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UNDP/GEF South African Solar Cooker Project (SOLCO)

Final evaluation

Final Report

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List of abbreviations

AFRECA	African Renewable Energy Association
APM	Assistant Project Manager
BMZ	Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung
CEF	Central Energy Fund
CO₂e	Carbon Dioxide equivalent
DME	Department of Minerals and Energy
EDC	Energy Development Corporation
GEAR	The Growth Economic development And Reconstruction economic strategy of the South African government
GEF	Global Environmental Facility
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
kt	Kilo Tons (a unit of measurement of mass equal to one million Kilograms)
M&E	Monitoring and Evaluation
Mt	Mega Tons (a unit of measurement of mass equal to one thousand kt.)
NGO	Non Governmental Organisation
PIR	Project Interim Report
PMU	Project Management Unit
PSC	Project Steering Committee
RE	Renewable Energy
SADC	South African Development Community (14 countries in Sub-Saharan Africa)
SESSA	Sustainable Energy Society of Southern Africa
SOLCO	The South African Solar Cooker project jointly funded by the GTZ, UNDP/GEF, DME and BMZ
UNDP	United Nations Development Programme
USD	United States Dollars or US\$ (currency)

1. Executive summary

The purpose of the SOLCO project was stated in broad terms as seeking to address the harmful effects of current cooking practices in South Africa on the environment and on the safety and quality of life of, in particular, the poor, through the rollout of solar cookers as a solution. The purpose of the UNDP/GEF funded component of the project, more specifically was to attempt pilot production and commercial dissemination of solar cookers in South Africa.

Table 3 summarises the indicators used for the measurement of the achievement of the project objectives. It is therefore the conclusion of this evaluation that, based on the project indicators developed, solar cookers have not been commercialised in South Africa through the activities of the project over the last 3 years.

For the purpose of this evaluation, the project cycle has been broadly broken down into project:

- formulation comprising conceptualisation and design,
- implementation and
- results or outcomes

The analysis of the reason for an inability to create a mass market for solar cookers in South Africa through the project, the objective of the evaluation as stated explicitly in the stakeholders questionnaire, could therefore be attributed either to deficiencies in project formulation, in project implementation or in both. This evaluation has found generally that the above three categories of the project were rated by stakeholders as follows:

Project element	Rating	Numerical stakeholder average (4 = Highly Satisfactory 1 = Unsatisfactory)
Formulation	Marginally satisfactory	2.5
Implementation	Satisfactory	2.8
Results	Unsatisfactory	1.5

One success of the project has been precisely in providing conclusive proof that the time was not right for solar cookers. This implies that commercialisation is not possible in the current market context. Other successes included incorporation of outcomes of the project into national policy and energy strategy through for example the establishment of the domestic cooking and heating energy roundtable for the creation of a comprehensive and coordinated strategy on cooking including national departments such as the Department of Science and Technology and the Department of Minerals and Energy.

A review of the greater SOLCO project running from 1996 to 2005 by Nell and Shapiro (November 2005), summarises the outcomes of the project succinctly in saying that:

“The project did not achieve what was an overly ambitious overall objective of establishing a viable market demand for commercially available Renewable Energy Cooking Technologies in South Africa. It did, however, achieve [several] interim targets. More importantly, it took on the task of exploring, thoroughly, the potential of solar energy to respond to cooking needs in developing countries at this point in the development of solar technology. Such an exploration was overdue and moved discussions about solar energy cooking from the realm of rhetoric to that of concrete experience. The experience gained is invaluable and should be reviewed as an essential part of any investigation into further such projects. The lessons learned go beyond such projects and provide useful insights for all those involved in development work”

Following consultation with GTZ, DME and UNDP/GEF project proponents, this evaluation has sought to document the specific lessons to be gleaned for solar cooker projects in the future in South Africa and elsewhere.

1.1. Brief description of project

The title of the project was:

Pilot production and commercial dissemination of solar cookers in South Africa

It was designed to remove barriers to the widespread use of Solar Cookers at household and institutional levels in peri-urban and rural areas. More specifically the project aimed to address the following barriers:

- Those which hamper the phased local manufacturing, retailing and provision of after sales services for different solar cookers;
- Lack of end user awareness and information in target areas as well as with other stakeholders involved in the further development of solar cooking and baking
- Technical, organisational, information and possibly financial barriers to the geographical spreading and scaling up of the initiative.

1.1.1. Environmental objectives

The environmental objective of the project is a contribution to climate stabilisation by reducing CO₂ emissions measured in Mt CO₂e per annum.

The UNDP project document (Ref. 5) describes the expected end of project situation from an environmental perspective as seeking to have achieved emissions reductions of 135 [k]tCO₂e¹ to 225 [k]tCO₂e as a result of “direct fossil fuel savings as a result of the dissemination and use of 50,000 solar cookers with a lifetime of 5 years. Given the incremental cost investment of US\$ 800.000 the expected unit abatement cost of these reductions was expected to be in the range from USD 12 to USD 22 per tonne of Carbon (USD 3.50 to USD 6.00 per tCO₂e).

1.1.2. Developmental objectives

The developmental objectives of the project are stated in the project logical framework matrix (logframe) as

“Affordable, renewable energy services are increased and basic energy needs met through the use of clean, safe, environmentally friendly technologies (reducing CO₂) in a manner that stimulates economic growth.”

It was the intention that these should be verifiably measurable by considering the following indicators:

- Number of businesses with project-related purposes
- Number of people cooking with solar energy
- Energy savings per household
- Cost decreases of solar cookers over project lifetime
- Financing modalities and newly accessible lending volume available
- Number of people with improved income as a result of project intervention

¹ The use of the MtCO₂e unit of measurement in the project document is an error and should read ktCO₂e.

1.2. Context and purpose of the evaluation

SOLCO has been through three main phases, each lasting approximately three years apiece:

1. Consumer acceptance testing
2. Test Marketing, and
3. Commercialization.

In phase one, it was found that if low-income consumers had access to Solar Cookers, they do indeed use them, and will use them for a third of the time. In phase two, the parameters for commercial approaches to dissemination were defined and a (demand side) business case was made. The third and final commercialization phase sought to support “the establishment of a small but viable industry in which value chains’ supplying a growing market demand for a number of different products [had] been established”.

The South African experience has not demonstrated that Solar Cookers can make a positive contribution to either low income consumers in particular or to the development process in general. In assessing the project experiences, numerous positive, general conclusions can, however, be drawn that will assist any further Solar Cooker dissemination efforts, in other countries and contexts. At the same time, many of the questions or issues that have plagued other attempts to introduce Solar Cookers, remain open or unanswered. The review assessed the activities carried out in the last funding period which incorporates activities from both part of phase two (as the precursor to commercialization) and the whole of phase three (the pilot production and commercial dissemination drive). This corresponds to the period during which support was received for the project as a GEF/UNDP initiative from June 2002 to December 2005.

This evaluation was commissioned by the SOLCO Project Management Unit, on request of the GEF focal point, Ms. Pam Yako, DG DEAT, and in compliance with statutory requirements to evaluate all Medium sized GEF funded projects on their completion. Given the pioneering nature of the project, the reviewers have assessed progress based not only on the originally proposed strategy, but also on the project’s response to emerging realities. All of the project’s primary stakeholders including the GEF/UNDP local Pretoria office, the Department of Minerals and Energy, private sector interests, industry associations, and the Energy Development Corporation have been involved in the evaluation. The findings and conclusions have been rated in conformity with the GEF guidelines for final evaluations

1.3. Main conclusions, recommendations and lessons learned

The lack of commercial success with solar cookers can be attributed to:

- The complex set of issues to be considered for the low income target market
- Disadvantages inherent in solar cookers such as lack of convenience
- The correlation between price and performance of the product (difficulty producing a low cost, reliable and effective cooker)

2. Introduction

2.1. Purpose of the evaluation

The purpose of this final project evaluation was stated as assessing the project's progress towards its objectives and goals as contained in the original Solco project document and log-frame and any modification as approved during periodic review. The evaluation intends to analyse the reasons for an inability to create a mass market for solar cookers in South Africa.

2.2. Key issues addressed

The project cycle was broadly categorised by project:

- formulation comprising conceptualisation and design,
- implementation and
- results or outcomes.

2.3. Methodology of the evaluation

The methodology used included:

- A review of the documentation as listed in section 7.4
- Interviews with the people listed in section 7.2
- Field visits were undertaken to:
 - Rustenburg townships retail scheme
 - ULOG cooker manufacturing facility
- Facilities of additional businesses with project-related purposes as listed in Table 1 of the 2005 UNDP/GEF annual project report which the evaluation team were unable to visit included.
 - Improved wood stove business
 - Retained heat cooker
 - 2 solar cooker manufacturers
 - 6 solar cooker distributors/entrepreneurs
 - 6 solar cooker retailers
 - 18 solar cooker agents.
- The questionnaire as found in section 7.5 was distributed to interviewees 2 weeks prior to the interview and the results consolidated in section 7.5. Electronic recordings of the interviews were retained for reference purposes.

The evaluator spent approximately 70 hours in the offices of the CEF between 29 November 2005 and 3 February 2006 working with the PMU and APM.

2.4. Structure of the evaluation

The elements of the evaluation are summarised in Table 1

Title	Subtitle	Elements assessed	Elements Rated	Elements rated by stakeholders
Formulation	Design	5	2	2
	Stakeholders			
Implementation	Approach	6	3	4
	M&E			
	Stakeholders			
Results	Objectives	3	1	1
		14	6	7

Table 1 Evaluation structure summary table

The 6 elements rated were informed by a statistical consolidation of 18 sub-elements rated by project respondents during interviews. The table above provides the key to this consolidation from the base data obtained and analysed in Table 4.

3. The project(s) and its development context

3.1. Project start and its duration

The period under review in this evaluation is phase 3 of the SOLCO 9 year project 'the pilot production and commercial dissemination of solar cookers in South Africa'. The estimated project period was from July 2002 to June 2005. A cost neutral extension of 6 months was provided by GEF extending the project duration from 36 to 42 months. The revised closing date was the 24th of December 2005.

The GEF project brief and project documents were developed in 2000 and 2001 as a commercialisation phase component following the preceding 5 years and first two phases of the greater SOLCO project. This represents the GEF project conceptualisation. It is captured in the GEF project document developed between the DME as the implementing agent and the UNDP country office.

