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Effectiveness of Rubber Plantation on Villagers' livelihood Improvement in the Northern Part of Laos

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Rubber plantation processes had been involved with villagers' livelihood improvement as well as poverty reduction in Laos, the rubber plantation had been introduced among Lao farmers in 2000s. This study investigated to examine the effectiveness of rubber planting activities on the poverty criterion that Lao government had focused on the enhancement of local livelihood. 3 villages in Luangnamtha province were selected to investigate their outputs from the rubber plantation such as smallholder planting, contract farming and villagers who had become the employees in the rubber plantation field of investors. Comparison study on the sample households' livelihood in each period (before, during or after rubber plantation) for 3 selected villages, it can be concluded that smallholder planting is evaluated as a rubber planting model with positive impact on their livelihood improvement; and that cases of contract farming and employing of villagers in the rubber plantation field of investors are challenging to their livelihood improvement.

Keywords: Poverty criteria, Livelihood improvement, Rubber plantation, Income generation, shifting cultivation

INTRODUCTION

Rubber tree was first introduced into Laos during 1930 (Laos had been becoming a French protectorate), the first rubber plantation had been established about 0.5 ha in Bachiang district of Champasak province (southern part of Laos) by French, and several years passed from 1930 to during 1980s in the country without the rubber planting processes. In 1990, a rural development company in Khammouane province, had brought the seedling that the species of rubber tree is RRIM600 (Rubber Research Institute of Malaysia) and that the company had brought from Thailand. Then the company had planted the seedling in the Thakhek district, Khammouane province in the Central part of Laos, in which the rubber plantation area is 80 ha. And in 1992 this company had expanded the rubber plantation area to another district as Hinboun district with the same species, the rubber plantation area for this district is 23 ha (Vongkhamhor *et al*., 2007).

The first rubber plantation process of villager level had occurred within Hadyao village in 1994 among 60 households about 44,962 trees per 100ha, this village was located in Luangnamtha district, Luangnamtha province, northern part of Laos. During 1995–1996, 87 households in Hadyao village had expanded the rubber plantation about 146,953 trees per 334 ha (density planting is 450 trees/1ha). Then 76 households had started tapping their rubber trees since 2002. Provincial Department of Commerce and Industry of Luangnamtha (2010) stated that the first six months of the 2008–2009 fiscal years the province exported 366 tons of raw rubber and 670 kg of processed rubber sheets. Exports of raw rubber declined to 215 tons in the first half of the current financial year (2010) and at the same time the exports of processed rubber sheets rose to 12 tons (Vientiane Time 2010). PAFO of Luangnamtha reported that number of rubber plantations in the province increases every year and exports should also be increasing accordingly. In 2007, rubber tapping areas covered just 500 hectares but that has since increased to more than 1,000 ha. The total area of rubber plantations in Luangnamtha reached 25,000 ha in 2010 (Vientiane Time 2010).

During 2004, there were many internal and external investors (Chinese, Vietnamese and Thai); they were interested to invest the rubber plantation promotion programs in many parts especially focusing on the northern and southern part of Laos (Ministry of Agriculture and Forestry [MAF], 2007). Rubber planting concession of investors attracted the experienced labor from neighboring countries and rubber plantation companies had created the employment and income for employees (remuneration from 500,000 to 1,000,000 kips per month). François (2007) stated "Vietnamese workers are paid 60% higher than Lao workers for similar task".

Domestic and international forestry sectors will be promoted in the following sub–sectors: tree planting, processing of plantation trees including furniture, modeling or household use, planting and processing of NTFP, conservation of forest resources and eco–tourism. Concerning specific areas for investment, the Law on Promotion of Domestic Investment No. 10/NA, dated 22nd Oct 2004 and the Law on Promotion of International Investment No. 11/NA, dated 22nd Oct 2004 should be referred to MAF, (2005).

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The eradication of shifting cultivation is one goal of the Lao government which has been trying to eradicate the shifting cultivated areas by the year of 2010. It means that the majority of the shifting cultivated areas will convert to the optimal land use which covers about 2,000,000 ha. The agriculture and forestry development is the optional direction to develop forest resources and enhance ecosystem. The support from the research sector, promotion services and the agricultural aid programs from foreign countries, and the agricultural models have been developing which motivate the agricultural activities among local farmers in the positive way. The agriculture and forestry development is the main connectors with the income generation of farmers for a long time (Committee for Planning and Investment [CPI], 2004). Lao president (2010) suggests that "the government has to pay more attention to reducing slash and burn and forest destruction as part of poverty reduction activities, the government must to promote development in rural area by creating village development groups" (Vientiane Time 2010).

