international workshop on bioenergy in the ASEAN region

Country Presentation on status of Bioenergy development in Lao PDR

23-24 July 2014 Plaza Athenee Bangkok, Thailand



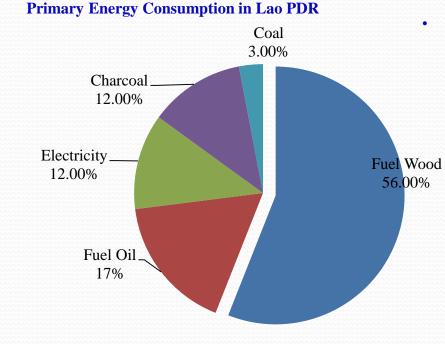




Overview of Bioenergy

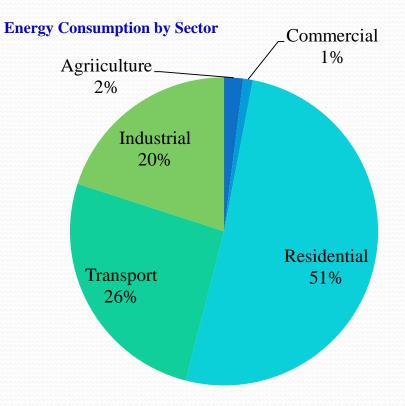
- Lao PDR is an agricultural based country. There are a lots of wastes generated every year from agro-forestry production,
- Municipal wastes/organic industrial wastes are among the important biomass energy resources.
- High potential of energy crops, which can be used as feedstock for biofuels production.
- Energy use in the country is mainly in the form of traditional fuels, i.e. the use of biomass such as wood and charcoal for cooking and heating in rural areas

Energy situation in the country



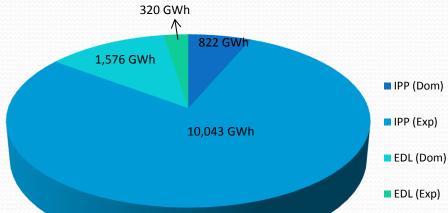
Data collection

- What is the legal basis and procedure to collect energy/agricultural data?
- Who uses the data and how?
- What are the main issues?

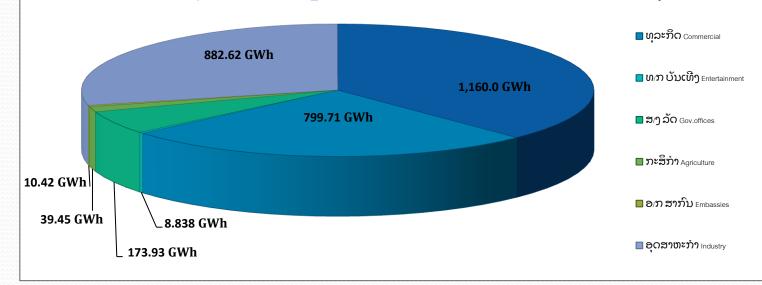


Electricity Situation in the country

Electricity Generation in Lao PDR



Electricity Consumption in Lao PDR

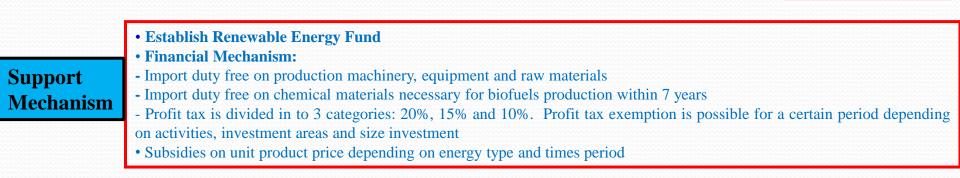


🔲 ທີ່ຍ່ອາໄສ Residential

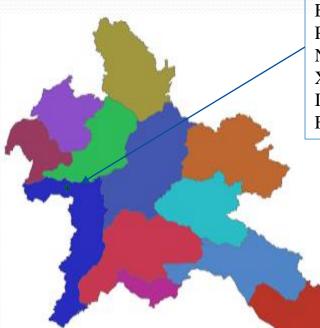
Agriculture situation in the country

- Main food crops produced
- Rice, corn, Cassava, sugarcane, Job tears.....
- Main export staples
- Rice, Corn...
- Crop residues/waste produced
- Rice husk, Corn crops, sugarcane crops /Animal Waste
- Agriculture strategy
- What are the main issues? (land, water, production,
- storage, export, policy,

Policy and Strategy for Renewable Energy Objective: Ensure energy security, sustain socio-economic development, and enhance environmental and social sustainability Financial Develop and Modify Legal **Renewable Energy Strategy** Incentive for documents (laws, regulations **Development** (2011-2025) and guidelines) Investors **Target:** increase RE use to 30 % of national demand by 2025 (bio-fuel production to account 10 %) **Bio-Energy Biofuels (ML)** Heat **For Electricity** SHP Solar Wind Ethanol 97.64 **Biomass Biogas Biomass Biogas** Waste 106 400 MW 73 MW MW **51 MW 58 MW 36 MW** 113 ktoe 178 ktoe **Biodiesel** 194.44



CURRENT STATUS OF BIOMASS DEVELOPMENT



Energy Self Sufficiency Village Pangbong Village Ngeun District Xayabury Province Install Capacity:40 kW Feedstock: Corn **crops**





