

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

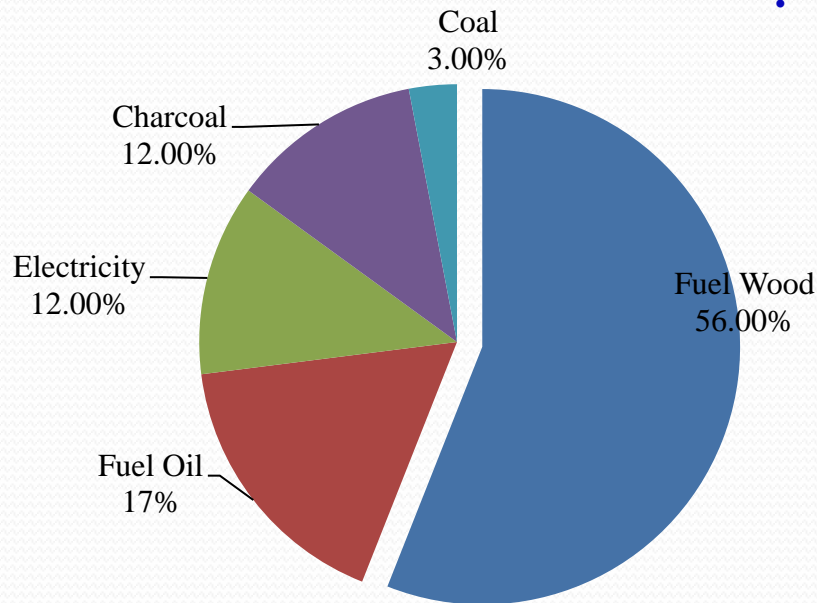


Overview of Bioenergy

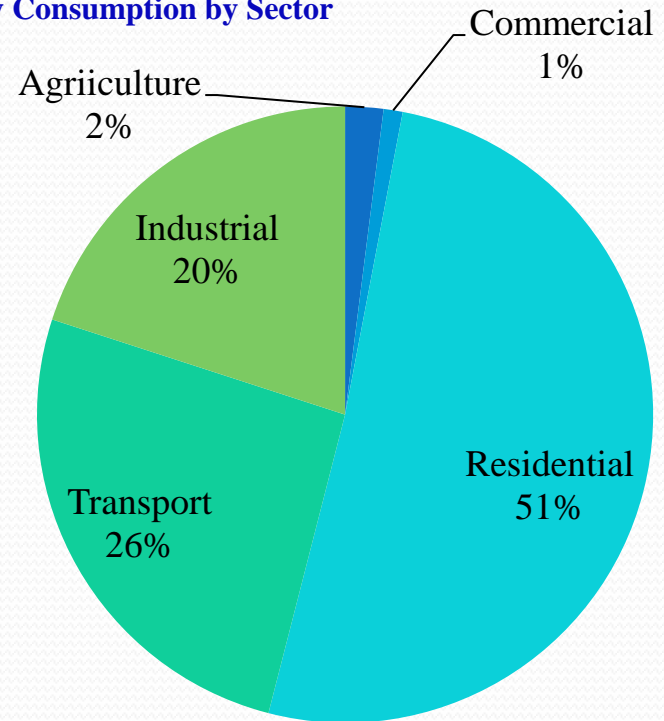
- Lao PDR is an agricultural based country. There are a lots of wastes generated every year from agro-forestry production,
- Municipal wastes/organic industrial wastes are among the important biomass energy resources.
- High potential of energy crops, which can be used as feedstock for biofuels production.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

