SOLAR COOKERS INTERNATIONAL

FIELD GUIDE

SPREADING SOLAR COOKING

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Solar Cookers International Field Guide

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CREDITS

This guide is based on three refugee projects in Kenya and Ethiopia and a national project in Zimbabwe as well as experience collected from hundreds of individuals and grassroots groups promoting solar cooking worldwide. Key partner agencies include the U.N. High Commission for Refugees (UNHCR), Lutheran World Federation, GTZ, a German technical development organization and the U.N. Educational, Scientific and Cultural Organization (UNESCO), the Development Technology Centre of the University of Zimbabwe, the Hlekweni Training Centre, the Epworth Grassroots Women's Group, and the Ministry of Transportation and Energy in Zimbabwe. These were supported by private donations and grants from the Setzer Foundation, the Humanitarian Services of the Church of Jesus Christ of Latter Day Saints, the Jules and Doris Stein Foundation, Atkinson Foundation, The Richard and Rhoda Goldman Fund, Alternative Gifts International, Cottonwood Foundation, UNHCR and UNESCO. In these projects women from Sudan, Somalia, Ethiopia, Congo, Uganda, Rwanda, Burundi, and Zimbabwe have found solar cooking useful.

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ABOUT S.C.I.

Solar Cookers International (SCI) is an educational nonprofit, tax-exempt corporation founded in 1987 to spread solar cooking to benefit people and environments worldwide.

SCI is an international clearinghouse on solar cooking which promotes information exchange through conferences and publications, develops educational materials and teaching tools, promotes research, provides consultation, and conducts occasional, demonstration field projects. For more information contact:

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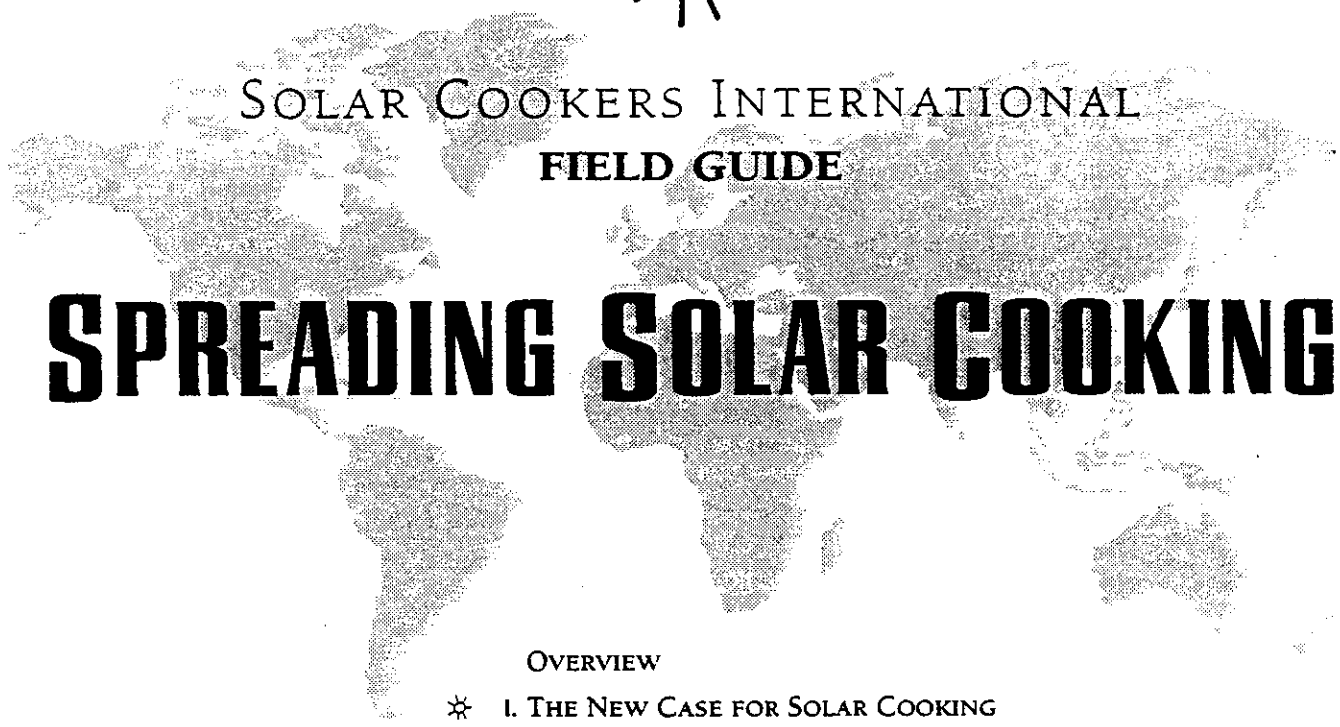

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Overview

This guide is for people and organizations who wish to spread solar cooking to benefit people and environments. It tells how to introduce solar cooking in an interested community. Local participation and empowerment are keys to success and avoiding waste of scarce resources.

This guide draws on the experience of many grassroots projects around the world. It discusses technology transfer methods, realistic time frames and patterns of acceptance. It includes language-free diagrams and describes hands-on learning activities. Each area is unique in needs, climate and habits, so this guide—like food preparation for solar cooking and the solar cooker itself—may need modifying for best results.

It includes checklists for organizing a community project: choosing sites and partner agencies, setting clear goals, finding adequate resources, and adapting well-tested teaching activities and solar cookers to local needs. It also includes checklists for setting up support services for an extended period of promotion and trouble-shooting.