Helberg (2003) reported that "slash–and–burn has to be considered as an integral part of the local people tradition".

She found that "In 1991, the 5th party congress of Luangnamtha province identified rubber as a key poverty alleviation strategy and an instrument to stabilize shifting cultivation".

The Lao government plans to grow rubber trees in 250,000 hectares by 2010 with a hope to produce rubber for export and a key for poverty reduction, the annual global consumption volume of rubber products is expected to be 31,5 million tones by 2020 (Lao News Agency [KPL], 2009).

The study attempts to explore the rubber plantation processes among 3 villages that villagers have been involved in the individual planting/smallholder, contract farming and land concession model of company (villagers were employees in the rubber plantation area of the investors, all of those villagers have been facing the challenges of the livelihood improvement in the local areas). The study includes the specific objectives as follows: (1) Analyze the villages' livelihood before they were involved in the rubber plantation and assess the villagers' livelihood after the rubber plantation for the individual planting; contract farming and land concession model (villagers had become employees in the rubber planting areas of investors). (2) Focus on the contract farming model because the government of Laos had paid much attention to this planting model; the contract farming is an agreement of the rubber plantation investment between the local farmers and investors, villager side has land, labor and they are responsible to maintain their rubber plantation areas, the investor side had a responsibility to supply the technical issues and find the rubber market. The final products of the rubber plantation had to share the profit from the rubber selling based on their initial agreement of the contract.

MATERIALS AND METHODS

Study sites

Hadyao village in Luangnamtha district and two villages such as the village of Huayla and Pasang–Huayluang in Sing district, all of those villages and districts were located in Luangnamtha province and those were the sample sites for the case study. In each village rubber plantation models are different from their stakeholders such as smallholder planting (Hadyao village), contract farming (Huayla village) and employing in the rubber plantation area belonging to investors (Pasang–Huayluang).

Field methods

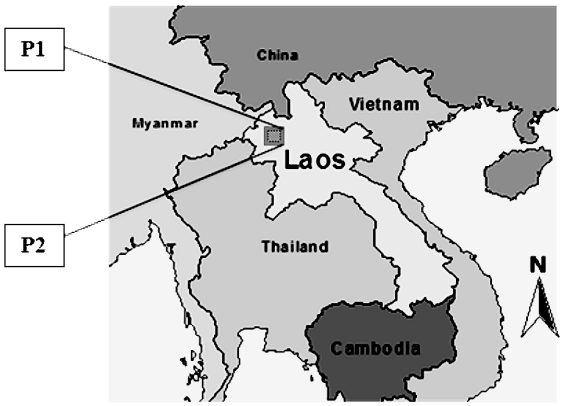
30 households in each village had been conducted to interview their rubber plantation, as in the case of Hadyao village, the selected smallholders could indicate their output and outcome from the rubber tapping on their livelihood change, for the rubber plantation from Huayla and Pasang–Huayluang villagers, they just started during 2007–2008 such as contract farming and employing for rubber plantation investors. Their activities, however, needed to consider and find out the main problems that those villagers have been facing about the rubber plantation processes in the local areas.

Data analysis

The data collection was conducted in the target villages, and each village administrations including the sample households had tried to bring the concerned information about the socioeconomic development of the village especially 30 sample households that have been involved in the rubber plantation. The criteria of the household selection was based on the status of the household such as wealthy, medium and poor household, the village development committee had participated to select the target households, and they can be the sample for whole villagers in the village level. The main components of interviewing on the rubber plantation among household level had focused on their livelihood improvement in each period as before, during and after rubber plantation; only Haoyao village could supply their input, implementation, output and outcome from the rubber plantation obviously, but the case of Huayla villagers had demonstrated that their activities could supply input of the contract farming and some problems that they have been facing in the waiting period for their latex tapping and sharing the profit between the household and investor side. For Pasang–Huayluang village, villagers were employees for investors who were investing the rubber plantation, the income generation from this source just started from the last few years; however, the sample households conceived of their change level about the livelihood improvement among their households. Direct observation about the rubber plantation fields of some households was implemented after their interviewing sessions to gather the concerned data such techniques, elevation and historical land use etc. Those data are qualitative and quantitative types which are used to under-

stand the circumstances of their rubber plantation model, then analyzing on impact from the rubber plantation processes on their livelihood improvement or the change of their household status based on the reduction level of the poverty criteria among household level.