3.2. Problems that the project sought to address

Broadly, the problems that the project sought to address, through the rollout of solar cookers as a solution, were the harmful effects of current cooking practices in South Africa on the environment and on the safety and quality of life of, in particular, the poor.

The programmatic context of the project and therefore the problem which is was stated as seeking to address, are aptly and more broadly described as part of the terms of reference for this evaluation in saying that:

The Government of South Africa is committed to redressing the historical imbalances created by previous dispensations. Since majority rule it has invested hugely in improving the well-being of its citizens at the lower end of the economy. In spite of these programmes more than half the population remains poor. Cooking energy costs for the projects primary target market have been shown by various reliable studies to average 15% of household income. The poorer a household is the more they will proportionally spend on energy for cooking. This has to be regarded as a fixed recurrent cost as everyone has to cook food and no alternative is available to reduce on this expenditure. This situation arises in spite of government's attempts to cushion the effects of relatively high energy costs for low income households by providing subsidy schemes on all the main energy carriers.

While the government has made impressive progress in electrifying previously disadvantaged groups, electricity is too expensive for most of our target market to use for cooking. Although electricity is the stated preferred option, only 10% of those 60% who have a connection, use electricity for cooking. They cite its prohibitive cost as the reason for not using it. Most (85%), reluctantly use a mixture of paraffin, wood and low grade coal. As well as facing the well-documented health and safety risks associated with the domestic use of these fuels, households are still confronted with high fixed recurrent cooking energy costs. Women and children are in this regard particularly negatively affected. In addition, all currently available energy carriers used for domestic cooking are big environmental polluters.

Being environmentally friendly and utilizing 'free' solar energy, Solar Cookers were seen as an ideal solution to this problem. Initially funded by the German and South African Governments as part of their bi-lateral development co-operation programme.

3.3. Immediate and development objectives of the project

The project was designed, therefore, to remove barriers to the widespread use of Solar Cookers at household and institutional levels in peri-urban and rural areas. More specifically the project aimed to address the following barriers:

- Those which hamper the phased local manufacturing, retailing and provision of after sales services for different solar cookers;
- Lack of end user awareness and information in target areas as well as with other stakeholders involved in the further development of solar cooking and baking
- Technical, organisational, information and possibly financial to the geographical spreading and scaling up of the initiative.

The projects 7 immediate objectives as per the logical framework matrix of September 2003 were:

NARRATIVE SUMMARY	OBJECTIVELY VERIFYABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
1. Put in place institutional arrangements	<p>PMU, PSC are operative within 1 week from project signature according to their assigned responsibilities</p> <p>The project is institutionally linked to a government-associated enabling institution at latest 1 year after project signature</p>	<p>6 months workplans, Budget, timetable, meeting minutes (PSC, TPR), APR/PIR</p> <p>Memorandum of Understanding</p>	<p>A convincing case can be made for the commercial viability of a Solar Cooker industry in South Africa</p>
2. Organise the local mass production of Solar cookers	<p>At least 4 SA entrepreneurs are involved in Solar Cooker manufacturing/assembly by the end of the project, thus increasing the baseline from 2001 by at least 100%.</p> <p>At least 2000 Solar Cookers are fully or in parts produced/assembled in SA per year</p>	<p>Business Plans, business register, field visits</p> <p>Visits to production facilities/ assembly lines</p> <p>Stock records</p>	<p>Local production is the cheapest solution</p> <p>Market demand warrants local production</p>
3. Set up local distribution channels	<p>At least 1 wholesaler, 1 large chain retailer and 50 small retail outlets stock, promote and turn over at least 10000</p>	<p>Business plan documents</p> <p>Field visit reports</p> <p>Retail Outlet Sales figures</p>	<p>Private sector partners show an interest in the new market opportunity</p>

NARRATIVE SUMMARY	OBJECTIVELY VERIFYABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
	<p>Solar Cooker products by the end of the project</p> <p>At least 1000 Solar Cookers per year are sold through small-scale income generation schemes in Low Income areas</p>	<p>Alternative root-to-market Monitoring records</p>	
<p>4. Increase Solar Cooker Awareness</p>	<p>At least 3 new Solar Cooker enterprises become active throughout the project lifetime</p> <p>Increased customer awareness results in aggregated exponential sales trends over the project lifetime</p> <p>The SA government promotes RE Cooking in at least 3 publications, policy recommendations or directives throughout the project period</p>	<p>Promotional materials on the market</p> <p>Retail sales figures and orders</p> <p>Government White Paper on RE, websites</p>	<p>The private sector can be efficiently targeted with recent market and demand information</p>
<p>5. Design and implement appropriate financing mechanisms</p>	<p>At least 1 new equity and/or debt financing mechanism for Solar Cooker entrepreneurs and at least 2 low-interest financing mechanisms for Solar Cooker consumers have been set up and used by the end of the project</p>	<p>Business plan submissions with different investors</p> <p>Loan agreements with different financial institutions</p> <p>Revenue statements of the project</p>	<p>Finance institutions are willing to invest in the lower end of the market</p> <p>Private sector partners take an active interest in the new market opportunity</p>
<p>6. Design and implement a dissemination strategy</p>	<p>Quantitative and qualitative market and demand data on the basis of at least 450 detailed household interviews is available before 10/2003</p> <p>A business case for the development of the Solar Cooker industry in</p>	<p>Market Survey document</p> <p>Business case document</p>	<p>A government associated enabling institution takes active interest in the new market opportunity and actively encourages and facilitates private sector involvement</p>

NARRATIVE SUMMARY	OBJECTIVELY VERIFYABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
	<p>South Africa has been compiled and presented to at least one government-associated institution before 11/2003</p> <p>A government-associated institution actively enables and evaluates at least 3 private sector-driven Solar Cooker dissemination ventures before 12/2004</p>	<p>Board decision document, MoU, Number of Business plans reviewed</p>	
<p>7. Assess programme impacts</p>	<p>The critical project indicators (Number of Businesses created, Number of Solar Cookers produced/assembled, Number of Solar Cookers sold) are recorded at least bi-monthly within the project period</p>	<p>Final Report</p>	

3.4. Main stakeholders

The main stakeholders were the GEF/UNDP local Pretoria office, the Department of Minerals and Energy, private sector interests, industry associations, and the Energy Development Corporation

3.5. Results expected

The expected project results at project conceptualisation were captured in section B2, 'Expected end of project situation', of the project document, reference 5, as follows:

"The expected results of the successful implementation of the project will facilitate the dissemination of 50 000 solar cookers in a 6-year period. More specifically:

- 3-4 existing solar cooker models will have been re-designed to meet local South African conditions. proto-types have been produced in Europe and transferred to South Africa for phased mass production;
- Mass production processes have been designed, tested and implemented in South Africa for the manufacturing of 3-4 solar cookers models;
- 2.000 Solar cookers will have been produced/distributed during the first 2 years of project implementation;
- Manufacturing and distribution, sales channels capable of mass dissemination of solar cookers have been adequately developed;

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- Awareness among key stakeholders about the potential, availability and affordability of solar cookers has been significantly increased in the target areas;
- 50 000 Solar cookers i.e. 10% of the households in the target area, will have been disseminated in a 6 year period;
- Information packages for stakeholders and interested others outside the target areas, even in the SADC region, have been prepared and presented during 2-3 (international) workshops. Furthermore it is anticipated that outcomes of the solar cooker activities will be presented to a larger audience via papers, publications at local and international forums;
- Human and institutional capacity for continued development of the solar cooker sector has been substantially strengthened;
- A policy context. including policy instruments conducive to accelerated solar cooker development and dissemination has been designed and developed; and
- [Greenhouse gas emission reduction of between 135 MtCO₂e and 225 MtCO₂e at a unit abatement cost of between approximately USD 6 and USD 3.5 per ton of CO₂ equivalent would have been achieved respectively].”

4. Findings and Conclusions

In addition to a descriptive assessment, all criteria marked with (R) have been rated using the divisions: Highly Satisfactory (4), Satisfactory (3), Marginally Satisfactory (2), Unsatisfactory (1). In gleaning input to the rating process, stakeholders were asked, likewise, to rate the required elements using this hierarchy during interviews following the questionnaire as in 7.5.1. Thereafter, an averaging of the results was obtained by assigning the numerical values as above in parenthesis. The results obtained are summarised in Table 4.

4.1. Project Formulation

4.1.1. Conceptualization/Design (R).

The approach used in design and an appreciation of the appropriateness of problem conceptualization was one of the areas identified repeatedly by stakeholders as one of greatest concern and highlighted for improvement in further endeavours of this nature. As reflected in the numerical outcome of the first question of the questionnaire process, the selected intervention strategy was considered by interviewees to be:

- overly ambitious (proponents note that this is not uncommon for development projects) or unrealistic
- a misguided (technological) solution to a now well defined problem.
- inadequately informed by the stakeholders and prospective market in particular (see low scores of question 2.3 of the questionnaire: 'Stakeholder participation in the design phases')

and therefore perhaps not ideally suited to addressing the root causes and principal threats in the project area. The average response to a rating of the project design was equivalent to a majority response of 'marginally satisfactory' in both overall conceptualisation and stakeholder participation in the design process. It is worth noting that many of the respondents were not directly involved in the project conceptualisation process and the weak score here could hint at an artefact of the evaluation methodology of seeking reasons for project failure in either conceptualisation or implementation and the seeming consensus that the downfall was not the result of the latter. The early project framework development flowing from phase two of the project back in 2000 is not well documented. Admittedly the SOLCO business case reference 6 was only finalised late in 2003 as was the logical framework matrix (logframe). As will be seen in the assessment of the project implementation the lack of a well-defined logframe was an early problematic oversight that was rectified during the course of the first 18 months of the project. Several respondents reported an evolution in evaluation element 3.1 ('Use of the logical framework') from unsatisfactory to satisfactory over this period.

4.1.2. Country-ownership/Drivenness.

Although the project conceptualisation had its origin within the national government Department of Minerals and Energy and claimed consistency with development plans and focuses on national environment and development interests such as the GEAR strategy, solar cookers did not received the kind or level of support from national government that other fuels and cooking fuels such as paraffin and biofuels are now getting (Mr. Siswe Madonda, personal communication Feb 2006).

