

A GLOBAL VIEW: SOLAR COOKING IN THE 21ST CENTURY

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ABSTRACT

This document paints a broad stroke picture of solar cooking efforts around the world, by continent and nation, with limited analysis of auspices and size of programs. Drawn from a larger research project, the document provides a broad view of where solar cooking is and is not practiced, along with a world overview of where the technology is and is not suitable.

Key Words: Global view of solar cooking, implications for action

1. PURPOSE

The purpose of the paper is facilitation of progress in working towards the goal of the time when all households for whom solar cooking is suitable, in all places where climate and fuel needs are also suitable, will have access to the equipment and training required for solar cooking.

2. A GLOBAL VIEW

Use of the sun's power is not new in the history of humankind. Like fire, the sun's warmth has been used as long as humans have existed on this earth. As far back as our Greek and Roman ancestors, villagers oriented their homes towards the sun for maximum warmth in winter with an overhang to protect from the sun in summer. Over time, knowledge expanded to other uses. One odd story (telling us that humankind's potential for violence is, alas, not new) tells of innovation centuries ago, when our ancestors attempted to concentrate the sun's ray on enemy warships, hoping to set them afire.

More recently, though several centuries ago, a less militant and more useful approach to harnessing the sun's power began. Beyond burning enemy ships and attempting to keep warm, our ancestors figured out a principle we now know well: that the sun's warmth contributes to food crops, and eventually, the discovery that heat could be trapped for other purposes – even cooking. It is believed that a Swiss naturalist, Horace de Saussure, experimented in the cooking and preservation of food as early as 1767.¹ Years before that, greenhouses had been built, using the heat trap principle, as well as the sun rooms many of us enjoy today. DeSaussure first experimented with glass boxes, one inside another – and learned that food cooked nicely. Others followed his lead, in fascinating adventures too many to record here. Only in the century just past however has the world seen relatively large scale attempts to use solar power which is far more potent and potentially useful than the average 21st century person understands. This briefest of histories is summarized in a recent report, dated 2004, on just where and under what circumstances solar cooking activities are found today.²

While many knew about programs around the world, no true global picture was available about where and under what auspices, solar programs are found today. Much of what I say comes from that earlier report, which is currently undergoing revision and expansion for publication. It provides summaries of the kinds of programs and auspices, where known, differences observed by continent, a grand summary, and some thoughts for the future, emerging from the data.

First, organizations and agencies which are international in scope and programming effort will be discussed, followed by an admittedly cursory summary by continent. The grand summary follows and to wrap up,

some thoughts on activities in the years ahead, against the background of “where we are now.”

1. International Organizations (defined as those which work across national/continental boundaries)

A look at the United Nations shows clearly that few of its many component organizations show even a modest degree of participation of any sort, true in virtually all of its constituent organizations. Work with refugees is perhaps the largest single part of that work; two major demonstration projects on solar cooking usage have been carried out in Africa; the World Food Program is a major supplier of food to refugees living in camps around the world. UNESCO sponsored a World Solar Decade, but almost no one ever heard of it, and little was accomplished of interest to promoters of solar technologies. (It did sponsor one very posh conference in Italy!) Some attention was present at the World Summit for Sustainable Development in Johannesburg in 2002. The Kyoto Clean Development Mechanism theoretically could be used to sponsor activities of interest to this body but its structure more for very large scale projects and thus, almost by definition, difficult to understand and access. Notably absent are the United Nations Environmental Program, the United Nations Development Program, the World Bank, and others.

A number of international non-governmental organizations are however active. They include Rotary International, which may have sponsored more programs than any other single NGO, and the World Association of Girl Guides and Girl Scouts. Augmenting that work (and sometime hard to distinguish as different from the latter group) are numerous organizations which are nationally based, but serve audiences of potential users in many corners of the globe. A “virtual laboratory” web site is based in France with collaborators in many nations; several large German organizations are extremely active in promotion of solar cookers, subsidized sale and demonstrations of usage for locations in Africa and Asia. These latter organizations include EG Solar, founded by the Seifert family, a group focused on serving the Sahelian area of Africa (Solar Cooking in West Africa.), the ULOG group which works all over the world, and includes the Scheffler organization which specializes in large scale installations for group and mass feeding. Kozon is a group based in the Netherlands which also focuses on nations of the Sahel. A number of U.S. based organizations work internationally include SCI, the host along with Solar Terra of this event, the Solar Oven Society, a non-profit with a program in Afghanistan and sales around the world, and a number of manufacturers with both internal US and external markets.

