Charcoal as Business and Potential for Carbon Credits

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A brief word on CAMCO/ESD

- Established in 1989 to:
  - Help build sustainable energy infrastructure
  - Provide technical, policy, training and management expertise in rural and renewable energy
- Formed CAMCO in 2003 to help realize the carbon value of projects
- CAMCO floated in LSE in 2006
- Reverse merger in 2007
- 145,000,000 tons of CO₂ in >60 projects
- Over 250 employees in Tanzania, South Africa, Kenya, China, Russia, Austria, Bulgaria, the UK, and the United States
Charcoal Sector in Tanzania

Overview

- The energy balance is characterized by biomass (woodfuels - charcoal and firewood) use which accounts for about 90% of the primary energy consumption,

- Charcoal and firewood use dominates in urban and rural areas respectively,

Factors influencing the choice of using charcoal instead of firewood in urban areas are:

- Charcoal has high calorific value per unit weight than firewood (31.8 MJ/kg – charcoal and 16 MJ per kg – firewood)
- It is more economic to transport charcoal over longer distances as compared to firewood
- Storage of charcoal takes less room as compared to firewood
- Charcoal is not liable to deterioration by insects and fungi which attach firewood
- Charcoal is almost smokeless as compared to firewood

Over a million urban Tanzanian households use approximately one million tons of charcoal annually as their primary source of energy for cooking;

Annual charcoal consumption is valued at approximately Tsh 310,845,934,157 per year (roughly US$243 million).
Charcoal Sector in Tanzania

Charcoal Production

- Tens of thousands of rural Tanzanian entrepreneurs depend on the revenue resulting from charcoal production and trade for their subsistence.
- Simple earth mound kilns with low recovery rate (efficiency of 10-12 percent) are widely used for charcoal production
  - One cubic metre of wood produces 1-2 bags of charcoal (28kg bags)
- Making one million tons of charcoal using traditional methods is equivalent to clear-cut about 331.7 hectares of forests every day. More than 121,061 hectares of forests destroyed annually.

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Charcoal Sector in Tanzania

Charcoal Production...

- According to calculations made by ECCM, each ton of charcoal produced and consumed in Tanzania generates nine tons of CO2 emissions, one million tons of charcoal thus translating into nine million tons of CO2.
- This amount of greenhouse gas emissions is greater than the CO2 generated from 44 typical coal-fired cement factories.

The problem of charcoal is not its existence, it is rather the manner of production.
Charcoal Sector Background

Charcoal Trade

Trade in charcoal is conducted by both formal and informal actors,

Charcoal produced on
Private or public land
(with government issued licenses)

Transported and traded
by officially licensed
transporters and trader

Transported and traded
clandestinely

End consumer

Charcoal produced on
Forest reserves
(without government licensed issuance)

Transported and traded
by officially licensed
transporters and trader

Transported and traded
clandestinely

It is estimated that at least 80% of charcoal is produced and traded by the informal sector actors.

Charcoal Consumption

National annual consumption of charcoal is estimated to be 1 million tonnes,

- Around 28,000 bags (56 kg each) are consumed daily in Dar es Salaam city. This is equivalent to 564,480 tons of charcoal per year,
- Retail price of charcoal in Dar es Salaam is escalating at a rapid pace (Tsh. 17,000 per 30kg (June 2007) to more than Tsh. 25,000 (June 2008))

Low-income households have higher per capita consumption of charcoal,

Inefficient charcoal stoves are still in use,

- Adoption rate for fuel-efficient charcoal stoves is still low in most urban areas,
- Only 40% of households in Dar es Salaam use efficient charcoal stoves.
Switching to other alternative fuels is more difficult,

Logical alternatives are either unavailable (e.g. briquettes) or perceived to be too expensive (e.g. LPG).

What is SC?

Is charcoal that is produced in a sustainable and efficient manner with minimum environmental impact,

It enhances livelihood of rural poor,

Should aim to achieve at least 25% efficiency converting wood to charcoal,
Sustainable Charcoal (SC)...

Sustainable charcoal production include the following activities:

- Forest protection (of areas already designated as protected forests or forest reserves within village boundaries), by policing to effectively control all encroachment from illegal harvesting and fire management,

- Sustainable harvesting of productive forest areas
  - All managed areas should be clearly mapped.
  - An inventory and management plan is required.

- Establishments of woodlots on severely degraded / depleted land.
- Introduction of agroforestry systems,

- Use of improved efficiency kilns – e.g. half orange brick kiln, improved basic earth-mound kiln, etc, AND improved conversion techniques (e.g. drying of wood, stacking),

- Markets for sustainable charcoal,

- Credible process of certification
Carbon Credit Finance

- It is difficult for charcoal producers to switch to sustainable charcoal production methods solely for environmental reasons,
- It has to make financial sense to them,
- Additional financial incentives are necessary to motivate their switch,
- Carbon finance can provide that motivation through the Plan Vivo System.

Carbon Credits through Plan Vivo System

- A carbon credit is a quantifiable, certified reduction in carbon emissions to which a credible claim of ownership can be made,
- Plan vivo is a set of guidelines, procedures and standards to provide certified environmental services (carbon offsets) from rural communities through activities to restore ecosystems, prevent land degradation, conserve biodiversity, protect watersheds and promote sustainable livelihoods.
- Through the Plan Vivo system, villages that produce charcoal in a sustainable way and establish woodlots/plant trees will earn carbon credits, as sustainable charcoal and tree planting abates the carbon dioxide emissions through avoided deforestation and carbon sequestration system respectively.
  - For example, ECCM (a sister company of ESD) estimates one ton of carbon emissions reductions are equal to one carbon credit. The production and commercialization of one ton of sustainable charcoal abates nine tons of CO2 emissions, because the production and commercialization of one ton of traditional charcoal generates nine tons of carbon dioxide emissions. Thus, a village will earn nine carbon credits for every ton of sustainable charcoal produced and sold.
Sustainable Charcoal...

Case Study

In April 2008, ESD conducted a feasibility study in six villages of Kisarawe district,

More than 60,000 tonnes of charcoal are produced every year in Kisarawe,

Six villages produce more than 3,000 tonnes of charcoal per year,

Cost to produce sustainable charcoal in these villages is estimated to be 35% higher than the current value of charcoal,

Carbon finance may add between 35-45% onto the value of charcoal,

22,000 VERs may be generated annually from the six villages,

500,000 VERs may be generated in the whole district,

Market prices for VERs (May 2008) – approx US$6

No funds to pilot these initiatives

Thank you.