The poverty is the insufficiency of the fundamental factors in the daily living such as insufficient food security, insufficient clothing security, impermanent residence, lack of expenditure on health care, and lack of expenditure on children's schooling.[1] The income sources of household level will be utilized to calculate the comparative level of their poor criteria between their mean income sources (kips per person per month) and the official poverty criteria (180,000 kips[2] per person/month)[3] (PMO, 2009).



Remark: P1: Huayla and Pasang – Huayluang Village (Akha Community) in Sing District, Luangnamtha Province
P2: Hadyao Village (Hmong Community) in Luangnamtha District, Luangnamtha Province

Fig. 1. Location of Study Area.

Fig. 2. Land Use of Local Farmers in Huayla Village.

RESULTS

Indicator Comparison of the Activity Change for Sample Households' Shifting Cultivation

As shown in the table 01 that is decreasing number of sample households' shifting cultivation among the target villages, it had been appeared in Hadyao village only such as there were 33 percents of the sample households that could change from the shifting cultivation to other activities as well as rubber plantation. For the sample households of Huayla and Pasang–Huayluang village, the number of household that have been involved in the shifting cultivation remained constant for two periods (80% of sample household number in Huayla village and 100% of sample household number in Pasang–Huayluang remain concerning with the shifting cultivation).

Table 1. Activity Change for Sample Households' Shifting Cultivation

Sample Village	Percentage of Households involved with Shifting Cultivation (%)		
	Plantation Period		Decreasing Level
	Before	After	
A: Hadyao	93	60	33
B: Huayla	80	80	0
C: Pasang–Huayluang	100	100	0

Source: Author's interview survey (2009)
Remark: A: Smallholder Planting Type
B: Contract Farming (2+3) Type
C: Concession type (Villagers had become employees in the rubber planting area of investors)

Indicator Comparison of the Household Poor by Criteria

From the table 2, it can be seen that four of the household' livelihood components in 3 villages had improved in the positive ways after their involvement of the rubber planting activities such as food security, clothing security, expenditure security for their health care and children's schooling. On the other hand, the house development of household level is under investigation, as can be seen from the table that only 80% of all household numbers of Hadayo village had changed their houses from the impermanent house status to the permanent status. In the case of all sample households in Huayla and Pasang–Huayluang, villagers still reside in the impermanent houses.

[1] In 2004, the Lao government (The Roundtable Process Steering Committee) has issued the National Growth and Poverty Eradication (NGPES) which is the national development agenda to achieve the country's goal in 2020.
[2] $ 1 US = 8,268 kips approximately, as of May 2010.
[3] The Prime Minister had issued the decree on the poverty criteria and development criteria for 2010–2015 (No 285/PM, Vientiane Capital, Dated on 13 October 2009): The poverty criteria of individual which is based on the mean of income generation from the household members and depend on the location of their living such as the mean of income generation for people who are living in the urban area is 240,000 kips per person per month and for people who live in rural area is 180,000 kips per person per month. The main identification of the poor household had been based on the mean of income generation of household members which is lower than the income of the poverty criteria.

Table 2. Percentage of Sample Households' Livelihood Improvement

Components of the livelihood improvement	Positive Impact (%)						
	A: Hadyao			B: Huayla		C: Pasang–Huayluang	
	Before[1]	During[2]	After[3]	Before[1]	During[2]	Before[1]	After[3]
Food Security	67	60	100	77	93	0	57
Clothing Security	27	30	100	13	63	0	83
House Development	20	30	80	0	0	0	0
Expenditure Security for Health Care	17	20	97	13	77	0	83
Expenditure Security for Children's schooling	20	20	97	33	93	0	93

Source: Author's interview survey (2009)

Note: [1] Before villagers' rubber plantation activity period

[2] During villagers had implemented the rubber planting activity

[3] The period that villagers could see the output and outcome from the rubber plantation process on their livelihood improvement

Changing of the contact farming arrangements in Huayla Village

In Sing district, many villages had cooperated with Lao or Chinese investors (profit sharing is 50% and 50%, 60% and 40%). The rubber plantation by the contract farming was arranged in the on the principle of [2+3][4] profit sharing plantation system.

In Huayla village, the contract farming arrangements was concluded in 2007 and the villagers had already planted rubber trees in the first year. The total number of planted area in 30 sample households is 266.1 ha which comprise 3 contract farming arrangements since 2007 as follows:

(1) Contract farming directly between Chinese company (Xieuxeng[5]) and households:

155.4 ha or 58% of the total number of planted area had been planted by 2 households in the sample households and had been used for land resources by the company. Chinese company has been implementing their business on the rubber plantation in large area, their initial profit sharing is 60% and 40%. By the year of 2009, the company and household side had discussed about the amendment about the profit sharing, from the discuss result orally in 2009, household will receive 30% from rubber sale in the future and 70% will belong to Chinese company in the future.