It is a supplement to SCI's *Basics of Solar Cooking* and *Trainers Manual.*

I. A New Case for Solar Cooking

1. ONE-FOURTH OF HUMANITY SUFFERS FUEL SCARCITIES

Half of the world cooks with wood. In recent years wood shortages in many developing countries have added hardships to already-burdened families, particularly in eastern and southern Africa.

- Families must be fed, and each year women and children walk farther and pay more for less wood.
- Many families are unable to cook nutritious foods such as beans and maize, which require hours of cooking, and substitute less nutritious, faster cooking foods such as pasta.
- Families are also less able to heat/pasteurize their water and milk to reduce water borne-diseases, the major killers of children.
- Rural women of all ages—including those who are pregnant, have infants, are elderly, and the very young girls who should be in school—spend more time and walk ever-longer distances to find, then carry, heavy loads of wood.
- Urban families in many developing countries now spend up to a third of their income for cooking fuel.
- Refugees in Kenya, prior to getting solar cookers, often barter away part of their food rations to get fuel to cook the remainder.
- Fuel-gathering is one factor in the tide of migration to cities. A rural Zimbabwean, seeing a solar cooker demonstration, summed up the

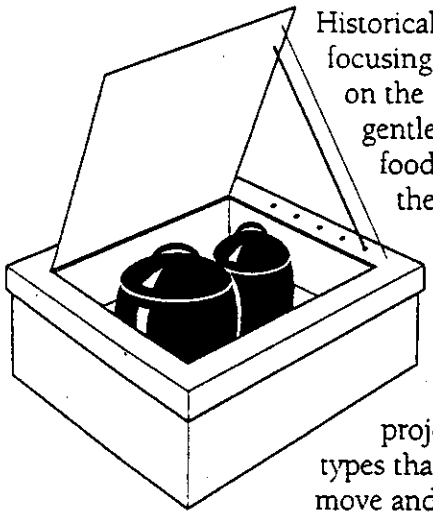
possibilities: "Today many young Zimbabwe women don't want to stay in rural areas because gathering fuelwood is so difficult and time-consuming. *Solar cookers can make rural life easier for women so they'll want to stay there.*"

2. OTHER COSTS OF UNSUSTAINABLE ENERGY CONSUMPTION

- The annual per capita wood consumption for cooking in most parts of the world is about 0.5 ton (1.32 kg per day), or about 3 tons per family of six people.

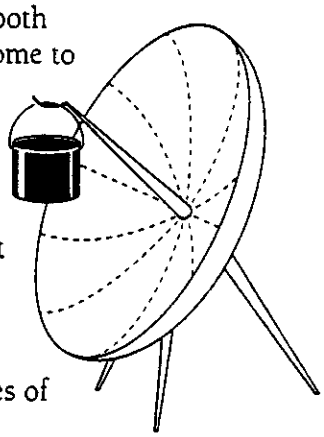
  About 90% of most families' cooking fuel needs are for midday and evening meals. If meals are solar cooked on most sunny days, and about 2/3 of days are mostly sunny, families could theoretically reduce wood consumption for cooking by 90% on 2/3 of the days, or about 60% overall. Studies of solar cooking use in India and Costa Rica confirm fuel savings of 30–50% per family.
- Cholera and other water-borne diseases kill 50,000 people daily; and scarce fuel makes it hard for families to heat milk and water to be safe. Solar cookers easily pasteurize water and milk.
- The cost of replacing cut trees in India is roughly double the market price of cut wood.
- Many governments including Zimbabwe and Kenya import and subsidize less sustainable fuels at great expense.
- Cooking with fire means fire hazards and dangers of burns for small children
- Smoke causes lung and eye diseases.

3. NEW SOLAR COOKERS



Historically most solar cookers have been either curved parabolic reflectors focusing intense heat onto a single pot, or heat trap boxes with a window on the top and one or several flat reflectors. Box-type cookers do slower, gentler cooking, and most of them allow unattended cooking without food burning or sticking to the pot. Generally women have preferred the box-type cooker for home use.

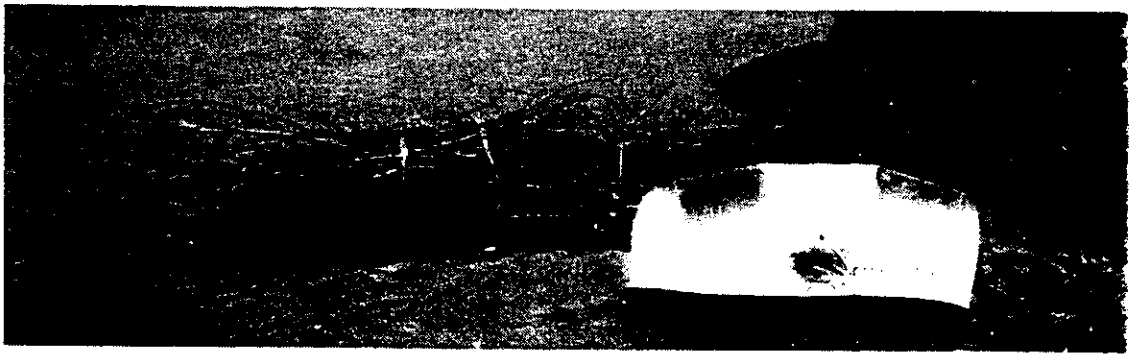
The curved reflectors provide much higher temperatures, exceeding that of fires, and cook very fast, but need fairly constant attention and can be dangerous to unprotected eyes. These are found more often in schools and institutions where there is direct, constant supervision. Most previous solar cooker projects around the world involved devices of one or both types that required subsidies and/or charity, were cumbersome to move and inconvenient to use.



