

NATIONAL BIOENERGY POLICIES

Presented by: Mr. Hatsady SYSOULATH
Ministry of Energy and Mines, LAO PDR

Bangkok, Thailand

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Country overview: Lao PDR

- **Terrain**
 - Land locked
 - 70% mountainous
- **Population**
 - 6.2 million, 1.2 million HHs
 - 73% in rural areas
- **Economy**
 - GDP per capita: US\$920 in 2009
 - Growth (1990-2008): 6 to 7.6%
- **Energy Resources**
 - Hydropower (18,000 MW potential, excluding Mekong river)
 - Biomass ,Solar...



Country overview

Government has systematically advanced the process of industrialization and modernization of Lao PDR following the liberation in 1975

- **1986 - policy to steer from centrally planned system to market based economy. Subsequently Govt. introduced development programs anchored by ambitious targets**
 - **National Growth and Poverty Eradication Strategy (NGPES)**
 - **Periodic National Socioeconomic Development Plans (2001-2005-2010)**
- **Targeted poverty alleviation projects in 47 poorest districts**
- **Graduate from the least-developed country grouping by 2020**

Policies and Priorities for the Power Sector

Provide reliable, affordable and sustainable electricity to sustain economic growth and poverty alleviation

- **Hydropower development**
 - Sustain economic growth
 - export for revenue earning
- **Expand access to electricity services**
 - to 70% of households by 2010
 - to 90% of households by 2020

Policies and Priorities for the Power Sector

The power sector plays a key role in powering the country's growth and development

1975

- **42 MW installed generation capacity, of which 30 MW Nam Ngum Dam**
- **World Bank assisted us with financing to complete this project over 1966-1971, and has since been a major partner in our power sector's development**

Today

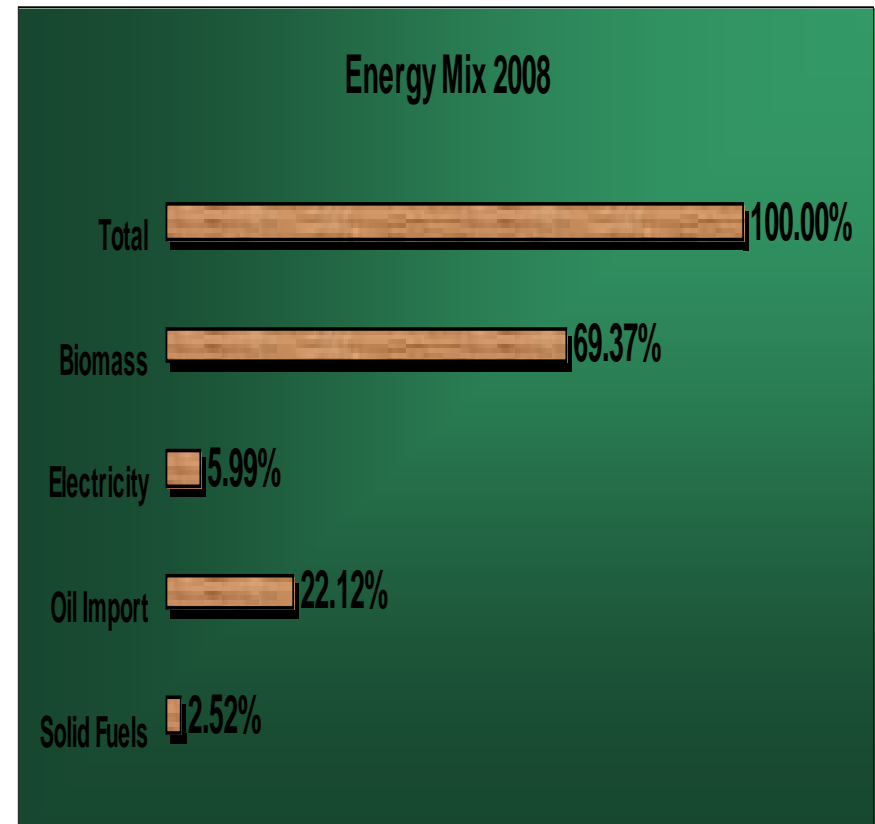
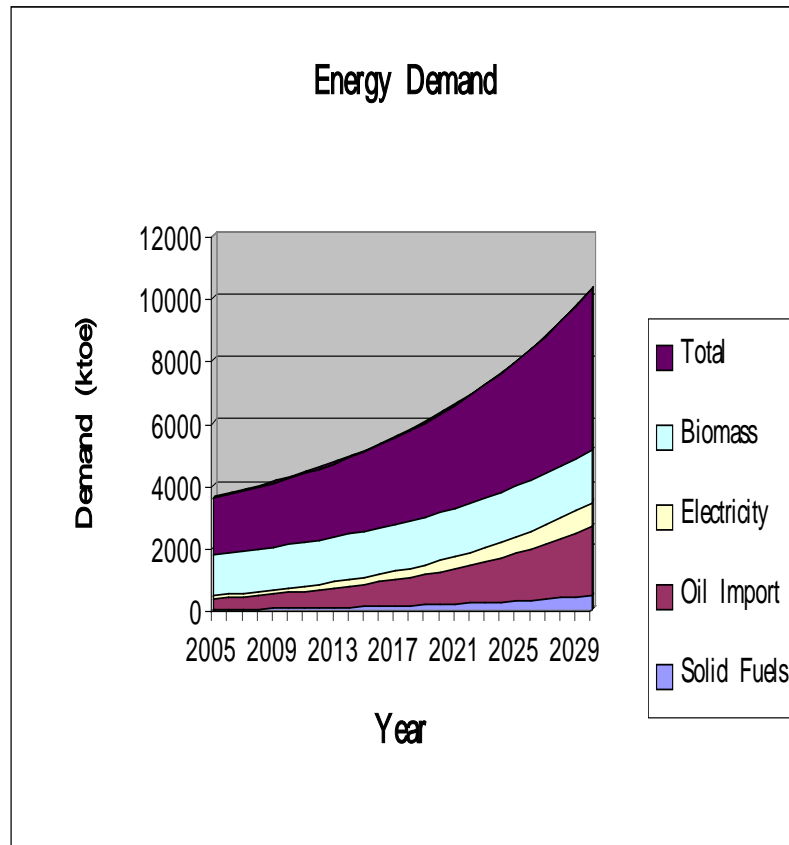
- **2,500MW installed, of which 30% Government own**
- **rest are export-oriented hydro projects with IPPs, including the Bank-supported NT2 (1088 MW)**

