577.6***	8.2
	436.5	328.9	546.5	178.6	241.3	300.2
Poor/Non-poor						

Groups	Annual crop land (m2)			Perennial crop land (m2)		
	2007	2012	Change	2007	2012	Change
Poor	6,324.4***	6,943.7***	619.2	1,078.0***	867.3***	-210.7
	219.9	488.6	535.7	153.0	110.3	188.5
Non-poor	8,261.2***	6,805.5***	-1,455.7	2,120.3***	2,375.4***	255.2
	891.8	432.1	990.8	337.6	496.8	600.5
Ethnicity						
Kinh	5,471.9***	3,235.3***	-2,236.6	2,519.8***	2,727.9***	208.1
	1,640.9	373.0	1,682.0	600.2	912.7	1,091.8
Ethnic minorities	7,790.7***	8,019.0***	228.3	1,271.8***	1,217.6***	-54.2
	253.7	411.1	483.0	141.9	138.1	198.0
Ethnic minority groups						
Tày	4,238.8***	4,054.4***	-184.4	980.0***	2,463.0***	1,483.1**
	200.0	273.0	338.1	196.6	660.6	688.8
Thái	7,421.4***	8,608.5***	1,187.2	925.7***	544.9**	-380.8
	652.5	1,891.0	1,998.9	333.5	245.9	414.0
Mường	4,898.7***	4,715.6***	-183.1	2,572.8***	403.7***	-2,169.0***
	493.2	543.4	733.1	770.3	114.0	777.8
Nùng	4,899.5***	6,652.9***	1,753.4	2,099.9***	1,561.5***	-538.4
	333.1	1,216.7	1,259.8	651.1	563.8	860.2
H'Mông	12,012.7***	10,034.5***	-1,978.2***	612.5**	300.7***	-311.7
	451.2	506.4	678.0	253.3	104.8	274.0
Dao	9,775.8***	8,906.5***	-869.3	2,003.4***	1,767.1***	-236.3
	1,019.5	742.1	1,260.3	363.7	306.3	475.2
Others	7,926.8***	9,474.2***	1,547.5	1,194.5***	1,611.6***	417.1
	635.5	886.1	1,090.1	280.7	294.4	406.6
Regions						
North	8,330.6***	7,838.9***	-491.7	1,042.0***	1,030.9***	-11.0
	255.9	302.6	396.3	137.0	167.7	216.5
Central	5,381.6***	6,553.3***	1,171.6	2,638.7***	2,644.9***	6.1
	260.8	893.1	930.2	364.5	347.3	503.4
South	6,700.6***	4,914.1***	-1,786.5	1,629.9***	1,687.6*	57.7
	1,872.7	801.5	2,034.8	619.3	946.6	1,129.9

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Table 4. 23: Proportion of lands that are irrigated (%)

Groups	Annual crop land (%)			Perennial crop land (%)		
	2007	2012	Change	2007	2012	Change
Total	50.2***	82.1***	31.9***	29.8***	61.7***	31.9***
	1.1	0.7	1.3	2.3	2.5	3.4
Poor/Non-poor						
Poor	46.7***	80.8***	34.2***	20.4***	57.2***	36.8***
	1.4	1.0	1.7	2.9	3.7	4.7
Non-poor	54.8***	83.7***	28.9***	37.2***	65.1***	27.8***
	1.8	1.1	2.1	3.3	3.3	4.7
Ethnicity						
Kinh	63.7***	93.1***	29.3***	44.5***	69.8***	25.3***
	3.4	1.2	3.6	4.9	4.8	6.8
Ethnic minorities	47.3***	79.7***	32.4***	23.6***	58.3***	34.7***
	1.1	0.8	1.4	2.5	2.8	3.8
Ethnic minority groups						
Tày	67.7***	90.4***	22.8***	21.1***	39.8***	18.7**
	1.9	1.2	2.2	4.6	6.0	7.5
Thái	52.8***	74.1***	21.3***	30.4**	53.6***	23.2

Groups	Annual crop land (%)			Perennial crop land (%)		
	2007	2012	Change	2007	2012	Change
	2.8	2.6	3.8	13.3	10.1	16.5
Mường	64.5***	81.3***	16.8***	65.8***	95.9***	30.1***
	3.1	2.5	4.0	7.8	3.1	8.3
Nùng	49.8***	84.8***	34.9***	21.1***	43.1***	22.0*
	3.9	3.2	5.0	7.6	11.1	13.3
H'Mông	22.2***	77.1***	54.9***	17.5***	63.6***	46.1***
	1.5	1.9	2.4	6.6	8.7	10.9
Dao	44.7***	73.2***	28.5***	4.1	67.5***	63.5***
	2.0	2.2	3.0	2.5	6.7	7.2
Others	44.8***	79.8***	35.0***	18.1***	60.7***	42.7***
	3.0	1.9	3.5	4.6	4.8	6.6
Regions						
North	44.7***	77.6***	32.9***	27.8***	47.9***	20.1***
	1.1	1.0	1.5	2.8	3.5	4.5
Central	47.5***	85.6***	38.1***	31.6***	70.7***	39.1***
	1.8	1.2	2.2	4.0	3.4	5.3
South	80.8***	95.8***	15.0***	34.2***	87.2***	53.0***
	4.2	1.3	4.4	8.4	5.4	9.9

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Access to credit

In addition to programs that provide land supports for the poor, the government has launched micro-finance programs to provide preferential credit for the poor and ethnic minorities. Main micro-finance support from the government is provided through Vietnam Bank for Social Policies. The role of credit in increasing household welfare in the developing countries has been found in many empirical studies (*e.g.*, Morduch, 1995, Pitt and Khandker, 1998, Coleman, 2002). In Vietnam, several studies found positive effect of credit, both micro finance and formal sources, on household welfare and poverty reduction (e.g., Quach and Mullineux, 2007; Pham and Lensink, 2008; Nguyen, 2008).

Nearly one third of households in P135-II communes borrowed credit from Vietnam Bank for Social Policies (VBSP). The poor and ethnic minorities are more likely to borrow from VBSP than the non-poor and Kinh, because the VBSP's credit is targeted at the poor. The proportion of households who borrow from VBSP did not increase over 2007-2012. Real average level of loans (in the 2012 price) decreased from 2.8 to 2.4 million VND per households who borrow. To promote production, provision of credit might not be enough. Households should be provided with vocational training and production skills to make use of the capital.

Table 4. 24: Credit from Vietnam Bank for Social Policies (VBSP)

Groups	% households borrowing			Loan size (thousand VND)		
	2007	2012	Change	2007	2012	Change
Total	26.8***	26.1***	-0.7	2,829.0***	2,407.8***	-421.1***
	1.1	1.1	1.5	118.5	104.3	157.9
Poor/Non-poor						
Poor	28.3***	30.9***	2.6	2,772.3***	2,883.7***	111.3
	1.4	1.4	1.9	143.0	146.7	204.8
Non-poor	25.1***	20.7***	-4.4*	2,892.9***	1,874.6***	-1,018.4***
	1.7	1.7	2.4	194.0	147.8	243.8
Ethnicity						
Kinh	24.1***	20.3***	-3.8	2,922.9***	1,884.8***	-1,038.1***
	2.7	2.6	3.7	321.7	238.7	400.4
Ethnic minorities	27.6***	27.9***	0.3	2,800.2***	2,571.7***	-228.6
	1.2	1.1	1.6	119.7	113.5	164.9
Ethnic minority groups						
Tày	33.2***	27.5***	-5.7	3,735.8***	2,544.8***	-1,191.0***
	2.6	2.5	3.6	332.2	261.2	422.3
Thái	26.2***	33.4***	7.2*	2,894.9***	3,324.8***	430.0
	2.8	3.0	4.1	340.3	361.6	496.1
Mường	27.1***	23.7***	-3.4	2,669.7***	2,005.7***	-664.0
	3.3	3.0	4.5	354.6	254.5	436.0
Nùng	21.6***	29.7***	8.2	2,455.3***	2,905.0***	449.7
	3.2	4.0	5.1	405.0	449.6	604.3
H'Mông	35.6***	21.1***	-14.6***	2,867.7***	1,976.7***	-891.0***
	2.7	2.1	3.4	238.1	210.3	317.5
Dao	26.0***	23.7***	-2.3	2,731.0***	2,155.3***	-575.8
	2.6	2.5	3.6	290.4	245.9	380.3
Others	22.2***	31.8***	9.6**	2,383.4***	2,834.8***	451.3
	2.7	2.8	3.9	248.9	251.7	353.9
Regions						
North	28.7***	23.8***	-4.9***	2,837.8***	2,251.1***	-586.7***
	1.2	1.1	1.6	130.4	115.3	174.1
Central	27.4***	33.2***	5.8**	3,235.1***	3,018.5***	-216.6
	1.7	1.8	2.5	213.7	188.6	285.0
South	21.3***	23.4***	2.1	2,335.0***	2,090.5***	-244.6
	3.6	3.6	5.0	364.1	316.0	481.6

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

The non-poor and Kinh have higher borrowing rate from formal credit. Borrowing from formal credit often requires collateral but households can receive larger amount of loan. In 2012, 34 percent of households borrowed from formal credit sources. This figure for the poor and non-poor households is 27.1 and 43.2 percent, respectively. The Kinh and non-poor households have higher amount of loan than the ethnic minorities and poor groups, respectively.

Table 4. 25: Formal credit

Groups	% households borrowing			Loan size (thousand VND)		
	2007	2012	Change	2007	2012	Change
Total	22.5***	34.3***	11.8***	13,662.4*	10,038.7***	-3,623.7
	1.2	1.2	1.7	7,200.1	1,095.8	7,282.5
Poor/Non-poor						
Poor	17.8***	27.1***	9.3***	3,220.7***	5,798.6***	2,577.8***
	1.4	1.5	2.1	479.3	729.0	872.3
Non-poor	27.7***	42.3***	14.6***	25,452.8*	14,791.1***	-10,661.7
	1.9	2.0	2.8	15,313.4	2,140.8	15,459.5
Ethnicity						
Kinh	40.5***	54.0***	13.5***	47,821.9	23,814.2***	-24,007.8
	3.4	3.3	4.7	30,694.1	4,214.7	30,966.4
Ethnic minorities	16.8***	28.1***	11.3***	3,214.8***	5,723.8***	2,509.0***
	1.0	1.2	1.5	286.8	307.8	420.7
Ethnic minority groups						
Tày	26.2***	38.1***	12.0***	5,177.1***	9,279.7***	4,102.6***
	2.5	2.7	3.7	859.3	873.0	1,224.2
Thái	12.1***	34.5***	22.4***	2,379.1***	6,067.6***	3,688.6***
	2.1	3.1	3.7	492.5	658.1	821.4
Mường	40.2***	41.1***	0.9	8,429.2***	10,783.8***	2,354.6
	3.7	3.7	5.2	1,443.1	1,918.5	2,398.1
Nùng	29.6***	37.7***	8.1	4,475.1***	8,594.2***	4,119.1***
	4.0	4.5	6.0	733.1	1,304.9	1,494.8
H'Mông	5.0***	16.2***	11.2***	669.8***	2,543.3***	1,873.5***
	0.9	2.0	2.2	174.8	319.0	363.6
Dao	8.4***	22.4***	14.0***	1,342.4***	4,276.9***	2,934.5***
	1.7	2.4	2.9	303.7	499.2	584.0
Others	14.4***	22.9***	8.5**	2,849.4***	4,017.5***	1,168.1
	2.3	2.7	3.5	646.0	456.2	790.6
Regions						
North	17.6***	29.9***	12.3***	16,882.9	6,672.3***	-10,210.6
	1.0	1.2	1.6	13,380.0	404.5	13,384.6
Central	22.2***	36.4***	14.2***	5,491.5***	10,336.6***	4,845.1***
	1.7	1.9	2.5	673.0	952.8	1,166.3
South	34.6***	42.5***	7.9	15,170.6***	17,897.2***	2,726.6
	4.2	4.3	6.0	3,917.0	4,683.5	6,098.9

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Table 4.26 presents access to informal credit. When households do not have access to formal credit and micro-finance, informal credit presents as the alternative source for households to cope with negative shocks, and other needs. 12 percent of households borrow from informal sources in 2007 as well as 2012. The Kinh have a higher borrowing rate from informal credit as well as larger credit size than those of their ethnic minority counterparts.

