

# Gender in Artisanal Tin Mining in Lao PDR

A Case Study in  
Ban Moua Khay and Ban Nahi, Khammuane  
Province

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## EXECUTIVE SUMMARY

This case study is one of the outputs of an International Consultancy to specifically examine the on-the-ground situation regarding gender and Artisanal and Small-scale Mining (ASM) in Lao PDR. The Terms of Reference for this study included: firstly, developing a Rapid Assessment Tool (RAT) as one of the inputs in development of a Gender and ASM theoretical framework for understanding of gender dimensions; secondly, using the assessment methodology, to prepare an in-depth report of gender situation of an ASM community, and finally to develop a set of recommendations that would build upon previous analyses and findings on Gender and Social Inclusion in the Mining Sector in the country. The objective of the exercise is to develop a replicable method that can be used in similar situations in other countries to enable rural and poor women to share more equitably in the benefits of ASM and to decrease the negative impacts on and potential harm to women associated with ASM.

The study may have limitations, imposed by the time and financial constraints, and lack of official data. For example, the project team could not secure information on the exact number, and other details, of the number of tin companies operating around the valley. A project steering committee was established in the beginning of the project, but communication could at times be better.

**Method and Activities Undertaken:** The present Report is based on a field-based empirical method that is essentially participatory and consultative in nature. The International Consultant (IC), jointly with the National Consultant (NC), undertook a series of exercises in one location (see Figure 1) that included two villages, Ban Nahi and Ban Moua Khay. The site-based participatory methods applied combined primary rapid rural appraisal techniques to generate qualitative data, and included:

- *Delphi Process* - Meetings with resource persons such as Government officials, Company personnel and key stakeholders;

- *Three visits to the field site*, chosen by officials of the Department of Mines (DoM), during April-June, 2010;
- Gathering of data to establish a baseline through:
  - The use of the Rapid Assessment Tool, which was prepared prior to the surveys and refined during the process;
  - *Participant observation* in the field, in mining sites, processing sites and in villages and at homes;
  - *Community consultations*, usually pre-organised in villages, but also impromptu on mining sites;
  - Pre-organised *Focus Group Discussions* with women and men on gender needs and issues;
  - *Interviews* with key informants and village elders
  - *Dissemination and verification* of results with the community through focused meetings
  - *Basic training on M&E and assessment methodology* – during the second field visit by the IC - to the provincial officers of DoM.
- *Dissemination of results through two workshops* synchronizing with the IC's field visit:
  - The first workshop was site-based, held at the community level,
  - The second workshop was held in the capital city, Vientiane, with a number of key local and international experts, government personnel, as well as other stakeholders such as international donors. It was meant primarily as a dissemination seminar, but included some elements of capacity-building and allowed the preparation of final strategies (and the recommendations) based on the inputs received from the workshop.

**General Findings:** Artisanal tin mining has a long history in the area studied in Laos. However, the current mining legislation has poor understanding of the livelihood implications of the communities involved in ASM, and it is not uncommon to see ASM as an illegal activity that is surviving as a parasite on formal tin mining companies. We found that it could in fact be described in the opposite way: that the tin companies purchase processed ore at a lower cost

from ASM communities. Addressing the issues around *legitimacy* would enable the provision of better and more services to improve the quality of life for both women and men in ASM communities.

*Access* to the area is not easy, and the *few services* that are provided by the Lao-Korea Tin Mining Company are almost non-functional. These services include the maintenance of roads, which are almost un-negotiable during the rainy season due to the movement of heavy trucks. There is only one primary school for children in the entire area. There are no higher level schools, no health facilities excepting the primary health centre. There are *no water supply and sanitation* services.

There are a *diverse range of ASM practices* in the area, starting from purely artisanal mining with very low mechanisation to more mechanised operations. However, there are close links between these different forms of mining as the ore moves in the supply chain. The end product, tin, is secured by the local tin companies for export to Thailand and other countries. The maximum amount of capital accumulation takes place at this ‘Company’ end. These more mechanised operations run by the Companies also have a *high impact on the environment* – in this case deforestation, sheet-wash, deposition of sand into the river systems, lowering of fertility of the soil in farming areas and laterisation of the soil in general. The artisanal miners suffer from environmental degradation through a *reduction in farming* activity due to the lowering of soil quality.

**Women Specific Findings:** Women have a *very high level of participation* in all kinds of activities and processes in tin ASM in Laos. Although most ASM groups work as *family units of labour*, and are characterised by a high degree of cooperation amongst themselves, women still outnumber men in almost all the stages of tin production. They comprise about **80%** of the ASM miners in the communities studied. In addition, women are directly responsible for the provision of family subsistence, family chores, and for looking after the children and the elderly. This *double burden* reflects poor life-choices, and does not lead to their high representation amongst the more powerful members of the community. In general, we noticed that women have a muted

voice in community meetings, and tended to keep silent unless we encouraged them to speak about their interests.

It was also found that there is a *high level of social capital* amongst the ASM communities and the level of cooperation was quite high amongst women artisanal miners. Although ASM provides the major means of livelihood, women gather small games, collect minor forest produce and farm rice. Some women may own machines and hire assistants – both women and men – to work up the washing of tin ore.

As a result of their excessive burdens of livelihood responsibilities, women suffer from a number of *vulnerabilities*. Livelihood shocks include variable tin prices that are beyond control and poor crops and diseases of domestic animals. A direct result of excessive work is tiredness; many women complained of fatigue and other physical ailments. Accidents in the ASM work are neither common, nor serious, although incidents of minor injuries have taken place.

However, there are some *direct health consequences* of the specific activities undertaken in the ASM process as well: digging with iron rods, collecting the earth with hand, and bagging the earth (or putting it in buckets), and washing and cleaning the ore lead to chipped nails and frayed skin, other skin diseases and, in particular, urinary tract infections. Even during menstruation, women sit in waist-deep water to wash and process the ore. Some women complained of the infections being transmitted in this manner from one person to another. Due to the shortage of time, it was not possible to go through the cases of medical histories of individual women in detail.

As can be expected in such a situation, *children* are involved in very large numbers in the collection of tin ore, washing and processing in local ponds. It is not uncommon to encounter large groups of children, collecting ores from the sides of the raised embankments of roads, during the monsoons. Children are also often found to scavenge the tailings of the tin processing factory.

Women expressed their *needs* in the community level FGDs as well as in the interviews. These needs can be classified for convenience into practical and strategic gender needs. The *practical needs* included access to medical facilities, school for children, water supply and sanitation facilities, and better access roads. The *strategic needs* were more intensively discussed during the meetings and expressed in clearer terms by women - the need to have access to credit, land rights, need for better implements and equipment, and the need to have more transparent and equitable terms of sales of processed tin to the Company.

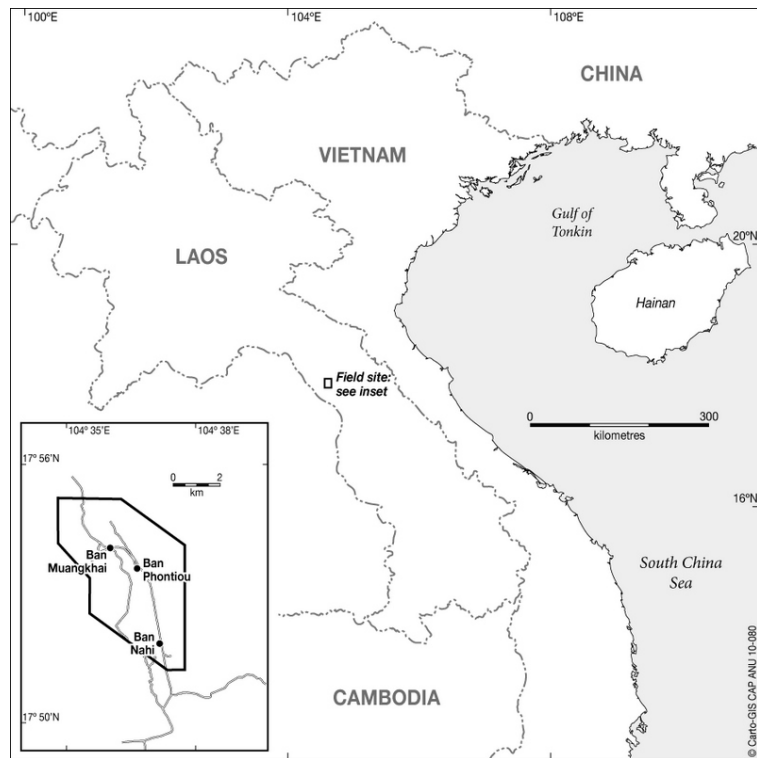
**Recommendations:** A number of recommendations arise from the study. These include:

- **Address legal issues:** Issues of legitimacy are currently poorly addressed. There is a need to accommodate ASM within the mining legislation to provide legitimacy to the ASM communities. Such legitimacy, for example, may improve women’s physical security;
- **Build capacity** of government personnel at different levels: Connected to this is the need to build capacity of government personnel to recognise the livelihood needs of ASM communities, and particularly the significant roles played by women in securing the livelihood. This would include gender-training and exposure to the ideals of gender equality embodied in Millennium Development Goals;
- **Tackle environmental degradation:** There is a burning need to make the larger companies more accountable for causing environmental degradation, and train local DoM personnel to identify the downstream livelihood effects of such degradation (the ‘push’ factor). Women suffer disproportionately from such degradation – water sources are now farther away, rice farming is minimal;
- **Pay attention to gender-specific needs:** Although the ASM families work together, men and women are bound by different social norms in Laos, and women invariably bear the greatest share of the burdens of reproductive chores. Consequently, the needs and interests of men and women are often different. Provision of simple services such as medical or health centres, and facilities such as water supply and sanitation would improve women’s well-being. This would require gender-sensitisation of stakeholders



integrated in and conducted through the capacity-building process. Gender-sensitisation of stakeholders would also mean that women are hired as monthly wage staff in the tin companies that are operating around the area.

- **Improve production efficiency and quality of life of ASM women:** Since women are actively involved in almost all steps in the production process of tin, they expressed the need for more efficient technology and tools. Provision of better tools and more efficient machines, however, requires more financial capital that is currently available within the community. A large number of women in ASM are in debt to secure food for their families. Provision of credit could allow them to navigate through family crises more efficiently and improve their quality of life.
- **Exploitation by tin companies:** The price of tin is determined by the Companies under the current marketing arrangement. From a monopsony (only one buyer), the form of the market has recently changed into an oligopsony (only a few buyers). In this structure, the actions of the buyers grossly affect the well-being of the tin producers. Generally women bring the tin for sale to the companies. Being illiterate and poor, ASM women have no control over the assessment of percentage tin content, and the price at which the tin is purchased by the companies.
- **Harness the economies of scale:** The exploitation can be addressed through the harnessing of scale economy in production, through the mobilisation of locally available social and financial capital, political and external support to establish a marketing co-operative. Small individual producer families can then sell their produce to this cooperative which might be able to have more bargaining power to elicit better prices from the tin companies.
- **Alternative income sources:** Although the assignment is focused on the improvement of livelihoods of women *in* ASM, it might also be judicious to plan for alternative income sources, and train women in particular to generate incomes from other sources. Establishment of a credit system, however, could be difficult under the current lack of legal recognition and lack of land tenure.



**Figure 1: Location map of the area studied**



**Photo 1: The IC & the NC at work**

# **1. THE CONTEXT**

As part of a larger study of the gendered livelihoods in artisanal and small scale mining (ASM) in multiple regions of the globe, this case study specifically examines the situation in Lao PDR. The study provides detailed insight on the relation between ASM and livelihoods of communities involved in tin mining in the Lao PDR, with specific attention to the relation between gender and rights to resources and women's contribution to ASM-based livelihood. The research presented here was undertaken during April–June 2010, and was carried out through participatory processes — Focus Group Discussions; consultations with key informants; interviews; and field observations as outlined in the Rapid Assessment Tool prepared for this purpose. Based on this and previous work in Laos and elsewhere, recommendations are made on how to improve the livelihood situation of women in ASM.

In Laos, artisanal mining (AM) has been practiced since ancient times when people used tin, copper, gold and silver as part of their tools and decoration, including tin-copper alloys (i.e., bronze). This case study focuses on tin ASM because tin ore is one of the oldest mined ores with a long history of women's involvement in such AM activities in Laos, and provides a source of livelihood for women. The study area is indicated in Figure 1

## ***1.1 The Story of Tin***

Tin mixed with copper, brought humanity ahead from the copper age (or Chalcolithic) to the Bronze Age and revolutionised the use of metal around 300 BC. Today, tin is widely used for a number of purposes. Most commonly, tin is found as cassiterite and also stannite. Tin ore has a high specific gravity and is generally 'discovered' as placer or alluvial deposits. The deposits of Laos are part of the Indo-China Tin Belt that runs from China through Thailand to Malaysia and the Indonesian archipelago. The tin deposits of the surveyed area are also alluvial in nature.

## **1.2 Tin Mining in Laos**

In spite of its long history, commercial tin mining in Laos is a small activity. Still, Laos is emerging as one of the new supplier nations as tin reserves in older producing countries are gradually getting exhausted. In 2009, Lao produced around 500 tonnes of tin as compared to regional producers like Vietnam (3,500 tonnes), Malaysia (3,000 tonnes) and Indonesia (80,000 tonnes) with China being the largest at 120,000 tonnes.<sup>1</sup> Most of Lao's tin is exported to Thaisarco in Thailand, although China has recently emerged as an important market. The artisanal miners are at the lowest rank of the long supply chain of this global commodity.

Like other mineral commodities such as coal, copper, gold and other precious metals, the price of tin has risen continuously during the past few decades. Prices reached an all-time high in May 2008 (\$25,000 per ton) and which resulted in the expansion of tin mining in Laos. As the Lao economy is gradually opening up, this had *two visible effects*: first, the privatisation of state-owned mining enterprises and second, the establishment of new privately-owned mining companies in the area. However, a third, and less visible, effect has been a mushrooming of artisanal tin mining activities. ASM has become an important generator of rural livelihoods and income in the tin-bearing tracts of Laos. The new (draft) Mineral Law of the country has yet to establish a common definition of ASM in Laos. Generally, the Department of Mines (DoM) makes a distinction between 'artisanal mining' that is purely manual and family-based, and 'small scale mining' that has some mechanization whose production is on a larger scale.

## **1.3 Women in ASM in Laos**

Women are economically active citizens of Laos; more so than neighbouring Southeast Asian countries. They comprise more than half the workers. In addition, a very large proportion is in the informal sector which is poorly recorded. Women have always played a 'critical role' in agriculture in this predominantly rural country—80 per cent of the total workforce of 2.4 million

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<sup>1</sup> See [www.indexmundi.com/minerals/?product=tin...production](http://www.indexmundi.com/minerals/?product=tin...production) (accessed on 9 June 2010).

people. Yet, they have lower literacy rates, less education, limited economic opportunities and limited mobility and are concentrated in low-skill jobs (Lao Women's Union and GRID 2005). As the country undergoes rapid economic and social changes, a number of vulnerabilities have arisen for women in recent years. It is estimated that about two-thirds of the artisanal miners in Laos are women. In tin mining, women comprise about 80 per cent of the labour force. Women participate mainly as direct producers in the production process and this study focuses primarily on these women. As ASM activities have expanded, the roles of women have also changed. Women have become more engaged in direct productive roles, undertaking digging and washing–panning for ore preparation and processing in the last decades.

