

**Terms of Reference**  
**High Quality Charcoal and Briquetting**  
**Pak Chong, Thailand**  
**26 February – 7 March, 2007**

**Organized by: Asia Regional Cookstove Program, Indonesia & Appropriate  
Technology Association, Thailand**

**BACKGROUND**

Biomass energy has been the most sustainable fuel in the world as for centuries, people have been using biomass fuel for many different purposes for cooking, small industries, etc.. Even at present, large number of Households and small industries still use biomass as their main fuel.

However, the use of biomass fuel has also indicated of having negative impact most especially to the health of the users in this case women and also contributors to air pollution both indoor and outdoor. Therefore if the biomass fuel can be upgraded so that it can become cleaner fuel, it may substantially increase the environmental condition through the reduction of emissions to both indoor and outdoor environments.

While research and development of renewable energy technologies receive widespread attention all over the world, the improved and more efficient use of biomass-based energy resources, such as for instance the briquetting of agricultural wastes and other loose biomass residues like leaves, sawdust, etc. remains under-explored; while technologies are developed, they are under utilized due to lack of their dissemination.

Charcoal making and use is popular in many Asian countries and it has been used for centuries for cooking and ironing. Charcoal is also popularly used in many small industries such as blacksmithing, foundries, food industries and restaurants. Yet, the technology of charcoal production remains traditional and inefficient. The inefficiency of charcoal production also leads to waste of resources.

By providing an opportunity to acquire the necessary skills to introduce improved carbonizing and low-density briquetting technologies, besides making better use of existing natural resources, opportunities for local income generation among developing communities will be created. The technologies, although are relatively simple and cheap, have not been well diffused in Asia resulting in very few initiatives in their applications.

To address the lack of skill and know-how and awareness on the potential of charcoal production and briquetting to upgrade biomass fuel into better and cleaner fuel, ARECOP try to pull expertise in the region to share their skills and knowledge in the Regional Training on High Quality Charcoal Production and Briquetting.

## **GOAL**

The goals of the training is the dissemination of high quality charcoal production technology and biomass briquetting technology in the Asian countries that will lead to :

- Improvement of charcoal quality produced in various countries in Asia and improved handling and more versatility on the use of loose biomass.
- Decreased risk of forest depletion due in part to the presence of efficient charcoal production methods and encouragement of integrated sustainable resource management
- Utilization of charcoal and its by products for other purposes, and also for additional income generation.

## **OBJECTIVES**

The objectives of the training are:

1. Participants will be able to construct different charcoal kilns types and produce high quality charcoal
2. Participants will be able to process loose biomass such as leaves to produce char briquettes.
3. Participants will understand and be able to practice integrated sustainable forestry management.
4. Participants will understand and be able to apply the different uses and application of the charcoal produced as well as its by products.

## **GENERAL TRAINING COURSE CONTENT**

1. Construction of Japanese designs for high quality charcoal production, the Iwate and Yoshimura Kiln
2. Construction of Flat Bed charcoal design kiln
3. Construction of vertical and horizontal drum kiln
4. Operate and produce high quality charcoal from the various kiln
5. Construction and operation of loose biomass char briquetting system
6. Integrated sustainable forestry
7. Wood Vinegar : How to produce, its various uses and utilization, and market potential
8. High quality Charcoal market potential

## **RESOURCE PERSONS:**

1. (Mr) Sigiura Sensei (Charcoal expert from Japan)
2. (Mr) Hiruwaka Sensei (Charcoal expert from Japan)
3. Dr. A.D. Karve : (Inventor of ARTI Char briquetting system, Ashden Awards winner)
4. Mr. Puttinan : Charcoal producer in Thailand
5. Mr. Iwan Baskoro : Director of Cambodia Fuel Wood Saving Project-GERES
6. Mr. Aryanto Sudjarwo : ARECOP technical Officer
7. Mr. Rudianta Utama (Charcoal expert, Indonesia)

## **DATES AND VENUE OF TRAINING**

### **Venue**

The training will be held at the Appropriate Technology Association (ATA) center at Pakchong, about 300 km (4 hours drive) from Bangkok, Thailand.

### **Dates of the training**

The training will be held from February 26 – March 7, 2007

## **TRAINING FEE & FINANCIAL SUPPORTS**

Number of participants will be limited. Selection of participants will be based on participants' previous involvement in biomass energy/household energy programs.

### **Self supporting participants**

For self supporting participants, the training is free. Participants are responsible for travel, accommodation and other expenses.

### **ARECOP financial supports**

Limited supports are provided for participants for travel expenses and/or accommodation and daily subsistence allowance. Please see the application form for more information on what will be required to qualify for ARECOP supports.

## **APPLICATIONS**

Please fill in the application form and submit to ARECOP Secretariat, latest by 31<sup>st</sup> January, 2007. Announcement will be done at the latest by 10<sup>th</sup> February, 2007.

## **DOMESTIC TRANSPORT & ACCOMMODATION**

### **Domestic transport (Bangkok-Pat Chong)**

ARECOP has arranged free transportation (for all, self supporting as well as supported participants) by bus from Bangkok to ATA center at Pakchong.

The bus to Pakchong will leave Bangkok on February 25<sup>th</sup> at 15:00. (details on the pick up point in Bangkok will be informed at a later date). Participants are expected to arrive in Bangkok before the afternoon of February 25<sup>th</sup>.

### **Accommodation in Bangkok**

ARECOP could arrange accommodation for any one who will arrive in Bangkok before or on the evening of 24<sup>th</sup> February. Details of the hotel and rates will be informed at a later date.

### **Accommodation in Pak Chong**

ARECOP has arranged accommodation at Energy Ashram, ATA.