Table 4. 26: Informal credit

Groups	% households borrowing			Loan size (thousand VND)		
	2007	2012	Change	2007	2012	Change
Total	13.0***	12.6***	-0.4	1,522.9***	1,881.7***	358.8
	0.9	0.9	1.3	223.6	233.8	323.5
Poor/Non-poor						
Poor	13.1***	13.1***	-0.1	759.0***	1,642.8***	883.8***
	1.3	1.2	1.8	92.3	270.0	285.3
Non-poor	12.9***	12.1***	-0.7	2,385.4***	2,149.3***	-236.1
	1.3	1.2	1.8	463.6	393.8	608.2
Ethnicity						
Kinh	15.1***	16.9***	1.9	3,193.2***	3,728.7***	535.5
	2.3	2.7	3.6	848.5	754.1	1,134.6
Ethnic minorities	12.4***	11.3***	-1.1	1,012.0***	1,303.1***	291.1
	0.9	0.7	1.2	136.2	194.1	237.1
Ethnic minority groups						
Tày	13.5***	15.4***	1.9	1,095.1***	1,709.5***	614.4
	1.9	2.1	2.8	213.6	367.2	424.5
Thái	9.7***	9.1***	-0.6	672.5***	736.9***	64.3
	1.8	1.7	2.5	167.1	180.7	246.0
Mường	19.7***	16.7***	-3.1	1,080.1***	1,502.8***	422.7
	3.1	2.8	4.2	226.2	375.1	437.5
Nùng	20.4***	17.2***	-3.2	1,194.1***	5,612.6*	4,418.5
	3.4	3.9	5.2	266.6	2,958.9	2,967.0
H'Mông	3.8***	2.9***	-0.9	467.0*	199.4**	-267.5
	1.3	0.7	1.5	276.5	79.6	287.6
Dao	7.5***	16.9***	9.4***	529.3***	1,947.5***	1,418.2***
	1.4	2.3	2.7	126.1	521.7	536.4
Others	16.2***	11.1***	-5.1*	1,588.0***	1,111.7***	-476.3
	2.5	1.5	2.9	402.2	315.2	510.8
Regions						
North	12.8***	12.1***	-0.6	1,042.5***	1,710.5***	668.0**
	0.9	0.9	1.3	122.5	276.6	302.5
Central	11.1***	12.9***	1.8	2,331.8***	2,314.8***	-17.0
	1.2	1.3	1.8	700.6	570.3	903.1
South	15.8***	13.6***	-2.3	1,774.4***	1,802.6***	28.2
	3.2	3.1	4.4	567.2	517.7	767.1

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

4.3 Poverty dynamics of ethnic minorities

Dynamics of poverty

Analysis of poverty dynamics often requires long panel data. Basically, the chronically poor are households whose living standard is below a defined poverty line for a number of years, while the transiently poor experience some non-poverty years during that period (Hulme and Shepherd, 2003). Jalan and Ravallion

(2000) decompose poverty into two components: transient poverty due to the inter-temporal variability in consumption, and chronic poverty determined by mean consumption overtime. However this method requires longitudinal data with at least three repeated observations. In this study, we use a simple approach to examine the dynamics of poverty in P135-II communes. We use panel data to classify households into four groups: persistently poor – households that were poor in both 2007 and 2012; those escaping poverty – households that were poor in 2007 but non-poor in 2012; those falling into poverty – households that were non-poor in 2007 but became poor in 2012; and persistently non-poor – households that were non-poor in both 2007 and 2012. Households who escaped from poverty and those who fell into poverty can be regarded as the transiently poor.

Table 4. 27: Poverty transition during 2007-2012

Groups	*Persistently poor:* Poor in both 2007 and 2012	*Escaped poverty:* Poor in 2007, and non-poor in 2012	*Fell into poverty:* Non-poor in 2007, and poor in 2012	*Persistently non-poor:* Non-poor in both 2007 and 2012	Total
All households	35.0	22.1	14.3	28.6	100.0
	(1.2)	(1.0)	(1.0)	(1.2)	
Ethnic minorities					
Kinh & Hoa	16.7	18.1	15.3	49.9	100.0
	(3.2)	(2.9)	(3.3)	(3.8)	
Ethnic minorities	39.5	23.1	14.0	23.4	100.0
	(1.3)	(1.1)	(0.9)	(1.1)	
Ethnic minority groups					
Tay	32.4	24.2	11.3	32.2	100.0
	(2.7)	(2.5)	(1.8)	(2.7)	
Thai	41.0	15.6	21.9	21.5	100.0
	(3.4)	(2.4)	(3.0)	(2.7)	
Mường	32.8	13.4	15.6	38.3	100.0
	(3.6)	(2.6)	(2.8)	(3.8)	
Nùng	33.3	26.3	8.2	32.1	100.0
	(4.1)	(3.7)	(2.0)	(4.4)	
H'Mông	51.5	31.5	7.8	9.2	100.0
	(3.0)	(2.9)	(1.6)	(1.7)	
Dao	38.2	23.1	17.7	21.0	100.0
	(3.0)	(2.6)	(2.5)	(2.4)	
Other ethnic minorities	35.7	22.6	15.0	26.7	100.0
	(2.6)	(2.3)	(2.1)	(2.7)	
Regions					
North	39.2	24.7	11.5	24.6	100.0
	(1.4)	(1.3)	(0.9)	(1.2)	

Groups	*Persistently poor:* Poor in both 2007 and 2012	*Escaped poverty:* Poor in 2007, and non-poor in 2012	*Fell into poverty:* Non-poor in 2007, and poor in 2012	*Persistently non-poor:* Non-poor in both 2007 and 2012	Total
Central	37.7	18.7	16.5	27.0	100.0
	(2.0)	(1.6)	(1.6)	(1.8)	
South	18.3	18.4	19.9	43.3	100.0
	(4.0)	(3.5)	(3.9)	(4.5)	

Note: Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Table 4.27 presents the proportion of households falling into four poverty categories. 35 percent of households were poor in both years. There were a large proportion of households in transient poverty. 22.1 percent of households escaped from poverty, but 14.3 percent of household fell into poverty. Kinh households are more likely to be transiently poor, while ethnic minority households are more likely to be persistently poor. Although Kinh poor households were more likely to escape poverty, there is also a large proportion of non-poor households from the Kinh group falling into poverty in 2012. *By ethnicity*, there is a high proportion of chronic poverty among Thai, H'Mong and Dao groups. H'Mong, Nung, Tay and Dao are those who were more likely to escape from poverty than other ethnic minorities. Thai and Dao groups were more vulnerable to poverty: 21 percent of Thai households and 18 percent of Dao households fell into poverty in 2012.

Determinants of poverty

To examine determinants of poverty status, we use a standard multinomial logit model.[12] In our study, households can fall into one of the four mutually exclusive poverty statuses: persistently poor; escaped poverty; fell into poverty; and persistently poor. The methodology is presented in appendix.

Table 4.28 presents marginal effects of explanatory variables on the probability of households being in the four poverty statuses. Age of household head has expected effect on chronic poverty: households with a young or an old household head are more likely to fall in persistent poverty. Households with middle-age heads have lower probability of being persistently poor. Households with female heads tend to have lower probability of being persistently poor. High education of household heads is positively correlated with the probability of being persistently non-poor

[12]Multinomial logit models are presented in most econometrics textbooks such as Wooldridge (2001).

and negatively correlated with the probability of being persistently poor.Households with large size and high proportion of children and elderly are more likely to be persistently poor. On the contrary, persistently non-poor households tend to have a smaller household size and smaller proportion of children and elderly.

Ethnic minorities also matter to poverty dynamics. Compared with Kinh households (base group), Tay and Muong households are more likely to be chronically poor. Thai households tend to fall into poverty, while H'Mong households tend to escape from poverty.

Asset ownership is an important for households not to fall into persistent poverty Households with large living areas, crop lands, and receiving remittances are less likely to be persistently poor. However, asset is not the most significant factor making households escape or fall into poverty.

Table 4. 28: Marginal effect in multinomial logit regression

Explanatory variables	Dependent variable			
	Persistently poor: Poor in both 2007 and 2012	*Escaped poverty:* Poor in 2007, and non-poor in 2012	*Fell into poverty:* Non-poor in 2007, and poor in 2012	*Persistently non-poor:* Non-poor in both 2007 and 2012
Age head	-0.0196***	-0.0035	0.0019	0.0212***
	(0.0063)	(0.0065)	(0.0051)	(0.0076)
Age head squared	0.0002**	0.0001	-0.0000	-0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Head is male	0.1032**	0.0059	-0.0218	-0.0873
	(0.0421)	(0.0523)	(0.0331)	(0.0660)
Schooling years of head	-0.0305***	-0.0041	-0.0011	0.0357***
	(0.0043)	(0.0040)	(0.0033)	(0.0047)
Kinh	Omitted			
Tày	0.1313**	-0.0107	0.0402	-0.1609***
	(0.0663)	(0.0537)	(0.0478)	(0.0526)
Thái	0.0707	-0.0633	0.1441**	-0.1515***
	(0.0617)	(0.0491)	(0.0628)	(0.0504)
Mường	0.1544**	-0.1048**	0.0710	-0.1206**
	(0.0642)	(0.0411)	(0.0535)	(0.0546)
Nùng	0.0705	0.0401	-0.0125	-0.0981
	(0.0658)	(0.0582)	(0.0514)	(0.0646)
H'Môn g	0.0571	0.1524**	0.0172	-0.2266***
	(0.0693)	(0.0738)	(0.0467)	(0.0539)
Dao	0.0167	-0.0057	0.1369*	-0.1479***
	(0.0612)	(0.0626)	(0.0785)	(0.0554)

Explanatory variables	Dependent variable			
	Persistently poor: Poor in both 2007 and 2012	*Escaped poverty:* Poor in 2007, and non-poor in 2012	*Fell into poverty:* Non-poor in 2007, and poor in 2012	*Persistently non-poor:* Non-poor in both 2007 and 2012
Other ethnic minorities	0.0273	0.0895**	-0.0110	-0.1059
	(0.0734)	(0.0440)	(0.0296)	(0.0749)
North	Omitted			
Central	-0.0620	-0.0660	0.1257***	0.0023
	(0.0414)	(0.0465)	(0.0453)	(0.0548)
South	-0.0505	-0.0963*	0.1412***	0.0056
	(0.0713)	(0.0496)	(0.0543)	(0.0825)
Household size	0.0393***	0.0084	-0.0198***	-0.0278**
	(0.0076)	(0.0092)	(0.0070)	(0.0116)
Proportion of children	0.2942**	-0.0068	-0.1072*	-0.1802**
	(0.1179)	(0.0627)	(0.0630)	(0.0740)
Proportion of elderly	0.2422***	-0.1986*	-0.0167	-0.0270
	(0.0921)	(0.1094)	(0.0795)	(0.1059)
Proportion of female members	0.0714	0.0148	-0.0754	-0.0108
	(0.0757)	(0.0701)	(0.0495)	(0.0938)
Per capita living area (m2)	-0.0077***	-0.0049*	0.0033**	0.0092***
	(0.0029)	(0.0027)	(0.0016)	(0.0023)
Per capita annual crop land (ha)	-0.1065***	-0.0904***	0.0587***	0.1382***
	(0.0268)	(0.0223)	(0.0162)	(0.0235)
Per capita perennial crop land (ha)	-0.0106	0.0005	-0.0077	0.0178*
	(0.0116)	(0.0095)	(0.0090)	(0.0108)
Poverty rate of commune	0.0034***	0.0009	-0.0012*	-0.0032**
	(0.0010)	(0.0009)	(0.0006)	(0.0013)
Receiving remittances	-0.1179***	-0.0316	0.0359	0.1136***
	(0.0422)	(0.0458)	(0.0252)	(0.0397)
Receiving allowances	0.0606	-0.0700**	-0.0100	0.0194
	(0.0384)	(0.0312)	(0.0248)	(0.0481)
Borrowing from VBSP bank	0.0064	0.0037	0.0411*	-0.0512
	(0.0294)	(0.0264)	(0.0227)	(0.0408)
Observations	3,515	3,515	3,515	3,515

*Note: * significantly different from zero at 10%; ** significant at 5%; *** significant at 1%.*
Standard errors in the second line below the estimates.

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

4.4 Conclusions

Poverty, especially chronic poverty, in Vietnam is common among the ethnic minorities. Although ethnic minorities accounts for only 14 percent of the national population, they accounts approximately for 50 percent of the poor throughout the country. While poverty incidence decreased from 57.5 percent to 49.2 percent during the period 2007-2012, the reduction mainly come from the ethnic minority groups. There was almost no decrease in the poverty rate of Kinh households.

