

Chapter 3

MINING SECTOR IN LAOS

*Phouphet Kyophilvong**

Abstract

Laos is a Least Developed Country (LDC) with GDP per capita of US\$580 in 2007. 34 percent of the population lives below the poverty line. On the other hand, Laos is ranked as one of the most resource-rich countries in Asia; more than 570 mineral deposits have been identified, including gold, copper, zinc and lead. In order to use this mining potential to promote economic development, the Lao government allows Foreign Direct Investment (FDI) in this sector. Although Laos has abundant mining resources, there are some constraints in terms of geological information, laws, and the licensing process. In addition, institutional capacity is weak compared to neighboring countries. Therefore, the main objectives of this paper are to give an overview of policy framework, the current situation, and issues related to FDI in the mining sector, and to identify the challenges and opportunities awaiting Japanese investors in the mining sector. Japanese investors face the same challenges as investors from other countries, but they also have significant opportunities to benefit from Laos' high potential for mining deposits and prospects.

INTRODUCTION

Laos¹ is a Least Developed Country (LDC²) with GDP per capita of US\$580 in 2007. 34 percent of the population lives below the poverty line (NSC, 2003). It is basically an

* Associate Professor at the Faculty of Economics and Business Management, National University of Laos. Comments should be send to: Mr. Phouphet Kyophilavong, Faculty of Economics and Business Management, National University of Laos. P.O.BOX 7322, Vientiane, Laos, Tel: +(856) 21-770067, Fax: +(856) 21-312562, E-mail: Phouphet20007@hotmail.com

¹ Laos, located in Southeast Asia, is a landlocked country with an area of 236,800 sq Km and a population of 6 million (2008). Laos shares a border with 5 countries: China to the north, Thailand and Myanmar to the west, and Cambodia and Vietnam to the east.

² According to UNDP (2007/2008), in terms of the human development index, Laos was ranked 130th out of 177 countries.

agricultural country; of the nation's total GDP of US\$ 4,053 million in 2007, the agricultural sector accounted for 40.3 %, the industry sector for 34.1 % and the service sector for 25.6 % (World Bank, 2008). Laos introduced a market mechanism, the New Economic Mechanism³ (NEM), in 1986 and joined the ASEAN Free Trade Area (AFTA) in 1998; it plans to join the World Trade Organization (WTO) by 2010.⁴ The Lao economy has been gaining momentum and the incidence of poverty has declined. One of the most important factors influencing the current high economic growth is the contribution of the mining and hydropower sectors (World Bank, 2008).

Recently, Laos was ranked as one of the most resource-rich countries in Asia. More than 570 mineral deposits have been identified, including gold, copper, zinc and lead (DOG, 2008). In addition, Laos has also traditionally been known for its substantial hydropower potential, which is estimated at 26,000 MW (excluding mainstream Mekong); only 9% of this capacity was being used in 2004 (Pholsena and Phonekeo, 2004). FDI has rapidly increased since 2004 (correctly speaking since 2002), mainly because foreign mining companies began to increase production in the mining sector and the price of minerals increased during this period. In 2007, the actual FDI inflows were estimated at about US\$950 million, which showed an increase by 60% from 2006. About 90% of FDI value is related to the resource industry (World Bank, 2008).

Despite the massive impact of mining-related FDI on the Lao economy, there has been little research done on issues related to mining investment in Laos.⁵ Therefore,

³ After the 1975 communist revolution the Lao PDR set up a centrally-planned economy. Under this economic system, domestic prices, foreign trade, and trade among provinces were strictly controlled by the State. Since 1986, Laos has implemented various reforms under NEM, which includes the following vital components: (a) promotion of private production through improved incentives; (b) institutional infrastructure to improve market economy operations; (c) the strengthening of Lao comparative advantages through trade liberalization and future specialization; and (d) the establishment of price stability through macroeconomic policy measures (Ljunggren, 1993).

⁴ Laos applied for WTO membership in 1997; by February 1998, an official observer statute had been granted and a WTO Working Party for Laos' accession had been established. There are many areas that still require improvement, such as laws related to trade, including standards, intellectual property, customs and enterprises.

⁵ As one of a few exceptions, Warr (2006) used a Computable General Equilibrium (CGE) model – 1-2-3 model framework with multi-households to investigate Dutch Disease in Laos. Kyophilavong and Toyoda (2008) estimated the impact of foreign capital inflows in the resource sectors on the Lao economy using a macro-econometric approach.

the main objectives of this paper are to give an overview of the policy framework, the current situation, and issues related to FDI in the mining sector, and to identify the challenges and opportunities awaiting Japanese investors in the mining sector. The scope of this study focuses on foreign investment in mining; as Japan is a developed country with sophisticated technology and experience in mining development, Japan was chosen as case study.

The data was obtained from the Department of Mines (DOM) and the Investment Promotion Department (IPD), which base their figures on registered capital and projects.⁶

This paper is organized as follows. Section 2 describes the current macroeconomic conditions in Laos. Section 3 reviews the policies, legal framework and institutional capacity in the mining sector. Section 4 gives a general overview of FDI in Laos. Section 5 describes potential mining resources and constraints. Section 6 explains the procedure followed to obtain a mining license. Section 7 considers FDI in the mining sector specifically and Section 8 presents the opportunities and challenge awaiting Japanese investors in particular. This paper concludes with Section 9.

1. MACROECONOMIC SITUATION AND CONTRIBUTIONS OF THE MINING SECTOR

Since introducing the New Economic Mechanism (NEM) in 1986,⁷ Laos has been in transition from a centrally planned economy to a more market-oriented economy. As a result, except during the Asia Financial Crisis of the 1990s, Laos has been achieving high rates of economic growth with low inflation. The average economic growth was about 6.53 % during 2001-2006, which increased from 6.18 % during 1996-2000.⁸ The average inflation rate was maintained at one digit during 2001-2006, which is a

⁶ It is important to note that data from IPD is quite different from DOM. It would be more suitable to have data from MD for analysis, but that data about investment capital is not available for this study.

⁷ After establishing the Lao People's Democratic Republic in 1975, the Lao government adopted a planned economy, following other socialist countries.

⁸ The engine of growth during this period was capita inflows of Foreign Direct Investment (FDI) in the mining and hydropower sectors and mining production and exports. For a more detailed discussion of the impact of FDI in the mining and hydropower sectors on the Lao economy see Kyophilavong and Toyoda (2008).

significant decline from the average rate of 57 % during 1996-2000. The exchange rate was also stable during 2001-2006 (Table 1). Of the nation's total GDP of US\$ 4,053 million in 2007, the agricultural sector accounted for 40.3 %, the industry sector for 34.1 % and the services sector for 25.6 % (World Bank, 2008). However, since 2003, the industry sector has grown more than 10%, which has caused the agricultural share of GDP to decline.

Table 1. Key Macroeconomic Indicators

Macroeconomic indicators	2001-2006	1996-2000	1990-1995
Population (mil. person)*	5.46	4.86	4.40
Population growth (annual %)*	2.12	2.06	2.52
GDP (current mil. US\$) **	2,416	1,618	1,276
GDP growth (annual %)	6.53	6.18	6.46
GDP per capita (constant 2000 US\$) **	379	307	248
GDP per capita growth (annual %)	4.04	3.68	3.80
Money supply (M2) annual change, percent*	21.14	65.99	30.92
M2 percent of GDP at current market prices*	18.42	16.90	10.87
Inflation* -CPI (increase %)	9.73	57.00	15.27
Trade Deficit (mil. US\$)***	-1319.47	-1316.07	-1049.50
Trade Deficit (mil. US\$)/GDP (%)	-9.24	-16.06	-13.14
Foreign reserve (mil. US\$)***	220	127	48
External debt (mil. US\$) *	2,640	2,410	1,965
External debt (mil. US\$) /GDP (%)	115	152	161
Budget deficit (including grants)(mil. US\$)***	-104	-58	-100
Budget deficit (including grants)/GDP (%)	-4.42	-3.60	-7.61
Budget deficit (exclude grants)/GDP (%)	-6.29	-7.58	-11.21
Official Rate (kip/US\$) official rate***	10,163	4,094	727
Official Rate (change, %)	4.52	67.88	5.53

Sources: * Asian Development Bank (ADB), Key Indicators for Asia and the Pacific 2008.

