

MEKONG ECONOMIC RESEARCH NETWORK

**Study Report on “Social Protection for Small-Scale  
Farmers in Lao PDR: Risk and Vulnerability  
Assessment”**

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## Abbreviations

<b>ADB</b>	Asian Development Bank
<b>AEC</b>	ASEAN Economic Community
<b>APB</b>	Agricultural Promotion Bank
<b>ASEAN</b>	Association of South-East Asian Nations
<b>CBHI</b>	Community Based Health Care Insurance
<b>CRDPR</b>	Committee for Rural Development and Poverty Reduction
<b>DMH</b>	Department for Meteorology and Hydrology
<b>ESIA</b>	Environmental and Social Impact Assessment
<b>FAO</b>	Food and Agriculture Organization
<b>GDP</b>	Gross Domestic Product
<b>HEF</b>	Health Equity Fund
<b>IFAD</b>	International Fund for Agricultural Development
<b>LAK</b>	Lao Kip
<b>Lao PDR</b>	Lao People's Democratic Republic
<b>LDC</b>	Least Developed Country
<b>MAF</b>	Ministry of Agriculture and Forestry
<b>MDG</b>	Millennium Development Goals
<b>MLSW</b>	Ministry of Labour and Social Welfare
<b>MoF</b>	Ministry of Finance
<b>MoH</b>	Ministry of Public Health
<b>MoIC</b>	Ministry of Industry and Commerce
<b>MoNRE</b>	Ministry of Natural Resources and Environment
<b>MPI</b>	Ministry of Planning and Investment
<b>MPWT</b>	Ministry of Public Works and Transport

<b>MRC</b>	Mekong River Commission
<b>NAFRI</b>	National Agriculture and Forestry Research Institute
<b>NAPA</b>	National Adaptation Programme of Action
<b>NDMC</b>	National Disaster Management Committee
<b>NDMP</b>	National Disaster Management Plan
<b>NERI</b>	National Economic Research Institute
<b>NTFPs</b>	Non Timber Forest Products
<b>PB</b>	Policy Bank
<b>PM</b>	Prime Minister
<b>SOE</b>	State Owned Enterprise
<b>UNDP</b>	United Nations Development Programme
<b>USD</b>	United States Dollar
<b>VDPU</b>	Village Disaster Protection Unit
<b>WB</b>	World Bank
<b>WFP</b>	World Food Programme
<b>WREA</b>	Water Resources and Environment Administration

## Acknowledgement

The social protection system for smallholders is identified as a very important aspect of socio-economic development in Lao PDR. Therefore, any study related to the topic is very important and highly needed.

By support from the Mekong Economic Research Network (MERN) managed by the Center for Analysis and Forecasting (CAF) of the Vietnam Academy of Social Sciences (VASS) with financial support from the International Development Research Centre (IDRC), Canada (project 105220), this paper focuses on vulnerability assessment of smallholders associated with climate change and market integration and based on findings from the assessment, this paper recommends policy frameworks for addressing risks and vulnerabilities for smallholders in Lao PDR. Hopefully, the information and policy recommendations provided in this paper will be useful for improvement of social protection for smallholders in Lao PDR.

Despite our best efforts, research errors, collation mistakes, insufficient data and information and contested issues were unavoidable. In this regard we greatly appreciate and welcome all readers' comments and suggestions.

I would like to express my gratitude and appreciation to IDRC for its financial support, Dr. Nguyen Thang, Director of MERN, Dr. Leebor Leebuapao, Lao National Coordinator of MERN for giving opportunity and for selecting this topic, Dr. Chansathith Chaleunsinh and Ms. Nguyen Thi Thu Hang for their excellent coordination. Special thanks are also extended to Dr. Edgard R. Rodriguez, Senior Program Specialist of IDRC for his helpful comments.

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## **Abstract**

This study focuses on risks and vulnerability assessment associated with climate change and market integration of smallholders in Lao PDR and based on findings from the assessment, this paper suggest and priorities policy frameworks and measures for addressing risks and vulnerabilities of smallholders in Lao PDR.

According to results from this study, smallholders in Lao PDR face many risks and vulnerable to many shocks related to climate change and market integration, including illness, concession, flood, drought, wind storm, agricultural product price volatility, market loss, environmental degradation, late coming rain, and crop and livestock pest.

To improve social protection system for smallholders in Lao PDR, this study suggest and priorities number of policy frameworks and measures, including (1) improve and implement a community based social security scheme; (2) strengthen the ESIA process; (3) enhance the capacity of communities to address risks and vulnerabilities; (4) improving early warning; (5) establishment of vocational training programme and fund for smallholder to undertake livelihood activities and diversify their income sources; (6) establish a minimum agricultural product price security system, particularly for rice; (7) establish an agricultural product market and price information centre; (8) enhance the capacity of NDMC; and (9) advocate for environmental protection and sustainable land use for farmers. (10) establish a crop and livestock insurance scheme.

## Executive Summary

Smallholders represent around 78% of the total population of the Lao Peoples Democratic Republic (Lao PDR). Because they are the majority and have relatively low socio-economic development status, smallholders are a priority target for socio-economic development. The Lao PDR will not be able to achieve the Millennium Development Goals (MDG), graduate from Least Developed Country (LDC) status or meet other socio-economic development targets without significant improvements in the livelihoods of smallholders.

According to the findings of this study, smallholders in Lao PDR are vulnerable to many risks related to climate change and market integration. Exposure to risks arise from the following sources: (1) flooding; (2) drought; (3) crop and livestock pests; (4) wind storms (topical depression/storm); (5) late rains (late onset of the rainy season); (6) volatility in agricultural product prices; (7) market losses; (8) land concession practices; (9) environmental degradation and unsustainable land use; and (10) illness.

Most importantly, this paper finds out that smallholders in Lao PDR are highly vulnerable to health shock and concession, moderately vulnerable to flood, drought, wind storm, agricultural product price volatility, market loss and environmental degradation and they are relatively low vulnerable to late coming rain and crop and livestock pest.

