

LAO PEOPLES DEMOCRATIC REPUBLIC
MINISTRY OF INDUSTRY & HANDICRAFT
ELECTRICITE DU LAOS

COUNTRY PAPER

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Presentation Paper - Participants from Lao P.D.R

I. General Condition

Lao P.D.R is a land locked country in South East Asia, between China in the north, Vietnam in the East, Thailand and Myanmar in the West and with Cambodia in the South.

Population of Lao P.D.R is about 5,5 million.

Capital city is Vientiane, which is located in the central part of the country

Land area is 236,800 Sq.Km, of which two-thirds is mountainous area.

Our country is divided into three major zones, as follows:

1. Northern zone is comprised of sloping and mountainous land, that

varies in altitude between 500 to 2000 meters above sea level.

2. Eastern zone is the same condition with altitude 500 to 2000 meters above sea level.

3. Western zone generally ranges from 100 °C 300 meters above sea level.

The Lao P.D.R has a tropical climate with average temperature of 26 degrees, there are two seasons: the wet and dry season.

The wet season is from May °C October and the dry season is between November °C April, the mean annual rainfall is 1600 mm-2000 mm or more in mountainous area, of which 75% to 90%, occurs during the wet season.

There is abundance of water resources in my country. The main basin of water resources in Lao P.D.R comes from the 17 major rivers of the country. They flow from north to south with a distance of 1870 km, traverse through country's total land mass. Abundant rainfall combined with high density river system (with a total water course length of 30,000 km), produces an annual runoff volume discharge into the sea of 223,000 million cubic meters (m³).

From the geography and water resources available of the Lao P.D.R, we have great potential for development of hydropower, even small, medium and large hydropower projects. Development of these resources can contribute to the supplying of electricity to households, offices, hospitals and schools in the mountainous area. Energy is also available for agricultural processing such as rice mills, handicraft and cottage industries.

Most of the people in these areas depend heavily on "slash and burn" for their living. As a result, the natural ecology and environment is quickly destroyed. So the quantity of water in upland streams in dry season is diminishing at a high rate. On the other hand during the wet season, when rainfall is heavy, the land is being destroyed by soil erosion thus causing flooding in the low lands. To solve those problems we have to develop hydropower projects in our country.

II. Hydro-Power Development in Remote Rural Areas.

At present, the main purpose of energy supply to the rural people is for developing their living standards, like in the city areas. The plan for supplying electricity to rural and remote areas will be carried out by means of expanding transmission lines from existing substations, setting up diesel generating plants and generating electricity from renewable energy resources, for example: micro hydropower. However problems encountered in the development of this plan could be described as follows:

1. High investment cost for the expansion of transmission lines to the scattered villages, but the power consumption and the load factor of the systems are relatively low. This is due to the fact that electricity is mostly used for domestic purposes.
2. Generally the investment required for setting up the diesel generating plants is relatively low, but because of the high operating costs including fuel and O & M, the cost of electric power production is rather high.
3. Generation of electricity from hydropower is very desirable because hydropower is indigenous, renewable and it can be developed near the area where the load demand is.

In the past, however only a small number of micro hydro generating plants have been built as a result of high development costs, as compared to the major hydro generating plants. The power produced from these big projects are used mainly in the municipality areas of towns, districts and some spots along the transmission line route, and some are exported to the neighbouring country.

At the present it is necessary to find a solution, which would reduce the development costs.

III. National Energy Plant

As Lao.P.D.R. has plenty of renewable energy resources such as coal, wood, etc, recently we are highlighting hydropower as the best option for electricity development for country with combination of a mountainous terrain and heavy rainfall. This will provide extensive potential for the generation of hydro electricity in the country:

For the medium and large hydropower station, at present we have a total installed capacity of 615 MW,

The small hydropower station in the country has a total capacity of about 12 MW,

The micro-hydro power station has a capacity of 2 MW.

And the diesel generating plants have a total capacity of about 16 MW. The total capacity of the energy plant of my country is 645 MW.

IV. Energy Requirement and Supply in Lao P.D.R

1. Energy Requirement

In 1985 the country total energy demand	213.2 GWh
The 1990 energy required	289.4 GWh
The 1995 energy required	465.9 GWh
The year 2000 energy required	657.1 GWh

2. Forecast of Energy Demand of Country:

In the year 2005 energy demand	858.3 GWh
In the year 2010 energy demand	1,963.00 GWh
In the year 2020 energy demand	2,798.00 GWh

3. Forecast of Peak Power Demand:

In the year 1995 peak power demand	128.2 MW
In the year 2000 peak power demand	216.0 MW
For in the year 2005 peak power demand	320.1 MW

For in the year 2010 peak power demand	464.2 MW
For in the year 2020 peak power demand	700.0 MW

4. Policy and Development Plan (for Electrification in Lao P.D.R):

The government of Lao is aiming to develop about 16 small hydro sites, 22 medium and 30 large hydropower sites.

In 2001 to 2010 the government of Lao has projected 6 medium hydro plants as follows:

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|----|--|--------|
| 1. | Nam Mang-3 (2002-2004) with installed capacity | 35 MW |
| 2. | Xeset-2 (2003-2006) with installed capacity | 76 MW |
| 3. | Xepon (2004-2006) with installed capacity | 75 MW |
| 4. | Nam Ngum-5 (2005-2007) with installed capacity | 100 MW |
| 5. | Xeset-3 (2006-2008) with installed capacity | 20 MW |
| 6. | Houay Lam Phan (2008-2010) with installed capacity | 60 MW |

With the total investment cost of about : 548.70 million USD.

There fore the hydropower resource development in Lao .P.D.R is very important for the development of the whole country