

Poverty - Environment Initiative (PEI) Lao PDR



Assessment of Economic, Social and Environmental Costs and Benefits of Mitr Lao Sugar Plantation and Factory: Case Study in Savannakhet Province



Photo: NERI

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&

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Data used in this research is obtained from official statistics, published literature and field surveys carried out between May and December 2010, with reasonable efforts to ensure that these are factually correct.

The views expressed in this report are those of the authors and do not necessarily reflect the view of the Ministry of Planning and Investment of Lao PDR.

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Acronyms and Abbreviations

| | |
|-----------------|---|
| ECC: | Environmental Compliance Certificate |
| ESIA: | Environmental and Social Impact Assessment |
| EU: | European Union |
| FDI: | Foreign Direct Investment |
| GDP: | Gross Domestic Product |
| GoL | Government of Lao PDR |
| Ha | Hectares |
| IUCN: | International Union for Conservation of Nature |
| Km | Kilometer |
| LAK: | Lao Kip |
| Lao PDR: | Lao People's Democratic Republic |
| MAF: | The Ministry of Agriculture and Forestry |
| MOU: | Memorandum of Understanding |
| MPI: | The Ministry of Planning and Investment |
| NERI: | The National Economic Research Institute |
| NGO: | Non Government Organization |
| NTFP: | Non Timber Forest Product |
| PA: | Participatory Assessment |
| PAFO: | Provincial Agriculture and Forestry Office |
| PDIC: | Provincial Department for Industry and Commerce |
| PDPI: | Provincial Department for Planning and Investment |
| PLMO: | Provincial Land Management Office |
| PWREO: | Provincial Water Resource and Environment Office |
| UNDP: | United Nations Development Program |
| USD: | United States Dollar |
| WREA: | Water Resources and Environmental Administration |

1. Introduction

1.1. Background and rationale of the project

Because of the favorable natural conditions and infrastructure development of Savannakhet Province, it has received significant investment flows during the last decade. Reaching a total of USD 2.123 billion over 2004-2008, investment in Savannakhet is significant nationally, accounting for 21.8% of all investment in the country during the same period. The larger share of investment in the province, 59.3% is from foreign countries (FDI).¹ About 2% of FDI comes from India; 23% comes from China; 16% from Australia; about 9 % comes from Vietnam; 7 % from Thailand; and the remaining 16 % of the FDI comes from other countries.² The natural resource sectors attract the most investment in the province, with most FDI occurring in the agriculture and forestry sector (about 66%, followed by electricity and mining at 23%). The service and processing sectors account for the remaining 6% and 5% respectively.³

There has been research related to investment in Savannakhet Province in the past, including a study on impacts of regional economic integration conducted by NERI in 2007. In addition, in 2008, NERI carried out a study focusing on benefit sharing from infrastructure development and transportation links. However, these previous studies did not provide sufficient information and understanding about how investment projects create economic, social and environmental impacts at the community level. Therefore, IUCN Lao PDR, NERI and the Savannakhet provincial authorities, with support from the Poverty Environment Initiative (PEI) in Lao PDR, conducted case studies focusing on evaluating the economic, social and environmental impacts of investment at the community level in villages surrounding two key investment sites. These case studies provide local-level information to support the overall assessment of the costs and benefits of investment in Savannakhet Province, carried out by IUCN Lao PDR and NERI in 2010. The two case studies selected are:

- Mitr Lao Sugarcane Plantation and Sugar Factory, located in several districts of Savannakhet Province (but with the case study focusing on three villages in Xayburi District);
- Savan Vegas Casino & Hotel, located in Kaisone Phomevihane District, close to the Savannakhet provincial town center.

The findings of the first case study are presented in this report, which examines the economic, social and environmental costs and benefits associated with the sugarcane plantations and

¹ Savannakhet IPD. *Five Year Plan 2011-2015* [Draft].

² Estimated by research team by using data provided by Savannakhet IPD (data sheet).

³ Estimated by research team by using data provided by Savannakhet IPD (data sheet).

processing facility of Mitr Lao in three villages around the concession: Dong Phung, Keng Head and Na Dieng villages.

1.2. Research objectives and Parameters

The case study aims to examine the following impacts of the investment:

Economic impacts: This section aims to clarify how the plantation creates employment and income generation activities for local people, as well as how it contributes to community development and to government revenues;

Social impacts: This section examines how the plantation affects the livelihoods of local people, as well as what are the social benefits, risks and threats related to plantation industry for local people;

Environmental impacts: This section explores the investment's impacts on local forests, non-timber forest products (NTFPs), water resources and biodiversity, paying attention to the inter-linkages between social and environmental impacts in the Lao context.

1.3. Research methodology and activities

To achieve the research objectives outlined above, as well as to promote local involvement and inter-agency cooperation in the project, a research team was formed in Savannakhet Province, comprising researchers from NERI and representatives from the key provincial departments and agencies involved in investment promotion and management, including Department for Planning and Investment (PDPI), the Water Resources and Environment Office (WREO), the Agriculture and Forestry Office (PAFO), the Land Management Office (PLMO), and the Department of Industry and Commerce (PDIC), the Governor's Office, and so on. While the research conducted in the province was lead by NERI, the team worked together to gather all the necessary data from various sectors in the province, as well as to carry out the case studies.

The research methods for the case studies included both desk-based research and participatory assessment approach. Based on nature of each investment project, the research team conducted the studies in different styles but each study examines the business in question, its activities and its impacts on surrounding villages. The case studies include village profile surveys using the information collection form provided at Appendix 1, focus group discussions and individual surveys. In total, the research team organized three focus group discussions in each sampling village. They included (1) village organizers; (2) educated people and (3) women. Each group was composed of between 7 and 10 people. To get more in-depth information, the research team interviewed two people in depth in each sampling village who

suffered as a result of expansion of the sugar cane plantation and two people who benefit significantly from expansion of sugar cane plantation.

The case studies were also supported by the research undertaken throughout the project to assess the costs and benefits of investments in Savannakhet Province as a whole, which also utilized both desk-based and participatory approaches, as outlined below:

- *Literature review:* The research team collected documents including previous research publications related to investment, social and environmental issues, as well as monthly, quarterly and yearly development reports and data from several government departments, for Savannakhet Province and the case study districts.
- *Focus group discussions:* The research team organized focus group discussions with several provincial government departments related directly to investment management such as PDPI, WREO, PAFO, PLMO, and PDIC. The Deputy Director Generals, Directors and main technical officers at each of these provincial departments participated in the discussions.
- *Key informant interviews:* In addition, to get more detailed information, the research team conducted individual interviews with key informants, including representatives of the Savannakhet PDPI, WREO, PLMO and PAFO, representatives of civil society organizations (such as the Youth Union, Lao Women's Union, Labor Union and non-government organizations, such as Norwegian Church Aid), and representatives of several key investment companies (including KOLAO, Savan Sugar Factory, Mitr Lao Sugar Factory, Savan Banhao Tourism Company, Daosavanh Hotel, Savan Vegas Casino & Hotel, and Lao Thai Hua Rubber Company).
- *Consultation workshops:* During the course of the study, three consultation workshops were organized in order to seek the comments and advice of stakeholders to the project. An introductory and planning workshop was held at the beginning of the project; a second workshop was organized after the field survey and the preparation of the draft report; and the third workshop was held to discuss the revised report and results of the study in Savannakhet in October 2010.

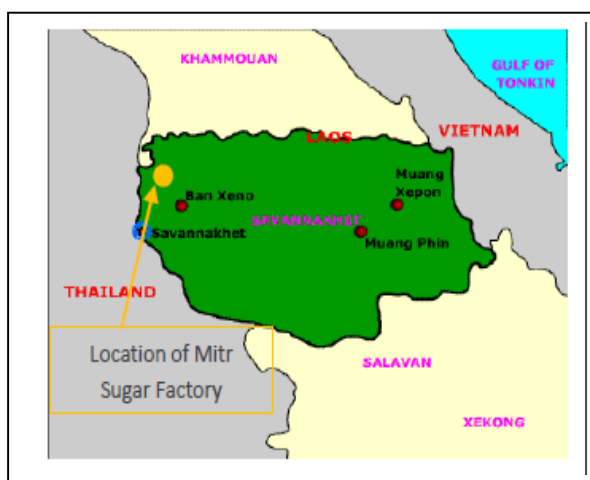
2. Mitr Lao Sugar in Savannakhet Province

The Mitr Lao Sugarcane Factory and Plantation belong to the Mitr Phol Group, which is a group of companies involved in industry sectors related to the sugar industry, including: (1) the sugar industry itself; (2) the particle board industry; (3) bio-energy; (4) ethanol industry; and (5) warehouse and logistics industry.

The group is the biggest sugar producer and exporter in Thailand. Currently, the group has a total of seven sugar factories, of which six are located in Thailand and one is in Lao PDR (Mitr Lao Sugar, which is the subject of this report). The group plans to expand their business activities to Cambodia.