For millennia, livelihood systems in Lao PDR have comprised cultural beliefs (ritual technology), land (territory), rice cultivation, livestock, corn, tuber and vegetable crops and natural resources (fish, wildlife and other forest products). Women enjoy equal rights (as per the 1991 Constitution of Lao PDR, Articles 22 and 24), and the Lao Women's Union is constitutionally mandated to advance women's interests in the country. The customary land inheritance system varies between ethnic groups and is related to traditional residence patterns after marriage — matrilineal, patrilineal, or bi-lineal.

All land is owned by the state but all citizens have equal rights to use land through their 'user right permit' issued by the district-level government. All mineral resources are owned by the state. Inheritance law is gender-neutral; in contradiction to the customary system, it endorses the same inheritance rights for women and men, girls and boys. Much of the standard wisdom about gender in ASM – such as women labouring hard under men who acquire higher positions - does not apply in Laos. For example, it is not necessarily men who control the labour of women and production processes in AM, although that is the case in more mechanised ASM processes.

#### ***1.4 Objectives of the Study***

The objective of this case study is to better understand the positive and negative gender dimensions of ASM in Lao PDR. On a larger scale the findings, lessons learned and recommendations coming from the assignment will contribute to a comprehensive Guidance

Strategy on Gender and ASM (tentative title) as well as contribute to Gender and ASM framework and Monitoring and Evaluation strategy and assessment tool on Gender and ASM. The overall objectives of this Guidance Strategy will be to:

1. enable women to have an equal opportunity to participate in ASM, and to allow women to share more equitably in the benefits of ASM, and
2. decrease negative impacts and amplify positive impacts of ASM, including by helping to reduce and mitigate health and safety risks, and potential social, economic and physical harm for women associated with ASM.

The research team, which comprises of an international and a national consultant, was recruited to carry out the Laos country study on gender and ASM. For this particular assignment the consultant team has been assigned by the DoM under the Ministry of Energy and Mines (E&M) to carry out field research at the Lao–Korea Tin Mining Company, locally called Bor Khua Phontiu (Phontiu tin mine). The two communities that were surveyed in detail in this project are the villages of Ban<sup>2</sup> Nahi and Ban Muang Khay. These villages are located within the elongated Phathen valley, which is almost enclosed by two near-parallel ranges running NNW-ESE, about 30 km northeast from Thakhek town.

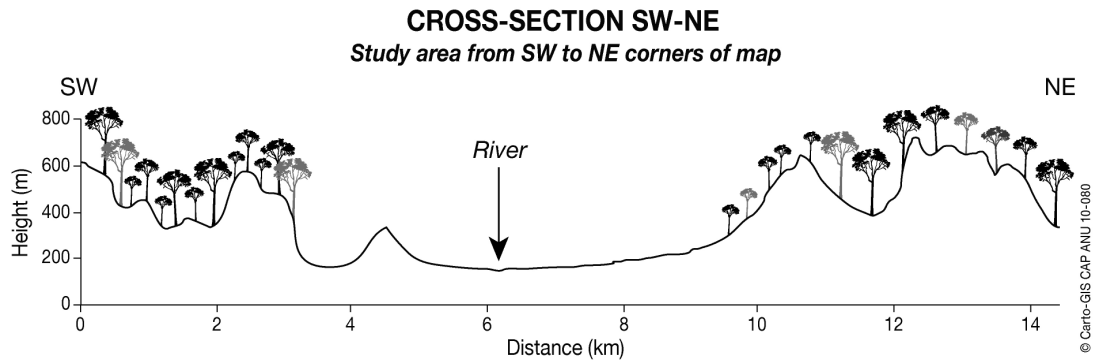
### ***1.5 History of Phontiu Mine***

Phontiu tin area is located in the valley of Phathen, Hinboun district, Khammuane Province (see Figure 2 below, and also Annex A and Annex B). The elongated Phathen valley lies between two parallel mountain ranges running west-northwest to south-southeast, and rising over 400 ms on the west and over 900 m on the east. The valley is located at around 160–190 m, and can be accessed from the southeast. Naam Phathen or the Phathen river is the main water source for the villagers for their drinking and household needs, farming and for washing the tin. The river also serves as the water source for the various tin companies. The area receives heavy rainfall—about

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<sup>2</sup> Ban is the term for ‘village’ in Lao.

1,700 mm annually—during the monsoon months, i.e., May to September. This is the main growing season for Laos, a country that had practiced, for centuries, swidden farming on hill slopes like those enclosing the valley. The rainy season also brings alive the artisanal and small-scale tin mining activities.

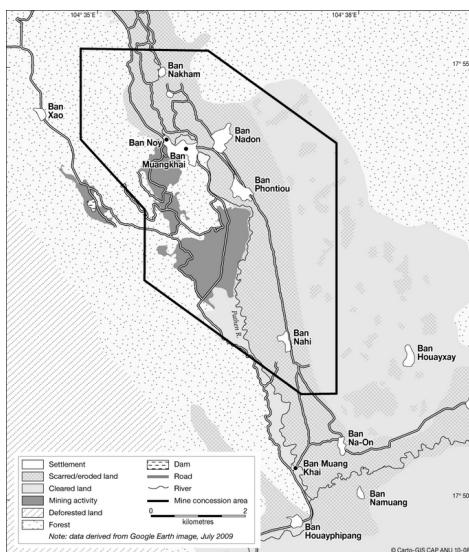


**Figure 2: Cross-section of the valley**

Tin in Phathen valley was discovered by the French colonialists in the early 1900s; its exploration started in 1910. The Phontiu tin mining, according to the local people, is more than 90 years old. Local people reported that French tin exploration commenced as early as 1917. The French had officially started a mining company called Société d'Etude d'Exploitation Minière de l'Indochine (SEEMI) in 1928. The French company operated from the early 1920s till 1977, when the then Lao government took over the mine operation. By 1927, the French had constructed roads and other infrastructure in the area, including small iron bridges, warehouses, mine offices as well as workers' living quarters. The technique of mining was 'shaft mining': a vertical shaft leading to a number of galleries underground. Even then, SEEMI used ASM miners; for example, company records show that in February 1964, the mine produced 43 tons from shaft operations, whereas 13 tons were secured from ASM miners. Of these 13 tons, 12 were from direct ASM and 1 ton came from processing the tailings.

After the Revolution, the name of the company was changed to State Mineral Exploration Company (Lat Visahakit Khout Khon He Khua). From 1980 to 1994, the Russians assisted the Lao government with further exploration and geological mapping. They also attempted to

improve the efficiency of mine operation and tin processing through the application of modern technology, such as bulldozers and excavators. In 1986–87 they initiated production through the open cut technique. Villagers recalled that use of this technology eventually proved to be excessively detrimental to local environment. This observation is verified by recent satellite images that reveal the degraded nature of hills around the valley (see Figure 3 below).



**Figure 3: Concession area of Lao-Korea Tin Mining Company**

In 1994 the Lao government signed an agreement with the Government of North Korea to carry out tin mining in Phontiu area as a joint venture company. This company, the Lao-Korea Tin Mining Company (hereafter the Company), has the mining concession of the area today. It has three offices: in Vientiane, Thakhek (the provincial capital of Khammuane Province); and on the site in Ban Moua Khay (Phontiu), Khammuane Province. The Vientiane office undertakes marketing, documentation and administration of all mining activities, as well as the tasks of liaising with the Lao PDR government. The Thakhek office deals with shipping and transportation of tin ore between Lao-Thai Mekong borders in Thakhek. The mining site office,

**Table 1 List of Small Scale Mining (SSM) Companies in Phontiu Area**

No.	Company Name	Type of Cooperation	Type of Ores	Location Site (Village)	Concession Area (ha)		Issued by
					Exploration	Extraction	
1	Lao-Korean	Gov-	Tin	Moua Kha	18586.5	134.5	Ministry of



	Tin	Bilateral					E&M
2	Lao–Russia	Foreign	Tin	Borneng	4350	0	Ministry of E&M
3	S.V. Trading Ltd.	Private	Tin	Nong Seun	350	250	Ministry of E&M
4	Keoblualapha Tin (formerly Lao-China Development)	Private	Tin	Thong kha	325	145	Ministry of E&M
5	Lao-Thaixing Mining Co. Ltd	Private	Tin	Xao	437.5	0	Ministry of E&M
6	Nong Xeun Chaluen Phattana	Private	Tin	Nong Seun	460	50	Ministry of E&M
7	Lao-Vietnam	Gov-Bilateral	Tin	Nong Seun	700	0	Ministry of E&M
8	Mining Unit Army Khammuane	Military	Tin	Na An	0	24	Provincial E&M
9	Lao-Suanshi	Foreign	Tin	Houayxay	4200	0	Ministry of E&M
10	Chantha vong	Private	Tin	Kuankacha	0	40	Provincial E&M
11	Chonchirongxing	Foreign	Metal	Thana	2800	0	Ministry of E&M
12	Haohan Mining Ltd.	Foreign	Metal	Borneng	4000	0	Ministry of E&M

Source: Department of Energy and Mining in Khammuane Province (2009) updated with Map (Annex XXX) provided by Ministry of Energy and Mining on 31 May 2010.

located in Ban Moua Khay, deals with day-to-day processing and operation. It is this office that is in touch with the ASM miners who operate within the concession area of the Company.

**Inset 1: What does this history mean to ASM in Phontiu valley?**

None of the 2,000 people, most of whom are artisanal miners, have *bai tadine* or full title to the land. They only have *bai cheng*, which allows them to live in their homes located within the land leased to the Company. They are mining on Company land. In other words, the miners are involved in an ‘illegal’ livelihood in the narrow and technical sense of the term.

Although this case study only covers two communities in the Concession Area (CA) of the Company, a few other mineral exploration and exploitation companies have begun their operations in the Phontiu area (see Table 1), particularly since the opening of the economy. The

list shows that sizeable chunks of land in the Phathen Valley are given to mining and mineral exploration and exploitation companies—private; government-bilateral; and foreign-owned—as concession areas.

**Inset 2: Illegitimacy - Who and what is legal?**

The manager of the Company believes that the villagers are ‘illegally selling’ their tin to other companies because they are obligated to sell to the Company on whose leasehold land they are living.

The villagers consider it their right to not only dig, but also to choose to whom they should sell their products.

In fact, this freedom to sell the tin to whoever they choose may hold the key to better management of the supply chain and empower the community.

It appears that **three** *sources of illegitimacy* could be identified: the villagers’ lack of entitlement to land through displacement from land owned by them by the Company; displacement from traditional occupations (such as farming); and the poor accommodation of ASM in minerals regulatory regime in Lao PDR.

Of these, the Lao–Korea Tin Mining Company has the largest CA area, about 20,000 ha.<sup>3</sup> The second and third largest CAs were issued to Lao-Russia (4,350 ha) and Lao Suanshi (4,200 ha) both of which are fully owned by foreign investors. It is also interesting that most of the CAs were issued by the Ministry of Energy and Mining except the army-owned company and the privately-owned Chantavong Company. These companies received their CAs from the Provincial Department of Energy and Mining. However, we could not ascertain their production amounts or find the details of the social contributions made by them, if any.

According to the contract agreement signed by the Lao government and the Lao–Korea company (dated 27 October 1994) the total land concession is effective for 4,068 ha in Phontiu

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<sup>3</sup> The consultants found different CA sizes in the contract agreement between Lao government and the Lao–Korea Company. Here a CA of 4,068 ha is mentioned. On a map provided by the Lao–Korea Company it states that the company has 2,000 ha under concession.

valley for the duration of 15 years. The contract also stated that the Company is allowed to extend the contract with five years per extension while giving a notice of six months. Within the CA area, there were originally eight villages—now merged into six—and the communities in these villages benefit to greater or lesser extent from the ASM activities.

While the expansion of the Lao–Korea CA is being processed at this moment, the Lao government is also collaborating with the Vietnamese government with the aim of approving government joint ventures on evaluation and monitoring (E&M) between Vietnam, Lao and Korea. On 25 September 2008, the Lao government signed a contract agreement for tin investment expansion project to the Cavico Vietnam and Metallurgy-Mine Institute of Science and Technology under the Ministry of Trade of Vietnam. This investment aims to increase exploitation of tin ore in Phontiu to about 2,000 tonnes with 60 per cent SnO<sub>2</sub> concentration per annum. Therefore, it is expected that the Lao–Korea Tin Mining might become Vietnam–Lao–Korea Tin Mining.

## ***1.6 Relationship between ASM Miners and the Company***

The relationship of ASM miners with the Lao–Korea Tin Mining Company is also complex. As evident from French records, the ASM miners have worked in the area at least from 1920s where the French bought tin from ASM miners. Today, there are about 2,000 people living in the six villages in the valley. Almost 95 per cent of the working age group population is engaged, to some extent, in tin mining, and the major part of the incomes of the villagers in the area comes from its sale proceeds.

According to Mr Moly Phongsamout, Director of the Company at Ban Moua Khay, the CA allows the Company to relocate the villagers, if needed. However, the Company concluded that it makes better financial sense to allow artisanal miners to continue mining because of the cost of

compensation and rehabilitation (CAR), as the mineral deposit is not very large. He said: ‘This is such an old mine. It has been in operation for a very long time, and most of the tin is finished.’<sup>4</sup> In contrast, it is more cost effective to allow ASM miners to mine and sell the tin back to the Company.

According to the villages, initially, they were not allowed to mine in the Company CA. Villagers at Ban Nahi revealed that in 1997 the Company fined 45 villagers to the extent of 40,000 KIP (~\$5) per person plus one day’s labour for land clearance. The fine was levied because the villagers continued to collect ores after the Company truck stopped the day’s work. The villagers filed a complaint to district and provincial authorities stating that the Company stopped them from their routine livelihood and did not offer them alternative livelihoods or compensation. The provincial authority dealing with the case opined that since the Company has no alternative livelihoods, it was obligated to provide the villagers with basic infrastructures. This was confirmed by the Chief Division of E&M, Khammuane Province who said that the government had indeed asked the Company to assist the community with the provision, repair and maintenance of public services and amenities such as school, health centres and roads.

**Inset 3: Official perception about the main driver of environmental degradation**

Mr Bounta Butsabang, Chief of Division, E&M, Khammaua: ‘The artisanal miners are causing most of the environmental degradation. They cut the trees and dig everywhere. The Company you can easily control, but the community you cannot.’

The CA signed in 1994, however, was silent about the community or their participation in mining. Article 11 in it mentions that there will be a recruitment of 380 Lao and 30 Korean staff.

