

Bioenergy Development in Lao PDR

Presented by:

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Outline of the presentation

- Country Overview
- Current situation and out look of bioenergy
 - Current Status
 - Challenges and Opportunity
- National Policies and Action Plan
- Conclusion or Recommendation

Country overview

- Location : south east Asia,
- Area : 236,800 km²
- 80% of terrain is mountainous
- VIENTIANE is capital
- Population: 5.6 mill.
- 2.6% of population grow rate
- 23 pers/Km² of aver density.



Country Overview (Con't)

- Economy: least developed, GDP US\$ 499; 6.5% grow rate; based on agriculture 43.5%, Industry 30.5 % and service 26%.
- GOL targets to Exist LDC group by 2020s. NGPES set in 2004
- Energy plays important role to support that goal. Exploitation of all Country's Energy source should be promoted.

Current situation of Bioenergy

- Biomass is one of the most important sources of energy in Lao PDR and in particular in rural areas. There is a potential for various biomass technologies , but there is a shortage of data on local resources and feasibility in different areas of the country .
- The 2005 census indicated that 92.7% of people used the fuel wood, 4.3% used charcoal and 0.7% used saw dust as their main cooking fuel. 85.6% of people in urban depending on wood fuel, out of these 17% of people used charcoal while in rural area 99.4% of the people used wood fuels.



ເຕົາປະສິດທິພາບສູງ



ເຕົາໄຟເຊື້ອໄຜໄດ້ດີ, ແປວໄຜແຂງ, ຫຼຸດຜ່ອນການສູນເສຍຄວາມຮ້ອນ, ເຄື່ອນຍ້າຍສະດວກ, ປະຢັດເຊື້ອ (ສິນ, ຖ່າຍ) ໄຜໄດ້ຫຼາຍກວ່າ 40%

ປະໂຫຍດຂອງການນຳໃຊ້ເຕົາປະສິດທິພາບສູງ



ຫຼຸດຜ່ອນລາຄາການຫາຜົນ



ຫຼຸດຜ່ອນປະລິມານໄມ້ສິນ/ລາຍຈ່າຍສຳລັບຊີວິດ



ຫຼຸດຜ່ອນການຕັດໄມ້ສຳລາຍຢ່າເຮັດໃຫ້ຢາໄມ້ ແລະ ແຫຼ່ງນ້ຳອຸ້ມສິມບູນ



ຫຼຸດຜ່ອນມົນລະພິດໃນເຮືອນຄົວ ແລະ ປະຢັດເວລາໃນການແຕ່ງກິນ

ສາທາລະນະສື່ສານສຳນັກວິໄນ
 ທຳມະດາ ສຳນັກວິໄນ ສາ ສິງຄະດາ
 ຕຳບຳ 20781 ສາມາດສູນວຽກງານ ສາມາດ
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With regard to industrial applications of biomass energy technologies like for brick making, tobacco curing, etc. very little work has been carried out .
 For domestic sector, improved charcoal stove program has initiated in 1998 by CORE in cooperation with PADECT has resulted in commercializing the stove with sales reported to be in the tens of thousand, TRI/STEA has continued the work with the same stove type in other area of Laos again with success. Commercialization of improve stove has been experimented in Paek District Xiengkhuang Province. Biomass gasification is underpromotion.

■ Biogas

TRI, STEA has initiated some activities in biogas, installing 18 digesters in various areas in Laos, and will continue to take the lead role in the development of a biogas sector. SNV is providing technical assistant to Laos to promote biogas. The government of the Netherlands, through the Asia Biogas Project, will be providing funds to promote the use of biogas, with funds to be used to provide subsidy (30% of the cost of a biogas digester system) to farmer who decide to install a biogas system.



In the framework of the Asia Biogas Programme (ABP) co-financed by the Directorate-General for Information Cooperation (DGIS) of the Dutch Ministry of Foreign Affairs, the Netherlands Development Organization (SNV) aims to facilitate the setting-up and the implementation of pilot project on domestic biogas in Lao PDR. As the most appropriate partner for this, the Lao Ministry of Agriculture and Forestry (MAF) has been identified, more in particular the Department of Livestock and Fishery (DLF) and/or the National Agricultural and Forestry Extension Services (NAFES).

The overall objective of proposed Biogas pilot Project (BPP) is to properly introduce domestic biogas in the rural areas of Lao PDR resulting in a significant improvement of the quality of life of the families and their environment concerned.

The tentative specific objectives contributing to its overall objectives are:

- To construct 6,600 family sized quality biogas plants in selected provinces in during the period 2006 through 2009.
- To ensure the continued operation of all biogas plants installed under the BPP
- To maximize the benefits of the operated biogas plants, in particular the of optimum use of digester effluent.
- To develop in-country capacities for further wide-scale deployment of biogas digester technology in Lao PDR.

The main obstacles encountered:

- Low level of awareness of people
- People face the shortage of microfinance and microcredit facilities as formal banking system is limited mainly on principal urban centers .
- People are reluctant to substitute fuelwood by Biogas: Fuelwood for cooking is basically free (in case manpower for the collection is not monetize) and for that reason Biogas digesters with the Biogas being used as a substitute for fuelwood and charcoal, has difficulty competing price-wise as the investment costs of a family sized digester (about 350 USD) is often beyond the financial means of the rural population and require loane with high interest rates.

Biofuel

- Particularly biodiesel based on *Jatropha curcas* is at present a hot issue and receives a lot of attention. A private company invested about 31 million USD in 2007 to set up biodiesel plant using locally grown *jatropha*, (about 100,000 ha of planted *jatropha* is required for this plant). At present over 2000 ha of *jatropha* plantation exist in addition to an know but large area where *jatropha* grows in the wild as well as for natural fencing of agricultural land, etc.