Based on the findings from assessment, this study suggests and priorities policy frameworks and measures for addressing risk and vulnerabilities for smallholders as below: (1) improve and implement a community based social security scheme, particularly health insurance scheme; (2) strengthen the ESIA process and ensure community involvement to reduce negative social and environmental impacts of



concession practices; (3) enhance the capacity of communities to address risks and vulnerabilities arising from their exposure to climate change and market integration; (4) improving early warning; (5) establish a vocational training programme and fund for smallholder to undertake livelihood activities including diversification of their income sources that will make them less dependent on agricultural production; (6) establish a minimum agricultural product price security system, particularly for rice; (7) establish an agricultural product market and price information centre; (8) enhance the capacity of NDMC; and (9) advocate for environmental protection and sustainable land use for farmers. (10) establish a crop and livestock insurance scheme.

# I. Introduction

Lao PDR is categorized as a LDC with a Gross Domestic Product (GDP) per capita of 1,500 United States Dollars (USD) in 2013. Subsistence agricultural production plays an important role in the economy. In 2013, the agricultural sector contributed around 26% to GDP and employed about 78% of the economy's labour force. Although smallholders represent the majority of the population they have a relatively low socio-economic status. Thus, these groups are a priority target for socio-economic development in Lao PDR. The Lao PDR is unlikely to achieve its socio-economic development targets without significant improvements in the livelihoods and quality of life of smallholders.

Due to their relatively low socio-economic status, smallholders are vulnerable to my shock events. Therefore, the improvement of social protection is identified as a very important aspect of socio-economic development in Lao PDR. Hence, any study and publication related to the topic is also important and highly required. However, based on finding from our rapid literature survey, there is still very limited number of studies and publications related to improvement of social protection for smallholders in Lao PDR. The most relevant and updated publication that we found by our literature survey and analysis before starting this project is a study report on social protection for small scale agriculture: a case study in Oudomxay province and Vientiane Capital; the study was conducted by the National Economic Research Institute (NERI) in 2012 by technical and financial support from OXFAM-GB. The case study focused on examining shock frequency and severity that smallholders experienced in the practical life and the linkage among shock frequency and severity and household characteristics like income rank, income sources, etc. The case study provides a lot of important information for improvement of social protection for smallholders in Lao PDR.

However, the case study still has number of limitations; particularly the case study did not conduct vulnerability assessment correctly. Shock frequency and severity along is not clear enough for improvement of social protection. It requires vulnerability assessment. Without vulnerability assessment, the improving social protection will be inefficient.

Based on the need, by financial support from the Mekong Economic Research Network (MERN), we go on conducting vulnerability assessment for smallholders in this study to provide additional information for improvement of social protection for smallholders in Lao PDR.

The main objective of this study is to conduct vulnerability assessment of smallholders in Lao PDR with particular focus on vulnerability associated with climate change and market integration. The analytical framework used in this study is the vulnerability assessment framework from MRC, which identifies vulnerability as composition among potential risks/exposure and adaptive capacity. According to the assessment framework, the vulnerability is identified as high when the potential risk/exposure is high and the adaptive capacity is low; the vulnerability is identified as low when the potential risk/exposure is high and the adaptive capacity is also high, etc. We would like to describe more details on the assessment framework in the next section.

Due to time and resources constrains, literature survey and analysis are main approach to provide statistic data and information for this assessment. The most important publications and documents used for this study included the National Adaptation Programme of Action (NAPA), the National Disaster Management Plan (NDMP) 2011-2015, Social Protection for Small-Scale Agriculture (OXFAM-GB), Basin Wide Climate Change Impacts on Wetland (MRC) and other relevant

references. The sources of publications and documents used for this study are provided in the reference list.

This study report composes of three main parts, including (1) introduction; (2) potential risks and vulnerabilities of smallholders associated with climate change and market integration and (3) conclusion and policy recommendations.

## **II. Potential Risks and Vulnerabilities of Smallholders Associated with Climate Change and Market Integration in Lao PDR**

As described in the section above, to assess the vulnerability of smallholders, we need to examine both potential risks/exposure that they face and their adaptive capacity, which depends on many factors, particularly their income characteristics, experiences, their level of education and social assets. Therefore, in order to conduct vulnerability assessment in details, we would like go step by following three sub-sections, i.e. (1) reviewing on characteristics of smallholders; (2) reviewing shock events associated with climate change and market integration that smallholders experienced in their practical life and (3) vulnerability assessment of smallholders. While the sub-section 1 and 2 provide background information, the sub-section 3 conducts the assessment.

### **2.1. Specific Characteristics of Smallholders**

As a part of assessing risks and vulnerabilities, it is useful to review characteristics of smallholders in Lao PDR, in particular the range of risks and nature of vulnerability they experience related to markets and the effects of climate change.

**(1) Living in remote areas along the Mekong River and its tributaries** is an important characteristic of smallholders in Lao PDR. According to the latest statistical data, over 78% of population in Lao PDR are engaged mainly in the agricultural sector and living in remote areas where road, communication and

information infrastructure is relatively poorly developed<sup>1</sup>. Over half of these people live in areas of flat land along the Mekong River and its tributaries in the central and southern part of the country. According to the NDMP 2011-2015 and the National Adaptation Programme of Action (NAPA), these areas are subject to flooding, drought and wind storms while northern Laos and highland areas in central and southern parts of the country are exposed to risks from crop and livestock pests. Natural disasters are identified as potential risks for smallholders. Every year, natural disasters damage infrastructure, people's assets, agricultural production and the health and livelihoods of the rural poor in these areas. Further details are described in the sub-section below.

**(2) Traditional way of life.** The majority of the rural population maintain a traditional way of life. They usually live together in large families with grandfather, grandmother, father, mother and children, often surrounded by relatives and friends. Solidarity and community level support underpin traditional social relationships among the farming community in rural Laos. Based on findings from a study conducted by the NERI in 2013, the traditional way of life also provides an important informal system of protection and safety net to smallholders.<sup>2</sup> This means that when their household and or livelihoods and welfare are affected by disasters, illness and loss of assets, family members, relatives and friends provide assistance.

However, traditional livelihoods of smallholders have been changing gradually, particularly due to increased penetration of market oriented or commercial economic activities and declining solidarity among people living together in the same community. The gradual decline in household size in remote areas dominated by smallholders seems to indicate this trend. According to population

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<sup>1</sup> Lao Expenditure and Consumption Survey 3 (LECS 3)

<sup>2</sup> Saykham V. 2013. Conceptual Framework on Risk and Vulnerability and Situation Analysis of the National Policy Environment.

census, the average household size in rural areas has declined from 6.1<sup>3</sup> in 1995 to 5.9<sup>4</sup> in 2005. The changing traditional way of life also erodes social capital for coping with economic and environmental shocks such as illness of key family members of working age, flooding or drought. Therefore the need has arisen for a formal social safety net mechanism supported by appropriate institutions.