(2) Chinese investors used Lao negotiator to make contract with households:

58 ha or 22% of the total number of planted area had been planted by 3 households interviewed in the village. The profit sharing among Chinese company and the households had been agreed on their initial profit sharing at 50% and 50%. Chinese company had used Lao negotiators to make their contract with villagers. By the September of 2009, these sample households had reported about the state of their rubber planting as follows:

– 2 households had made contract to plant rubber trees in 40 ha which consist of 18,000 planted trees, after they had shared the number of rubber trees such as Chinese investor received 50% (9,000 trees/20 ha), in 50% is part of villagers.
– In within 50% (9,000 trees/20 ha) of 2 households, they had to share 20% of total number of rubber planted trees for Lao negotiator who helped Chinese investors and villagers. Finally, 2 households received 7,200 trees/16 ha and the rest of total number of rubber trees and planting area in 1,800 trees/4 ha belong to Lao negotiator. By the September of 2009, this 2 households had sold their rubber trees (7,200 trees/16 ha) for Lao negotiators at the negotiating price as 35,000 kip/tree.
– One household had planted rubber trees in 8,000 trees/18 ha, the household had shared the number of rubber trees for Chinese investor (4,000 trees/9 ha), Lao negotiator received 800 trees/1.8 ha and the rest was belonging to household (This household did not sell their rubber trees for Lao negotiator yet).

(3) Contract farming directly between Lao investors and households:

All the rest of the sample households consisting of 25 households have been involved in the contract faming directly with Lao investors from neighboring villages who are living at the municipality of Sing district. Their planted area was 52.7 ha or 20% of the total number of planted area, the mean of rubber planted area for each

[4] [2+3] means that 2: villager had land and labour, 3: investor had capital, techniques and will find the rubber market

[5] The common name of a Chinese company that villagers call and know well within the village, English spelling may be incorrect.

household was 2.1 ha. From the information, it can be seen that majority of the sample households were involved with Lao investors, their land source used for the rubber planting is not larger than 2 previous contract arrangements.

Indicator Comparison of the effective Income Sources on the Poverty Criteria

From the table 3, it can be inferred that the mean of monthly income generation for individual who are involved in the rubber planting activities, there is one

Table 3. Indicator Comparison of the Effective Income Sources from the Rubber Planting Activities on the Poverty Criteria

Description	Unit	Income of Individual in the Target Villages		
		(A)	(B)	(C)
Mean of income generation which based on the poverty criteria (for Individual who live in rural areas)	Kip/person/month	180,000 (Comparison)	180,000 (Comparison)	180,000 (Comparison)
Mean of monthly income generation from tub–lump sale for individual (Case of calculation: 5 months from April to September)	Kip/person/ month	300,468 (> 180,000)	–	–
Expected mean of monthly income generation from tub–lump sale for individual (Case of calculation: 8 months from April to November)	Kip/person/ month	300,468 (> 180,000)	–	–
Expected mean of monthly income generation from tub–lump sale for individual in 2009 (Case of calculation: 12 months/ year)	Kip/person/ month	200,312 (> 180,000)	–	–
Expected mean of monthly income generation from employing wage (Case of calculation: 12months/year)	Kip/person/ month	–	–	47,732 (< 180,000)
Mean of monthly income generation from employing wage (Case of calculation: 4 months/year)	Kip/person/ month	–	–	143,197 (< 180,000)

Source: Author's interview survey (2009)
Note: (A) Smallholder Planting, (B) Contract farming and (C) Concession type (Villagers had become employees in the rubber planting area of investors)

Table 4. Income Comparison of the Rubber Planting Activities and Other Sources with the Poverty Criteria for Individual Level

Description	Unit	Income Categories of Individual Level (Kip/person/month)		Total of Income Sources (Kip/person/ month)	Comparison with the Poverty Criteria (Kip/person/ month)
		Rubber Planting	Other Sources		
1. Income Generation until September					
1.1 (A)	Kip/person/ month	300,468	9,368	309,836	>180,000
1.2 (B)	Kip/person/ month	0	22,693	22,693	<180,000
1.3 (C)	Kip/person/ month	143,197	0	143,197	<180,000
2. Expected Income Generation within 12 months of 2009					
2.1 (A)	Kip/person/ month	200,312	9,368	209,680	>180,000
2.2 (B)	Kip/person/ month	0	46,351	46,351	<180,000
2.3 (C)	Kip/person/ month	47,732	0	47,732	<180,000