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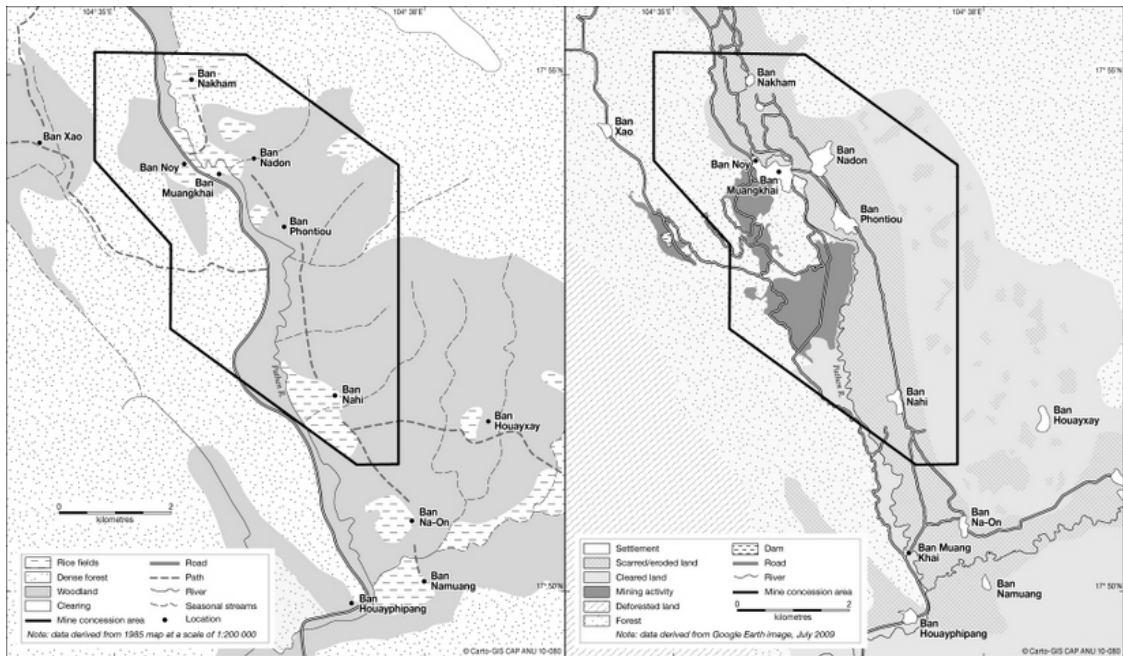
<sup>4</sup> This statement is contradicted by the Manager of the Company based in Vientiane who thinks there is enough tin in the valley to last another 75 years.

Article 5.2.f states that the Company should be responsible for the Lao workers in terms of human capacity building in mining activities. There is, however, no mention about community in the area nor where the Lao staff will be recruited from or whether the villagers in the CA have the right to mine or the Company has the right to resettle people.

Nonetheless, the Company and the villagers hold the same opinion that the villagers have the right to mine tin within the CA and all mineral extracted should be sold to the Company. However, with other companies setting up operations in nearby areas, the monopoly of Lao–Korea Tin Mining Company has now been broken. ASM miners working within the CA of the Company are now selling their tin to these new companies as they are offering slightly higher prices. This ‘illegal purchase’ has given rise to some amount of annoyance for the Company, which claims sole purchase rights over the tin produced by ASM miners. The Korean managers of the Company claimed that while they pay a tax to the government for being legally registered, other companies are freely buying tin from local people without paying any tax.

The other problem of governance, according to the Chief of Provincial E&M Division, is the mobility of ASM miners: ‘The Company you can easily control, but the community, you cannot.’ This is because of *khut twoatip*, ‘because they go everywhere’ (or dig everywhere) and cannot be necessarily contained within the concession boundaries. Such mobility has been the major driver of environmental degradation in the region in the Chief’s view.

On the other hand, communities argue that the companies are ruining their environment. They reported that since the Russians took over from French, their cultivated land areas were systematically destroyed from the contamination of soil by toxic water runoff. The landuse maps presented in Figure 3 are of 1985 and current (year 2010, based on satellite data), and reveal significant changes in landuse/landcover.



**Figure 4: Comparative Landuse, 1985 (left) and 2010 (on right)**

## 2. RESEARCH METHODS

The Rapid Assessment Toolkit—based on rapid and participatory rural appraisal techniques—prepared by the International Consultant team was used as the guiding light for undertaking research for this case study. Site selection was done by DoM. The location is about 350 km east-southeast from Vientiane capital city, Khammuane province, Theun Hinboun district (see Annex A and Annex B). The selected location is within the area of about 20 ha that the Lao government gave as land concession to the Lao–Korea Company, comprising the six villages. The selected site consists of an autochthonous population who have lived in the area for hundreds of years and those who arrived as a result of SSM activities initiated by the French, the opportunity seekers. The Rapid Assessment Toolkit was trialed in the field in an autochthonous community, Ban Nahi, and a migrant community named Ban Moua Khay (see Annex B).

Rapid assessment conducted by the consultants included reviewing of *secondary resources* such as reports on ASM from various organizations, recent regulations and law on energy and mining sectors, concession agreement between the Lao government and a SSM company (Lao–Korea) and the progress reports.

In addition, a range of *primary information* — of a qualitative nature — was used to formulate the case study. This included direct interviews with stakeholders and field visits where direct observations on the processes of ASM activities were made. The rapid rural appraisal techniques concentrated on community consultation (village meeting) and interviews with village authorities, concerned government departments and related SSM companies. The participatory rural appraisal techniques were used in the focus group discussions to assess gender roles, division of labour, access and control of financial, physical and natural resources, ability to obtain skills and knowledge, strengths and vulnerabilities and assess practical needs for improving livelihoods of the women in ASM. In detail, the qualitative research methodologies include:

- Interviews with experts and concerned parties:
  1. Related government departments at the central level, in particular DoM.
  2. Provincial government officials.
  3. Lao–Korea Tin Mining Company officials (in Vientiane and on site).
  4. Earth-systems Lao.
  5. Village authorities, chief of cluster villages and village elders.
- Community consultations:
  1. Participants from two villages were selected. Those from Ban Nahi consisted of 42 people of whom 18 were female whilst 80 people took part from Ban Moau Khay of which 50 were female.
  2. Informing participants about the purposes of the research, paying particular attention to gender roles in ASM and to ensure that the community understands the aims, objectives and the nature of the research.
  3. Conduct community dialogue and discussion on general ASM in the community, learn their current views and future perspectives on ASM.
  4. Specific enquiries on AM livelihoods for the community, addressing two-way flow of information.
  5. Discussions on the benefits from and difficulties of livelihoods in ASM, and the future perspectives in continuing ASM (with a greater focus on women and children in ASM).
  6. Women’s practical and strategic gender needs to improve livelihoods and their perspective on ASM.
- Focus Groups Discussions (FGD): This methodology is based on informal participatory discussions to ensure that the outcome of the assessment is people-centred. The villagers were divided into different social and political status groups—village authority (Ban Nahi and Moua Khay), men’s group and women’s group (Ban Nahi and



Ban Moua Khay), the Lao Women's Union's groups (Ban Moua Khay). The information collected includes:

- a. women and men's roles in ASM and division of labour,
- b. seasonal calendar,
- c. daily activity clocks,
- d. access, control and ownership of resources and benefits, and
- e. livelihood patterns, risks and vulnerabilities and external and internal social supports and issues thereof.

### **3. GENDER ROLES AND STATUS IN ASM**

As with other jobs in Laos, women and men have clearly different roles in ASM. This section analyses the gender division of labour between the genders in the tin production processes in Ban Nahi and Ban Moua Khay, their working conditions and the labour organization of the ASM.

The two villages represent the socio-cultural and economic diversity within the valley. Economically, Ban Moua Khay is better off than Ban Nahi. In the latter, assets are conspicuous by their absence; there are, for example, no vehicles, the village is difficult to access and the majority of the houses is made of wood with only corrugated sheets as roofs. In contrast, Ban Moua Khay is visibly richer; most of the houses (at least part of the structure) are made of concrete and a significant number of villagers own some kind of vehicles. As we enquired, it also became clear that villagers of Ban Moua Khay have their own SSM enterprise, which generates more money than the AM being widely practiced in Ban Nahi or being a wage labourer with the Company.

This relative prosperity has been derived historically from the proximity to the official centres of tin production — the office of the Company (and previously SEEMI), its sheds, processing plant and other infrastructure are all located in Ban Moua Khay. Even some of the

concrete and/or stone housing—as compared to the wooden houses in rural Laos— built by the French stand evidence to its centrality in the tin economy of the valley.

The centrality has brought outsiders to Ban Moua Khay and, over the years, the village has a diverse ethnic composition compared to Ban Nahi. Another reason why migrants chose to live in Ban Moua Khay is the proximity of the village to the better quality mineral reserves. The artisanal miners living in Ban Moua Khay have better access to minerals (and the processing plants) than those in Ban Nahi, which is located further downstream. However, villagers in Ban Nahi are entirely dependent on ASM as compared to the diversified livelihood bases of households in Ban Moua Khay. The community in Ban Nahi has been involved in mining since the French times. The villagers from Ban Moua Khay, however, moved in to the mining area after it became clear to them that they could earn better incomes from mining tin. Together with the French came some Vietnamese workers who ended up staying in the area and integrated into the community of Ban Moua Khay.

Physically, Ban Moua Khay has better and easier access to other basic public facilities such as a primary health care centre, secondary grade schools, shops and transportation, while Ban Nahi only has grade one and grade two primary schools. In the rainy season the valley is flooded and Ban Nahi becomes almost impossible for outsiders to access. Ban Moua Khay has a good access road that runs alongside the Pathen river through the length of the valley, connecting it to the main road 13 south of the capital of Khammuane. Some demographic information on these villages is given in Tables 2 and 3.

**Table 2: Demography of Case Study Area**

	<b>Total Population (persons)</b>	<b>Females (persons)</b>	<b>Households</b>	<b>Families</b>	<b>Ethnic</b>
<b>Ban Nahi</b>	324	160	59	64	Kalearn
<b>Ban Moua Khay</b>	1275	617	230	275	Kalearn, Gnor Phouthai, Vietnamese

Source: Interview Khum Ban held in April 2010.

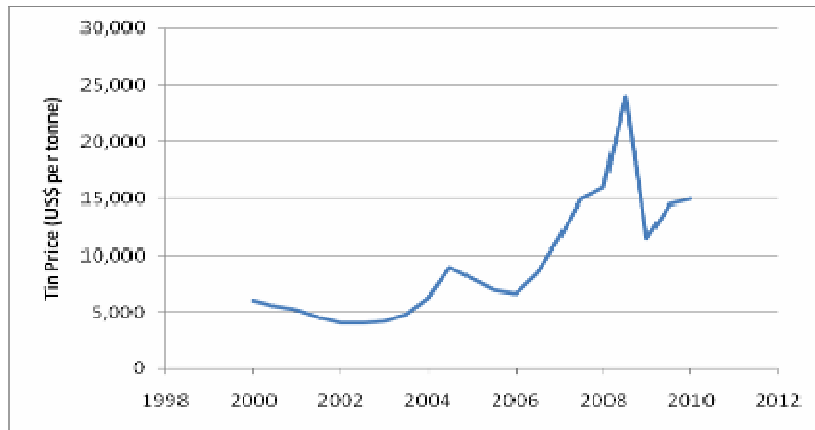
**Table 3: Facilities and Transport Assets**

	<b>Primary School (km)</b>	<b>Health Clinic (km)</b>	<b>Paddy Land (families)</b>	<b>Hyundai and 4WD Trucks</b>	<b>Motorbikes</b>	<b>Water pump engines</b>
<b>Ban Nahi</b>	0	7	8	0	35	3
<b>Ban Moua Khay</b>	0	0	0	26 + 3	230	85

Source: Field interview held in April and May 2010.

### ***3.1 Nature of involvement and gender roles in ASM***

According to the site manager of the Company, there were 320 people working for the Company before the tin price dropped during the Global Financial Crisis (GFC) in 2008, causing the retrenchment of 200 employees (see Figure 5 below).



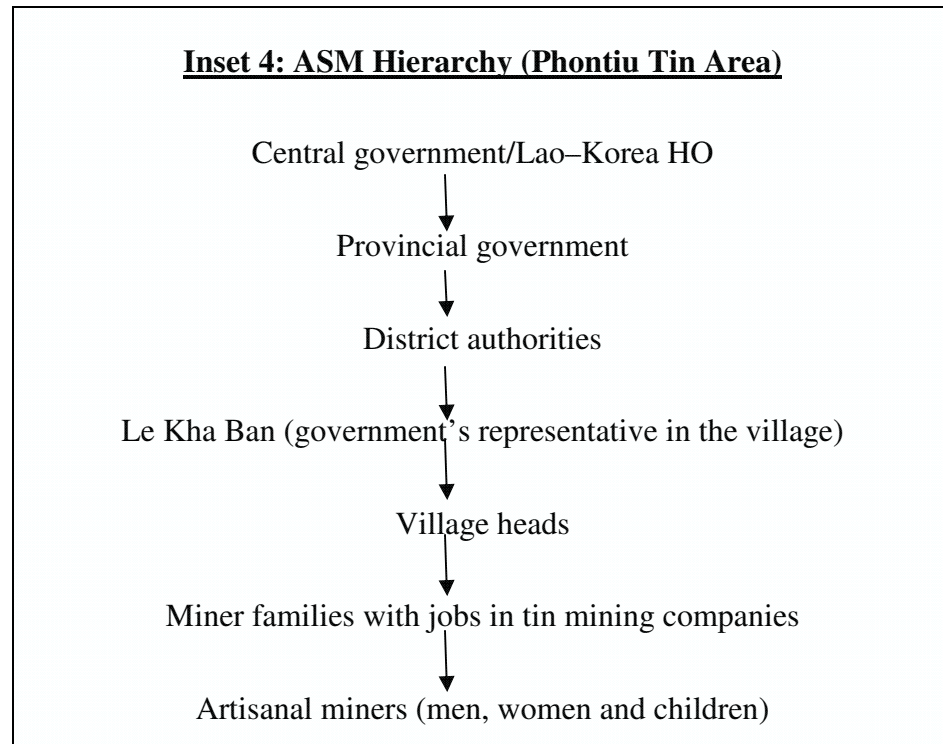
Source: London Metal Exchange Website ([www.lme.com](http://www.lme.com)), accessed 15 May, 2010

**Figure 5: Tin Price 2000–2010**

Currently the Company employs only 120 people, of which five are women who work the 8 am - 4 pm shift. However, the tin price is recovering post GFC and there is hope for the employment situation to improve in future. Even if the number of employees goes up, the likelihood is that women will not be employed by the Company for three reasons: their reluctance to accept a shifting roster due to household duties; the incomes they earn from office jobs are not higher than those from ASM; and younger women are less interested in night jobs. Besides the Company, the government is present in different layers and the ASM workers are at the bottom of the hierarchy (see chart below).