** World Bank, *World Development Indicators* CD-ROM (2005).

*** International Monetary Fund, *International Financial Statistics* CD-ROM August 2008.

Even though Laos has been maintaining high economic growth with low inflation and a stable exchange rate, it still has serious macroeconomic issues to overcome. Firstly, Laos is basically facing chronic twin deficits in both government spending and international trade. The average ratio of budget deficit to GDP was 4.4% during 2001-2006. The average ratio of current account balance deficit to GDP was 9.24 % during the same period.⁹ These deficits are mainly financed by Official Development Assistant (ODA), Foreign Direct Investment (FDI), and remittances. The fiscal issue is particularly serious in Laos. If the budget deficit continues to expand, it might cause an accelerating inflation rate and the devaluation of the kip (Lao currency), and could lead to economic instability like during the period of the Asian Financial Crisis (Okonjo et al, 1999). Secondly, there is a huge gap between savings and investment. The savings rate is low because of low average incomes—GDP per capita was about US\$580 in 2007 (World Bank, 2008)—and because financial sectors are underdeveloped. The banking sectors are occupied by the state commercial banks, which are unable to perform full banking functions.¹⁰ Thirdly, Laos is also facing a high burden of external debts. The external debt accumulation was more than 60 % of GDP in 2007. If Laos becomes too dependent upon foreign finance, especially to meet its debt obligations, this could cause a foreign debt crisis and might lead to macroeconomic instability.

Thanks to abundant natural resources, since mining development began in 2003/2004, the mining sector has made significant contributions towards Laos' economic development. The mining sector has direct and indirect impacts on the Lao economy. In terms of direct impact, there are four main routes. Firstly, the mining sector contributes to demand and supply-side GDP though increasing investment and capital stock. As increasing FDI flows to Laos, it leads to increased demand-side GDP; at the same time, the capital stocks also increase, which leads to an increase in supply-side GDP. According to estimates of the World Bank (2008), FDI in the resource sector, which includes mining and hydropower, contributed 2.5 % of the economic growth rate

⁹ It is important to note that trade data which is used for this analysis is based on data from international organizations. The Lao government claimed that the trade deficit became a surplus in 2006.

¹⁰ More details about financial issues in Laos are discussed in Kyophilavong (2008).

(7.5%) in 2007. Secondly, FDI in the mining sector also contributes to increased exports. As the domestic market is small, most FDI export their products to foreign countries, which contributes to narrow trade deficits. The trade deficit during 1996- 2000 was 16.06 % of GDP, but it was narrowed down to 9.24 % during 2001- 2006 (Table 1). Mining exports have the highest share of total exports; they accounted for 37.4 % of total exports during 2004-2006(Table 2).¹¹

Table 2. Comparison of Resource Sector in Laos with other Countries

(average 2004-2006)

Country	Resource export		Per capita GDP (in US dollars)	Commodity
	As percent of total exports	As percent of GDP		
Low-income countries				
Laos	37.4	9.1	501	Copper and gold
Mongolia	61.5	35.8	847	Copper and gold
Papua New Guinea	75.3	66.2	666	Oil, gas, copper and gold
Timor-Leste	-	109.2	353	Oil and gas
Vietnam	22.5	14.5	639	Oil and gas
High-and middle-income countries				
Australia	46.2	9	34381	-
Brunei	85.3	62	25976	-
Indonesia	23.1	6.8	1353	-
Malaysia	8.1	8.8	5126	-
Total regional average	18.5	7.3	2054	-
Low-income country average	22.9	14.7	608	-

Source: IMF (2007a).

IMF (2007), *World Economic and Financial Survey, Regional Economic Outlook, Asia and Pacific*, International Monetary Fund, Washington, DC.

¹¹ A drop in the price of copper of about 60% since July 2008, has had a negative impact on mining exports and production, and also on the Lao economy though declining tax revenues. Vientiane Time (2008) and KPL (2009).

Thirdly, as Laos faces chronic budget deficits, FDI in mining also contributes to narrowing the government budget deficit. The Lao government receives royalties and taxes from mining projects. As a result, the government budget deficit has declined from 7.58 % during 1995- 2000 to 6.29 % during 2001- 2006. Non-tax renewable resources, which include the mining sector, accounted for 17.1 % of total tax revenues in 2006/2007 (Table 3). Tax revenues from the mining sector are expected to increase when other mining projects are completed. Fourthly, as mining development requires a large amount of labor, the labor force might increase from its impact. A large mining

Table 3. General Government Operations (2000/01- 2006/07)

Revenue and grants	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
	(In billions of kip)						
Revenue and grants	2476	2683	2798	3104	3886	4962	5370
1. Revenue	2000	2324	2345	2822	3387	4266	4689
Tax	1629	1875	1928	2337	2803	3641	4086
non-renewable resources 1/	24	17	23	32	95	291	698
renewable resources 1/	51	46	45	32	93	99	103
non resource revenue	1554	1812	1860	2273	2615	3252	3285
Non-tax	372	449	417	484	584	625	602
2. Grants	476	359	453	283	499	696	681
	(in percent of GDP)						
Revenue and grants	16.3	17.7	18.4	20.4	25.6	32.7	35.3
1. Revenue	13.2	15.3	15.4	18.6	22.3	28.1	30.9
Tax	10.7	12.3	12.7	15.4	18.4	24.0	26.9
non-renewable resources 1/	0.2	0.1	0.2	0.2	0.6	1.9	4.6
renewable resources 1/	0.3	0.3	0.3	0.2	0.6	0.7	0.7
non-resource revenue	10.2	11.9	12.2	15.0	17.2	21.4	21.6
Non-tax	2.4	3.0	2.7	3.2	3.8	4.1	4.0
2. Grants	3.1	2.4	3.0	1.9	3.3	4.6	4.5
Non-tax renewable resources 1/ to Total tax (%)	1.5	0.9	1.2	1.4	3.4	8.0	17.1
Nominal GDP (in billions of kip)	15194	17726	21548	25553	29663	33612	37926

Source: IMF (2007b).

1/ Non-renewable resource: royalties and taxes from mining; renewable resource: those from hydro-power.

project (e.g. Sepon Mining Project) might generate about 1000 workers (GDC and SMEPDO, 2007).