The Mitr Lao project was established in Savannakhet Province in 2005. In the first year, the company received a 104 hectare (ha) concession from the Government of Lao PDR (GoL) for experimentation. In 2006, the company started growing sugarcane seedlings and in 2007, Mitr Lao started to grow sugar cane and established a sugar factory at N 16°52'1", E 104°54'4", near Keng Head village, about 60 kilometers (km) north of the Savannakhet provincial center. The map and picture below present more details on the location of the factory.⁴

Map 1: Location of Mitr Lao Sugar project



Source: Created by NERI

Picture 1: Mitr Lao Sugar Factory in Savannakhet



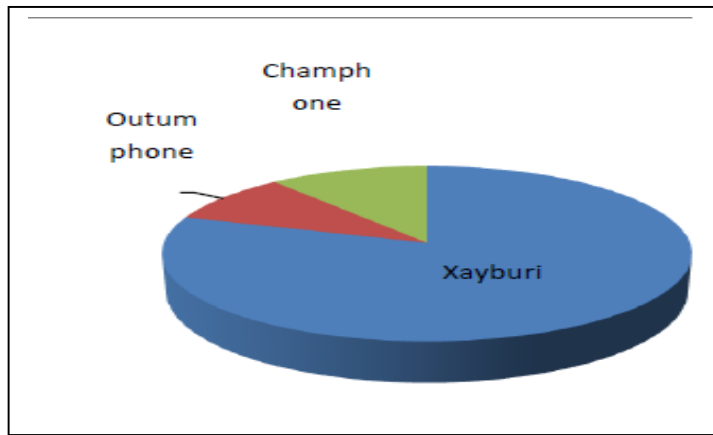
Source: Photographed during case study

As of July 2010, Mitr Lao Sugar had received a total of 10,000 ha of land from the GoL through a concession with a period of 40 years. Of this land, 8,014 ha are in Xayburi District, 912 ha are in Outumphone District and 1,100 ha are in Champhone District (all located in Savannakhet Province).⁵ The figure and map below presents more details on the concession areas of Mitr Lao Sugar.

⁴ Mitr Lao Sugar Factory. 2010. *Company Presentation*.

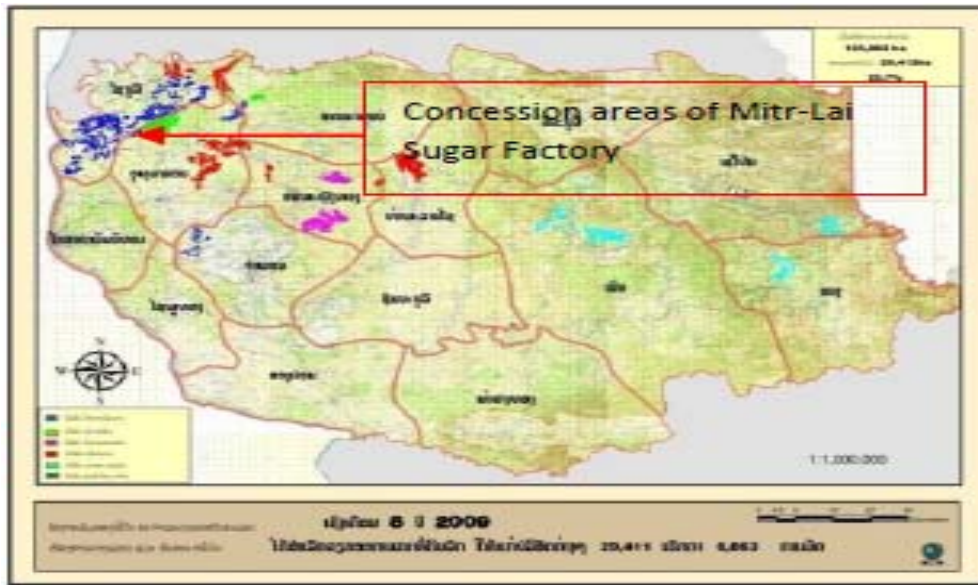
⁵ Mitr Lao Sugar. 2010. *Company Presentation*.

Figure 1: Concession area of Mitr Lao Sugar by district



Source: Mitr Lao Sugar. 2010. Company Presentation.

Map 2: Concession area of Mitr Lao



Source: Savannakhet PLMO

According to the information provided by the Mitr Lao management team, the company has already cultivated 7,790 ha of sugarcane. Of this, 5,256 ha are grown on company land and 2,534 ha are grown through contract farming. According to the management team, the remaining 2,210 ha of area acquired through the concession are not useable because they are stony fields.⁶ The table below provides more information.

⁶ Please note that the 2,210 ha which is not useable is not a single large area, but it is divided into many small spots located in the bigger concession area.

Table 1: Sugar cane plantation of Mitr Lao Sugar, 2010

| Description | Area (ha) |
|--------------------|--------------|
| Company plantation | 5,256 |
| Contract farming | 2,534 |
| Total | 7,790 |

Source: Mitr Lao Sugar.2010. Company Presentation.

In 2010, the company employed about 7,000 people per day during the harvest period and 4,200 people in the maintenance period. Most of these employees are daily workers. About 1,194 households have joined in the company's contract farming scheme, which will be discussed in greater detail in the next section.

The factory produces both semi-processed sugar and refined sugar products. The refined sugar product is for the domestic market, while the semi-processed product is for export to Thailand for further processing and then re-export to the European Union (EU).⁷ In 2008/09, Mitr Lao Sugar harvested 221,000 tons of sugarcane and produced 200 tons of sugar to meet domestic demand and 23,000 tons of raw sugar for export. The production volume increased significantly the following year because of the increased production area. Table 2 below shows the company's increased production.

Table 2: Production volume of Mitr Lao Sugar

| Description | Production year 2008/09 | Production year 2009/10 |
|-----------------|-------------------------|-------------------------|
| Sugarcane (ton) | 221,000 | 366,456 |
| Sugar (ton) | 200 | 1,500 |
| Raw sugar (ton) | 23,000 | 37,000 |

Source: Mitr Lao Sugar.2010. Company Presentation

The company contributes to the government budget through taxes and concession fees. The company's accumulated contribution from 2007 until the end of 2009 is estimated to be about USD 1.5 million, corresponding to about 0.06% of government budget or to about 0.7% of Savannakhet Province's budget during the same period.⁸ Given the large size of the concessions, this is not a very substantial contribution to government revenues. It is important

⁷ Tate & Lyle, a global food company based in the United Kingdom, invested £2 million to acquire a 10% shareholding in Mitr Lao Sugar; Lao PDR became eligible to export sugar duty free into the EU under the "Everything But Arms" initiative from 1 July 2009. Raw sugar shipped to the EU by Mitr Lao Sugar will be refined by Tate & Lyle. (Tate & Lyle. 15 August 2007. "Tate& Lyle Announces Investment in Sugar Joint Venture in the People's Democratic Republic of Lao", <http://www.tateandlyle.presscentre.com/Press-releases/Tate-Lyle-announces-investment-in-sugar-joint-venture-in-the-People-s-Democratic-Republic-of-Lao-275.aspx>, (accessed December 2010).

⁸ Estimated by research team using information provided by Mitr Lao Sugar and budget information given in Savannakhet *Five Year Plan 2011-2015* (Draft) and the MPI *Social Economic Development Plan for 2009-2010*.

to note that all of these taxes and concessions go directly to the central government (funds are then allocated to the provinces through the Ministry of Finance). Table 3 below provides more detail of the breakdown of the company’s contributions.

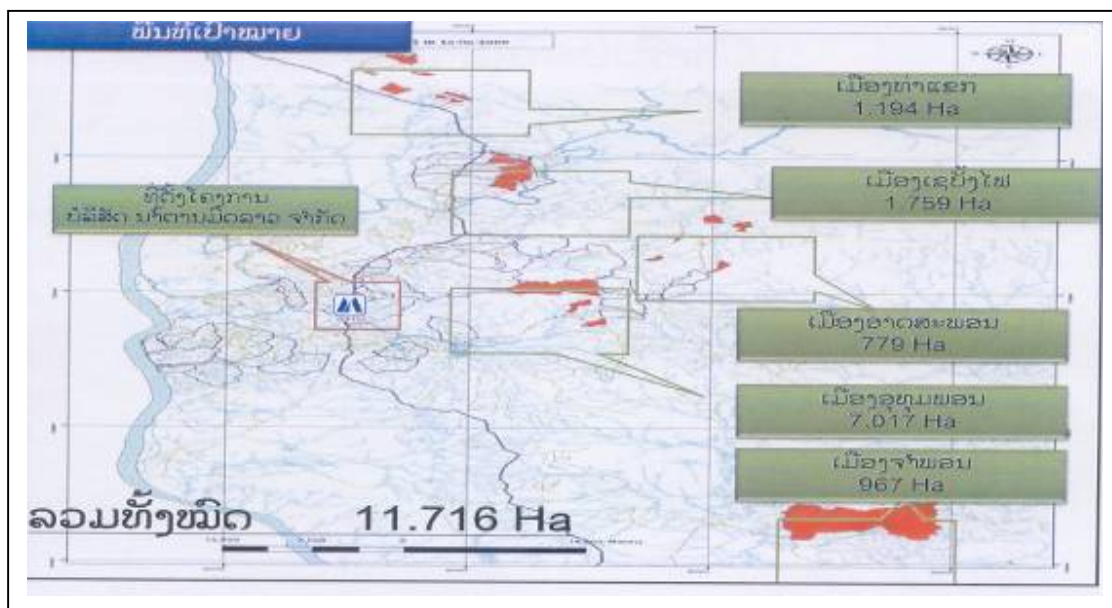
Table 3: Contribution of Mitr Lao Sugar to central government budget, 2007-09

| Year | Amount (USD) |
|--------------|------------------|
| 2007 | 61,310 |
| 2008 | 737,839 |
| 2009 | 764,409 |
| Total | 1,563,559 |