4.1.3. Stakeholder participation (R)

This section deals with stakeholder participation in project design. Stakeholder participation during project implementation is dealt with in section 4.2.3. Interviewees rated aspects of stakeholder participation in project conceptualisation as follows:

Aspect of participation	Evaluator rating according to GEF/UNDP rating system	Numerical outcome
Information dissemination,	Satisfactory	2.8
Consultation,	Marginally satisfactory	2.6
“Stakeholder” participation in design stages.	Marginally satisfactory	2.3

Table 2 Rating of stakeholder participation in project design

The overall impression of stakeholder participation during the design phases of the project was that it was marginally satisfactory. A claim that consultation was not wide enough and was overly limited to direct project proponents presents something of a dilemma in that prior phases of the project sought precisely to assess these. The rigour of these assessments and therefore the validity of the assessments of market acceptability are beyond the scope of this investigation. None the less it was felt by some respondents that this could have been better and should be flagged as an area for focus in future design.

4.1.4. Replication approach.

The solar cooker market can be considered to be in a ‘pre-commercial market’. What this project sought essentially from a UNDP perspective is to move the market closer to a commercial market in a phase sometimes referred to as a ‘pioneer market’. This model is applicable to other sectors and technologies although the intervention did not succeed in this instance. It appears highly unlikely that the approach to solar cooker market development used here will be replicated in the foreseeable future. Probably the primary reason identified by stakeholders was that the time was not yet opportune, that is that the market was at too early a stage of development for an initiative of this nature. So for example, there is insufficient demand for cookers because they are not readily commercially available and they are not available because there is insufficient market demand to render commercial production and dissemination a viable proposition.

The lesson to be learned is that the timing of such an intervention as a function of the stage of market development is paramount. In this instance, the market was not ready for the significantly resourced market push.

4.2. Project Implementation

4.2.1. Implementation Approach (R).

This should include assessments of the following aspects:

- (i) The use of the logical framework as a management tool during implementation and any changes made to this as a response to changing conditions and/or feedback from M and E activities if required. (Rating: 2.8 or Satisfactory)

The project was designed and set underway essentially without a logical framework. This was remedied and improved upon during the first year of the project in making the logframe more specific and in codifying the project in GEF suitable terminology. The current logframe is dated September 2003. The design of the project did not change but the parameters for operation of the

project in the project document and logical framework was improved. In the first 12 months of project implementation the use of the logical framework evolved from unsatisfactory to satisfactory.

- (ii) Other elements that indicate adaptive management such as comprehensive and realistic work plans routinely developed that reflect adaptive management and/or; changes in management arrangements to enhance implementation (Rating: 2.8 or Satisfactory).

Given the innovative nature of the project and the non-existence of a market requires significant creative and adaptive management style. The co-funding of phase 3 of the project also makes delimiting project activities complex. The project document and logframe could have received more attention from the members of the PMU. There were major changes over the course of the project through adaptive management of the project. The need for a project logframe was necessary to provide boundaries within which adaptive management could proceed.

- (iii) The project's use/establishment of electronic information technologies to support implementation, participation and monitoring, as well as other project activities (Rating: 2.8 or Satisfactory).

This aspect appears to have been generally sound. The project developed two good website www.rescooking.com and www.resopportunity.co.za. Use of the website by private sector partners for advertising purposes largely did not materialise and where it did, the impact appears difficult to quantify. Information dissemination to stakeholders was good but perhaps the immaturity of the market led to poor uptake thereof.

- (iv) The general operational relationships between the institutions involved and others, and how these relationships have contributed to effective implementation and achievement of project objectives.

The financial and managerial responsibility lies with the government to achieve the objectives of the project as a nationally executed project. There was some confusion as to whether the national execution responsibility was actually delegated to the CEF or whether it was an administrative contribution artefact that the project was housed within the EDC. Be that as it may, this aspect of evaluation had the largest range of responses, from unsatisfactory to highly satisfactory. The average response pointed to the relationship between the project the GEF and other institutions being generally good.

- (v) Technical capacities associated with the project and their role in project development, management and achievements.

The project and the project management unit operated in an institutional and market context. The technical capacity of the project manager and assistant project manager as well as the contracted sub-consultants was generally very good. The start of the PMU was not ideal. This was prior to the appointment of a second APM, Mr. Mark Tanton, who remained to the completion of the project. There were also some problems with relatively high turnover amongst support personnel.

4.2.2. Monitoring and evaluation (R)

Assessment by project participants and the project steering committee as to whether there had been adequate periodic oversight of activities during implementation was generally favourable. This element also received the highest numeric score of 3.1 (satisfactory). The annual project reports appear to have become more thorough as the project has progressed. The initial absence

of clear logical framework matrix and therefore indicators is perhaps the reason for poor monitoring early on. It is the opinion of the evaluator that action has been taken based on the results of this monitoring oversight and evaluation reports where possible within the project objectives. For example, the project management unit was not at liberty to focus their attention on efficient stoves and retained heat cookers when they were found to be dominating the market space at least partially intended for solar cookers – the focus of the project.

4.2.3. Stakeholder participation (R)

This section on stakeholder participation during project implementation includes consideration of information dissemination, participation by local resource users and NGOs, the development of partnerships and collaborative relationships and the involvement of governmental institutions.

- (i) The production and dissemination of information generated by the project. (Rating: 2.3 – marginally satisfactory). Again the fault in all likelihood lies less with the information dissemination drive undertaken by the project than with the fledgling market's ability to absorb the outputs. Clear evidence exists of mechanisms for information dissemination being put in place. A great deal of work including an excellent website and professional brochures have been prepared.
- (ii) Local resource users and NGOs participation in project implementation and decision making and an analysis of the strengths and weaknesses of the approach adopted by the project in this arena. Attempts to encourage stakeholder participation were thorough but meaningful participation and uptake of solar cookers through this sector was not forthcoming. Probably the most notable non-governmental organisation, albeit involved at a distance only, is the Sunstove organisation.
- (iii) The establishment of partnerships and collaborative relationships developed by the project with local, national and international entities and the effects they have had on project implementation. The numerical assessment for this element was 2.5 (marginally satisfactory to satisfactory).
- (iv) Involvement of governmental institutions in project implementation, the extent of governmental support of the project. This aspect demonstrated the best performance amongst the stakeholder participation elements with an assessment of firmly satisfactory. One of the major successes of the project was convincing CEF to get involved in the project. The preparation of the business case and the approval thereof by the board of CEF was a major achievement. The subsequent involvement of CEF and their hosting of the project are noteworthy for a project of this nature.

Attempts to encourage stakeholder participation were thorough. The uptake of these advances was, sadly, poor. This points once again to the attempt at market acceleration being premature. Participation by the private sector in particular was disappointing. The failure of the project to attract entrepreneurs willing to enter ventures along the length of the solar cooker supply chain despite the direct incentives provided, indicates a technology not yet mature enough to provide viable points of market entry.

4.2.4. Financial Planning

Including an assessment of:

- (i) The actual project cost by objectives, outputs, activities

The most up to date project financial information at the time of writing was in the 2005 Solco PIR dated September 2005. At the time USD712 000 had been disbursed representing a disbursement ratio of 89.0%. At the time of writing the full project budget has now been allocated and will be disbursed by June 2006. The financial audit will be conducted following the final minor disbursements to be made in preparation of school packs as an outflow of the Anglo Platinum partnership.

(ii) The cost-effectiveness of achievements

The intended unit emissions reduction abatement cost was estimated to be approximately USD6/tCO₂e. Assuming that the GEF/UNDP contribution to this reduction was the only one, which it was actually not, the unit abatement costs over a 7 year crediting period were approximately USD158/tCO₂e.

(iii) Financial management (including disbursement issues)

The evaluation team has not studied the project financial management and is not aware of a financial audit of the project having been undertaken at the time of writing.

(iv) Co-financing

Co-financing of USD500 000 was secured from the BMZ as a result of the GEF/UNDP support for the project. The originally anticipated co-financing included sales 'revenues' from end users of USD2.25million. This did not materialise.

4.2.5. Sustainability

Given that the quantifiable benefits of the project are limited, it is similarly difficult to outline the extent to which these are expected to continue, within or outside the project domain, after it has come to an end. Relevant factors include for example: development of a sustainability strategy, establishment of financial and economic instruments and mechanisms, mainstreaming project objectives into the economy or community production activities.

Much hope for sustainability of the Solar Cooker industry is placed in the founding of AFRECA the African Renewable Energy Cooking Association. Some believe that at this pre-commercialisation phase of solar cooker market development that the efforts of a newly created industry association will be premature and largely without success as with the broader project. It is the evaluator's hope that the industry association will receive sufficient support to maintain any market momentum which may have been established and steadily attempt the acceleration of the market which the project could not achieve in a limited time. As discussed in section 6 below of market preconditions that would have provided a suitable context for the project under investigation to succeed, time for the context for solar cookers to improve may be precisely what is needed, possibly even in making slow progress with regards to the lack of 'user friendliness' of the technology.

What would be good to see is that solar remains one of the options that is considered and which receives appropriate support in future programmes that deal with sustainable cooking. This has been attempted by linking the solar cooker to the Probec initiative. This is another achievement of the project looking at kitchen management and cooking devices. This should continue, for example, if CEF and the EDC could still entertain solar cooking initiative proposals or components of project proposals in future, particularly given the institutional capacity built during the commercialisation phase of the project as supported by the GEF.

4.2.6. Execution and implementation modalities.

This section considered the effectiveness of the UNDP counterpart and Project Co-ordination Unit's participation in selection, recruitment, assignment of experts, consultants and national counterpart staff members and in the definition of tasks and responsibilities; quantity, quality and timeliness of inputs for the project with respect to execution responsibilities, enactment of necessary legislation and budgetary provisions and the extent to which these may have affected implementation and sustainability of the Project; quality and timeliness of inputs by UNDP and other parties responsible for providing inputs to the project, and the extent to which this may have affected the smooth implementation of the project.

Consideration of these elements led primarily to emphasis of the improvements in timeliness of inputs, financial and otherwise, after the middle of 2004, when the Energy Development Corporation (EDC), a subsidiary of the Central Energy Fund, stepped in as a facilitator on behalf of the South African Department of Minerals and Energy (DME).

4.3. Results

4.3.1. Attainment of Outcomes/ Achievement of objectives (R)

This aspect of the evaluation including a description and rating of the extent to which the project's objectives (environmental and developmental) were achieved using the GEF monitoring and evaluation rating system.