- **Primary Energy Consumption in Lao PDR**



- **Energy Consumption by Sector**

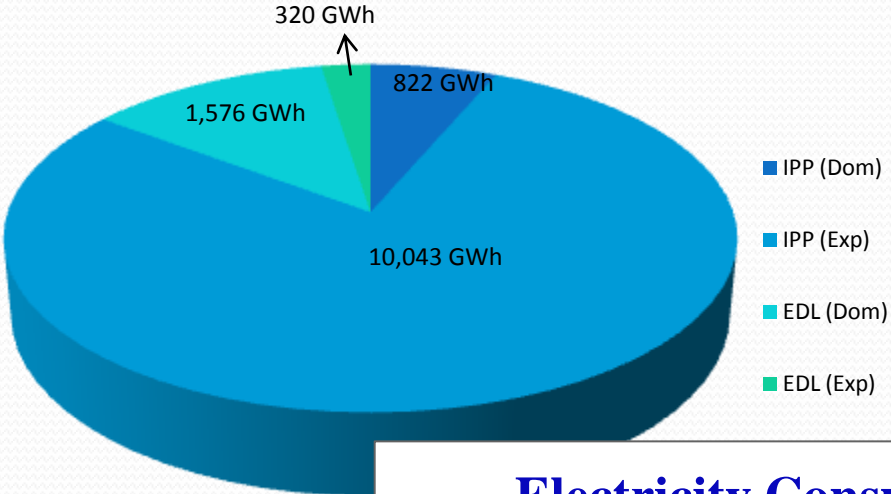


Data collection

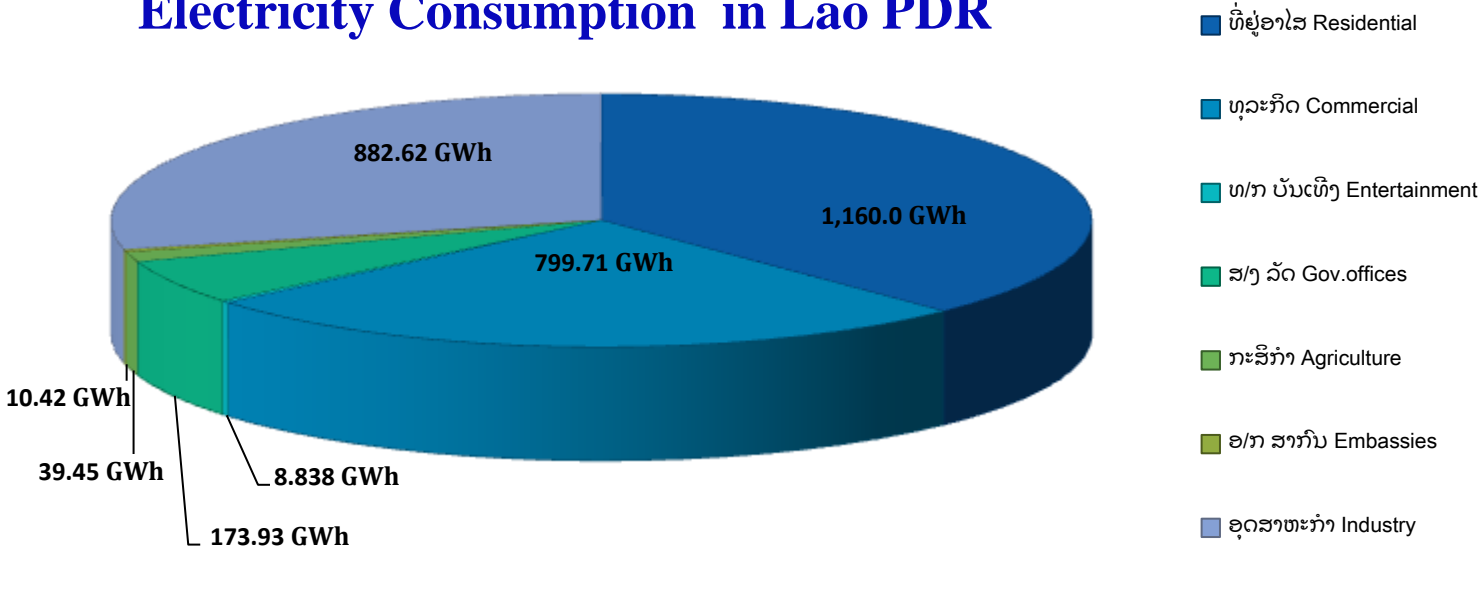
- What is the legal basis and procedure to collect energy/agricultural data?
- Who uses the data and how?
- What are the main issues?

