USE AND MANUFACTURE OF COOKITS IN A REFUGEE CAMP, IRIDIMI, TCHAD

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ABSTRACT

The use of CooKits was demonstrated in a refugee camp, and was readily accepted by the refugee women that took part in the early demonstrations and in the training to use them. The demonstrations were extended to the women of the neighbouring village. A project is operational to train refugees to manufacture this simple solar cooker and to train all refugee women, who so wish, in its use. Some of the reasons for the acceptance of the method are indicated.

Keywords: CooKit, refugees, manufacture, use, training

1. OBJECTIVE

The objective of the project is to provide training for all women in the camp and the village, who so wish, in the use of the CooKit (1), and to train refugee persons to manufacture CooKits to good quality standards within the camp, so that all can obtain the number of CooKits they require.

2. INTRODUCTION

The origin of the refugee camps does not need any description in this presentation.

The camp Iridimi is situated at 950 m above sea level, about 60 km west of the Sudan-Chad border and 15°8' North, in a near desert region. Rainfall in 2005 was about 80 mm, in 2006 it was somewhat more abundant, but not measured. There are few rain-days in any year, and when rain falls it may not all penetrate in the areas with capping soils, and a fair part runs off as either surface or subsurface flow into the wadi's. As a result, tree and shrub growth does occur on the banks of the wadi's but virtually not throughout the countryside with the exception of rare spots with an appropriate micro-relief. The soils carry little and sparsely distributed grazing vegetation, if any at all.

The solar radiation regime is that of virtual whole-day sunshine on most days from October to May, with the exception of days with a presence of dust storms at varying moments in these months. Such dust storms may last several days in varying intensity, resulting sometimes in a total absence of direct sunlight to the ground and the transmission of diffuse sunlight is severely reduced. During the months of June to September clouds do occur even if they do not bring rain. Sometimes these clouds are isolated in an otherwise rather clear sky, still permitting solar cooking. At other times clouds form in a generally more humid atmosphere, so that the transmission of sunshine is "filtered" and strong sunshine is virtually absent. During the October to May season, upper air humidity may locally create high Cirrus clouds that may last for a variable duration, often not more than hours. Such veiled skies do affect the duration needed for cooking, and most women rapidly learn to adapt cooking times under such conditions. In the absence of adequate (am and pm) sunshine data for the area, our estimate is that solar cooking is possible on at least 250, and perhaps up to 300 days per year (2).

Before the present flow of refugees to the area, there existed a few villages, each with barely a hundred inhabitants, along the banks of the wadi's, often tens of kilometres distant from each other. The trees and shrubs on the banks of the wadi's provided just enough fuel-wood for cooking for these villagers.

The sudden influx of 15,000 refugees in the Iridimi area created, among other events, an unprecedented demand for firewood, which now had to be collected from tens of kilometres away. The quest for sparse firewood has led to several conflict situations, some serious, all significantly affecting the mood of the divers groups of people.

In April 2004 a group of women belonging to the NGO "Groupement de Femmes pour la Vulgarisation des Nouvelles Technologies" (GFVNT) in Ndjamena received training in the use and manufacture of CooKits. In late 2004, one of the members of this

group contacted AAA to suggest that the training should be extended to the refugee camps. This coincided with a similar idea studied by Kozon and AAA.

A "Mini-Projet de Démonstration" (MPD) was conceived and put into place by some members of GFVNT and AAA in February 2005, using 100 CooKits, supplied by Kozon. Given the size of the camp and the small number of CooKits available, the MPD was limited to only 2 of the 10 zones of the camp and to the women in the neighbouring village, Erre. A further demo was requested by women in other zones. A second MPD, with 120 CooKits, was organised in April 2005, and this included a test on manufacture within the camp by refugees themselves, and a third in July 2005, using the CooKits made earlier. The acceptance was such that it was logical to write a proposal for provision of training in use and manufacture for the whole camp and the neighbouring villages. That proposal was supported by the UNHCR.

The project document was approved for funding in November 2005 The donors were, for a very substantial part, Stichting Vluchteling (SV) of The Netherlands, in particular for the great majority of costs of the infrastructure and materials required for manufacture in the camp; furthermore, through Solar Cookers International (SCI) a donation was received from the Dora Freeman Levit Fund and from Mrs Judy Cunningham. Kozon and AAA continue to contribute the costs of some materials, costs of all expatriate and of some local personnel, and all costs of overheads. HCR contributes costs of transport of persons and goods within the country. Under a contract with HCR, CARE is slated to provide the costs of three local project personnel and the remuneration of (some of) the auxiliary (refugee) trainers and artisans. The material for the After Sales Service is paid, during the first year, by the project funds.

3. PROJECT PHILOSOPHY

The project is based, and presented to users, on the premise that solar energy alone, using the CooKit, can not provide for all cooking needs. It aims to promote solar cooking as one method besides the use of an economic wood-stove ("foyer amélioré"), when sunshine conditions are not favourable and the use of the "pannier thermos", a locally produced heat conserving basket, keeping food warm for several hours after cooking ends.

The Cookit is a simple and effective answer to the need for solar cookers, when a requirement of several hours for preparation is not an obstacle. A minor modification to facilitate use even when strong winds blow, sometimes well exceeding 20 knots, is being incorporated.

The choice was made to import raw material and to have the manufacture done within the camp, thus bringing work, and a certain amount of money, to the refugee population**. The project therefore is foremost a training exercise:** training of trainers in the use of the CooKit and training of artisans for the manufacture. A quality control system, both for manufacture and for training, has been set up, and is accepted and appreciated by users and producers alike. The second point is the supply of the basic infrastructure, tools and materials for manufacture.