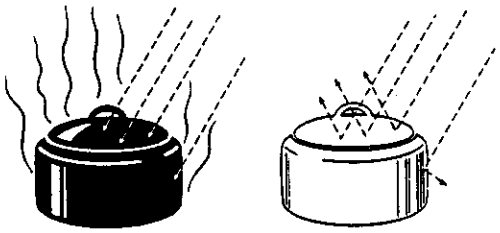
A wide variety of new solar cookers are now more convenient and also competitive in price with less sustainable alternatives such as wood, charcoal, and wood stoves. A few are being commercially produced in several countries at prices ranging from $2 to $2000 US. These attest to the flexibility and versatility of this simple, passive technology. Once the idea is introduced, local ingenuity takes the idea and modifies it to meet local needs. Several combine features of both the parabolic and box-type cookers.

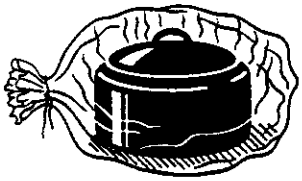
One such model uses an open reflector and is compact and affordable. It has recently proven useful to some of the world's neediest people in Kenya and Zimbabwe. Developed in 1994 by an international team of volunteers and dubbed the "CooKit," it is convenient for household use and ideal for introducing the basics of solar cooking. It is easily hand-made and has also already been mass-produced in USA, Kenya and Zimbabwe with a variety of materials and sizes to suit local needs and climates. Most importantly, it is affordable, paying for itself in fuel savings in two months or less.

CooKit and a pile of wood it saves every two days



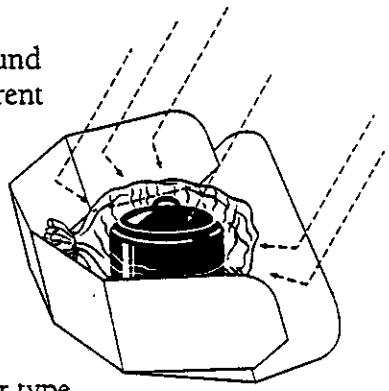
The technology is simple:
A dark pot turns sunlight to heat.





The heat is held around the pot by a transparent polypropylene bag.

A shiny reflector captures extra sunlight, raising the heat to cook a large pot of food.



Comparing this latest device to concentrator type solar cookers: it doesn't need frequent moving to follow the sun, no stirring is needed, foods never burn, and flat reflectors are safer for eyes. Compared to a box cooker: it folds flat and needs no window or insulation; instead it uses a dozen plastic bags per year.

Handy for household use, solar cookers also have many uses in small businesses:

* Boiling rice straw to make paper (Philippines)
* Extracting wax from honey (Belize, Uganda)
* Heating dyes for wool (Lesotho) and basket materials (Kenya)
* Killing silk larvae (Philippines)
* Heating paint in a bicycle factory (Belize)
* Heating hot dogs for beach vendors (USA)
* Baking bread, cakes and cookies to sell (Chile, Kenya, Canada, Cuba)
* Restaurant cooking (USA)
* Keeping tortillas hot (Mexico)
* Pasteurizing potting soil (USA)
* Building and selling cookers
* Disinfecting medical supplies in field conditions

Compared to traditional cooking with wood, solar cookers:

* use free fuel requiring no gathering,
* produce no smoke, lung problems, risk of fires or serious burns,
* keep kitchens cooler,
* don't require governments to import and subsidize foreign fuels,
* allow families' diets to include nutritious foods that require many hours' cooking, such as beans and maize, and
* can disinfect medical supplies.

II. The Challenge of Technology Transfer

(Reasons not to distribute solar cookers off the back of a moving truck.)

1. ACCEPTANCE FACTORS

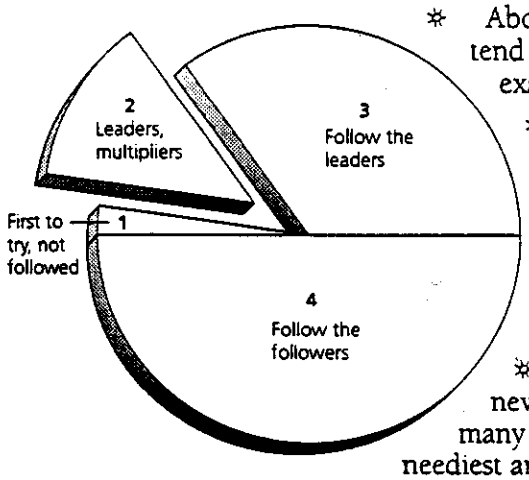
Two essential factors in acceptance (usefulness) of solar cookers are: appropriate climate and a strong motive for women to seek new cooking methods, such as local fuel shortages. These and other important factors discussed in Section III include affordability of solar cookers and appropriate site-specific adaptations. Adequate instruction is critical. There is a common tendency to distribute solar cookers "off the back of a moving truck," and, when they aren't accepted, to rush back and redesign the device. Most often what is lacking is adequate instruction and help with new cooking habits.