Policies and Priorities for the Power Sector

- **Electricity Law 2008 signals strong Government commitment for private-sector led hydropower development for cross-border trade to meet the growing demand in Greater Mekong Sub-region (GMS) countries – Thailand, Vietnam, China, Cambodia, Myanmar**
- **About 2,554 MW Hydropower projects under construction today, most of which are IPPs for export, and financed by foreign investments**
 - **Five-fold increase in installed capacity from 699 MW by 2008 to 3,252 MW by 2013**
 - **Increase in annual gross revenues from US\$130 million today to US\$500-600 million by 2013**

Current Bio Energy Efforts

Energy Consumption and projection



Current Bio Energy Efforts

- **The initiation of bio energy development by various sectors has been promoted by the government, especially the production of bio gass for household community and bio-fuel from jatropha, Casawa and Sugarcane.**
 - **Biogas Program**
 - **Bio Fuel Program**
 - **Biomass- Cooking Stoves**

Current Bio Energy Efforts

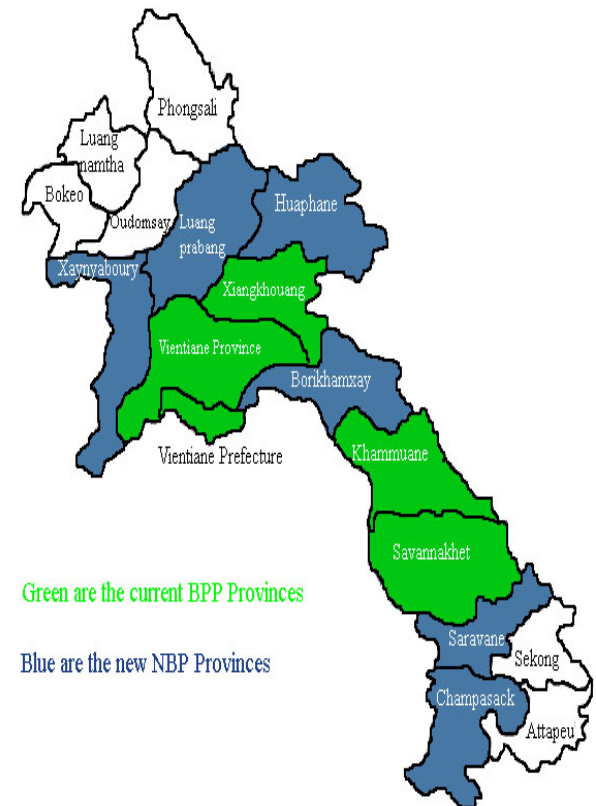
Biogas Gassificaion

- The Lao energy economy is dominated by solid biomass; firewood and charcoal used for cooking and heating accounts for 56% of the energy consumption of the country.
- The Biogas Pilot Program (BPP) is implementing under the Department of Livestock and Fisheries, Ministry of Agriculture and Forestry funded by Government of Netherland
- The program started since January 2007 to December 2010.