In addition, FDI in the mining sector also indirectly contributes to economic and social development in rural areas. Firstly, mining development also contributes to infrastructure development, such as road networks and electricity connections. In addition, mining projects also provide funds for developing rural areas, such as building schools, hospitals etc. Secondly, mining projects have spillover effects on Small and Medium Enterprises (SMEs), creating enterprises which facilitate the transfer of technology and improved knowledge and skills to domestic SMEs. It generates new business for agriculture, livestock farming, and retail trade. Employment in new businesses linked to the Sepon mining project involves 35,000 to 45,000 persons. (GDC and SMEPDO, 2007). In sum, mining development has positive direct and indirect impacts on economic development in Laos.¹²

2. POLICY, LEGAL FRAMWORK, AND INSTITUTIONAL CAPACITY

2.1 Policy and legal framework

The National Development Goal is to liberate the country from the group of LDCs by the year 2020. In order to achieve this goal, the Government announced the National Growth and Poverty Eradication Strategy (NGPES) in 2004. The main strategies concerned with mining development are (i) promote industries using domestic natural resources and actively promote small and medium-sized enterprises (SMEs) and handicraft production; and (ii) develop and promote all economic sectors, particularly the private sector, including foreign direct investment (FDI), in order to expand business opportunities, placing emphasis on exported-oriented sectors that have comparative advantage. It is clear that the Lao government promotes FDI which uses

¹² Despite the positive impact of the mining sector on the Lao economy, it also has negative impacts such as Dutch Disease or the resource curse (Kyophilavong and Toyoda, 2008); Sachs and Warner, 995); Papyrakis and Gerlagh, 2004); Leite and Weidmann, 1999; Coden, 1984); Corden and Neary, 1982). In addition, mining projects also have a negative impact on the environment and human health (Moore and Luoma, 1990; Hilson, 2002; Ogola, J., Mitullah, W., Omulo, M. , 2002; Negrete, Benitez and Verbel, 2008).

domestic natural resources to enhance economic growth and eradicate poverty (GoL, 2004). In August 2008 the Government approved a strategy for developing the energy and mining sectors until 2020 (MEM, 2008). The main objectives in developing the mining sector are to:

- Promote the sustainable use of national mineral resources and use mining effectively; and to protect the environment and minimize the negative impact on the environment, society, and biodiversity.
- Make the mining sector an important revenue source for development; and to promote the mining industry to contribute to rural development and poverty eradication.
- Build infrastructure for industrialization and the eradication of poverty by 2020.

In terms of strategies, the Government has both a short-term development plan (2007 to 2010) and a long-term development plan (2011 to 2020); the main tasks of the long-term development plan are as follows:

- To promote the usage of natural minerals to maximize profits; and to promote high-technology survey systems in order to identify mining deposits, and the quantity and quality of mines.
- To promote large-scale investment in large core mining projects; and to collect data and information for building a middle-term mining development plan for medium and large projects.
- To strengthen the capacity of state-owned mining companies to be more profitable; and to strengthen the capacity of government institutions in mining activities, investment procedures, and revenue collection from the mining industry in an efficient and timely manner.
- To build human resources in the mining sector in order to respond to demand; and to cooperate with the mining sectors in foreign countries to use advanced technology and experiences; and to build controlled environmental systems in the mining sector.

In sum, the Lao government has clear goals, strategies, and plans in the mining sector, and FDI plays an important role in these strategies and plans.

There are two main sets of laws related to mining investment in Laos, investment promotion laws and mining laws. Since the NEM was introduced in 1986, Laos has continued to open its doors to foreign trade and investments by relaxing severe quantitative restrictions on imports and exports and introducing several laws. In order to promote FDI in Laos, the first investment law was adopted in 1988; the first revision of the law was conducted in 1994 and the second revision in 2004.¹³ The main characteristics of current FDI law are as follows. Firstly, 100 % FDI licenses were extended from 15 years to 50 years, and joint-venture licenses were also extended from 20 years to 50 years. Secondly, according to the foreign investment law in 1994, investors should give priority to hiring Lao people, but they could also hire skilled foreigners with permission from the concerned authorities. However, according to the foreign investment laws of 2004, investors can hire foreign employees as long as they do not constitute more than 10 % of total employees. Thirdly, foreign investment law in 2004 divided investment zones into 4 zones. Zone 1 includes mountainous areas that lack infrastructure. Foreign investors in this zone receive 7 years of tax exemption, and pay a 10 % tax on profit after the tax exemption period finishes. Zone 2 refers to areas which have infrastructure. In this zone, foreign investors receive 5 years of tax exemption, and pay 7.5 % tax on profit after 3 years and 15 % after the tax exemption period ends (Suzuki and Keola, 2005).

The current Mining Law was promulgated by the National Assembly in April 1997¹⁴. It consists of 8 chapters and 63 articles. The purpose of the Mining Law is to provide a system of management for the conservation, exploration, mining and processing of minerals for both local consumption and for export; it is also concerned with the use of mineral resources in industry and its processes and improving the quality

¹³ In order to attract more FDI and manage FDI more effectively, the Ministry of Planning and Investment (MPI) draft the third revised investment law, which is scheduled to be presented to the National Assembly in June 2009.

¹⁴ The Ministry of Energy and Mines drafted a new Mining Law, which was presented at the National Assembly in 2008. However, it has not been approved yet. This new law consists of 7 parts with 104 articles. Its main purpose is to define principles, rules and measures regarding the management, preservation, and utilization of minerals and mineral resources; and to monitor mineral activities, aiming to ensure effective prospecting, exploration, mining and processing of minerals in conjunction with environmental protection. These activities should also be consistent with the national socio-economic development plan, in order to create the conditions for gradual economic growth, industrialization, and modernization; sustainable mineral development; and improvements in multi-ethnic people's living conditions.

of life for the people of the Laos. However, according to MINDECO (2006), current mining laws create some barriers for mining development promotion. Firstly, the Government must have equity in FDI mining projects, but government equity is not well defined. Secondly, unless the government decides otherwise, assets including machines, facilities, etc, which belong to foreign companies shall become government property when the company withdraws or dissolves. Thirdly, transferring mining rights to a third party are not well-defined in the current law.

2.2 Institutional capacity

Before June 2006, the Department of Geology and Mines (DGM), which was organized under the Ministry of Industry and Handicraft (MIH), had responsibility for geological surveys, mineral analysis, mining administration and issuing mining concessions (MINDECO, 2006). In June, 2006, the DGM of the MIH was incorporated into the Ministry of Energy and Mines (MEM), which has the function of policy making, administrative management, technical management, geological surveys and environmental protection.

In addition, the DGM was divided into the Department of Mine (DOM) and Department of Geology (DOG) in March 2007. The DOG has 34 staff members and four divisions, including the administration division, information division, research division and geological survey division. The DOM has 51 staffs members and 5 divisions, including the division of general administration, the division of technical, the division of mining concessions, the division of environment and inspection, and the division of contracts and laws (MEM, 2006). Compared with neighboring countries such as Thailand and Vietnam, the organization and capacity of the mining sector is still weak. It lacks adequate technology, technical knowledge and expertise. In addition, there are limited legal or economic professionals in DOM to support the mining sector. (MINDECO, 2006).

3. FDI ISSUES

During the planned economy period, investment from socialist countries flowed into Laos. However, data on FDI during that period is not available. Therefore, in this paper the analysis of FDI is from 1989 until August 2008. From 1989 to 2008, there were 1547 FDI projects with 9,525.8 million US\$ (Table 4).

Table 4. FDI in Laos (1989-2008)

Year	Total			
	Number of projects		Capital	
	Project	%	mil. US\$	%
1989	9	0.6	29.8	0.3
1990	6	0.4	3.9	0.0
1991	21	1.4	28.2	0.3
1992	39	2.5	69.1	0.7
1993	69	4.5	78.8	0.8
1994	69	4.5	1313.1	13.8
1995	27	1.7	53.8	0.6
1996	40	2.6	114.5	1.2
1997	54	3.5	659.2	6.9
1998	52	3.4	1385.0	14.5
1999	62	4.0	186.0	2.0
2000	45	2.9	513.6	5.4
2001	61	3.9	72.7	0.8
2002	99	6.4	434.9	4.6
2003	106	6.9	65.4	0.7
2004	121	7.8	217.5	2.3
2005	120	7.8	119.6	1.3
2006	187	12.1	789.6	8.3
2007	180	11.6	3128.0	32.8
2008	180	11.6	263.2	2.8
Total	1547	100.0	9525.8	100.0

Source: Author's adaptation from MPI's raw data.