**(3) Engaging in subsistence agriculture** is another important characteristic of smallholders in rural Laos. The majority of people in rural areas own agriculture land and production equipment. They usually produce food for their own consumption and only sell some of their produce to earn cash income. According to the findings from rapid assessments conducted by NERI in Champhone District, Savannakhet Province, the main agricultural product of smallholders is sticky rice; they consume over 70% of their produce while the remaining 30% is sold in the local markets for cash income.<sup>5</sup> This means subsistence production still plays an important role for the livelihoods of smallholders. Subsistence agricultural production and less dependence on markets, reduces exposure of smallholders and landless poor to risks related to market shocks.

At present subsistence agricultural production activities of smallholders are changing gradually towards more modern industrialized processes and greater socio-economic and market integration. Agricultural production is becoming more commercial. In addition to growing rice, many small-scale farmers grow industrial crops commercially to meet the demand of factories established in their locality or for export to neighbouring countries. These commercial crops include maize, cassava, sugar cane, etc. There is also a trend towards more

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<sup>3</sup> The National Statistical Centre, Population Census, 1995

<sup>4</sup> The National Statistical Centre, Population Census, 2005

<sup>5</sup> Saykham V. 2013. Conceptual Framework on Risk and Vulnerability and Situation Analysis of the National Policy Environment.

modern production methods. Such socio-economic changes and market-oriented production activities create new opportunities but also pose a threat to farmers. Their livelihood activities are increasingly becoming dependent on external markets which bring new risks and uncertainty.

**(1) Using traditional modes of production** is another important characteristic of smallholders in Lao PDR. Traditional production methods are associated with low productivity and high cost compared with the same production using modern technologies. For example, the average rice production in Lao PDR was estimated to be about 3.7 tonnes/ha for sticky rice in 2010 and 1.9 tonnes/ha for upland rice, whereas rice production using advanced technology in Thailand and Vietnam yields about 5.3 tonnes/ha. The lower productivity of Lao farmers places them at a disadvantage when they compete on external or export markets; they are less competitive and are subject to the risk of losing their market.

In addition, due to irrigation infrastructure limitations, rice production is only possible in the wet season in most locations in Lao PDR. Irrigated rice production is possible in a few areas. In 2010, there were about 887,094 hectares of rice fields, of which about 655,000 ha, representing over 73.8 per cent were rain fed rice fields, about 116,830 ha, representing about 13.2 per cent were irrigated rice fields and about 115,264 ha, representing about 13 per cent were upland rice fields. On average, farmers in Lao PDR own 1.1 ha of rice fields per household.<sup>6</sup> Agricultural land owned by smallholders is very small and unequally distributed. The farmers in Northern provinces of Lao PDR which is mountainous and has other limitations own less land than farmers in the central and southern parts of the country, which is predominantly flat land. According to findings from a case study conducted by the National Economic Research Institute (NERI) in 2012, the

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<sup>6</sup> The National Socio-Economic Development Plan for Fiscal Year 2009-2010



lack of irrigation systems means that farmers in the region are exposed to the risk of drought and smaller scale production means higher shock severity when they are affected. Traditional agricultural production generally depends more on natural conditions and is therefore at greater risk from natural disasters such as drought, flooding and pests, etc.

**(4) Diversification of income sources** is identified as an essential characteristic or profile of smallholders in rural Laos. After the rice harvest, farmers usually look for other livelihood activities to earn additional income. Some collect Non Timber Forest Products (NTFPs); some move temporally into urban areas to seek jobs and income generation activities in non-agriculture sector; some run their household owned business activities/trading; and some engage in handicraft production, etc. According to a study conducted by the NERI and United Nations Development Programme (UNDP) in 2005, over 39.5 percent of farmers are engaged in non-farm activities as their major occupation or source of income, including handicraft production, wage labour, remittance, household business/trading, etc.<sup>7</sup> Diversification of income sources is an important factor helping them to mitigate impacts of shocks related to market integration and climate change. For example, if income from agriculture production is lost because of drought, flooding or crop pests, farmers still have income from other sources for their survival.

**(5) Relatively low income and relatively high poverty concentration** is identified as another important characteristic of smallholders in rural Laos. According to findings from a study on “Improving Farm Family Incomes in Lao PDR” conducted by NERI and UNDP in 2005, the average income of farmers accounted for about USD 1,850 per household or about USD 319 per person.<sup>8</sup> It is

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<sup>7</sup> UNDP, Improving farm family income in Lao PDR, 2005

<sup>8</sup> UNDP, Improving farm family income in Lao PDR, 2005

about 40 percent lower than the GDP per capita in the same year. The study found farmers to be in the lowest income group in Lao PDR. Findings from many previous studies stated that the majority of poor people are engaged in subsistence agriculture. Poverty in rural Laos means inadequate consumption and access to food, clothing and housing. Thus, poor people have relatively low adaptive capacity and are highly vulnerable to any change. Events such as flooding, drought and commodity price fluctuations often severely affect the welfare of small-scale farmers.

**(6) Relatively low level of formal education and limited vocational training** is the next important characteristic of smallholders and landless poor. Based on findings from the study on “Improving Farmer’s Family Income”, almost half of them have education levels of completing primary school or lower. Almost 14 percent of them have never attended school and are illiterate. Only a very small proportion of them have completed upper secondary school or higher. The formal education level of farmers is lower in remote areas where infrastructure is less developed and access to educational services is difficult. Lower education levels mean lower adaptive capacity and lower adaptive capacity means greater vulnerability to change.

## **2.2. Potential Risks for Smallholders**

This section discusses, the most significant potential risks to smallholders in rural Laos. Based on findings from literature review, the most significant potential risks related to climate change and market integration for smallholders in Lao PDR include:

- **Flooding:** is identified as a potential risk related to climate change affecting smallholders in Lao PDR. According to information provided by World Food Programme (WFP), there were 16 flood events reported during the period

from 1996-2002; over 3.2 million people were affected by flood events; and over 228,610 hectares of rice production areas were damaged. This means on average the Lao PDR experienced more than two flood events, affecting over 0.4 million people and damaging rice production areas of over 28,576 hectares per year.

