

Empowering young Rural and Tribal women with Solar Cookers: Lessons learned from implementation of two successful models in India.

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Barli Development Institute for Rural Women: Introduction

Recognising the importance of the role and contribution of rural and tribal women in India in general and Madhya Pradesh in particular, Barli Development Institute for Rural Women, a Baha'i inspired NGO, was established in Indore in 1985. The very name of the Institute symbolises empowerment. The word 'Barli', is a very common female name among tribal districts where many of the trainees come from, denotes the 'central pillar' that supports the tribal house typical in these areas. This name highlights the philosophy of the Institute that women are the 'central pillars' of the society - if they are empowered, the whole society is empowered.

Based on universal principles of unity and equality, the Institute is dedicated to empowerment of rural and tribal women by training them as human resources in a manner to build their capacity to further develop themselves, their families and also contribute towards the socio-economic and environmental development of their communities. The training is residential and free of cost. Preference is given to the socially and economically disadvantaged i.e. scheduled tribes, scheduled castes, backward classes, the physically challenged, orphans, widows, divorcees, the abused and the neglected.

Main curriculum includes hygiene & health, literacy, income-generating vocational skills, gender mainstreaming and 'learning to develop myself and my community'. Interwoven throughout the curriculum is the environmental component. Trainees learn caring for the environment as a spiritual responsibility, as well as service to community. They are trained in all the emerging technologies such as solar cookers, briquetting and other renewable technologies as well as old aged skills like planting and raising trees, preparing and preserving indigenous seeds, energy conservation

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techniques such as composting, vermiculture, the use of biodegradable products and proper waste management. More specifically, the trainees learn conservation strategies by practicing them.

The Institute also has three extension centers in rural areas of Chhattisgarh to reach those women who cannot leave their families and homes to come to Indore for residential programmes.

History of Solar Cooking & Food Processing

Though the Institute had been working with the Box Cooker and making the trainees aware about use of Solar Energy since 1985 but the development and transfer of Solar Cooking was initiated in 1998 by its Manager late Mr James R McGilligan (Jimmy) OBE. Solar Energy was incorporated as one of the major components to its ongoing training as a step towards sustainable development. Twenty six years (1985-2011) of knowing, developing and transferring these technologies through Barli Development Institute for Rural women, has been a very unique learning experience². Jimmy was a Bahá'í pioneer from UK with no academic/ professional degree, nor he had any background experience in research and development, neither he asked for funding nor he had any technical infrastructure. All he had was his mind body and soul and passion to learn and serve!

First Largest Solar Community Kitchen at Campus

Jimmy McGilligan built³ the purposely designed first largest Solar Community Kitchen in Madhya Pradesh installed at Barli Campus in 1998 and still in regular use. It has three large Scheffler Parabolic concentrated solar cookers. This project was initiated by School of Energy & Environment of Devi Ahilya University sponsored by Ministry of Non Conventional Energy Sources, Government of India. First dish was manufactured by Mr. Deepak Gadhia. Later on two more dishes were made and installed by Jimmy McGilligan. In the same kitchen, he also established the solar storage cooker (made by Wolfgang Scheffler and Deepak Gadhia), perhaps the only

² The author served as a Director since its establishment until took retirement on April 16,2011

³ Jimmy McGilligan "Establishing the first solar kitchen in Madhya Pradesh and centre for the awareness generation and dissemination of solar cooking technology among rural women of central India. 12- 16 July 2006. Granada (Spain)

one of its type in the whole world .It collects the solar energy directly from the sun throughout the day, and it cooks *chapattis* of 10-12 kg of wheat/corn flour even after the sunset. This kitchen continues to be used for making meals and breakfast for about 100 people for 300 days every year. This saves fuel worth Rs 5000/- per day, equivalent to 9 LPG cylinders or around 900 kg wood per month.

Empowerment of Women with Solar Cooks

Jimmy was always concerned about women cooking with wood and often said “cooking in smoky kitchens is a kind of violence against women”. It was delightful to hear the feedback of two tribal women Solar Cooks of this Community Kitchen. Mrs.Sagri and Mrs. Dangri who have been cooking on solar cookers in the Institute’s kitchen since many years are very proud to share “we are able to solar cook chapattis, make porridge from wheat, maize and millet etc. We can also roast ground-nuts, boil potatoes, roast sweet potatoes, deep fry and cook different curries”. They further said “Solar cookers are user-friendly, can be just turned on with the sunrise. Except rainy days, food can be cooked in all seasons .It is also convenient, economical, smoke-free, and saves all kinds of polluting fuels like wood, dung cakes and LPG. Solar cooked food is more nutritional and healthy. It also saves time.”These two are main trainers of Cooks for Community Kitchens and enthusiastic promoters of solar cooking among visitors and trainees who love to meet and interact with them.

