

SOLAR COOKING IN MADAGASCAR

Solar Cooker Project of ADES

Heinz Vetter

Technikumstrasse 62, CH-8401 Winterthur
Switzerland
Telephone: +41 52 2134477
E-mail: heinz.vetter@cores.ch

ABSTRACT

The article describes the contribution of the ADES (Association pour le Développement de l'Énergie Solaire Suisse-Madagascar) Solar Cooker Project in the south of Madagascar: fighting the ongoing deforestation, preserving the environment and fighting poverty. It explains advantages and disadvantages of solar cooking and the challenges to change traditional cooking habits. It shows the achievements of the project after five years of existence and the future goals and long term perspectives of ADES in the field of cooking methods and in the field of electricity in rural areas by using renewable energies.

WHAT IT IS ABOUT

COOKING WITH SOLAR COOKERS INSTEAD OF WOOD:

For centuries the population of Madagascar has been cooking their food with wood, which requires vast amounts of firewood in the form of charcoal. A Madagascan family uses about 100kg of charcoal on a monthly basis, amounting to 1/6 of an average monthly salary. Madagascar has, especially in the south of the country, close to ideal conditions for the use of solar energy.

The solar cookers are an important contribution towards halting the deforestation process and thereby preserve the environment. At the same time they help in fighting poverty. 500 solar cookers save 5,500 tons of wood a year, which translates into 1,000 hectares of woodland in the south of Madagascar. There is no CO₂ emission, which is the main agent responsible for climate change. The population will become less dependent on wood and charcoal. Besides environmental reasons there are also economical and practical reasons to favour the solar cooker. Families spend a lot less money on wood and charcoal. There is a pay back on the investment after only 6 months of using the solar cooker. Furthermore cooking with the solar cooker is hygienic, there is no smoke to affect health and therefore reduces life expectancy. Housewives report they have more time for other work as the fire doesn't need to be tended. Also, the solar cooker is less dangerous for children than it is with cooking on the open fire.

Nevertheless there are also some disadvantages of the solar cooker. It cannot be used to cook breakfast and meals in the evening when there is no sun. In the box type solar cooker the cooking time takes about 50–100% longer than on the open fire since it is low temperature cooking. On the other hand the meals cannot be overcooked.

WHAT IS A SOLAR COOKER (BOX TYPE SOLAR COOKER)?: The box type solar cooker is an easily built, insulated box (Figure 1). Due to incident solar radiation temperatures up to 150 °C can be generated in the box which is sufficient to cook almost all meals: rice, manioc, mais, potatoes, vegetables, meat and fish. Also bread and cakes can be baked and medical tools or water can be sterilised. There are also other kinds of solar cookers, like the parabolic solar cooker or the solar dryer to dry vegetable, fruit, leaves and fishes.

THE CONSTRUCTION, PRODUCTION AND SALES OF SOLAR COOKERS IN TULÉAR AND EJEDA: Local craftsmen produce the box type solar cooker in the ADES workshop in Tuléar and since April 2006 also in Ejeda in the South of Madagascar. ADES (Association pour le Développement de l'Énergie Solaire Suisse-Madagascar) is a Non-Governmental Organization (NGO) and a non-profit organization, producing solar cookers in Madagascar and encouraging the use of renewable energy. ADES sells the solar cookers to the population and can offer a fair price due to donations. Teaching the population to use the solar cooker is an important part of ADES work. Demonstrations on how to use the solar cooker regularly take place.

HOW IT ALL HAPPENED: Regula Ochsner, the initiator of the solar cooker project, worked for a women's program in Tuléar in the south of Madagascar between 1972 and 1975 for the Swiss development aid agency (now called DEZA). In 1998 she revisited Madagascar and was shocked when she noticed that entire forests had been cut down leading to the loss of diverse and unique animals and plants. She realized that within a short time the country would lose its livelihood if the deforestation continued at this rate. As the main part of the chopped wood was being used as firewood or charcoal to prepare the food, Regula Ochsner began looking for alternative cooking solutions. Her search led her to the solar cooker, a technology that was already known. In 2001 local production of solar cookers by Malagasy carpenters began under a tent. Also distribution and sales started. ADES was founded. In 2003 the own carpentry workshop began its operation in Tuléar and in 2006 in Ejeda, located 250km in the south of Tuléar.

DEVELOPMENT OF THE PROJECT: Since its start in 2001 the project has developed positively. ADES works closely with various cooperation partners like Soltec, WWF, Tany Meva, ANGAP, Bel Avenir in Tuléar, association des femmes of Anko-ronga, ESSVA school of Antsirabe as well as governmental



FIGURE 1. Cooking with the solar cooker

organizations on the state and the province level. ADES has developed into a small non-profit enterprise. Currently ADES provides a work place for 13 employees in Tuléar and Ejeda in the South of Madagascar. By the end of 2005 1,300 solar cookers had been sold at a fair price to the population. A survey of the usage of the solar cookers conducted by two German students in 2004 showed that 75% of the solar cookers were used regularly. These are very positive signs but nevertheless there is still a long way to go until solar cooking becomes more widespread.

