

Guide Questions

1. Identify & explain all social, economic and environmental principles
2. Analyze the project in the context of "systems thinking"
3. Draw a diagram showing the connection between various parts of the system

In India, a program for rural women emphasizes training as the key to effective use of solar cookers

JHABUA DISTRICT, Madhya Pradesh, India - Ask women about the benefits of using solar energy for cooking in the remote districts of this central Indian state, and "saving the environment" is not necessarily the first response that comes to mind.

Rather, the advantages of using solar cooking have more to do with saving time, money, and "personal" energy. Solar cooking, they say, means no longer doing things like scrubbing fire-blackened pots, searching for firewood, or worrying about children getting burned by the traditional cook fire.

Some 30 women in a half-dozen western districts of Madhya Pradesh state here have so far received household-sized SK14 cookers through a program run by the Barli Development Institute for Rural Women (BDIRW), which is based in Indore.

The program has become something of a showcase for introducing new technologies into rural areas, drawing notice from state-level government and education officials.

"I think people have a lot to learn from the Barli Institute," said Rameshwar Lal Sawhney, head of the School of Energy and Environment Studies at Devi Ahilya University in Indore, which has worked closely with the Institute. "Many people from different parts of the country are visiting my department, and I take them to Barli. They are a model that can be repeated."

What makes the program distinctive is its emphasis on extended training and motivation, and its focus on a specific population group: young rural women.

Indeed, the SK14 distribution program is the latest in a series of efforts by the Institute to promote not only solar energy but environmental consciousness in general. And it sees young women as the key to promoting underlying social change, not only in terms of environmental practice, but also in the areas of health, nutrition, education, and moral development.

"Fundamental to the rationale of the Institute is the concept that the education of women is paramount to their empowerment and consequently to community development," said Janak Palta McGilligan, director of the Institute. "Women are the first educators of their children and this education affects the thought and behavior of a new generation of people, both men and women."

Originally established in 1985 as the Bahá'í Vocational Institute for Rural Women, the Institute became an independent entity with its own board of directors in September 2001, taking the name Barli Development Institute for Rural Women.

The objective of the Institute is that, empowered by training in literacy, hygiene, nutrition, income-generation, and conservation, the young women can return to their home villages and become "pillars" of their families and communities - agents for changing the social and physical environments. The word "barli" is the local word for the central pillar of the house; hence the name of the Institute.

Despite the name change, the Institute's program is still very much inspired by Bahá'í principles, which emphasize the equality of women and men and quite specifically advocate vigorous measures to educate girls and women.

Over the last 17 years, the Institute has trained more than 1,500 young women and girls. Its programs are entirely free, and the Institute's trainees come mainly from indigenous or "tribal" areas in the western districts of Madhya Pradesh surrounding Indore.

Much of the region is marked by chronic poverty and malnutrition, due in part to low crop yields, frequent droughts, a shortage of drinking water, and poor soil. Many of these problems have been compounded by extensive deforestation and erosion, partly as a consequence of the search for firewood.

In the mid-1980s, the Institute began using solar box cookers for some of its cooking and promoting their use in the villages it served.

In May 1998, a large 7.5 square-meter parabolic solar cooker was installed at the Institute; another was installed in 2000. These two large reflectors, designed by German solar energy specialist Wolfgang Scheffler, became a test-bed for working out practical aspects of solar cooking for the Institute and its trainees.

This effort, in and of itself, has been innovative. For example, the second Scheffler reflector has been combined with a novel solar storage system. The reflector is used to heat up a well-insulated 400 kilogram steel core; stored heat can then be used for cooking around the clock. The system was designed by Gadhia Solar Energy Systems of Valsad, Gujarat.

With this system, the Institute is able to cook entirely with solar energy for 300 days a year. The most recent phase of the Institute's solar program entails placing the household-sized SK14 cookers in villages throughout the Institute's service area. As of this writing, 32 women have received them. The women pay 10 percent of the approximately US\$100 cost, with the rest funded by two Austrian non-governmental organizations. Another 18 SK14s are scheduled to be distributed in 2003.