The artisanal miners seem to work as *family labour units* comprising women and men, boys and girls and, sometimes, elderly men and women. It is not unusual for the entire family to be involved in one or more aspect of the production process of ASM. Such work is undoubtedly based on a great amount of cooperation between women and men. However, in this study, we observed that most ASM households are not typical units in which resources are pooled with the male head as main decision-maker and the representative. Many women not only play important roles in these communities, they sometimes hire men to work for them. The intricate gender division of labour processes also results in an intra-household specialization along gender lines with regard to productive activities. We found that some ASM households were, in fact,

composed of one or two or more intra-household production units. For example, in those cases where the man holds a job in a nearby company and the woman works in ASM this was more evident, but we also found some men specialising in certain processing tasks.



We noticed that whilst all household members share the common goal of family welfare, each household member tries to maximise benefits for himself or herself from the allocation of their labour and other agricultural investments through negotiations with other members—‘trying to get the best deal of it.’ In these negotiations, the limiting factor for both women and men is family welfare and family stability. This is true even for children, which is why there are a large number of children working in artisanal mines.

Distinguishing intra-household production units not only adequately conceptualises the gendered organization of ASM mineral production, but also reflects the reality that ASM is usually only one activity in a range of income-generating activities in ASM households. Like

elsewhere in the world, ASM household livelihoods in Phathen Valley are also *pluriactive*, i.e., they engage not only in ASM but also in other livelihood activities.

**Inset 5: Women’s knowledge of tin sources**

Mr Bun Thai Darnavo, Manager of Lao-Korea Tin Mining Company, based in Vientiane, says: ‘[W]omen have a special ability to find the good tin deposits. Women do everything in these villages.’

The information presented in the box suggests that the women contribute the greatest amount of time to the production and processing of tin. This significant role in ASM—often over the years—has honed their skills in many ways. For example, a widely circulated belief is that women have a deep knowledge about the availability of tin. When asked why and how, they suggested that gender division of labour in mining practiced for generations has attributed the special ability in women to ‘divine’ tin deposits.

As evident from the *seasonal calendar*, older men are involved in ASM for only about two months in the year, during the post-monsoon months of September and October. Younger men, usually between 15–25 years of age, generally work as labourers in SSM in the neighbouring village of Ban Moua Khay in April (according to women it is January, February, May and June). During the rainy season they work again as labourers for others in SSM.

In comparison, women are involved fully in ASM for about 10 months of the year. They spend a large amount of their time on ASM in December, January and February. The AM workload is reduced in the planting season in March, April and May before rainfall. In July, August and September when there is not much work in the fields and the ore is washed down to the valley by the rain, the women again work full-time in AM. Just before the harvest and during the harvest in October and November their time input in AM is again reduced. The results are shown in Tables 4, 5 and 6.

**Table 4: Elderly Men’s Views on their own ASM Activities (Yearly Calendar)**

<b>Month</b>	<b>Activity of Elderly Men</b>
<b>January</b>	Prepare land and home gardening
<b>February</b>	Prepare, gardening and cut trees for fencing
<b>March</b>	Cut trees for fencing for paddy land and clear forest for <i>hai</i> and garden
<b>April</b>	Cut trees for fencing and prepare land <i>hai</i> —clean bushes and scrap trees
<b>May</b>	Fencing and plough the prepared cultivated area
<b>June</b>	Fencing and plough the prepared cultivated area, plant seeds
<b>July</b>	Plant rice ( <i>dam na</i> ), and others (corns, beans, etc.)
<b>August</b>	Plant rice and other
<b>September</b>	Tin AM ( <i>pai keo</i> )
<b>October</b>	Tin AM ( <i>pai keo</i> )
<b>November</b>	Harvesting rice
<b>December</b>	Harvesting and prepare home gardens

Source: Elderly Men Focus Group Discussion held in April 2010.

These seasonal calendars suggest that women have a more important role to play in ASM than men, and that they spend more time working on tin production. Therefore, we looked more closely at the daily activities and the division of labour between them. This provided more insight into the contributions of each person to the household livelihoods. The same male and female peer groups were used for analysing their daily patterns. The daily time breakdown indicates that woman spent much more time than men working for the household on an average daily basis. Men and women both agree that women, in addition to the ‘normal’ work, take care of children, cook, clean and wash for four to five hours per day. On a daily basis women spent seven to 10 hours on working in the field, garden or mining for tin. The men on the other hand also spend the same time on ‘normal’ work; however, they contribute little time to the household chores (see Tables 7 and 8).

**Table 5: Men's Views on Activities of Men and Women (Yearly)**

<b>Month</b>	<b>Activity of Men</b>	<b>Men's Perception of Women's Activity</b>
<b>January</b>	Prepare land/home gardening	Prepare land/home gardening
<b>February</b>	Clear <i>hai</i> /garden/search for food	<i>Pai keo</i>
<b>March</b>	Clear <i>hai</i> /trees, making fences/search for food	<i>Pai keo</i>
<b>April</b>	<i>Pai keo</i>	<i>Pai keo</i>
<b>May</b>	Fencing and plough the land area	Weeding
<b>June</b>	Plant rice and other seeds	Plant rice and other seeds
<b>July</b>	Weeding	Weeding
<b>August</b>	Plant rice and <i>pai keo</i>	<i>Pai keo</i>
<b>September</b>	<i>Pai ke,o</i>	<i>Pai keo,</i>
<b>October</b>	<i>Pai keo</i>	<i>Pai keo</i>
<b>November</b>	Harvesting rice	Harvesting rice
<b>December</b>	Harvest, store rice and gardening	Harvest, store rice and gardening

Source: Men Focus Group Discussion held in April 2010.



**Table 6: Women's Views on Activities of Women and Men (Yearly)**

<b>Month</b>	<b>Activity of Women</b>	<b>Women's Perception of Men's Activity (need info next time)</b>
<b>January</b>	<i>Pai keo</i>	Clear land for <i>hai</i> and work in SSM in Ban Moua Khay
<b>February</b>	<i>Pai keo</i>	Clear land for <i>hai</i> and work in SSM in Ban Moua Khay
<b>March</b>	<i>Pai keo</i> and clear land for <i>hai</i>	Clear bushes and scrap trees and make fence
<b>April</b>	<i>Pai keo</i> , prepare land <i>hai</i> , clean bushes and scrap trees (must divide time for <i>pai keo</i> because need money to buy food; men do not do tin mining as much as women)	Clear bushes and scrap trees and make fence
<b>May</b>	<i>Pai keo</i> , fencing and plant rice ( <i>kao hai</i> )	If no rain then <i>pai keo</i> , if rain then <i>kao hai</i>
<b>June</b>	<i>Pai keo</i> , plant rice and weeding	If no rain <i>pai keo</i> or work in SSM in Ban Moua Khay, if rain, <i>kao hai</i>
<b>July</b>	<i>Pai keo</i>	Weeding
<b>August</b>	<i>Pai keo</i>	Weeding, work in SSM in Ban Moua Khay
<b>September</b>	<i>Pai keo</i>	Work in SSM in Ban Moua Khay
<b>October</b>	<i>Pai keo</i> and weeding	Work in SSM in Ban Moua Khay
<b>November</b>	Harvest rice and <i>pai keo</i> less	Harvest rice
<b>December</b>	<i>Pai keo</i>	Gardening

Source: Women Focus Group Discussion held in April 2010.

**Table 7: Men’s Views on Activities of Men and Women (Daily)**

Time	Activity of Men	Activity of Women
5 am <sup>5</sup>	–	Get up and prepare rice
6 am	Get up and have breakfast	Collect water, have breakfast and clean dishes
7 am	Go to rice field/garden/ <i>pai keo</i>	Go to rice field/ <i>pai keo</i>
8 am	Work in the field/ <i>hed keo</i>	Work in the field/ <i>hed keo</i>
11 am	Lunch	Lunch
12 am	Rest	Rest
1 pm	Work in the field/ <i>hed keo</i>	Work in the field/ <i>hed keo</i>
5 pm	Go home	Go home
6 pm	Take shower and rest	Cook for family
7 pm	Dinner	Dinner and clean dishes
8 pm	Watch TV	Teach children and/or watch TV
9 pm	Watch TV or go to bed	Watch TV or go to bed

Source: Men Focus Group Discussion held in April 2010.

### **3.2 Women’s role in ASM**

There are *three* ways for individual members of the communities to receive cash incomes from ASM:

1. By securing a job with the Company and earn a monthly wage as a staff member.
2. By working as artisanal miners for the entire process of tin production. Although they do not ‘belong’ to the Company and work freelance in ASM, they nevertheless sell their output to the Company.
3. By working as small scale miners using machines for the extraction, transportation or/and riffing to produce the tin. These individuals can either work freelance or as

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<sup>5</sup> Some of the participants in the men’s peer group discussion told that their wife would get up at 4 am to start her work and that the man would get up at 5 am to take care of the animals. In addition, they explained that in some cases they would work until 7 pm on the land or in the mining area.

labourers to the owners of these machines. Either way, they sell their extracted tin to the company

**Table 8: Women’s View on Activities of Women and Men (Daily)**

Time	Activity of Women	Activity of Men
4 am	Get up, wash, prepare rice	–
5 am	Collect water, clean dishes, feed animals	–
6 am	Clean house, prepare food	Get up, wash, help feed animals
7 am	Have breakfast	Have breakfast
7.30 am	Go to work, <i>pai keo</i>	Go to work, bring wood for fence
8 am	Eat betel leaf, rest, work	Go to work/at work
11 am	Rest, shower	Rest, shower
12 am	Prepare food, take lunch	Lunch and rest
1 pm	Rest	Rest
2 pm	Continue to work/at work	Continue to work/at work
5 pm	Return home	Return home
6 pm	Call for animals, feed animals, shower	Rest, shower
7 pm	Prepare food, eat, clean house	Rest have dinner
8 pm	Watch TV and go to bed	Watch TV and go to bed
9 pm	Watch TV and go to bed <sup>6</sup>	Watch TV and go to bed

Source: Women Focus Group Discussion held in April 2010.

Tin production processes are diverse within the area, and for the ease of understanding, we decided to classify them into *five* broad categories. The first two of these, *tuerd* and *hed keo* (or *pai keo*) are fully manual and hence artisanal in nature. In SSM, there are three different techniques (*hang long*, *keo chaan* and shaft mining).

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<sup>6</sup> In the rainy season (May, June, July and August) when the rain washes out the sediment from the mining site, the family works sometimes until 9 or 10 pm.

## **Tuerd**

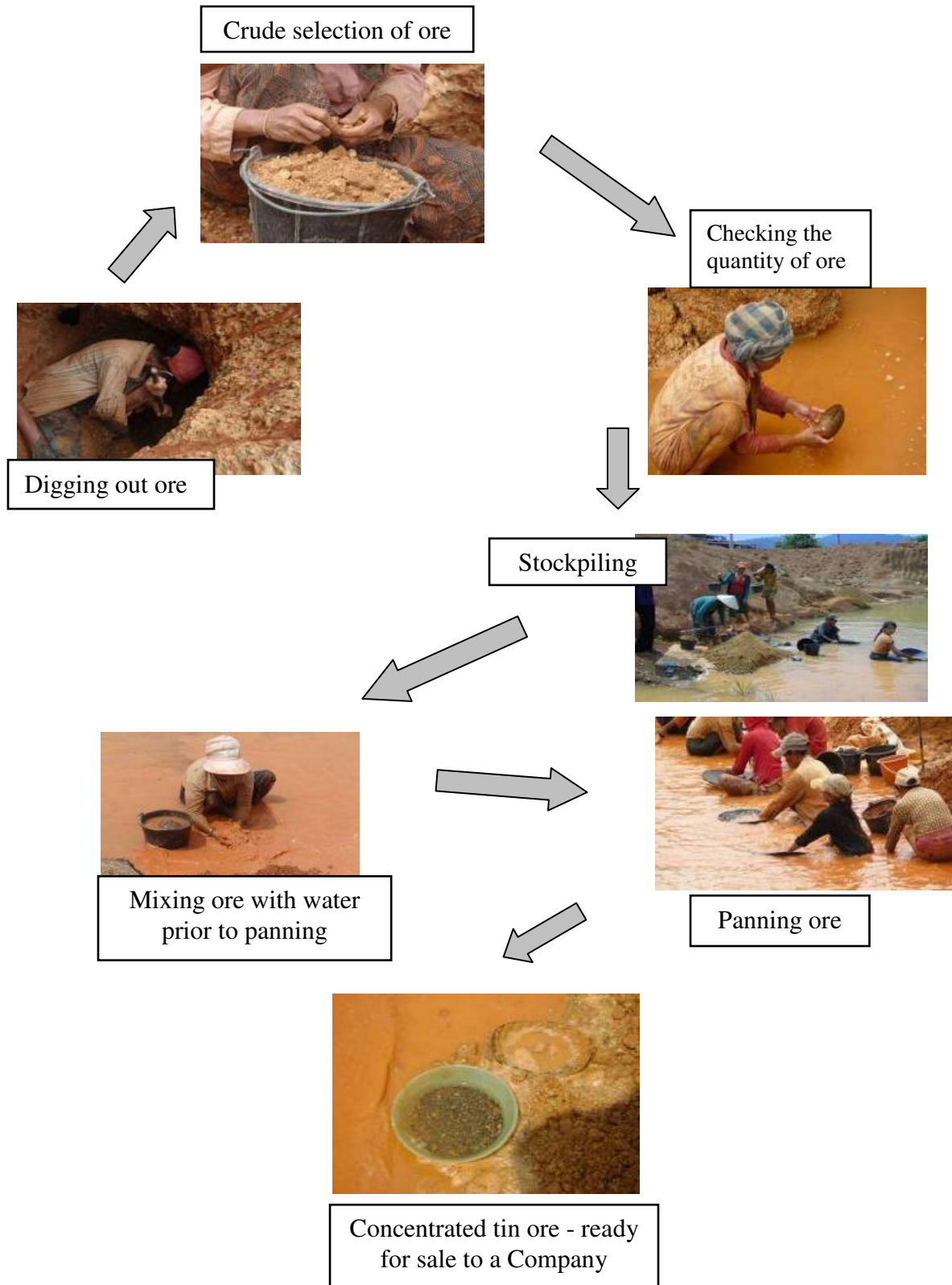
This is a traditional AM technique in which the miners dig a small hole with iron rod or a pickaxe, to loosen the earth, which is then carried in small buckets to a nearby stagnant water source such as a pond. The earth is then washed and panned to extract tin. This is practiced by both women and men particularly during the dry season.

## **Hed keo/pai keo**

This is a fully AM process which goes together with the traditional panning technique of *tuerd*. In this process, the Company brings a heavy earth excavation equipment to dig part of the mountain slope in a specific area. This creates a large open pit from which the villagers dig out their ore using shovels, pickaxes or hoes and transport it for approximately 30–200 m to the pond, which is artificially made by the Company. Villagers sit here most of the day to do the panning while being directly exposed to harsh weather conditions. The overall process of *Hed keo/pai keo* and *Tuerd* is outlined in Figure 6.