Current Bio Energy Efforts

Biogas Gassificaion

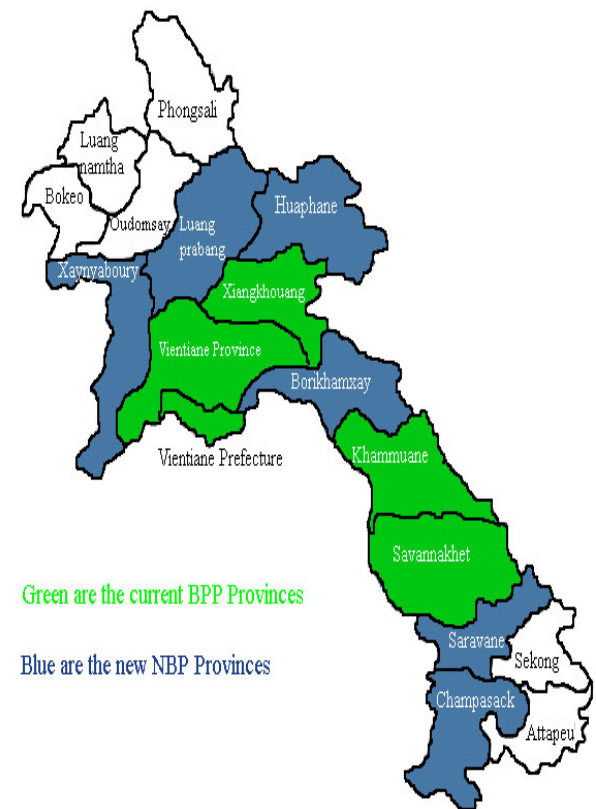
- The Target area: 5 provinces (Vientiane Capital, Savannakhet, Xiengkhouang, Vientiane province and Khammouan).
- The 1,500 family-sized biogas digesters have been installed in 539 villages, 34 districts of 5 provinces (until June 2010)
- Targeted by 2,000 digesters by the end of the program 2010



Current Bio Energy Efforts

Biogas Gassificaion

- Second Biogas will be started from 2011 to 2015 with total project cost is USD 11.04 million financed by ADB,
- the targeted 14,350 biogas digesters (households)
- In 11 provinces.



Current Bio Energy Efforts

Bio Fuel Program

- the plantation of jatropha trees has been conducted in 10,500 ha and planed 85,861 ha by 2015
- 125,000 liters of bio diesel produced
- Private sector investment



Current Bio Energy Efforts

Bio Fuel Program

Investment 49,991,800 USD

Area recorded in 2009 10,500 ha

Area planned in 2020 334,750 ha

Plantation age 1-3 years old

Total yield up to 2009 1.478 tons

Farm gate price 735 LAK

Contract farming 2+3 86.1 %
model

Contract farming 1+4 13.5 %
model

Plantation model < 1%

MJB DEVELOP PLAN



Bio Energy Potentials

- Biogas in Lao PDR is produced from animal droppings. It is estimated that there are four million cubic meters of animal wastes per year, capable of producing 280 million cubic meters of biogas per year
- ***Resource requirements to substitute 10% of fossil fuel by bio fuel in 2025.*** A model calculation of bio fuel production by **10% offset of fossil consumption in 2025 is required** 517,669 ha of agricultural land and about **15% of agricultural land would be required for cultivation.**
- Industrial Plantation rapidly increase by last five year

Bio Energy Potentials

Year	Jetropha		Sugarcane		Rice		Corn		Casawa	
	ha	Tons	ha	Tons	ha	Tons	ha	Tons	ha	tons
2009	10,898	1420	11,133	603,051	614,324	3,584,080	72,125	267,532	14,186	185,393

Renewable Energy Policy

- Lao PDR promotes and develops renewable energy as import energy to take part in national development to ensure energy security, continuous socio-economic development, and environmental and social sustainability;
- Promote sustainable renewable energy development as important part for ensuring the supply of energy in the social and economic development
- Facilitate financial aspects such as tax exemption and incentive for investors
- Prepare and improve law, regulations related to facilitation of renewable energy development