The objectives of the project are stated in section 1.1. In terms of the attainment of project objectives the project must be said to have failed with questionnaire respondents submitting a 1.5 rating (unsatisfactory) on average. The project was implemented and managed professionally with an overall rating of satisfactory. The fault lies neither with the PMU nor the national executing agent in implementation of the project. The attempt to create a viable market for solar cookers in South Africa through commercial production and dissemination was perhaps overly ambitious and premature. The market conditions for solar cookers are not appropriate or conducive to their commercialisation. Perhaps solar cookers still suffer from a lack of cultural acceptability. When cooking convenience is a consideration as opposed to the case of need in extreme stress situations such as refugee camps, the demand for solar cookers has not been stimulated at the levels of price reduction through learning achieved through this project.

The environmental objective of the project was to contribute to climate stabilisation by reducing CO₂ emissions measured in Mt CO₂e per annum. The UNDP project document (Ref. 5) describes the expected end of project situation from an environmental perspective as seeking to have achieved emissions reductions of 135 [k]tCO₂e² to 225 [k]tCO₂e as a result of "direct fossil fuel savings as a result of the dissemination and use of 50 000 solar cookers with a lifetime of 5 years." Given the incremental cost investment of US\$ 800 000 the expected unit abatement cost of these reductions was expected to be in the range from USD 12 to USD 22 per tonne of Carbon (USD 3.50 to USD 6.00 per tCO₂e).

Numbers derived from sales figures indicated that 1243 solar cookers were sold during 2003, 2004 and 2005 as a direct or indirect result of the project activities over this period. This includes an assumed 180 Sunstoves which can be attributed to the project activities either through direct sales or referrals from the project website (Bennett, personal communication).

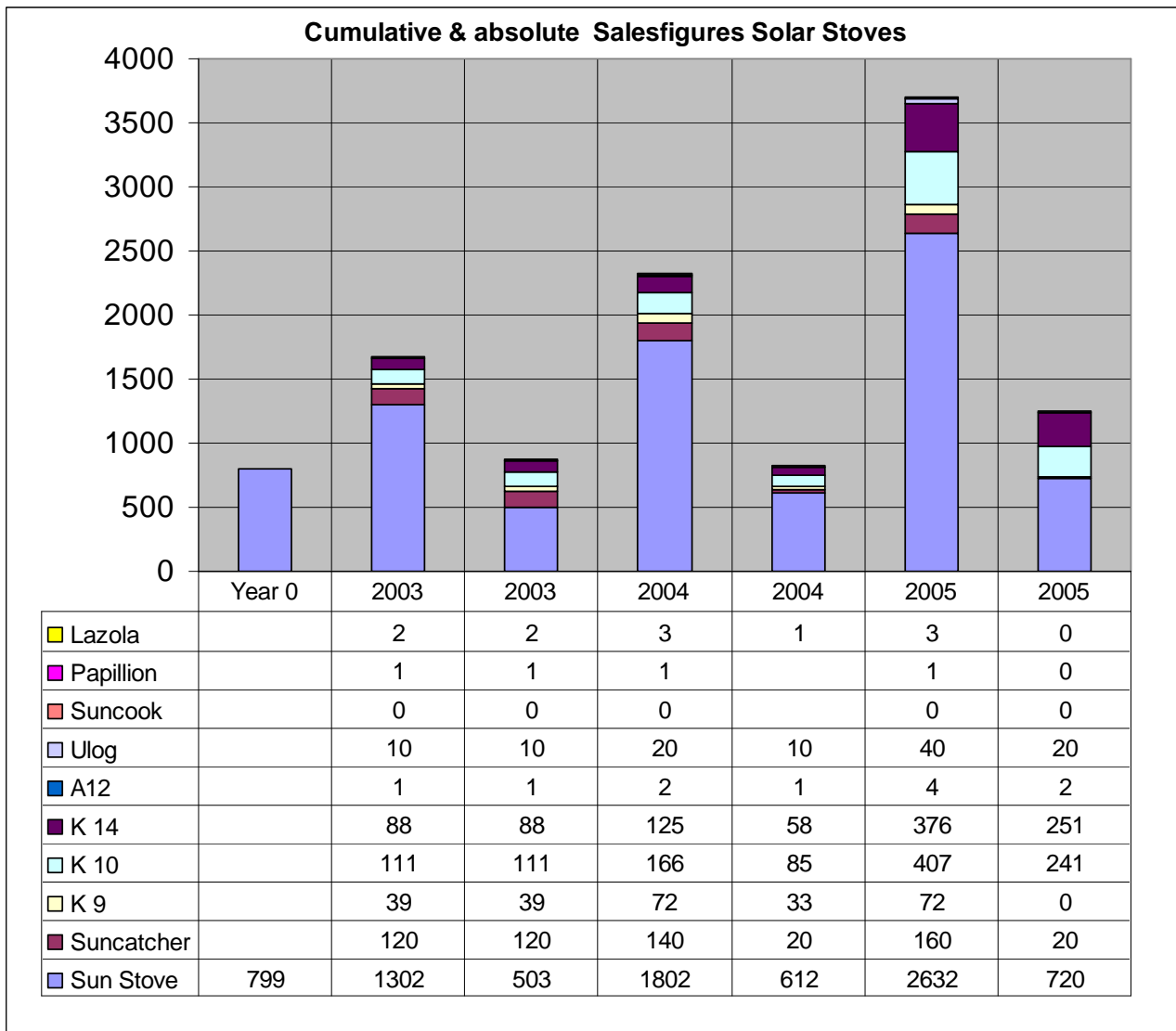
² The use of the MtCO₂e unit of measurement in the project document is an error and should read ktCO₂e.

Figure 1 shows total (including baseline figures) cumulative and annual solar cooker sales figures over the project period. Using usage rates from PDC 2005 (Ref. 7)³ and emissions reduction capacities of K14 and Sunstove solar cookers from Energy Transformations 2003 (Ref. 8)⁴ yields an emission reduction total attributable to the last three years of SOLCO project activity of approximately 5100 tCO₂e to 2012.

³ Average use rates according to Raubenheimer and Thorne have been used, 17% for non use and a 20% figure for non functionality after a period of 7 years as found by PDC 2004. 7 years has been used as a more standard ERPA crediting period.

⁴ The ability of Sunstove and K14 solar cookers to reduce the relevant Kyoto Protocol direct greenhouse gases (in this case CH₄, N₂O and CO₂) are estimated to be between 0.330 and 1.326 tonnes CO₂ equivalent per year. A weighted equivalent K14 to Sunstove ratio of 32% (as for cumulative figures in 2005) has been applied to total attributable cooker sales over the project period and no further sales beyond 2005 have been considered.

Figure 1 Cumulative and annual solar cooker sales figures



The developmental objectives of the project are stated in the project logical framework matrix (logframe) as

“Affordable, renewable energy services are increased and basic energy needs met through the use of clean, safe, environmentally friendly technologies (reducing CO₂) in a manner that stimulates economic growth.”

It was the intention that these should be verifiably measurable by considering the following indicators:

- Number of businesses with project-related purposes
- Number of people cooking with solar energy
- Energy savings per household
- Cost decreases of solar cookers over project lifetime
- Financing modalities and newly accessible lending volume available
- Number of people with improved income as a result of project intervention

In terms of measurable project indicators the following assessment summary can, therefore, be presented:

Indicator	Target	Achieved
ktCO ₂ e over 7 years attributable to project	135 ktCO ₂ e to 225ktCO ₂ e. Using the revised methodology as above yields a target of 209 ktCO ₂ e over the 7 year crediting period.	5.1 ktCO ₂ e (approximately 2.5% of the target)
Number of businesses with project-related purposes	3 new solar cooker enterprises	7 new solar cooker enterprises are listed according to the project M&V materials provided.
Number of people cooking with solar energy	The logical framework revised the figure of 50 000 cookers sold over the lifetime of the project to 10 000. Assuming an average household size in the target market of 5.8 per household, this target represent 58 000 people cooking with solar energy disregarding non-use and cooker disrepair parameters for ease of comparison.	Based on the number of 1243 cooker sales attributable to the project over the 3 year project cycle and the same household density, non-use and disrepair rates, 7209 people can be considered to be cooking with solar energy as a result of the project activities. This represents approximately 12% of the revised target.
Energy savings per household	Every cooker sold should result in savings of one third being made.	Use rates: 25% - 31% Fuel savings 38% Monetary Savings R68 average Time Savings 36% - 33 hrs per month. (PDC 2004)
Cost decreases of solar cookers over project lifetime	Ex factory price cost reduction of 50% (not stated as real or nominal prices)	No notable price reduction even in nominal terms.

Indicator	Target	Achieved
Financing modalities and newly accessible lending volume available	<p>1 Venture financing facility available to entrepreneurs.</p> <p>2 consumer financing schemes and</p> <p>[strategy for access to] CDM credits.</p>	<p>Venture financing available (ongoing beyond project) with proven, viable business plans. The latter has proven difficult to achieve.</p> <p>Theba negotiations failed. Consumer financing already widely available for other products – use thereof for solar cookers not evident. A supplier credit scheme was successfully established in Rustenburg.</p> <p>Investigation into CDM credits for solar cookers proved transaction costs were prohibitively high to warrant CDM project registration and transaction. In mitigation this situation is not limited to solar cooker projects.</p>
Number of people with improved income as a result of project intervention	Not set. Mid term measure based on business level revenues and household savings where cookers are in use.	31 at a business level and approximately 1000 at a household level assuming a single income per household.

Table 3 Indicators of achievement of project objectives

It is therefore the conclusion of this evaluation that, based on the project indicators developed, solar cookers have not been commercialised in South Africa through the activities of the project over the last 3 years.

The project, although it has not achieved its objectives, has led to other lessons being learned regarding solar cookers in South Africa. These are captured in section 6. In addition, it is worth reiterating that the greater project has proven that the time and conditions in South Africa are not right for commercialisation of solar cookers. The stage that the market finds itself in is analogous to the pre-commercial market stage described by Hankins and Banks 2004 for UNDP in relation to photovoltaic market development. The question begs asking as to whether a project of this nature can actually move a market beyond the pre-market phase. There currently is little more to speak of than what could be called a pre-commercial market. The further steps in market development as described by the above are the pioneer market and the emerging market. At the end of phase two of the SOLCO project the only market participants were the project and the Sunstove organisation. GEF would have hoped to move the market beyond this to the pioneer market as part of these market development activities. Such market development activities require sustained and well-timed effort including customer awareness, supply side and technology, mass production, financing and achieving a competitive price. The project worked, unsuccessfully on these several ingredients in an attempt to develop the market.

