
UNEP Collaborating Centre on Energy and
Environment

RISØ

ASSESSMENT OF THE COMMERCIALISATION
STATUS OF SOLAR COOKERS

Final Report

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EXECUTIVE SUMMARY

Technology status

Solar cookers utilise the simple principles of reflection, concentration, glazing, absorption and the greenhouse effect to produce heat. Various types of solar cookers exist, harnessing one or more of these principles. The generic types are:

- Solar box cookers or solar ovens
- Parabolic reflector cookers
- Indirect solar cookers

The approach to dissemination of solar cookers world-wide has traditionally been non-commercial and no recorded commercial application has taken place. The definition of commercialisation is taken to mean “the manufacture and sale of solar cookers is a profit driven process in that the income derived (which may or may not include subsidies) is sufficient to make it a worthwhile activity for the entrepreneur”. The ongoing Solar Cooker field test in South Africa is the closest to what can be described as a case study on commercialisation and is therefore used as the basis for the assessment.

Internationally cooker production status can be classified into:

- Prototype
- Pre-series
- Series

All solar cooker production activities to date can be classified in prototype and pre-series production.

The commercialisation process of solar cookers presents different commercialisation opportunities:

1. Production of a product with commercial value – the production of the cookers by a manufacturer (product)
2. Distribution of solar cookers – physically transporting and distributing cookers to retail outlets (service) as well as related issues such as packaging
3. Retailers selling solar cookers to end-users or customers (service)
4. Marketing and advertising solar cookers as product and as concept (service)
5. Maintenance and repair to maintain the product (service)
6. Training to end-users, retailers and service providers (service)

From the experience of the South African Solar Cooker Field Test, only options 1 and 3 can be profitable in the shorter term, provided that demand for solar cookers is adequate (estimated to be at least in the series production of 1000 cookers per manufacturing batch). Price emerged as the single most important factor and research indicated that the market responds to prices between R200 and R400 (\$25 - \$50).

It is doubtful if individual countries, , will offer a large enough potential customer base to sustain individual local producers of solar cookers. Instead, a regional approach should be adopted where production takes place in one country and solar cookers are exported and assembled in neighbouring countries. This is would be the only way in which the economies of scale from mass production (estimated at 10 000 units per annum) could be reached.

Market & Customers

The ideal market for solar cooking is in:

- Areas with a high level solar radiation,
- The dependence on biomass as an energy source for cooking in households, community facilities (schools) and small businesses.
- Low availability of biomass especially fuel wood
- High costs for alternative cooking fuels such as bottled gas

Various factors are required for production delivery, of which, the most important factors are:

Credit to purchase (end-user credit)

The target market of the rural poor or biomass dependents require some form of credit in order to purchase a solar cooker. Monthly instalments, lay buys and savings clubs are important tools to extend credit to the end-user.

Capital for tooling costs

Solar cooker manufacturers require capital for tooling up costs and preparation for the production process. In order to produce high quality cookers, injection moulding is recommended for example, and the capital required for the mould would be in the order of approximately \$200 000.

Marketing

The marketing of solar cookers requires substantial capital to be effectual. General awareness raising around the concept of solar cooking as well as the marketing of the products themselves are required. Marketing is an expensive undertaking and in the experience of the South African solar cooker field test, manufacturers cannot afford to pay for awareness raising and advertising.

End-user training and support

The importance of end-user training and support as a critical success factor in the dissemination of solar cookers has been well documented in international literature. However, training is difficult to organize and expensive to implement. The use of various training materials should be considered.

In terms of the aims of AREED, described as seeking to create energy companies that use renewable energy technologies to meet the energy needs of the poor, thereby reducing the environmental and health consequences of existing energy use patterns, the support of the commercialisation of solar cooking is appropriate and justified. The objective of the AREED programme is to expand and support the private sector in five select African countries (Botswana, Zambia, Mali, Senegal and Ghana) in the delivery of products and services in the sustainable energy field. With this objective in mind, possibilities to support the production of solar cookers in a single country, with export links to other countries should be investigated.