

# Sustainable Cooking for TLC

**Project Brief:** To reduce the charcoal used for cooking midday meals for TLC client children. Primary foods to be cooked are rice and beans.

Charcoal purchase is the largest element in producing these meals and this cost is increasing. There is a wider problem of deforestation and climate change arising from charcoal production for cooking fuel used by city dwellers. This applies not just to Tabora but more generally in the third world.

Our project currently has 5 technical strands. There is as yet no clear preferred approach; in our opinion any or all of them are worth trying in Tabora and promoting there for institutional cooking and also for domestic cooking. Approach 3 is already widely promoted by other groups in Africa, and approach 5 in China and India.

- 1 Use Pressure Cooker with an efficient charcoal stove, particularly for beans. This reduces the time the pot needs to be on the fire from 3 hours to 30 minutes. The fire needs to be hotter, the pressure cooker costs money and there is new technique to be learned.
- 2 Use PV solar panels on roof to provide electrical energy for an insulated pressure cooker/rice cooker. A suitable cooker designed to work from mains electricity exists and seems to work ok with batteries and inverter. A special simplified version of the cooker to work directly from two solar panels (60 volts DC) could be attractive.
- 3 Introduce more efficient charcoal/wood burning stove (Rocket Stove). Existing available stoves are reputed to save 60% of present charcoal use. Stoves utilising the wood gas from biomass conversion offer even more promise.
- 4 Insulation around cooking pots can maintain cooking temperature with less or no further heat input (Haybox Cooking). Theoretically energy/fuel use could be reduced to a quarter. This technique offers promise in conjunction with all other strands. If the sun is not shining exactly when a hot meal is wanted, food cooked or started hours earlier can be available.
- 5 The sun's rays can be reflected or focused onto a cooking pot. Parabolic mirrors can be effective especially for large scale cooking but need care to avoid burning the cook. A safer "greenhouse effect" cooker uses flat mirrors and a glazed cooking enclosure; these are slower and probably more suited to small families.

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