2. REALISTIC TIME FRAMES

One other essential factor is a realistic time frame. Expecting dramatic, early results often leads agencies to think they have failed and to abandon a project when it has barely started. Long-term, community-wide benefits of solar cooking, such as cleaner air, fewer illnesses, less demand for wood for cooking, are noticeable only when solar cooking is widely practiced in the community.

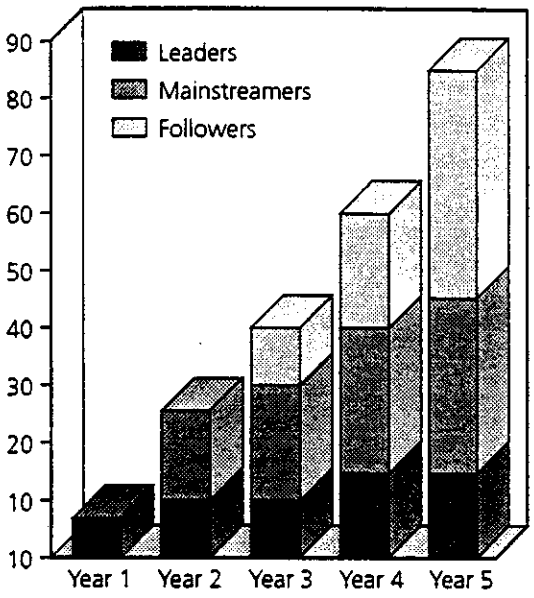
Pattern of uptake

The pattern of uptake of new technologies and the fact that cooking is so central to daily survival cause the normal uptake of solar cooking to be much slower than expected. The least expected and counter-intuitive fact is that various segments of any population take up new ideas in sequence and at different rates:



- About 2% of any group take up new ideas immediately but tend to be viewed as 'off-beat' and others don't follow their example.
- About 15% are natural opinion leaders, who are somewhat willing to explore new ideas and many will try them in the first year. Their opinions are valued by most others in the community.
- In the second year another group will begin: mainstreamers. About 1/3 of any population, they try new ideas only after natural leaders do.
- The rest of any population—about half—won't try a new idea like solar cooking until about the third year, after many mainstreamers are using solar cookers regularly. The neediest are usually in this last group; to survive they avoid risks, especially with scarce food.

Solar cooking is a new way of cooking that requires habit changes. At the points when people in each of the above groups decide to try solar cooking they need affordable supplies and clear instruction. After that the shift from old cooking habits to new ones still takes several months. For individual cooks, frequency of solar cooking tends to increase gradually over a year or more. Important long-term, community-wide benefits of solar cooking, such as cleaner air, fewer illnesses, less demand for wood for cooking, are noticeable only later, after solar cooking is widely practiced in the community.



III. Planning a Community Project

1. SITE ASSESSMENT

Solar cooking is useless in some areas, life-saving in others, and its potential usefulness in a given area can be predicted. Two key questions are:

1. Is the climate good for solar cooking? and 2. Are there problems with current cooking methods so people would spend time, energy and scarce resources to try solar cooking? Compatible cooking habits and other resources also help

Climate

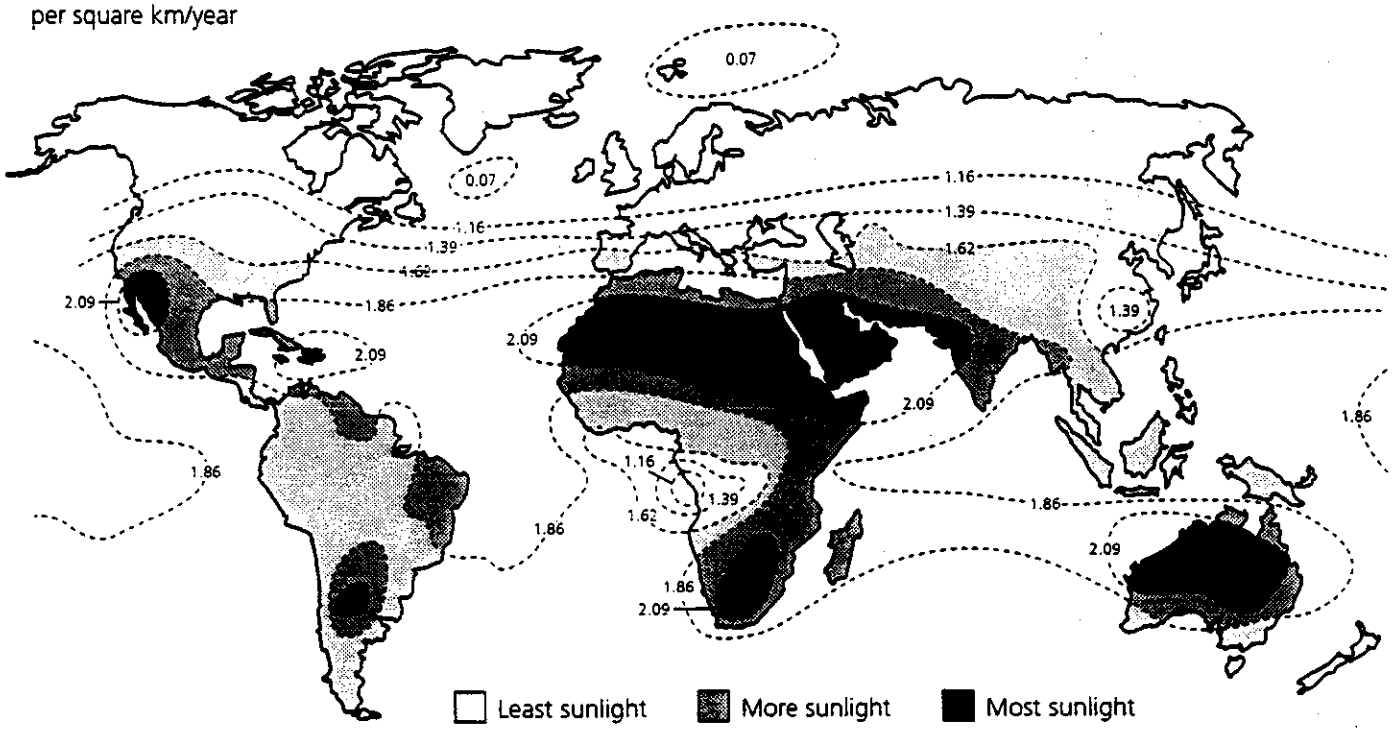
- ☐ Climate is sunny and dry most of the year. Note: There may be different micro climates within a small region.
- ☐ Fog, dust storms, or high winds are not common most of the year.
- ☐ There are open, sunny spaces near homes, where a solar cooker and food can be safe from stealing, tampering, or damage.
- ☐ If there is rainfall, it is brief and comes about the same time every day.

