Cambodia's Bioenergy Situation

By

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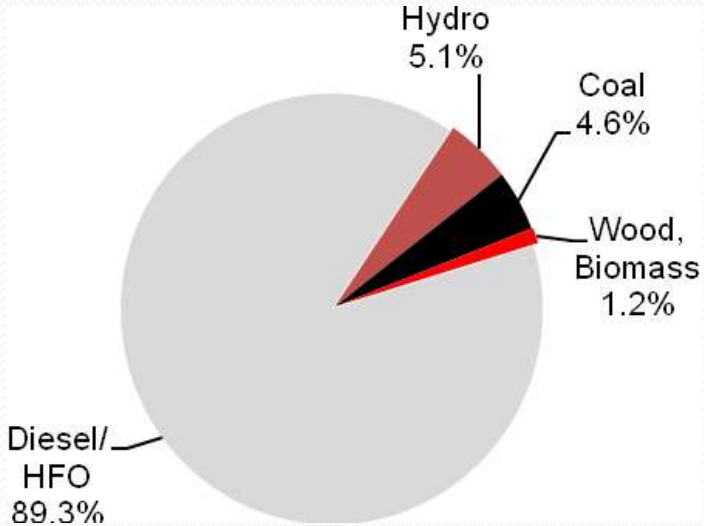
International Energy Agency

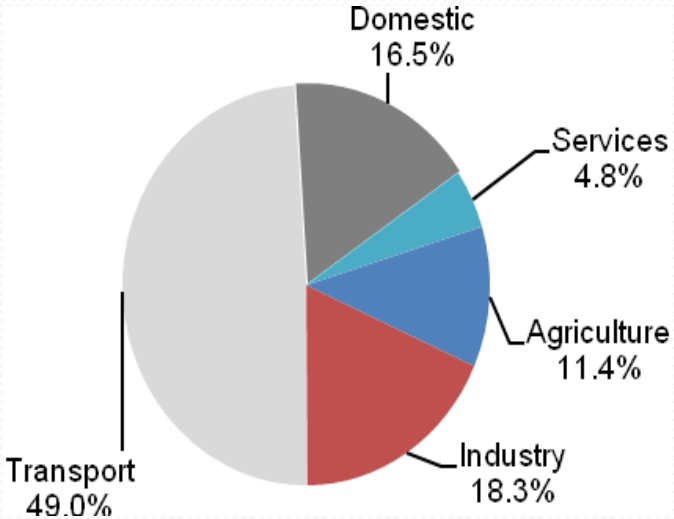
IRENA
International Renewable Energy Agency

Energy situation in the country

Total Primary Energy Supply



Energy Consumptions by Sector



Data collection

- Data was collected from the Department General of Energy, Ministry of Industry Mine and Energy (2013)
- Data can be used in the public

Agriculture situation in the country

- Rice is main food crops produced and export staples
- Agricultural residues such as rice husk and straw, corn cob, sugar cane baggasse, animal dung, etc.
- Agriculture strategy: The strategic role of the rice sector in economic growth, poverty reduction and food security, and rice appears in government strategy and planning documents wherever agriculture is mentioned. Measures of intensification include the construction and maintenance of irrigation facilities, improved water resource management, enhanced input supply and delivery. Many of these measures target rice (Cambodia's Agricultural Strategy: Future Development Options for the Rice Sector, 2010).
- The main rice issues is water, storage and export

Bioenergy in the country

1. **Policy** for bioenergy

   Government policy of promoting biomass used is linked with reducing poverty by supplying bio energy and helping improved soil condition to the poor, especially in the remote areas. The use of locally available biomass resources considered to be ideal in line with supporting local agricultural activities.

2. The **biomass resource availability** been assessed at national/local level

   Biomass resources are used for energy consumption and soil amendment such as:

   - Biogas resource from digestion of animal waste
     - Plastic-made household biodigester
     - Concrete-made household biodigester
   - Biogasifier from the agricultural wasted products and firewood including improved cook stove
   - Biofuel from the Jatropha
   - Biochar from the agricultural residues
   - Bioethanol from the cassava chips

Bioenergy in the country

3. Identification on the **market potential and economic impact** of bioenergy production

It has not been widely market due to mostly small scale bioenergy production.