Manufacturing and Installing 4 more Solar Community Kitchens

As a response to the first largest Solar community kitchen at Barli, Jimmy assisted by the Institute staff and volunteers ,manufactured solar dishes and installed 4 more kitchens in the region⁴. The largest solar community kitchen of Madhya Pradesh, with five dishes was built on site, in a hostel for 900 students at Chena High School in Village Gadwada at Jhabua district. This was the second solar kitchen. The third solar community kitchen of 4 dishes was manufactured and established on site for a hostel of 450 girls and boys in Dhar district in Dattigaon in October, 2006 .The Institute built its fourth solar community kitchen of 2 dishes in a hostel for more than 200 tribal girls also in Dhani in Dhar district and established on

⁴James R. McGilligan ‘ Learning to develop and transfer Solar Food Processing Technologies at Barli Development Institute for Rural women in India’, International Solar Food Processing Conference 14– 16 January.

site in December 2006 . Soon after this, fifth Solar kitchen with one large dish was manufactured and installed for 60 children in an orphanage i.e. Shradhanand Ashram in the heart of the city of Indore.

Rural and Tribal Women Motivated to take Solar Cookers home

Having first-hand experience of use of solar energy in such a big way at the Campus motivated the trainees to adopt solar technology for domestic use and it helped them to overcome all the myths and barriers to accept and use this non-conventional source of energy. All they needed was knowledge, skills and access to resources and availability of solar technology that could be used to bring positive changes in their lives as well as of their families and communities.⁵ The women undergoing six months residential training were very excited to know the project and they gave a very positive response. The Institute decided to start a special training focused on Solar Cookers.

Partners in Empowerment

Barli Institute was already exploring possibilities of facilitating the process of transferring solar energy for domestic cooking in the year 2000, when Gadhia Solar approached to implement a project to give 50 SK 14 solar cookers per year to rural poor, funded by PLAGE, Austria. Knowing the psyche of the people ,the Institute decided to give the cookers mainly on two conditions firstly, the cookers not be given away as charity but “ by choice” only to those who will pay 10 % percent of the cost in advance, as 90 % was to be subsidized by PLAGE. Secondly, the users had to be highly motivated graduates of the Institute who demonstrated a keen interest and willingness to come for 10 days to Barli for taking special training of potential users of SK 14.

Training & Transfer of 500 SK 14 solar cookers

The SK14 parabolic solar cookers are handy and small in size. These cookers have the capacity to cook daily meals for a one family. There is increasing demand for these

⁵ Janak Palta McGilligan ‘ Socio-Economic Empowerment Of Rural And Tribal Women In India Through Training In Solar Cooking Using Sk 14 Parabolic Solar Cookers’ 12- 16 July 2006. Granada (Spain)

cookers from the areas from where maximum number of trainees has been coming. The actual cost price of this cooker is about Rs.7000, but in order to encourage the use of solar cooking technologies among those who are needy but unable to pay this cost, they get at a subsidized cost of Rs1000 each. Institute started systematic training and transfer of the cookers to the selected graduates 10 days. The course included general instruction in theory as well as practice. For instance, the trainees learned how to maintain and assemble the cookers, and how to use them for preparing traditional and modern recipes.

In 2001, Jimmy McGilligan and his team started manufacturing the first lot of 60 SK 14 solar cookers. PLAGE had given 50 but 10 percent contribution by the users made it possible to give to 10 other women. In all, 280 women were empowered with Solar Cookers by PLAGE. Later Terra Foundation donated 100 SK 14 in 2009 for the Barli Graduates. By the year 2011 in all 500 Cookers were given to trained women who took these cookers by choice.

This was commended by Pro. Rameshwar Lal Sawhney School of Energy and Environment Studies at Devi Ahilya University in INDORE “I think people have a lot to learn from the Barli Institute. Many people from different parts of the country visit my department, and I take them to Barli. It is a model that can be replicated.”

Staff was also trained at Barli by Dr. Dieter the inventor of SK 14 and his wife and Expert trainer of SK14 Imma Siefert and late Shirin Gadhia in training how to assemble maintain and repair this cooker.