Source: Mitr Lao Sugar.2010. Company Presentation

Mitr Lao Sugar is currently asking the GoL for over 11,700 ha more in land concessions, of which 1,194 ha are in Thakhek and 1,194 ha in Se Banfai districts of Khammuane Province, and 779 ha in Atsaphone, 7,017 ha in Outumphone and 967 ha in Champhone districts, Savannakhet Province. The map below shows these proposed concession areas.⁹

Map 3: Concession target of Mitr Lao Sugar



According to findings from the case study, the sugar cane plantations and factory established so far has significant economic, social and environmental impacts in the project areas. These impacts will be discussed in the next section.

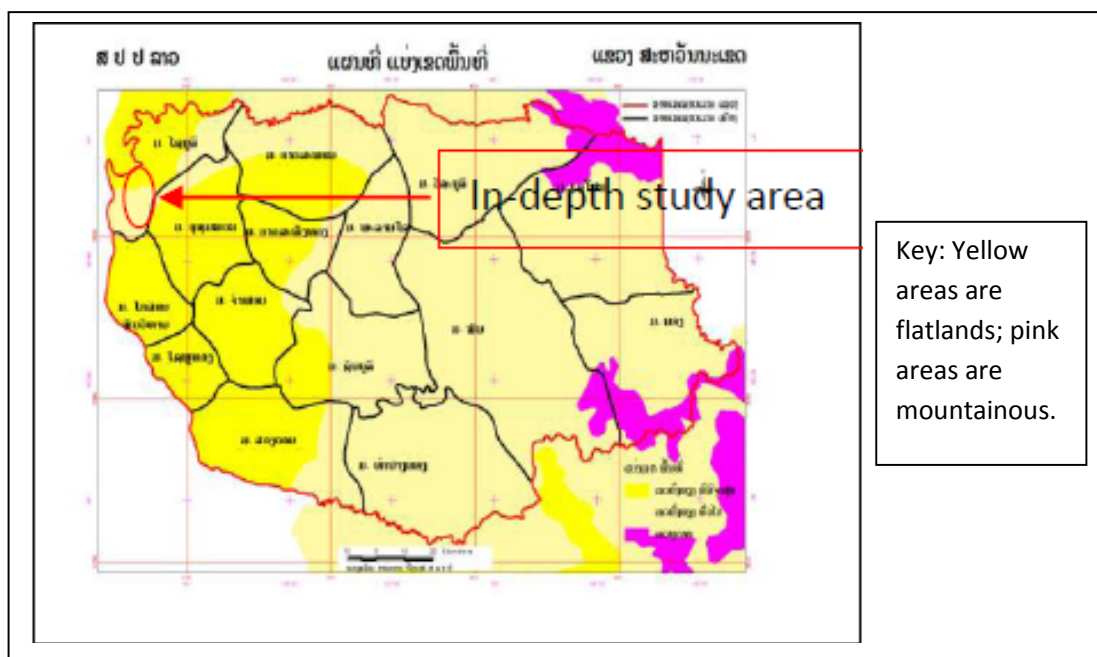
⁹ Mitr Lao Sugar Factory 2010: Company Presentation.

3. The Case Study Area

3.1. Location and natural resources

Geographical location: The case study area includes three villages: Dong Phung, Keng Head and Na Dieng, all of which are located in Xayburi District of Savannakhet Province. The first village (Dong Phung) is located at N 16°48'2", E 104°52'7" , about 263 m above sea level, and about 40 km north of Savannakhet provincial center. The second village (Keng Head) is located at N 16°52'2", E 104°54'7", about 146 m above sea level, and about 60 km north of Savannakhet provincial center. The third sampling village (Na Dieng) is located at N 17°00'9", E 104°56'7", about 151 meter above sea level and about 65 km north of the Savannakhet provincial center. By overlaying concession maps, it is evident that the case study villages are located in the middle of the Mitr Lao sugarcane plantations. Maps 4 and 5 below show the geographical locations of the villages and the surrounding case study area. In addition, map 5 indicates that the plantation area is encroaching on provincial-level protection forest. However, the provincial authorities have been unable to confirm whether the forest areas in question are officially classified as protection forest, indicating that there is a level of confusion regarding land use in the concession area.

Map 4: Landscape of case study area



Source: Savannakhet PAFO

Land, soil and forest cover: The three case study villages cover a total land area of 5,852.24 ha, including: 245.32 ha of residential areas; 3,916.92 ha of production areas (including the production area under contract farming and concession area for industrial crop production); and about 1,690 ha of forest areas. More details are provided in Table 4 below. All the sampling villages are located in flatland areas with fertile soil. The fertile land and forestry have supported local people’s livelihoods and have been an important income sources for these villages. However, according to findings from the focus group discussions, forest cover has been rapidly declining due to the growth of the plantation industry. The focus groups in the sampling villages explained that the industrial production model, as used by the plantation, is also gradually changing the traditional livelihood patterns of local people. Before the establishment of the sugar factory, subsistence agriculture, livestock production and NTFP collection were the main livelihood activities of people living in the area. After the establishment of the factory and expansion of the plantations, employment on the plantations and in the factory started to play a key role in livelihoods.

Table 4: Land area of sampling villages (ha)

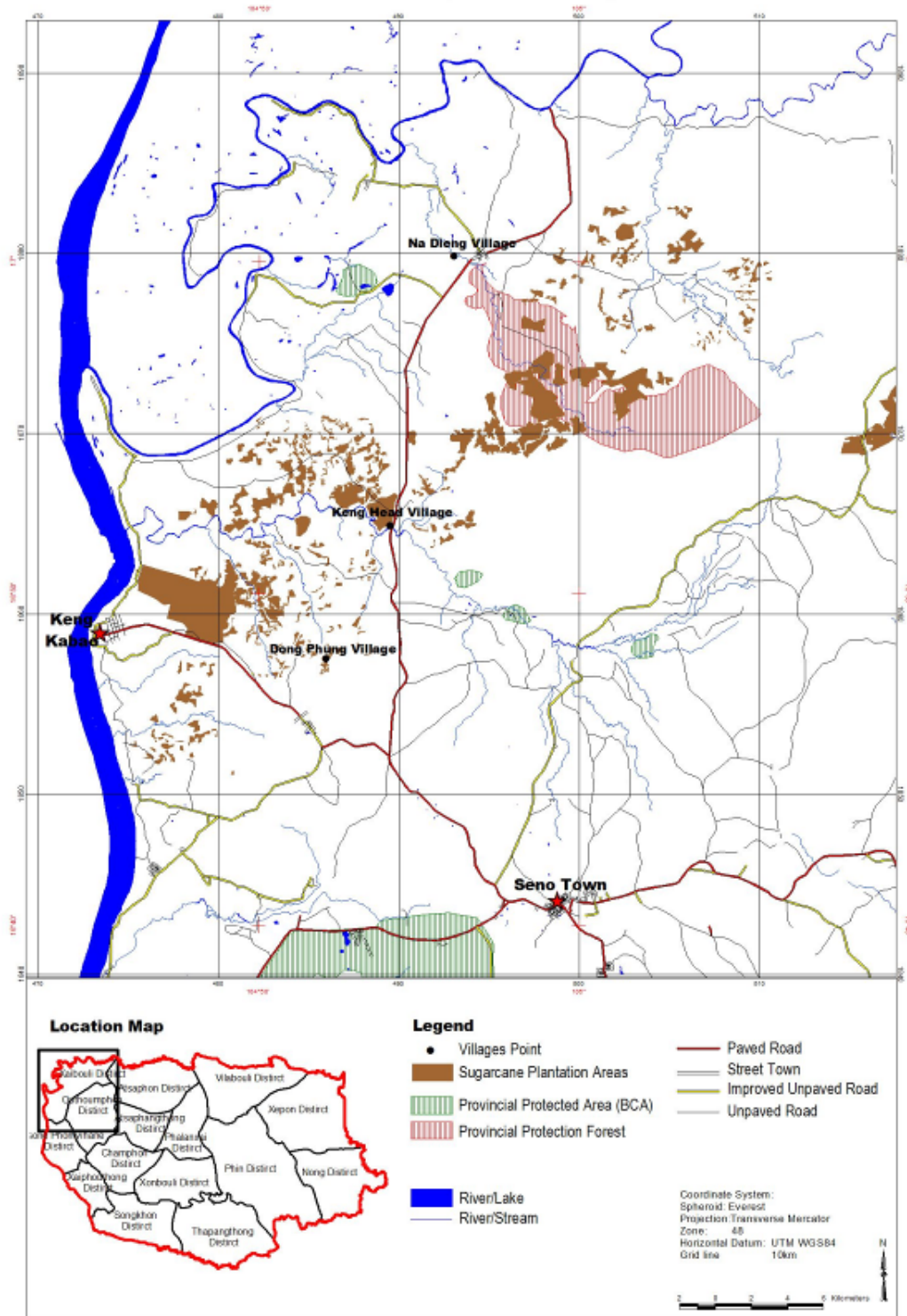
| Villages | Total area (ha) | Residential area (ha) | Production area (ha) | Forest area (ha) |
|-----------------|------------------------|------------------------------|-----------------------------|-------------------------|
| Dong Phung | 1,753.34 | 25.5 | 349.84 | 1,378 |
| Keng Head | 3,086 | 45.39 | 3,025.61 | 15 |
| Na Deng | 1,012.90 | 174.43 | 541.47 | 297 |
| Total | 5,852.24 | 245.32 | 3,916.92 | 1,690 |

Source: Village profile survey

More discussion of the impacts of the investment on local land and natural resources is provided in the sections below.