Note: The mining data is from staffs who in charge with mining division in IPD. Mining data is not consistent with whole IPD's data, so author made some adjustment from 2004-2008.

FDI has increased sharply since 2003, of which FDI in the mining sector has the highest share. In terms of registered capital accumulation, the energy (hydropower) sector has the highest share, about 54.4 % of total capital. The mining sector share is 18.3% of total capital (Table 5), which shows that FDI in the mining sector accounts for the second largest share of accumulated registered capital after the energy sector.

Table 5 FDI by Sector (1989-2008)

Sectors	Project	Capital	
		mill. US\$	%
Energy & Hydropower	38	5,184.39	54.42
Mining	135*	1,747.35	18.34
Agricultural	257	523.3	5.49
Industry & Handicraft	291	501.76	5.27
Services	269	486.86	5.11
Construction	53	286.54	3.01
Telecommunications	17	263.4	2.77
Hotels & Restaurants	115	172.51	1.81
Banking	16	133.8	1.4
Wood Industry	60	101.39	1.06
Trade	160	63.88	0.67
Garment	67	50.15	0.53
Consultants	69	10.47	0.11
Total		9,525.80	100

Source: Author's adaptation from MPI's raw data.

Note: *this data is based on MPI's data which different from MEM's data in section 6.

FDI by country is shown in Table 6. Thailand has the largest investment share, which accounts for 26.5% of total capital.¹⁵ The second largest investor is France, which accounts for 18.2 % of total capital, and the third is Vietnam. Despite being the largest donor country in Laos, Japan is ranked as 16th in terms of FDI; it has 50 projects with 28.9 million US\$ registered capital. Japanese FDI has flowed into Laos since 1994; since 2004, Japanese FDI has increased gradually (Table7). Japanese FDI is invested in various sectors in Laos (Table 8). In term of capital, industry and handicraft occupies

¹⁵ There are three main reasons that Thailand has the largest share of investment in Laos. First is a geographical reason, as Laos shares a long border with Thailand. The second reason is cultural, as both countries share similar customs and culture. The third reason is due to capital, technology, and know-how, as Thailand is more developed than other countries in this region and so has increased capacity to invest in Laos.

the highest share of total capital, accounting for 29.7 %; other sectors include construction (15.9%), services (11.7%), agriculture (10.7%) and energy and hydropower (10.4%). However, there is no Japanese FDI investment in the mining sector.¹⁶

Table 6. FDI by Country (1989- 2008)

No.	Country	Project	Capital	
			mil. US\$	%
1	Thailand	333	2525.5	26.5
2	France	125	1730.0	18.2
3	Vietnam	169	839.6	8.8
4	Italy	6	501.7	5.3
5	China	325	428.7	4.5
6	Korea	159	358.6	3.8
7	America	45	167.6	1.8
8	Malaysia	47	106.4	1.1
9	Singapore	36	88.0	0.9
10	Australia	49	57.6	0.6
11	Russia	10	53.8	0.6
12	Taiwan	36	51.2	0.5
13	Holland	5	50.8	0.5
14	Switzerland	8	41.2	0.4
15	India	7	36.7	0.4
16	Japan	50	28.9	0.3
17	England	21	18.6	0.2
18	Canada	19	11.1	0.1
19	Other	97	915.5	9.6
	Total	1547	9525.8	100.0

Source: Author's adaptation from MPI's raw data.

There are two main reasons for increasing Japanese FDI into Laos. Firstly, the Japanese FDI invested in manufacturing in Thailand faces high wages and the appreciation of the Thai Baht. So, some investors have shifted to Laos due to cheap labor costs. Secondly, the investment climate in Laos has improved as Laos has introduced the One-Stop-Service Unit (OSU).

¹⁶ It is important to note that the data for this analysis is before August 2008. Therefore, it does not include joint venture of Mitsui company which had a license in December 2008 to exploration in bauxite in the south of Laos.

Table 7. Japanese FDI

Year	Project	Capital	
		mil. US\$	(%)
1994	1	4.50	15.56
1995	1	0.10	0.35
1996	3	0.95	3.29
1997	6	3.06	10.58
1998	4	1.38	4.78
1999	1	0.50	1.73
2000	6	1.28	4.41
2002	4	0.63	2.18
2003	1	1.30	4.50
2004	4	1.78	6.16
2005	4	2.32	8.02
2006	3	2.10	7.26
2007	9	8.32	28.76
2008	3	0.70	2.42
Total	50	28.92	100.00

Source: Author's adaptation from MPI's raw data.

Table 8. Japanese FDI by Sectors

Sector	Project	Capital	
		mil. US\$	%
Agriculture	12	3.1	10.7
Construction	2	4.6	15.9
Consultants	1	0.5	1.7
Energy & Hydropower	3	3.0	10.4
Garment	2	1.8	6.3
Hotels & Restaurants	3	0.4	1.4
Industry & Handicraft	12	8.6	29.7
Services	8	3.4	11.7
Trade	5	1.0	3.5
Wood Industry	3	2.5	8.8
Mining	0	0.0	0.0
Total	50	28.9	100.0

Source: Author's adaptation from MPI's raw data.

Investment in Laos has various comparative advantages. Firstly, the political and socio-economic situation is stable. In Laos, there have not been serious problems related to religious, political, or ethnic disputes. During the Asian financial crisis in 1997, there was serious political and socio-economic instability in some Asian countries, but not in Laos. In addition, there is no minority conflict in Laos. In sum, the political and social stability in Laos provides confidence for investors. Secondly, Laos has rich natural resources, which are important factors in promoting FDI in developing countries. Laos is endowed with natural resources including land, water, forests, and minerals, most of which have not been exploited. Laos has a variety of mineral resources, such as copper, coal, gold, and iron; Laos also has rich water resources for developing hydropower plants. These are considered one of the most important factors attracting FDI to Laos (a more detailed discussion follows in section 5). Thirdly, Laos also has a plentiful labor force and low labor costs compared to other countries. In addition, business costs, including the cost of land, water, electricity etc, are low compared with other countries.