4.3.2. Contribution to upgrading skills of the national staff

The project APM Mr. Mark Tanton was appointed as the Energy Development Corporation's Development Manager directly following the closure of the SOLCO project, as from January 2006. Not only is this a direct recognition of the capacity displayed by Mr. Tanton and other Solco project staff over the project life and particularly that part during which the project was housed within the EDC and more broadly within the Central Energy Fund, but also suggests that lessons learned during the SOLCO project will be strategically retained at a national public level and that future solar cooker initiatives, should they be proposed, would find a first port of call at the very least.

5. Recommendations

Corrective actions for the design, implementation, monitoring and evaluation of the project include

- Incorporation of a mechanism for market assessment prior to project initiation and careful consideration of the needs of the perceived target market

Actions to follow up or reinforce initial benefits from the project

- Continued support for the newly formed AFRECA industry association to maintain minimal momentum and
- Continued consideration of solar cooking in niche applications.

Proposals for future directions underlining main objectives

- In line with the findings of the project, the importance of careful documentation thereof, thorough dissemination to stakeholders and suitable archiving of these should not be overlooked.

6. Lessons learned

This section highlights the best and worst practices in addressing issues relating to relevance, performance and success.

One of the perceived successes of the SOLCO project, was the concrete evidence that the time for solar cooking as a commercially based environmental and development solution in developing nations has not yet come. That is, that the time for commercialisation of solar cookers in South Africa has not yet come. The preconditions for successful commercial market-based development of solar cookers and which would need to change, some dramatically, in time to come are considered by stakeholders to include:

- access to cooking fuels in general
- the price of these fuels (affordability of the solar cooking additional option)
- acceptance of the technology

The assumption that South Africa was the most suitable country to undertake this investigation, usually based on a very good solar resource and moderate per capita income levels, may not have been sound given the well developed suite of cooking alternatives available in South Africa at an affordable level. This is as opposed to most African countries which rely primarily on biomass fuels

The now widely accepted admission that solar cooking be seen as part of a package of cooking devices rather than as a cooking solution on its own, can be seen to have been learned through the activities of this project. This switch to solar cooking as an 'add-on' device is something positive which the project has contributed. The project may not have achieved its objectives for solar cooking but it has made a significant contribution in terms of efficient cooking solutions in South Africa and their incorporation into national policy and energy strategy through for example the round table initiative launched in October 2005.

The inclusion of solar cookers in the suite of demonstrations, although perhaps receiving less attention than efficient stoves, retained heat cookers and inexpensive electrical water heating devices, has lead to future potential users being exposed to cooking using solar radiation.

7. Evaluation report Annexes

7.1. Evaluation Terms of Reference

TORs Final Evaluations Solco 2005

Terms of Reference for Solco Final Evaluation

I. INTRODUCTION

UNDP/GEF Monitoring and Evaluation (M&E) policy

The Monitoring and Evaluation (M&E) policy at the project level in UNDP/GEF has four objectives: i) to monitor and evaluate results and impacts; ii) to provide a basis for decision making on necessary amendments and improvements; iii) to promote accountability for resource use; and iii) to document, provide feedback on, and disseminate lessons learned. A mix of tools is used to ensure effective project M&E. These might be applied continuously throughout the lifetime of the project – e.g. periodic monitoring of indicators -, or as specific time-bound exercises such as mid-term reviews, audit reports and final evaluations.

In accordance with UNDP/GEF M&E policies and procedures, all regular and medium-sized projects supported by the GEF should undergo a final evaluation upon completion of implementation. A final evaluation of a GEF-funded project (or previous phase) is required before a concept proposal for additional funding (or subsequent phases of the same project) can be considered for inclusion in a GEF work program.

Final evaluations are intended to assess the relevance, performance and success of the project. It looks at early signs of potential impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. It will also identify/document lessons learned and make recommendations that might improve design and implementation of other UNDP/GEF projects.

The project objectives and its context within the program country.

The Government of South Africa is committed to redressing the historical imbalances created by previous dispensations. Since majority rule, it has invested hugely in improving the well being of its citizens at the lower end of the economy. In spite of these programmes, more than half the population remains poor. Cooking energy costs for the projects primary target market have been shown by various reliable studies to average 15% of household income. The poorer a household is, the more they will proportionally spend on energy for cooking. This has to be regarded as a fixed recurrent cost, as everyone has to cook food and no alternative is available to reduce on this expenditure. This situation arises in spite of governments attempts to cushion the effects of relatively high energy costs for low income households by providing subsidy schemes on all the main energy carriers.

While the government has made impressive progress in electrifying previously disadvantaged groups, electricity is too expensive for most of our target market to use for cooking. Although Electricity is the stated preferred option, only 10% of those 60% who have a connection, use electricity for cooking. They cite its prohibitive cost as the reason for not using it. Most, (85%), reluctantly use a mixture of paraffin, wood and low grade coal. As well as facing the well-documented health and safety risks associated with the domestic use of these fuels, households are still confronted with high fixed recurrent cooking energy costs. Women and children are in this regard particularly negatively affected. In addition, all currently available energy carriers used for domestic cooking are big environmental polluters. Being environmentally friendly and utilizing 'free' solar energy, Solar Cookers were seen as an ideal solution to this problem. Initially funded by the German and South African Governments as part of their

bi-lateral development co-operation programme. Solco has been through three main phases, each lasting approximately three years apiece:

1. Consumer acceptance testing
2. Test Marketing, and
3. Commercialization.

In phase one, it was found that if low-income consumers had access to Solar Cookers, they do indeed use them, and will use them for a third of the time¹.

In phase two, the parameters for commercial approaches to dissemination were defined and a (demand side) business case was made.

The third and final commercialization phase has supported the establishment of a small but viable industry in which value chains' supplying a growing market demand for a number of different products have been established.

While the South African experience has demonstrated that Solar Cookers can make a positive contribution to low income consumers in particular and to the development process in general, *in the South African context*. In assessing the experiences made by the project, numerous positive, general conclusions can be drawn that will assist any further Solar Cooker dissemination efforts, in other countries and contexts. At the same time, many of the questions or issues that have plagued other attempts to introduce Solar Cookers, remain open or unanswered.

The review will assess the activities carried out in the last funding period which incorporates activities from both part of Phase two and the whole of phase three.

II. OBJECTIVES OF THE EVALUATION

This evaluation has been commissioned by the Solco Project Management Unit, on request of the GEF focal point, and in compliance with statutory requirements to evaluate all Medium sized GEF funded projects on their completion. The evaluation will assess the projects progress towards its objectives and goals as contained in the original project document as well as the project log-frame, and any modifications as approved by the required tri-partite review. Given the pioneering nature of the project, the reviewers will assess progress based not only on the originally proposed strategy, but also on the projects response to emerging realities.

All of the project's primary stakeholders should be involved in the evaluation and will include, GEF/UNDP local Pretoria office, Department of Minerals and Energy, private sector interests, including industry associations, and the Energy Development Corporation.

¹ As a precursor to subsequent work, a clear orientation towards market development, as opposed to social welfare approaches, was made at this stage of the project.

III. PRODUCTS EXPECTED FROM THE EVALUATION

The main product expected from the evaluation is the evaluation report.

The evaluation report outline should be structured along the following lines:

- | |
|---|
| <ol style="list-style-type: none">1. Executive summary2. Introduction3. The project(s) and its development context4. Findings and Conclusions<ol style="list-style-type: none">4.1 Project formulation4.2 Implementation4.3 Results5. Recommendations6. Lessons learned7. Annexes |
|---|

The report should not exceed 25 pages in total (excluding annexes) and be available for review within two weeks of completion of the in-country part of the mission. It should be submitted to the UNDP country office in Pretoria and it should be circulated for comments to the government counterpart (DME), the executing agency (CEF), the project management unit and other key stakeholders. If there are discrepancies between the impressions and findings of the evaluation team and the aforementioned parties these should be explained in an annex attached to the final report.

IV. METHODOLOGY OR EVALUATION APPROACH

The methodology that will be used by the evaluation team should include the following:

- Documentation review (desk study); the list of documentation to be reviewed should be included as an Annex to the TORs
- Interviews
- Field visits
- Questionnaires
- Participatory techniques and other approaches for the gathering and analysis of data.

V. EVALUATION TEAM

The evaluation will be carried out by one National South African expert. He/she will be assisted with all logistical arrangements by the PMU. The consultant will be chosen on the basis of a selected tender.

VI. IMPLEMENTATION ARRANGEMENTS

- Management arrangements - The Country Office is the main operational point for the evaluation. It will be responsible for liaising with the project team to set up the stakeholder interviews, arrange the field visits, co-ordinate with the Government the hiring of national consultants and ensure the timely provision of per diems and travel arrangements within the country for the evaluation team. These Terms of Reference follow the UNDP GEF policies and procedures, and together with the final agenda will be agreed upon by the UNDP/GEF/Regional Coordinating Unit, UNDP Country Office and the Government. These three parties will receive a draft of the final evaluation report and provide comments on it prior to its completion.

- **Time frame** for the evaluation process:
 - Desk review: 3days
 - Briefings for evaluators: 1 days.
 - Visits to the field (including allocation fro travel), interviews, questionnaires: 3days
 - Debriefings: 2 days
 - Validation of preliminary findings with stakeholders through circulation of initial reports for comments, meetings, and other types of feedback mechanisms: 2 days
 - Preparation of final evaluation report debriefing and presentation to stakeholders: 4 days

Total days: 15.

The evaluation will take place during the two weeks beginning November 28th 2005

- **Resources required:** Solco's project vehicle and project administrator will be at the unrestricted disposal of the evaluator.

VII. SCOPE OF THE EVALUATION - SPECIFIC ISSUES TO BE ADDRESSED

The project should be assessed against the indicators contained in the logframe matrix. In addition, the reviewer will take particular note and evaluate project performance based on the following issues:

- Assess the Government of South Africa's role and support to the project concept and its activities.
- The integrity of the process of establishing indicator targets.
- Assess the project's original design in view of current understanding and best practice regarding technology led as opposed to problem solving project approaches.
- As many Publicly funded Private Sector Development interventions tend to distort markets, rather than develop them, appraise the project in this regard.
- Evaluate and comment on the rationale given for the project's various changes in strategy from UNDP/GEF original involvement in 2002 to 2005).
- In light of the project's results and those of any other relevant context (ie other countries), assess the 'do-ability' of the original task.
- Assess the project's institutional implementation framework through its lifetime and comment.