## **Kao phu**

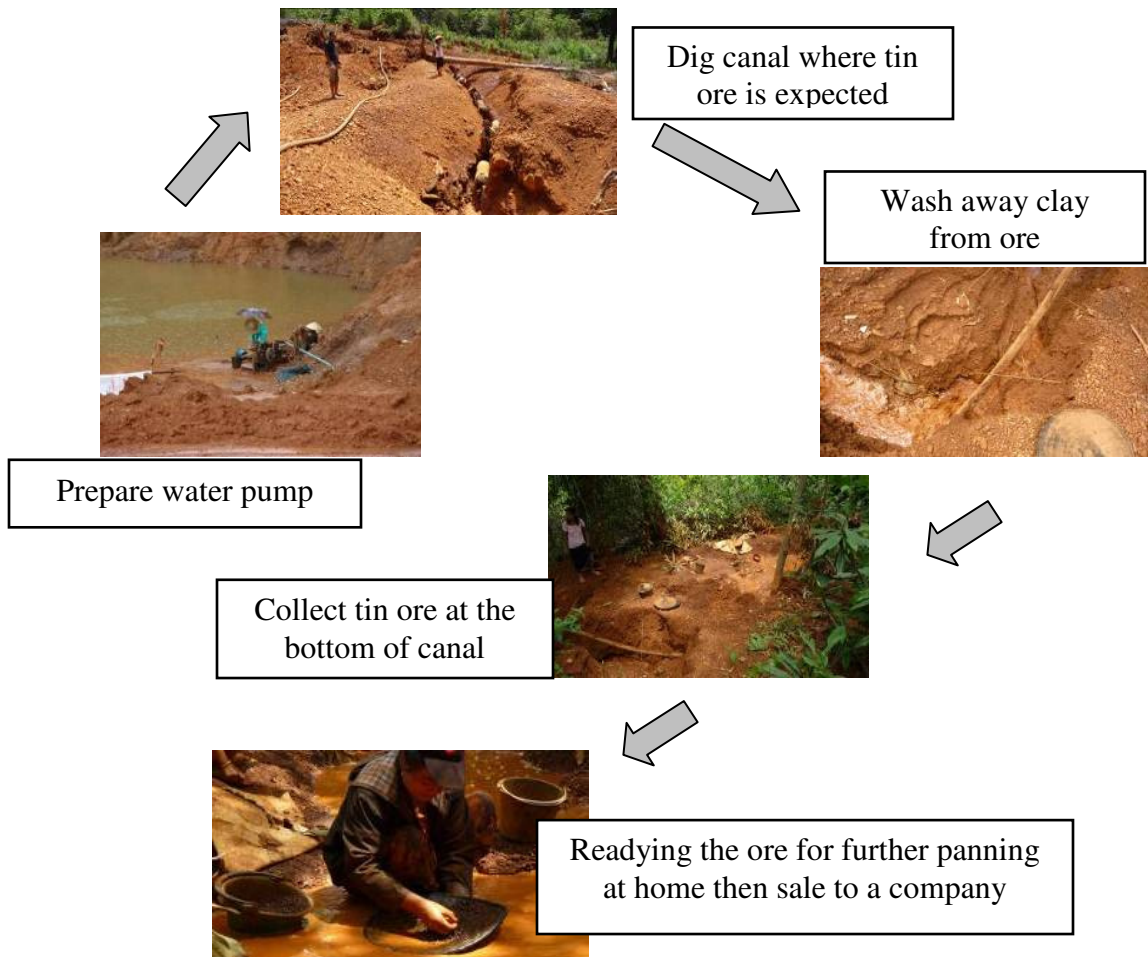
This is yet another technique where the villagers extract the ore manually from open pits and transport it on Hyundai trucks to the small panning factory where they rent a panning machine from the Lao–Korea Company to pan the ore.



**Figure 6: Traditional Mining -*paikeo, hedkeo, tuerd***

## Hang long

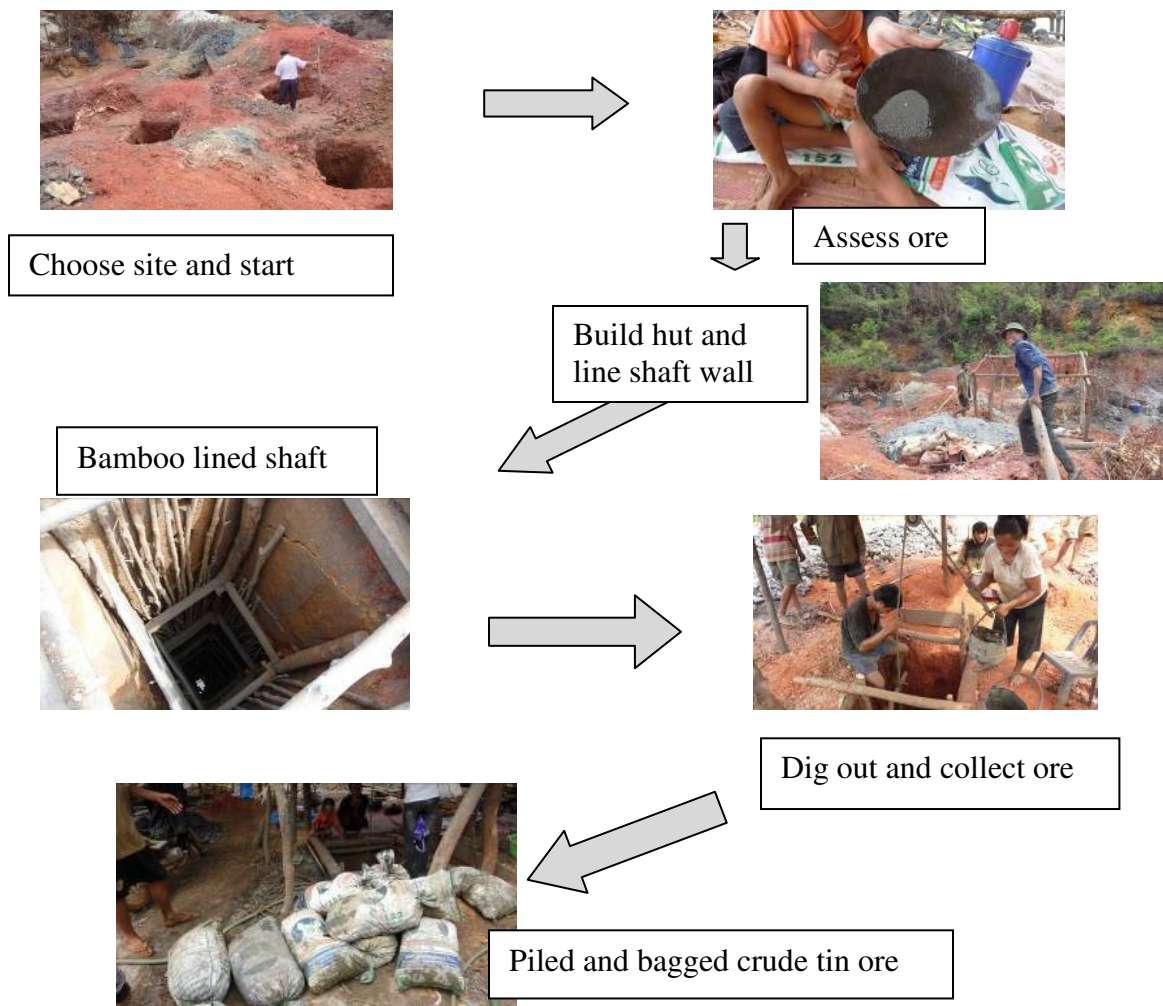
This is the first technique in SSM. The villagers dig channels on the mountain slope and use pumps to pump water from the river or stream up to the hill. Using the gravity from the higher grounds the water washes away the soil, earth and stones and leaves behind the heavier ore at the bottom of the open channels. They pan pure ore from the mixture of stones, gravels and earth. Some people conduct the panning on the spot while others transport it to the village to carry out manual panning at home. Figure 7 outlines the procedure.



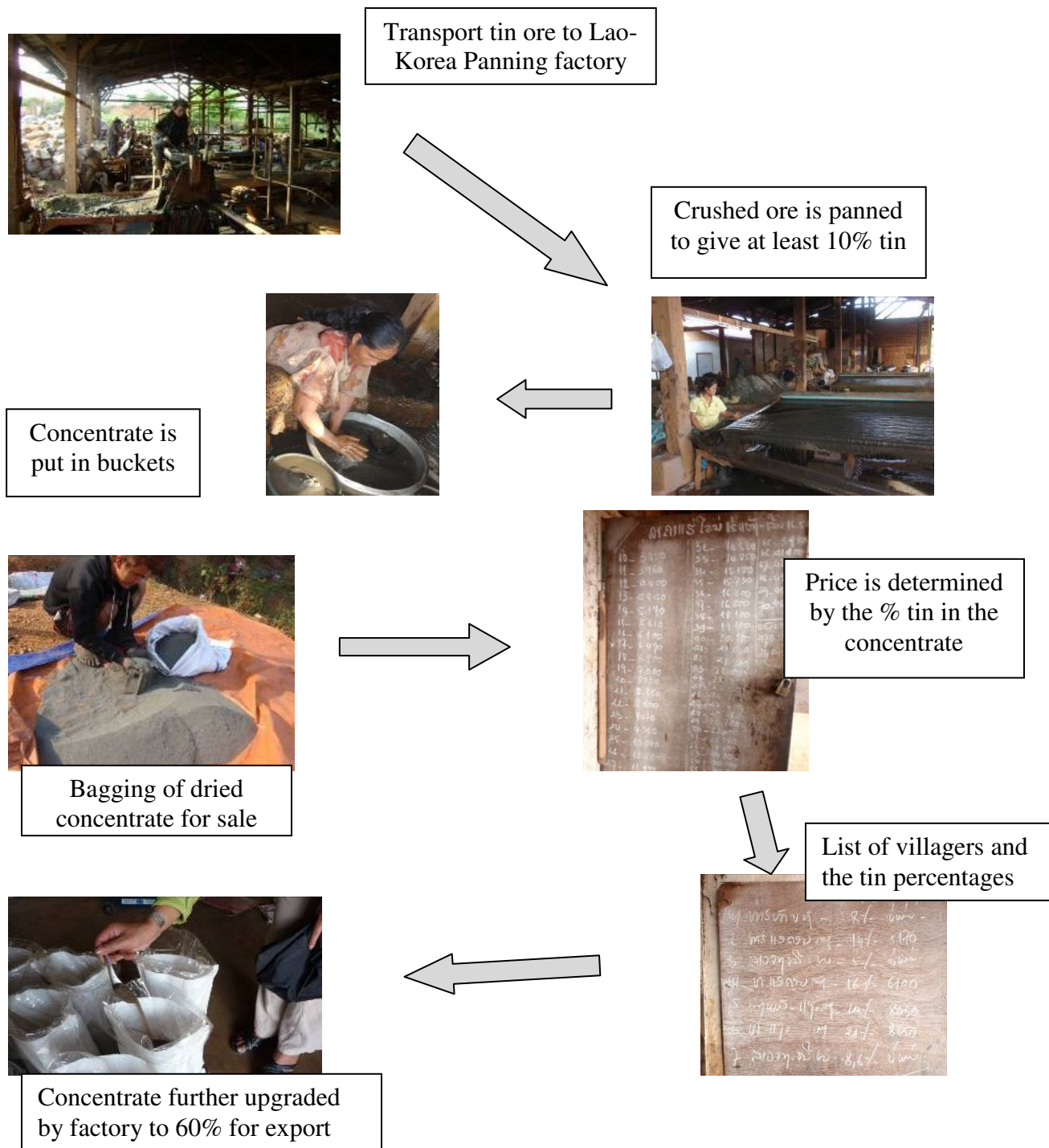
**Figure 7: SSM Process –Hang long**

## Shaft mining or *Keo chaan*

This is the last technique where the villagers dig a shaft (the old French technique) and extract the ore manually. Same as with the first and second techniques, the ore is transported on Hyundai trucks to the factory where they rent a machine for panning. Figure 8 below shows the process of shaft mining whilst Figure 9 outlines upgrading at the factory.



**Figure 8: Shaft Mining**



**Figure 9: Factory processing of crude ore**



Table 9 lists different mining techniques and features, which are classified into three different groups – Company, Small Scale Mining (SSM), and AM. It shows that the involvement of women and young children is higher especially in artisanal open cut mining processes. They are involved in processes starting from digging the ore, carrying it in buckets, washing and panning it, to selling the tin to companies. For the purpose of this case study—which focuses on women’s role in ASM and their vulnerability—we will describe the process of AM, locally known as *hed keo* in detail. In some cases we will describe the other methods and techniques only as a reference for AM.

The community at the *hed keo* mining site explained that they work as groups with their direct family, relatives or close friends, which makes it possible to share labour and profit. On an average about six to eight people work together as an economic unit. The Company will buy their tin for 50,000 KIP<sup>7</sup> per kg when it is of high quality (60 per cent plus tin) and pay 15,000 KIP per kg for the low quality (30 per cent tin). On an average a household earns about 45,000 KIP per day which is equally divided amongst the labour force. This comes down to about 6,000 KIP per person per day. In the rainy season, or on a good day, the production and profits can be doubled. In ASM, women have control over money because they sell the end product to the Company and manage the money for family use.

The production process for ASM of tin consists of several steps. Gender roles in the production process are clearly segregated. Men are only engaged in digging the mine pit and help with bagging and carrying the ore, while women and children are engaged in every step of the process (see Table 10).

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<sup>7</sup> KIP is the national currency of Laos. On 4 June 2010, USD 1 was about KIP 8,200.

**Table 9: ASM Methods and Techniques in Phontiu Area**

	Company	SSM			AM
<b>Type of employment</b>	Staff	Self-employed (family unit)	Labourer and self-employed (family unit)	Labourer and self-employed (family unit)	Self-employed (family unit)
<b>Gender</b>	Mainly men	Mainly men	Mainly men	Mainly men	Mainly women and children
<b>Mining method</b>	Fully mechanised	Panning is mechanised ( <i>khun song</i> )	Extraction is mechanised ( <i>hang long</i> )	Shaft mining ( <i>kout koun</i> )	Traditional open pit ( <i>hed keo</i> )
<b>Ore extraction Techniques</b>	Open pit extraction with motor grader	Open pit, tunnel, manual extraction	Open channel, pumped mechanised water washing, manual extraction	Manually dig shaft, manual extraction	Open pit, manual extraction
<b>Equipment used</b>	Fuel	Pickaxe, shovel and bucket	Fuel, generator, pump, water, shovel, bucket	Electricity, pickaxe, shovel, bucket, rope	Pickaxe, shovel, bucket
<b>Transport technique from pit to panning place</b>	Wheel loader, self-pouring truck	Hyundai truck	Hyundai truck	Hyundai truck	Walk with bucket or bag
<b>Equipment used</b>	Fuel	Fuel	Fuel	Fuel	–
<b>Panning technique</b>	Mechanised grinder, panning, bagging	Mechanised grinder, panning	Mechanised grinder, panning	Mechanised grinding, panning	Manually grinding and panning with coconut bowl
<b>Equipment used</b>	Electricity, water	Electricity, water	Electricity, water	Electricity, water	Panning board, water
<b>Production kg/day</b>	Unknown	15–20	7–25	5–20	0.5–1.5
<b>Income kip/day</b>	35,000	–	100,000–200,000	50,000–150,000	6,000–45,000
<b>Safety and health<sup>8</sup></b>	Good	Intermediate	Intermediate	Intermediate	Bad
<b>Risk and vulnerability<sup>9</sup></b>	Low	High	High	High	Very high

Source: Focus group discussions with men and women held in April–May 2010.

