



# **Executive Summary on Lao PDR Mineral Resources**

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Figure 1 Lao PDR map.

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### 1. Introduction

Lao PDR is a landlocked country with high density of forest and mountains. Today Lao PDR still limited in infrastructure, budget, staff and etc. This is because the country was in long war situation. Therefore, high investment costs on mineral exploration and exploitation is not possible to avoid.

### 2. Mineral potential

Up to 2000, detailed exploration has been conducted over 20 mineral types, 50 minerals deposits and 10 of these deposits have been mined for use both for internal consumption and exported. <sup>(2)</sup> For more details of each commodity have shown in table 1.

Table 1:Mineral deposits and reserves investigated up to 2000.

No.	Commodity	Unit	Deposit Quantity	Reserves
1	Barite	tons	4	401,815
2	Clay for bricks	Cubic meter	-	70,621,000
3	Copper	tons	1	1,000,000
4	Glass sand	tons	1	7,989,000
5	Gold	tons	2	100
6	Gypsum	tons	2	34,700,000
7	Iron	tons	3	57,666,420
8	Lignite and anthracite	tons	7	655,000,000
9	Limestone for Cement	tons	5	2,205,800,000
10	Magnesium salt	tons	1	10,700,000,000
11	Manganese	tons	1	300,000
12	Ornamental rocks	Cubic meter	3	5,000,000
13	Peat	tons	3	1,500,000
14	Phosphorites	tons	3	550,000
15	Potash salt	tons	1	51,000,000,000
16	Pyrite / Marcasite	tons	1	701,065
17	Salt (Halide)	tons	8	20,000,000,000
18	Sapphire	carats	1	32,300,000
19	Tin	tons	3	29,600,000
20	Zinc	tons	1	71,000

## 2.1 Coal

Coal is considered as important fuel mineral for industrial development as it can produce electricity, metallurgy and industrial sector products. In Lao PDR has two major type of coals as anthracite and lignite. An old age, Paleozoic-Mesozoic coal is anthracite which high in calorific value. For Tertiary coal is lignite with moderate calorific value. More details of coal reserve was shown in table 2 and 3.<sup>(2)</sup>

Table 2 Anthracite reserves in Lao PDR.

Deposit	Anthracite reserve (tons)			
	Indicated	Inferred	Hypothetical	Total
1. Ban Vang Deposit, Vientiane Province	-	-	400,000	400,000
2. Bochan Deposit, Vientiane Province	2,010,000	2,144,000	4,000,000	8,154,000
3. Ban Namthom Deposit, Vientiane Province	-	-	400,000	400,000
4. Ban Vangmiang Deposit, Vientiane Province	830,000	1,310,000	-	2,140,000
5. Chakeui Deposit, Saravane Province	-	92,000	27,500,000	27,982,000
6. Phongsaly Deposit, Pongsaly Province	-	-	24,500,000	24,500,000
Total	2,840,000	3,546,000	57,199,500	<b><u>63,576,500</u></b>

Table 3 Lignite reserves in Lao PDR.

Deposit	Lignite reserve (tons)			
	Indicated	Inferred	Hypothetical	Total
1. Khangphaniag Deposit, Xiengkhouang Province	-	2,526,413	-	2,526,413
2. Muong Phane Deposit, Xiengkhouang Province	35,837,536	13,910,771	-	49,748,307
3. Hongsa Deposit, Sayaboury Province	505,825,339	5,200,000	-	511,025,339
4. Viengphoukha Deposit, Vientiane Province	12,727,356	-	-	12,727,356
5. Ban Nam Ngeun Deposit, M.Namo, Oudomxay Province	-	510,000	-	510,000
6. Ba Ai Deposit, M.Namo, Oudomxay Province	-	-	115,450	115,450
Total	554,390,231	22,147,184	115,450	<b><u>576,652,865</u></b>



## **2.2 Gold**

In Lao PDR, the investigation on gold is not yet well developed. There are only some area have detail of gold information. However, a lot of gold occurrences have been found in many part of the country. Gold in Sanakham and Sangthong district, Vientiane Province and Vientiane Municipality is estimated at 36,000 ounces by Newmont company.