Although poverty incidence decreased, the poverty gap and severity indexes of households in P135-II areas did not decrease during 2007-2012. There is an increase in the poverty gap and severity among Thai and Muong households. Poverty situation is still severe among the poor. H'Mong is the only ethnic minority group who experienced reduction in all the three poverty indexes.

Average income of household increased by 20 percent during the period 2007-2012. Households with low levels of income experienced lower growth rate than households at the high levels of income. As a result, income inequality among households in P135-II communes increased overtime. The Gini index (measured in 100) increased from 43.0 in 2007 to 47.0 in 2012. Inequality within Kinh households as well as within ethnic minority households also increased during this period. A large proportion of the total inequality is due to within-group inequality. The between-group inequality component accounts for less than 10 percent of the total inequality.

The decomposition analysis shows that poverty reduction of the households in P135-II communes resulted from income growth. Poverty is sensitive to economic growth. However, the elasticity of poverty with respect to income growth tends to decrease overtime, which means that income redistribution plays a very important role in decreasing poverty gap and poverty severity.

Households in Program 135-II communes remain heavily reliant on agricultural income whereby agricultural activities generate nearly 60 percent of total households' income. Nevertheless, there has been a shift from farm to non-farm activities leading to an increasing share of income from wage. However, this transition is taking place at a slow rate, which is reflected by a limited share of non-farm income of around 5 percent.

There were a large proportion of households in transient poverty. 22.1 percent of households escaped from poverty, but 14.3 percent of household fell into poverty. Kinh households are more likely to be transiently poor, while ethnic minority households are more likely to be persistently poor. Although Kinh poor households were more likely to escape poverty, a large proportion of non-poor fell into poverty in 2012.

CHAPTER 5

CAPACITY, DECENTRALIZATION, PARTICIPATION AND IMPACTS OF P135-II ON OUTCOMES

5.1 Introduction

One core development of Program 135 Phase II (P135-II) is the strong emphasis on capacity-building through decentralization, and participation. Rural development and rural poverty alleviation experience has shown that decentralization and participation are powerful tools for sustainable community and economic development. Decentralization is the democratic process of engaging communities over the decisions that shape their future. Decentralization is said to be accompanied by participation, empowerment, transparency and accountability. In particular, decentralization facilitates participation, which is seen as a process through which stakeholders influence and share control over development initiatives and the decisions and resources which affect them (World Bank, 1994). Through participation, people become actors in their own development rather than just passive beneficiaries. These advantages of decentralization and participation are conditional on the local authorities' as well as the community's capacity to take charge of the whole process from engaging the targeted population in planning stage, implementation and financial management to project operation and maintenance. Recognizing the importance of participatory approach, Program 135 Phase II has integrated capacity building as one of the Program's four components. Likewise, "*decentralization, empowerment and participation*" is designed as Policy Area II in four key Policy Areas of the Policy Matrix.

This chapter provides a comprehensive analysis of the extent to which capacity strengthening has been enforced at local level. This goal is assessed through the perspective of both local authorities and the beneficiaries. The first part describes in-depth capacity building at local authorities through assessment of local training activities and then provides an insight into project management capacity and

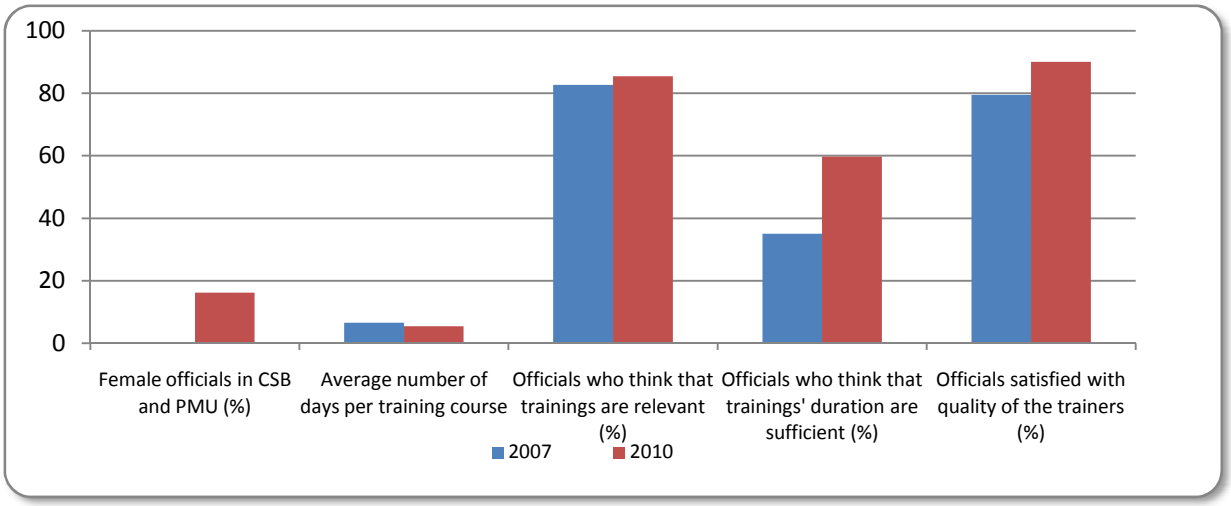
decentralization at local authorities. The outcomes of commune investment ownership and measurement of household participation in planning and implementation stages are presented before the detail results of impact measurement on the expected outcomes for beneficiary households of both ethnic minority and majority. The conclusion is presented in the last section of this chapter.

5.2 Capacity strengthening and Project Management

5.2.1 Capacity strengthening through training activities at commune level

P135-II is the only National Targeted Program that has strongly enforced decentralization to commune level with the introduction of commune investment ownership. In order to facilitate the decentralization process, capacity building at the local level is essential. Phase II has shown the importance of local-level institutional capacity-building with more than 7 percent of the Program's total funding allocated for this activity, a 6 percent increase from Phase I. Throughout the Program, a number of decentralization policies have been presented to enhance autonomy and accountability of local government in targeted areas. Shifting investment ownership responsibilities from provincial and district levels to communes require the communes' strong capacity in administrative and financial planning as well as project management. Local staff training is one of the key capacity strengthening activities at commune level. Local authorities have organized training on administration, financial and project management skills for 178,000 commune staffs and village staffs. Training is delivered in the form of short-term courses, which last approximately 5 – 6 days per course.

Figure 5. 1: Training activities for commune officials



Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Figure 5.1 provides information on training activities for Commune Supervisory Board (CSB) and Project Management Unite (PMU) staff. 95.4 percent of the respondents[13] attended training courses organized under P135-II. In general, majority of respondents express positive opinions about the quality of the training courses. Over the period 2007 – 2010, quality of training has been appraised more positively by commune staff. In 2007, 82.7 percent of the respondents found the training courses practical and applicable to their work and this proportion increases slightly by 3 percentage point in 2010. Significant change in assessment of training courses is further demonstrated in 24.7 percentage point increase in the number of staff who think that the duration of training is sufficient and 11 percentage point rise in the number of officials who are satisfied with the quality of the trainers. Our empirical results suggest that the quality of training has been improved in terms of content, duration of training courses as well as quality of trainers.

Qualitative studies through in-depth interviews have enabled identification of issues related to training that are not reflected in the empirical results. Qualitative studies in certain P135-II communes specify that while training courses have brought about multiple positive impacts such as equipping commune officials with knowledge of the program management and development issues, capacity building at commune level is insufficient. Firstly, the training syllabus remains

[13] The respondents are either member of CSB or PMU of P135-II projects

unadjusted year after year and does not meet specific requirements of each commune. Secondly, high turnover rate and rotation of commune staff leads to extra resources and time spent on training the new in-charge personnel. These facts partially explain the reason why a substantial proportion of commune staff did not give positive comments about the training programs.

Promoting female participation in every project activity and project committee is an important goal of P135-II. Our research shows that 16.2 percent of officials in CSB and PMU are female officials. This number sends a positive signal on female representativeness in public operation and services, although their participation is only at a modest level. While P135-II has included certain regulations to promote women's participation, extra effort needs to be made to encourage their representativeness in both public and government bodies.

5.2.2 Project Management at commune level

Management and planning for P135-II projects at commune level

The transfer of project's investment ownership from higher administrative level to local authorities requires formation of Project Management Unit (PMU) at commune level. PMU holds legal authority to carry out administrative activities and financial transactions of commune projects. Circular 676/2006 states that PMU has to be formed before any project implementation. Following the formation of PMU, a set of prerequisite management system for the Program is to be implemented before the commune undertakes any project. Table 5.1 provides information on the adequacy level of management system at commune level.

Table 5. 1: Project Management and Planning at commune level (%)

	2007	2010	Difference
Communes with PMU	70.04	93.93	23.89
using participatory planning	93.02	93.94	0.92
with training plan for commune officials	80.95	73.71	- 7.24
having communication plan	84.52	90.35	5.83
using new report format	34.42	38.16	3.74
organizing participatory M&E activities	87.50	86.64	- 0.86

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Most of P135-II communes have implemented the prerequisite management system for the Program. Prerequisite management system for the Program has

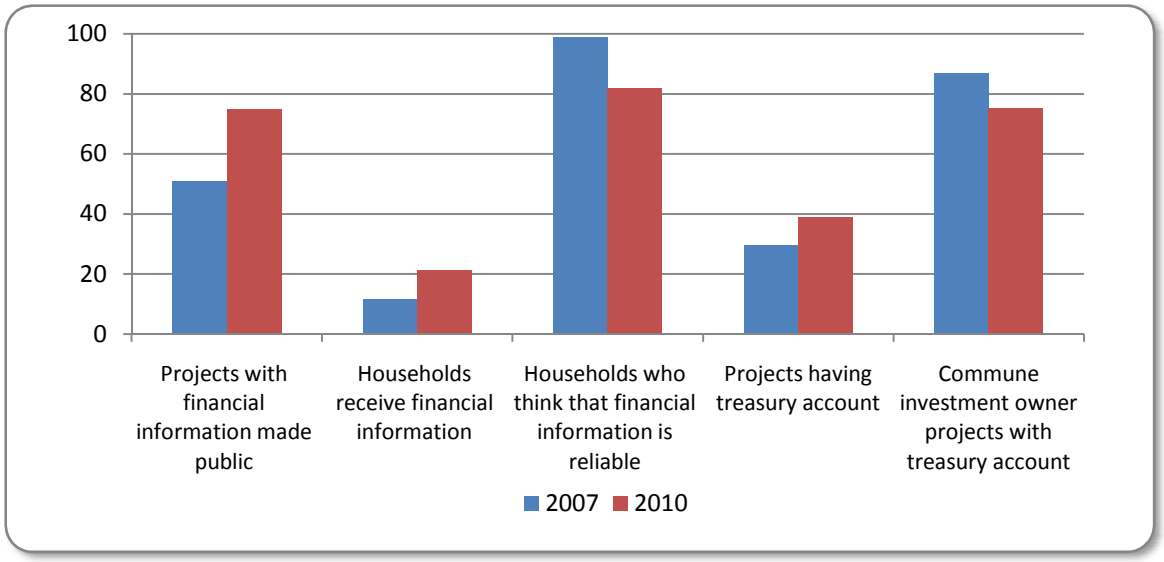
also been better established in 2010 as compared to 2007 since an additional 23.9 percent of communes have formed PMU, making up the proportion of communes with PMU to a significant 93.9 percent. The regulation stipulating that every investment-owned commune must have a commune PMU leads to the requirement that every commune have a PMU by the end of the Program. However, 6.1 percent of communes still do not have separate PMUs to manage the Program's activities.

For communes where PMUs are established, the application of participatory planning is extensive. The percentage of communes with participatory planning stands at 93 percent in both 2007 and 2010. While the numbers of communes having communication plan and organizing participatory M&E activities remain relatively high in both years, the application of new reporting format has not been well established at commune level. Despite an improvement in the use of new reporting format from 2007 to 2010, only less than 40 percent of the communes use this one in 2010.

Public Financial Management & Transparency

In the period 2011 – 2020, a reform strategy for Public Sector is underway, in which Public Financial Management System is the center of the reform. The reform, with the emphasis on decentralization, is taking steps towards enhancing transparency and accountability arrangements of the system. While development partners share concerns about the system through which resources are channeled to the poor, P135-II's objective addresses this concern and matches the Government's interest in promoting a more transparent and effective Public Financial Management System. This share of interest is shown in the Program's Policy Matrix with '*Fiduciary Transparency and Accountability'* being one of the key four policy areas.