<sup>8</sup> In the next section more attention will be paid to the safety and health situation of the miners.

<sup>9</sup> In the next section more attention will be paid to the vulnerability and risks of ASM mining.

**Table 10: Production Process for Open Artisanal Mining of Tin and Input Divided by Gender<sup>10</sup>**

	AM	Men's Role	Women's Role	SSM	Men's Role	Women's Role
<b>Step 1</b>	Digging pit	✓	✓	Digging pit	✓	✓
<b>Step 2</b>	Bag the ore	✓	✓	Bag the ore	✓	✓
<b>Step 3</b>	Bring to the river	✓	✓	Bring to factory	✓	✓
<b>Step 4</b>	Mix ore with water manually		✓	Mix ore with water semi manually		✓
<b>Step 5</b>	Panning with hands		✓	Panning with machine		✓
<b>Step 6a</b>	Separate tin from sand/stone with hands		✓	Separate tin from sand/stone with machine		✓
<b>Step 6b</b>				Residue is again panned <sup>11</sup>		✓
<b>Step 7</b>	Collect tin manually		✓	Collect tin semi manually		✓
<b>Step 8</b>	Bring to the buyer and sell		✓	Bring to the buyer and sell		✓

Source: Focus group discussions with men and women held in April–May 2010.

### **3.3 Vulnerabilities of women in AM**

Since men and women share only few common tasks (Steps 1, 2 and 3), it is evident that health and safety concerns are higher for women in AM. The two main occupational health and safety issues as witnessed on-site were during digging the pit (Step 1), carrying (Step 3) and panning the ore (Step 5 and 6b).

<sup>10</sup> Children carry out the same work as women.

<sup>11</sup> Residue is supposedly collected and treated in a tailing dam of the factory; however, in this particular case the residue is channelled out of the factory into the surrounding area.

Digging the pit is not only physically exhausting, but there is also a direct danger of facing the collapse of the tunnel. In the past, several people have died working in the pit. There is no record showing actual deaths from this accident, but villagers from both villages reported many such casualties especially at the early stage of AM. There was an incident where a man died because he was hit by an excavation machine when he was illegally working in one of the big pits of the Company. In 2008 one boy and one girl died, and in 2009 two girls died. These children were working in the pit when the tunnel collapsed on them. Data on general health issues and accidents were requested from the district hospital and Khum Ban health centre; these statistics were never released.

Carrying and panning the ore is again physically exhausting (Step 3, Step 5 and Step 6b) and this study suggests that it affects women's health. Women who pan the ore sit directly in the muddy water. In the dry season this is an approximately for half a day, in the wet season, however, this can be up to one full day. When they work they cannot change their position too much or too often. Women from the peer group complained that often women who were menstruating would still sit in the river to do the panning. Also it was said that some women would have diseases which were thought to be transmitted to other women while sitting in the water. Common complaints amongst the women from the peer group—which are thought to be related to ASM — are excessive white discharge, pain in the womb and muscle ache.

Be it whichever season, the dry (when temperatures can soar to 45° C) or the rainy season, women sit in the waist-deep water and pan non-stop to secure their next meals. On the days of site interviews, the consultant team noticed a newly-posted sign by the Company. The poster warned anyone from going near the bulldozer; but group discussion with women revealed that majority of them could not read it as they were illiterate.

Many women reported that their biggest vulnerability is that they have no rights to productive land and ore mineral, which are the most valuable assets a community can hold on.. Since the land and ore mineral have been given to different companies, they found themselves landless and asset-less.

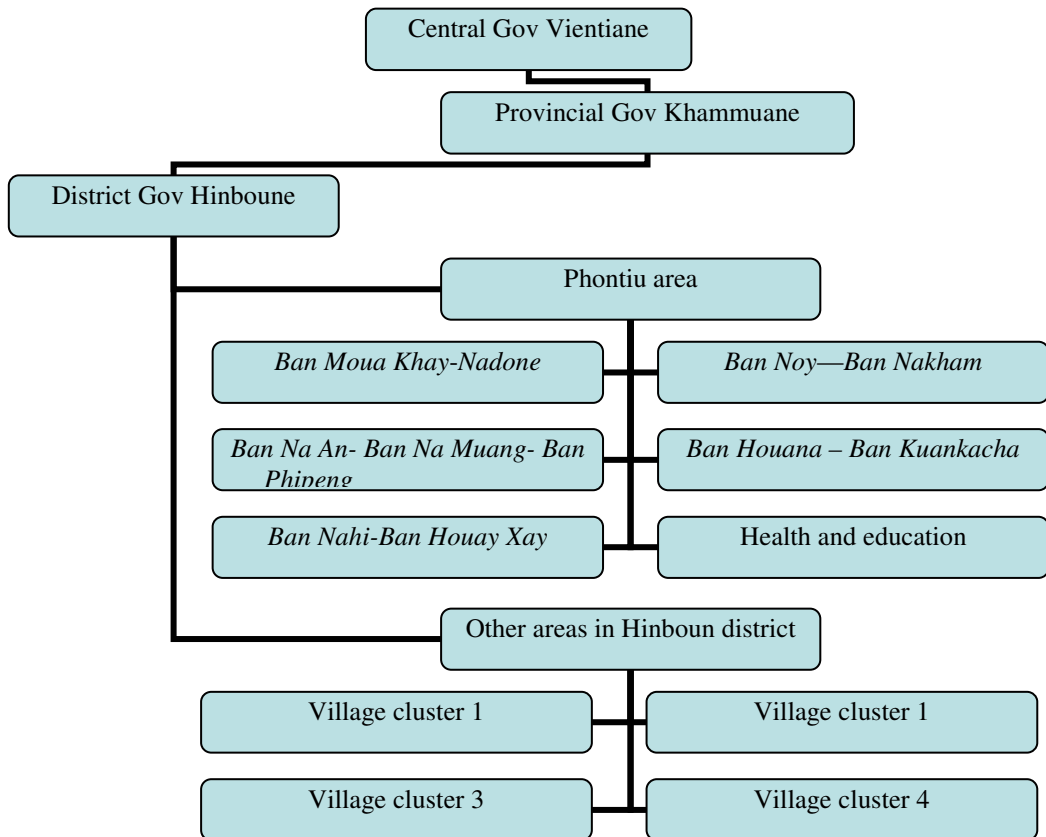
### **3.4 The actors in ASM sector**

This study revealed that there are four main actors playing crucial roles in ASM sector in the area:

1. the government;
2. the ASM communities;
3. the village authority committee; and
4. the Company.

These actors have different roles when dealing with tin mineral extraction and production. The government gives rights to investment companies to operate, the communities extract ore at different levels of mining operations, the village authority is sub-contracted by the Company to operate at the ground level and the Company operates on its own. In addition, there are also smaller entities involved in the ASM environment. These are the middlemen and other companies. All of these actors have their own distinctive involvement roles in relations to the other parties in Phontiu.

At a provincial level the Department of Mining and Energy of the Government of Lao has three main duties: monitoring and facilitating the mining process, management and promotion and improvement of mineral production. At the local level the governmental management structure is different from other districts. The government considers this area as an industrial zone and, therefore, the cluster villages have different functioning roles and responsibilities. Under ordinary circumstances, the cluster of villages (*Khum Ban*) is only used for implementing special security measures, acting as a focus for agriculture development projects or health measures. The reporting channel is from the village upwards to the district level, without being aggregated on *Khum Ban* level, and then to the province. However, in the Phontiu area they have different administrative rules; the government uses these *Khum Ban* not only for implementing activities, but also for monitoring and reporting. Besides, Phontiu area has a special cluster for health and education which, in normal circumstances, would not be organised on a village level. Figure 10 shows the detailed local government management.



**Figure 10: Governmental Structure in Phontiu Area versus Other Areas**

Source: Village authority interview held in May 2010.

The ASM communities play an important role in providing labour to the Company or work as freelance labour. They are involved in every step of mining processing and production and sell their extracted concentrated tin ores to the Company. The village authority committee sub-rents tin processing equipments from the Company and re-rents it out to individuals or households at a higher price. The Company itself produces tin on a larger scale besides buying tin ores from ASM communities. The tin ores sold by the village can either be concentrated ores or upgraded

ores. Once the Company has upgraded the tin ores, it sells the same to the Thaisarco Company in Thailand or to China. On the outskirts of this ASM environment there are the opportunistic individuals who act as middlemen and buy directly from the villagers and sell to other mineral companies as described in Section 1.

#### 4. LIVELIHOOD ASSETS AND ENTITLEMENTS OF WOMEN IN ASM

For analytical purposes, this case study chooses to use the livelihood approach widely used by practitioners and researchers. This approach is used to get a clear understanding on what assets or ‘capitals’ individuals utilise and what decisions are taken and by whom to make a livelihood. An overview of the complete livelihood framework can be found in Annex C. A livelihood is based on five core ‘capitals’ which are described in detail in the ASM context but disaggregated by gender. We pay specific attention to woman’s roles, property rights and entitlements in ASM.

##### **Inset 6: Women’s Song, ‘The Beauty of Phontiu’**

An ancient rumour	Tells us about the Phontiu area
It is true and reflects its name	Phontiu has many beautiful things
It has processing plants and garages	Repair cars and trucks
It has metal workshops	Machines and equipments
To service the factory	In our Phontiu
In the evening and morning voices	We hear like singing birds
To tell the factory workers	That it has the mountains
We stand on the side with Phontiu	With thunderous noises
My heart is dreaming of Phontiu	In the Phathen Valley
Twisting & curving down to the South	Where there is tin in Kunthai mountain
Levels 5, 6, 7, 8, 9	Level 10, level A, level B
The rumor is that	In our Phontiu
Only tin gets a good price	Our Phontiu
Is so precious	Nowhere else is like this place
Lands in the north or the south	There is no change
In the evening birds call	Couples fly to the nests
I hear the sounds of their singing	Phontiu dreams never fade in my heart

The five types of capital that are critical as the building blocks in forming the livelihoods of ASM communities are human, social, natural, physical and financial. Human capital generally comprises labour but can also include skills, experience, knowledge, creativity and

resourcefulness. Social capital is about the quality of relations among people, for example, whether one can depend upon the support from one's family or (mutual) assistance from neighbours. Natural capital includes resources such as land, water, forests and pastures, but also minerals. Physical capital can be houses, tools and machinery, food stocks or livestock, jewellery and farm equipment. Last, financial capital refers to the money in a savings account in a bank or in an old stock, a loan or credit.

#### **4.1 Livelihood capitals in Ban Moua Khay and Ban Nahi**

The capitals utilised for everyday livelihoods of villagers in Ban Nahi and Ban Moua Khay are very similar. Data suggest that no individual from these villages is completely autonomous in making his/her livelihood. Instead the community and government officials repeatedly mentioned that the *family unit* is responsible for their livelihoods. The basis of every livelihood is the family unit or household. A household is also an economic unit. However, it is slightly different from a family unit, because people who live in a household and share these capitals may not necessarily be part of a family unit. A family unity in this context refers to family-relative relationships. People who mine as a family unit may comprise of an aunt, a sister, a brother's wife or a cousin. A household unit in this ASM mining context refers to those people who live in the same house and work together to make a livelihood.

All household interviews revealed that they utilised all possible assets in order to make their living. Therefore, the presence of capitals is not so much different between the two villages. The difference, however, is between the individual households. As mentioned earlier the major differences between villages are the amount of financial capital available and the physical capital dimension. Basically, villagers in Ban Moua Khay have, on an average, double the income of the villagers in Ban Nahi. In addition, the state and amount of physical capital, as in houses, vehicles, motorbikes, machinery is double that of in Ban Moua Khay. It is very interesting to notice both villages have more or less equal natural capitals, and a slightly different level of human and social capitals. Tables 11 and 12 are a summary of the three different household wealth categories (well-off, medium-off and worse-off) in Ban Moua Khay and Ban Nahi.



**Table 11: Comparison of Capitals of Three Types of Households in Ban Moua Khay  
(Husband and Wife)**

	<b>Well-off</b>		<b>Medium-off</b>		<b>Worse-off</b>	
<b>General Information</b>						
<b>Type of miner (occupation)</b>	Truck driver	Shopkeeper	SSM	SSM	AM	AM
<b>Member of political party</b>	Member of village authority	Village Women Union	None	None	None	None
<b>Human Capital</b>						
<b>Respondent name, age</b>	Mr Khamphan 45	Mrs Khunsy 39	Mr Boualor 52	Mrs Khambay 60	Mr Sane 39	Mr Xay 35
<b>Education</b>	Secondary	Primary	Secondary	Primary	Primary	Primary
<b>Time spent in hh work in a day</b>	Very little	Have relative do the house work	4 hrs	6 hrs	6 hrs	6 hrs
<b>No. Children and ages</b>	3		5		6	
<b>Financial Capital</b>						
<b>Main income source</b>	Mineral Transportation	Sell goods from her shop	House sitting	Nanny	Artisanal miner	Artisanal miner
<b>Other income</b>	Construction material supplier	Construction material supplier	Money from children	Money from children	None	None
<b>Total monthly earning (in KIP)</b>	12 million	8 million	600,000	600,000	150–300,00	150–300,00
<b>Saving</b>	6 million	6 million	None	None	None	None
<b>Debt</b>	no	no	no	no	Yes	Yes
<b>Income trend</b>	Stable	Increase in dry season, decrease in rainy season	A bit more in rainy season	A bit more in rainy season	A bit more in rainy season	A bit more in rainy season
<b>Physical Capital</b>						
<b>Type of house</b>	Good concrete/wooden house		Good wooden house		Poor condition wooden house	
<b>Household Assets</b>	three truck, one car, mini-mark shop, motorbikes, two houses,		one house, one motor bike, two caws, 20 ducks, 30 chickens		One house, one motorbike,	
<b>Natural Capital</b>						
<b>Rice field/ land rights</b>	Housing plot	Housing plot	Housing plot	Housing plot	Housing plot	Housing plot
<b>Trees</b>	Yes	Yes	Yes	No	Yes	Yes
<b>Water</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>NTPP</b>	No need to go	No need to go	No need to go	No need to go	Yes	Yes
<b>Wild animal</b>	Never hunt	Never hunt	Never hunt	Never hunt	Never hunt	Never hunt
<b>Fish</b>	Never fish	Never fish	Never fish	Never fish	Never fish	Never fish
<b>Social Capital</b>						
<b>Direct family (first line)</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Indirect family and friends</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Phi Nong</b>	Yes	Yes	Yes	Yes	Yes	Yes

Source: Household interview held in May 2010.