Many more agencies, small and some large, are involved in these efforts; an endeavor to understand their methods and strategies would be very useful towards understanding more fully the multiple aspects of the solar cooking community.

2. Solar Cooking in Africa

This continent is characterized by a large number of small countries, and a few very large ones. It is second only to Asia in size and has a rapidly growing population, exceeded only by Asia also, but considerably more densely populated. The continent is large enough to have huge diversity in terrain, climate, ethnic and linguistic groups, as well as diverse histories and traditions. No continental solar cooking association exists to the best of our knowledge.

Of the 56 nations, 27 (nearly half) had no formal solar cooking programs, while 29 (51.7%) or just over half, did. Programs range from small to larger scale projects, each of which speaks of serving from a few to 100 to thousands of cooking learners. (This picture changes quickly, of course.) With few exceptions the bulk of the projects were organized and carried out by groups external to the continent itself.

3. Solar Cooking in Asia

The Asian continent includes approximately 30% of the earth's land surface and, naturally, great diversity of geography and inhabitants, with varied cultures and histories. Like Africa, the population continues to grow rapidly.

Forty-nine countries, varying in size from small to the world's largest, are found here. Thirty-two or two-thirds (65.3%) have no programs while the remaining 17 do. Asia has the distinction of hosting two of the globe's largest programs, in China and India. These mass programs have each provided solar cooking opportunities to hundreds of thousands of people. An important, unusual difference in these two countries is that both, though using somewhat different market mechanisms, have been sponsored directly by the national governments. Many smaller, organization-sponsored projects are found side-by-side with the larger governmental programs.

4. Solar Cooking in Europe

As would be anticipated, Europe (40 countries) has fewer solar cooking programs, related to the physical climate, not suitable for year round solar cooking use in many of its nations. Only two promotional projects are found, focused on promotion to the population of Europe.

However, a substantial amount of promotion in other parts of the world stems from European inventors and marketers of solar cooking products; the majority of large scale exporters are located in Europe, with their programs and products spread widely around the world.

5. Solar Cooking in North America

This “continent” contains the territory in North America and all of the Central American “bridge” between the hemispheres. The territory thus includes 34 nations, large (Canada and the USA) and the smaller ones of Central America. Of the 34, 22 or roughly two-thirds (64.7%) have no formal promotional projects, but several exporters and promoters of programs from other parts of the world work in this area. In ten nations, projects promoting solar cooking exist, most of which began at the initiative of organizations from outside the region.

6. Solar Cooking in Oceania

Oceania is seldom thought of as a “continent” and, physically speaking, is clearly not one. However, the National Geographic Atlas, used in this project, conceptualizes the thousands of small island nations and protectorates strung over thousands of miles in the South Pacific Ocean as a continent. Twenty of these islands can be thought of as “nations”; of the twenty, only one (Australia) has solar cooking promotion of any sort. In all the others, plus numerous islands which are either part of other nations or in some in-between step towards independence, have no solar cooking programming whatsoever. The total population of the countless islands is relatively small; the difficulties of contacting and marketing are great; the result is a substantial non-use of a useful technology in a hard-to-serve market.

7. Solar Cooking in South America

South America has only 14 nations, several of which are substantial in size, a few small. Of the 14, 8 (57.1%) have solar cooking program, while 6 (42.9%) do not. Noteworthy on this continent is the fact that, while individuals and organizations from outside the region have contributed to solar cooking development, a substantial part of the effort here has been indigenous in nature – Latin Americans themselves have led the effort to initiate and maintain solar cooking programs. No truly large scale projects are found but a multiplicity of small ones abound, spreading with relatively little impetus from outside the region. Also unusual on this continent is the presence of at least the skeleton of a continental network of solar cooking promoters.