Figure 5. 2: Fiduciary transparency at commune level (%)



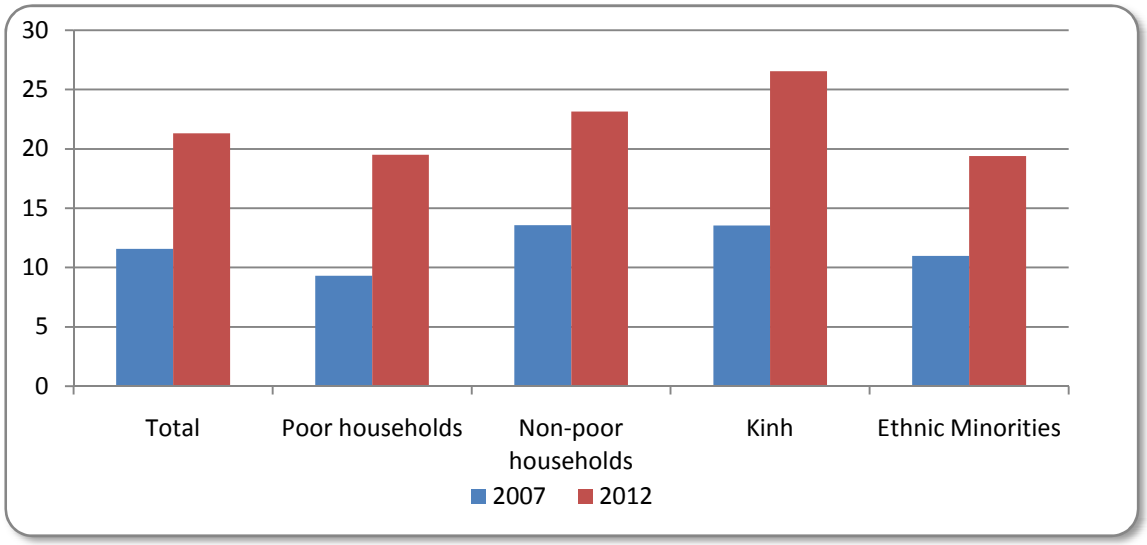
Source: Analysis Team calculations based on 2007 and 2012 household surveys.

A detailed evaluation of the Program's impact on fiduciary transparency is not within the scope of this study. The study measures the impact on local experience in financial reporting and the extent to which households are aware of public expenditure information. Our empirical analysis shows substantial improvement in financial reporting at community. Figure 4.2 shows a 24 percentage point increase in number of projects with financial information made public (50.9 percent in 2007 to 74.9 percent in 2010). Even though financial reporting has been applied broadly from commune perspective, the method of disclosing the financial information is not highly effective as information has not reached majority of its targeted households. In 2010, 74.9 percent of projects publicizes their budget allocation and expenditure but only 21.3 percent of households receive the information. The large gap between project' information made public and the rate of recipients indicates ineffective financial reporting mechanism as well as weak reporting capacity of the implementing agency.

Low recipient rate of information results not only from the commune capacity to disseminate information but also from households' ability to access to information. Figure 5.3 indicates that poor households have lower access to information on financial expenditure as compared to non-poor households. This difference might be explained by the fact that non-poor households have better means to access to multiple channels of information; and with better level of general knowledge and understanding, they are more connected to community

activities. Similarly, the percentage of Kinh households aware of project financial expenditure is 14 percentage points higher than their ethnic minority counterparts in 2010. This phenomenon suggests that ethnic minorities have relatively limited access to information, in which language barrier might considerably contribute to the outcome. Nevertheless, it is undeniable that there has been considerable improvement in information access as a double increase in the percentage of households receiving financial information has been recorded over the period 2007 – 2010. Among those who receive financial information, 81 percent in 2010 think that financial information is reliable. This indicates a 16.8 percentage point decrease from 2007, which implies that households have become more cautious in evaluating the reliability of financial information that they receive.

Figure 5. 3: Household receive information about financial expenditure of infrastructure projects (%)



Source: Analysis Team calculations based on 2007 and 2012 household surveys.

In the process of modernizing and strengthening Project Financial Management (PFM) system with decentralization to local level, P135-II has introduced new regulation(s) on financial management of the government's and donors' funding. Circular 676 states that direct funding for P135 from government budget has to be transacted through the National Bank. In order to facilitate the funding transfer and to allow for effective management of public funding, commune offices need to open treasury account for each project. The percentage of projects having treasury account has increased by 10 percent over the period 2007 – 2010 but remains at a modest level (39.1 percent in 2010).

By the end of the Program, commune office has adopted a fairly comprehensive prerequisite management system to facilitate community-driven mechanism in its planning and management process. More intensive application of participatory approach has been adopted. The Program shows an increase in the number of commune PMUs, a rise in planning activities that integrate participatory approach such as in planning, reporting, M&E, communication plan. Commune office has actively promoted financial transparency and information dissemination to grassroots level. As such, public and financial transparency has been improved, which is demonstrated by an increase in projects publicizing expenditure information as well as the number of households receiving the information. Even though progress has made been, there is big room for improvement on information dissemination to household level and on public financial management system at commune level.

5.2.3 Ownership of P135-II investment projects

Decentralization is pushed forward in P135-II with the introduction of commune investment ownership whereby commune office is given the responsibility for take leading of small and medium infrastructure projects including administrative and technical procedures. While all of the projects in Phase I were undertaken at district level which was believed to have sufficient capacity to carry out the work, this new policy in Phase II is considered a challenging but necessary step towards the success of community-driven approach; that is to build up institutional capacity at commune level.

Taking up the responsibilities of an investment owner, the commune has to master the process of preparing profile design for construction, budget estimate, organizing bidding and selecting the contractor as well as supervising project implementation and handing over the completed project to beneficiaries. All of these activities require thorough understanding of the procedure as well as technical knowledge even for small-scale projects. This requirement leads to the low proportion of P135-II commune-owned projects in 2007 (21.5 percent). With rigorous capacity building, including provision of technical assistance and training courses for commune level, the number of commune-owned projects doubled in 2010 (45.9 percent). With the target of 100 percent communes being investment owners, this figure seems to indicate that the former goal is far from being achieved. Despite the modest number of commune-owned projects, the double increase in the number of projects over the period 2007 – 2010 demonstrates

significant improvement in the ability of communes to become investment owners. Together with the increase in number of commune-owned projects, the number of households benefiting from each investment-owned project increases slightly by 10 households. This improvement indicates that not only more projects can be owned by communes but the positive impact of each commune-owned project is also more widespread by the end of the Program.

Table 5. 2: Ownership of P135-II infrastructure projects

	2007	2010	Difference
Infrastructure projects where communes are investment owners (%)	21.54	45.95	24.41
Households benefiting from each investment-own projects (no of households)	421.3	432.1	10.8
Communes think that it is better for communes to be investment owners (%)	97.44	96.11	-1.33
Projects with CIO encounter slow funding (%)	57.35	45.33	-12.02
Projects with CIO encounter weak capacity of commune officials (%)	17.65	17	-0.65
Projects with CIO encounter weak capacity of the contractors (%)	5.88	5.38	-0.5

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Table 5.2 shows problems encountered by investment-owning communes. The majority of investment-owning communes do not encounter serious problems during implementation process. In both years, more than 96 percent of commune staff interviewed expresses their preference to be the investment owners rather than having the projects owned by higher authorities. The former option gives them more autonomy in planning and implementing the projects; therefore the project would best meet the need of community. During implementation process, the biggest problem encountered by projects with CIO is slow disbursement. 12 percent decrease in number of projects experiencing slow funding seems to indicate that the problem has alleviated but remains dominant by the end of the Program as a significant proportion of 45.3 percent still encounters this issue. Slow funding indicates inefficiency in public financial system and poses challenges for contractors who have to carry out the construction work without timely financial payout. The second most prevailing issue, and equally important, is weak capacity building of investment owners. 17.7 percent of projects with CIO has problem with weak capacity of commune officials. Worryingly, this weight does not seem to significantly decrease in 2010 (17 percent) while the total number of investment-owned projects has increased substantially. Capacity at commune

level has been the biggest concern in the decentralization process to grassroots level because success of commune investment-owned projects highly depends on communes' capacity. This is the reason why the Program has invested considerably on capacity building at local level. It is, on the other hand, difficult to measure the effectiveness and quality of capacity building through training courses. Weak capacity of contractors does not seem to be a notable problem for commune-owned projects. Less than 6 percent of projects in P135-II face this problem.

5.2.4 Capacity strengthening at community – HouseholdParticipation

Rural development and rural poverty reduction experience have shown that empowering local governments to engage in a constructive dialogue with civil society is one of the most cost-effective and insightful medium for sustainable community development. Participation is seen as a process of empowerment, which aims to improve democracy, independence and self-reliance of the rural population (Ghai, 1990). Recognizing the importance of participatory approach, P135-II has strongly promoted informed public participation in program planning and management. This section measures the impact of the Program on household participation level throughout the selection, planning and implementation stages of infrastructure projects. The participation level is assessed through the perspectives of commune office (the implementing agency) and households (the targeted population).

Household participation in selection of P135-II infrastructure projects

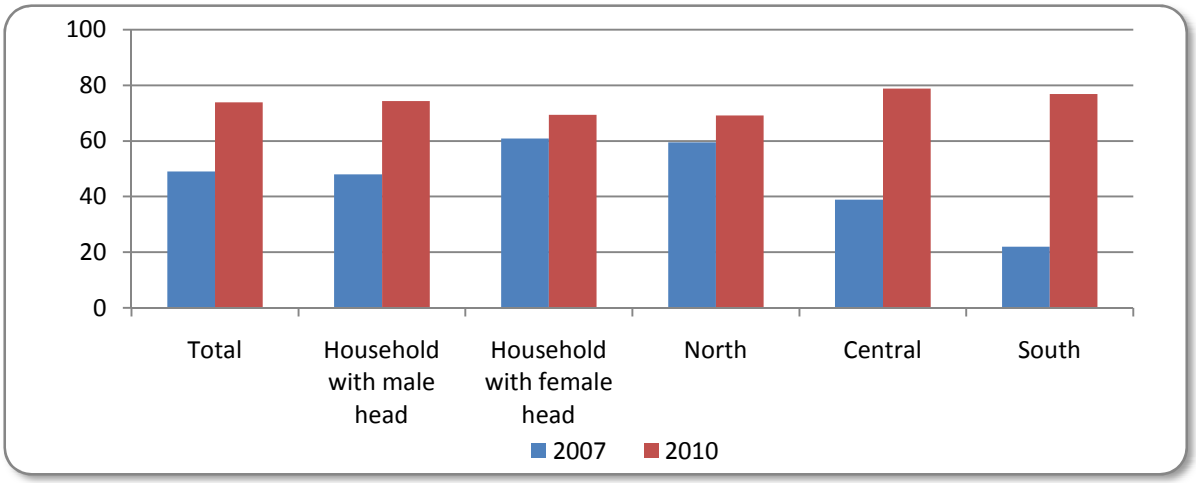
Household participation in the selection stage of infrastructure projects is critical for project planning at grassroots level. Active and effective household participation in project selection determines whether their ideas and needs are well reflected in the choice of construction projects at their locality. At village level, selection meetings to get direct beneficiaries' opinion are organized by Planning Board.

According to local participatory scheme, all households are informed about selection meetings and each would appoint one representative to attend the meeting. After collecting community opinions during the selection meetings, the Planning Board and village head would then build an investment project list in order of importance. With strong emphasis and close guidance of higher

administrative authorities, the Program has succeeded in encouraging household to participate in project. In 2010, around 85 percent of P135-II projects have organized local selection meetings; while the proportions of households aware of the meetings are 56.1 percent and 79.3 percent in 2007 and 2010 respectively. These figures first show an improvement in household awareness over the period 2007 – 2010, indicating better information dissemination at village level. Nevertheless, the gap between household awareness rate and the actual rate of meetings organized persists. With an increase in awareness about selection meeting, attendance rate in selection meeting has climbed accordingly from 49 percent in 2007 to 73.9 percent in 2010, in which only 51 percent of poor households attend selection meeting in 2010. This means that 49 percent of poor households have been overlooked in project selection stage.

By ethnicities, our numerical findings indicate that Kinh&Hoa, Tay and Nung groups are more aware of selection meetings, therefore their participation rates in selection meetings are the highest among all those of ethnic groups. Another notable change is the tremendous increase in household awareness and in participation level of Thai group in project selection over the period 2007 – 2010. Information about selection meeting has become known to more than 56 percent of Thai population in 2010, resulting from an increase in 50.6 percentage point from 2007. H'Mong group has the lowest participation rate. Households with male head participate more than households with female head in 2010. Figure 5.4 also display an interesting trend in household participation by region. At the Program's onset, the Northern region has the highest participation rate and the Southern region has the lowest rate. This trend has reversed in 2010: Northern region has the lowest participation level while the other two regions demonstrate significant improvement. This phenomenon suggests that the Southern and Central commune authorities have scored better in terms of implementing participatory approach as compared to their Northern counterpart.