**Table 12: Comparison of Capital of Three Types of Households in Ban Nahi (Husband and Wife)**

	Well-off		Medium-off		Worse-off	
<b>General Information</b>						
Type of miner (occupation)	AM	AM	AM	AM	AM	AM
Member of political party	Deputy chief of village	None	Police village	None	None	None
<b>Human Capital</b>						
Respondent name, age (yrs)	Mr Keola 54	Mrs Sonchan 48	Mr Lar 39	Mrs Chay 34	Mr Noy 26	Mrs Ving 26
Education	Secondary	Primary	Primary	Illiterate	Illiterate	Illiterate
Time spent in hh work in a day	4 hrs	6 hrs	4 hrs	6 hrs	6 hrs.	6 hrs
No. Children and ages	7		6		2	
<b>Financial Capital</b>						
Main income source	Labourer	AM	AM	AM	AM	AM
Other income	None	None	None	None	None	None
Total earning (in KIP)	500,000	300,000	150–300,000	150,000–300,000	150,000–300,000	150,000–300,000
Saving	25–50,000	None	None	None	None	None
Debt	Yes	Yes	Yes	Yes	Yes	Yes
Income trend	More in rainy season	More in rainy season	More in rainy season	More in rainy season	More in rainy season	More in rainy season
<b>Physical Capital</b>						
Type of house	Good concrete or Good wooden house		Poor wooden house		Poor condition wooden house	
Household Assets	One motorbike, one house		One motorbike, one house		One house, paddy land enough for 1 month rice for h.h. (70–80 kg)	
<b>Natural Capital</b>						
Rice field/ land rights	No	No	No	No	No	No
Trees	Yes	Yes	Yes	Yes	Yes	Yes
Water	Yes	Yes	Yes	Yes	Yes	Yes
NTFP	Yes	Yes	Yes	Yes	Yes	Yes
Wild animal	Never hunt	Never hunt	Never hunt	Never hunt	Never hunt	Never hunt
Fish	Yes	Yes	Yes	Yes	Yes	Yes
<b>Social Capital</b>						
Direct family (first line)	Yes	Yes	Yes	Yes	Yes	Yes
Indirect family and friends	Yes	Yes	Yes	Yes	Yes	Yes
Phi Nong	Yes	Yes	Yes	Yes	Yes	Yes

Source: Household interview held in May 2010.

Data suggest that the economic status of households depends on the nature of involvement in the mining sector. It is interesting to see that in both villages the households which are relying completely on AM fall in the category of worse-off. Data show that the medium category household living in Ban Moua Khay works as small scale miners and has about twice the amount of income as the medium category household in Ban Nahi that practices AM. Data reveals a relatively higher income from the well-off category in Ban Moua Khay, where both the husband and wife are not engaged in mining activities directly, but are engaged in businesses as a truck

diver and a shopkeeper. Their monthly net income mounts to 20 million KIP, whereas the well-off household income in Ban Nahi reaches only 800,000 KIP.

#### **Inset 7: Grandma Seng**



Grandma Seng was born in Ban Nahi in 1935 and has lived there all her life. She remembers being a farmer all her life. Before she married at the age of 15, she cultivated both lowland paddy and upland rice. Three years after her marriage she started working as a labourer for the French company, bagging the ore or carrying it from the shaft well to the bagging place. It is whilst working as a day labourer, Grandma Seng had two daughters. She lost her work with the French company in 1975 because the factory was shut down

for a while. Then it was taken over by the government, but when it restarted, she did not get her job back. Then she started to work as an artisanal miner until the age of 74. Grandma stopped being a miner only last year, because she could not dig, carry and pan the ore anymore. She told us that her muscles ached each time she worked, therefore, she stopped.

One of her daughters works in Thailand as a hairstylist and the other works in Vientiane as a cleaner. Both daughters send money to her to buy daily necessities such as rice, clothes and to look after her 12-year-old grandson.

Today, after working for almost 35 years in the AM, she has no assets. Grandma Seng does not have any money, nor any vehicles or any animals. She only has a small plot of land with her ramshackle wooden house on it. Nevertheless she has to take care of her grandson who lives with her. On the day of the interview—the same as many other days—she has only rice to eat. There are no toppings such as meat, fish or vegetables to enrich her diet. She was pleased when we shared our lunch with her.

In addition, the income gap from the three households in Ban Moua Khay is very large; meanwhile the income gap is only slightly different in Ban Nahi. Data shows that wealth is disproportionately distributed in Ban Moua Khay and more equally distributed in Ban Nahi.

## **4.2 Entitlements of women in ASM**

Since ASM is the most important source of income for the majority of households in Phontiu, it is important to know who has what kind of rights related to that natural resources. Rights can be differentiated as that of access, withdrawal, management, exclusion and alienation of the natural

resources. These rights can be held either privately by individual woman or man, or can be held communally by all members of a particular community.

After analysing the main capital affected in ASM it can be concluded that there are three types of capital used and one gained: (i) social capital; (ii) natural capital; (iii) human capital, which are used and (iv) financial capital which is received in return. From the analysis of the rights to resources it becomes clear that most of the rights rest with the women (Table 13). Especially on the dimension of financial capital it can be seen that women have all the rights. Ostrom and Schlager (1992) give the following definition for the bundles of rights: (i) access — the rights to enter a defined physical property; (ii) withdrawal — the rights to obtain the benefits from that property by taking out some of the flow; (iii) management — the rights to regulate use patterns, thus, transforming the resource and potentially altering the stream of benefits from that resource. Management rights also provide the ability to define access or withdrawal rights; (iv) exclusion—the rights to determine who will (and will not) have access to the resource; and (v) alienation—the rights to sell, lease or bequest rights to the resource.

**Table 13: Privately-held Rights to ASM by Capital Divided by Gender**

Rights	Access		Withdrawing		Managing		Excluding		Alienation	
	M	W	M	W	M	W	M	W	M	W
<i>Capital</i>										
<b>Social Capital</b>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Human Capital</b>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Natural Capital</b>	✓	✓	✓	✓	✓	✓				
<b>Financial Capital</b>	✓	✓	✓	✓		✓		✓		✓

Source: Household interview held in May 2010.

## 5. RISK AND VULNERABILITY OF SELECTED HOUSEHOLDS

The livelihood model and actual status of capital are not independent but are connected contextually. The livelihood framework (Annex C) identifies two variables, one being vulnerability. In this context, vulnerability belongs to the household. The vulnerability can be health risks, hazards, seasonality, shocks or anything which can affect the availability or accessibility of capital by household. Some groups are more prone to damage, loss and suffering in the context of differing hazards. Key variables explaining variations of impact include class (which includes differences in wealth), occupation, caste, ethnicity, gender, disability and health status, age and immigration status (whether ‘legal’ or ‘illegal’), and the nature and extent of social networks. A livelihood can be sustainable if the household has the capability to cope with these hazards, seasonality or shocks. Blaikie et al. (1994) define vulnerability as:

[Vulnerabilities are]... the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard (an extreme natural event or process). It involves a combination of factors that determine the degree to which someone's life, livelihood, property and other assets are put at risk by a discrete and identifiable event (or series or 'cascade' of such events) in nature and in society.

The Pressure and Release Model (Annex D) tool developed by Blaikie et al. (1994) to assess the vulnerability and (disaster) risk women and men are exposed to, provides a picture of the possible reasons and pressures for generating unsafe conditions can be traced. Yet, its shortcoming is that the gender dimension, which is central to this case study, is not explicit as one of the variables. This study incorporates gender as a specific variable into the model with the assumption that the risks for women and men are in most cases dissimilar due to their different gender roles.

There is not so much difference in vulnerability between the stratified households in the two villages under study, but, there is a big difference between the different stratifications. The worse-off households in both villages, which completely rely on AM, are most vulnerable. The well-off households, which rely for at least a part of their income from the ASM mining sector, are least vulnerable. The vulnerability for men and women is mostly the same since households form a single economic unit. Interviews made it clear that women are more vulnerable from health risks and workload conditions than men.

There are more women involved in ASM activities than men in Lao PDR. Although men often help in carrying out the heavy duties involving physical strength, women spend longer hours working on similar tasks than the men, thus, are both prone to the physical vulnerability of the work. Men use a lot of their arm and back muscles while digging the hard soil, meanwhile women involved in AM squat in the water the entire day long to pan the ore.

Tin prices vary year-by-year and even day-by-day, depending on the global situation. This means that every day the miners are looking for the best price for selling their product. For reasons well beyond their control, women ASM miners may or may not receive a good price for

their labour. These instabilities decrease their capabilities to fulfil their livelihood needs and increase their vulnerabilities.

Vulnerability of the miners is directly related to the amount and quality of tin they can produce daily as the miners work on a freelance basis.. For example, the artisanal miner can produce about 0.5 kg tin ore on a bad day. On a good day he/she can produce 1.5 kg of ore of the same quality, which increases the daily income three times. A same pattern of inconsistency of production is seen in all forms of SSM. With a lower income, the household will have more difficulties purchasing items needed for their livelihoods and therefore the vulnerability increases and vice versa with a higher daily production the vulnerability decreases.

Seasonal flooding and drought affects the vulnerability of ASM households. However, the study revealed that each season the community copes with different shocks and, since men and women operate as an economic unit, the vulnerability is equally divided. In the dry season, they cope not only with the absence of water needed to grow upland and paddy rice, but also restricts panning activities since both artisanal and small scale miners require a lot of water to carry out this process. In the rainy season, although it is easier for households to operate mining activities due to the sufficient inflow of water, it is difficult for the villagers to mobilize because every year the Phathen valley is inundated for three to four months. Therefore, while their vulnerability decreases for one aspect, it increases for other aspects.

An unknown disease killed all livestock in the area in 1996 and made all households more vulnerable due to the decrease in financial capital and food availability, as interviews revealed. There is not much livestock present in the villages nowadays. Interviews made clear that in the past there was an abundance of livestock. Large livestock is valuable; small livestock is more commonly used for consumption and daily small cash income supplementary. The villagers have never been able to recover the number of domestic animals and cattle after this incident.

Another factor which increased the vulnerability of households in the Phontiu area is the degradation of the paddy field due to unsound mining practices since the time of Lao–Russia Cooperation between 1977 and 1994. The Russians used big machines to dig mountains which

led to massive movements of earth and sedimentation runoff into rice fields, creeks, stream and rivers. Over years, Phathen valley became one flat area fuelled with red earth; the paddy fields are now polluted, hence, do not produce as much rice as before. Men and women have been equally hit in terms of vulnerability. Earlier, many households had paddy rice fields. This has made all households involved in paddy farming more vulnerable and dependent on AM completely.

#### **Inset 8: The Story of Sao Noy**



Mrs. Noy was born in Ban Phontiu (5 km away) and married to a man from Ban Muay Khay. She moved into this village as a daughter in-law in 1966 of a farmer family. She has three children, a son and two daughters. Both of her baby girls were taken by malaria and did not survive past 5 years of age. She and her husband live in the village as artisanal miners because their land was filled with sedimentation and mud from mining. Unfortunately, her husband died

14 years ago, and left nothing but a son to raise. Her son, who is now 37 years old, married a woman from Ban Phonetiu 7 years ago and moved in with her, leaving Mrs. Noy on her own. He has two children, she said “*my son barely can take care of his family because he also has no land and the forest is empty...even his house is filled with mud on the ground*”.

Living on her own for many years, with no land and poor forest products, Mrs. Noy relies completely on the Company’s discharge pond. Each day from 10 am to 5 pm, she collects Company’s residue and pans for tin. She earned about 6000 to 25,000 kip, barely allowed her to live by. On the day of the interview, she said, “*I would invite you to my house for glass of water, but my balcony is broken, it cannot hold two people. My house has also fallen into pieces, I am not able to repair since my husband died...all my money goes for rice*”.



Her son’s visit is not as frequent as she wants. She said, she is always looking forward for his visit for he often brings with him some rice and sweets.

She said, “*My rice field is not far from here, but I cannot plant rice, even old growth trees die because of the thick muddy water that runs through all year*”.



## 6. COPING STRATEGIES OF WOMEN AND MEN

Within the livelihood framework *three* broad clusters of livelihood strategies can be identified: agricultural intensification or extension; livelihood diversification; and migration. This case study identified a *fourth* cluster of strategies, which can be described as a transition from agricultural to mineral extraction and processing.

In the past all households in Phontiu area had more or less similar livelihood strategies and they coped with shocks and stresses in very similar ways. Villagers were farmers who cultivated paddy rice fields and gardens. Then, only a few households diversified from agricultural production and gained significant cash incomes from alternative sources; service provision, small shops, working for the government and so on were the main ‘non-farming’ sources of jobs and incomes. After the introduction of mining by the French, many households started diversifying from their agricultural-based livelihoods. They complemented their rice harvest and home-garden production with cash income generated mainly by men who started to work as labourers for the French company. Since cash incomes promised them with easy access to material household needs combining with the steadily and slowly degraded agricultural lands, many farmers transformed their agriculture livelihood to AM livelihood.

This transition from an agricultural-based society to a society where people work for cash income took a dramatic turn with land degradation caused by the Lao–Russia mining era. As mentioned earlier, our field surveys suggest that the use of heavy machinery to extract tin ore proved to be the most harmful factor to agricultural land and led to environmental degradation. As a consequence the villagers could not cultivate paddy or grow any crops in their home gardens. This necessitated a dramatic change in the livelihood strategy of most households in the Phontiu valley. Our informants also mentioned that the majority of households adapted to this change by engaging themselves almost fully in mineral extraction. The seasonal and daily calendars in Section 1 show that this process of transformation had a major effect on the women who are now working full-time in household activities as well as work either as freelance artisanal miner, small scale miner or simply as a labourer.

## **6.1 Livelihood coping sub-strategies and the importance of social capital**

Looking in detail at the coping strategies, data reveals that the households have come to depend heavily on cash income from tin ores. Nonetheless, the data also reveal that financial gains from selling tin is complemented by minor or non-timber forest products (NTFP), vegetables and other crops from the home garden and small amounts of upland rice. This fact indicates that the artisanal tin mining households do not have one single strategy or use one type of capital in sustaining their livelihoods but use a range of coping 'sub-strategies' for survival.