Latin America is the continent with the largest proportion of countries having solar cooking projects; although the number is small. Noteworthy is the fact that initiation of these projects comes from Latin people themselves, in most cases.

3. GLOBAL SUMMARIES

Looking only at programs without making at least a rough assessment of “suitability” of nations for solar cooking would give a mis-leading picture. While doing that in detail was beyond the scope of this study, the nations of the world were considered roughly from that perspective, and divided into major categories of “Suitable, Suitable with Qualification, Unsuitable for Economic Reasons, and Unsuitable for Climatic Reasons”. (More detail on these categories is provided in the report itself.)

Of the world’s 213 nations (National Geographic Atlas), 130 or 61% appear to be “Suitable”; 16 or 7.5% are conditionally “Suitable” (the conditionality usually means either temporary conflict or that some portion of the country is not suitable); 15 or 7.0% are not “Suitable” from an economic perspective (usually meaning that development in the nations has provided modern and economically means of cooking for the bulk of inhabitants); and a final 52 (24.4%) are not “Suitable” for climatic reasons (too far from the equator, etc.) In summary, “Suitable” (combining the conditional with the fully so) suggest that roughly two-thirds of the world’s nations are good prospects for the promotion of solar cooking, while the other third is not.

Comparing that to the existence of programming, in grand summary (and eliminating the “Unsuitables”) just over two-fifths (40.1%) of the suitable nations of the world have programs, while two thirds (68.5%) can be thought of as “Suitable”. We clearly have our work cut out for us in the decades ahead.

Thoughts on Future Activities for the Global Solar Cooking Community

- 1) In only a few instances are governments of the world involved at all in solar cooking programs. Research on policy frameworks and energetic action to improve those to enhance the promotion of solar cooking could be very beneficial. As example, little awareness of the danger of Indoor Air Pollution caused from cooking with biomass fuel is apparent. Another example is the issue of tariffs and duties which often prohibit or make too expensive importation of much needed solar cooking technology.

- 2) Linking solar cooking promoters around the globe to promote exchange of knowledge, preparation of global priorities, etc. (precisely what we are doing at this gathering) would be beneficial.
- 3) Enlisting women's organizations to participate in our work is a must. Hundreds of groups, from local to national and international, exist; most (both organizations and their members) are not aware of the issue discussed in this meeting. We need to invite their participation in our programs and enlist their aid in involving women of the world.
- 4) The weakest link in solar cooking promotion is the lack of knowledge about the success and/or failure of our efforts. How often have we all heard that "solar cookers do not really work"? That fact is at least partly due to the inadequacy of our evaluation of the success or failure of our promotional efforts and, thus, our inability to counter the "it does not work" claim.
- 5) From the sketchy information provided above on the global picture of solar cooking activities, it must be clear to all that far more knowledge than that provided by one researcher (working only from published data, and sitting in the middle of the USA, far from solar cooking action) is not adequate for our purpose. We must figure out a way to understand the current situation better, in order that we can make realistic plans to continuously update our knowledge base, share information with one another, and, most importantly, use that data for promotion with governments and non-governmental organizations alike. Solar cooking is not only a "cause" – it is a potential life- and world- saving technology, little understood and relatively little practiced.

Those of us gathered here have a special responsibility to see that this situation changes in our lifetimes, before the planet and its inhabitants are irreparably damaged, along with millions of human beings, by the continued burning of our forests with its inevitable negative consequences to user and community and the world as a whole.

ENDNOTES

¹ Much of what is known of the long term history of solar cooking comes from the work of Ken Butti and John Perlin, The Golden Thread, published by Van Nostrand and Reinhold in 1980. Unfortunately, the book is out of print; communication with the authors suggest a revised version is in the making.

² Knudson, Barbara, State of the Art of Solar Cooking. Unpublished, 2004.