4. IMPLEMENTATION PLAN

A workshop has been constructed and equipped with the necessary tools. This workshop has become operational from the end of February 2006.

Training of artisans to manufacture the CooKits has started. The emphasis is on high quality of produced units. Teams of two artisans from two of the ten zones in the camp are already producing CooKits, using the workshop facilities in alternate shifts. As teams from other zones are being trained, they will take their turns in the manufacturing process. Approved units carry an official stamp, including the date, confirming quality control.

Training of auxiliary trainers in the use of CooKits has started by the Principal Trainer and her associate. Classes are groups of at most 6 women at the time. Duration of training varies from 3 to 5 days. Upon the end of the training the auxiliary trainers are given some time to practice. Thereafter an exam follows. If minor flaws are observed, a few days of further training are given. Only auxiliary trainers that work to a high standard will be employed for further training. The aim is to assure that all women in the camp will receive the best possible chance to use CooKits to their full satisfaction. The principal trainer and her associate continue to assist at further training sessions in an unscheduled manner.

5. TIME SCHEDULE

As regards production of CooKits
There are about 15,000 persons in 3000 households in the camp. To provide at least 2 CooKits per household, at least 6000 CooKits must be produced. In the present size pots and CooKits, the main dish, "la boule", a maize meal dish (from ingredients distributed by the World Food Programme), can be provided for about 5 to 6 persons at most. Test with bigger size CooKits showed them to be quite inefficient in converting solar energy for cooking. Bigger families will thus need 2 CooKits for "la boule" and still one for "la sauce". We therefore aim at an initial production of about 6600 CooKits. On the basis of our present experience, we

estimate that the rate of production, once all zones have their team of artisans, will be at least 20 "approved quality CooKits" per day, 6 days per week. It may be higher if no supply problems occur. Total demand will thus be satisfied in about one year. Thereafter the production will cover replacement units and possibly requirements in neighbouring camps.

A foot-driven sewing machine is available at the workshop so that women can either make their own carrying bags, or ask a tailor to do this for them. There is a small charge for the latter option.

As regards training in the use of the CooKit our experience is that training of a group can be completed satisfactorily within one week, thus allowing for some days with dust or clouds. In each zone, teams of 2 or 3 auxiliary trainers will work alternate weeks, every team training about 6 women. Given that there are about 300 women in each zone, training of all women in any one zone should take about one year. We noted that younger women catch on very readily, some elder ones will need a very long time.

The rhythms of the production and of the user training seem about in equilibrium. Adjustments are possible.

6. CLIENT SUPPORT, OR "SERVICE APRES VENTE" (SAV)

The major items needing this SAV support are:
- the replacement of unusable polypropylene bags;
- the touching up of the pots that have been painted black with "ardoisine", a mat black paint, washable in water, used for painting blackboards in schools;
- the repair of minor mishaps with the CooKits, using nylon-reinforced plastic tape on the cardboard side.

A SAV has been established. So far, our interventions have been less frequently required than was thought.

7. RESULTS, REACTIONS, ACCEPTANCE AND APPRECIATION

Early results were very positive. If not, we would not have formulated such a project. Women of the first, second and third MPD wanted CooKits, and were supplied with these not as a gift, but on condition that they would show the method to others. We checked on this, and a fair number of them did indeed do so, some reaching up to 30 or more other families.

The major reasons for appreciation were:
- "look at us, we are clean, we are beautiful, our clothes are not filthy, we do not smell bad, our noses do not run, our eyes have no tears";
- "with solar cooking we do not need to go to search for firewood in places we do not wish to go to";
- "we do not have to go on long journeys, sometimes as much as 25 km once every 3 days, with a donkey or alone, carrying a heavy burden of wood";
- "we have more time for our children, our handicraft work, our study".

8. OTHER BENEFITS

There is a reduction in the number of occasions when gathering of scarce firewood can lead to clashes and/or conflicts.
Food can be prepared and, when required, water pasteurised (3) in a hygienic, timely, easy and essentially cost-free manner.
There is less risk for accidents from fire, there are fewer incommodities for health.

9. ENVIRONMENTAL MATTERS

As regards the environment, there is less gathering and burning of scarce wood, less need to cut living trees.

The CO_2 output of burning solar cookers at the end of the useful life is about $1/400^{th}$ of the CO_2 output of burning wood, if uniquely improved stoves were used, and less than $1/1000^{th}$ of that put out by the traditional cooking methods now used.

The amount of oxide or hydroxide of aluminium produced when used CooKits or scraps from the production are burned is only an insignificant fraction of that occurring naturally in tropical or subtropical soils (4).

10. COST COMPARISON

HCR and NGO's up to now brought in by truck huge amounts of paraffin, firewood etc. to cope with the need to help refugees cook their food. A number of the figures relating to cost of the procurement of the fuel, if required of the containers, and of the transport of this fuel supplied to refugees are not readily available. Those that are, and those that can be obtained informally, suggest that the costs of CooKits, at about EUR 6.00 a unit, lasting on average 100-120 days, exploiting the free sunshine, abundantly available in the region, and combined with the improved wood-stoves and thermal baskets, when sufficiently strong sunshine is absent because of clouds or dust, are of the order of a few percent of the traditional methods.

11. THE FUTURE

Spread of the use and manufacture of CooKits to other refugee camps may be decided, in part, by the outcome of the present project.

12. REFERENCES

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