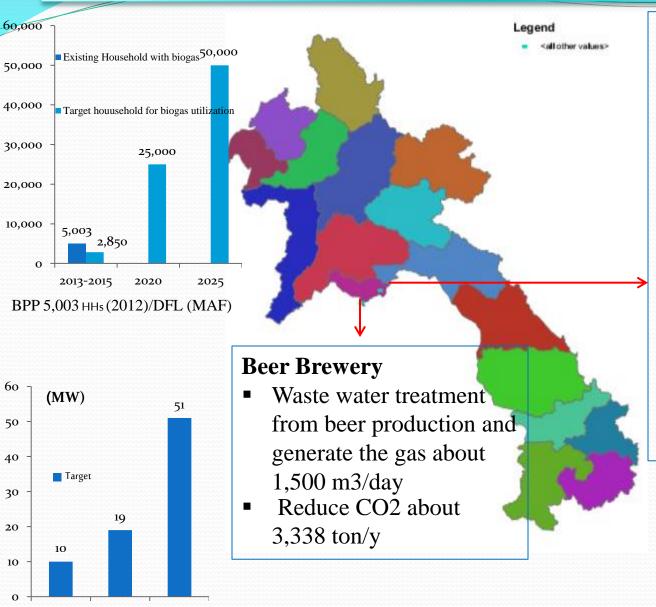
Mit Lao Sugar Mill Xaibury, district Savannakhet Province Install Capacity: 9.7 MW Feedstock: Bagasse



Hoang Anh Sugar Mill

Phouvong, district Attapeu Province Install Capacity: 30 MW Feedstock: Bagasse

CURRENT STATUS OF BIOGAS DEVELOPMENT



2015

2020

2025

TBEC (Lao) Sole Co. Ltd

- Waste water treatment from Cassava and produce biogas 7 million m3/y
- Production of biogas 90 Million (Nm3) or million normal cubic meters (Nm3), approximately at 175 million liters, of heavy fuel oil (HFO)
 - reducing as much as 300,000 tones of greenhouse gas per year and 60,000 tones of CO2 on an annual basis.

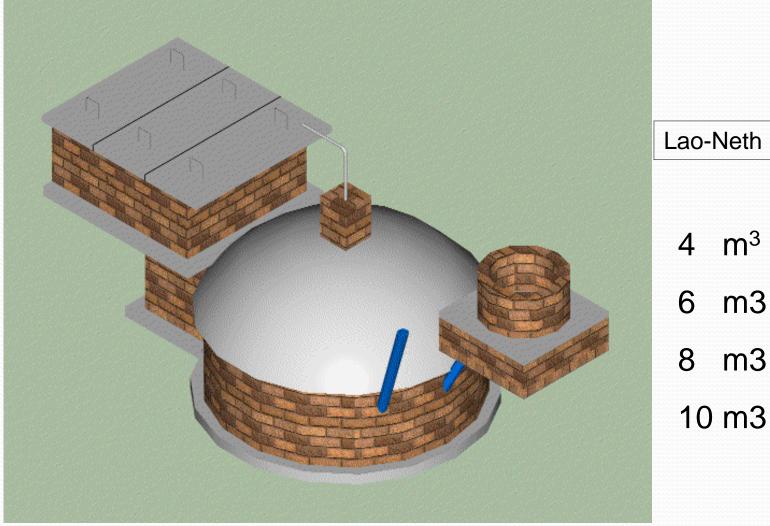


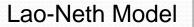
<u>Data</u>

U.D. Farm; Mai Village, Phonetong District, Vientiane Province.

- Amount of waste 270 cu.m./day 2,090 cu.m./day **Biogas** production Engine and Gen-set capacity 260 kW Total Project investment cost \$357,345 \$80,428 Potential profit per year **Energy Production** 2,927 kWh/day **Operating hours** 11.2 Hrs/day Payback period(No loan and no subsidy) 4.5 years
 - Status: Under construction will be finished in Feb. 2015

Family scale of Biogas

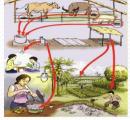




m³



With Biogas System



Biogas system converts existing wastes into clean and valuable household products.

Statistic for Family scale of Biogas Installation

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total |
|------------------------|------|------|------|------|------|------|-------|
| | | | | | | | |
| Number of Biogas | 110 | 188 | 650 | 1000 | 1330 | 1725 | 5003 |
| Number of Provinces | 1 | 3 | 3 | 5 | 6 | 6 | |
| Number of Districts | 4 | 15 | 21 | 29 | 41 | 45 | |

CHALLENGES ON RENEWABLE ENERGY DEVELOPMENT

- Awareness barriers among policy makers, consumers, suppliers etc
 - Lack of knowledge concerning opportunities, reliability and lifetime of technologies;
 - ✓ Lack of knowledge concerning impacts on environment from renewable energy production;
 - ✓ Lack of information on resources available and sustainability, in particular with regard to biomass
- Financial challenges:
 - \checkmark The high investment cost and scare resources support
 - \checkmark Renewable energy is hardly variable economically unattractive to provide investor
 - ✓ Lack of financial institutional support and absence of appropriate financing
- Administrative challenge:
 - ✓ Long processing/take many paper work for tax exemption
 - ✓ Lack of coordination among government agencies and the private sector which hampers renewable energy development and promotion in Lao PDR
- Socio-cultural challenge
 - Lack of renewable energy specialist among the decision makers meaning that policy makers are not be fully aware of characteristics and benefits of renewable energy
 - \checkmark No local production
 - ✓ Limited public awareness of renewable energy advantage in daily life
- Technical challenge
 - \checkmark Some of renewable energy has low energy generation compare to other energy
 - ✓ Need large area
 - ✓ Lack of local standards for renewable energy equipment and systems as renewable energy technologies are relatively new to the market Environmental and social impacts
 - ✓ Lack of effective measures to prevent the adverse social and environmental impacts of large scale hydropower projects

Conclusion

- Improvement of Data collection in provincial level
- Master plan and action plan for Bioenergy
- Subsidies on unit product price (adder or FIT)
- Carry out resource assessment to estimate potential
- Business Model
- TA



Thank you