It is important to mention that for the first time, these cookers were launched by a group of five Barli graduates from Temla village, of Sondhwa block in Jhabua district on June 5, 2002 on the World Environment Day. They started popularizing the solar cookers for cooking food and local products as well as boiling water for drinking. This started generating more demand for these cookers.

Developing Training Materials in local Language

The author, with the help of the Staff and volunteers specially designed and prepared the training materials for SK 14 users. A great deal of work went into learning about food habits and collecting information about indigenous and documenting those recipes after practically experimenting with an SK 14. Training materials like recipe book of Soya and other locally available materials and users manual was written in English as well as simple understandable Hindi and made available to each user.

Training in Solar Engineering for Empowerment of Women

In year 2003, Ms Heike Hoedt, from Solar Brouke ,Germany conducted six weeks special training at Barli for staff and local village fabricators artisans/blacksmiths as well as the Manger to learn to manufacture 10 square meter parabolic reflectors, build and set up one complete reflector including all the jigs and fixtures required to empower them be self-sufficient in their installation and maintenance .They could take back this knowledge and skills of environmental sound technology to their communities and serve their communities and provide access to technology to the rural poor women who are affected the worst by environmental degradation and poverty.Mrs Nanda Chohan and her husband Mr Rajendra Chouhan working at Barli were also trained by Heike to build 2.7 Scheffler Dish in 2007 at Mozda in Gujrat. Nanda has installed many domestic solar cookers in the villages.

As a result of such training, the cooks are able to maintain the solar units, whilst the garden staff is doing technical adjustments or repairs. For instance once the wire rope supporting the weight to drive the tracking mechanism broke, the manager did not know about it until a new rope was fitted to the system. The cooks clean the reflectors and make the seasonal adjustments, and if the tracking clockwork mechanism stops they get it started themselves.

Trainers Installed SK 14 in many villages

- In year 2001, Sarbai Solanki, daughter of Mrs.Gujri Bai, the *Sarpanch* of Temala and her four friends were trained in the Institute as users of SK 14 solar cooker and they are still making best use .
- In 2008, Mrs.Shakuntala Devi and Mrs. Prabhat Devi of Sewadham Ashram (Ujjain), were given one week training in solar food processing and learning to use and maintain solar lanterns etc. According to the Ashram, it improved their life and working at the Ashram .
- In year 2009, the Institute staff , Mr Sakha Ram Dawar, Mr Kohilo (volunteer), Mrs. Mantu Solanki installed 12 SK 14 cookers at villages Mandav khera, Lalpura, Samarpat and Borkhera (Khargone district).
- In 2009, Mr. Vikram Tomar and Mr Narayan Solanki a student of Gujarati science college, Indore who were trained in assembling and use of SK 14 cookers, they went to villages Gelkheri and Bhojra in Jhabua district and installed 5 such

solar cookers at villages of Jhabua, and also trained the women's self-help groups. These cookers were installed with the financial support of State Bank of India at a nominal interest of only 4 percent. This is also another example of economic empowerment of these groups.

- In year 2010, Mr. Rajendra Chouhan, and Mrs. Nanda Chouhan more popularly known as solar engineers, installed 5 solar cookers in Unhala and Fadtala villages in Alirajpur district. All the recipients of these solar cookers are Barli graduates.

Livelihood Training of Micro-Credit Groups

As well as supporting the training of individuals, in 2004 the Institute expanded its training to Micro Credit Groups in the use of solar cookers for food processing for making their livelihood. These programmes started in 2005 for a duration of three to six days and have generated a demand from many NGOs such as SIRDI, based in the village of Behiram, 400 kilometers from Indore, sent 18 women from three different groups for a complete theory and practical training course. They started solar cooking for their livelihood by making various types of sweets and namkeens (salted & spicy). Some of them are making mid-day meal for schools.

Another group of eight women in the Betul district now cook for two hours during the peak sunshine each day using solar cookers. They make and pack local snacks and they sell in the nearby markets and supply to the village council meeting, earning between 75 and 100 rupees each day. Many of the cookers have become sources of livelihood and their owners living examples of the success of solar food processing technology in rural areas. Transfer of this technology has also enabled rural women to become pioneers in the development of their villages, a role not readily available to rural and tribal women.

Many other groups have been trained here for livelihood by using solar cookers and others have come to see how these methods of training. Few of these to be mentioned are:

During 2006, group that came through Kasturba Gram Trust was trained.