An annex providing more detailed guidance on terminology are an integral part of this TORs and are attached.

In detail, the final report will contain the following elements. Please note that some of the categories in the findings and conclusions need to be rated in conformity with the GEF guidelines for final evaluations (see 4 below)

1. Executive summary

- Brief description of project
- Context and purpose of the evaluation
- Main conclusions, recommendations and lessons learned

2. Introduction

- Purpose of the evaluation
- Key issues addressed
- Methodology of the evaluation

- Structure of the evaluation

3. The project(s) and its development context

- Project start and its duration
- Problems that the project seek to address
- Immediate and development objectives of the project
- Main stakeholders
- Results expected

4. Findings and Conclusions

In addition to a descriptive assessment, all **criteria marked with (R) should be rated** using the following divisions: Highly Satisfactory, Satisfactory, Marginally Satisfactory, Unsatisfactory

4.1. Project Formulation

- Conceptualization/Design (R). This should assess the approach used in design and an appreciation of the appropriateness of problem conceptualization and whether the selected intervention strategy addressed the root causes and principal threats in the project area. It should also include an assessment of the logical framework and whether the different project components and activities proposed to achieve the objective were appropriate, viable and responded to contextual institutional, legal and regulatory settings of the project. It should also assess the indicators defined for guiding implementation and measurement of achievement and whether lessons from other relevant projects (e.g., same focal area) were incorporated into project design.
- Country-ownership/Driveness. Assess the extent to which the project idea/conceptualization had its origin within national, sectoral and development plans and focuses on national environment and development interests.
- Stakeholder participation (R) Assess information dissemination, consultation, and “stakeholder” participation in design stages.
- Replication approach. Determine the ways in which lessons and experiences coming out of the project were/are to be replicated or scaled up in the design and implementation of other projects (this also related to actual practices undertaken during implementation).
- Other aspects to assess in the review of Project formulation approaches would be UNDP comparative advantage as IA for this project; the consideration of linkages between projects and other interventions within the sector and the definition of clear and appropriate management arrangements at the design stage.

4.2. Project Implementation

- Implementation Approach (R). This should include assessments of the following aspects:
 - (i) The use of the logical framework as a management tool during implementation and any changes made to this as a response to changing conditions and/or feedback from M and E activities if required.

- (ii) Other elements that indicate adaptive management such as comprehensive and realistic work plans routinely developed that reflect adaptive management and/or, changes in management arrangements to enhance implementation.
 - (iii) The project's use/establishment of electronic information technologies to support implementation, participation and monitoring, as well as other project activities.
 - (iv) The general operational relationships between the institutions involved and others and how these relationships have contributed to effective implementation and achievement of project objectives.
 - (v) Technical capacities associated with the project and their role in project development, management and achievements.
- **Monitoring and evaluation (R).** Including an assessment as to whether there has been adequate periodic oversight of activities during implementation to establish the extent to which inputs, work schedules, other required actions and outputs are proceeding according to plan; whether formal evaluations have been held and whether action has been taken on the results of this monitoring oversight and evaluation reports.
 - **Stakeholder participation (R).** This should include assessments of the mechanisms for information dissemination in project implementation and the extent of stakeholder participation in management, emphasizing the following:
 - (i) The production and dissemination of information generated by the project.
 - (ii) Local resource users and NGOs participation in project implementation and decision making and an analysis of the strengths and weaknesses of the approach adopted by the project in this arena.
 - (iii) The establishment of partnerships and collaborative relationships developed by the project with local, national and international entities and the effects they have had on project implementation.
 - (iv) Involvement of governmental institutions in project implementation, the extent of governmental support of the project.
 - **Financial Planning:** Including an assessment of:
 - (i) The actual project cost by objectives, outputs, activities
 - (ii) The cost-effectiveness of achievements
 - (iii) Financial management (including disbursement issues)
 - (iv) Co-financing ²

² Please see guidelines at the end of Annex 1 of these TORs for reporting of co-financing

- Sustainability. Extent to which the benefits of the project will continue, within or outside the project domain, after it has come to an end. Relevant factors include for example: development of a sustainability strategy, establishment of financial and economic instruments and mechanisms, mainstreaming project objectives into the economy or community production activities.
- Execution and implementation modalities. This should consider the effectiveness of the UNDP counterpart and Project Co-ordination Unit participation in selection, recruitment, assignment of experts, consultants and national counterpart staff members and in the definition of tasks and responsibilities; quantity, quality and timeliness of inputs for the project with respect to execution responsibilities, enactment of necessary legislation and budgetary provisions and extent to which these may have affected implementation and sustainability of the Project; quality and timeliness of inputs by UNDP and GoC and other parties responsible for providing inputs to the project, and the extent to which this may have affected the smooth implementation of the project.

4.3. Results

- Attainment of Outcomes/ Achievement of objectives (R): Including a description *and rating* of the extent to which the project's objectives (environmental and developmental) were achieved using Highly Satisfactory, Satisfactory, Marginally Satisfactory, and Unsatisfactory ratings. If the project did not establish a baseline (initial conditions), the evaluators should seek to determine it through the use of special methodologies so that achievements, results and impacts can be properly established.
- This section should also include reviews of the following:
- Sustainability: Including an appreciation of the extent to which benefits continue, within or outside the project domain after GEF assistance/external assistance in this phase has come to an end.
- Contribution to upgrading skills of the national staff

5. Recommendations

- Corrective actions for the design, implementation, monitoring and evaluation of the project
- Actions to follow up or reinforce initial benefits from the project
- Proposals for future directions underlining main objectives

6. Lessons learned

This should highlight the best and worst practices in addressing issues relating to relevance, performance and success.

7. Evaluation report Annexes

- Evaluation TORs
- Itinerary
- List of persons interviewed
- Summary of field visits
- List of documents reviewed
- Questionnaire used and summary of results
- Comments by stakeholders (only in case of discrepancies with evaluation findings and conclusions)

TORs Final Evaluations Soleo 2005

VIII. TERMS OF REFERENCE ANNEXES

- Annex 1: Terminology in the GEF Guidelines to Terminal Evaluations
- Annex 2: List of Documents to be reviewed by the evaluators

Annex 1. Explanation on Terminology Provided in the GEF Guidelines to Terminal Evaluations

Implementation Approach includes an analysis of the project's logical framework, adaptation to changing conditions (adaptive management), partnerships in implementation arrangements, changes in project design, and overall project management.

Some elements of an effective implementation approach may include:

- The logical framework used during implementation as a management and M&E tool
- Effective partnerships arrangements established for implementation of the project with relevant stakeholders involved in the country/region
- Lessons from other relevant projects (e.g., same focal area) incorporated into project implementation
- Feedback from M&E activities used for adaptive management.

Country Ownership/Drivenness is the relevance of the project to national development and environmental agendas, recipient country commitment, and regional and international agreements where applicable. Project Concept has its origin within the national sectoral and development plans

Some elements of effective country ownership/drivenness may include:

- Project Concept has its origin within the national sectoral and development plans
- Outcomes (or potential outcomes) from the project have been incorporated into the national sectoral and development plans
- Relevant country representatives (e.g., governmental official, civil society, etc.) are actively involved in project identification, planning and/or implementation
- The recipient government has maintained financial commitment to the project
- The government has approved policies and/or modified regulatory frameworks in line with the project's objectives

For projects whose main focus and actors are in the private-sector rather than public-sector (e.g., IFC projects), elements of effective country ownership/drivenness that demonstrate the interest and commitment of the local private sector to the project may include:

- The number of companies that participated in the project by: receiving technical assistance, applying for financing, attending dissemination events, adopting environmental standards promoted by the project, etc.
- Amount contributed by participating companies to achieve the environmental benefits promoted by the project, including: equity invested, guarantees provided, co-funding of project activities, in-kind contributions, etc.
- Project's collaboration with industry associations

Stakeholder Participation/Public Involvement consist of three related, and often overlapping processes: information dissemination, consultation, and "stakeholder" participation. Stakeholders are the individuals, groups, institutions, or other bodies that have an interest or stake in the outcome of the GEF-financed project. The term also applies to those potentially adversely affected by a project.

Examples of effective public involvement include:

Information dissemination

- Implementation of appropriate outreach/public awareness campaigns

Consultation and stakeholder participation

- Consulting and making use of the skills, experiences and knowledge of NGOs, community and local groups, the private and public sectors, and academic institutions in the design, implementation, and evaluation of project activities

Stakeholder participation

- Project institutional networks well placed within the overall national or community organizational structures, for example, by building on the local decision making structures, incorporating local knowledge, and devolving project management responsibilities to the local organizations or communities as the project approaches closure
- Building partnerships among different project stakeholders
- Fulfillment of commitments to local stakeholders and stakeholders considered to be adequately involved.

Sustainability measures the extent to which benefits continue, within or outside the project domain, from a particular project or program after GEF assistance/external assistance has come to an end. Relevant factors to improve the sustainability of project outcomes include:

- Development and implementation of a sustainability strategy.
- Establishment of the financial and economic instruments and mechanisms to ensure the ongoing flow of benefits once the GEF assistance ends (from the public and private sectors, income generating activities, and market transformations to promote the project's objectives).
- Development of suitable organizational arrangements by public and/or private sector.
- Development of policy and regulatory frameworks that further the project objectives.
- Incorporation of environmental and ecological factors affecting future flow of benefits.
- Development of appropriate institutional capacity (systems, structures, staff, expertise, etc.) .
- Identification and involvement of champions (i.e. individuals in government and civil society who can promote sustainability of project outcomes).
- Achieving social sustainability, for example, by mainstreaming project activities into the economy or community production activities.
- Achieving stakeholders consensus regarding courses of action on project activities.

Replication approach, in the context of GEF projects, is defined as lessons and experiences coming out of the project that are replicated or scaled up in the design and implementation of other projects. Replication can have two aspects, replication proper (lessons and experiences are replicated in different geographic area) or scaling up (lessons and experiences are replicated within the same geographic area but funded by other sources). Examples of replication approaches include:

- Knowledge transfer (i.e., dissemination of lessons through project result documents, training workshops, information exchange, a national and regional forum, etc).
- Expansion of demonstration projects.
- Capacity building and training of individuals, and institutions to expand the project's achievements in the country or other regions.
- Use of project-trained individuals, institutions or companies to replicate the project's outcomes in other regions.