Source: Author's interview survey (2009)
Note: Remarks are same as Table. 3.

case that Hadyao villagers only could eradicate the poverty status such as during 5 and 8 months (2009) of their rubber tapping and sale period (mean of individual income generation is greater than 180,000 kips/person/month). If considering the expected income security for individual level on the poverty criteria within 12 months is also greater than 180,000 kips, all of sample villagers in Hadyao village can be considered as rich. For the case of Pasang–Huayluang villagers, during their working as employees in the rubber plantation field of investors within 4 months, those sample villagers could not eradicate the poverty status that their income generation was less than 180,000 kips/person/month. If their total income from the employing in the rubber plantation field averaged with 12 month per year, it is extremely poor performance.

According to table 4, it can be inferred that income comparison from the rubber planting activities and other sources with the individual poverty criteria among 3 sample households, there is one case that Hadyao villagers only could eradicate the poverty criteria (the mean of individual income generation is greater than 180,000 kips/person/month). Even though cases of Huayla and Pasang–Huayluang village had added the rubber planting income with their other income sources, their individual income remained less than 180,000 kips. Sample villagers of Huayla and Pasang–Huayluang, therefore, have been facing with difficulties of their living as well as livelihood improvement.

DISCUSSION AND RECOMMENDATION

Effective evaluation on the rubber plantation on local livelihood improvement is one of the most important factors for the forecasting of the rubber plantation issues which related to villagers' livelihood as well as their poverty reduction. By the year of 2009, the positive impact on villagers' livelihood improvement had appeared in the smallholder planting model only that their rubber planting activity could contribute in the poverty reduction processes of the society. The exploring of the effective model is necessary to ensure the poverty reduction criteria while the Lao government had paid much attention for this issue.

From the results, it can be shown that the effectiveness of the rubber plantation on the sample households in 3 selected villages and their village development processes as follows:

Firstly, as for the comparison study of the activity change for those sample households' shifting cultivation, case of smallholder planting had been considered as the village that there is decreasing of household numbers who had been involved in the shifting cultivation after their rubber planting activity.

Secondly, the sample households' livelihood in each period (before, during or after rubber plantation) for 3 selected villages, it can be found that smallholder planting of 30 sample households in Hadyao village is evaluated as an effective rubber planting model that could reach the positive impact on their livelihood improvement, all of the fundamental components for the household livelihood level had performed effectively and could ensure in their poverty reduction processes. On the other hand, the sample house of Huayla and Pasang–Huayluang, their rubber planting activities have been challenging to the households' livelihood improvement.

Thirdly, the contract farming model [2+3] in Huayla village, the agreement in contract farming is changing easily and it was broken down. Their concerning problems that villagers have been facing in the rubber plantation periods as follows: Contract farming (Huayla village) faces 3 main problems: (1) Loose contract and oral agreement with the lack of official documents between villager side and investor's side, (2) Profit sharing between villagers and investors becomes undisciplined and (3) Lack of coordination with the functional sections in the local level.

Lastly, the indicative results for the effective incomes from the rubber planting activities particularly and the sum of incomes which is added with rubber planting source and other sources, both of income sources compare with the poverty criteria of the Lao government they can be found that the mean of monthly income generation for individual level in Hadyao village (smallholder planting) are greater than 180,000 kips. Mean of monthly income generation for both Huayla and Pasang–Huayluang is less than 180,000 kips. Therefore, villagers' livelihood faces with the low income generation as well as poverty status.

The rubber planting promotion scheme should be ensured to improve the livelihood improvement as well as the poverty reduction of the villagers. According to the evaluating results of the rubber planting model in 3 selected villages, the security of the poor criterion and income generation is considered as the most important fundamentals to improve the household livelihood. The policy makers on the agricultural and forestry development as well as local livelihood improvement in each level should consider the output and outcome from the rubber plantation models among villagers carefully. In the present time, there are many poor villagers who have been involved in the rubber plantation processes such as smallholder planting, contract farming and employing in the rubber plantation field of investors, these activities are the challenging to their poverty reduction, the positive impact of the rubber plantation had occurred among the smallholder planting (Hadyao villagers) but villagers have been facing with some problems in their rubber production and sale step to Chinese traders. Cases of the contract farming (Huayla villagers) and employees (Pasang–Huayluang) face with many problems in their rubber planting activities and challenging to their household livelihood in the future. It is high time that the concerning sectors in each level should coordinate with the target villages and help them to solve the difficulties.

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