- Many companies and association have invested in plantation of oil trees for Example: Japan Bioenergy Development Corporation established in Lao PDR in 2007 and is planning to reach 3,000 ha of plantation in Lao PDR by operating mainly in three provinces: Bokeo, Vientiane and Savannakhet, Association for Promotion of Plantation.
- There is not Existing Production of Bioenergy in Lao PDR, Bioenergy Development is at the beginning stage



Biofuel (con't)

- BioEthanol: Now there is only one small existing sugar factory in Vientiane and there are two sugar factories in Savannaket Province to be constructed

Challenges

- Develop a better source seed material
- Implementation of new (Energy) crop into the existing farming

Lao PDR has the potential to become major biofuel producer. The development and use of bioenergy has become an important international focus which generate enormous public interest and debates, the main concern in the serious would have serious implications for food production unless new and more efficient technologies are developed both in biofuel development and food production, ADB notes. There must be polices that protect land, water and forest resources, promote socially acceptable land use, and guide bioenergy development in sustainable direction.

Opportunities

Taking into account the increasing demand in energy and the fighting against greenhouse gas emission and other pollutants the increase of fossil oil price.

- The industrialized nations as well as developing portions are focusing on bioenergy development.
- within GMS (ADB/FAO/IFAD launch GMS biofuel initiative) and ASEAN nations, extend the economic cooperation to energy cooperation especially Bioenergy would be an opportunity for Lao PDR to get benefit from such cooperation.

Renewable Energy policy

- Prime Ministry's Recommendation order on Economy of fossil fuel the move toward the utilization of Bioenergy (N. 09/PM, dated of 25/05/2006) . The decree calls for concerted and coordinated efforts to speed up the development of biofuel technologies, reduce the use of fossil fuels, to contribute to climate change mitigation and adaptation, and help reduce rural poverty.
- The country is in the process of planning the integration of biofuels and other types of rural renewable energy into agriculture and energy sectors in ways that will complement and accelerate poverty reduction efforts.

- Lao PDR has no specific policy of Renewable energy yet; however, the renewable energy was included in electricity policy in context of rural electrification by off-grid system to achieve to target of GOL to raise the national electrification rate to 90% by the year 2020. 10% of these are expected to be electrified by renewable energy.
- Other aspect of renewable energy policy need to be formulated to encourage the exploration, development and use of all national renewable resources, which are socially and environmentally acceptable to the country as well as all communities
- Presently, the policy on Renewable energy and Renewable energy strategic and action plan are in preparing.

POWER SECTOR POLICY

- Maintain and expand an affordable, reliable and sustainable electricity supply in Lao PDR to promote economic and social development.
- Promote power generation for export to provide revenues to meet GOL development objectives;
- Develop and enhance legal and regulatory framework to effectively direct and facilitate power development; and
- Strengthen institutions and institutional structures to clarify responsibility, strengthen commercial functions and streamline administrations.

Research and Development

- In general, renewable energy resources will most likely be developed under the direction of MEM/MIH coordination with renewable energy sector organizations is recommended so that their data, experience and expertise can be accessed for the future projects. As well, these organizations may be able to contribute practical experience on appropriate technologies, implementation approaches and pilot projects.
- TRI had created a Renewable Energy Technology Center (RETC), which will be a training center, demonstration and research center promoting the development and use of RET. Demonstration of RET applications for public awareness. This center will also offer training in the utilization of the various technologies to the national technicians and also to the region.

ENERGY SECTOR/Energy Institution

- **Ministry of Energy and Mines (MEM/MIH)**

manages the electricity sector through DOE, EdL, primary responsibility for policy formulation and strategic planning

- **Ministry of Commerce**

governs imports and sets prices of liquid fuel and LPG

- **Lao National Committee for Energy (LNCE)**

act as a Government agency with powers to manage the development and marketing of electricity across the whole country, reported as including the promotion of investment in the power sector and meeting market demand for power in neighboring countries,

con't

- **Science Technology and Environment Agency (STEA)**

Main coordinating agency for environmental planning and management across all sectors . **TRI** implements R&D on RET, environmental sound technology, etc

- **FOE/NUL** is mainly involved with research and educational issues on renewable energy, over 100 students had graduated in this field since 2000s.

- **The National University of Laos (NUOL)**
mainly involved with research and education issues on renewable energy.
- **Renewable Energy for Sustainable Development Association (RESDALAO), SunLabob** are private sector organizations, heavily involved with the introduction of Renewable energy equipment using innovative mechanisms like hire-purchase systems of PV system, solar powered water pumping, etc

Conclusion

- Renewable energy can and does play an important role in Lao PDR, it has potential source which can be explored to meet the demand and support socio-economic development particularly in rural area.
- There are many RE systems and applications available and being used in some context. Some R&D on RE has been initiated which mostly are only applied research and desk studies.
- Presently, only hydro and solar energy for electrification have been significantly explored, biomass based fuel wood and charcoals is largely used in rural areas of the country and are generally inefficient when used. Other RE sources are less explored.

Recommendation

Needs

- Sound policy direction
- Rigorous assessment of supply, demand , potential and likely impacts
- Investment in second generation technologies
- Alternative production and processing

Priorities

- Clean Development Mechanism and Energy Security
- Income Distribution
- Food Security and Engagement
- Policy and Investment Cooperation

Approaches to Biofuel Development

■ Sub- regional Cooperation

- Policy and Strategy
- R & D
- Investment Cooperation and Public – Private Partnership

■ National program support for plans, priorities and Capacity Development

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Thank you