Map 5: Case study area

**Sugarcane plantation Map
(Xaibouli district, Savannakhet)**



Source: Developed by NAFRI using data gathered during case study

Temperature and rain fall: the case study area is located in a flat area that has a higher temperature and less rainfall than the upland areas of the province. The average temperature in the area is estimated to be about 26.5°C and average rainfall is estimated to be about 1,083.5 mm per year.¹⁰ According to Savannakhet PAFO, the climate situation does not constrain agriculture production. The lowland areas are highly productive. This is described in more depth in the next section.

3.2. Socio-economic development

Population and labor force: The total population of the whole case study area is about 2,065 people: about 62.3% of the population is of labor force age (15-60 years) and about 25% of the population is 14 or younger. This age structure, combined with a large work force, is a good condition for investment in the area. Table 5 shows the age structure of population.

Table 5: Age structure of population in the case study area, by percentage

| Age group | In-depth study area | Dong Phung | Keng Head | Na Dieng |
|-----------|---------------------|------------|-----------|----------|
| <14 | 25.5 | 19.8 | 37.3 | 22.2 |
| 15-60 | 62.3 | 64.3 | 49.3 | 68.3 |
| >60 | 12.3 | 15.9 | 13.4 | 9.4 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Village profile surveys

The majority of the population has a relatively low level of educational attainment, and is engaged in independent, subsistence agricultural production. About 29.8% of the population has not completed primary school and just 8% have completed upper secondary school, university or graduate school.¹¹ Table 6 shows educational structure for the population in the case study area.

Table 6: Educational structure of population of the case study area, by percentage

| Educational level | Case study area | Dong Phung | Keng Head | Na Dieng |
|--------------------------|-----------------|------------|-----------|----------|
| Illiterate | 2.8 | 6.9 | 2.8 | 0.0 |
| Less than primary school | 27.0 | 39.6 | 52.2 | 6.3 |

¹⁰ Savannakhet PDPI. *Savannakhet Province Statistical Year Book, 2008.*

¹¹ Village profile survey.

| | | | | |
|------------------------|-------|-------|-------|-------|
| Primary school | 56.4 | 21.9 | 38.5 | 88.7 |
| Lower secondary school | 6.8 | 16.0 | 4.6 | 1.4 |
| Upper secondary school | 4.9 | 13.4 | 1.4 | 0.7 |
| Higher education | 2.1 | 2.1 | 0.5 | 3.0 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Village profile survey

According to discussions with a number of investment companies during the study in Savannakhet Province¹², the low educational level and lack of experience with industrial production remains a constraint for investment in the province, especially for implementing contract farming, using modern techniques and technologies, following regulations/rules and orders related to work, as well as adaptation to the province's changing situation.

Occupational structure: The majority (about 87.2%) of the population in the case study villages is engaged in small-scale, family subsistence-based agricultural production.¹³ Agriculture in the area is not yet based on commercial production using modern techniques and technologies. Table 7 provides more detail on occupations of people in the three villages.

Table 7: Structure of labor force by main occupation (percentage share)

| Occupation | In-depth study area | Dong Phung | Keng Head | Na Dieng |
|---------------------------------|---------------------|------------|-----------|----------|
| Agriculture | 87.2 | 90 | 90 | 84 |
| Trade | 8.4 | 2 | 5 | 14 |
| Services (except trade) | 1.3 | 3 | 2 | 0 |
| Construction | 0.8 | 3 | 0 | 0 |
| Full time Labor (on plantation) | 2.3 | 2 | 3 | 2 |
| Total | 100 | 100 | 100 | 100 |

Source: Village profile survey

However, according to focus group discussions, the occupational structure and livelihoods of people in the area is beginning to change. The industrial production mode and the lifestyle that accompanies it are replacing traditional livelihoods. About 2.3% of labor force in the case study area is now employed on the sugarcane plantations full-time (see Table 7). Although the percentage is still small, industrial agriculture is a new phenomenon for the area and signals a

¹² Names of companies are given in the methodology section.

¹³ Village profile survey.

major change in livelihoods in the case study area. The impacts of the investment on employment and incomes will be discussed in greater detail below.

Infrastructure development and integration: The case study area has relatively good infrastructure linking it with external world. Keng Head and Na Dieng villages are located along the national road Route 13, which connects the villages to the center of Savannakhet Province, Vientiane Capital and other socio-economic centers in Lao PDR. Dong Phung Village is located about 20 kilometers west of Route 13, along the Mekong River. A standard paved road connects the village with Route 13 and Savannakhet town center. With regards to communication and information infrastructure, the case study area also has relatively good connectivity. The mobile phone network, television and radio signals cover the entire area. According to findings from focus group discussions, every household has at least one mobile phone and one television. Therefore, the access to communication and information is better than in other parts of the province and the country.

Income structure The case study area has a relatively high economic development status. According to the village authorities, the total production value of all three villages combined was estimated to be LAK 15.0234 billion in 2009 or equal to about USD 1.82 million. The average per capita (GDP) income is thus estimated to be LAK 7.3 million or about USD 884.8 per person in 2009. It is about USD 83.8 (or about 10.1%) higher than the GDP per capita for all of Savannakhet Province in the same year. Agricultural production, including farming and livestock production, is still the main income source in the area. In 2009, subsistence agricultural production was responsible for over 72% of household income in these villages; this was followed by trade (11.3%), daily wage labor at the sugarcane plantation (8.5%), services (4.0%) and construction (2.0%).¹⁴ Table 8 shows the income structure in the three villages and the area more broadly.

Table 8: Income structure in the case study area

| Income sources | In-depth study area | Dong Phung | Keng Head | Na Dieng |
|--------------------------|---------------------|------------|-----------|----------|
| Crop farming | 58.6 | 34.9 | 83.5 | 52.6 |
| Livestock production | 15.6 | 19.2 | 13.6 | 14.4 |
| Trade | 11.3 | 4.4 | 0.0 | 30.6 |
| Services | 4.0 | 13.1 | 0.0 | 0.0 |
| Construction | 2.0 | 6.6 | 0.0 | 0.0 |
| Daily wages (plantation) | 8.5 | 21.9 | 2.9 | 2.4 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Village profile survey

¹⁴ Village profile survey

Poverty incidence: Based on findings from the focus group discussions, only 15 households are identified as poor¹⁵ in whole case study area. It corresponds to about 2.2% of the total number of households in the area. It is a significantly lower poverty rate in comparison with the poverty incidence in the whole of Savannakhet Province. Table 9 provides more detail.

Table 9: Poverty situation in the case study area

| Villages | Number of HH | Number poor HH | Poverty incidence (%) |
|--------------|--------------|----------------|-----------------------|
| Don Phung | 207 | 6 | 2.9 |
| Keng Head | 215 | 5 | 2.3 |
| Na Dieng | 247 | 4 | 1.6 |
| Total | 669 | 15 | 2.2 |

Source: Village profile survey

Dong Phung Village has highest incidence of poverty, with six households are identified as poor,¹⁶ corresponding to about 2.9% of the village’s total household. Na Dieng Village has the lowest poverty incident, with only four poor households corresponding to about 1.6 % of the total number of households in the village.

4. Economic, social and environmental impacts of the plantation and factory

Now that the socio-economic status, resources and livelihoods of the case study population, as well as background to the Mitr Lao Sugar Company has been reviewed, this sub-section will examine the economic, social and environmental impacts of the sugar cane plantation and factory.

4.1. Economic impacts

The most significant economic impacts of the Mitr Lao Sugar investment in the case study area are:

The plantation creates employment and income generation activities for local people:

According focus group discussions, the plantation industry is an important source of additional income in the case study area. Though only 2.3% of labor force in the case study areas works

¹⁵ Poverty, as defined in the focus group discussions, means here that there is insufficient food consumption, no adequate living quarters (house) and or adequate clothing.