Problems with current cooking methods:

- ☐ Local women tell of problems related to cooking methods and give high priority to exploring alternatives. (Often in regions of fuel scarcities women also face other problems that are even more urgent and need addressing first.) For a large project a baseline survey of interest, need and fuel consumption is a good idea.
- ☐ Costs of cooking fuels are high.
- ☐ Diminishing wood supplies require many hours to gather from ever-longer distances.
- ☐ People are burning green wood or dung.
- ☐ Kerosene, gas and electricity are unavailable or unreliable.
- ☐ Depletion of wood, brush and dung is causing soil erosion.
- ☐ Children miss school to gather fuel.
- ☐ Families are malnourished from inability to cook food and/or are avoiding nutritious foods like maize and beans which require long hours to cook.
- ☐ People suffer intestinal diseases from unsafe drinking water.
- ☐ There is air pollution from cooking fires, and lung and eye diseases are common from hours tending hot, smoky fires.
- ☐ People suffer injuries from carrying heavy loads of fuel.
- ☐ Open fires are a special hazard for serious burns to small children.
- ☐ Cooking needs frequent attention over long periods to prevent food from burning.

Map of Average Annual Solar Radiation

Measured in terawatt-hours per square km/year



Cooking and eating habits:

- ☐ Cooking is already usually done outside.
- ☐ Black cooking pots are already commonly used or are available and affordable.
- ☐ Main meal(s) are around noon and/or around sunset or soon after.
- ☐ Common main dishes require long, slow cooking rather than, for example, stir-frying.

Resources

- ☐ The area has adequate transportation and communication systems.
- ☐ There is relative political stability, allowing people to travel and exchange information.
- ☐ Gender roles allow/encourage women to participate in community groups and allow women some decision-making in family financial matters.
- ☐ There are few families whose livelihoods depend heavily on the status quo, such as wood gathering or charcoal production.
- ☐ Public policies encourage—or at least don't discourage—sustainable technologies like solar cooking.
- ☐ If solar cookers aren't available or producible in-country, import customs regulations are unlikely to cause major delays.
- ☐ A funding source will cover start-up expenses, initial supplies, and an extended period of support services for users and trainers.

2. PARTNER ORGANIZATIONS

Most consumers need sustained consumer support services: training, affordable cookers, and an extended period of coaching and problem-solving by experienced solar cooks. These are difficult for individuals to provide—especially those who visit temporarily from outside the community.

Thus, each project needs a local development group, SCI or similar group for training and consultation, and a donor source of start-up money. Mass media and marketing can help spread awareness about solar cooking, as can schools, colleges, technical institutes, youth groups, religious groups, environment and energy groups, and health programs.

Integrating solar cooking education into broader development programs is desirable, even though solar cooking can get lost among other priorities of an agency, making the resolve to support a project hard to maintain over several years. Also, in an effort to be cooperative, organizations sometimes initially agree to tasks which they would neither choose nor have the capacity to do well. Careful negotiations are thus important for clear, manageable commitments by all.

Sample job description for local development group:

- ☐ Has needs that a solar cooking project may address.
- ☐ Works with women to address issues that women themselves have chosen.
- ☐ Is respected in the community and understands local concerns and cultural values.

- ☐ Involves staff and intended beneficiaries in project planning.
- ☐ Modifies projects in response to frequent feedback.
- ☐ Is able to communicate regularly with all other participating groups.
- ☐ Has interest and capability to manage and oversee human and financial resources.
- ☐ Hires and supervises a local project coordinator.
- ☐ Can make a multi-year commitment.

Sample job description of SCI or a similar group with solar cooking expertise:

- ☐ Conduct initial site assessments.
- ☐ Work with partner agencies to set goals and develop project plans.
- ☐ Provide clear instructions and training plans that don't require literacy.
- ☐ Arrange transport, other logistics of initial project supplies, including painting of pots if needed.
- ☐ Oversee initial adaptation of solar cookers, instruction methods, and solar cooking to local foods and customs, working closely with initial local volunteers.
- ☐ Oversee initial training of about 100 pilot families.
- ☐ Train the most enthusiastic of these pilot solar cooks to train others.
- ☐ Set up support systems for new solar cooks and for trainers.
- ☐ Provide ongoing consultation to partner agencies and project staff as needed.