The majority of flood events occurred between August and September and affected the central and southern part of the country along the Mekong River where the land is generally flat, food production areas are concentrated and where the majority of smallholders are living. Details on rice production areas damaged by flooding from 1996-2005 are provided in Annex 1. Flooding also damages infrastructures, including houses, irrigation systems and roads which cost millions of USD to repair.

In 2013, flood events affected a total of 12 provinces, 52 districts, 1,221 villages, 395,000 people and damaged 50,247 hectares of rice fields, representing about 6.9% of rice fields across the country.<sup>9</sup> Details of districts flooded in 2013 are presented in Annex 2. In Savannakhet Province, flood events affected 7 districts, including 203 villages, 13,465 families and over 60,000 people; over 14,714 hectares of rice fields were flooded; of which 10,184 hectares were damaged, 12 irrigation systems were damaged and thousands of livestock died. In Oudomxay Province, flood events affected many hundreds of households and people, including 17 deaths in 2013.

- **Drought:** is identified as a further potential risk related to climate change affecting smallholders in Lao PDR. According to information provided by the MAF, drought affects the Lao PDR almost every year and every 10 years (1957, 1967, 1977, 1987, 1998, 2003, etc.) the country experiences extreme drought. In these years, the average temperature will increase; rainfall will decline and the water in Mekong River and its tributaries will reduce.

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<sup>9</sup> Report on flood damage in 2013

According to statistical data provided in the National Adaptation Programme of Action (NAPA), the year 1998 was the driest year that Lao PDR has experienced. The average temperature recorded was 29.2 degrees centigrade in the north and about 32.5 degrees centigrade in the central and southern part of the country; the rainfall declined to 1,444.5 mm in the north, 1,790.2 mm in the central region and to 1,481.7 mm in the south.

Drought affects agricultural production and increases food insecurity, particularly for smallholders. According to statistical data provided by the MAF, there were 5 drought events reported during the period 1996-2002; the drought events affected over 4.2 million people and agricultural production on over 300,000 hectares. When compared with flooding, drought did not damage agricultural production areas totally but reduced productivity. According to rapid assessment conducted NERI in 2013, drought reduces rice productivity by around 20-30%.<sup>10</sup> According to the information provided in the NDMP 2011-2015 and in the National Adaptation Programme of Action (NAPA), most drought events affected flat areas of land along the Mekong River including Xayabury, Vientiane, Borikhamxai, Savannakhet, Saravan and Champasack. Statistical data on rice production areas affected by drought is provided in the Annex 3.

- **Wind storms/Topical depress storms:** is identified as a type of shock related to climate change which affects smallholders in Lao PDR. According to WFP, there were 4 wind storms reported during the period from 1996-2002. Over 1 million people were affected by these wind storms. This means on average, the Lao PDR experiences one wind storm per year and about 0.2 million people are affected each year. Between 2006 and 2009 the Lao PDR experienced three

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<sup>10</sup> Saykham V. 2013. Conceptual Framework on Risk and Vulnerability and Situation Analysis of the National Policy Environment.

typhoons, named Xangsane (2006), Lekima (2007) and Ketsana (2009). These typhoons have resulted in loss of human life, property and agricultural production. According to the Centre for Research on the Epidemiology of Disaster (CRED), wind storms cause economic losses in most countries no less than draught and flooding. However, specific data on economic losses from wind storms in Lao PDR is very limited.

- **Late coming rain:** According to a study conducted by NERI in 2009, over 70% of income of smallholders in Lao PDR comes from crop farming, particularly rice production. Over 95% of smallholders in Lao PDR are engaged in crop farming, which is vulnerable to flooding, drought and also to late arrival of the wet season. According to findings from a study conducted by MRC in 2011, increasing temperatures and late rains affect crop farming significantly, especially wet season rice production. According to the study, farmers in Lao PDR usually start their wet season rice production in June with seeding, in order to be able to plant rice in July. However, many farmers, especially those with rice fields in higher locations or further away from water bodies, are often not able to seed rice in June and therefore frequently not able to plant wet season rice at all. Rice farmers with fields in the lowlands or close to water bodies also regularly need to pump water from water bodies to water their rice seedlings. This may increase production cost by around LAK 640,000 or USD 80 per hectare.

- **Crop and livestock pests:** are identified as potential risks associated with climate change. According to the information provided in the Draft of the NDMP 2011-2015, crop and livestock pests occurred predominately in the highland areas in the northern provinces of Laos and in the higher elevations of central and southern provinces. According to findings from a case study conducted by the NERI in Nakham Village, Houn District, Oudomxay Province in 2011, over 75.6% of the households interviewed stated that they experienced at least one

crop and livestock pest in the past five years. The effects of pests were recorded as high, medium and low by 38.3%, 55.1% and 6.6% of households respectively. In 2007, the Lao PDR experienced the effects of bird flu and millions of chickens and ducks were killed for security reason.

- **Illness/epidemics:** are also identified as potential risks related to climate change and market integration. Increasing temperature and rainfall encourages insects like mosquitoes, affects water quality and results in contamination, leading to many diseases including the common cold, malaria, dengue fever, typhoid and diarrhoea in populations with inadequate protection. According statistical data provide in NAPA, in the period of 2000-2004, over 4,300 people were affected by dysentery; 6 of those people were death; over 20,700 people were affected by diarrhoea; 555 of those people were death; over 35,500 people were affected by dengue fever; over 100 of those people were death; in the period from 2001-2005, over 873,000 people were affected by malaria; over 800 of those people were death; almost 15,000 people were affected by pneumonia; over 770 of those people were death; over 6,000 people were affected by smallpox; about 30 of those people were death.<sup>11</sup>

- **Agriculture product price volatility:** is a potential risk associated with market integration. Since 1986, the Lao PDR has been implementing integration policy and promoting commercial production in the agricultural sector to enhance farmer's standard of living. Since then, commercial agricultural production plays an increasing role in the livelihoods of farmer's in Lao PDR. Most farmers produce not only for their own consumption but also to sell part of their produce to earn cash income. The main commercial agricultural products include rice, maize, vegetables, cassava, sugar cane, rubber, livestock and coffee. Therefore the livelihoods of farmers in Lao PDR are increasingly dependent on

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<sup>11</sup> The national Adaptation Plan for Action (NAPA)

external markets. According to the findings from the literature review, the agricultural product price also fluctuates greatly. For example, the market price of rice in Savannakhet Province ranges between LAK 1,500 and LAK 3,000 per Kg or about USD 0.19 and 0.38 per Kg while the average production costs are around LAK 2,500 per Kg, equivalent to USD 0.31 per Kg (including the cost of labour).<sup>12</sup> This means farmers frequently have to sell their rice below the cost of production. The price of rice usually falls between November and April and starts to rise from May to October.