¹⁶ Results from participatory assessment. “Poor household” means here a household does not have sufficient food consumption, no adequate house and the household members have no adequate clothes.

fulltime on the plantations, most of the villagers in the case study area are employed in the plantation industry, in some shape or form. Most are employed irregularly as day laborers. While the research team could not identify the exact percentage of the work force working part-time/irregularly on the plantations, it was clear that the majority of the labor force works on the plantations one or two weeks out of the year. As day laborers they earn about LAK 20,000 or about USD 2.4 per day. This is slightly lower than minimum wage fixed in the new regulation, i.e. LAK 569,000 per person per month, for full time work of 26 working days per month, 8 working hours a day¹⁷, which equals LAK 21, 885 per day. The villagers usually work in the plantation sector seasonally, after harvesting rice. According to information received in focus group discussions, full time local employees of Mitr Lao Factory earn about LAK 600,000 or about USD 35 per month. It is a little higher than the Lao minimum wage. The company also hires 103 foreign workers.

The villagers use work on the plantation to supplement the income they receive through their traditional income, rather than to replace it. Most of the villagers do not want to risk leaving their traditional agricultural production to engage fully in the plantation industry. Many people in the focus groups mentioned that *“the wage is too low and full employment in the plantation industry is too uncertain”*. According to findings from village surveys, only about 30 people¹⁸, representing about 2.3 % of the labor force in the sampling villagers, work full-time in the plantation industry. However, it does not mean that these people are fully reliant on the plantation since other household members are still engaged in subsistence agriculture to produce rice and other foods. Over 60 households, corresponding to about 13.5 % of the total households in the three villages, have joined the contract farming scheme with Mitr Lao Sugar.

According to focus group discussions and village surveys, the income from the employment in the plantation industry contributes to about 8.5 % of total household income in the sampling villages.

The investment has contributed to a reduction in livestock production: Livestock production used to be the second most important food and income source in the case study area, after rice production. According to findings from village surveys and focus group discussions, livestock production (cows, buffaloes, pigs, chickens, ducks, etc) used to account for around 20% of household income in the area. However, the growth of the plantation has caused villagers to limit their livestock production, especially large livestock like cows and buffaloes. The focus groups in Dong Phung, Kieng Head and Na Dieng villages mentioned that many cows in their villages had died due to weight loss and no longer have regular reproductive cycles, with the villagers suspecting that of the cause is feeding on grass contaminated by chemical materials used in the plantations.

¹⁷ Arrangement No 1450/MLSW dated April 30, 2009.

¹⁸ Excluding people involved in contract farming with the company.

Due to limited land availability, because of the expanding sugar plantations, and fears of chemical pesticides, many villagers in the case study area have stopped their livestock production activities. Consequently, the contribution of livestock production to household income has been reduced to around 10% in recent years. The findings show that approximately half of the livestock production in these villages has ceased. Figures 2 and 3 below show the change in income structure in the case study area.

Figure 2: Income structure before Mitr Lao investment (2005)

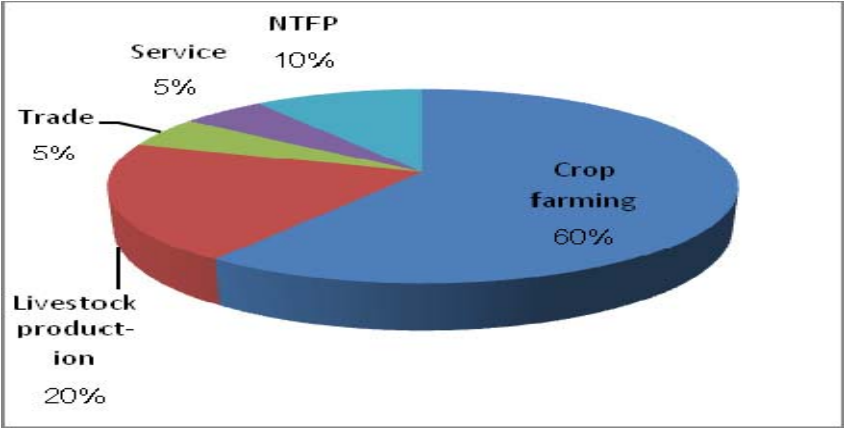
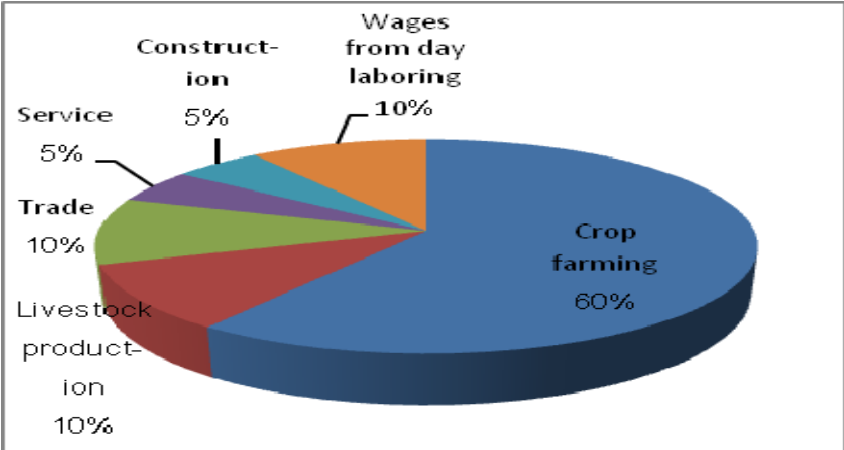


Figure 3: Income structure after Mitr Lao investment



Source: based on data from village surveys and focus group discussions

The investment has contributed to a loss of income and food from NTFPs collection: Like livestock production, NTFPs collection used to play an important role in the economy of the case study area. It used to be the third most important food and income source in the area, after rice and livestock production. NTFPs, including forest vegetables¹⁹, bamboo shoots, mushrooms, and straw, among others, previously contributed about 10% of household income. Due to the expansion of the sugarcane plantations, loss of forests and increasing chemical use has resulted, and NTFP collection is becoming difficult for the villagers. The quantity of NTFPs has been reduced significantly and the villagers are scared to eat them due to fear of ingesting chemicals. There have been no cases so far of people becoming ill or dying after consuming contaminated NTFPs, but livestock deaths and illnesses have made people feel that NTFPs are also unsafe.

The investment is associated with an increase in household expenditure: As mentioned above, livestock, NTFPs and locally-sourced water were an important source of food and income for households in the case study area. As a result of changes brought about by the Mitr Lao Sugar investment, villagers have started buying animal products and other food items (to make up for the loss of livestock and NTFPs). In addition, due to the use of chemicals, villagers no longer feel comfortable drinking water from local streams and wells. As a result, they must buy filtered drinking water, again increasing household expenditure. According to focus group discussions in Dong Phung Village, household expenditure doubled during last five years. However, it is important to note that the growth of the sugarcane plantation alone is not responsible for the entire increase in household expenditure. Increases in other types of production, increased use of imported goods like mobile phones, televisions, etc, increased use of services like telecommunications, electricity, etc, and an increasing desire for material goods also appear to play an important role in expanding household expenditure.

The investment has led to increasing debts because of contract farming: Contract farming is one of the sugarcane plantations' production modes in Savannakhet Province. Households that have land and do not want to sell it can join contract farming with Mitr Lao Sugar. As mentioned above, more than 60 households, about 13.5 % of the total households in the case study area, have signed up for contract farming with the company, which allows it to access further land for growing, maintaining and harvesting sugarcane. All the costs associated with clearing and preparing the land as well as growing and maintaining the sugarcane are described as "debt" by the villagers who own the land.²⁰ On average, the cost of preparing,

¹⁹ There are many kinds of vegetables that villagers used to collect from the forest, including Pakvane (sweet vegetable), Pak Ka, Yanang, Pak Kadone, etc.

²⁰ Contract form for contract farming with Mitr Lao Sugar.

growing and maintaining one hectare of sugarcane is about THB 18,000 or LK 4,680,000 (USD 567) and the entire cost is borne by the land owners.²¹

When it comes to harvesting and selling, the company pays the households for the sugarcane, theoretically balancing out their debts and providing them with additional income. However, based on findings in the case study area, most households will not be able to pay off their debts with income earned from the sale of the sugarcane. In Na Dieng Village, about 40 household signed up for contract farming with Mitr Lao Sugar, but only 2 households expect to be able to pay off all their debts and gain some income from the contract farming scheme. The remaining 38 households explained that they will be not able to pay back their debt. According to focus group discussions, these households each have debts of around LAK 20 million (USD 2,424) on average.²² This is quite a large sum of money for local conditions, amounting to about 2.7 times the yearly average per capita GDP of the case study area. Villagers in Na Dieng Village are therefore worried about their debts. The figures below summarize the economic effects of the Mitr Lao Sugar investment on income structure in the case study area.

