

## National and Institutional Capacity Building for Clean Energy

Cambodia

June 2012

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In Cambodia, the unavailability of a central grid and the high tariff rates charged by the Rural Energy Enterprises (REE) are some of the major barriers to the development of Small and Medium Enterprises (SMEs), especially for agri-businesses in rural areas. To overcome these barriers, the Ministry of Industry, Mines and Energy (MIME) has developed and approved a Renewable Energy Policy for the development of rural electrification. The policy's main objective is to create a framework for renewable energy (RE) technologies in order to increase electricity access in rural areas. To realize the above policy, a master plan was developed with support from the Japan International Cooperation Agency. The objectives of the plan are: a) to achieve 100% village electrification, including battery lighting by 2020; b) to achieve 70% household electrification with grid quality electricity by 2030.

There is huge potential for hydroelectric, solar energy and biomass power generation in Cambodia. The MIME-Japan International Co-operation Agency (JICA) master plan for rural electrification through RE estimates the potential for micro-hydro power (MHP) to be around 17 MW. However, the development of MHP is still limited due to the lack of qualified human resources and technical skills in planning, investigating, designing, constructing, operating, maintaining and managing electricity business.

### Quick facts

Zone	Entire country
Topic	Renewable Energy Policy, Rural Electrification, Energy Efficiency
Leading agency	Ministry of Industry, Mines and Energy
Supporting Agencies	Japan International Cooperation Agency

Case Study



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The gasifier systems market assessment conducted by the Economic Institute of Cambodia (EIC) in 2009 shows that over the period of 3 years from late 2006 to early 2009, the number of gasifiers installed has increased exponentially. This clearly demonstrates the potential of gasifiers for rural applications. Despite the growing trend on usage of gasifier systems, the local manufacturers of gasifiers face problems with its efficiency and durability.

Improving the Energy Efficiency (EE) of appliances and equipment in residential and commercial buildings can result in reduced energy consumption in the range of 10 to 70 %, depending upon the type of appliance. There are a myriad of opportunities for EE improvement in various sectors of Cambodia. Cambodia's total potential savings from EE measures are estimated to be around 467 GWh/year. Some of the measures include retrofitting with new efficient lighting, introducing new efficient appliances, etc. Penetration of most of these technologies and measures in the Cambodian market is very low and has not been fully implemented in residential and commercial buildings.

The proposed project will create a conducive environment for promoting investments in RE technologies and EE in Cambodia. Through the project's intervention, it is expected that an enabling environment will be created for attracting the private sectors to participate in the development of solar battery charging stations, MHP, energy efficiency and biomass gasifier projects. These activities would augment the rural electrification efforts in Cambodia. Similarly, RE based rural electrification can improve the quality of rural life. In addition, these measures also address the environmental issues associated with the current electricity generation using fossil fuels.

The project activity will be divided into 3 components. Each component will have a definite set of activities that will put forth certain defined outputs and outcomes, which will ultimately lead to the achievement of the project goal. Outputs and activities of each of the components are described below:

**Project component 1:** The project seeks to develop and formulate exclusive RE policies to strengthen the existing policies, regulations and programs for promoting and supporting RE. All preparatory studies on supply-demand, policy and regulatory gaps as well as strategy policies regarding RE projects that can be adapted will be undertaken and completed. The policy document will also include EE aspects and would pave the way for the improved EE in different sectors of Cambodia. A draft energy policy incorporating RE and EE strategies will be prepared for consideration by the RGC.

**Project component 2:** Key decision makers from different government agencies, technical institutions and other relevant stakeholders will be trained and equipped with the technical capacity for supporting, developing and implementing solar battery charging stations, MHP, biomass gasification and EE/DSM projects/activities. Bank personnel, financial institutions and funding agencies will be trained in the assessment of these projects.

**Project component 3:** Evaluation of existing local capacity in manufacturing MHP turbines, controls and biomass gasifiers will be carried out and few interested manufacturers/fabricators for MHP turbines and controls and few manufacturers/fabricators for gasifiers will be identified. A thorough assessment of the demand for locally manufactured equipments will also be made. Based on these, the capacity will be built through training and experience sharing with the identified manufacturers/fabricators. Technology will be transferred in all aspects of manufacturing to the local fabricators. These activities will enable the high quality local fabrication of MHP turbines, controls and biomass gasifiers which would sustain the RE activities in the country.

It is expected that the achievement of project outputs will lead to the availability of local capacities to promote gasification, solar battery charging stations, and micro-hydro power plants. Ultimately, this will replace diesel power electricity generation which is prevalent in most of the parts



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of Cambodia. Hence, the project will lead to global environmental benefits delivered in the form of reduced CO2 emissions, by producing electricity through renewable means.

### Reference:

- JICA and MIME (2006), the Master Plan Study on Rural Electrification by Renewable Energy

- MIME (2007), National and Policy on Rural Electrification by Renewable Energy

- Energy Environment Partnership (EEP 2010), Mekong Region, Report on the status of biomass gasification in Thailand and Cambodia