Every sub-strategy combines different capitals in multiple combinations for making a living. In the most rudimentary form households only use two types of capital to sustain their livelihood. However, data suggests that in most cases four or five sub-strategies are simultaneously used for sustaining livelihood. For instance, when households use only two capitals they are more likely to provide male labour to the Company or to villagers of Ban Moua Khay and the women invest in their households by preparing food, cleaning, washing and taking care of their children. In this case, they utilise only their human capital and receive financial capital in return. Nonetheless, data reveal that in most cases women and/or men also work some months each year at their poor quality agricultural lands or in their gardens, spent time collecting NTFP, which in turn will give them some food like vegetables or bamboo. The women and children sometimes sell these products in the market or besides the road as an alternative source of income.

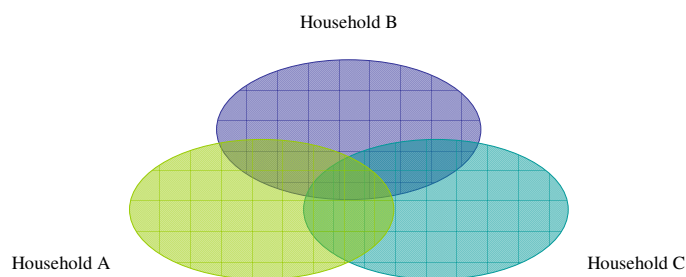
Social capital was mentioned as the most important capital for sustaining the livelihoods of the communities. Households stressed the importance of the social network, connections, families or *phi nong*,<sup>12</sup> which they use for reciprocity purposes. In non-market economies

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<sup>12</sup> *Phi nong* are people who have a close relation to one (particular person in the) household. The basis of this relation can be friendship, blood relation or close business associate or even a combination of all the above, but there is always a strong sense of reciprocity amongst *phi nong*.

reciprocity was a way of defining people's informal exchange of goods and labour, i.e., people's informal economic systems. Nowadays with the introduction of market economy money also becomes an asset which can be exchanged or shared.

Villagers explain that for their livelihood they rely mostly on their social capital. For example, if Household A needs money it will go to Household B or when it needs rice it will go to Household C (as shown in Figure 11). They know that these households have a surplus of that particular capital and they can provide or offer them other capital in exchange. One such system, where household rely on their social capital is for ASM purposes.



**Figure 11: Sharing of Capitals by Different Households to Sustain their Livelihoods**

The natural resource (tin ores), according to the villagers, is the second-most important capital in the household livelihoods, because this brings most of the cash or the financial capital that is so critically needed to fulfill the household needs. In case of ASM, different households share human and social capital with each other in order to extract natural capital and gain financial capital. One mining pit is often worked at by five to eight persons and, in most cases, this work combines labour from at least two or three different households. After all the work is done, every person who worked on that particular pit gets his or her equal share from selling the tin.

### **6.1.1 Coping strategies and vulnerability for different categories of households**

As mentioned in Section 5, the worse-off households in Ban Moua Khay and Ban Nahi are extremely vulnerable to shocks, stress and changes from outside or inside. For these households, mining is the only option for making a livelihood. The risk of losing their livelihood after a shock or stress is very high. Everybody knows and agrees that extracting tin resources is time-bound. At a some time in the near future tin resources in the Phontiu area will be completely exploited and depleted and then households have to find other ways of making their living and coping with their vulnerability. However, the manager of the Company thinks this is some way off (see footnote 4).

As Tables 10 and 11 illustrate, all miners from Ban Nahi have significant amounts of debt, which arises from their need to purchase rice, which is the staple food. Despite Ban Moua Khay is on an average twice as rich as Ban Nahi, the worse-off households from both villages which have artisanal miners are in debt because of the purchase of rice. This means that when the tin runs out all of these households will not be able to sustain their livelihood with resources from within their own capitals. If any change occurs that interferes with their access to and availability of these natural capitals such as the depletion of tin resources and NTFP, these household are most likely be the first to be exposed to vulnerable situations like having greater debt or health risk.

It is most likely that the well-off and medium households from Ban Moua Khay are capable of dealing with stress, shocks or changes imposed by external agents or those that have occurred internally. The reason is because these households have diversified income, which means their income does not solely rely on the tin mining. In addition, both these groups have not only more financial and physical capital, but also, as data suggest, that the ‘quality’ of their social capital is better than the other households. The fact that these households are able to send their children to good schools and expect substantial financial contributions from their children clearly illustrates that they are not subject to vulnerability.

## 7. RECOMMENDATIONS

### 7.1 General

- **Address legal issues:** Issues of legitimacy are currently poorly addressed. There is a need to accommodate ASM within the mining legislation to provide legitimacy to the ASM communities. Such legitimacy, for example, may improve women's physical security;
- **Build capacity** of government personnel at different levels: Connected to this is the need to build capacity of government personnel to recognise the livelihood needs of ASM communities, and particularly the significant roles played by women in securing the livelihood. This would include gender-training and exposure to the ideals of gender equality embodied in Millennium Development Goals;
- **Tackle environmental degradation:** There is a burning need to make the larger companies more accountable for causing environmental degradation, and train local DoM personnel to identify the downstream livelihood effects of such degradation (the 'push' factor). Women suffer disproportionately from such degradation – water sources are now farther away, rice farming is minimal;
- **Pay attention to gender-specific needs:** Although the ASM families work together, men and women are bound by different social norms in Laos, and women invariably bear the greatest share of the burdens of reproductive chores. Consequently, the needs and interests of men and women are often different. Provision of simple services such as medical or health centres, and facilities such as water supply and sanitation would improve women's well-being. This would require gender-sensitisation of stakeholders integrated in and conducted through the capacity-building process. Gender-sensitisation of stakeholders would also mean that women are hired as monthly wage staff in the tin companies that are operating around the area;
- **Improve production efficiency and quality of life of ASM women:** Since women are actively involved in almost all steps in the production process of tin, they expressed the

need for more efficient technology and tools. Provision of better tools and more efficient machines, however, requires more financial capital that is currently available within the community. A large number of women in ASM are in debt to secure food for their families. Provision of credit could allow them to navigate through family crises more efficiently and improve their quality of life;

- **Exploitation by tin companies:** The price of tin is determined by the Companies under the current marketing arrangement. From a monopsony (only one buyer), the form of the market has recently changed into an oligopsony (only a few buyers). In this structure, the actions of the buyers grossly affect the well-being of the tin producers. Generally women bring the tin for sale to the companies. Being illiterate and poor, ASM women have no control over the assessment of percentage tin content, and the price at which the tin is purchased by the companies;
- **Harness the economies of scale:** The exploitation can be addressed through the harnessing of scale economy in production, through the mobilisation of locally available social and financial capital, political and external support to establish a marketing co-operative. Small individual producer families can then sell their produce to this cooperative which might be able to have more bargaining power to elicit better prices from the tin companies;
- **Alternative income sources:** Although the assignment is focused on the improvement of livelihoods of women *in* ASM, it might also be judicious to plan for alternative income sources, and train women in particular to generate incomes from other sources. Establishment of a credit system, however, could be difficult under the current lack of legal recognition and lack of land tenure.

### 7.1.1 Policy and Institutional Strengthening

- Currently, ASM is poorly accommodated in the mining legislation. This reflects the poor knowledge about the labour and social issues within the sector. In the first step, there should be more attention on this sector and a database should be created to

show more detail information on ASM communities. This database should be widely available;

- Secondly, ASM should be accommodated into the draft Energy and Mining Law (or through the creation of a stand alone ASM regulation);
- Improve capacity-building of the mining sector in central, provincial, district and *kumban* levels. The capacity development may involve:
  - building knowledge on regulations and laws, and
  - building deeper understanding of the immediate and long-term impacts of Artisanal and SSM.

### **7.1.2 Social and Economic Development**

- Introduce a bank-based (micro or macro) credit system for women;
- Introduce a small-saving programme to relieve women from debt burden;
- Conduct further in-depth village-level analyses to seek alternative livelihood strategies in consultation with village women;
- Implement an alternative livelihood development plan together with selected Companies. This can be included in the mining development plan when the government plans to grant CA to a company;
- Conduct an in-depth research on property rights to natural resources in the Phontiu area.

### **7.1.3 Social and Environmental Safeguards**

- Introduce social safeguards similar to the ones used in large-scale hydro and mining projects;
- Regular monitoring and controlling of water quality and quantity from external agency, not the government;
- Regular monitoring and controlling of soil quality and quantity from external agency, not the government;

- Produce guidelines on safety and environmental health for companies operating in Pontiu area (maybe on a national level);
- Produce IEC materials and disseminate safety and environmental health principles.

#### **7.1.4 Gender Action Plan**

- Conduct baseline study for Gender and ASM in Lao PDR;
- Introduce Women Miners Association;
- Development proper Gender Action Plan.

#### **7.1.5 Health and Safety Awareness Programmes**

- Health safety awareness programs related to ASM;
- Health and hygiene promotion for ASM miners;
- Maternal health and family planning.

### ***7.2 Company***

#### **7.2.1 Laws and Regulations**

- Adopt and implement mine regulations and laws.

#### **7.2.2 Social and Economic Development**

- Adopt and comply with the benefit-sharing approaches;
- Invest in the community by implementing alternative livelihood development plans together with the government;
- Invest in up-scaling human capital of villagers and labourers.

#### **7.2.3 Social and Environmental Safeguards**

- Ensure the compliance by tin mining companies of safety and environmental health guidelines (including proper drainage of panning water into tailing dams, adequate



- working conditions for staff, introducing safety measures on large equipment, train company staff in first aid);
- Ensure the compliance by tin mining companies of with social safeguards (compensate villagers for losses of cultivation land, livestock, train villagers in alternative livelihoods, absorb them where possible into the company's labour force, benefit sharing, allow them to produce crops and livestock for provisioning the company);
  - Ensure that regular water and soil quality and quantity monitoring is undertaken by the government.

## **7.3 Community**

### **7.3.1 Economic Development**

- Support women's Self-Help Groups to mobilize human capital in income generating activities other than ASM;
- Support women's micro-credit programs for specific groups;
- Support women's small saving groups;
- Encourage and support the representation of women in local committees to enhance their voice;
- Support and build capacity of local women's organizations;
- Organize Women's Tin Cooperative;
- Place a mechanism to elect women as leaders amongst the villagers in negotiations with the companies at the village level;
- Adopt savings and investment scheme for reaching long term livelihood goals in collaboration with the Lao Women's Union at the village level. Such credit-saving scheme is already been implemented by many NGOs and the Lao Women's Union together with poverty reduction programmes.

### **7.3.2 Social/Livelihoods Development**

- Organise training courses in alternative livelihood sources in order to diversify their incomes;
- Training for fish farming has the potential to provide fish to Ban Moua Khay and other local SSM companies;
- Explore the possibilities of cash crop farming for products such as corn, cassava, bean, cucumber, green vegetables, etc.

### **7.3.3 Environmental Health and Safety**

- Targeted awareness programs on health and safety to selected women miners;
- Training on the effect of environment degradation (causes and consequences of ASM on environment);
- Occupational health and safety awareness programs related to ASM, use of simple gears such as gloves, shoes and helmet;
- Health and hygiene promotion for women and men ASM miners;
- Maternal health and family planning.

# Annexures

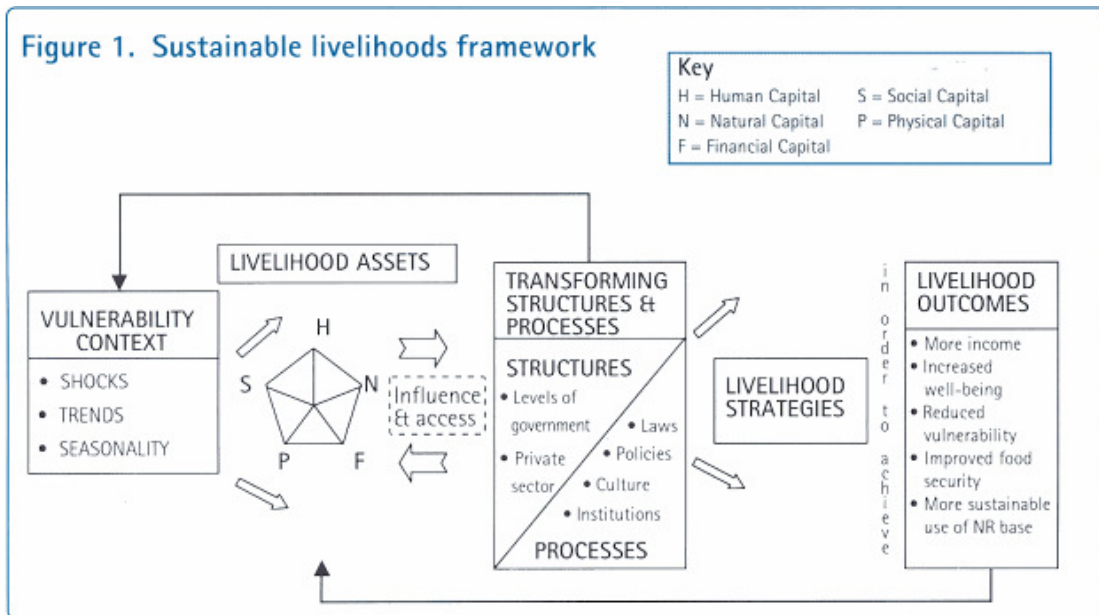
## Annex A: Map of Lao PDR



Source: Messerli et al. (2008).

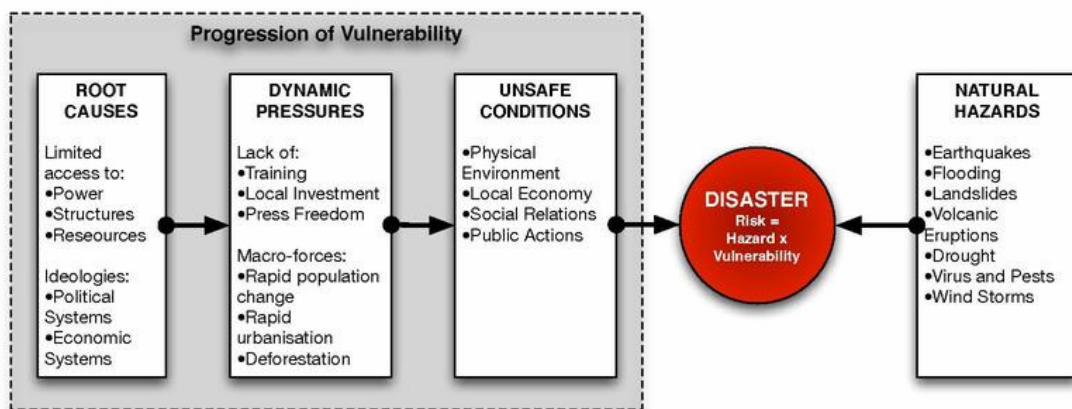


## Annex C: The Livelihood Framework



Source: DFID's sustainable livelihoods framework (Ashley and Carney 1999: 47)

## Annex D: The PAR Model



Source: Blaikie et al. (1994).

## References

Blaikie, Piers, Terry Cannon, Ian Davis and Ben Wisner. (1994) *At risk: natural hazards, people's vulnerability, and disasters*, 1st ed. London: Routledge.

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