Figure 5. 4: Household participation rate in selection meeting (%)



Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Even though households have become increasingly involved in project selection meeting, the majority remains inactive during selection meetings' discussion. Our empirical results indicate an almost triple increase in the percentage of households who voice their opinions during project selection meeting but the figure remains low at 36.1 percent, out of 76.6 percent joining the meeting in 2010. Qualitative analyses indicate a number of important reasons that make it difficult to obtain households' opinion: language barrier for the ethnic minority, lack of preparation and ineffectiveness in collection of socio-economic information at village board. *First*, most ethnic minority groups use their native language during group discussion while written guidance and relevant documents are written in Kinh language. This language barrier prevents the ethnic minorities from expressing their opinions in a clear manner. *Second*, attendants are supposed to be equipped with certain socio-economic background information for effective participation but the information has not been properly collected by village and commune. Therefore, attendants are not well-informed prior to the meeting. As a result, selection process has not well reflected household opinions but those of the upper administrative levels.

Classification by ethnic minorities and household characteristics provides prominent patterns. Three ethnic groups: Kinh&Hoa, Tay, and Thai are the most active in sharing their ideas during selection meetings in 2010. Muong and H'Mong groups seem to be the most "reticent" groups. By 2010, the percentage of households with male head sharing their opinions doubles that of households with female head. The majority of household representatives in selection meetings are

household heads; therefore, the noted discrepancy reflects gender difference as male participants seem to be more confident in sharing their opinions than their female counterparts. This phenomenon is particularly true in the rural and remote setting where male is given priority in education and in the decision-making process.

Among those who voice out their opinions, 25.8 percent of households have their ideas taken, three times higher than the corresponding figure in 2007 (8.2 percent). Even though only a small number of households having their ideas taken, the majority of households interviewed are satisfied with project selection. This can be attributed to the fact that the living condition and socio-economic status at treated areas are extremely inadequate, so any additional construction project would significantly improve their living condition and livelihood.

Household contribution to implementation stage of P135-II infrastructure projects

Community contribution

Community contribution for public investment does not only include financial and labor support to infrastructure project implementation but also aims to promote public accountability in project management and future maintenance of public services. Local contribution comes under the form of cash or in-kind labor. The number of households making contribution to infrastructure projects increases significantly by 14.2 percent over the period 2007 – 2010. One big concern of community contribution in poor communes is that this strategy might pose direct taxation to households' limited income or reduce their time availability for other income-generating activities. This concern does appear to be a problem according to our finding as the contribution rate of the poor is relatively higher than that of the non-poor for both 2007 and 2010. Table 5.3 shows consistent improvement regarding community contribution in terms of household number as well as contribution value in cash and in-kind labor. For instance, the average number of labor days contributed by each household increases significantly from 1.1 in 2007 to 6.27 in 2010. Value of contribution per household for each project also rises greatly by 10 times. In general, household contributions still represent a small percentage of the total value of the projects, these contributions are, nevertheless, important in promoting community responsibility for public services from which they are the direct beneficiaries. Households have demonstrated their

responsibility as well as recognized the importance of these infrastructure projects to their living condition and livelihood. In this respect, the Program has succeeded in promoting households' accountability in construction of public projects, albeit to a certain extent.

Table 5. 3: Community contribution for P135-II infrastructure projects (%)

	2007	2010	Difference
Households contributing to construction of the project (2)	21.8	35.9	14.1
Average amount of contribution in cash (1000 Dong) per household (2)	12.2	135.42	123.2
Average amount of household contribution in cash per project (1000 Dong) (1)	4,136.2	5,713.5	1,577.3
Average number of labor day per household (2)	1.07	6.27	5.2
Average number of labor day contributed by household per project (1)	100.2	122.5	22.3

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Job creation (by all local infrastructure projects)

Infrastructure development can create job opportunities and generate a temporary source of income for local people living in the areas where the construction projects are carried out. P135-II and many other poverty reduction projects have connected infrastructure development with job creation and income generation for local people. This strategy also promotes community "ownership" with respect to infrastructure projects.

Table 5. 4: Job creation opportunities for households in local infrastructure projects

	2007	2010	Difference
Households having members working for local infrastructure projects (%)	31.1	27.1	- 4.0
Participants in infrastructure projects having signed contracts with employers (%)	2.9	1.8	- 1.1
Average number of working days per project participant in the past 12 months	6.5	7.2	0.7
Participants get paid from working for infrastructure projects (%)	4.4	9.1	4.7

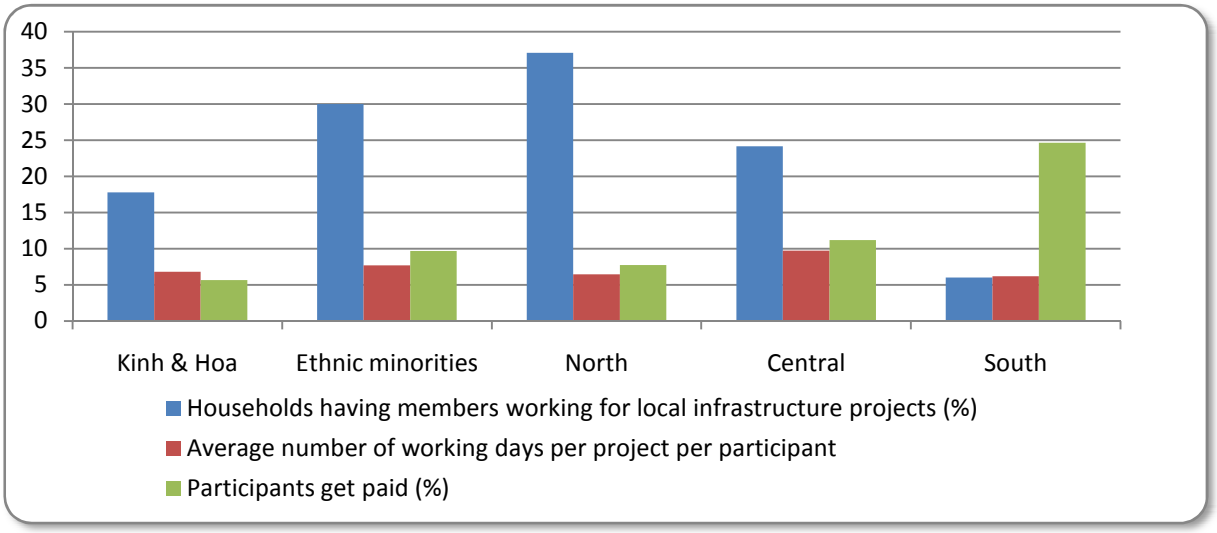
Source: Analysis Team calculations based on 2007 and 2012 household surveys.

The level of local job created from all local infrastructure projects remains low and seems to slightly decrease over the period 2007 – 2010. In the setting that households' labor contribution for all local infrastructure projects have tendency to decline (by 4 percentage point as shown in Table 5.4), P135-II has done a good

job in attracting more local workers (as shown in Table 5.3). The percentage of households having members working for local infrastructure projects stays around 30 percent, in which only less than 3 percent have signed contract with employers. Most local members work informally for infrastructure projects without legal obligation. This situation seems to worsen in 2010, demonstrated through a 1.1 percentage point (40 percent) drop in contract signing rate. When no legal binding agreement is made between the contractor and the workers, both parties are not obliged to take responsibility for the other and this might affect the quality as well as progress of any project.

In terms of labor contribution, there is an increase in average number of working days per project per participant (6.5 to 7.2) and the percentage of households getting paid doubles (4.4 percent to 9.1 percent) despite its remaining low over the period 2007 – 2010. This phenomenon implies that infrastructure projects have provided more paid work to local workers in the year 2010 but majority of households still do unpaid or voluntary work for local construction projects. In theory, infrastructure development seems to be a good opportunity to generate income for the local, but in reality project contractors encounter considerable difficulty in recruiting qualified and available local workers. This phenomenon explains the low participation of local workers. *Firstly*, local workers could only take up simple-skill work while certain construction stages require skilled workers so the contractors end up hiring outside workers. *Secondly*, many local workers, especially the ethnic minority workers, prefer working on a daily basis and they are not willing to work overtime or at weekend when required. These constraints adversely affect the effectiveness of job creation from infrastructure development projects.

Figure 5. 5: Job creation for households in local infrastructure projects with classification



Source: Analysis Team calculations based on 2007 and 2012 household surveys.

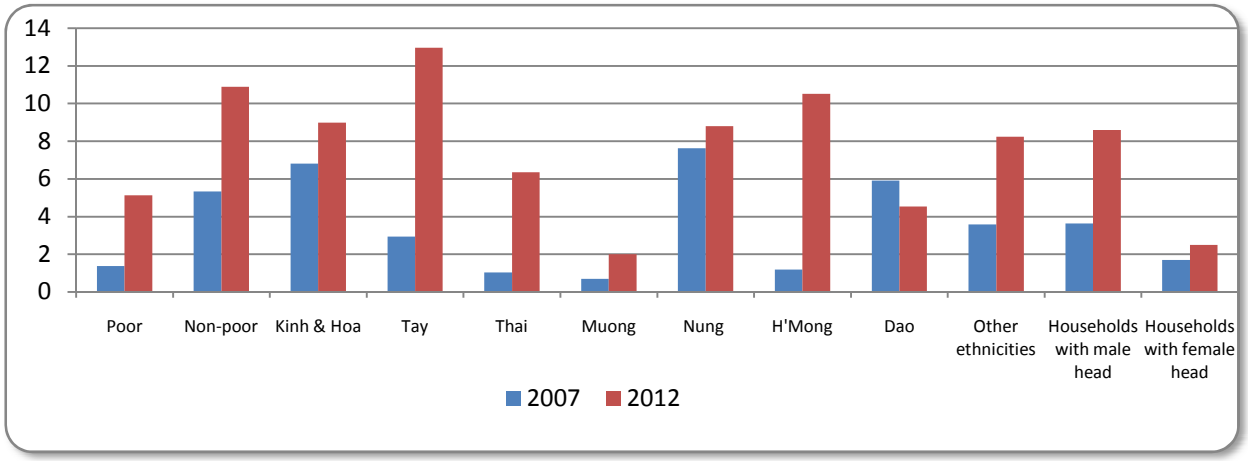
Figure 5.5 shows that ethnic minority households participate more actively in construction process than their Kinh&Hoa counterparts. Specifically, 30 percent of ethnic minority households have members working for local infrastructure projects while the corresponding percentage for their Kinh&Hoa counterparts is 17.8 percent. The former group also contributes more number of working days per participant per project than the latter group. This phenomenon can be partially explained by the fact that the Kinh&Hoa have better access to income-generating activities; therefore, job opportunities in local infrastructure projects are more likely to be taken by the minorities. Among those who get hired, the percentage of ethnic minorities getting paid for their work is significantly higher than that of the Kinh&Hoa. *By region*, it is noteworthy that Northern households offer the highest labor contribution, followed by Central households; the South has a markedly lower rate of local workers across the period 2007 – 2010. The percentage of Southern workers getting paid is significantly higher than that of the other two regions. Indeed, job opportunities in remote areas of the North are scarce as compared to the Central and the South. Qualitative studies indicate that in the Central and the South, local people find it easier to get temporary or seasonal jobs during harvesting seasons therefore they are either less willing or available during project implementation period. In geographically difficult regions like the Northern Mountain where land is less fertile and the weather is unfavorable, local people have to look for job elsewhere during unseasonal

periods. Therefore, job creation should be paid more attention in the Northern region.

Household participation in supervision of P135-II infrastructure projects

In order to promote community involvement and to improve community capacity in project management, People Supervisory Board is formed by local community members. People Supervisory Board plays a critical role throughout the project implementation process. Supervisory Board has the responsibility to monitor the project implementation. Our empirical results show an improvement in households' involvement in Supervisory Board. Even though the percentage of households having member joining Supervisory Board remains below 10 percent for both years, there is a major improvement in their participation as the figure doubles from 3.5 percent in 2007 to 8 percent in 2010.