Renewable Energy Objectives

- Ensuring the supply of energy for industrial development, to maintain growth and drive, is a priority in the continued development of mining, industry, agriculture and economic development:
 - **Energy security**
 - **Economic benefit**
 - **Social equality**
 - **Environment protection**

GOL Target on Energy Sector

- **GOL aims to electrify 90% of households by 2020.**
- **GOL aims to share 30 % Renewable Energy by 2025**
- **GOL aims to 10% of bio Energy to substitute oil import by 2025**

GOL Target on Energy Sector

ឆ/ព	Kind of REN	Potentials	Existing	Target 2015		Target 2020		Target 2025	
		MW	MW	MW	Ktoe	MW	Ktoe	MW	Ktoe
A	Power Generation			83		214		481	
1	Small Hydro	2000	11.5	69	58	150	127	241	205
2	Solars	511	0.5	4	3	16	13	56	48
3	Wind	>40		0.5	0.4	1.5	1	5	4
4	Biomass	938		4	3.6	22	18	83	70
5	Biogas	313		4	3.6	22	18	83	70
6	Waste t	216		1	0.99	4	3	14	12
B	Bio Fuel	ឆ្នាំនីមួយៗ	ឆ្នាំនីមួយៗ	ឆ្នាំនីមួយៗ		ឆ្នាំនីមួយៗ		ឆ្នាំនីមួយៗ	
1	Ethanol	600		2	4	41	74	79	141
2	Bio Diesel	1200	0.125	5	8	50	90	97	173
C	Heating	Ktoe	Ktoe						
1	Biomass	226.55			20		25		86
2	Biogas	444			10		15		185
3	Solar	217.92			10		15		195
	Total								
	Energy Demand	2145			2504		3139		3970
	Renewable Energy Share				123		401		1190
	Renewable Energy Share(%)				5%		17%		30%

Bio Energy Promotion and Development

Bio Fuel Development

TARGET 1: To substitute 10% of diesel imports with biodiesel by 2025

TARGET 2: Biofuel technology is utilised by 10% of rural small-holders by 2025

- Tax and subsidy is a limited option for the Lao PDR, as petroleum fuels are subsidised. The GoL may consider removing the subsidy or raising the price of unblended fuel, in order to incentivise the purchase of blended biofuel
- Direct Control via bio-fuel targets and blending mandates can achieve market regulation. In contrast to tax credits, market regulation through direct control drives up the price of fuel
- Agricultural Policies can have a strong influence on production economics, as the production cost of biofuel largely depends on the cost of feedstock. Numerous policy mechanisms are available to the government to regulate price and availability of feedstock, notably price supports, land use and trade regulation.
- Trade Policies serve to restrict the movement of feedstock and bio-fuel. Import tariffs and quotas can protect domestic producers and restrict benefit to trade partners
- Research and Development funding has been argued as the most appropriate government support given to bio-fuels

Bio Energy Promotion and Development

Biogas Development

- Increase the number of households in Laos using biogas by 50,000, to reduce the importation of gas, the use of firewood and charcoals and the use of electricity for heating
- Develop biogas energy businesses, in which the direction of development has been defined as follows: a) small scale development of biogas for cooking & lighting; b) medium and large scales for electricity generation on a personal use scale or being sold to EdL;
- Ensure rapid operation and sustainability of the system
- Maximize benefits from the use of biogas, especially its effectiveness
- Technically develop and build capacity to continue developing biogas technology in Lao PDR
- Strengthen and establish an organization to be responsible for developing sustainable biogas systems

Bio Energy Promotion and Development

Biomass Development

- Encourage feasibility studies of biomass energy from woods, wooden scraps, rice straw and husks to produce electricity serving rural development in remote areas, contributing to the reduction of poverty
- Encourage people in rural areas to use biomass energy from agricultural wastes, to become self-reliant (This may include the set up of a biomass gassifier per community).

Bio Energy Promotion and Development

Biomass Development

- Land policy that include the proper use of abandoned lands (such as mine lands) which can be utilized for energy crop production, a more effective land allocation/distribution, and the strengthening property rights and security of tenure among farmers.
- Bio energy production and use policy to regulate the bio energy processing plants and strategize their location based on the country's infra- structure development plan.
- The policy should consider food security issues and regulation of food crops for bio fuel production.
- Research and technology development and training to improve production efficiency and modernize the industry,
- Institutional strengthening helps create and enforce policies to ensure strict and proper guidance on bio Energy development plans and programs.

**THANK YOU FOR
YOUR ATTENTION**