To find a partner agency:

- ☐ Create opportunities from which partnerships can emerge, e.g. offer a workshop or seminar of interest to prospective partners.
- ☐ Ask for recommendations of likely partner NGOs from others
- ☐ Explore suitability and compatibility among prospective partners by discussing their purposes, values, strategies, needs, views of partnership, and what they would hope to gain from a partnership.

3. CLEAR GOALS AND PROGRAM GUIDELINES

Planning:

All partners participate in a thorough planning process

- ☐ Local women help plan the project.
- ☐ For larger projects a local advisory committee of leaders, staff and beneficiaries is useful.
- ☐ Larger projects need baseline data on needs, fuel consumption, and possibly a market survey to assess potential markets.
- ☐ Jointly define program goals, evaluation criteria, and implementation strategy and tactics. Unique factors in each location and varied partners can lead to quite diverse projects.
- ☐ Take time to develop the project together so strong interest is confirmed.

- ☐ Conduct joint field visits and work sessions to design the project, and discuss with donor agencies as a team to try out working together.
- ☐ Check whether all agree on how to work with other community groups
- ☐ Establish guidelines for how the budget and finances will be managed and monitored to ensure mutual financial accountability.
- ☐ Discuss a program monitoring system—how each is accountable to the others, to other community groups and to intended beneficiaries.
- ☐ Discuss how to maintain open communication on a regular basis, so all operations are "transparent" to all others and both problems and good news are shared by all.

- ☐ Agree to meet regularly to review project progress and address problems.
- ☐ Agree on a system where the donor agency is kept informed and all partners know what goes to the donor.
- ☐ Jointly develop the capacity to provide training to other future partner organizations on planning and management of projects like this.
- ☐ Discuss thoroughly and agree on the tasks to be done by each.

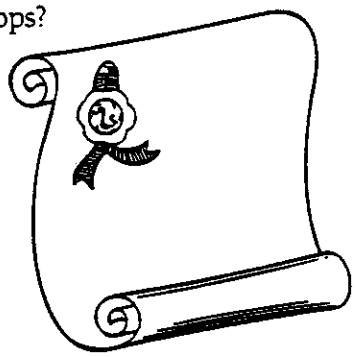
Goals:

- ☐ Partner organizations spell out specific, compatible goals for this project. They include:
- ☐ The stated needs of intended beneficiaries, e.g. to reduce their need for wood, to spend less on wood, to spend less time gathering, etc.
- ☐ Realistic estimates of how many of those reached will find solar cooking useful, use it frequently, and save fuel/ money/time.
- ☐ Long range sustainability.

Guidelines: All partners agree to the following:

- ☐ **Specific participation and support will be committed for several years.**
- ☐ **Since actual use usually grows slowly at first, regardless of initial enthusiasm, realistic expectations are defined at the beginning so no one sees slow acceptance as failure of the program.**
- ☐ **Consumer instruction and follow-up encouragement will always accompany sales of solar cookers and be part of all dissemination strategies.**
- ☐ The project will gather frequent feedback from users and trainers to modify and adapt the project.
- ☐ Formal, periodic assessments will observe actual use, pattern of spread, actual savings in fuel and labor, etc., related to project goals.
- ☐ Regular communication is important with solar cooker users, trainers, key staff in partner agencies, local leaders and institutions, and funding sources.

- ☐ Guidelines also spell out:
  - ☐ Whether families pay for cookers and bags—both initially and for replacements—and if so with time or money or bartered items?
  - ☐ Special policies for elderly, handicapped, large families, etc.
  - ☐ Who provides foods to be cooked at workshops?
  - ☐ How, when and by whom trainers are periodically recertified.
  - ☐ A clear, written agreement is signed by all participating organizations. It includes goals, guidelines and division of responsibilities among partner agencies (see samples above).

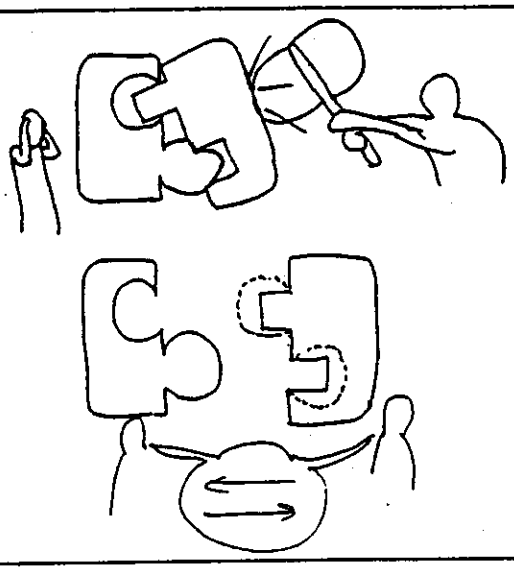


4. LOCAL ADAPTATIONS

It is worth going slow at this point to identify and address as many potential obstacles as possible before starting workshops.