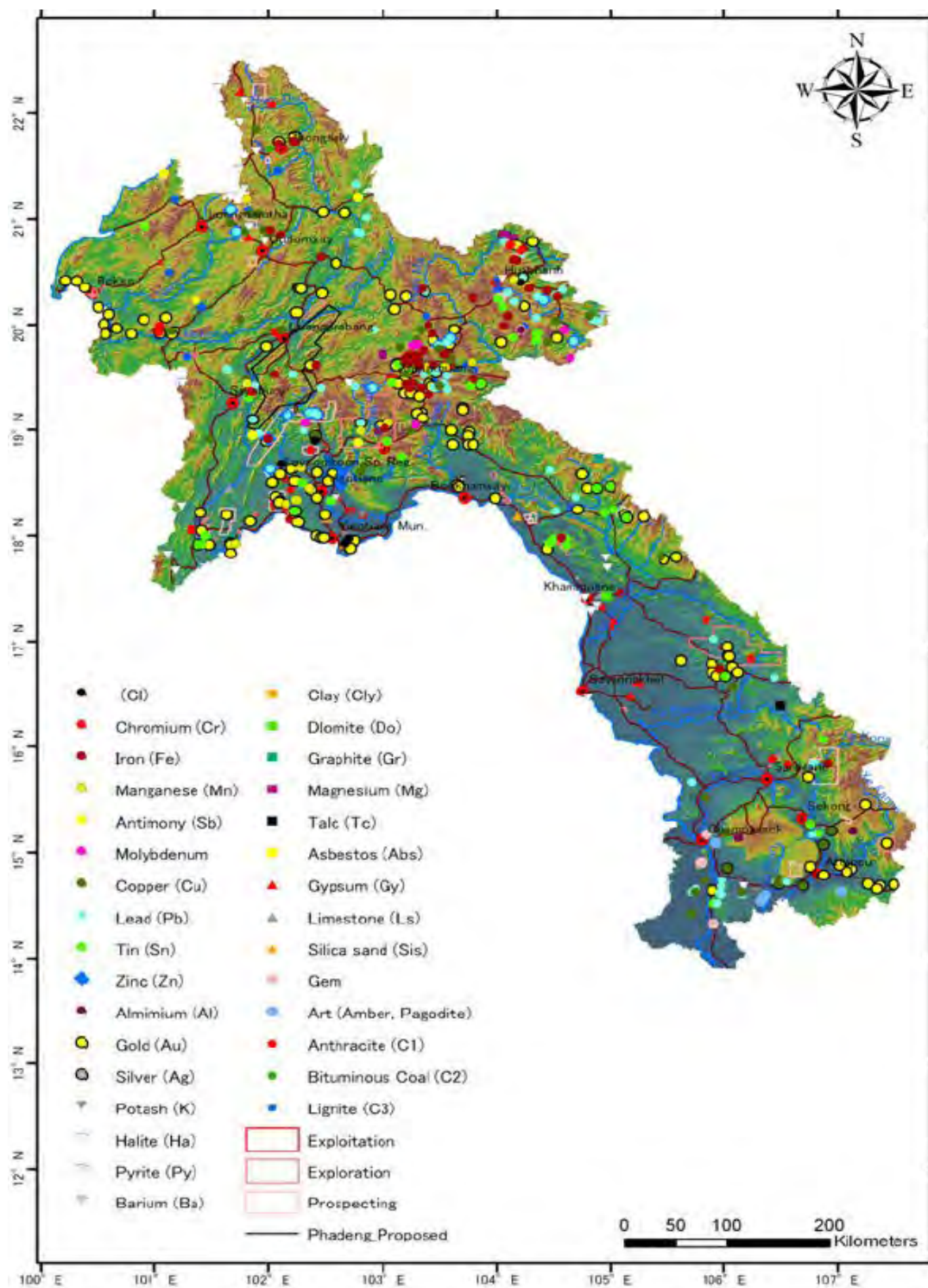
Despite these comparative advantages, Laos also has comparative disadvantages. Firstly, Laos has geographic constraints. Laos is a land-locked country and about 85 % of the area is mountainous. In addition, Laos has a small population and so a small domestic market. Moreover, the domestic market is not completely integrated due to poor infrastructure. Secondly, infrastructure is poor: the ratio of roads to the whole area of the country is low; the rail network is not well developed; and there is no seaport. As there is no seaport, goods have to pass through Thailand or Vietnam, which creates cost burdens for business. Therefore export goods are more expensive than those from other countries which have seaports.¹⁷

4. POTENTIAL MINING RESOURCES

According to DOG (2009), Laos has a total of 572 mining deposits and prospects. 47% of these deposits and prospects were found to contain gold, copper, lead and/or zinc. The potential zones for gold, copper and zinc are presented in Figure 1. The geological features and characteristics of potential minerals are as follows:

¹⁷ For a more detailed discussion of the comparative advantages and disadvantages of FDI in Laos see Suzuki and Keola (2005).

Figure 1. The Potential Zones in Gold, Copper and Zinc



Source: DOG (2009).

- “Zones with potential for gold, copper and zinc are widely distributed throughout Laos, especially in the three fold belts.
- Zones with gold potential occur throughout the country but are concentrated along the faults around granitic rocks of the Late Palaeozoic era.
- Zones with copper potential are distributed around the PhuKham deposit and south of the Sepon deposit. The Sepon deposit is situated around an inflection point out the NW-SE trending fold belt.
- Zones with zinc potential are distributed throughout the country, especially in and around the NE-SW trending fold belt”. (MINDECO, 2006).

The potential for gold is about 500 to 600 tons; the potential for copper is about 8 to 10 million tons; and the potential for zinc is about 2 to 3 million tons MINDECO (2006). This shows that Laos has significant potential mining deposits. According to DOG (2009), a geological map (1/500.000) was produced by France in 1964, and other geological maps (1/1.000.000 and 1/500.000) were also produced during the 1990s. Until now, the geological survey map (1:200,000) covers only 54.86% of the country (236,800 Km²). The summary of geological survey maps is presented in Table 9.

Table 9. Geological Survey Maps

No.	Map size	Completed	Area (Km ²)	Builder	Remarks
1	1/50,0000	1964	Indochina	France	
2	1/1,000,000	1991	Indochina	ESCAP	
3	1/500,000	1990	Whole country	Russia	
4	1/200,000	1980	15.131	Vietnam	Somneur province
5	1/200,000	1987	8.276	Vietnam	Vientiane capital
6	1/200,000	1999	31.77	Vietnam	Central part
7	1/200,000	2007	62.285	Vietnam	North part
8	1/200,000	2008	12.463	JICA	Attchapeu province
Total			129.925		54.86 % of country area

Source: DOG (2009).

The main reasons for geological survey constraints are lack of funds, technology and human resources. In addition, Laos is mountainous country and infrastructure is

poor. However, in order to produce and improve geological maps for promoting mining development, the Lao government has requested international donors for funding and technical support. Recently, geological surveys were conducted by the Vietnamese government and by the Japan International Cooperation Agency (JICA). The Vietnamese government provided a grant for conducting a geological survey (1:200,000) which was completed in 2007. This survey covers the northern part of Laos, including five provinces (Phongsaly, Oudomsay, Luangnamtha, Borkeo, some part of Luangphabang) which cover 26.30% of the country's area, or about 62.285 km². JICA also provided a grant for producing a geological survey map (1:200,000) which was completed in 2008; it covered only Attapeu province in the south of Laos, which cover 5.26 % of country's area. Information about mining is still in the early stages; there is limited information about the details of reserve and the grades of mineral deposits and prospects.

5. PROCEDURE TO OBTAIN MINING LICENSE

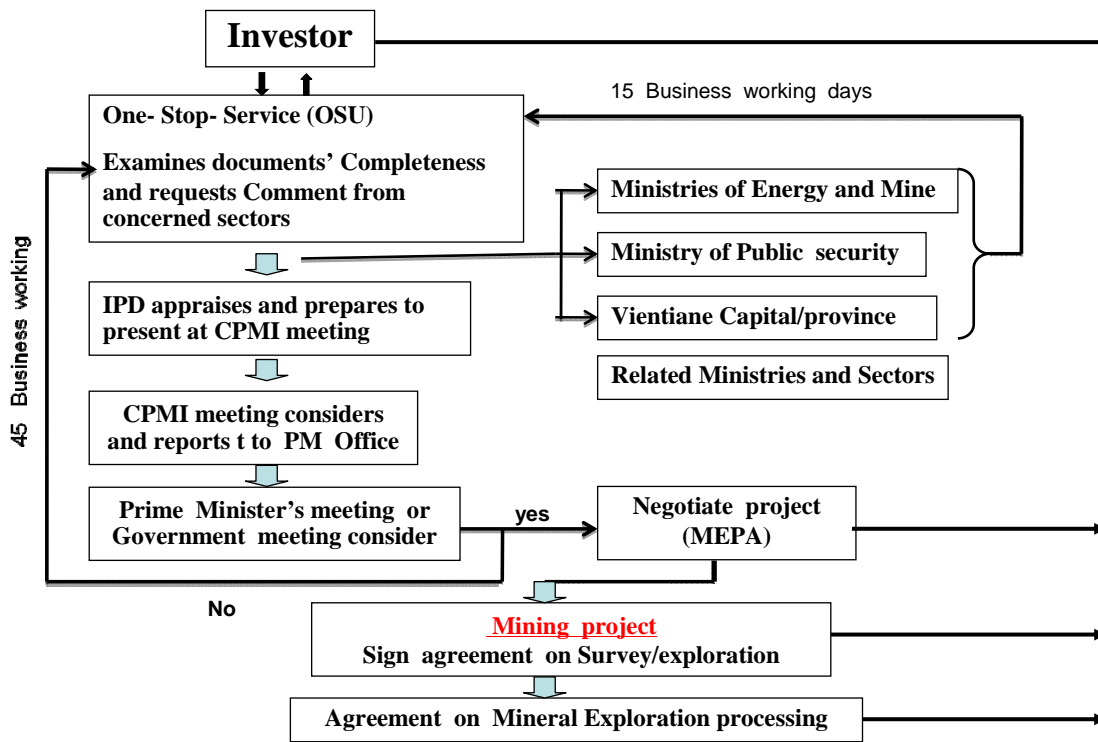
According to the MPI investment guidelines (2008), in order to obtain a mining license for prospecting, exploring and feasibility studies,¹⁸ investors must follow roughly seven steps. The flowchart illustrating the process for obtaining a mining license is shown in Figure 2.