LONG TERM PERSPECTIVES AND THE FUTURE DIRECTION OF ADES

SOLAR COOKING: ADES has the vision that within 20–40 years a large part of the population in the south of Madagascar is predominantly using solar cookers to prepare their food. In this region we encounter a very rich environment that is worth preserving. Due to the favourable conditions of 350 sunny days per year the South is ideal for using solar energy. ADES therefore focuses its activities on the south of Madagascar, the Province of Tuléar, which is four times as big as Switzerland.

In order to cover the whole south ADES is planning to build various regional and local centres for solar cooking within the next 8 to 10 years. Two regional centres are planned in Morondava (about 300km north of Tuléar) and in Fort Dauphin (ca. 350km south-east of Tuléar). The regional centres will be based on the same concept as the centre in Tuléar. For each regional centre the construction of 2–3 local centres is planned in order to reduce the level of transportation on the poor roads. The solar cookers will be introduced to the surrounding villages via the regional and local centres. Each centre consists of a

carpentry workshop for the production of the solar cookers and a sales and demonstration office. The realization of these projects will very much depend on the financing. Up to the present time the financing of two centres (investment and yearly operation) is possible through the fundraising activities of ADES in Switzerland. For further centres other financial sources have to be found.

In general the interest of people for solar cooking is big, but it needs a lot of work to convince the people to apply this new way of cooking like a daily routine. Since solar cooking means a completely new cooking method and therefore a change in cooking habits and attitudes. Changing attitudes and habits is not easy, as we know by our own experience: Are we in the western countries willing to reduce individual car traffic to reduce the CO₂ emission? The biggest challenge is convincing the people and slowly implementing the new method of cooking. In order to enforce and support this process ADES has planned many different efforts in the near future: Radio, TV and press advertising; education programmes in the usage of the solar cooker for the population in both the countryside as well as in the cities; educational films for children that will be shown in cinemas, raising children's awareness in schools for environmental questions and solar cooking as a method to preserve the environment; cooperation with partners like WWF, women associations etc.

ADES continuously cooperates with partners that are involved with other similar projects. One of them, for example, is Soltec in Antananarivo, a German-Malagasy NGO, which produces the parabolic type solar cooker. This type is also part of the ADES product programme. ADES does not produce it but sells the Soltec parabolic type solar cooker in the south as a

reseller. In this way cooperation between different organizations that are working in the same field can be reached.

IMPROVED TRADITIONAL COOKING: ADES is often reminded that the solar cooker cannot be used in the early morning and in the evening when there is no sun. Since a lot of people in Madagascar eat warm rice for breakfast this is a strong argument. In order to cope with these needs ADES now completes its product programme with an improved traditional cooking device that saves up to 40% of the charcoal. Professor Daniel Ramampihika, a member of the ADES board in Tuléar, had the idea and the concept. The production of this new device has just started a few weeks ago. It is a low tech product and all components can be produced in Madagascar. It will be promoted together with the solar cooker. ADES considers the solar cooker and the improved traditional cooking device as an ideal combination to fight the ongoing deforestation and the poverty by saving a lot of money for charcoal and wood. The improved cooking device can be used in the early morning and in the evening and the solar cooker during the day.

FAVOURABLE CONDITIONS FOR FIGHTING AGAINST DEFORESTATION: Although the need for means to protect the environment is enormous and very urgent – some people say it is a race against time – the experience tells us that it will develop step by step, “slowly slowly” or “mora mora” as the people in Madagascar say. But the time for these various initiatives seems to be right as the consciousness of many people of Madagascar to protect the environment is increasing. The country and the population also want to increase gentle tour-

ism and have realized that the preciousness of Madagascar’s habitat and nature are an attraction for tourists. Should this all be destroyed it would mean the end of tourism. Governmental circles as well as the World Bank Group have come to realize the importance of regulating and reducing deforestation and are actively supporting several aid projects.

BRINGING ELECTRICITY TO RURAL AREAS BY USING RENEWABLE ENERGIES: It is one of the goals of the government of Madagascar to bring electricity to rural areas to support rural development and to fight poverty. In rural areas only 4% of the population does have electricity. The government very much favours the application of renewable energies, in the high planes hydroenergy and in the south solar and wind energy. Encouraging the use of renewable energies is also an ADES goal. ADES has become a partner of the provincial government in Tuléar in order to encourage renewable energy, mainly solar energy, in the province of Tuléar. Concrete projects have been worked out and are currently being discussed with organizations that may provide financial support. The further development of ADES in this field very much depends on the projects that can be realized.

In the past five years the ADES project has developed very positively, step by step. This will also be the philosophy for the years to come – a continuous, but careful development of the activities, as well as the funding and organization.

ADES homepage: www.adesolaire.org

Translation to English by: Michael Spiess, Albisstrasse 37, CH-8038 Zurich, Telephone: +41 78 8137901