

# Alternative Options for Food Security of Rural Poor Farmers

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**Abstract:** *There are several challenges in food security of rural poor farmers in Laos, including low quality of upland agriculture productions, limited technical knowledge and a lack of financial security. Primary objective of the research was to assess alternative options and needs for improving food security of local villagers. The methodology includes reviewing documents and reports, interviewing key informants from the local governments using a mixed quantitative and qualitative data analysis approach. It is found that key alternative options are to improve food security through improving local communities' capacity in food production, and their ability to access markets to sell excess produce, as well as create alternative employment, and provide basic agricultural materials and inputs to local producers. Forest restoration is also important for balancing ecosystem and livelihoods. It is also a crucial element to mitigate climate change and conserve local biodiversity. The suggested recommendation is useful for improving food security of local farmers and sustainable forest management and land use planning or decision making.*

**Keywords:** Upland agriculture, food security, rural farmer, land use planning, Laos

## 1. Introduction

A large proportion of the Lao population is still encountering malnutrition across the country. Among children under the age of 5 (CU5), 44% suffer from stunting, 27% are underweight and 6% suffer from wasting [1 - 5]. Livelihoods and food security improvement are urgent needed for the Lao communities, especially capacity buildings for local communities such as home gardens, livestock raising, water construction and income generation. Suitable agriculture extension and other supports are to ensure practical and sustainable support to local communities. The government has attempted to enhance food security, produce comparative and competitive agricultural commodities, develop clean, safe and sustainable agriculture and shift gradually to a modern, resilient and productive agriculture economy [6]. However, there are many challenges for Laos.

## 2. Literature Review

An estimated 79.9% of Laotians engage in farming and 59% of these farmers are engaged solely in subsistence agriculture [1, 3, 7]. Food security is a serious issue for Laotian farmers as droughts and floods often wipe out entire fields of crops. Even in a successful harvest, there still lies the danger of malnourishment. The basic staple of farmers is the production of rice, primarily for home consumption [4]. Meanwhile, there are significant changes in upland agriculture recently. Much of the changes owes to conversion of forest for agricultural production, as well as infrastructure and urban developments. Primary forests are being replaced by tree plantations and degraded by

unsustainable logging. The government of Laos has set an ambitious target to increase forest cover up to 70% by 2025 due to forests are under pressure [3, 8]. About 80% of the population is still rely on natural forest resources and lack livelihood options. Upland agriculture is most commonly practiced in the country [2]. About over 300, 000 households had practiced shifting cultivation accounting for over 1.6 million hectares [5]. The government issued policies and development programs to reduce shifting cultivation. Despite governmental policies to curb shifting cultivation, the activities are continuing in many parts of the country, including NBCAs. These challenges include limited technical knowledge and skills, and a lack of funds. Therefore, external assistance and support has played an important role to overcome these challenges. In this study, main objectives are to seek alternative options for improving food security and to understand their needs. The result is expected to be useful for understanding challenges of local farmers' agricultural productions. The suggested recommendation is useful for improving local livelihoods, sustainable forest management and land use planning or decision making.

## 3. Methodology

Ardengkotay village, Samouy district, Salavanh province was selected as the study area. It is located in Samouy district, Salavanh province, a border to Vietnam in the East. According to DAFO, the village has around 4, 716 ha of total land with a population of 400 villagers. This study is rapidly produced based on key informant interviews, village discussions in a field visit, as well as obtaining existing spatial data. A mixed method was used in this research

project, including quantitative and qualitative data analysis. Key informant interviews and village discussion were conducted between 10 - 20th Mar, 2019 in Salavan province. Existing spatial data was provided by DAFO such as forest cover and land use maps. After key documents and reports were initially reviewed and then, semi-structured interview was designed for key stakeholders including government sectors: PAFO and DAFO. At the village, the interview was two hours for key persons: village leaders and random villagers. An individual interview with village head was done to identify the key agricultural production and its challenges. However, only 120 villagers were visited and interviewed in visited village, used as random samples. In addition, home gardens, vegetable farming fields and constructed sheds were observed to verify its productions. One-week field visit was undertaken to interview villagers and for site observation.

## 4. Results and Discussions

### 4.1. Current Livelihood Situations

Overall, there are some challenges in local livelihoods in the study site. Agricultural productions have been impacted by compounding shocks over the past 2 years, including flash floods, animal diseases, droughts and rodent/pest outbreaks that have negatively impacted livelihoods and food security, especially of vulnerable household. The government's development priorities are to eradicate malnutrition of poorest communities. It was suggested that substantial benefits were provided to local communities in the form of technical and agricultural inputs and support and capacity building which were really needed by local communities. It was found that vegetable production could be the most effective option for local villagers to generate income and improve their nutrition. District authorities aim to promote agricultural production, especially for local ethnic groups who are most relied heavily on natural forest resource, e. g. NTFPs. Landscapes are mountainous, rough terrain and difficult to access. However, there is a need to promote agriculture production of local communities, and to effectively use of the limited arable agriculture lands by poor farmers. In target districts, several villages are remotely located and difficult to access, with poor knowledge on agricultural cultivation and high rates of malnutrition of women and children, including the study site. To improve food production and food security through agriculture and livestock, there are needs to increase knowledge, practicing sustainable crop production and farming practices, establishing and supporting home gardens and generating income from their agricultural productions. To increase the resilience, food security and nutrition awareness to target communities in Samouy district, the PAFO and DAFO has promoted few nutrition sensitive farming practices through capacity building programs in some villagers surrounding NBCAs. They have supported participatory establishment of vegetable gardens, livestock raising and improved water supply by constructing water storage or streams/reservoir preservation to support their agriculture.