Figure 5. 6: Households' participation in Supervisory Board (%)



Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Figure 5.6 suggests that the 'supposedly' better-off groups are more likely to be Supervisory Board members. Non-poor household members are 50 percent more likely to join Supervisory Board than poor household members. Kinh&Hoa, Tay, Nung and H'Mong have relatively high participation rate in Supervisory Board as compared to Thai, Muong, Dao, and other ethnic groups. Particularly, Tay, Thai and H'Mong groups have become more deeply involved in Supervisory Board in 2010 as compared to 2007. More households with male heads joining Supervisory Board than households with female head further confirms the gender bias in most of project-related participatory activities. This phenomenon indicates the

importance of engaging the most disadvantaged groups among the already disadvantaged in every community-driven activity.

Capacity of People Supervisory Board is rather limited; therefore capacity building for this committee is extremely important to ensure the quality of implementation process. Capacity building for Supervisory Board has not been effectively carried out as shown in table 5.5. In 2010, only 17 percent of Supervisory Boards undergo technical training even though this level is already an improvement from the baseline period. Similarly, only 17.4 percent of Supervisory Boards are provided with project design. Following a standard procedure, projects after completion have to undergo Supervisory Board's approval before coming into operation. This step has been an administrative procedure rather than being fully exercised by relevant parties due to weak capacity of Supervisory Board. The majority of commune officers as well as households are not satisfied with qualification of Supervisory Board. More than 60 percent think that members of Supervisory Board are not qualified for their task.

Table 5. 5: Participation and quality of Supervisory Board (%)

	2007	2010	Difference
Households having member join People Supervisory Board (2)	3.5	8.0	4.5
Projects having People Supervisory Board (1)	81.1	85.4	4.3
Projects having People Supervisory Board (2)	47.5	55.1	7.6
Projects with People Supervisory Board undergoing technical training	11.3	17.0	5.7
Projects with People Supervisory Board provided with project design	14.3	17.4	3.1
People Supervisory Board qualified for the task (1)	38.4	30.0	-8.4
Households satisfied with qualification of People Supervisory Board (2)	28.8	39.8	11.0

Source: Analysis Team calculations based on 2007 and 2012 household surveys.
(1) refers to commune staff's assessment; (2) refers to households' assessment

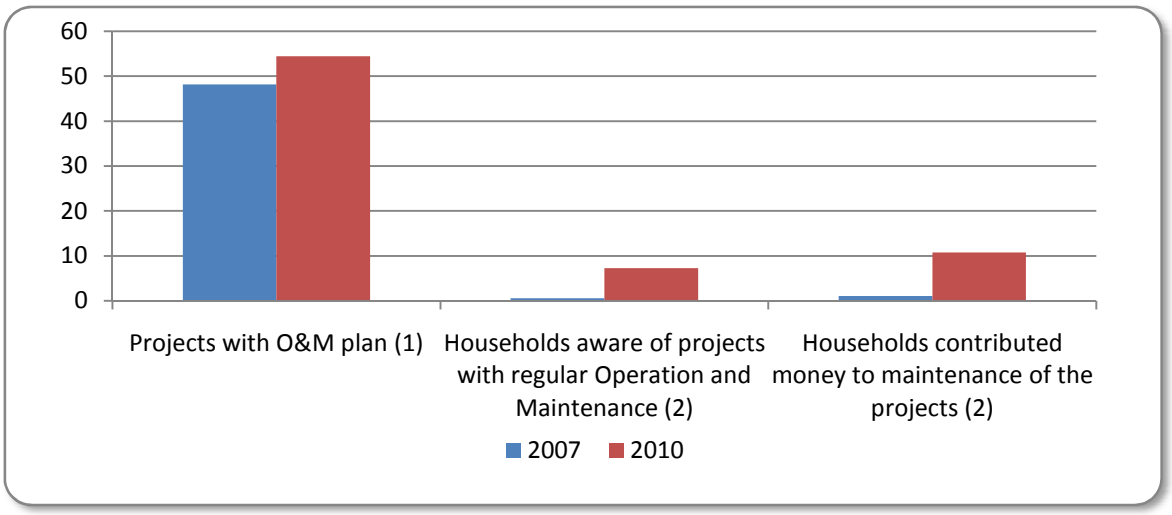
Other households' contribution to infrastructure projects

Completion of infrastructure project and O& M

After each project is completed, the contractor needs to officially hand it over to the investment owners, and the investment owners are supposed to formally delegate the responsibility/ownership to the direct beneficiaries. Nevertheless, this procedure has not been properly executed. Local community is not formally

informed of their responsibility or ownership with respect to each new public infrastructure. As a result, they are less obliged to take accountability and ownership of the service project. This situation results in little awareness of the community about O&M. Despite a relatively high percentage of projects with O &M plan (48.2 percent in 2007 and 54.4 percent in 2010), the percentage of households who know about O & M plans for these projects are around 40 percentage point lower. Equivalently, percentage of households contributed money to maintenance of the projects remains extremely modest. Even though households' awareness and involvement in O & M remains low in 2010, the Program still witnesses a huge improvement in households' awareness and involvement in O & M activities of infrastructure projects. Specifically, the awareness rate increases by almost 13 times over the period 2007 – 2010; financial contribution rate to O&M fund also rises by 10 times in the same period.

Figure 5. 7: Households' involvement in O & M of P135-II projects (%)



Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Public bidding

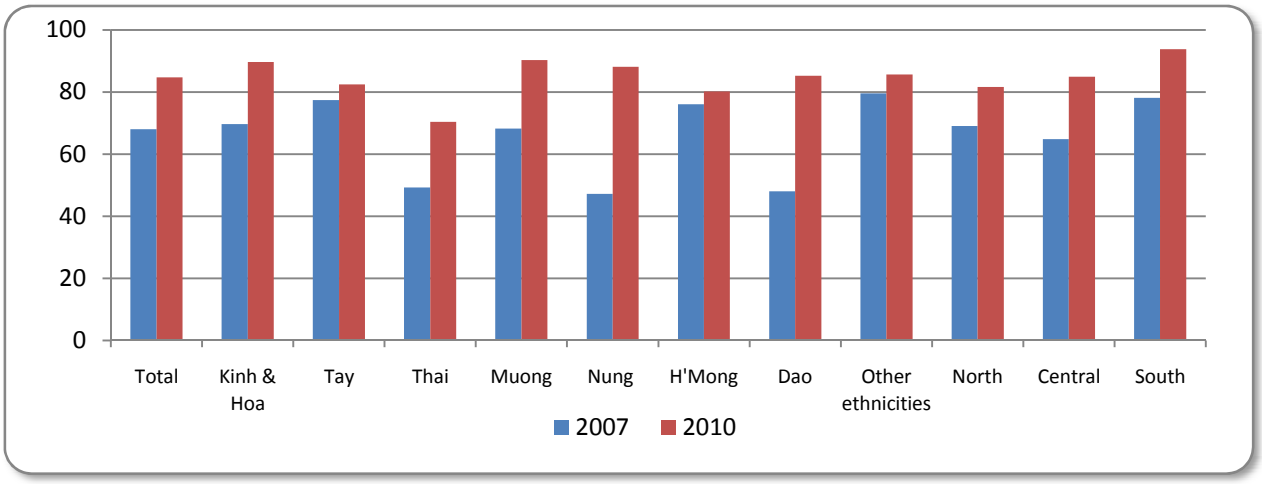
As regard to the organization of public bidding, commune staff reports more than 50 percent of projects adopting public bidding for infrastructure projects. The figure remains relatively unchanged over the period 2007 – 2010 (with a slight increase by 3 percent during the Program period). Nevertheless, what is reported by households presents a different picture. Only 27 percent of households are aware of public bidding in 2010, indicating low effectiveness level of information dissemination about public bidding at commune level. Nevertheless, there has

been a big improvement of 9.3 percent increase in household awareness from the year 2007 to 2010. As public bidding enhances the financial transparency, these figures suggest that P135-II project management activities have been more transparent even though the result is far from being satisfactory. Public bidding can hardly operate effectively and widely if only a small group of community is aware of its occurrence. Therefore, PMU and Supervisory Board play critical roles in information dissemination to grassroots level. Lack of information reveals weak capacity and low qualification of PMU and Supervisory Board. More proper and relevant trainings should be provided for these in-charge parties.

Assessment of P135-II infrastructure projects

The level of satisfaction with project quality increases, with respect to both households and commune officers. At the project onset in 2007, households and commune officers express different viewpoints regarding P135-II project quality. In 2007, commune officials were more positive about project quality than households. The percentage of commune officials satisfied with project quality is 15.6 percent higher than that of households. By 2010, this gap diminishes to 4 percent; there occurs a convergence of opinions between households and officers with both groups having more than 80 percent expressing satisfaction with project quality. We can conclude with confidence that projects' quality has been improved in Phase II.

Figure 5. 8: Households that are satisfied with quality of P135-II infrastructure projects (%)



Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Figure 5.8 provides a closer look into households' evaluation with classification by ethnicity and region. All ethnicities express an increase in the level of satisfaction with quality of the project, especially Nung and Dao with 41.0 percent and 37.2 percent increase respectively. Households from the South show higher satisfaction with the project quality, as compared to the North and Central regions.

Beneficiaries of P135-II infrastructure projects

Increase in satisfaction level can be related to the increase in beneficiary population per each infrastructure project. P135-II Infrastructure projects have successfully extended its reach for greater impact. By the end of 2010, there is a 10 percent increase in number of household benefiting from P135-II infrastructure projects, making up 94.6 percent of the total household number benefiting from the project. Half of the beneficiary population is poor households. This phenomenon indicates that P135-II has fairly succeeded in targeting the poor.

Table 5. 6: Households benefit from P135-II infrastructure projects

	2007	2010	Difference
Total	84.90	94.59	9.70
Ethnicities			
Kinh&Hoa	85.92	96.95	11.03
Tay	84.83	92.34	7.51
Thai	71.65	94.70	23.04
Muong	89.60	96.77	7.17
Nung	75.86	99.56	23.71
H'Mong	90.50	89.47	-1.02
Dao	76.01	91.20	15.19
Other ethnicities	92.47	93.31	0.84
Region			
North	85.83	92.49	6.66
Central	83.71	96.21	12.50
South	84.04	97.38	13.34

Source: Analysis Team calculations based on 2007 and 2012 household surveys.

Benefit from infrastructure projects is distributed relatively equally among ethnic groups and across three main geographical regions. For most of the ethnic groups, the population benefiting from P135-II infrastructure projects remains above 90 percent of the whole population, except for H'Mong with 89.5 percent (2010). Nung and Thai groups show the highest augmentation in the benefited population from P135-II infrastructure projects (23.7 percent and 23.04 percent

respectively). Apart from Nung and Thai groups, Kinh&Hoa and Dao are among the groups with significant rise in number of households benefitting from P135-II infrastructure projects. By region, households from the South benefit the most from P135-II infrastructure projects (97.4 percent), followed by Central region (96.2 percent), and North region (92.5 percent).

5.3 Impact of P135- II on outcomes

5.3.1 P135-II Impacts on Key Response Variables

Higher level outcomes appear in the lower half of Figure 3.2 (Causal Chain Hypothesis). These include measures of agricultural production, household income, household poverty status, and so on. In this section we define several key response variables and report the estimated impacts of P135-II on them. We focus heavily on measures of agricultural productivity because important elements of P135-II target agricultural productivity. The detail definition of the key response variables, including the calculation method, is presented in the appendix

5.3.2 Control Variables

Control variables for the household income regressions include: education and education squared of the best-educated working-age member of the household; age, age squared, and gender of the household head; size of the household; total land area held by the household; annual remittances received by the household; an indicator for the number of negative shocks experienced by the household during the past few years; and a dummy variable for the year (2007 or 2012). Working age is defined as $15 \leq \text{age} \leq 65$ for both men and women.We ran separate regressions for minority and non-minority households that aims to the impact level of the Program on the different major beneficiary household groups.

5.3.3 Estimation

Fixed-effects estimation was implemented via the xtreg command in STATA; estimation accounted for the complex sample design (stratification, clustering, and weighting). Outliers, defined as observations with values greater than four standard deviations from the mean, were deleted prior to estimation. The set of control variables was narrowed-down by stepwise deletion: the least significant variable was deleted and the model re-estimated until all remaining controls were

significant at the 40% level. The high significance level is used to guard against Type II error, which would lead to omitted variables bias. Results are given in Table 5.7 below.

Estimated P135-II impact appears in columns headed by DID FE/X (difference-in-differences, fixed-effects, with controls). T-ratios for the hypothesis that the impact is no greater than zero are given, as are one-tail p-values for testing the hypothesis. Impacts are given for minority and non-minority households. The panels on the right-hand side of the table show the sample average values of the outcome variables, which are helpful for interpreting the estimated impacts. It is essential to keep in mind the role of the counterfactual (comparison communes) for interpreting the estimated impacts.