Electricity Situation in the country

Electricity Generation in Lao PDR



Electricity Consumption in Lao PDR



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

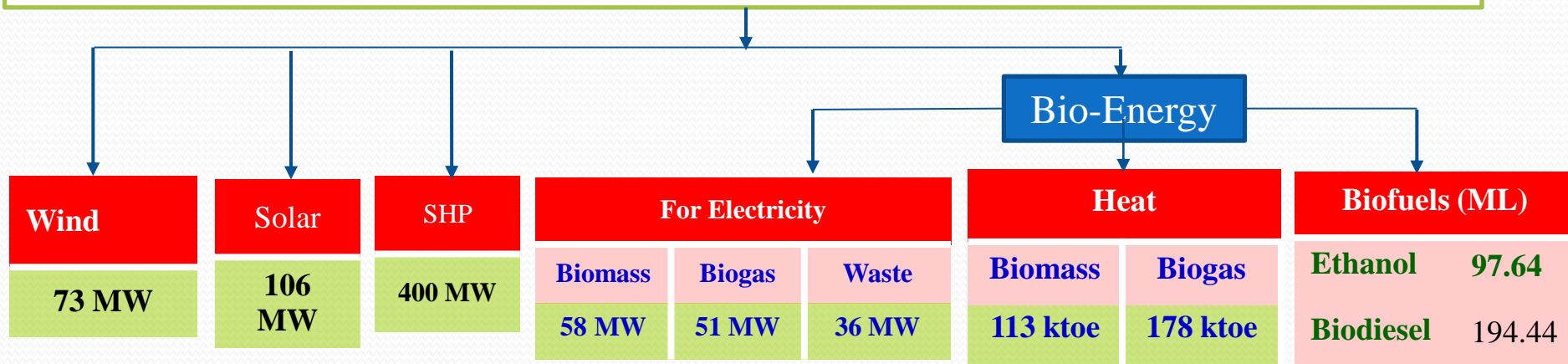
Objective: Ensure energy security, sustain socio-economic development, and enhance environmental and social sustainability

Financial Incentive for Investors

Renewable Energy Strategy Development (2011-2025)

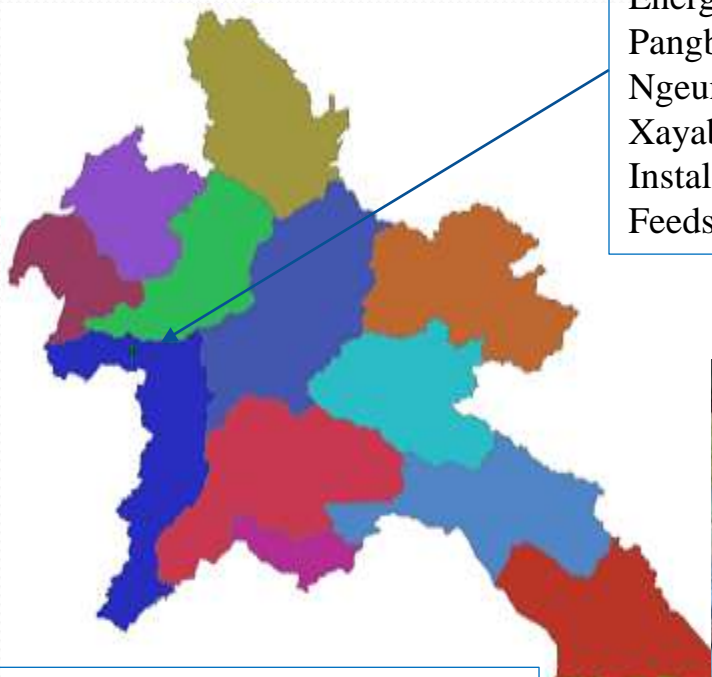
Develop and Modify Legal documents (laws, regulations and guidelines)

Target: increase RE use to 30 % of national demand by 2025 (bio-fuel production to account 10 %)