### 4.2. Key Challenges in Food Sources and Natural Forest Resources

Ardengkotay village has about 400 villagers (150 females), 65 HH (living in 65 Houses). There are about 22 poorest HHs in the village including 15 people with disability. Main labours are 120 people (60 females), mostly of villagers practice upland agriculture (previously known as shifting cultivation) as a main occupation. Only some of them cultivate paddy rice production in along the road, close to village. However, their rice productions seem to not enough for their own consumption (1 - 2 months of rice insufficient in year around). Collecting NTFPs is the secondary favor activity of villagers such as tiger grass/*thysanolaena latifolia* or DokKhame, Bae Lay (still found but difficult to search for them now), bamboo, Mak Tao (sugar palm tree's fruits or *Arengawesterhoutii*), mushroom (Het Lin Cheu), rattans, other orchids. This village is connected to Vietnamese border, so NTFPs trading is one of the most common as soon as its available. However, collecting NTFPs takes about 2 - 3 hours by walking to the East of the village (located in Xe Sap NBCA). NTFPs is common used for self-consumption such as mushroom, bamboo, rattans and Mak Tao.

Wildlife trade is also common due to easy to sell to outsiders, including deer, money, wild pigs and any small wildlife. Livestock is another option for their income generation. There are about 20 cows, 40 goats, 1,000 poultry, 50 pigs in the village. Goat is expensive due to their common consumption, especially for traditional practices or ceremony. However, it was reported that animal disease was harmful, especially pigs' diarrhea, although some international development projects run animal raising activities in the village (providing poultry and animal feeding, animal food processing, vaccination and technical advice). Other sources of income for young villagers are selling labour to Vietnamese traders who need for transporting Acacia timbers. Averaged income is about 1 million kips/HH/year (100 USD) from NTFPs, labours and livestock.

According to the DAFO, it is found that approximately 4,092 ha is covered by dense forests (87% of total village land area). A majority of dense forest is evergreen forest, which located in Xe Sap NBCA and closed to Vietnam. Around 600 ha of upland agriculture areas, including active cultivating upland agriculture 59 ha. Upland agriculture areas are easily found along both sides of the main road which are on the top and across slope areas. A small area of paddy field was found, about 11 ha and young plantation (less than 5 years) and other cash crops were reportedly planted in recently years, however it is very difficult to access. However, there is an increase in shifting cultivation areas but forests have decreased due to its population growth. Secondary forests resulting for shifting cultivation practice (old fallows) are easily spotted on the top and across slope areas. There is no legal document/paper to approve land rights of the villagers yet. However, it is commonly recognized by themselves traditionally. There is no clear on the village boundaries although it has surveyed by DNRE in 2013.

The PAFO aims to promote commercial tree plantation in the village, such as Mai Doo (*Pterocarpus macrocarpus* Kurz), Ka Yung (*Dalbergiacochinchinensis* Pierre), Yang Bong (*Persea kurzii*, Lauraceae), Teak (*Tectona grandis*), Mai Cham Pa Pa and Ket Sa Na (Agar wood or *Aquilaria malaccensis*) in along the roadside or utilization forests of the village. However, this restoration has not started yet. Some villagers start planting acacia trees for selling to Vietnam. Fruit trees (orange) are also found but not really at a large scale. Only few commercial trees are reportedly found in natural forests but difficult to find (such as Cham Pa Pa, Koung Deng, Ket Lin).

## 5. Conclusion

The goal of this paper was to examine alternative options and needs for improving food security of local villagers. The methodology includes reviewing documents and reports, interviewing key informants from the local governments using a mixed quantitative and qualitative data analysis approach. The analysis revealed that there are several challenges in local livelihoods due to they are heavily relying on natural resources for their consumption. Although upland agriculture (shifting cultivation) is only option for them to survive, nutrition food sources and income can be promoted through sustainable agriculture production and livestock at small scale or in existing land uses. Key alternative options are to improve food security through improving local communities' capacity in food production, and their ability to access markets to sell excess produce, as well as create alternative employment, and provide basic agricultural materials and inputs to local producers. It is a need to promote nutrition - sensitive farming practices by improving home gardens cultivation, livestock raising and water storage practices, and water supply for vulnerable families, and awareness raising on nutrition food consumption and practices. This is to ensure an increase in the availability of nutritious foods and food security for the most vulnerable families in the target locations. Forest restoration is important for balancing ecosystem and livelihoods. It is also a crucial element to mitigate climate change and conserve local biodiversity in the current and future.

## 6. Author Contributions

Conceptualization, methodology, field data collection was designed by Dr. Chittana Phompila, including writing original draft preparation, editing and revising. Manuscript was assisted by all co - authors. This work was supervised mainly by colleagues and professors from different mentioned institutions. All authors have read and agreed to the published version of the manuscript.

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## 8. Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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