Clearly, the expansion of sugarcane plantations has had both positive and negative effects on the local economy and the economic prospects of households in the case study area. It has created new jobs and income generation activities for local people on one hand and on the other hand it has damaged traditional income sources in the area, including livestock production and NTFP collection. It is important to note that despite these substantial changes in income structure, the importance of small holder farming has remained constant. As described at the beginning of this section, plantation workers are hesitant to work full time on the plantation because they do not want to risk giving up their traditional farming activities and becoming fully dependent on the plantation. As such, the villagers usually work in the plantation sector seasonally, after harvesting rice.

It is not yet possible to conclude whether or not the plantation has had a net positive or net negative effect. Due to lack of statistical data on household income before plantation (about 5 year ago) and recent household income, the difference between the economic costs and benefits of plantation industry cannot be quantified exactly. Due to limited time, we were not able to conduct household-level surveys in the three villages to capture this information on household incomes.

²¹ Finding from focus group discussions in Na Dieng, Dong Phung and Keng Head Villages.

²² Finding from focus group discussions Na Dieng, Dong Phung and Keng Head Villages.

4.2. Social impacts

Based on findings from focus group discussions and village surveys in the case study area, the Mitr Lao investment project has had numerous social impacts in the three villages, including the following:

The project has had impacts on traditional livelihoods: Changes to the traditional livelihood patterns of people are evident. These changes also demonstrate the strong link between environmental and social impacts in the case study area. Before the sugarcane plantations, villagers used to collect NTFPs for consumption and sale, as well as wood and straw for sale or for building after the rice harvest. Collecting timber and NTFPs was a part of the people's traditional livelihood activities as well as a source of extra income. However, as discussed above, livelihood patterns have changed, with working in the plantations as laborers now constituting a major source of additional income. This change from independent farmers to dependent employees on an industrial plantation, in which people have to follow directions, represents a substantial change for local people in the area. Participants in the focus group discussions expect that their traditional way of living will be replaced by an industrialized and modernized livelihood, which is characterized by landlessness, dependent employment and increased individuality. Local people also feel that this kind of lifestyle is more dependent and uncertain than that of before, as they become more dependent on the external world and mechanisms that they are not able to control.

The plantations have had negative health effects for workers and the local communities: The negative health effects noted during the participatory assessment were mainly attributed to contamination and use of chemical materials, especially pesticides, without sufficient knowledge, training and equipment. Many people in the focus group discussions mentioned that: *"the factory does not provide adequate information on the dangers, nor protection training and equipment to workers who spray insecticide in the sugar cane plantation."* More details are provided in the environmental impacts section below. In addition, the focus groups reported many cases of illnesses in their villages. Numerous people experienced headaches, dizziness, and pains after spraying pesticides or got itchy skin after washing in the river or ponds located near to plantations. In addition, two occupational injuries were reported to have occurred in 2009. Both cases involved children that were about 12 years old. One child died and one had a leg broken caused by falling off of the back of a truck while watering sugarcane. In both cases the families did not yet receive any compensation to cover treatment cost (in the case of the broken leg) or financial assistance for burial (in the case of the fatality). The occupational injuries as well as the complaints about the effects of chemicals suggest that workplace health and safety is not strongly regulated in the plantations and factory.

The investment project is associated with child labor and negative effects on education: Child labor appears to be widespread in the case study area (and it is recognized that it is not

uncommon in rural areas of Lao PDR more broadly). According to focus group discussions, about half of the day laborers at the sugarcane plantation are children below the age of 14 (i.e. school-aged children). However, it should be noted that the Mitr Lao Sugar investment alone is unlikely to be responsible for the level of child labour in the area. The socio-economic status of the case study area, especially the incidence of poverty, people's lack of understanding of the importance of education and the relatively low access to education²³ contribute to this situation. Children often work to help earn extra income to support themselves and their families rather than attending school. The establishment of the Mitr Lao Sugar factory and the expansion of sugarcane plantations in the area provide school children with an opportunity to leave school to work. Although the school administration has not recorded significant evidence linking the plantations to negative effects on education, focus groups stated strongly that there had been negative impacts on school attendance and the quality of education in the area. The school administration mentioned that it is difficult to measure the effect of the plantations on school attendance quantitatively because it is difficult to separate out children who move with their families to Thailand for seasonal work from children who work on the plantations (or stay home to take care of younger siblings while the adults work on the plantations).

The Mitr Lao plantations have contributed to land conflicts: There are many cases of land conflicts in the case study area. However, all of these cases have been solved in different ways, including compensation, renting and contract farming. However, the focus group discussions also reported that they knew of numerous difficult land conflicts occurring outside the case study area. These land conflicts included: conflicts among villagers due to increasing land prices; conflicts among companies and villagers; and conflicts between various companies. According to the Xayburi District Office for Planning and Investment, there are more 20 cases in the district that are still unresolved to date. The Office states that majority of cases occur because villagers do not register all the land that they own in order to avoid tax payments.

4.3. Environmental impacts

The findings from the focus group discussions and village surveys in the case study area also indicate that the Mitr Lao Sugar investment project has had a number of negative environmental impacts, as described below. Importantly, the project has been implemented without having conducted an environmental and social impact assessment (ESIA) or received an environmental compliance certificate (ECC), as required by Lao law.

²³ This was the opinion of participants in the second workshop organized at Savannakhet PDPI Office.

The establishment of sugarcane plantations has affected forest cover and water resources:

Substantial impacts on forest and water resources from the Mitr Lao sugarcane plantations have been felt in the case study area. According to village authorities of all three villages, over 1,420 ha of “production forest”²⁴, representing about 46% of the total forest area managed by Dong Phung, Keng Head and Na Dieng villages was converted into sugarcane plantations. The pictures and table below provide more detail about the changes to forest cover in the villages.

Picture 2: Forestry impacts of sugar cane plantation in sampling villages



Source: Mitr Lao Sugar Factory. 2010. Company presentation.

Table 10: Reduced forest cover in case study area

| Villages | Present (ha) | Before sugar cane plantation (ha) | Reducing (ha) | Percentage (%) |
|-----------------|---------------------|--|----------------------|-----------------------|
| Dong Phung | 1,378 | 1,433 | 55 | 4 |
| Keng Head | 15 | 1,118 | 1,103 | 99 |
| Na Dieng | 297 | 559 | 262 | 47 |
| Total | 1,690 | 3,110 | 1,420 | 46 |

Source: Village profile survey

The forest of Keng Head Village, which is located near to the Mitr Lao Sugar Factory, has been especially affected. More than 1,103 ha of forest, representing about 99% total forest

²⁴ It should be noted that land and forest has not yet been allocated to show clearly where is production forest and where is degraded forest, which can be used for plantation purposes. There is also no exact definition on what is degraded forest, a gap in the forestry regulations which facilitates their misuse. From the villagers’ point of view, the areas that were converted into sugarcane plantations were production forest (and secondary forest). From the company’s and concessioners’ point of view, the areas were degraded forest. It is a controversial issue which has not yet been resolved.

managed by the village, was converted into sugarcane plantations. However, even if the conversion was technically legal, i.e. the conversion of degraded forestland to plantations, it is important to recognize the role of secondary or regenerating forests in supporting the livelihoods of local people. As noted above, in addition to the loss of forest environmental services, such as carbon storage, soil protection and biodiversity, decreased village forests also means the loss of forest products.

It should be noted that it is unclear whether or not some of the forest that has been lost to the sugar cane plantations was provincial protection forest (meaning forest that is to be protected, such as in order to preserve a watershed area). Map 5 above indicates that the sugar cane plantation encroaches on the protection forest between Keng Head and Na Dieng villages. However, discussions with the Department of Forestry, the Provincial Agriculture and Forestry Office (PAFO) and the Xayburi District Agriculture and Forestry Office (DAFO) have indicated that there is no consensus on whether or not this is the case. In the context of contradictory data, it is ultimately under the authority of the province to make this decision. Regardless of the forest areas' official status, the confusion over land and forest allocation is problematic, as a concession was issued despite the lack of clarity.

The establishment of sugarcane plantations is also believed to have negatively affected water resources in the area. According to focus group discussion, many rivers, reservoirs and streams that used to have water during the whole year, no longer have water during the dry season. These waterways include Hua Khansy Chang and Tham Phung in Dong Phung Village. As noted in this project's main report for Savannakhet Province, the relationship between forests or plantations and water flow and quality is a complex one, dependent on numerous factors, such as the species involved, local rainfall, access to irrigation, soils, and so on. However, the implications of increased investments in the natural resource sector in Savannakhet Province on its water supply and quality will require careful considerations; in particular, the potential impacts of hydropower and irrigation development are interwoven with the impacts of plantations development and the negative effects of continued forest loss and degradation.