MATCHING NEEDS AND SOLUTIONS

1. *A perfect match is UNLIKELY. Adaptations are usually needed.*
2. *Trying to alter needs to fit a fixed solution is usually UNSUCCESSFUL.*
3. *Adapting solutions to fit needs through cooperation is UNCERTAIN, UNWIELDY, TIME-CONSUMING, AND USUALLY SUCCESSFUL.*



Experienced solar cooking trainers work with 6-8 local women leaders to

- ☐ Try solar cooking all local staple foods and identify adjustments needed in food preparation so they come out the way local people like them. (Often adjusting the amount of water is all that is needed.)
- ☐ Discuss women's daily tasks and what changes are needed in daily schedules for longer cooking times.
- ☐ Identify and address potential concerns about food safety, family acceptance, other.
- ☐ Check for modifications in solar cookers for family size, types of pots and other local preferences, such as portability & compactness versus

immovability. Cookers must be easy to operate, durable, safe, available and affordable.

- ☐ Have a practice workshop, with local women suggesting changes for local needs.

5. SUPPLIES

A challenge unique to each region is to find local sources for supplies and/or arrange production and transport.

- ☐ Initial supplies of reflectors and transparent polypropylene bags may be brought from elsewhere for initial training.
- ☐ If women don't already use lidded, dark pots a source is found for paint and brushes.
- ☐ Sources are found for future supplies of reflectors and polypropylene bags (made locally or imported from a nearby country, after considering cost, timeliness of production and delivery, quality, durability, potential problems with customs for items that need importing, etc. If local pots aren't already black on the outside, paint may also be needed.

6. COMMUNITY SUPPORT

- ☐ Contacts are made with important local leaders to enlist their support of solar cooking activities in the community, perhaps cooking them a meal of favorite local foods.
- ☐ Raise public awareness and interest by demonstrating solar cooking at public gatherings and other means. Attractive displays and handouts help people get more information.

IV. Learning Exchanges

Solar cooking spreads best where the intended users are actively involved in two-way learning exchanges with experienced solar cooks. Pooling everyone's wisdom benefits all and encourages honest, mutual assessment of the potential value of solar cooking in a specific region.

At first, women who are illiterate and inexperienced in community decision-making are sometimes fearful and reluctant to participate. Their efforts to please may mask honest responses. They may be shy in the presence of authority, fearing criticism for overstepping customary roles. They may feel powerless, distrust the motives of solar cooking promoters, and hesitate to take risks.

Traditional teaching sees people as passive, empty vessels into which the teacher pours knowledge. When it comes to cooking, women already have abundant skills which need to be adapted for solar cooking.

This section describes learning exchanges that encourage equality and mutual respect:
hands-on workshops to begin adapting cooking habits,
home visits to give/gather feedback,
group meetings to solve problems, and
ongoing feedback and encouragement

All participants are both teachers and students, and speaking and listening are equally important.

- Trainers bring solar cooking experience, enthusiasm, workshop supplies, and skills to draw out others' questions and experience and help them enjoy the workshop.

- Participants bring a reason to try solar cooking, a willingness to actively participate, traditional cooking experience to compare with solar cooking to decide its usefulness, and leadership skills to be nurtured.

1. *Workshops*

Groups of 8-10 women adapt solar cooking to their needs by "doing," not just listening and watching. The first workshops in a new region may take 2 or 3 days. Later when many local people are solar cooking one-day workshops may be enough. Workshops start early in the day and cover each important point three times.

Sample outline of a 1-day workshop

A. Set up demonstration
B. Prepare food

(These are done before introductions to teach the importance of starting early.)

C. Introductions
D. Basics #1 - 4:Why solar cook, What you need, How to set up, and Differences in food preparation for solar cooking
E. Sample food or tea
F. Fill in workshop form: name, cooking fuels used, her goal
G. Basics #5,6: Differences in time it takes to cook foods, Other helpful ideas
H. Review
I. Discuss possible problems, home visits, time and place for group meeting
J. Close - Share goals, distribute supplies, and celebrate

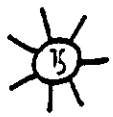
2. *Home visits*

Home visits a few days after the workshop help each new solar cook choose the best place for her cooker - sunny, protected from wind, record what foods she has tried, discuss her first solar cooking results, and to gather feedback on problems and the usefulness of solar cooking. Trainers visit each home to help, not to judge.

3. *Group meeting*

The same group meets again for a half day about one week after the workshop.
If women brought foods to solar cook, put them out.
Have each tell what their families say about solar cooked food.
Discuss problems mentioned at home visits and how they might be solved.
Review basics. Women take turns explaining diagrams.
Ask women to discuss their own goals related to solar cooking and whether they still seem doable.

4. *Ongoing feedback, advice and replacement supplies*



V. Support Services for Trainers and Consumers

As interest in solar cooking grows in a community, there must be available training, educational materials, solar cooking supplies, and ongoing encouragement. Other support services may include periodic training updates, development of educational materials in local languages, and management training. Ideally there is a project coordinator for every 10-15 trainers to coordinate the following support services.

CHECKLIST FOR SETTING UP AND FOR PERIODICALLY REVIEWING SUPPORT SERVICES

A. Supplies:

☐ Per family: 1 reflector, 12 polypropylene bags/year—20" diameter also black pot with lid—8-10" diameter, or access to paint and brushes.

In addition each trainer needs: extra bags, language-free diagrams, this guidebook, record forms + several pencils, (optional: several WAPIs for demonstrating water pasteurization) and a source of food for workshops.