4. The **technology, infrastructure and required skills** available in the country sufficient to meet plans for bioenergy deployment

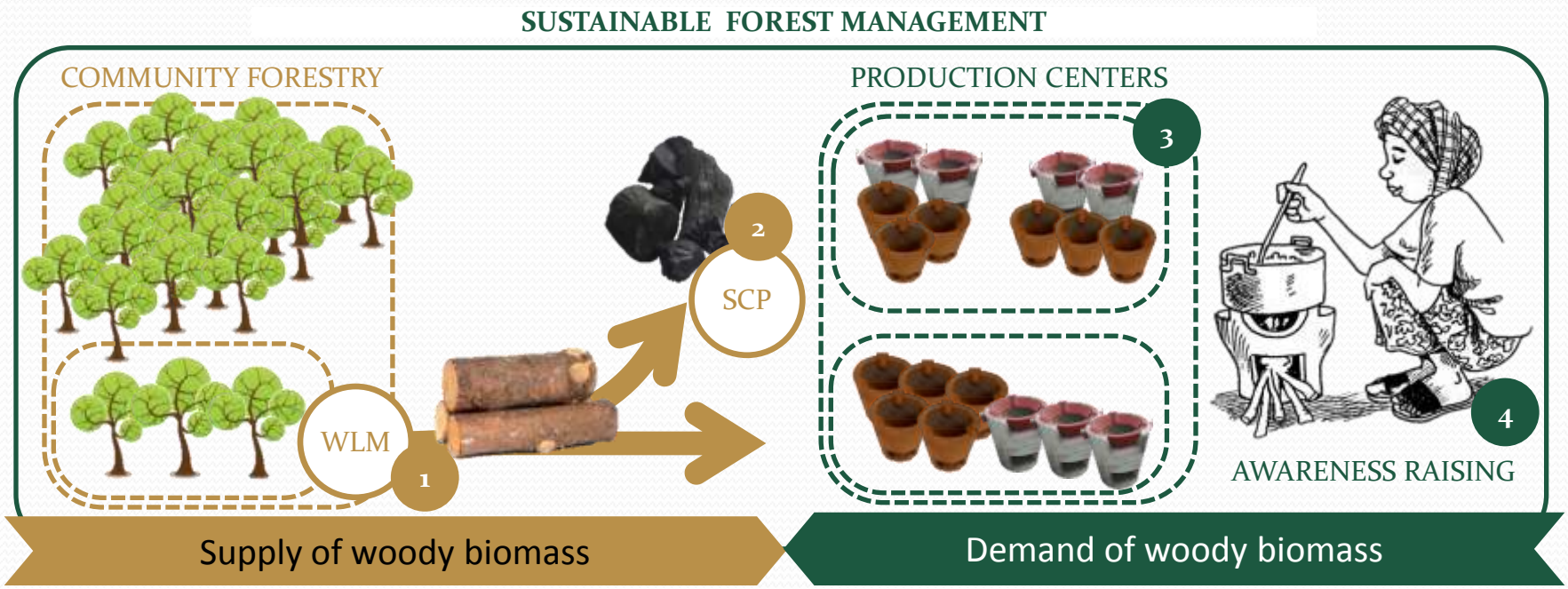
Four key technologies, lead to both bioenergy and GHG mitigation and climate change adaptation for poor rural households as follow:

- Biogas and efficient use of bioslurry
- Biochar and clean charcoal
- Improved cook stoves (ICS); and
- Intercropping oil seed crops
- Strengthening capacity building on this topic for both national and local level is needed

Recommendations

1. Strengthening capacity building on bioenergy to implementors and awareness raising with relevant stakeholders
2. Better information sharing and extension of the technology on the benefits of bioenergy
3. State institutions should be in close cooperation with development partners and private sector on bioenergy making device and application
4. Developing a policy framework for bioenergy and promoting markets and identify economic impact production
5. Bioenergy technologies assistant and financial support are needed