The plantations have resulted in increased chemical use, with negative impacts on the environment and health: The chemical pesticides used in the Mitr Lao plantations include the brand BAKA ZONE (paraquat dichloride), which is not yet examined and allowed to be imported and used by the Ministry of Agriculture and Forestry (MAF).²⁵ The pesticides could be dangerous to human and animal health and detrimental to soil quality. According to discussions with a relevant officer at MAF and with pesticide retailers in Vientiane Capital, the Lao PDR does not yet allow the importation, production and use of pesticides with family

²⁵ In accordance with regulation number 0886/MAF on *Management of Insecticides*.

name ZONE.²⁶ According to MAF and the Mitr Lao Sugar company itself²⁷, the use of any chemical insecticide can be dangerous; people must have adequate knowledge and protection, such as protective clothing and gear. The empty pesticide containers must also be buried safely. The pictures below present proper use of the chemical.

Picture 3: Chemical insecticides used in Mitr Lao sugarcane plantations and proper application



Source: Mitr Lao Sugar.2010. Company Presentation

However, according to the findings and observations from the case study, people spraying the pesticides in the plantations used only thin cotton masks (such as those normally used to protect themselves from cold and dust while riding a motorbike). These are not designed to protect people from inhaling chemical particles (see pictures below). Some of them also wore cotton gloves; some people wore no gloves at all. The workers explained that they bought these things with their own money; they were not supplied by the company. In addition, the research team questioned them about their knowledge of the dangers of the chemicals that they use and on adequate protection and training courses that the company provided them

²⁶ According to information received during the final workshop in Vientiane on 17 November 2010, the IPD in cooperation with concerned agencies is setting up a committee to investigate the chemical use.

²⁷ The company seems not to clearly know the regulation and laws related to importing, producing and using chemical insecticides in Lao PDR. Consequently, it seems not to know that it violates the regulation.

before using the chemical materials. Their responses indicate that the company did not provide sufficient information and adequate protective equipment for people using the chemicals. The workers knew very little about the pesticides. The pictures below show how people actually use the pesticides in the field at present.

Picture 4: People spraying pesticides in the sugarcane plantations



Source: Photographed by NERI during case study

The improper use of the chemical insecticide can have negative effects on human health, especially on the health of hundreds or thousands of people who have direct contact with the chemical materials. It also has the potential to adversely affect the biodiversity of surrounding area. The focus groups in the sampling villages reported many illnesses in their villages and strongly believe that the reduction of populations of shrimp, crab, snails, fish and other aquatic animals is caused by the use of chemical pesticides in the sugarcane plantations. Most importantly, villagers mentioned that they are afraid to consume natural water and collect NTFPs anymore. The loss of these natural food and water resources contributes to increasing their daily expenditure.

5. Conclusion and recommendations

Significant amounts of investment have flowed into Savannakhet Province during the last decade, likely attracted by the province's strategic location and rich natural resources. The investment flows have helped to stimulate economic growth and poverty reduction. Savannakhet Province now has a relatively high economic development status and relatively low poverty rate compared to other parts of Lao PDR. However, based on the findings from this case study on Mitr Lao Sugar's investment in Xayburi District, investments have also contributed to negative social and environmental impacts, especially damage to forest, watersheds, biodiversity, health, education, and so on. Most importantly, the investment flowing into Savannakhet Province is changing traditional livelihoods into industrial livelihoods yet without necessarily improving the people's quality of life. Consequently, this study cannot

Box 1: Changing life for a Lao household

A head of a household, Kham*, in the Xayburi District case study area told us about the changes experienced by his household caused by expansion of the sugarcane plantation and establishment of the sugar factory. Kham's household includes six members: himself, his wife, one son, two daughters and their grandmother.

Before the expansion of sugarcane plantations and the establishment of the sugar factory, the household engaged mainly in subsistence agriculture and collected NTFPs. After rice harvesting, Kham and his son would saw wood; his wife and daughters would go collecting vegetables, bamboo and mushrooms, or would cut straw for their own use and to sell. The grandmother used to stay at home and take care of livestock and cook for the rest of the family. The household had a middle socio-economic standing in the village; they were not poor and had sufficient food, an adequate house and clothes.

Kham explained that after the plantations and factory were established, the lot of forest where they used to get timber and collect NTFPs was converted into plantation. They could no longer get these products. Consequently, he and his family have started part-time employment at the sugarcane plantation and in the sugar factory after harvesting rice, in order to earn extra income. Kham told us that employment in the plantation is very different from working in the forest. Working on the plantation is physically harder and requires more discipline. Employees in the plantation must work from 8 AM to 12 AM and then from 1 PM to 5 PM in afternoon without any breaks. When people worked in the forest collecting NTFPs and timber, they were their own bosses; they could start work and break at whatever time they wanted.

Regarding earnings, he explained that he and his family make more money, but they also have to spend more. Kham's household now has to buy everything they eat, including meat, fish, vegetables, bamboo, and drinking water – they used to get a lot of these things from the forest. As a result, they are not able to save any money, as they did in the past.

When asked whether he and his family have improved their quality of life, Kham answered that it is not much different. They are still able to meet their basic needs; their livelihoods have changed but not their quality of life.

**Not his real name.*

say that the benefits from investments are sufficient to cover the costs. The results from this case study also supports the argument that the investment management system in Savannakhet Province needs to be improved in order to mitigate negative impacts and ensure that local communities benefit from investments.

Based on the focus group discussions and interviews held for this case study, the people in the case study area are not certain whether the Mitr Lao Sugar project has ultimately helped or harmed their community. Regardless, the changes that have occurred in these communities are permanent; it is not possible to return to the lifestyle that they had before the company established the plantations and factory. Therefore, to reduce the costs and increase benefits from the investment, the participants from the three villages suggested the following:

- *Increasing wages for employees in the factory and plantations.* People explained that at present employees' wages are very low (20,000 LAK or about USD 2.4 per person per

day) which is slightly lower than the minimum wage fixed by the GoL. Income earned from employment in the factory and plantation cannot cover the daily expenses of employees and their families. Therefore, many people do not want to be employed full time by Mitr Lao Sugar. Local people explained that earnings from employment by the company should at least cover the necessary expenditure of the employee and his or her family.

- *Reducing or stopping use of chemical pesticides that are dangerous for animal and human health:* At present, local people are suffering due to the use of chemical pesticides by Mitr Lao Sugar. They have lost access to safe water sources, have decreased livestock production and NTFP collection, which used to be important income sources, and have suffered adverse symptoms. Therefore, the villagers have asked the company to reduce or stop using the chemical pesticides.
- *Technical and financial assistance from the government:* This suggestion is related to contract farming. Villagers have signed up for contract farming arrangements that make them highly financially dependent on Mitr Lao Sugar. The majority of contract farmers have fallen into debt because of this arrangement. Therefore, they request that the government provide technical and financial support to contract farmers and people considering contract farming. Thus, they would be less dependent on the company and obtain a better bargaining power with company.

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Annex 1: INFORMATION COLLECTION FORM AT VILLAGE LEVEL

| |
|------------------|
| Form ID: _ _ _ _ |
|------------------|

General Information

Province:

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
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District:

| | |
|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|

Interview Information

| No | Interviewee's name | Age | Ethnicity | Gender 1=Male 2=Female | Position | Duration of living in the village | If some position, describe year of begin |
|----|--------------------|-----|-----------|------------------------------|----------|-----------------------------------|--|
| 1 | | | | | | | |
| 2 | | | | | | | |
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| 6 | | | | | | | |
| 7 | | | | | | | |

Interviewer

| |
|--|
| Interviewer's Name: Signature: Interview Date: ____/____/2007 (dd/mm/yy) |
|--|

Quality Control Record

| | | |
|--|------------------|---------------------|
| Supervisor's Name:..... | Signature: | Checking Date:..... |
| Questionnaire needed to call back: | | |
| Supervisor's remarks: | | |

I. General information related to socio-economic development status of in-depth study area

1.1. Year of establishment?

| | |
|--|------------------------------|
| | Before 1975 |
| | After 1975, what year? _____ |

1.2. Population and labor force

| No | Item | Current | Five years ago |
|----|----------------------|---------|----------------|
| 2 | Number of villages | | |
| 1 | Number of HH | | |
| 2 | Number of population | | |
| 3 | Number of males | | |
| 4 | Number of females | | |

1.3. Age group

| Age/year | Male | Female | Total |
|----------|------|--------|-------|
| < 10 | | | |
| 11-14 | | | |
| 15 – 60 | | | |
| 60 – 64 | | | |
| 65< | | | |

1.4 Education structure of population aged 15 and over

| No | Education level | Number of persons | Percentage |
|----|---------------------------|-------------------|------------|
| 1 | Illiteracy | | |
| 2 | Lower than primary school | | |
| 3 | Primary school | | |

| | | | |
|-------|------------------------|--|-----|
| 4 | Lower secondary school | | |
| 5 | Upper secondary school | | |
| 6 | Vocational training | | |
| 7 | University | | |
| 8 | Higher education | | |
| 9 | Other..... | | |
| Total | | | 100 |

1.5 Main employment structure of population aged 15 and over

| No | Areas | Employment | | Production value | |
|-------|--------------------------|-------------------|------------|------------------|------------|
| | | Number of persons | Percentage | Value/million LK | Percentage |
| 1 | Crop production | | | | |
| 2 | Livestock production | | | | |
| 3 | Fishery | | | | |
| 4 | Trade | | | | |
| 5 | Construction | | | | |
| 6 | Transportation service | | | | |
| 7 | Hotel/restaurant service | | | | |
| 8 | General worker | | | | |
| 9 | Unemployment | | 0 | 0 | 0 |
| 10 | Other..... | | | | |
| Total | | | 100 | | 100 |