## **2.3 Lead-Zinc**

There are many locations of lead-zinc deposits are found in Lao PDR. However, only two deposits have been investigated in detail which one of them have been mined. In Ban Kaiso found lead-zinc reserve approximately 23,000 tons of 37 % zinc.

Phadeang Industry (Laos) Company Limited has been conducted an exploration programme for lead and zinc in Pha Louang area, Vangvieng district, Vientiane province.

## **2.4 Copper**

In Lao PDR geological and mineral reports found 46 of copper occurrences. They are located in many provinces. In Sepon deposit in Savannakhet Province that will be mined by Oxiana Resources Company in the nearest future. (information of 2000)

## **2.5 Tin**

There are 33 tin occurrences in the country. Almost of tin mines were conducted in secondary tin deposits.<sup>(2)</sup> In the area of Nam Pathene Valley in Kham Mouane Province was estimated ore reserve of possible 65,000 tons containing 0.5-7 per cent tin.<sup>(1)</sup> Today some prospect start to mine in a primary deposit. Although Lao PDR found quite a number of tin deposits but some of them have not yet deeply investigated and exploited.

## **2.6 Iron**

There are two major iron ore deposits, Phou Nbouan Deposit and Pha Lek Deposits. Phou Nbouan Deposit is located the northern part of Xiengkhouang province. This deposit comprises mostly magnetite of 70 % Fe with hypothetical reserve of 30,000,000 tons. Pha Lek Deposit is located at SSW of Khoune district, Saysomboun Special Zone. It is divided into 8 occurrences of iron ore. Phou Nbouan Deposit and Pha Lek Deposit. Phou Nbouan Deposits are estimated to have a hypothetical reserve of about 70 million tons.

## **2.7 Bauxite**

This mineral group is a major sources of aluminum. Lao PDR's representative has been reported to the meeting in mining and primary industry cooperation on 2<sup>nd</sup> December 2004 at Chiang Mai, Thailand that in Champassack, Xekong and Louang Namtha may be found bauxite deposits in area of 7,000 square kilometers.<sup>(3)</sup>

## **3. Rules and regulations<sup>(3)</sup>**

The percentage of foreign investment in Lao PDR can be maximum up to 100 %. Mining license will held for 30 years and able to extend to 50 years. Lao PDR has free tax

duration depend on amount of investment. An appropriate channel for mineral investment should be directly contact to the Lao PDR government.

#### 4. Limitations in mineral industry

Lao PDR has high potentially in minerals but can not be explored and exploited for minerals intensively due to following limitations:

- Mineral industry is not yet classified as higher priority in the development goal, in consequence there is only low investment in the mineral sector.
- Basic available geological data are not sufficient for attracting investors.
- Limitation in nearly all of infrastructure such as transportation, telecommunication, electricity, and others, to support for mineral investment.
- Although mineral law is officially enacted, regulations on implementing of this law are not yet approved (at the year of 2001).
- There are some problems in custom policy on mining activities.
- Market for mineral products is not large.

#### 5. Conclusions and Recommendations

Lao PDR is one of the attractive countries in mineral investment. The mining activities as mineral exploration and mineral exploitation in this country are quite slow and limited in some area due to a long period of war. A chance for foreign investors is widely open to be investing in Lao PDR. The high potential minerals comprise of coal, gold, lead-zinc-copper, tin, iron, bauxite and also non-ferrous minerals.

Lao PDR still needed for semi-detailed and detailed nation wide geological and geophysical survey, mineral exploration programmes, mining ore dressing smelting technology and also budget for investment from inside and abroad. Thailand has a great advantage on distant if compare to the others. If both Thailand and Lao PDR can set up a competent cooperative organization to work on this aspect will be gain beneficial on both side.

#### References

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