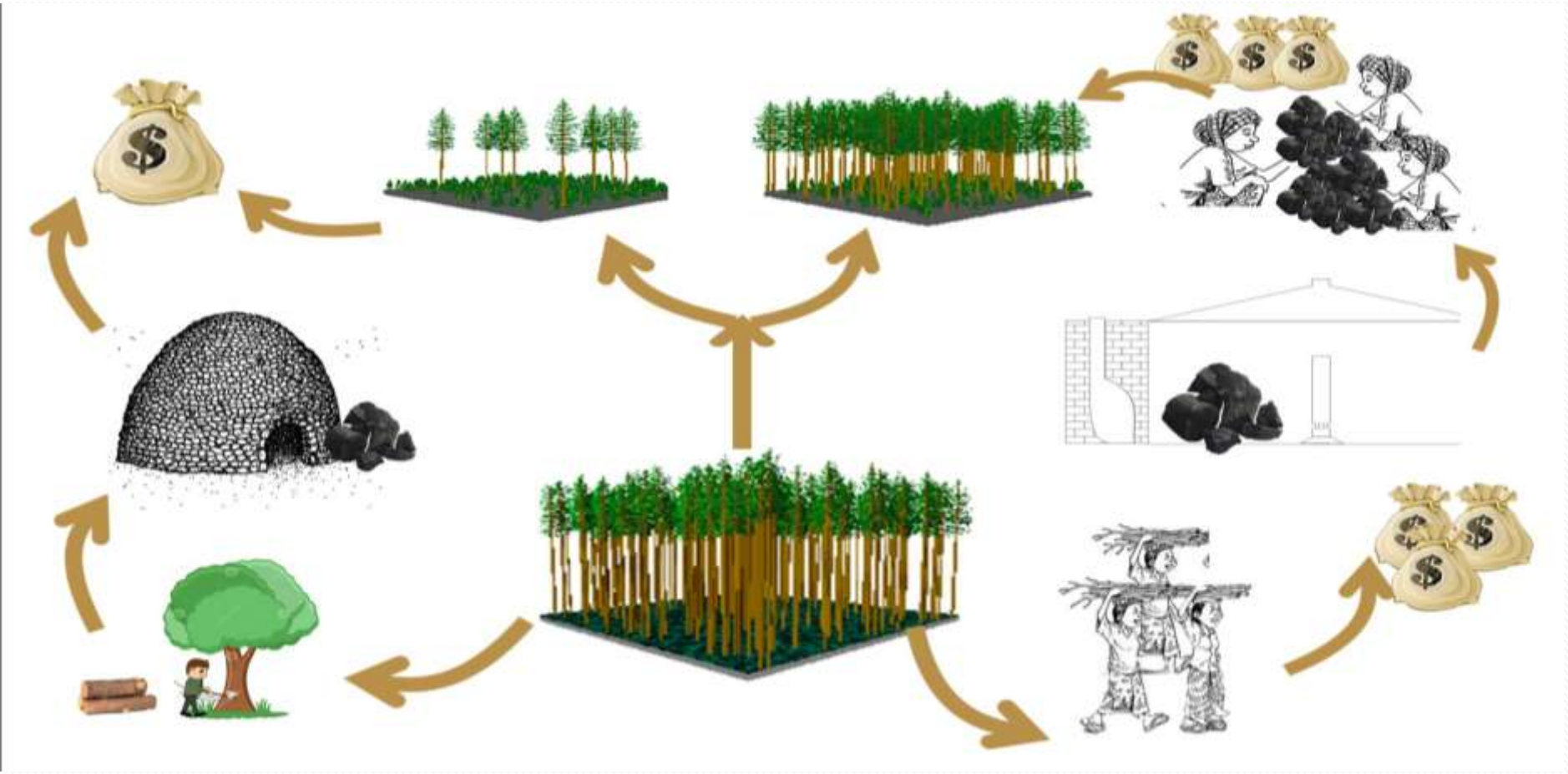
Application on wood energy case: Ensuring the balance between supply and demand of woody biomass



Traditional Charcoal kiln

Improved Charcoal kiln

Traditional and Improved Charcoal Kiln Comparison



The Yoshimura kiln: a more efficient technology for the production of improved charcoal

SUSTAINABLE WOODLOT MANAGEMENT

Wood drying for 2 weeks

IMPROVED CHARCOAL PRODUCTION

TRADITIONAL CHARCOAL KILN

- Conversion ratio wood/charcoal 6.5kg/1kg

- Calorific value 26.4 MJ/kg

IMPROVED CHARCOAL KILN

- Conversion ratio wood/charcoal 4.5kg/1kg

- Calorific value 29.3 MJ/kg

More efficient technology → Lower demand for wood

Successful case study

- The Neang Kongrey Stove (NKS) in Cambodia
  - Attractive alternative to traditional cook stoves
  - 42 production centers
  - 1,818,094 sold (May 2003 - June 2012)
  - Unit cost: US$ 3.50 to 5.00
  - Association of Producers & Distributors: 249 members
  - Generated more than 1,100 jobs

  - **Emissions reduced:**
    1,464,625 tons of CO_2eq (2003-2011)

THANK YOU SO MUCH FOR ATTENTION