A study conducted by NERI in 2013 identified agricultural product price volatility as a high risk to their livelihoods. Price volatility in agricultural markets is expected to increase with greater market integration.

- **Loss of market for agricultural products:** It is well known that small scale farmers in Lao PDR use traditional methods of agricultural production which are characterized by high dependency on natural conditions, relatively low productivity and quality, and relatively low competitiveness with products exported from neighbouring countries such as Thailand and Vietnam. Although Laos has relatively low productivity and competitiveness, economic integration policies have been implemented since 1986. In 2015 Laos will join the ASEAN Economic Community (AEC). AEC aims to develop a single market and production based area, characterized by free movement of goods, services and labour. Therefore, the loss of markets is identified as potential risk for small scale farmers in Lao PDR.

- **Land concession practices:** Many smallholders in Lao PDR use land without official land titles for livelihood activities and income generation, for example crop farming, livestock production and NTFP collection. They have

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<sup>12</sup> Saykham V. 2013. Conceptual Framework on Risk and Vulnerability and Situation Analysis of the National Policy Environment.

limited legal protection for the land. Land is legally understood as public land which can be conceded to investors. The government of Lao PDR has taken steps to protect farmers by enacting many regulations and laws, including the Environmental Protection Law and the Environmental and Social Impact Assessment Regulation, requiring public consultation processes and agreement of all stakeholders before concessions are approved. However, frequently regulations and laws are not implemented strictly or efficiently, particularly due to the lack of disciplined government officers responsible for land concessions, limited understanding of the rights and the position of farmers and the lack of strong farmer organizations. Based on findings from many studies, land concession practices frequently affect farmer's livelihoods and lead to land conflicts among farmers and firms. Farmers lose agricultural land, areas for livestock production and NTFP collection activities which are important sources of income. Increasing demand for agricultural products as well as energy and minerals in global markets will increase demand for land concessions. This represents a potential risk for smallholders without improvements in land tenure and security.

Due to serious land conflicts, the government of Lao PDR temporarily stopped approving large scale land concessions for eucalyptus and rubber plantations until 2015 so land management systems can be improved. After 2015, the government will reconsider the concessions.

- **Environmental degradation and unsustainable land use practices:** are identified as important risks associated with market integration. As described above, market orientated and industrialized agricultural production is beginning to develop in Lao PDR. Many farmers do not produce simply for their own consumption but now produce industrial crops to meet market demand. The most significant industrial crops include sugar cane, rubber, maize and cassava.



Many small scale farmers use chemical fertilizers and insecticides for increasing productivity without adequate knowledge and understanding of their impacts. Intensive land use and monoculture practices and the use of chemical fertilizers and insecticides lead to environmental degradation and are unsustainable. Sugar cane and maize plantations in Luang Namtha and Xayabury Province is an example of environmental degradation and unsustainable land use. Both provinces have been producing sugar cane and maize by contract farming for export to China and Thailand for a decade. The productivity of sugar cane and maize in both provinces has halved due to land degradation. If the productivity is not maintained, the revenue from selling the crop will not cover the cost of production in this location making it uneconomic. Farmers will lose the production and this source of income.

In addition, there are a number of other potential risks for smallholders and landless poor in Lao PDR, including landslides, increasing food prices, fires and earthquakes. However, the exposure to these risks is identified as low as they occur very infrequently and damage to life, production, infrastructure and the assets of Lao people is very limited.

### **2.3. Vulnerabilities of Smallholders**

In the sub-sections above, we tried to review the characteristics of smallholders in Lao PDR, to assess their adaptive capacity and also to identify potential risks. In this section we would like to assess their vulnerabilities.

Generally, vulnerability is understood as a combination of risks and adaptive capacity. According to the MRC's assessment framework, vulnerability is high (H) when risks/exposure are high and adaptive capacity is low (L). Vulnerability is medium (M) when risks/exposure are high and adaptive capacity is medium (M) and vulnerability is low (L) when risks/exposure are high and the adapting

capacity is also high (H). The table below describes frameworks for vulnerability assessment in accordance with MRC’s report:

**Table 1: Vulnerability Assessment Framework**

<b>Risks/Exposure</b>	<b>Adaptive capacities</b>	<b>Vulnerabilities</b>
H	H	L
H	M	M
H	L	H
M	H	L
M	M	L
M	L	M
L	H	L
L	M	L
L	L	L

*Source: MRC, Climate change impacts on wetland*

Based on the framework and information collected from the literature review, results from vulnerability assessment for smallholders and landless poor in Lao PDR are presented in the table below:

**Table 2 : Vulnerability for Smallholders**

<b>No</b>	<b>Type of potential shock</b>	<b>Risks</b>	<b>Adaptive capacities</b>	<b>Vulnerabilities</b>
<b>1</b>	<b>Flooding</b>	<p><b>H:</b></p> <p>As described in the sub-section above, on average, the Lao PDR experiences more than two flood events per year. On average flood events affect 0.4 million people every year and damage agricultural production areas (28,576 hectares), housing, property, livestock, irrigation and road infrastructure. Flooding also contributes to increase many illnesses including diarrhoea, typhoid and skin diseases. The trend of flooding is expected to increase as a result of the increasing intensity of rain. In addition to increasing agricultural production and environmental degradation,</p>	<p><b>M:</b></p> <p>Smallholders in Lao PDR have some capacity to cope with flood effects. For example, rice and other crops can be grown after a flood event. They can also increase their activities related to fishing, collecting NTFP and other income generation activities in non-farm sectors.</p>	<b>M</b>

		flood damage is also expected to increase.		
<b>2</b>	<b>Drought</b>	<p><b>M</b></p> <p>The Lao PDR experiences droughts almost every year. Droughts affect larger areas and more smallholders compared to flooding. On average, drought affects around 1 million people and an agriculture production area of 50,000 hectares every year. Drought does not damage infrastructure and agricultural production totally, but reduces agricultural productivity between 20% and 30%. Drought also affects the health and income sources of smallholders, including NTFP, fisheries and livestock production. As with flooding, drought effects are expected to increase with increasing temperatures.</p>	<p><b>L</b></p> <p>Smallholders have limited adaptive capacity to cope with drought effects. They cannot grow crops, collect NTFP, or increase their incomes from fisheries. They can only seek other jobs or find other income generation activities in non-farm sectors. However, they have limited capacity to participate in formal employment and income generation activities because of their relatively low formal education and vocational training as well as limited financial assets. Therefore, the adaptive capacity of</p>	<b>M</b>