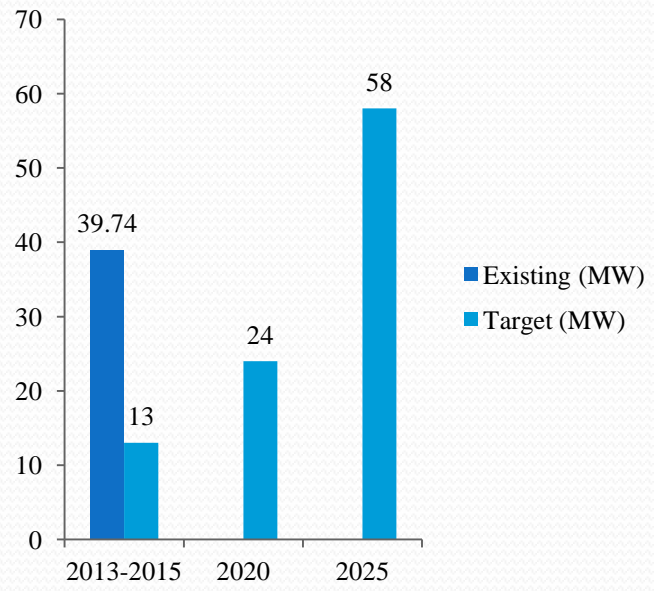


- Support Mechanism**
- Establish Renewable Energy Fund
 - Financial Mechanism:
 - Import duty free on production machinery, equipment and raw materials
 - Import duty free on chemical materials necessary for biofuels production within 7 years
 - Profit tax is divided in to 3 categories: 20%, 15% and 10%. Profit tax exemption is possible for a certain period depending on activities, investment areas and size investment
 - Subsidies on unit product price depending on energy type and times period

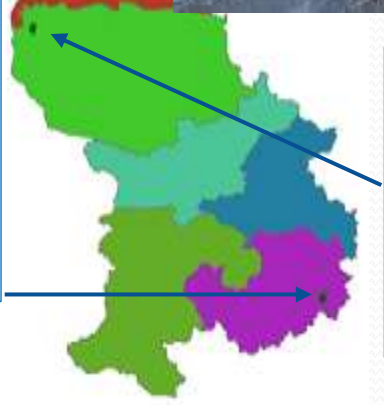
CURRENT STATUS OF BIOMASS DEVELOPMENT



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



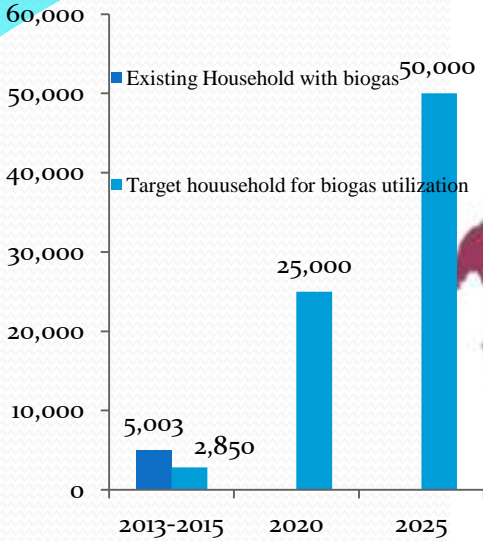
Hoang Anh Sugar Mill
 Phouvong, district
 Attapeu Province
 Install Capacity: 30 MW
 Feedstock: Bagasse