However, the Institute does more than merely make and place the cookers in rural Indian villages. The cookers are sold only to women who have been through the Institute's training program, a program that includes not only practical training in the use of solar cookers but also general instruction designed to promote an overall consciousness of environmental conservation.

"One of the significant components of our curriculum is theory and practical training in the use of renewable energy," said James McGilligan, manager of the Institute, who has been largely

responsible for the Institute's solar program. "We could easily give the cookers away to anyone, but our experience is that they wouldn't be used. So we require the people to have training - and that they pay 10 percent of the cost."

Such training is an important factor in successfully introducing new technologies into rural areas, said Prof. Sawhney and others. Too often, new technologies go unused if they are simply dropped in without adequate education.

Another distinctive aspect of the project is its focus on young girls and women, said Sneha Lata Kumar, managing director of the Madhya Pradesh Energy Development Corporation, a state-level public sector alternative energy promotion agency, which works with a number of NGOs in the state.

"Women, and especially young girls, do most of the household work in their families," said Ms. Kumar. "The Institute is already working on the training and upliftment of girls and women, through literacy and vocational training, and now they are showing how the use of non-conventional energy in their daily life can lessen their drudgery."

The process of training in sustainable development begins when students come to the Institute and see how the Institute itself grows most of its own vegetables and cooks much of its food on the large Scheffler reflectors installed there.

"At the Institute I noticed that almost daily, food for 150 persons was cooked on the solar cookers," said Chanda Nikhare, a 35-year-old woman and former Institute trainee, who recently bought a smaller SK14 cooker for her home in Indore. "It inspired me to purchase one for myself. It is working well and I have saved a lot of hassle. It saves gas and energy." Sagri Bai, a former Institute trainee from Dhar and now a cook at the Institute, has likewise purchased an SK14 for her home. "The solar cooker is much better than fire," said Ms. Bai. "After spending money once then there is no need to spend money for wood, as is the case with a wood stove."

Her husband, Sakha Dawar, who also works at the Institute, is hopeful that solar cooking can help stop the deforestation that has plagued their home district.

"Now people have cut down all the forests and it is very difficult to find wood," said Mr. Dawar. "If we cook on fire, we need wood for fuel and if we cut the trees for the sake of getting fuel, it will affect the rains and our future will be darkened. We will get less trees, less rain, less water, and less food."

Solar energy use is not the only element of environmental conservation that is taught at the Institute. Trainees learn that caring for the environment is a spiritual responsibility, as well as an important service to the community. Students are taught about planting and maintaining trees, finding local sources for seeds, and the use of environmental and energy conservation techniques such as composting, vermiculture, the use of biodegradable products, and proper waste management.

The Institute also uses an innovative water management program, again in an effort to show trainees what is possible. In that program, rainwater is harvested and used to recharge the underground aquifer. Wash-water is reused for irrigation of the Institute's gardens, which provide most of its food.

Trainees also receive courses in literacy, tailoring, agriculture, artisan crafts work, human rights, environmental awareness, self-esteem and personality development, social commitment, nutrition and health, and income-generating skills. Art, music, and dance are also incorporated into the curriculum.

Institute graduates have had a measurable impact on their communities. Although more than half of the trainees are illiterate when they arrive, 99% leave fully able to read and write Hindi. Studies show that 96% of them use their income generation and related skills upon their return home and that 46% have established small businesses of sewing clothes and have started generating income, while some 9% are employed in various jobs. Some 97% of graduates are using safe drinking water practices; some 70% now include leafy vegetables in their diet; and 41% are growing and selling vegetables. In addition, women in five villages have planted some 2,500 trees.

Other studies have shown that the women have assisted in creating a new atmosphere of mutual respect and unity in their communities, helping to displace caste prejudices in tribal communities once notorious for their high crime rate and alcohol abuse. The Institute collaborates actively with government officials and non-governmental organizations, exchanging information, methodologies, and research information.