Financial Planning includes actual project cost by activity, financial management (including disbursement issues), and co-financing. If a financial audit has been conducted the major findings should be presented in the TE.

Effective financial plans include:

- Identification of potential sources of co-financing as well as leveraged and associated financing³.
- Strong financial controls, including reporting, and planning that allow the project management to make informed decisions regarding the budget at any time, allows for a proper and timely flow of funds, and for the payment of satisfactory project deliverables
- Due diligence due diligence in the management of funds and financial audits.

Co financing includes: Grants, Loans/Concessional (compared to market rate), Credits, Equity investments, In-kind support, Other contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries. Please refer to Council documents on co-financing for definitions, such as GEF/C.20/6.

Leveraged resources are additional resources—beyond those committed to the project itself at the time of approval—that are mobilized later as a direct result of the project. Leveraged resources can be financial or in-kind and they may be from other donors, NGO's, foundations, governments, communities or the private sector. Please briefly describe the resources the project has leveraged since inception and indicate how these resources are contributing to the project's ultimate objective.

Cost-effectiveness assesses the achievement of the environmental and developmental objectives as well as the project's outputs in relation to the inputs, costs, and implementing time. It also examines the project's compliance with the application of the incremental cost concept. Cost-effective factors include:

- Compliance with the incremental cost criteria (e.g. GEF funds are used to finance a component of a project that would not have taken place without GEF funding.) and securing co-funding and associated funding.
- The project completed the planned activities and met or exceeded the expected outcomes in terms of achievement of Global Environmental and Development Objectives according to schedule, and as cost-effective as initially planned.
- The project used either a benchmark approach or a comparison approach (did not exceed the costs levels of similar projects in similar contexts)

Monitoring & Evaluation. Monitoring is the periodic oversight of a process, or the implementation of an activity, which seeks to establish the extent to which inputs, work schedules, other required actions and outputs are proceeding according to plan, so that timely action can be taken to correct the deficiencies detected. Evaluation is a process by which program inputs, activities and results are analyzed and judged explicitly against benchmarks or baseline conditions using performance indicators. This will allow project managers and planners to make decisions based on the evidence of information on the project implementation stage, performance indicators, level of funding still available, etc, building on the project's logical framework.

Monitoring and Evaluation includes activities to measure the project's achievements such as identification of performance indicators, measurement procedures, and determination of baseline conditions. Projects are required to implement plans for monitoring and evaluation with adequate funding and appropriate staff and include activities such as description of data sources and methods for data collection, collection of baseline data, and stakeholder participation. Given the long-term nature of many GEF projects, projects are also encouraged to include long-term monitoring plans that are sustainable after project completion.

³ Please refer to Council documents on co-financing for definitions, such as GEF/C.20/6. The following page presents a table to be used for reporting co-financing.

Final evaluation: UNDP/GEF South African Solar Cooker Project (SOLCO)

TORs Final Evaluations Solco 2005

Financial Planning Cofinancing

Co financing (Type/Source)	IA own Financing (mill US\$)		Government (mill US\$)		Other* (mill US\$)		Total (mill US\$)		Total Disbursement (mill US\$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
- Grants										
- Loans/Concessional (compared to market rate)										
- Credits										
- Equity investments										
- In-kind support										
- Other (*)										
Totals										

Other is referred to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

Leveraged Resources

Leveraged resources are additional resources—beyond those committed to the project itself at the time of approval—that are mobilized later as a direct result of the project. Leveraged resources can be financial or in-kind and they may be from other donors, NGO's, foundations, governments, communities or the private sector. Please briefly describe the resources the project has leveraged since inception and indicate how these resources are contributing to the project's ultimate objective.

7.2. List of persons interviewed

Mr. Martin Krausse	11 Jan 2006
Mr. Eddy Russel	12 Jan 2006
Mr. David Hancock	20 Dec 2005, 20 Jan 2006
Ms. Nadia Hamid	23 Jan 2006
Ms. Tieho Makhabane	26 Jan 2006
Mr. Siswe Madonda	3 Feb 2006
Mr. Tony Golding (telephonic)	13 Feb 2006
Mr. Mark Tanton	29 Nov 2005 to 23 Dec 05
Mrs. Margaret Bennet (telephonic)	3 March 2006
Mr. Crosby Menzies	11 January 2006
Mr. Matthias Weber	3 February 2006.

7.3. Field visit itinerary

Field visits were undertaken to:

- Rustenburg townships retail scheme (13 December 2005)
- ULOG cooker manufacturing facility (13 December 2005)

7.4. List of documents reviewed

Reference Number	Document	Key elements
1.	Nell and Shapiro Nov 2005	<p>P11. 'Without successful commercialisation there is no way of testing the underpinning hypothesis that successful commercialisation makes for sustainable development' In initial meetings it was alluded to that the success of the project had been precisely in providing conclusive proof that the time was not right for solar cookers. This implies that commercialisation is not possible in the current market context.</p> <p>P12 'A major flaw in the conception of the project was the initial assumption that solar cookers were the answer to the prayers of the poor, particularly women and children...The process started with a solution rather than with a problem.</p> <p>P12 the project failed to achieve its overall objective of 'establishment of a viable market demand for commercially available Renewable Energy Cooking Technologies in South Africa.</p>
2.	PDC January 2005	Use rates are around 30%.
3.	A2B August Progress Report	<p>Present Realities</p> <ul style="list-style-type: none"> • Retailing of cookers is extremely challenging • Not very profitable due to insignificant profit margins • Not viable to sell to poverty stricken customers if sold without consumer credit • Distribution to chain stores is not a viable option <p>Learnership income generation project idea</p>

initiated.

- | | | | |
|----|---|--|--|
| 4. | A2B September Envirocooker Progress Report | Page 3 Present Realities | <ul style="list-style-type: none"> • Retailing of Enviro cookers is extremely challenging due to low profit margin, no portability, lack of credit and non viable customer base • Awaiting marketing materials • Local manufacturers have been identifies who will manufacture products that we know are not necessarily in demand. |
| 5. | UNDP, 2001. MSP project document: Pilot production and commercial dissemination of solar cookers in South Africa. October 2001 | The project document describes the project objectives, outputs and activities as well as the context, barriers, beneficiaries, required inputs and sustainability and risks. The project document was developed as is the standard practice, from a project brief prepared during 2000 by proponents of the GTZ SOLCO project. | |
| 6. | SOLCO December 2003. Making the case for a commercially driven process | | |
| 7. | PDC, 2005. Overview of solar cooker use rates and durability. | An outline of the number of households cooking with solar by 2004, the use rates of the devices in these households and the expected lifespan of the cookers. | |
| 8. | Energy transformations, Evaluation of a potential in attracting finance through Clean Development Mechanism - Solar cookers and carbon mitigation possibilities Steve Thorne and Stefan Raubenheimer final draft 24th November 2003 | The desk study based on secondary data and its analysis attempts to evaluate the potential for CDM finance for a solar cooker business in South Africa. | |

Nell and Shapiro, November 2005. What the people want: learning for development practice. A summative overview of the experience and learning from a solar cooking appliance project in South Africa. November 2005. Draft version. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ).

7.4.1. Set of documents received on 29 Nov 05.

- Solar Cooker Project Evaluation 11 pages
- Solco Project timeline 2002-2005 2 pages
- Nell and Shapiro May 2005 30 pages



Nell and Shapiro November 2005 19 pages

SOLCO December 2003. Making the case for a commercially driven process to achieve a social, economic and environmental agenda. A commercially viable renewable and alternative energy household cooking technology sector. 86pages

A2B Progress reports, June (pp2), August (pp3), Sept (pp3), Oct (pp2)

PDC January 2005. Overview of solar cooker use rates and durability Draft Final Report 21 January 2005.

PSC minutes 9/6/05 (pp7), 4/2/05 (pp4)

7.4.2. 5 Dec 05

Solar Cooker Compendium 4 volumes May 2004

Salmon and Klingshirn April 2005. Solar Cooker Evaluation. Osire Refugee Camp (pp44)

PSC Minutes 19 Oct 05.

Logical Framework Matrix 19 Sep 2003 (pp3)

2005 Annual project report (pp24)

Plan of Operation 1/12/05 Result 2 to result Result 6 (pp6)

7.4.3. 8 Dec 05

Project Document 'Pilot production and commercial dissemination of solar cookers in South Africa'

7.4.4. 19 Dec 05

Project Gantt Chart files.

programme impacts.pdf

implementation strat.pdf

Credit.pdf

increase solar cooker awareness.pdf

setup local dist. channels.pdf

local mass production.pdf

Institutional arrangements.pdf

Vicious Cycle

SSN CDM solar cookers draft final.doc

grupp GHG by cooking with different fuels.pdf

Baseline diagramm.doc

Final Report CDM Solar Stoves.doc

7.4.5. 20 Dec 05

Hancock, D. Forthcoming. Solar Cookers after South Africa: Current status and constraints and opportunities from a global perspective. Draft Report (pp4)

Logical Framework Martrix, September 2003 (pp5).

Bendixen, M. and Stacey, A. 2002. Review of the Solar Cooker Field Test Project. GTZ (pp22)

Emfuleni business plan Excel spreadsheet.

7.5. Questionnaire used and summary of results

7.5.1. Questionnaire

UNDP/GEF South African Solar Cooker Project (SOLCO)

Final evaluation questionnaire

The purpose of this evaluation is stated as assessing the project's progress towards its objectives and goals as contained in the original Solco project document and log-frame and any modification as approved during periodic review. The evaluation intends to analyse the reasons for an inability to create a mass market for solar cookers in South Africa.

SOLCO has been through three main phases, each lasting approximately three years apiece:

- Consumer acceptance testing
- Test Marketing, and
- Commercialization.

The first phase found that if low-income consumers had access to solar cookers, they do indeed use them, and will use them for a third of the time. In phase two, the parameters for commercial approaches to dissemination were defined and a (demand side) business case was made. The third and final commercialisation phase sought to support "the establishment of a small but viable industry in which value chains' supplying a growing market demand for a number of different products have been established".

