## 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



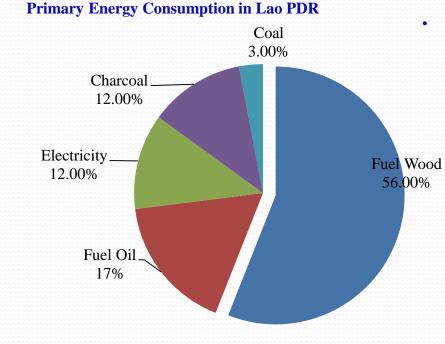




## **Overview of Bioenergy**

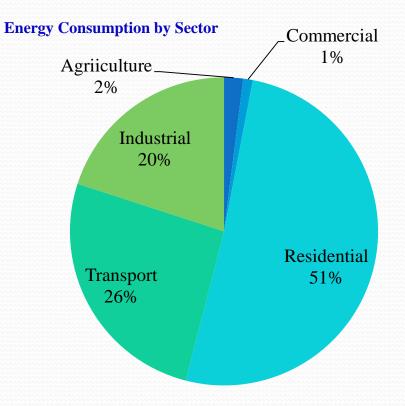
- Lao PDR is an agricultural based country. There are a lots of wastes generated every year from agro-forestry production,
- Municipal wastes/organic industrial wastes are among the important biomass energy resources.
- High potential of energy crops, which can be used as feedstock for biofuels production.
- 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**



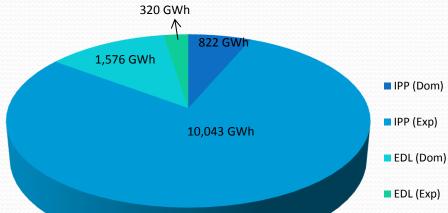
### **Data collection**

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

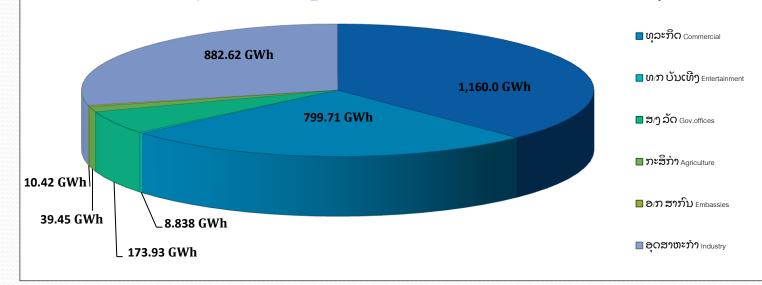


## **Electricity Situation in the country**

### **Electricity Generation in Lao PDR**



### **Electricity Consumption in Lao PDR**

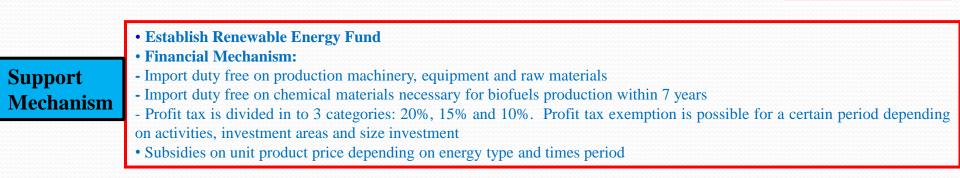


🔲 ທີ່ຍ່ອາໄສ Residential

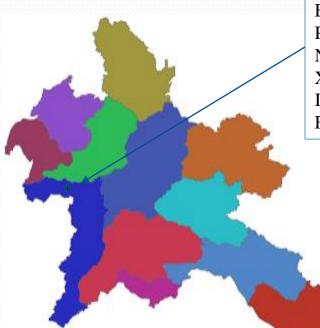
# **Agriculture situation in the country**

- 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

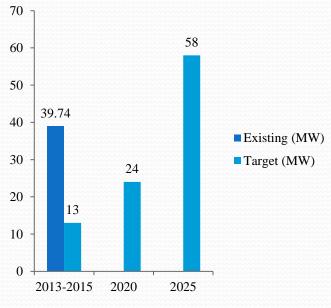


## **CURRENT STATUS OF BIOMASS DEVELOPMENT**



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





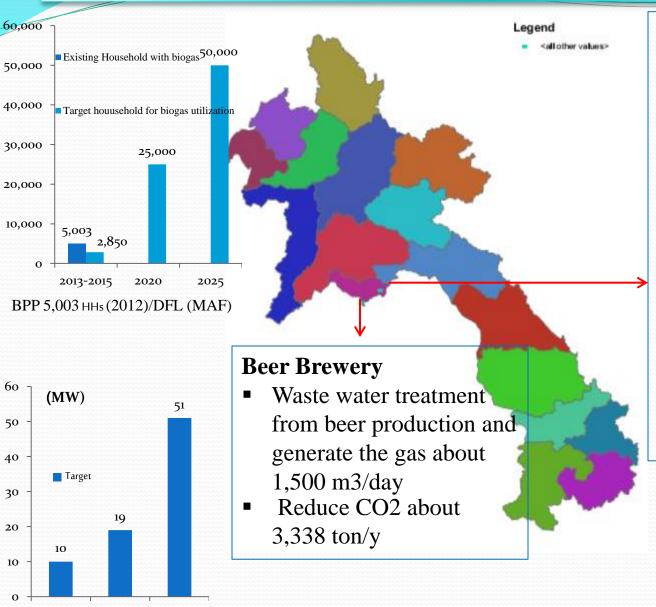
Mit Lao Sugar Mill Xaibury, district Savannakhet Province Install Capacity: 9.7 MW Feedstock: Bagasse



**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.

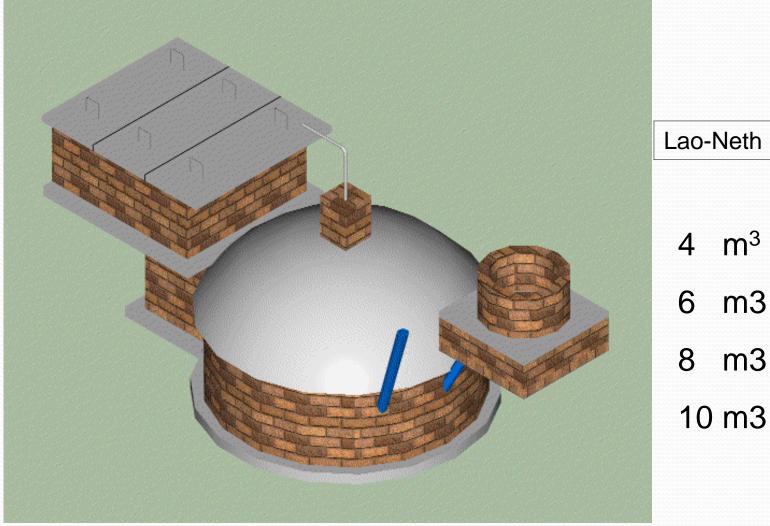


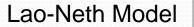
<u>Data</u>

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

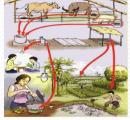




m<sup>3</sup>



### 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**