For example, the estimated impact on asset index for minorities is 0.38. However, the sample means show the following: between 2007 and 2012 the asset index among comparison households decreased from 2.43 to 2.09 (in 2007 households had 2.43 asset items, on average; this declined to 2.09 by 2012). Thus, the change over time was -0.34. Over the same time span asset items owned by households in treatment communes increased from 2.30 to 2.33, and increase of 0.03. Were we to use these data to calculate the difference-in-differences estimator, the calculation would be [(2.33 – 2.30) – (2.09 – 2.43)] = 0.37. Thus, the significant positive impact does not necessarily mean that households in the treatment area were much better off in 2012 than they were in 2007. The estimated impact in this case should be interpreted as follows: in the absence of treatment, the asset index of treatment households *would have decreased* by the same amount as for the comparison households. Finally, we see in this case that the controls did not play a very important role: the estimated impact is quite close to the ordinary DID calculation.

For further illustration, examine the results for income from businesses for non-minorities. The large negative impact (-22,536) appears to indicate that households in the treatment communes are much worse off. Again, the key interpretation is relative: households in the treatment communes saw their incomes from businesses rise from 22,988 to 28,703 between 2007 and 2012. However, households in the comparison communes enjoyed a much larger average increase: from 21,912 to 48,759. Thus, business incomes of households in the treatment communes failed to grow as rapidly as business incomes of counterpart households in comparison communes.

Minority households recorded statistically significant positive impacts due to P135-II for several important variables: productive asset ownership, household durables ownership, and rice productivity. Among higher-order outcomes, they enjoyed positive impacts in income from agriculture, household total income, and household per-capita income. A particularly important result is that poverty among minority households in treatment communes declined significantly more than it declined in comparison communes. Specifically, for ethnic minority households, P135- II increased the rice productivity about 10%, agriculture income about 17%, total income of these households about 16%, and then reduce the poverty of ethnic minority about 10%. In addition, Program helps to reduce the travel time of ethnic minority households to health facilities about 12%.

In only two instances were estimated impacts for minority households negative. First, the value of their corn productivity among households in treatment communes increased less than that in comparison communes. but it did increase (from 770 VND per square meter to 1,590 VND per square meter compared to an increase from 0.94 VND per square meter to 1,940 VND per square meter). In this case we see not only did comparison households enjoy a larger increase in the value of their corn productivity, they started off at a higher value as well. A similar description is appropriate for the negative impact recorded for the share of land allocated to industrial crops.

Statistically significant positive impacts were recorded for non-minority households for their household durables index and for their corn, cassava, and industrial crops productivities. While the industrial crop productivity increased, the share of land allocated to industrial crops decreased. Perhaps both results were driven by taking the least-productive land out of industrial crops production.

Non-minority households in treatment areas saw their agricultural incomes decline while those in comparison areas saw theirs increase: this contrast is reflected in the statistically significant impact on income from agriculture. The statistically significant impact on income from businesses was discussed above.

Finally, the measured travel time to health facilities in treatment communes increased. While it seems unlikely that travel times to specific facilities increased, this result could be driven by a shift in the mix of health facilities visited.

The right-hand panels of Table 5.7 support two important generalizations. First, in almost all measures the treatment communes were worse off in 2007 than the comparison communes. This is consistent with authorities directing P135-II resources to communes most in need.

Second, non-minority households are better off than minority households in several very important respects. In particular they have lower incomes and lower school enrollments. For both of these, there is evidence of improvement. Incomes increased, but not as much as non-minorities. Enrollments also increased, and by larger percentages than for non-minorities.

Table 5. 7: Impact estimation results

	Minorities			Non-Minorities			Sample Averages							
							Minorities				Non-Minorities			
Response Variable	DID FE/X	t-ratio	p-value	DID FE/X	t-ratio	p-value	Treatment		Control		Treatment		Control	
							2012	2007	2012	2007	2012	2007	2012	2007
Asset Index	0.38	2.33	0.0099	0.15	0.88	0.1894	2.33	2.30	2.09	2.43	2.04	1.90	2.14	2.16
Durables Index	1.18	7.42	0.0000	1.02	2.04	0.0207	7.45	6.58	8.80	9.14	10.90	9.83	11.08	10.78
House Quality Index	0.01	1.00	0.1587	0.02	1.05	0.1469	0.42	0.38	0.50	0.47	0.57	0.50	0.61	0.54
Rice Productivity (kg/sqm)	0.03	2.00	0.0228	0.002	0.07	0.4721	0.37	0.35	0.42	0.41	0.41	0.38	0.42	0.41
Rice Productivity (000 VND/sqm)	0.04	0.41	0.3409	-0.11	-0.48	0.3156	2.38	1.03	2.65	1.26	2.47	1.13	2.69	1.29
Corn Productivity (kg/sqm)	0.01	1.10	0.1357	0.03	1.44	0.0749	0.18	0.16	0.16	0.16	0.12	0.12	0.12	0.13
Corn Productivity (000 VND/sqm)	-0.18	-2.12	0.0170	0.003	0.02	0.4920	1.59	0.77	1.94	0.94	1.99	0.87	2.16	0.94
Cassava Productivity (kg/sqm)	-0.13	-1.01	0.1562	0.54	2.35	0.0094	1.14	1.26	1.26	1.35	1.64	1.22	1.27	1.21
Cassava Productivity (000 VND/sqm)	-0.16	-0.86	0.1949	0.45	1.69	0.0455	1.43	0.74	1.64	0.83	1.94	0.75	1.69	0.82
Industrial Crop Productivity (kg/sqm)	-0.01	0.10	0.4602	0.43	1.02	0.1539	0.54	0.51	0.53	0.60	1.58	4.42	1.01	1.43
Industrial Crop Prod (000 VND/sqm)	0.03	0.02	0.4920	12.54	2.41	0.0080	5.47	2.73	4.06	2.95	17.71	11.20	5.85	4.04
Share of Land in Industrial Crops	-0.04	-1.32	0.0934	-0.11	-1.91	0.0281	0.18	0.18	0.29	0.21	0.28	0.30	0.23	0.22
Income from Wages & Salaries	634	0.19	0.4247	2,985	1.10	0.1357	14,541	11,535	19,578	15,770	25,512	18,596	23,573	18,542
Income from Agriculture	3,230	3.27	0.0005	-3,285	-1.54	0.0618	19,224	17,446	18,632	18,584	17,039	17,954	16,724	14,774
Income from Businesses	2,104	0.52	0.3015	-22,536	-2.90	0.0019	14,012	7,597	22,268	12,676	28,703	22,988	48,759	21,912
Household Total Income	3,479	2.14	0.0162	-1,644	-0.41	0.3409	31,309	26,634	36,687	33,648	45,123	39,740	45,460	39,460
Household Per-Capita Income	1,118	2.51	0.0060	121	0.11	0.4562	7,047	5,739	8,174	7,722	12,193	9,829	12,083	9,832
Poverty	-0.10	-2.72	0.0033	-0.01	-0.17	0.4325	0.49	0.59	0.40	0.42	0.29	0.32	0.33	0.34
Enrollment: Primary	0.04	0.97	0.1660	0.04	0.50	0.3085	0.83	0.83	0.93	0.92	0.98	0.92	0.95	0.92
Enrollment: Lower Secondary	0.02	0.50	0.3085	0.10	0.96	0.1685	0.60	0.58	0.77	0.72	0.78	0.74	0.90	0.89
Enrollment: Upper Secondary	0.03	0.63	0.2643	-0.03	-0.32	0.3745	0.28	0.24	0.43	0.38	0.53	0.55	0.66	0.68
Travel Time to Health Facilities	-5.82	-1.69	0.0455	9.67	1.41	0.0793	46.13	43.48	39.09	28.48	48.64	37.11	37.25	62.36

5.4 Conclusion

Program 135-II has harvested significant success in implementing participatory approach from central to grassroots level. *First*, remarkable progress has been made by commune office in the implementation process. Notably, the Program experiences 24 percentage point increase in the number of commune-owned projects, 23 percentage point increase in that of commune PMUs, and 10 percentage point increase in that of projects having treasury account. *Second*, huge improvement in household participation level in every stage including selection, planning and implementation has been witnessed towards the end of the Program: 24.8 percentage point increase in selection meeting attendance, 23 percentage point increase in the number of households sharing their viewpoints during the meeting, 24 percentage point increase in households' contribution to construction projects and 9-time increase in household contribution towards O&M funds. *Third*, enhancement in financial transparency has been achieved to a certain extent. More than 24 percent of projects have its financial information publicized and the rate of households receiving financial information also doubles over the period 2007 - 2010. The Program has expanded its coverage to a greater beneficiary group. By 2010, 94.6 percent of households benefit from each infrastructure project.

Even though huge progress has been made, the target of 100 percent of communes becoming investment owners has not been achieved and this is still considered a highly challenging task given weak capacity building at local level. Significant improvement in every implementation activity has been made but the level of achievement in capacity building at local authorities and community remains low. This situation is first displayed through weak implementation at commune level: 46 percent of commune-owned infrastructure projects, 54.2 percent of projects with public bidding, 39.1 percent of projects with treasury accounts, 54.4 projects with O&M plan. On the other hand, community participation is still limited in certain stage such as: only 36.1 households voice their opinion during selection meeting, 8 percent join People Supervision Board. Participation level also varies greatly by different beneficiaries groups, with the most disadvantaged groups including ethnic minorities and female should be given more attention. With a "low" starting point of local authorities, the implementation process has encountered multiple difficulties. Impact of commune investment ownership is not highly significant and clear. Commune-

owned projects still face with problems during implementation period such as slow disbursement and weak capacity of commune officials. Participation in project supervision and O&M activities receive the least attention. Our finding also specifies the importance of an effective information dissemination mechanism to ensure high level of informed public participation. Communication mechanism needs to receive additional attention from the Program because access to information is highly correlated to the effectiveness of community-driven implementation.

The success of participatory approach requires tremendous efforts from central to local authorities in engaging local community into every project activity. To ensure an effective participation, local community needs to be equipped with sufficient information, knowledge, and understanding in the operation of each activity as well as understanding the importance of their participation prior to their active involvement. Also, institutional capacity building needs to precede that at local community. Apart from providing a systematic participatory framework, the Program should focus on improving each and every activity of the project implementation. Our analysis has identified key strength as well as weakness in project management and capacity strengthening process. Participatory approach is the way to sustainable community development but reliant upon adequate management capacity and effective capacity building at both institutional and community levels.

The estimated impacts on key response variables for minority households are on balance very positive. The most important results are large and statistically significant impacts on total income, per-capita household income, and poverty status. Results for non-minority households appear mixed, but impacts on the most important measures (total income, per-capita income, and poverty status), are neither large nor statistically significant.

School enrollment is critically important to households and their communities. Enrollment rates of minority children are lower than those of non-minorities, especially for upper-secondary school. However, enrollments improved among households in treatment and in comparison communes. In all cases but one, enrollments in treatment communes increased more than in comparison communes, but the impacts were not statistically significant.

The analysis shows two important facts. First, treatment communes were generally worse off than comparison communes in 2007, indicating that the authorities' targeting of most needy communes was accurate. Second, even though they comprise only 31% of the population represented by our sample, non-minority households are substantially better-off than minority households in key respects. The right-hand panels of Table 5.7 indicate that substantial disparities persist between minorities and non-minorities in total income, income per-capita, and school enrollments.

CHAPTER 6

CONCLUSION AND RECOMMENDATION

This report aims to evaluate the effectiveness of P135-II and to identify its limitations. The goal is to provide information that can be used to enhance the design of future government programs. We report the impacts of P135-II on the expected outcomes of household welfare indicators. In particular, we report the impacts on poverty, income, agricultural production, housing conditions, and access to basic public services. Our analysis is based on BLS 2007 and ELS 2012, the most comprehensive and reliable panel data set focusing on ethnic minorities who often live under difficult conditions and often that face the deepest poverty in Vietnam. This data set enabled us to implement the appropriate methods for measuring the program impactsand to measurethe progress in poverty reduction and gains in socio-economic status of ethnic minority communities. In addition, thislarge well-designed panel data set provides reliable baseline data for designing future government poverty reduction programs. Based on our analysis using this panel data set, we came up with the following major findings and policy implications.