Step1. Prepare documents required by MPI

Before sending an application to the Ministry of Planning and Investment (MPI), investors have to prepare all documents which are required by MPI and the Ministry of Energy and Mines, including mine information (type of mineral, site area, etc). Basic information about mining can be obtained from the Department of Geology (DOG) and the Department of Mines (DOM).

¹⁸ It is important to note that after finishing this stage, if investors want to continue to develop the mine, they must obtain mine licenses for manufacture or export etc. These also involve roughly seven steps to follow.

Figure 2. The Mining License Obtaining Flowchart



Note: Committee for Promotion and Management of Investment :CPMI
 Mineral Exploration and Production Agreement : MEPA, Prime Minister Office (PMO)

Source: MPI (2008)

Step 2. Submit project documents to OSU MPI

Investors have to submit all project documents required to One-Stop-Service Unit (OSU) in MPI. After receiving the project documents, government staffs examine the documents for completeness and request comments from the Ministry of Energy and Mines and concerned sectors, including the Ministry of Public Security, the Water Resource and Environment Administration (WREA¹⁹) and Department of Mines at the provincial level.

Step 3. IPD presents project documents to CPMI meeting

After appraising project documents based on the comments from concerned government

¹⁹ More recently, in July 2007, the Government of Lao PDR decided to create a single agency responsible for water resources and environment management, the Water Resources and Environment Administration (WREA). Within its mandate, this administration is entitled as a ministry-equivalent agency under the Prime Minister's Office

agencies, IPD prepares project documents to present at the Committee for Promotion and Management of Investment²⁰ (CPMI) meeting.

Step 4. Consideration in CMPI meeting and report to Prime Minister Office

CMPI holds a meeting to appraise the project documents and examines the investors in terms of capital, techniques, experience, mining activities in other countries, etc. If CMPI decides that the company has the capacity to carry out the project, CMPI reports to the Government for consideration at Prime Minister's meeting.

Step 5. Prime Minister's meeting

Every month there is a Prime Minister's meeting in which the Prime Minister, Vice-Prime Minister, and concerned Directors or Ministers participate. In this meeting, the projects will be approved or not approved.

Step 6. Negotiate Project (Mineral Exploration and Production Agreement: MEPA)

The CPMI is in charge of the Mineral Exploration and Production Agreement (MEPA). Government staff will negotiate with investors about project contributions in taxes, royalties, and other fees that occur during the exploration and feasibility study period.

Step 7. Sign MOU with government

After negotiations in step six, the Lao government will sign an agreement with investors; then the exploration and feasibility studies can start. The Lao government also provides various incentives to investors such as tariff rates for imported investment goods for projects (0 %).

²⁰ The Government of Laos established the CPMI at the central and local level. At the central level, the Chairman of the Committee for Planning and Investment is the chair of the CPMI by virtue of his position. There is also an Investment Promotion Department (IPD) acting as a Permanent Office with One-Stop-Service Unit (OSU). At the local level, the provincial governor or the mayor of Vientiane Capital city is the chair of the CPMI by virtue of his position; it uses the Provincial Department for Planning and Investment as permanent offices, with a One-Stop- Service Unit (OSU) located in the Investment Unit of Department for Planning and Investment (MPI, 2008).

6. FDI IN THE MINING SECTOR

Mining development in Laos was not well-recognized until Sepon Mine²¹ was implemented in 2003. As of October 2008, there are 127 domestic and foreign companies (213 projects) involved in the prospecting period, exploration period and feasibility study period.²² 42 companies are domestic investors and 85 companies are foreign investors. The number of foreign mining companies by country²³ is shown in table 10.

Table 10. Number of Foreign Mining Companies

Country	Company	%
China	48	56.5
Vietnam	19	22.4
Thailand	6	7.1
Australia	4	4.7
Russia	2	2.4
S. Korea	1	1.2
N. Korea	2	2.4
Canada	1	1.2
England	1	1.2
Poland	1	1.2
Total	85	100.0

Source: DOM (2008).

Foreign companies consist of 48 Chinese (56.5%), 19 Vietnamese (22.4%), 6 Thai (7.1%), 4 Australian (4.7%), 2 Russian (2.4%), 2 North Korean (2.4%), Canadian (1%), 1 South Korean (1.2%), and 1 Polish (1.2%) companies (DOM, 2008). The stages of project development are shown in Table 11. Prospecting stage has 40 projects

²¹ For more details of the project, see Sepon Gold Mine (<http://www.ozminerals.com/Operations/Mining-Operations/Sepon-Gold.html>).

²² Lao government has abolished 13 companies' licenses because they did not follow the agreement.

²³ Capital data is not available from DOM.

(22.5%), exploration stage has 85 projects (47.8%), feasibility study stage has 7 projects (3.9%) and mining stage has 46 projects (25.8%).

Table 11. Stage of Mining Project Development

Development stage	Project	%
Prospecting stage	40	22.5
Exploration stage	85	47.8
Feasibility study	7	3.9
Mining	46	25.8
Total	178	100.0

Source: DOM (2008).

In prospecting stage stages (Table 12), copper and zinc have 9 projects (22.5%), iron has 7 projects (17.5%), and gold and bauxite have 4 projects (10%). The exploration stage is shown in Table 13; it consists of 13 gold, iron and salt projects (15.7%); 11 gemstone projects (11.7%); 9 tin projects (10.8); and 6 copper and potassium projects (7.6%). The feasibility study stage has 2 tin, coal and gold projects and 1 bauxite project (Table 14). Exploration projects consist of 10 gemstone projects; 6 gold and coal projects; 5 barite projects; and 4 tin projects (Table 15). About 70 % of mining projects are in the prospecting period, exploration period or feasibility study period, showing that it takes time for projects to reach the mining stage.

Table 12. Number of Projects in Prospecting Stage

Mineral	Project	%
Copper	9	22.5
Zinc	9	22.5
Iron	7	17.5
Gold	4	10.0
Bauxite	4	10.0
Tin	3	7.5
Coal	2	5.0
Barite	2	5.0
Total	40	100.0

Source: DOM (2008).

Table 13. Number of Projects in Exploration Stage

Mineral	Project	%
Gold	13	15.7
Iron	13	15.7
Salt	13	15.7
Tin	9	10.8
Copper	6	7.2
Potassium	6	7.2
Barite	5	6.0
Coal	4	4.8
Gemstones	11	11.7
Antimony	2	2.4
Lead & Zinc	1	1.2
Total	83	100.0

Source: DOM (2008).