In 2007, an eminent expert in Self Help Groups/ Micro Finance, Dr Nandini Azad came personally to visit Barli Institute and know about its training, methods, specially how the training of Soya food items like Biscuits, Gulab Jamuns, Pakoras was actually provided with solar cookers. She witnessed women trained how to calculate the costs of the items

and market these products. These groups trained here in livelihood training programmes, have been very successfully running these programmes and at the same time inspiring other groups to come forward.

Outstanding Examples

In village Nathudhana, the schools started buying snacks from them for monthly parents- teacher meeting. The neighboring communities also started contacting them for buying their products. These women produced and sold about 150 kg of their products at Sanwal Mendha Haat during Behiram fair . They are earning while sitting at home. They report that now they do not need to go out for manual labour. Thus, they have set an outstanding example of attaining self-reliance. They have been freed from exploitation, indebtedness, and taking loan

Solar Tea Stall

A solar tea stall is being run Mrs. Komal Dawar and her husband in village Semlipura of Dhar district. She has reported that they earn approximately five thousand rupees every month by making tea and selling it.

Feedback from Users of Cookers

Empowerment of these women with solar cookers have made a remarkable difference. The Institute has conducted surveys from time to time and the latest in 2010 found that 99% of all the SK 14 cookers in the villages are functioning. The results of the survey are summarized below.

Money, Energy & Time Saving as well as Hassle Free⁶

- All of the users acknowledged benefiting from the SK 14, as it saved them time and money and some of the day to day hassles.

⁶ [When-tribals-tame-Solar-technology.doc /http://jimmymcgilligancentre.org/wp-](http://jimmymcgilligancentre.org/wp-content/uploads/2013/12/When-tribals-tame-Solar-technology.doc)

[content/uploads/2013/12/When-tribals-tame-Solar-technology.doc](http://jimmymcgilligancentre.org/wp-content/uploads/2013/12/When-tribals-tame-Solar-technology.doc) and also see Janak Palta McGilligan

“Advancing towards achievement of Millennium Development Goals by training Rural and Tribal women in Solar Food Processing: A Hands-on Experience at Barli Development Institute for Rural Women in Central India , First International Solar Food Processing Conference ,Indore 14-16 Jan 2009.

- The results of the survey indicated that the SK 14 cooker saved those who buy wood a minimum of 300 to 400 rupees per month.
- For those who collected wood, the SK 14 helped saving an average of 4-5 hours of time usually spent in looking for it and bringing it home.
- Another respondent stated that because the solar cooker did not require additional stores of wood, she had saved money by making the one-time investment by buying the solar cooker.
- The conventional alternative to firewood is gas, which is costly and hardly available.
- One 35-year-old respondent said that her solar cooker saved 320 rupees per month and she felt relieved of the hassle of getting leave from work to queue up to get gas. She also said the cooker was easy to use as did not require matches, kerosene, or paper to start the fire.

No more tears from smoke: Improved Quality of life

- The general consensus among the respondents was that the cookers improved their quality of life and that of their families. “No more tears from smoke...” was an interesting and spontaneous response of a young graduate of the institute.
- Many women shared that the solar cooker enabled them to heat water for washing and bathing as well as preparing Cattle-feed .
- The cooker also did not blacken the kitchen and surrounding areas, nor the kitchen utensils in the way that cooking fire does. This saved money and resources, as the utensils did not have to be replaced as often.
- Because of the minimal attention required in using the solar cooker, many of the users reported that they were able to leave food on the cooker and go away to do other work while anyone in the family, even a child, can change the direction according to the sun.
- One of the respondents said that the solar cooker provided “equal and smooth heat” which makes the food tastier food.
- Many of the users commented on the healthier and more nutritious food being cooked on the SK14. They stated that because solar cooking does not require opening the lid for frequent checking, the SK14 retains nutrients and flavors in the food.

- One husband said, “The solar cooker has made my life both better and easier. When my wife has gone to work and the cooker cooks the food, I can go to the bazaar or take my child to school, and when I come back, the daal is already cooked.”
- One respondent noted that the cookers bring them back to equilibrium with nature, as they are no longer exploiting forest resources and therefore no longer contributing to conditions that would lead to land degradation, erosion and drought.

We Feel Safe⁷

Most unexpected answer was “ We feel much safer as no longer need to face the danger of illegally searching long distances for firewood which leaves them vulnerable to forest official and police harassment as well as risk of rape and abuse.”

Safe for Our Children

- One middle aged woman said it is also very safe for children as the conventional fireplace is a common cause of burn cases for toddlers and children.