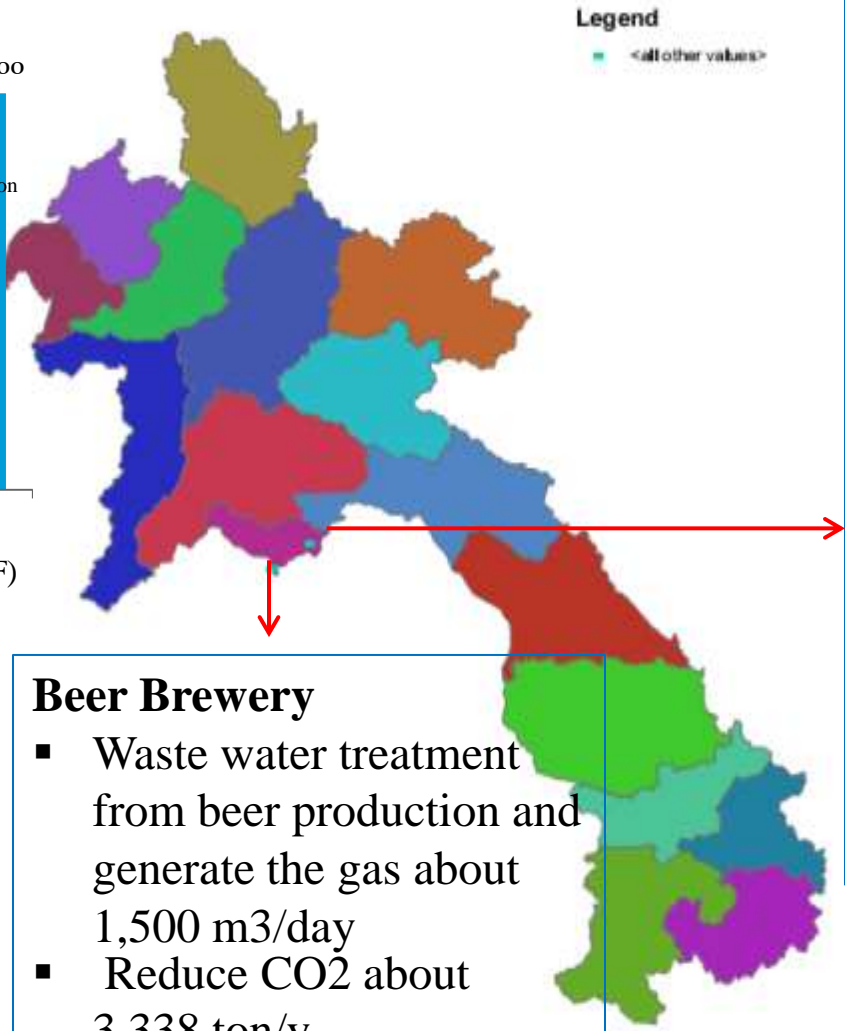
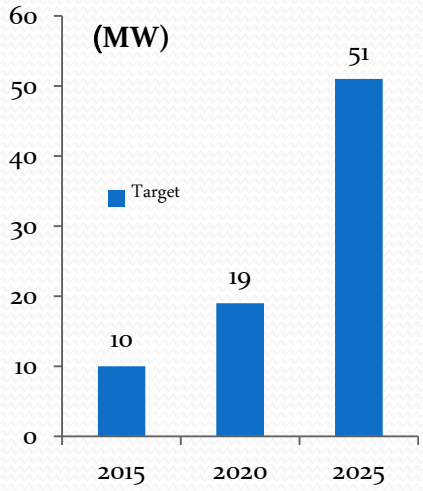
Mit Lao Sugar Mill
 Xaibury, district
 Savannakhet Province
 Install Capacity: 9.7 MW
 Feedstock: Bagasse



CURRENT STATUS OF BIOGAS DEVELOPMENT



BPP 5,003 HHs (2012)/DFL (MAF)



Beer Brewery

- Waste water treatment from beer production and generate the gas about 1,500 m³/day
- Reduce CO₂ about 3,338 ton/y

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.