			smallholders to drought effects is identified as low.	
<b>3</b>	<b>Crop and livestock pests</b>	<b>M</b> Crop and livestock pests are identified as potential risks affecting smallholders, particularly in the north and higher elevations in central and southern Laos. Findings from a case study in Nakham Village, Houn District, Oudomxay Province reported that 75.6% of farmer households interviewed had experienced at least one crop and livestock pest during the last five years. In 2007, the Lao PDR was affected by bird flu; millions of chicks and ducks were killed for security reasons. Pests are expected to increase along with climate change and market integration.	<b>M</b> In a similar respect to drought, crop and livestock pests frequently do not damage the whole crop; often they reduce the productivity of crops and livestock. As with flooding, smallholders have many ways to cope with the effects of drought. They include growing crops and raising livestock again after pests have gone, increasing fishing and NTFP collection, seeking jobs or doing other income generating activities to compensate for the loss.	<b>L</b>

4	<b>Wind storm</b>	<p><b>M</b></p> <p>Wind storms were identified as a potential risk affecting smallholders in Lao PDR. On average, Lao PDR experiences 1 wind storm per year; about 0.2 people are affected. These wind storms damage human life, property and agriculture.</p>	<p><b>L</b></p> <p>Wind storms affect infrastructure, particularly houses and human life. Therefore, in contrast to flooding, smallholders in Lao PDR have low capacity to cope with wind storms.</p>	<b>M</b>
5	<b>Late coming rain</b>	<p><b>M</b></p> <p>Late coming rain is identified as a potential risk affecting smallholders in Lao PDR. Farmers in Lao PDR usually start their wet season rice production in June with seeding, in order to be able to plant rice in July. However, many farmers, especially those with rice fields in higher locations or further away from water bodies, are frequently not able to seed rice in June and consequently are frequently not able to plant wet season rice at all. Rice</p>	<p><b>M</b></p> <p>Late coming rain does not damage infrastructure or completely destroy agricultural production. Frequently is just increases the cost of production and reduces productivity. Smallholders still have a number of ways to cope with late coming rain. These include using a water pump to water seedlings, increasing livestock</p>	<b>L</b>

		farmers with fields in the lowlands or close to water bodies need to pump water to water their rice seedlings. This may increase production costs by around LAK 640,000 or USD 80 per hectare.	production, NTFP collection, fishing, seeking additional jobs or doing other income generation activities in non-farm sectors.	
<b>6</b>	<b>Agriculture product price volatility</b>	<b>H</b> The potential for agricultural product price volatility is identified as a potential risk for smallholders in Lao PDR. According to findings from literature review, the agricultural product price fluctuates considerably; informants reported that the price of rice in their location fluctuates between LAK 1,500 and LAK 3,000 per Kg while average production costs are around LAK 2,500 per Kg. Farmers frequently sell their rice below the cost of production to get money for paying back their debts and to meet other financial demands.	<b>M</b> Farmers usually only sell their rice at a low price if they have urgent financial problems. They usually wait to sell when the price increases. In addition, smallholders still have a number of ways to cope with fluctuations in the price of rice. For example, increasing livestock production, NTFPs collection, finding work and doing other income generation activities in non-farm sectors.	<b>M</b>

		<p>The price of rice usually falls below production costs when harvest begins (November to April) because the supply of rice increases and the price usually increases again in the period before harvest (May to October). The volatility of agricultural product prices is expected to increase with greater market integration.</p>		
<b>7</b>	<b>Loss of market</b>	<b>H</b> <p>In a similar respect to agricultural product price shocks, the loss of market is identified as a potential risk associated with commercial production and market integration. Because of relatively low productivity, competition and poor quality products, smallholders in Lao PDR have a high risk of losing their market. According to finding from literature review, farmers in Lao PDR have lost markets, including irrigated</p>	<b>M</b> <p>The production of smallholders is of a small scale. They consume a large share of their produce and sell only a small amount to earn cash income. In case of market loss, smallholders in Lao PDR try to make use of their products by themselves. For example, in case of rice, they keep for</p>	<b>M</b>



		rice and cassava production in Savannakhet Province in 2010 and maize production in Xayabury Province in 2011. The trend of losing markets is expected to increase along with increasing commercial production and market integration.	their own consumption and to sell when the market recovers. In the case of cassava and maize, smallholders use their products for feeding animals.	
<b>8</b>	<b>Land concession practices</b>	<b>H</b> Land concession practices are identified as a potential risk affecting smallholders in Lao PDR. Often they use community or public land for crop and livestock production and collecting NTFPs. Usually they do not have any formal land title. Due to increasing demand for agricultural products, minerals and electricity there have been large flows of FDI into Lao PDR over the past decade. Hundreds of thousands of hectares have been conceded to investors for long periods of	<b>L</b> The government of Lao PDR has made efforts to protect the interests of farmers and to ensure they benefit by enacting a number of regulations and laws. However, due to the lack of strong organization, limited understanding of their rights and obligations, smallholders are powerless compared to investment firms/investors operating	<b>H</b>

		time. Hundreds of thousands of smallholders have lost the land upon which their livelihoods and income depended.	internationally and having lot of money, qualified people and experience.	
<b>9</b>	<b>Environmental degradation and unsustainable land use</b>	<b>M</b> Environmental degradation and unsustainable land use are identified as potential risks for smallholders in Lao PDR. Environmental degradation and unsustainable land use reduces the productivity of crops, livestock and NTFPs collection, which are the main income sources of smallholders.	<b>L</b> The capacity of smallholders to cope with environmental degradation and unsustainable land use is identified as low for many reasons, especially limited knowledge and understanding of sustainable land use and market demand.	<b>M</b>
<b>10</b>	<b>Illness</b>	<b>H</b> Illness is identified as a potential risk related to climate change, migration and increasing use of chemical fertilizers and insecticides without adequate knowledge. The most prevalent illnesses include cold, malaria, dengue	<b>L</b> The adaptive capacity of smallholders is identified as low for many reasons, particularly due to low income, limited assets, living in remote areas having difficult access	<b>H</b>