☐ Ensure supplies are always available to trainers when needed.

- ✲ Find source(s) of supplies (after initial training) within the country if possible
- ✲ Set up a reordering system to maintain enough supplies in storage for 3+ months.
- ✲ Reorder early so trainers always have needed supplies. Mass-production of reflectors may take months. Have a policy about how payment is made: half payment may be required when order is placed, but balance is held until order is filled satisfactorily
- ✲ Arrange transport (to remote areas this, too, can take months).
- ✲ Observe in-coming supplies for defects or damage
- ✲ Who paints pots? for how much?

☐ Arrange secure storage that protects from damage.

☐ Maintain inventory records including quantities distributed, to whom.

☐ Organize means for families to get replacements.

☐ Periodically check if trainers' kits are still useful and in good condition.

☐ Observe condition of consumers' cookers and bags after several months, a year.

☐ Trainers meet regularly with Project Coordinator to trouble-shoot any problems.

☐ Periodically discuss with trainers whether changes are needed in distribution, sale price, storage, record-keeping.

B. Personnel

- ☐ Trainers have clear job descriptions.
- ☐ All trainers receive initial training and periodic updates (technical, teaching, management) for recertification.
- ☐ Each trainer covers all key points in workshops.
- ☐ Each trainer is skilled at getting participation in learning exchanges.
- ☐ Each trainer completes record forms. Illiterate trainers are assisted as needed.
- ☐ Each trainer gets feedback, with deficiencies noted, together with efforts to address them.
- ☐ If efforts fail, trainers are replaced.
- ☐ Do trainers use solar cookers? If not, are they still effective trainers?
- ☐ Pay schedule provides fair pay appropriate for local similar work. Are trainers paid a regular salary, per workshop or ?
- ☐ There is an agreed-upon pay schedule—weekly? bimonthly? monthly?—and people are paid on time.
- ☐ Conflicts are resolved promptly.
- ☐ Trainers who must travel long distances have transport—bikes/ vehicles. Responsibility for maintenance is clearly assigned.
- ☐ Trainers have uniforms or some sort of identification.
- ☐ Trainers meet together periodically to share experiences and do group problem solving.

C. Records and Communications

- ☐ There are scheduled, periodic communications with key people in partner agencies.
- ☐ Reports include # workshops, # trained, observations on actual use, problems identified.
- ☐ Unusual happenings are also reported so there are no big surprises at evaluations.
- ☐ Workshop records are filled out completely so there are clear records of which households have participated in workshops, had home visits and attended group meetings, also information about problems they encountered, comments, etc. Forms are replenished and revised as needed.
- ☐ Inventory records are kept current.
- ☐ A mapping system tracks areas of target communities that are served and unserved, so workshops are equitably distributed in target neighborhoods.
- ☐ Trainers meet periodically to review progress, trouble-shoot.
- ☐ Problems are addressed by group problem-solving.

- ☐ Proposed solutions are recorded and followed up for results.
- ☐ Project results are shared with donors, board, partners, project staff.
- ☐ The project is accountable to donors and partners, with periodic reports and timely renewals of grants and agreements.

D. Finances

- ☐ There is secure storage of money and full accountability so no one could be accused of unauthorized spending or access.
- ☐ A standard accounting system assures a clear record of all pay-outs.
- ☐ Staff are paid promptly.
- ☐ Monitoring assures expenses remain within budget.
- ☐ Budget is revised by agreement of all partner agencies.
- ☐ Coordinator has a petty cash fund if needed for miscellaneous project-related expenses.
- ☐ If cookers or other supplies are sold, sales moneys and records related to them are separate from any cash used for project expenses and are securely stored.

E. Program

- ☐ There is prompt review of feedback from consumers by trainers and of feedback from trainers by coordinator and partners.
- ☐ When program changes are recommended, all partner organizations are informed.

VI. *Evaluations*

The ultimate measure of success in promoting solar cooking is how many people

find solar cooking truly useful?

solar cook frequently?

save time/fuel/money? and

achieve their own goals for solar cooking?

There may also be measurable benefits

to trainers such as income and empowerment

for partner agencies such as budget savings and progress toward mission

to environment: reduced wood consumption, less air pollution

☐ Define clear purposes for each evaluation: e.g.

1. Baseline data for later comparison
2. Improving cookers, education process and dissemination strategy
3. Data on acceptance and benefits for marketing the idea of solar cooking to development and refugee organizations and funding agencies
4. Comparing fuel consumption to existing baseline data and/or other data on alternatives such as 3-stone fires and fuel-efficient stoves.

☐ Gather frequent feedback from users and trainers. Use this to improve project through discussions with trainers.

☐ Schedule periodic formal assessments by independent persons.

✲ Select items related to project goals to measure: Some examples:

pattern of spread, actual savings in fuel/labor/money, frequency of use, numbers and per cent using after 1,2,3 years, market success without subsidy, how many buy, cooker durability, bags durability, health benefits, wood savings, positive cost/benefit analysis, air quality, community-wide benefits, time savings, nutrition, empowerment, gain for women.

✲ Decide type of data:
a little data from large numbers, in-depth data from a few

✲ Decide appropriate data-gathering methodology:
Observation, interviews of participants and/or trainers, focus groups

✲ Develop measurement tools (samples available on request).

☐ Collect, collate and analyze data and prepare a report that compares results with stated goals of project.

☐ Share results with all parties involved, including donors.