Table 14. Number of Projects in Feasibility Study

Mineral	Project	%
Tin	2	28.6
Coal	2	28.6
Gold	2	28.6
Bauxite	1	14.3
Total	7	100.0

Source: DOM (2008).

According to the MINDECO (2006), there are about 35 working mines in Laos which include the Sepon and Phubia mines (Table 16). Of the 35 working mines, only 2 working projects have modern production systems. There are 13 mines belonging to the Lao government: 7 mines managed by the Ministry of Energy and Mines, 5 mines managed by Ministry of Defence, and one mine managed by the Ministry of Industry and Commerce. Foreign investors manage 12 mines, of which China has 6, Thailand has 3 and Vietnam has 2.

Table 15. Number of Projects in Mining

Mineral	Project	%
Gold	6	13.0
Coal	6	13.0
Barite	5	10.9
Tin	4	8.7
Gemstones	10	21.7
Clay	3	6.5
Sand	3	6.5
Copper	2	4.3
Lead & Zinc	2	4.3
Potassium	2	4.3
Iron	1	2.2
Bauxite	1	2.2
Salt	1	2.2
Total	46	100.0

Source: DOM (2008).

Table 16 Main Working Mines in Laos

Company name	Mine name	Kind of mineral	Country	Capital	Reserve	Ore Production (2005)	Average grade of ore
unit	-	-	-	000US\$	tons	tons	-
Lane Xang Minerals	Sepon	gold	Australia	39,908	86,340,000	2,659,948	2,77g/t Au, 4,99g/t Ag
Lane Xang Minerals	Sepon	copper	Australia	167,321	4,946,154	643,771	5,80% Cu
Phu Bia Mining	Phu Kham	gold	Australia	15,321	21,400,000	400,567	1,63g/t Au
Lao-Korean Tin Mines	N/D	tin	Laos-N. Korea	N/D	3,122,595	56,749	0,21%
Padeng Industry Public Co.Ltd	Kayso	zinc	Thailand	400	27,000	791	>30%
Phialat Gold Panning	Phialat	copper	Laos - China	200	24,000	120	25g/t
Lao International Trade and Service *	Houaixay	sapphire	Laos**	150	10	80kg	N/D
Gypsum Mining Co.Ltd*	N/D	gypsum	Laos**	N/D	18,116,900	179,869	94,88%

Source: MINDECO (2006).

Note: N/D: No data, Au: gold, Ag: silver, Cu: copper.

*: National company

** : government

The characteristics of the mining industry in Laos are summarized in Table 17. The medium-large mining projects are operated by Australian companies, which have modern technology and also consider environmental protection. On the other hand, small mines are operated by neighboring countries such as China, Vietnam and Thailand, which use more basic technology and show weak consideration of environmental issues (MINDECO, 2006).

Table 17 Characteristics of the Laotian Mining Industry

Item	Medium-large mines	Small mines	Artisanal miners
Capital	Australia	Local/neighboring countries	None
Technology	Modern	Traditional	None
Product(s)	Gold/electric copper	metal concentrate/industrial materials	gold particles
Employees	500~2,500 workers	10~150 workers	Household
Environmental consideration	Existing	None	None
Mining rights	Existing	Existing	none(partially existing)
Engineers	Distributed into each field	partially distributed	None
Sales	US\$90million/mine	US\$10,000~1million	US\$200~
			800/household

Source: MINDECO (2006).

Laos has some constraints in mining development in Laos as follows. Firstly, Geological information is limited, as only about 50 % of the country area has geological maps (1/200,000). In addition, the existing information is quite basic and does not provide details about mine quality, reserves etc. Secondly, infrastructure is poor and as about 80 % of the country is mountainous, this constrains mining exploration and mining. Thirdly, there are some problems with the procedure for acquiring mining concessions. Detailed information about existing mining concessions for other projects and areas restricted for mining activities is not disclosed, and there is a lack of computer systems and human resources to check for overlapping concessions and errors (MINDECO, 2006). Fourthly, according to the MINDECO (2006), the Mineral

Exploration and Production Agreement (MEPA) process creates some barriers to the promotion of mining exploration and development. MEPAs for other projects are not published. The content of MEPA is complicated, and it takes a long time (sometimes more than a year) to negotiate a MEPA. Fifthly, current mining laws constrain investors. For example, transferring mining rights is not well defined, and foreign investors face a high risk of losing their property if they withdraw the project without government consent (MINDECO, 2006). Comparisons of Lao mining laws with those of other countries are shown in Table 18. Sixth, there are technology and human resource constraints. As mining development in Laos is a new industry and Laos is a LDC, industrial technologies are not well developed. In addition, there is lack of human resources (MINDECO, 2006).

Table 18. Comparison of mining laws

Item	Laos	W. Australia	Chile	Tanzania
Exploration license	prospect: 2 years X 2 times extension exploration: 3 years X 2 times extension	5 years	Courts decide	1 year + 2 times extension
Mining license	30 years + 2 times extension (10 years/time)	21 years	Courts decide	25 years +extension
Contract mining	Yes	No	Yes	Yes
License procedure	Application (MEPA included)	Application	Application	Application
License transfer	Yes (but need permission)	Yes	Yes	Yes
Royalties	Opacity (about 2.5%)	Cu: 7.5% on ore, 5% on concentrate, 2.5% on metal. Au: 2.5% on net smelter return but exempt first 2500oz	Unknown	3% Net back value

Source: MINDECO (2006).

Note: MEPA: Mineral Exploration and Production Agreement, Cu: copper, AU: gold.

On the other hand, FDI in the mining sector in Laos also has some advantages. Firstly, the political situation is stable, which makes investors confident. Secondly,

mines require substantial amounts of electricity, and Laos has a high potential for hydropower development and electricity production. Potential hydraulic resources are estimated at about 26,000 MW (excluding mainstream Mekong), but only about 9 % of this potential is used. Therefore, Laos has the potential to provide the mining sector with electricity at a low price. Thirdly, the labor force is abundant in Laos, especially unskilled labor for mining exploration and development. In addition, labor costs are quite cheap compared with neighboring countries. Fourthly, in order to promote FDI in the mining sector, the Lao government provides various incentives, including the tariff rates for imported investment goods (1%), income taxes for foreign employee (10%), etc.

7. JAPANESE INVESTMENT IN RESOURCE SECTORS

Japan is top donor in Laos in various sectors, including infrastructure and human resource development. By contrast, the share of Japanese FDI is small compared to other countries. Even though Japanese investment in mining has lagged behind other countries, there are still considerable rooms for Japanese investors to explore mining in Laos. Firstly, as information from detailed geological maps is incomplete, there is the potential for significant additional deposits and prospects. Secondly, as most mining projects in Laos are operated by neighboring countries which lack comparable funds and technology, the Lao government considers Japanese investors key players in the mining sector.

The Lao government is highly motivated to attract more Japanese FDI to Laos. The Lao and Japanese governments signed an investment agreement in August 2008, and both governments have engaged in government/private dialogue since 2007. This dialogue is a forum for Japanese investors to discuss investment issues directly with the Lao government. In the first dialogue in 2007, Japanese investors submitted 11 items for improvement related to the investment climate. In the second dialogue, held in December 2008, the Lao government provided an update on improvements in the investment climate requested by Japanese investors in the first dialogue. Recently, high-ranking Lao government officials and politicians have gone yearly to Japan for the Lao

Investment Workshop in order to attract more Japanese investors. Workshops held in Tokyo and Fukuoka in 2008 attracted considerable attention from Japanese investors.