		<p>fever, typhoid and diarrhoea. According to statistical data provided in NAPA, in the period from 2001-2005, over 873,000 people were affected by malaria; over 800 of those people were death; almost 15,000 people were affected by pneumonia; over 770 of those people were death; over 6,000 people were affected by smallpox; about 30 of those people were death.</p>	<p>to hospital and health centres.</p>	
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### III. Conclusions and Policy Recommendations

Based on findings in the sections above, smallholders in Lao PDR are highly vulnerable to illness and land concession practices, moderately vulnerable to flooding, drought, agricultural product price fluctuations and market losses; and they are relative low vulnerable to crop and livestock pests, late coming rain. Based on the findings, this study would like to suggest and priority following policy frameworks and measures for addressing risks and vulnerabilities for smallholders in Lao PDR:

**(1) Improving and implementing a community based social security scheme, particularly health care insurance scheme:** the community based social security scheme would be an important scheme providing social security benefits

to smallholders. Currently, CBHI has been implemented by the MoH in accordance with the Regulation Number 723/MoH. However, the existing CBHI still has many constraints. In particular the system offers only health and medical care benefits and participation in the scheme remains voluntary. In order to improve the community based social security system, Regulation Number 723/MoH should be revised. The community social security system should provide more social security benefits than the health care one. Participation in the scheme should be compulsory, not voluntary. It should be co-financed by insured households, the government and external donors to secure the financial sustainability of the system.

**(2) Strengthening ESIA processes and ensuring involvement of community to reduce negative impacts from concession practices:** the ESIA process and certificate is an important policy that the government of Lao PDR has been employing to avoid negative social and environmental impacts of investment concessions. However, based on the findings from this study, the ESIA certification process is not strong enough to achieve the target. Investment concessions are still identified as high risk, which smallholders are highly vulnerable to. Therefore, the system needs to be strengthened, have more qualified and experienced personnel, stronger law enforcement, stronger cooperation from other agencies and also most importantly stronger community involvement in the process.

**(3) Enhancing capacity of the community for addressing risks and vulnerabilities related to climate change and market integration:** is recommended as a measure to reduce risks and vulnerabilities related to climate change and market integration. Strong community and multilateral assistance and solidarity among people living together can reduce risks and vulnerability in many ways. For example, in the case of flooding, communities can help each

other to evacuate people and assets; they can restore houses, irrigation infrastructure and community roads damaged by floods; they can share food, water and temporary housing especially if they lose production and are not able to help themselves; strong networking and cooperation among farmers can also influence the market price for agricultural products to avoid fluctuations and maintain prices.

**(4) Improving the early warning system:** the early warning system is an important system for reducing risks and vulnerabilities related to climate change. In Lao PDR, the system is already established and has been providing weather forecasts on a regular basic and early warning in case of emergency. Currently, World Bank (WB), Asian Development Bank (ADB) and UNDP is providing financial and technical assistants to DMH for strengthening the system. The assistances include infrastructure development, improvement of regulation and laws, consultation services, buying new equipment and increasing weather station network. However, according to findings from literature review, the system needs to be improved in order to be able to provide higher quality warning messages. In particular the system needs new equipment, more surface stations, qualified and experienced staff and adequate funding.

**(5) Establishment of vocational training programmes and funds for smallholders to enhance and diversify their income sources and make them less dependent on agricultural production:** to do the above, the government already has institutional frameworks, coordinating mechanism and some funds, namely the CRDPR and Fund. In addition to infrastructure development, the rural development and poverty reduction programmes should provide more occupational training and small-scale credit to farmers for developing income generation activities in non-farm sectors in order to enhance and diversify farming family income sources. Increasing income, diversification of income

sources and less dependency on agricultural production will contribute to reducing risks and vulnerabilities related to climate change and market integration for smallholders.

**(6) Establishment of minimum agriculture product price guarantee system, particularly for rice:** the establishment of minimum agricultural product price insurance would help smallholders to cope with market price fluctuations which are expected to increase along with increasing market integration and commercial production. In particular, insurance should focus on the price of rice. Rice is the most important agricultural product of smallholders. Based on findings from a study conducted by NERI in 2013, the rice price usually falls when the harvest period begins (between November and April) and recovers before the harvest period (between May and October).<sup>13</sup> The study report described that rice price in their location frequently sinks to LAK 1,500 per Kg in the period after harvesting and increases sometimes to LAK 3,000 per Kg in the period before harvest while average production costs are about LAK 2,500 per Kg. Frequently, farmers have to sell their rice below the production cost because they need money urgently. The minimum rice price insurance scheme should help farmers secure their production costs and provide them with a reasonable profit. The concerned agency should buy rice from farmers at the guaranteed price when the price falls, and sell again when prices increase to sustain the fund. However, before implementation a feasibility study, detailed scheme design and piloting is required. The scheme could be co-financed by government, development partners and benefiting farmers themselves.

**(7) Establishment of agricultural product market and price information centre:** is highly recommended to promote agricultural production and to reduce

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<sup>13</sup> Saykham V. 2013. Conceptual Framework on Risk and Vulnerability and Situation Analysis of the National Policy Environment.

risks and vulnerabilities to market loss for smallholders. A centre could be established within NAFRI to provide the information. The centre should be responsible mainly for market analysis, price monitoring, providing information to farmers as well as to policy makers through mass media, etc. More details on roles and responsibilities need to be discussed and designed.

**(8) Strengthening capacity of the National Disaster Prevention Committee (NDPC):** the disaster management committee was established to provide emergency assistance to people affected by disaster. The committee has a coordination network down to community level. However, according to findings from literature review, the capacity of the committee needs to be improved, especially regarding training, adequate funding and equipment.

**(9) Providing advocacy on environmental protection and sustainable land use to farmers:** is also highly recommended to minimize impacts of environmental and land degradation in the long term. Radio and television programmes would be suitable measure to communicate the knowledge and information to farmers.

**(10) Establishment of a crop and livestock insurance scheme:** crop and livestock insurance would provide security to smallholders in case their agricultural produce is affected by floods, drought and pests etc. Natural disasters are expected to increase with climate change, in particular rising temperatures and intensity of rain. Financial support for crop and livestock insurance could come mainly from contributions of insured farmers themselves and partly from the government budget and from other external sources. According to findings from study on farmer's household income, the majority of farmers have some savings. So, they may be able to pay for the insurance to a certain level. However, an in-depth feasibility study, system design and piloting are still necessary before implementing such a scheme.