In assessing the project experiences, numerous positive, general conclusions may be drawn that will assist any further solar cooker dissemination efforts, in other countries and contexts. The review will assess the activities carried out over the period during which GEF/UNDP support was received for the project, from June 2002 to December 2005.

This evaluation has been commissioned by the SOLCO Project Management Unit, on request of the GEF focal point, and in compliance with statutory requirements to evaluate all Medium sized GEF funded projects on their completion. Given the pioneering nature of the project, the reviewers will endeavour to assess progress based not only on the originally proposed strategy, but also on the project's response to emerging realities. It is the intention of the evaluators that as many of the project's primary stakeholders as possible be involved in the evaluation.

This questionnaire, therefore, seeks to gather input to the UNDP/GEF component of the SOLCO project's final evaluation from participants and stakeholders. It includes a description and rating of the extent to which the project's objectives (environmental and developmental) were achieved using Highly Satisfactory, Satisfactory, Marginally Satisfactory, and Unsatisfactory ratings. The broad structure of the questionnaire is:

- Project design
 1. Conceptualisation
 2. Stakeholder participation
- Project implementation
 3. Implementation approach
 4. Monitoring and evaluation
 5. Stakeholder participation
- Project results
 6. Achievement of objectives
 7. Sustainability of these outcomes



1. Conceptualization/Design

This assesses the approach used in design and an appreciation of the appropriateness of problem conceptualization and whether the selected intervention strategy addressed the root causes and principal threats in the project area. It includes an assessment of whether the different project components and activities proposed to achieve the objectives were appropriate, viable and responded to contextual institutional, legal and regulatory settings of the project.

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

2. Stakeholder participation

2.1. Dissemination of information

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

2.2. Consultation

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

2.3. Stakeholder participation in design stages

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

3. Implementation approach

3.1. Use of logical framework

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

3.2. Adaptive management

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory



3.3. Electronic information technology use

3.3.1. In implementation

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

3.3.2. In stakeholder participation

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

3.3.3. In monitoring activities

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

3.4. Institutional operational relationships

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

3.5. Technical capacities

The role of the project management unit in project development, management and achievements:

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

4. Monitoring and evaluation

Including an assessment as to whether there has been adequate periodic oversight of activities during implementation to establish the extent to which inputs, work schedules, other required actions and outputs are proceeding according to plan; whether format evaluations have been held and whether action has been taken on the results of this monitoring oversight and evaluation reports.

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

5. Stakeholder participation

5.1. Production and dissemination of information generated by the project

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

5.2. Local resource users and NGO participation

What were the strengths and weaknesses of the chosen approach?

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

5.3. Partnerships and collaborative relationships required by the project

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

5.4. Government institutional involvement

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory



6. Achievement of objectives

This question aids in the description and rating of the extent to which the project's environmental and development objectives were achieved.

The overall objective of the project was to support "the establishment of a small but viable industry in which value chains' supplying a growing market demand for a number of different products have been established"

The critical project indicators from a developmental perspective were the number of:

- businesses created
- solar cookers produced/assembled
- solar cookers sold

The environmental objective of the quantity of greenhouse gas emissions avoided is in its turn a function of the number of solar cookers sold and in regular use.

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

7. Sustainability

This evaluation indicator measures the extent to which the benefits of the project will continue, within or outside the project domain, after it has come to an end. Relevant factors include for example: development of a sustainability strategy, establishment of financial and economic instruments and mechanisms, mainstreaming project objectives into the economy or community production activities.

Highly Satisfactory	Satisfactory	Marginally Satisfactory	Unsatisfactory

What do you think will happen now?



7.5.2. Summary of results

Respondent				Results	Responses		
Date Interviewed							
Element Number	Element rated						
1	Conceptualisation	2.5	2.4	2.4	7		
2.1	Dissemination of information			2.8	6		
2.2	Consultation			2.6	5		
2.3	Stakeholder participation in design stages		2.6	2.3	5		
3.1	Use of logical framework	2.8		2.8	6		
3.2	Adaptive management			2.8	6		
3.3.1	Electronic information use in implementation			2.9	5		
3.3.2	Electronic information use in stakeholder participation			2.9	5		
3.3.3	Electronic information use in monitoring activities			2.6	5		
3.4	Institutional operational relationships			2.9	7		
3.5	Technical capacities			2.8	2.9	7	
4	Monitoring and evaluation			3.1	3.1	6	
5.1	Production and dissemination of information generated by the project			2.8	2.4	2.3	6
5.2	Local resource users and NGO participation					2.1	5
5.3	Partnerships and collaborative relationships required by the project	2.5	6				
5.4	Government institutional involvement	2.8	6				
6	Achievement of objectives	1.5	1.5	1.5	6		
7	Sustainability			1.5	1.5	6	

Table 4 Summary of rated evaluation elements

8. Presentation of draft findings to final PSC



**UNDP/GEF SA Solar Cooker
Project (SOLCO)**

***Pilot production and
commercial dissemination of solar cookers
in South Africa***

Final Evaluation

Final Project Steering Committee Meeting
23 March 2006

Jason Schäffler
Nano Energy

Project and development context

- 'Pilot production and commercial dissemination of solar cookers in South Africa'
 - remove barriers to the widespread use of Solar Cookers
 - Those which hamper the phased local manufacturing, retailing and provision of after sales services for different solar cookers;
 - Lack of end user awareness and information in target areas as well as with other stakeholders involved in the further development of solar cooking and baking
 - Technical, organisational, information and possibly financial to the geographical spreading and scaling up of the initiative.
- June 2002 to December 2005 (42 months)
- USD 800 000



Nano Energy 23 March 2006

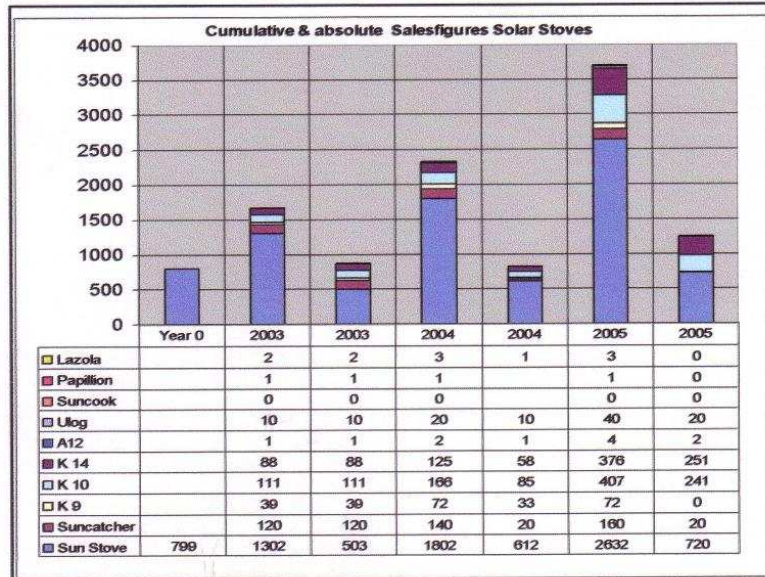
3

Elements of evaluation

Title	Subtitle	Elements assessed	Elements Rated	Elements rated by stakeholders
Formulation (Marginally satisfactory)	Design	5	2	2
	Stakeholders			
Implementation (Satisfactory)	Approach	6	3	4
	M&E			
	Stakeholders			
Results (Unsatisfactory)	Objectives	3	1	1
		14	6	7

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Indicator	Target	Achieved
ktCO ₂ e	209	5
Businesses	3 new enterprises	7 new enterprises
People cooking	58 000	7 200
Household energy savings	33%	Use rates: 25% - 31% Fuel savings 38%
Cooker cost decrease	50%	Nil
Financing and lending volume	<ul style="list-style-type: none"> •1 Venture financing facility •2 consumer financing schemes [strategy for access to] CDM credits.	<ul style="list-style-type: none"> •CEF/EDC • Theba failed. Consumer financing widely available -use for solar cookers not evident. Supplier credit Rustenburg. •CERs transaction cost/revenue stream ratio poor
Improved income	Not set.	31 at a business level and approximately 1000 at a household level assuming a single income per household.

Conceptualisation		2.4	2.4
Dissemination of information			2.8
Consultation			2.6
Stakeholder participation in design stages	2.5	2.6	2.3
Use of logical framework			2.8
Adaptive management			2.8
Electronic information use in implementation			2.9
Electronic information use in stakeholder participation			2.9
Electronic information use in monitoring activities			2.6
Institutional operational relationships			2.9
Technical capacities		2.8	2.9
Monitoring and evaluation		3.1	3.1
Production and dissemination of information generated by the project			2.3
Local resource users and NGO participation			2.1
Partnerships and collaborative relationships required by the project			2.5
Government institutional involvement	2.8	2.4	2.8
Achievement of objectives		1.5	1.5
Sustainability	1.5	1.5	1.5

Findings and conclusions

- ‘Solar cookers have not been commercialised in South Africa through the activities of the project over the last 3 years’
- Time not right for solar cookers
 - Commercialisation not possible current market context
 - Affordability (price:performance), accessibility and acceptability
- Flawed in design rather than implementation
 - Did the market really want this?
- Incorporation into national policy and strategy
- Retention in 17 cooking suite
- Add-on element of solar cookers recognised



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Recommendations and completion of evaluation

- Ongoing periodic monitoring of market
 - Input to national monitoring activities
 - Documenting longer term impacts of intervention
- Comments on draft report to Tuesday 28th
- Incorporation of these and final PSC inputs into final report by Friday 31st



Nano Energy 23 March 2006

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Thank you.



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Nano Energy 23 March 2006

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Solar Cooker South Africa



South Africa

AGENDA

Final Steering Committee Meeting

Thursday, 23 March 2006

Main Boardroom

Central Energy Fund (CEF) Offices
1st Floor, 158 Jan Smuts Avenue, Rosebank

10h00-12h00

- 1 Review of previous minutes for meeting held on Wednesday, 19 October 2005
- 2 Review of the Draft Evaluation Report
 - Comments to report
 - Legacy of SolCo
 - i. Related Activities going forward
 - ii. Afreca etc.
- 3 Identify & Clarify all outstanding SolCo issues
 - PPP
 - UNDP project close down
 - i. How to finalise the remaining funds
 - ii. Assets
 - iii. Reporting
 - iv. Documentation
 - GTZ project close down
- 4 Any Other Business

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Notes