P135-II is the first large government program that has adopted a systematic and professional evaluation procedure. It meets the highest professional standards, not only for the sake of the P135-II, but also as an illustration of the value added that good evaluations can provide. It demonstrates the methodology that could be used to draw lessons for upcoming government programs including the New Rural Development Program and Program 30A. BLS 2007 and ELS 2012 provide rich and high-quality information that enables us to answer many important questions that we cannot address for other government programs.

During the implementation of P135-II, some communes in the treatment group graduated from the program and some communes from the control group were brought into the treatment group. These reassignments were not part of the original program design and they complicated the impact evaluation task. We were compelled to omit communes that had been reassigned; this reduced the sample size, reduced the precision of the estimated impacts, and reduced the power of the necessary statistical tests. In addition, we found that the budget allocations of P135-II

communes and comparison communes were not statistically different. While the treatment communes did receive substantially more P135 funds than the control communes received, they also received substantially less non-P135 support. This pattern is consistent with the hypothesis of compensatory reallocation of non-P135 funds by the local authorities (district and province), which has been confirmed by our recent study.[14] The potential impact of P135-II depends on the degree to which it enhances resource availability to target communes. The reallocation non-P135 funds from P135 communes to non-P135 communes to compensate the latter because they were not included in P135 created a major difficulty for identifying P135 impacts and very likely resulted in underestimating the program impacts. The fact that the P135-II communes actually did not receive more funding than other communes undermined the goals of P135: to reduce the widening gap between P135-II communes and other communes, the gap between poor and non-poor households, and the gap between ethnic minorities and Kinh households. These issues should be addressed and monitored in future programs to ensure that the funds will be allocated to target groups and that it does not affect the decisions of local authorities on the other resource allocations.

P135-II achieved significant success in implementing a participatory approach to implementation, with remarkable corresponding progress in decentralization. The number of commune-owned projects increased substantially from 21.5% in 2006 to 46% in 2011. The number of projects having treasury accountsis increased by about 10 percentage points. These changes represent large improvements compared to the first phase of P135 and other programs.Beneficiary households participated in every stage of the project including selection, implementation, supervision and contributionsto the operation and maintenance funds. Financial transparency also improved to a certain extent. More than 24 percent of the local projects undertaken through P135-II have had their financial statements publicized and distributed to beneficiary households.

Even though progress has been made, the target of 100 percent of communes becoming investment owners has not been achieved and this is still considered a highly challenging task given weak management capacity at local levels. In contract to the target, more than 50% of infrastructure projects are district-owned projects,

[14]Effectiveness of Targeted Budget Support in Program 135 Phase II- An Aid Effectiveness Evaluation Report. Indochina Research and Consulting, 2011.

nearly 50% of projects were undertaken without public bidding, and only 40% of projects have treasury accounts. Community participation is low and varies greatly by beneficiary group; ethnic minorities and women's groups are under-represented. In addition, commune-owned projects still face problems such as slow funds disbursement and weak capacity among commune officials. Participation in project supervision and operations and maintenance activities receive the least attention. The success of the participatory approach requires tremendous efforts from central and local authorities in engaging local communities in every project activity. Therefore, local communities need to be equipped with sufficient information, knowledge, and understanding to execute each activity. These issues should be considered and addressed in designing future programs, especially programs which address decentralization and participation of the community.

The living standards of households in P135-II improved in every measured respect for all ethnic groups. The average household income increased about 20%, andthe poverty rate decreased from 57.5% to 49.2%. The housing and sanitation conditions also improved for most ethnic groups. However, poverty remains high and the living standard of the households in these communes is still very low compared to the national average. The poorer households experienced lower income growth rates than the better-off households. Therefore, inequality increased, with a large proportion of the inequality due to inequality within each ethnic group (more than 90%). The poverty gap and severity indexes of households in the Program 135-II areas did not decrease, so the living standards of the households that remained poor are less improved than others and the gap is widening between poor and non-poor households in these communes.

Our results also show that poverty reduction at the commune level is positively correlated with income growth and that inequality is slightly correlated with poverty. Moreover, the elasticity of poverty with respect to income growth tends to decrease overtime, which suggests that income redistribution plays a very important role in decreasing the poverty gap and alleviating the severity of poverty. In addition, part of the measured poverty is transitory: 22.1% of poor households escaped from poverty during our period of analysis, but 14.3 percent of households that initially were not poor fell into poverty. Kinh households are more likely to be transiently poor, while ethnic minority households are more likely to be persistently poor. This implies that

the poverty reduction in these communes is more difficult to sustain, partly due to the high level of dependency on agricultural income and a low rate of transition from farm to non-farm economic activities.

The program significantly improved the living standards of certain beneficiary households in the targeted communes. While the program impact on income and poverty of the Kinh &Hoa ethnic groups is neither large nor statistically significant, it has large and statistically significant impacts on the income and poverty rates of ethnic minority groups. Thus, theprogram successfully targeted the most disadvantaged groups in the treatment communes. According to the baseline data, the treatment communes were generally worse off than control communes in 2007, indicating that targeting the program on the most needy communes was accurate. In addition, the Kinh & Hoa households were substantially better-off than the ethnic minority households in most key dimensions of living conditions, including income, housing, sanitation, and education. Education is critically important to households and their communities. Enrollment rates of minority children are lower than those of non-minorities, especially for upper-secondary school. However, enrollments improved among households in treatment and in comparison communes and in all cases but one, enrollments in treatment communes increased more than in comparison communes, but the impacts were not statistically significant.

As pointed out in the Baseline Report, there was a big gap between the "baseline" outcomes and the P135-II targets, which implies a big challenge for the program to achieve its ambitious targets.[15] Our results show that the program only partly achieved of its targets. It reduced the poverty rate from 57.5% to 49.2%,though the target rate was 30%. Only 41% of households have annual income per capita of over 3.5 million VND, while the target is 70%. Net primary enrollment and lower secondary enrollment in the targeted communes did improve but are still far behind the goals (85.4% compared to 95% and 70.9% compared to 75%, respectively). About 28% of the households reported that they lacked of food sometime in 2012. In addition, progress toward achievement of the targets varies among different ethnic

[15]Chapter 8- Analysis of the P135-II Baseline Survey

groups. While sustained improvements in income and poverty were found in Tay, Nung, Dao, and H'mong groups, less improvement was seen among other ethnic groups, especially the Thai. The fact that program benefits were not equally distributed among different ethnic groups suggests that future support to these communes should be better designed to account for the specific conditions, needs, and culture of each ethnic group.

This report aims to measure the impact of the program on expected outcomes of key variables and the overall progress toward specific targets.Disaggregating the impacts, to explain why the program had different impacts on different ethnic groups and regions requires further study. In addition, analysis of the reasons some poor households remain poor in spite of the program and why some of the major targets were not achieved requires an additional study. Such studies have the potential to add valuable information for better design of future programs to supports the target households and their communities.

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APPENDIX

Three Foster-Greer-Thorbecke (FGT) Poverty Index

The three FGT indexes are computed as follows (Foster, Greer and Thorbecke, 1984):[16]

$$P_\alpha = \frac{1}{n}\sum_{i=1}^{q}\left[\frac{z - Y_i}{z}\right]^\alpha , \qquad (1)$$

Where Y_i is a per capita income for person i (there are no data on consumption expenditure in the Baseline Survey 2007 as well as the Endline Survey in 2012). z is the poverty line, n is the number of people in the sample population, q is the number of poor people, and α can be interpreted as a measure of inequality aversion.

When α = 0, we have the headcount index H, which measures the proportion of people below the poverty line. When α = 1 and α = 2, we obtain the poverty gap PG, which measures the depth of poverty, and the squared poverty gap P_2which measures the severity of poverty, respectively.

Gini index

The Gini index is computed as follows (Deaton, 1997):

$$G = \frac{n+1}{n-1} - \frac{2}{n(n-1)\overline{Y}}\sum_{i=1}^{n}\rho_i Y_i \qquad (2)$$

where ρ_i is the rank of person i in the Y-distribution, counting from the richest so that the richest has the rank of 1. $\overline{Y}$ is the average per capita income. n is the number of people in the sample.

[16]For other poverty measures, see Deaton (1997) and Haughton and Khandker (2009).

The value of the Gini coefficient varies from 0 when everyone has the same income to 1 when one person has everything. The closer a Gini coefficient is to one, the more unequal is the income distribution.

The generalized entropy (GE) inequality measures are measured by the following formula:

$$GE(\alpha) = \frac{1}{\alpha(\alpha-1)}\left[\frac{1}{n}\sum_{i=1}^{n}\ln\left(\frac{Y_i}{\bar{Y}}\right)^{\alpha} - 1\right] \quad (3)$$

The GE indexes range from zero and infinity, and higher values indicate higher inequality. α is the weight given to different parts of the income distribution. GE(α) with lower values is more sensitive to changes in the lower tail of the distribution, and GE(α) with higher is more sensitive to changes in the upper tail of the distribution. GE(0) is called the Theil L index of inequality, while GE(1) is called the Theil T index.[17]

Model to determine the poverty status of household

The probability of household *i* being in poverty status *j* is modeled as follows**:**

$$P_{ij} = \frac{e^{X_i\beta_j}}{\sum_{k=1}^{m} e^{X_i\beta_k}}, \quad (4)$$

Where *X* is a vector of household characteristics, and *β* is a vector of coefficients to be estimated. Since the coefficients in the multinomial logit model do not have clear meaningful interpretation, we compute the marginal effect as follows.

[17] For other poverty and inequality measures, see Haughton and Khandker (2009).

$$\frac{\partial P_{ij}}{\partial X_i} = \frac{e^{X_i\beta_j}}{\sum_{k=1}^{m} e^{X_i\beta_k}}\beta_j - \frac{e^{X_i\beta_j}}{\left(\sum_{k=1}^{m} e^{X_i\beta_k}\right)^2}\sum_{k=1}^{m} e^{X_i\beta_k}\beta_k$$
$$= P_{ij}\beta_j - P_{ij}\sum_{k=1}^{m} P_{ik}\beta_k. \quad (5)$$

Definition and calculation method of key response variables

1. Household Assets

- Household Productive Assets Index:

$PAI = \frac{1}{K}\sum_{i=1}^{K} a_i$,

$a_i = 1$if household has at least one of asset i , and 0 otherwise;

assets are listed in Section 5 of the questionnaire.

- Household Consumer Durables Index:

$CDI = \frac{1}{J}\sum_{i=1}^{J} d_i$,

$d_i = 1$if household has at least one of durable i , and 0 otherwise;

durables are listed in Section 5 of the questionnaire.

- Housing Quality Index:

$HQI = (10 - (htype + wtype + ttype))/7$, where:

$htype$: 1 = permanent house

2 = semi-permanent house

3 = temporary house

$wtype$: 1 = piped water

2 = clean water source

3 = other

$ttype$: 1 = flush toilet

2 = other toilet

3 = no toilet

HQI ranges from 1/7 to 1; higher scores indicate "better" houses.

2. Agricultural Productivity

- Productivity (rice):
  - kilograms per square meter of land allocated to rice production;
  - value of rice produced per square meter of land allocated to rice production.
- Productivity (corn):
  - kilograms per square meter of land allocated to corn production;
  - value of corn produced per square meter of land allocated to corn production.
- Productivity (cassava):
  - kilograms per square meter of land allocated to cassava production;
  - value of cassava produced per square meter of land allocated to cassava production.
- Productivity (industrial crops):
  - kilograms per square meter of land allocated to industrial crops production;
  - value of industrial crops produced per square meter of land allocated to industrial crops production.
- Share of land allocated to industrial crops.

3. Household Income[18]

- Income from wages & salaries, thousands of VND per year.
- Income from agricultural activities, thousands of VND per year.
- Income from household enterprises,thousands of VND per year.[19]

[18] Real values were computed using province-specific deflators to make 2007 and 2012 values comparable.

- Household income from all sources, thousands of VND per year.
- Household income per-capita, thousands of VND per year.
- Indicator for household poverty status; the indicator = 1 if real per-capita household income was below the rural poverty line; 0 otherwise.

4. Other Indicators

- Primary school enrollment rate: the proportion of household's primary-aged children enrolled in school.
- Lower secondary school enrollment rate: the proportion of household's lower secondary-aged children enrolled in school.
- Upper secondary school enrollment rate: the proportion of household's upper secondary-aged children enrolled in school.
- Travel times to schools.[20]
- Travel times to health facilities: weighted average of travel times to various facilities, with weights proportional to the numbers of visits by household members to each type of facility.

[19]This variable has too few observations for analysis.

[20] These variables had insufficient numbers of observations for analysis.