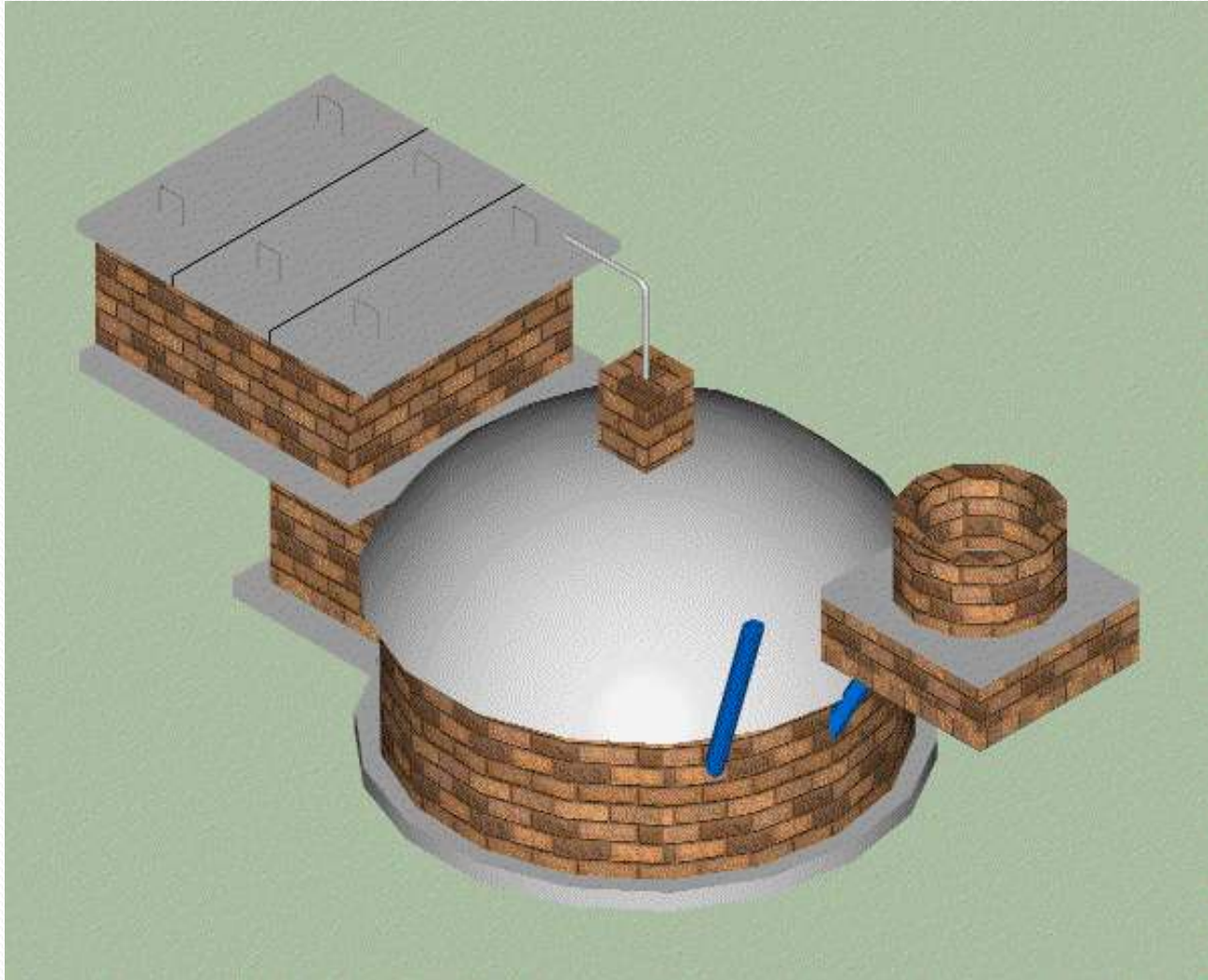
Biogas for Electricity Generation

Data

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

- Amount of waste 270 cu.m./day
- Biogas production 2,090 cu.m./day
- Engine and Gen-set capacity 260 kW
- Total Project investment cost \$357,345
- Potential profit per year \$80,428
- 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



Lao-Neth Model

4 m³

6 m³

8 m³

10 m³

➤ Biogas Concept

Clean, easy, modern cooking and lighting

Healthy house and clean area



Generates clean Biogas energy
Makes organic fertilizer



Treats Waste



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:
 - ✓ The high investment cost and scarce resources support
 - ✓ 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
 - ✓ No local production
 - ✓ Limited public awareness of renewable energy advantage in daily life
- Technical challenge
 - ✓ 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