Lasting Impacts of Solar Cooker Projects
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A review of evaluations of solar cooking projects using box and panel solar ovens in Bolivia, Ethiopia, and Kenya provides conclusive evidence of successful technology transfer and cultural acceptance of solar cooking.

There have been numerous solar cooking projects in various developing countries in the past few decades. The advantages of solar cooking to poor communities are evident: reduced use of fuelwood; reduced spending on fuels; decreased exposure to smoke, ash, and flames; and less time and energy spent collecting fuel to name a few. Unfortunately, there has not been much quantitative data collected during the evaluations of these development projects. The following analysis of research data gathered from three different solar cooking projects in Bolivia, Ethiopia, and Kenya conclusively supports theories concerning solar cooking's potential to generate economic and environmental benefits to poor people in developing countries.

The most comprehensive data demonstrating continued solar cooker use and fuelwood savings results from research conducted in the central highlands of Bolivia in 2005 (Pell, 2005). A French nongovernmental organization, Bolivia Inti, had funded a project managed by local solar cooking promoters David and Ruth Whitfield to introduce solar cooking in several villages there between 2001 and 2003. In 2005, Pell, an independent scientist, interviewed 170 people with and without solar cookers to determine whether their use affected household fuel consumption a few years after solar cooking was introduced to several villages.

The data found that 92.7% of the solar cooking course participants continue to use their solar cooker three to five years after the course ended (Pell, 2005). In fact, 62.4% of all participants use their solar cooker at least once a day during the dry season, demonstrating a lifestyle change that incorporates solar cooking into their daily lives. The solar cooker now supplements their other energy sources: gas, wood, or a combination of gas and wood.

This acceptance of a combination of cooking technologies can also be seen in a Solar Cookers International (SCI) project in a Somalian refugee camp in northeastern Ethiopia (SCI, 1999). After completion of a two year promotion of solar cooking, data from 180 households showed that 94.3% of households used their solar cooker in combination with other cooking methods (SCI, 1999). In fact, exclusive use of wood-burning stoves dropped from 75% among these households before the project to only 3.3% afterwards. These dramatic results, like those from Pell (2005), demonstrate the acceptance of solar cooking in two very different circumstances.

As mentioned above, solar cooking provides numerous advantages, including health, environmental, and economic benefits. For families in developing countries, the strongest of these may be the economic benefit of buying less fuel for their other cooking methods. Pell found that there was a significant difference (at the 95% confidence level) of the monthly fuel expenditure per household member between families with a solar cooker

and those without one for those households which purchase but do not forage for their fuelwood (2005). Households with solar cookers spent an average of 5.95 Bolivianos per household member per month in the dry season and 6.70 Bolivianos in the wet season, while households without solar cookers spent an average of 9.94 Bolivianos in the dry season and 10.39 Bolivianos in the wet season (Pell, 2005). This demonstrates a savings of 3.99 Bolivianos per month in the dry season and 3.69 Bolivianos in the wet season. These families reduced their fuel expenses by 40.1% and 35.5% in the dry and wet seasons, respectively.

Further analysis of the data reveals that the more the solar cooker is used, the lower the monthly fuel expenditure per household (Pell, 2005). This confirms with statistically significant results the direct link between using solar cookers and reducing fuel expenses.

A study of 70 households in a refugee camp in Kenya also discovered significant fuel savings among those who received solar cooking training (Knudson and Lankford, 1998). By using scales to measure fuelwood use, Knudson and Lankford found a 25-28% savings in fuel use per household per day. Data from the Ethiopian project revealed that frequent solar cooker users consumed an average of 44% less fuelwood and 78% less charcoal than other households (SCI, 1999). Overall, the refugee camp was using about 32% less fuelwood than before the project started (SCI, 1999). With a shortage of fuel in overpopulated refugee camps, these savings show that solar cooking could positively impact the lives of the residents and the surrounding environment.

Although both the seasonal and daily frequency of solar cooker use necessarily varies greatly among and within projects, it is clear that its advantages encourage most of the participants to continue to use their solar cookers years after their initial training. This resounding acceptance of solar energy as an alternative fuel provides numerous benefits, including statistically significant savings in fuel expenditure, a reduction in the inhalation of toxic smoke and of the environmental degradation due to the consumption of fuel wood.

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