1.6 Access to land

| No | Items | Current (ha) | Last 5 year (ha) | No | Item | Current(ha) | 5 year ago(ha) |
|----|------------------------------|--------------|------------------|----|------------------|-------------|----------------|
| 1 | Total land area | | | 5 | Irrigated area | | |
| 2 | Residential area | | | 6 | Areas unused | | |
| 3 | Agricultural production area | | | 7 | Other (wetlands) | | |
| 4 | Forestry area | | | 8 | Other | | |

1.7 Heavy agriculture production/equipment

| No | Items | Current/number | Five year ago/number | No | Items | Current | Five year |
|----|--------------|----------------|----------------------|----|-----------------------|---------|-----------|
| 1 | Tractor | | | 5 | Threshing machine | | |
| 2 | Hand tractor | | | 6 | Rice harvest machine | | |
| 3 | Rice mill | | | 7 | Rice planting machine | | |
| 4 | Agri. Animal | | | 8 | Others..... | | |

1.8 Transportation equipment

| No | Item | Current | Five year ago | No | Item | Current | Five year ago |
|----|------------------|---------|---------------|----|---------|---------|---------------|
| 1 | Track | | | 5 | Bicycle | | |
| 2 | Mini transporter | | | 6 | Boat | | |
| 3 | Car | | | 7 | Other | | |
| 4 | Motorcycle | | | 8 | Other | | |

1.9. Infrastructure connecting

| No | Item | Distance /Km, please describe 0, if the item is located within the village | Type of road connecting: 0=the item is within the village 1=Paved road 2=Non paved road, but accessible although the year 3=Non paved and not accessible although the year 4=No road access | No | Item | Distance /Km, please describe 0, if the item is located within the village | Type of road connecting: 0=the item is within the village 1=Paved road 2=Non paved road, but accessible although the year 3=Non paved and not accessible although the year 4=No road access |
|----|---------------------------|--|--|----|----------------------------|--|--|
| 1 | Formal border gate | | | 12 | Electricity | | |
| 2 | Informal border gate | | | 13 | Provincial hospital | | |
| 3 | Local market | | | 14 | District hospital | | |
| 4 | Provincial market | | | 15 | Clinic | | |
| 5 | District center | | | 16 | Pharmacy | | |
| 6 | Provincial center | | | 17 | Other health center | | |
| 7 | Post | | | 18 | Primary school | | |
| 8 | Bank | | | 19 | Lower secondary school | | |
| 9 | Micro finance institution | | | 20 | Vocational training center | | |
| 10 | Other financial institute | | | 21 | Other type of school | | |
| 11 | Telephone service | | | 22 | | | |

1.10 Source of use water:

| No | Item | Current | | Five year ago | |
|----|--------------|--------------|------------|---------------|------------|
| | | Number of HH | Percentage | Number of HH | Percentage |
| 1 | Piped water | | | | |
| 2 | Ground water | | | | |

| | | | | | |
|---|-----------------------|--|--|--|--|
| 3 | Well | | | | |
| 4 | Stream/River | | | | |
| 5 | Other (specify) | | | | |
| 6 | | | | | |

1.11 Kind of house

| No | Kinds of house | Current | Five year ago |
|----|-----------------------------|---------|---------------|
| 1 | Wooden house (two floors) | | |
| 2 | Concrete house (one floor) | | |
| 3 | Concrete house (two floors) | | |
| 4 | Haft Wooden – Haft Concrete | | |
| 5 | Villa house (one floor) | | |
| 6 | Grass roof – bamboo wall | | |
| 7 | Zinc roof – bamboo wall | | |
| 8 | Others (specify) _____ | | |
| 9 | Total | | |

1.12. Income source of villagers

| No | Economic activities | Currently (percentage) | 5 years ago (percentage) |
|----------|----------------------|------------------------|--------------------------|
| 1 | Agriculture | | |
| 2 | Livestock production | | |
| 3 | Fishery | | |
| 4 | Trade | | |
| 5 | Service | | |
| 6 | General labor | | |
| | Forest products | | |
| 7 | Others..... | | |
| 8 | Total | 100 | 100 |

II. General information on land, forestry and water resource

| No | Kind of land use | Currently | 5 year ago |
|----------|--|-----------|------------|
| 1 | Agriculture production areas (ha) | | |
| 1.1. | <i>Rice production areas (ha)</i> | | |
| 1.2. | <i>Vegetable production areas (ha)</i> | | |
| 1.2. | <i>Fruit production areas (ha)</i> | | |
| 1.3. | <i>Other agriculture production areas (ha)</i> | | |
| 2 | Plantation areas (ha) | | |
| 2.1. | <i>Rubber plantation (ha)</i> | | |
| 2.2. | <i>Sugar cane plantation (ha)</i> | | |
| 2.3. | <i>Jatrohpa / cassava plantation (ha)</i> | | |
| 2.4. | <i>Palm tree (ha)</i> | | |
| 2.5. | <i>Other plantation (ha).....</i> | | |
| 3 | Forestry cover (ha) | | |
| 3.1. | <i>Protection forest (ha)</i> | | |
| 3.2. | <i>Production forest (ha)</i> | | |
| 3.3. | <i>NTFP area</i> | | |
| 3.4. | <i>Deteriorated forest (ha)</i> | | |
| 4 | Wet land areas (ha) | | |
| 5 | Residential area (ha) | | |
| | | | |

III. General Information on Investment

2.1. Number of investment projects located in the in-depth study area:.....projects.

2.2. Describe detailed information on the investment project in following table:

| No | Name of the project | Investment sector: 1=Plantation 2=Processing industry 3=Service 4= Mining 5=Energy 6= Other..... | Year of establishment | Initial capital (USD) | Production area (ha) | Companies involving | Nationality of companies involving | Number of local labor | Number of migrant workers |
|-----------|----------------------------|--|------------------------------|------------------------------|-----------------------------|----------------------------|---|------------------------------|----------------------------------|
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |
| 8 | | | | | | | | | |
| 9 | | | | | | | | | |
| 10 | | | | | | | | | |

IV. Considering economic, social and environmental impacts of investment

4.1. State following **possible positive** impacts of investment in your location:

| No | Statement on positive impacts of investment | Opinions 1=agree, 2=Do not agree, 3= Cannot say |
|----|---|--|
| 1 | Investment contributes significantly to creating jobs and income generation activities for local people | |
| 2 | Investment contributes significantly to improving live and economic well-being of local people | |
| 3 | Investment contributes significantly to reducing poverty in local area | |
| 4 | Investment transfers technology and builds up capacity/knowledge of local people | |
| 5 | Investment increases value of natural resources in your location | |
| 6 | Investment improves road or other transportation infrastructure | |
| 7 | Investment contributes to community development by providing financial resources | |
| 8 | Investment improves accessibility to information and communication in your location | |
| 9 | Investment contributes to improving public administration | |
| 10 | Investment improves life quality of people in your location | |
| 11 | Other specifics..... | |

4.2. State following possible negative impacts of investment in your location:

| No | Statement on negative impacts of labor migration | Opinions 1=Agree; 2=Do not agree; 3= Cannot say |
|----|--|--|
| 1 | Investment increases pollution | |
| 2 | Investment effects negatively forestry, water and other natural resources | |
| 3 | Investment changes traditional livelihoods | |
| 4 | Investment effects living quality of people in your location | |
| 5 | Investment increases poverty in your location | |
| 6 | Investment stimulates labor migration in your location | |
| 7 | Investment effects physical and mental health of people in your location | |
| 8 | Investment effects education negatively | |
| 9 | Investment increases living cost in your location | |
| 10 | Investment increases consumption of luxury items | |
| 11 | Investment limits access to land and/or common resources for people in your location | |

| | | |
|----|--|--|
| 12 | Investment increases land conflicts in your location | |
| 13 | Investment increases corruption | |
| 14 | Investment increases social inequality in your community | |
| 15 | Investment effects negatively on living quality of people in your location | |
| 16 | Other negative impacts..... | |

4.3. Three main negative and positive impacts of investment

| Three positive impacts, please, describe three number from positive impact list | Three main negative impacts, please, describe three numbers from negative impact list. |
|---|--|
| | |
| | |
| | |

4.4. Please, choose one of the three statements

1= Investment has more positive impacts than negative one on our local community.

2= Investment has more negative impacts than positive one on our local community.

3= the positive and negative impacts of investment are balanced.

4.5 Choose one of the three options:

1= Investment should be continuously legalized and liberalized finally.

2= Investment should be continuously limited and stopped finally.

3= Investment should be consequently stopped.

V. Comments for increasing benefits and limited negative effects of investment

1.

.....
.....
.....

2.

.....
.....
.....

3.

.....
.....
.....

Thank you for cooperation