There are three main reasons why the Lao government is so motivated to attract more Japanese investors. Firstly, Laos and Japan already have a good working relationship. Secondly, most Japanese investors are interested in long-term investments which have a higher positive impact on industrialization and human resource development. Moreover, Japanese investors seem to consider environmental protection and community development issues more seriously than other neighboring countries. Thirdly, Japan is a developed country with ample financial resources and sophisticated technology; the spillover effect of technology is another key factor for Laos.

8. CONCLUSIONS

This paper is an attempt to give an overview of the current situation and to identify the opportunities and challenges for Japanese investors in the mining sector in Laos. From the previous discussion, the following conclusions can be drawn. The Lao government has clear strategies and policies to promote mining FDI in Laos in order to stimulate economic development and to eradicate poverty. FDI in the mining sector has increased sharply since 2003, mostly from investors from neighboring countries such as China and Vietnam. However, there are financial and technological limitations on mining project development, and about 70 % of projects are still in the exploration and feasibility study stages. There are also some constraints on mining investment in Laos. Detailed information from geological maps regarding mining deposits, mining reserves and mining quality is lacking. Mining laws also create some barriers, as institutional capacity is weak and the licensing process is time-consuming and complex. However, in order to attract more FDI in the mining sector, the Lao government is trying to remove these constraints by improving investment laws and mining laws, and upgrading institutional capacity. As Laos still has abundant mining resources and the Lao government is highly motivated to promote Japanese investment in mining and other sectors, there are still significant opportunities for Japanese FDI.

ACKNOWLEDGEMENTS

I would like express my sincere appreciation to Mr. Saiphet, Mr. Kongkham and Mr. Soukansack in the Department of Mines, Ministry of Energy and Mines for comments and suggestions. I would like to thank Ms. Sengphaivanh and Mr. Phouthone in Investment Department, Ministry of Planning and Investment for comments and cooperation. I would also like thank my research assistants for their efforts. All the conclusion and recommendations in this report are those of the author do not necessary reflect the views of Japan External Trade Organization. The author alone is responsible for any errors in this report.

REFERENCES

- Corden, W.M. (1984). Booming sector and Dutch Disease economics: Survey and consolidation. *Oxford Economic Paper*, 36.
- Corden, W. M. and Neary, J. P. (1982). Booming sector and de-industrialization in a small open economy. *Economic Journal*, 92.
- Department of Mines (DOM). (2008). *Annual Mine Report 2008*. (in Lao), Vientiane: Department of Mines, Ministry of Energy and Mines.
- Department of Geology (DOG). (2009). *Geological Strategy Development Plan in 2008-2010 and 2011- 2020* (in Lao). Vientiane: Department of Geology, Ministry of Energy and Mines. Unpublished.
- German Development Cooperation (GDC) & Committee of Planning and Investment, SME Promotion and Development Office (SMEPDO) . (2007). FDI-SME linkages: Two case studies. Vientiane: SMEPDO and Lao National Chamber of Commerce and Industry.
- Government of Laos (GoL). (2008). *Strategic development of energy and mining sectors* (in Lao). Vientiane: Ministry of Energy and Mines.
- Government of Laos (GoL). (2004). *National growth and poverty eradication strategy*. Vientiane: Author.
- Hilson, G. (2002). Small-scale mining in Africa: Tackling pressing environmental problems with improved strategy. *Journal Environment Development*, 11 (2): 149-74.
- International Monetary Fund (IMF). (2007a). *World economic and financial survey, regional economic outlook, Asia and Pacific*. Washington, DC: Author.

- International Monetary Fund (IMF).(2007b), *Lao People's Democratic Republic: Selected Issues and Statistical Appendix*, IMF Country Report No. 07/359, International Monetary Fund, Washington, D. C.
- Kyophilavong, P. (2008). SME development in Lao PDR. In Hank Lim (Ed.) *Asian SMEs and globalization*. ERIA research project report 2007. The Economic Research Institute for ASEAN and East Asia (ERIA).
- Kyophilavong, P. (2008). *Monetary and exchange rate policies in the Lao PDR*. Paper presented at Asian Development Bank's Monetary and Exchange Rate Policies in Cambodia, Lao PDR and Vietnam: The Scope for Regional Cooperation Conference, Bangkok, Thailand.
- Kyophilavong, P. & Toyoda, T. (2008). *Foreign capital inflows in the natural resources sectors: Impacts on the Lao economy*. Paper presented at The Future of Economic Integration in Asia Conference, Bangkok, Thailand.
- Khaosan Pathet Lao (KPL). (2009). *Has the crisis impacted on all?*
<http://www.kpl.net.la/english/news/newsrecord/03.02.09/edn1.htm>
- Leite, C. and Weidmann, J.(1999). Does Mother Nature corrupt? Natural resources, corruption, and economic growth. IMF Working Paper 99/85. Washington: International Monetary Fund.
- Ljunggren, B. (1993). Market Economies Under Communist Regimes - Reform in Vietnam, Laos and Cambodia. in Ljunggren, B (ed). *The Challenge of Reform in Indochina*. Harvard Institute for International Development, Harvard University Press.
- Negrete, J.M., Benitez, L.N., Verbel, J.O. (2008). Distribution of mercury in several environmental compartments in an aquatic ecosystem impacted by gold mining in Northern Colombia. *Arch Environment Contam Toxicol*, 55: 305- 316.
- National Statistic Center (NSC). (2003). Households of Lao PDR: Social and economic indicators. *Lao expenditure and consumption survey 1997/98*. Vientiane: Author.
- Ministry of Planning and Investment (MPI). (2008). *Investment guidebook for Lao PDR* (2nd ed.). Vientiane: Ministry of Planning and Investment (MPI), Investment Promotion Department.
- MEM. (2006). *Decree on administration and activities in Department of Mines* (in Lao). Vientiane: Ministry of Energy and Mines.
- Moore, J. & Luoma, S. (1990). Hazardous wastes from large scale metals extraction: A case study. *Environment Science Technology*, 24:1278-85.
- Okonjo-Iweala, N., Kwakwa.V., Beckwith. A., & Ahmed. Z. (1999). Impact of Asia's financial crisis on Cambodia and the Lao PDR. *Finance & Development*.

- Ogola, J., Mitullah, W., & Omulo, M. (2002). Impact of gold mining on the environment and human health: A case study in the Migori gold belt, Kenya. *Environment Geochem Health*, 24 (2): 141-58.
- Pholsena, S. & Phonekeo, D. (2004). *Lao hydropower potential and policy in the GMS context*. United Nations Symposium on Hydropower and Sustainable Energy.
- Papyrakis, E., & Gerlagh, R. (2004). The resource curse hypothesis and its transmission channels. *Journal of Comparative Economics*, 32.
- Sachas, J., & Warner, A. (1995). Natural resource abundance and economic growth. NBER Working Paper No. 5398. Cambridge, MA: National Bureau of Economic Research.
- Suzuki, M., & Keola, S. (2005). Foreign direct investment in Lao P.D.R.: Analysis of entry and divestment (in Japanese). In Amakawa and Yamada (Eds.) *Laos: Transformation to the market economy under a single-party regime*. IDE Research Series, No. 545, Developing Economies. JETRO.
- Vientiane Times. (2008, December 17). Developers suspend major hydro investments in Lao PDR. *Vientiane Times*.
- United Nations Development Program (UNDP). (2007/2008). Fighting climate change: Solidarity in a divided world. In UNDP (Ed.) *Human Development Report 2007/2008*. Author.
- Warr, P. (2006). The Gregory Thesis Visits the Tropics, *the Economic Record*, Vol. 82, No. 257, 177-194.
- MINDECO (Mitsui Mineral Development Engineering). (2006). *Sector plan for sustainable development of the mining sector in the Lao PDR*. The World Bank: Mitsui Mineral Development Engineering.
- World Bank. (2008). *Lao PDR Economic Monitor*, World Bank, Vientiane Office.