



*Helping the World  
One Step at a Time*



The Trailblazer Foundation is pleased to announce that we have been selected by the UK Biochar Research Center, University of Edinburgh, to participate in a biochar demonstration program in Cambodia.

*Biochar is a fine-grained, highly porous charcoal that helps soils retain nutrients and water, resulting in increased soil fertility for agriculture. The carbon in biochar resists degradation and can sequester carbon in soils for hundreds to thousands of years, providing a potentially powerful tool for mitigating anthropogenic climate change.*

*The rice husk gasification process can provide fuel to operate the rice mill and reduce conventional fuel consumption by 75%. In addition, there is the potential for Cambodian farmers to receive marketable carbon credits through the Clean Development Mechanism (CDM).*

See below for the project description. More information is available at the University of Edinburgh website [www.biochar.org.uk](http://www.biochar.org.uk) which describes some of their other current biochar projects, or contact the Trailblazer Foundation.

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December 17, 2009  
Dr. Simon Shackley  
UK Biochar Research Center  
Univ. of Edinburgh  
[www.biochar.org.uk](http://www.biochar.org.uk)

Trailblazer Foundation:

We are please to announce that your organization has been selected to participate in the Biochar Demonstration Project in Cambodia

#### **APN Project description**

This 12 month project funded through the Asia Pacific Network (APN) includes partners from four countries, and it is led by the

Appropriate Rural Technology Institute (ARTI) in India. Other partners are International Rice Research Institute (IRRI), SME Cambodia and the University of Edinburgh. This original research will look at the possible agronomic benefits which the addition of biochar can have to agricultural systems in South Asia. Biochar's carbon storage properties also make this project useful to address the issue of CO<sub>2</sub> reductions for the Asia Pacific region, and will also provide sustainability and social benefits.

#### **Biochar production**

SME Cambodia is an NGO with a sister company SME Renewable Energy Ltd and will provide the biochar for use in the trials. SME Renewable Energy promotes renewable energy technologies and market biomass gasification power generation systems in Cambodia. SME Renewables have to date have installed over 30 gassification units which are mainly fueled by rice husks, wood (*Leuceana* spp., corn cobs and peanut shells). The majority use rice husks, a waste product from the rice mill, and are an ideal feedstock for the burner since are uniform and have no transport costs. The output can then be used to drive the rice mill, reducing gasoline input by up to 75% in some cases which brings

# Trailblazer Foundation Biochar Project

significant cost saving benefits. The gasification units can have a payback time of less than 2 years. In the absence of these gasification projects, these rice husks would otherwise decompose, or be burned more completely, which would produce more greenhouse gases. During gasification, between 10 and 35% of the feedstock remains as char.

The project will also investigate other potential sources of biochar and will assess feedstock availability in the partner countries. Future scenarios will be examined to determine what will make biochar cost-effective, and financial models will be identified which will allow biochar deployment to be extended within the Asia Pacific region. Competition for feedstocks and the most efficient use of them will be investigated, at both the local and regional level.

## Agribenefits

This research will investigate using crop trials the impact of biochar on soil. Changes to the chemical and physical properties of the soil will be measured before and after biochar addition, and also the yield of crop will be measured. Biochar trial plots will be located in the North West of Cambodia, in Siem Reap, and potential plots in the neighbouring province Kampong Thom are also being considered. Biochar will be added during the normal planting regime of rice and a chosen horticultural crop, and the condition of the soil analysed in addition to measuring the yield of the crop after harvest. Trials of differing application rates, as well as combinations with different fertiliser / greenwaste addition will be undertaken. Sites will be chosen to represent several farming scenarios in Cambodia, so project expansion will be possible if positive outcomes are concluded. The permanency of the elemental carbon in the trial site will be analysed using tests on the biochar in the soil, which will be necessary if the potential for carbon credit generation from these activities is to be realised.

## Social benefits

This project aims to provide agricultural benefits for the rural poor and in Cambodia 68.2% of the population (2000-2007) live on below \$2/day. Cambodia had a reported HDI in 2007 of 0.593, which gives the country a rank of 137th out of 182 countries with data (UNDP 2009). There is a potential for farmers in Cambodia to receive carbon credits through the Clean Development Mechanism (CDM) or the voluntary carbon market, and this will be investigated. This could be an important revenue stream for poor communities. Cambodia is a prime location for this project since it has a large agricultural population who can potentially benefit from the addition of biochar to agricultural soils.

## Project outputs

Project activities will lead to a better understanding of the role of biochar for carbon storage and agricultural improvements. The project final report will be made publicly available on the web. Policy recommendations for further development of biochar as a component of natural climate change, sustainable energy and agricultural policy will be produced. The project will also include 3 workshops, and key policy makers from across the Asia Pacific region will be invited so findings can be disseminated.

--The University of Edinburgh is a charitable body, registered in Scotland, with registration number SC005336.

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