Gender friendly Cookers

One woman said the SK 14 cooker was gender-friendly. She said her husband and father-in-law had started doing the cooking, as they were the ones who demonstrate using the cooker for all the male visitors, guests, relatives, and officials. In the process, they started cooking.

Uplifts our Status

- Another user stated that her status was raised as a result of her owning and knowing how to use this cooker. She said it is also becoming a status symbol.
- One trainee’s father said, “It is a miracle of science that has changed our lives. It shows we can do so many things that we still do not know. In our village, everyone is excited about the SK 14, when they come and see it they confess that they could never believe that we can make food with the help of the SK . The *sarpanch* (elected head of a group of villages) of our village as well as many neighboring villages has visited our place and seen it working and even stayed on to taste the food and he was so overwhelmed.” Nearly all of the respondents said that their families were very happy with the difference the

⁷ Ibid

SK 14 has made it their lives.

Positive Impact of Empowerment of Women on the Institute

These empowered women made the Institute, a resource, testing, and training centre for Devi Ahilya University in Indore as it conducts technical sessions and practical demonstrations for Principles of Schools; Religious Heads; M Tech students Research Scholars; Participants of Farmers groups and women's self help groups.

- There is increased level of awareness regarding solar cooking, people from all walks of life constantly visit the institute to see this live demonstration.
- Institute has been training students like Shanu Singh from India, Tom Wilmot and Anokhi Shah from U K, Elisa Cooper from Canada, Nura from Yemen many and other countries who came to Institute to volunteer and learnt Solar Engineering skills and in one way or the other they continue the promotion of Solar Energy and environmental conservation.
- Barli Develops curriculum for trainees to learn how to build and use solar cookers that they take home, and how to use them as an income-generating tool.
- The Director and Manager have been giving regular presentations to government officials, police, army and others, on the use of solar cookers.
- Barli successfully hosted the first International Solar Food Processing Conference 2009

Jimmy McGilligan Centre for Sustainable Development

After retiring from Barli Institute and accidental demise of Jimmy McGilligan in April 2011, the author has set up Jimmy McGilligan Centre For Sustainable Development, her own residence by choice to live in a tribal neighbourhood of 50 families so that it can directly work towards their empowerment as well train youths to participate in sustainable community development. Within a short span of three years this centre has emerged as a live model for sustainable development. It demonstrates sustainable living of a model eco friendly house, growing and eating organic food, using a solar kitchen, solar dryers, solar water heaters, solar charged radio, mobile phone, computer and demonstrating 7 different type of Solar cookers, including a solar kitchen with Scheffler sq 2.7 meter solar dish, box cooker, funnel cooker, Celestino Cooker, SK 14, Hot Pot, Ultra Portable Solar Cooker. People also learn about, heat retainer basket, briquettes machine, fruits, herbs and colors dried

with a Tunnel solar dryers. The centre fosters entrepreneurship skills for livelihood by using solar cooking and processing organic products by training them in baking ,cooking, frying, and Solar dryers No use of plastic. No trash. It has a wind and solar power station providing 19 street lights to tribal landless families and educating the village children . This place is evolved as centre for learning for rural folks as well as raising awareness, sensitivity, understanding about the environment friendly lifestyle among common people, schools colleges and universities⁸ .

Mrs. Nanda Chouhan a Role Model

Mrs. Nanda Chouhan serves as Programme Assistant at the Centre .She is a young tribal lady from district Alirajpur, has 13 years of experience at Barli Development Institute for Rural Women, trained by trained by Heike Hoedt, German Solar Engineer of Solare-Bruecke' in manufacturing Scheffler Reflector Solar Cooker 2.7 m² and by Jimmy McGilligan in organic farming, Solar food processing, using , assembling and maintaining various types of Solar Cookers specially SK 14. She has been involved in building and developing the Centre for the last three years. She is very dedicated, enthusiastic and well versed in training and demonstrating working of all the Sustainable Technologies & organically grown and solar food processed products . She was honored on women day 2014 as a Solar Engineer and invited to many IIM to share her success story. Her husband Rajendra is also a programme assistant. They also reside at the centre and their son and daughter are studying in best schools. Her son went to Italy for studying one year. Not only Nanda , whole village is very proud of her and family, the way they are so effective and empowered. Family of 4 , the author , a cow and her calf all are fully sustained in one acre organic farm and solar

⁸ For more information kindly refer to Times of India Indore, September 3,2013,Dainik Bhskar,3 sep 2013, Patrika 3sept 2013 and Free Press September 13, 2013 news regarding Jimmy McGilligan Centre For Sustainable Development . Also see *JanakJimmy's Giridarshan blog* janakjimmy-janakjimmysgiridarshanblog.blogspot.com/

energy. The author specifically gives example of last three years using one LPG bottle per year ,mainly in monsoons or many guests or big gatherings at night with ,she has bought vegetables only four times and for food, only buys four items from the market Sugar, tea leaves, salt and cooking all.