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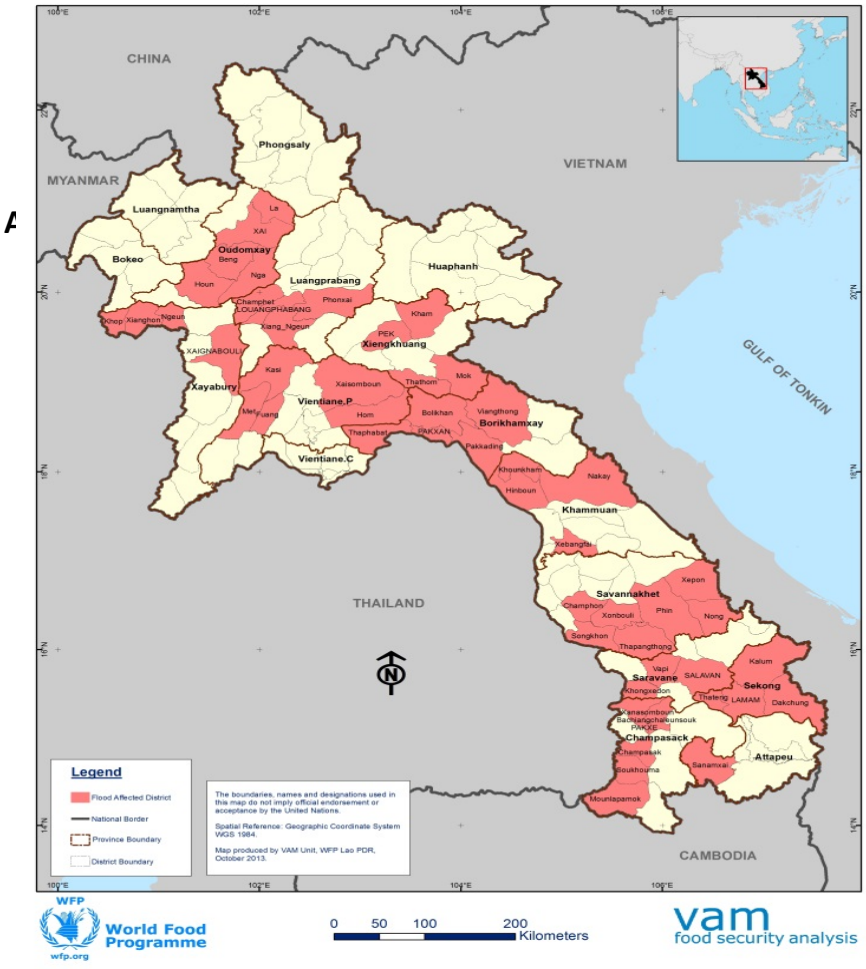
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# Annex

## Annex 1: Rain-fed Rice Fields Damaged by Floods from 1996 – 2005 (ha)

	Province/Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
No.	<b>Northern</b>	1,215	255	-	161	20	240	1,810	207	357	620
1	Phongsaly	184				20		962			
2	Luangnamtha							157			
3	Oudomxay		15					110			70
4	Borkeo	136						377			60
5	Luangprabang	178	40		3		10	64		25	245
6	Huaphanh	668	180		32			140	5	100	160
7	Xayabury	49	20		126		230		202	232	85
	<b>Central</b>	42,350	26,370	-	4,792	29,420	30,193	24,151	607	13,078	44,120
8	Vientiane Capital	210	2,800		390	11,290	5,080	5,493	90	1,488	1,385
9	Xiengkhuang						50	57	102		90
10	Vientiane	131	3,400		430	350	1,100	761	34	1,140	1,165
11	Borikhamxay	3,436	5,070		202	250	8,370	5,644		1,150	2,445
12	Khammuane	17,430	6,900			4,000	4,440	7,040		6,200	22,990
13	Savannakhet	21,038	8,200		3,770	12,460	11,153	5,156	350	3,100	16,045
14	Xaysomboon	105				1,070			31		
	<b>Southern</b>	23,981	6,750	-	3,549	13,460	11,790	8,103	-	960	9,900
15	Saravan	2,110	800		1,883	1,400		222		550	3,340
16	Xekong	350	50			12,060					90
17	Champasack	19,194	5,700		466		11,790	7,432		410	6,470
18	Attapeu	2,327	200		1,200			449			
	<b>Grand Total</b>	67,546	33,375	-	8,502	42,900	42,223	34,064	814	14,395	54,640

## Districts Affected by the 2013 Floods



### Annex 3: Rice Fields Affected by Drought 1995-2005 (ha)

Provinces/year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
<b>Northern</b>	<b>2,605</b>	<b>1,416</b>	<b>5,650</b>	<b>11,478</b>	<b>749</b>		<b>10</b>		<b>0</b>	<b>50</b>	<b>1,085</b>
Phongsaly	120			374						5	
Luangnumtha	180			4			10				
Oudomxay	150		4,810	3,529							990
Bokeo		71								45	
Luangprabang	1,255	179	200								
Huanphanh	900	35	640	3,851	549						95
Xayaburi		1,131		3,720	200						
<b>Central</b>	<b>4,160</b>	<b>20,333</b>	<b>11,920</b>	<b>11,926</b>	<b>960</b>		<b>25</b>		<b>15,874</b>	<b>342</b>	
Vientiane C	60	189	60	352						142	
Xiengkhoung				902	80		25				
Vientiane P	200	686	30	421	470					200	
Borikhamxay	3,200	9		200	40						
Khammuane	100	4,962		160							
Savannakhet		14,468	20	9,891	370						
Xaysomboun	600	19									
<b>Southern</b>	<b>300</b>	<b>263</b>	<b>50</b>	<b>5,798</b>					<b>7,923</b>	<b>8,168</b>	
Saravan				4,549						550	
Sekong				802						1,640	
Champasack		78	50	154						3,878	
Attapeu	300	185		293						2,100	
<b>Grant Total</b>	<b>7,065</b>	<b>22,012</b>	<b>5,810</b>	<b>29,202</b>	<b>1,709</b>		<b>35</b>		<b>23,797</b>	<b>8,560</b>	<b>1,085</b>