The centre also facilitates the access to solar technologies for rural folks. By organizing exhibition and sale of various types of renewable technologies like functional hybrid Solar wind power station .Additionally the centre has developed an organic farm. All the training is provided free of cost and in an integrated manner to rural and tribal women, farmers, Microcredit groups, school students and from various professional Institutions of Science, Engineering Management, Hotel Management, Medicine, Computers, Information Technology, Home Science, Agriculture, Communication and Specially from Devi Ahilya University of Indore with the objectives of saving environment, energy . More than 10,000 persons have trained and sensitized by the centre. Recently the Centre organized 6 memorable informative, innovative and most inspiring , musical performances to spread the message of use Solar Energy and specially demonstrated Solar Cooker , in three days at Advanced Academy, Police Training Centre ,Indore Public School, IIM⁹, Jimmy McGilligan Centre for Sustainable Development and Sri Sri Ravi Shankar Vidya Mandir among more than 3000 students . This centre is also ushering the Solar Food Processing network at local regional and continues research and promotion of transfer of technologies.

The author sees Empowerment of women with solar cookers is advancement towards Millennium Development Goals : Eradicating Extreme Poverty and Hunger; Achieving Universal Primary Education; Promoting Gender Equality and Empowering Women; Reducing Child Mortality; Improving Maternal Health; Combating HIV/AIDS, Malaria and Other Diseases; Ensuring Environmental Sustainability; Developing a Global Partnership for Development and Global Exchange.

⁹ [Energy Self-sufficiency need not be just a dream; Janak ...jugaadtoinnovation.blogspot.com/.../energy-self-sufficiency-need-not-be...](http://jugaadtoinnovation.blogspot.com/.../energy-self-sufficiency-need-not-be...) <http://jugaadtoinnovation.blogspot.in/2014/06/barli-institute-and-aavishkaar-show.html>

Lessons Learnt

Some of the lessons learnt are as follows:

- 1 Sustainable Development is only possible by equal and active participation of women as all the knowledge, Skills, experience and Values are they passed on to next generation naturally. All programmes should be women-centric.
- 2 Technologies given to people without training of users and training given without access to technology does not sustain.
- 3 Training is one of the most important priorities for manufacturing, installing, maintaining, and marketing of technologies. It also requires systematic development of training materials in local languages.
- 4 There is a need for NGO's and governments to work as active collaborators to popularize these technologies and make many successful models.
- 5 One of the need for Interdisciplinary Research in Engineering, Management, Home Science, Agriculture, Environmental Science because all these subjects are inter-related and have a direct impact on the lives of people and all the ecosystems now and for generations to come. Research area can be Sustainable Sources of Energy, Sustainable Technologies, all Sustainable Products for Consumption, Managing Sustainable Business, Industry, Enterprise, Marketing, Packaging and Social Sector etc. All these should be aligned with the Millennium Development Goals such as eradicating extreme poverty and hunger, achieving universal primary education, reducing child mortality and improving maternal health.
- 6 While undertaking research and development in the abovementioned areas, all the players and stakeholders need to practice and demonstrate their spiritual responsibility towards the environment to sustainably develop societies. This will also include enhancing sustainable ways of working by sustaining relations among the Governments, the Educational & Professional Institutions, faculties, students, N.G. O's, buyers, sellers, producers and service givers.
- 7 While using science and technologies, positive cultural values also need to be sustained.

8 When people pay even the token amount, they value it and use it.

9 Innovations, Research, Monitoring and Evaluation and documenting the success stories as well as the role models of empowerment of local people with Solar Cooking and other sustainable practices by individuals as well as Institutions./Government / NGOs /Academicians and Other Development Agencies is very important.

Conclusion

These experiences of working with two successful models¹⁰ are mainly grass root based at micro level. However these can be replicated at macro level provided the equal participation of women is ensured by including men folks and foundations are laid on sustainability and solidarity !

¹⁰ For more details of model 1 see website <http://www.barli.org> and model 2 website <http://jimmymcgilligancentre.org/>