



FUEL SAVING TECHNOLOGIES IMPROVE LIVES & MITIGATE CLIMATE CHANGE

In India's Himalayas, winters are cold, wood is scarce. Fuel-saving tools can cut use by half, improving lives and reducing global warming.

UNSUSTAINABLE FUELWOOD USE

In Rampur district, Himachal Pradesh, and in West Sikkim, Mrs. Bimla Dev and Mrs. Shanti Devi Rai both have had to carry over 100 kg of wood on their backs every week of their lives. This is difficult, back-bending work over 7 km of steep terrain and in dangerous conditions. In North India, winters are cold; fuelwood extraction is increasingly an unsustainable pressure that is degrading forests and accelerating climate change. This wood scarcity makes a difficult and time-consuming task harder for the women and girls who are responsible for fuelwood collection. It also results in unsustainable harvest of about 6 trees a year. Fuelwood extraction ultimately degrades one of the world's most biodiverse high-montane forest complexes and accelerates climate warming.

APPROPRIATE TECHNOLOGIES AS A SOLUTION

In response to this need the Partnership for Land Use Science (Forest-PLUS) introduced a constellation of fuel-saving technologies that improve these women's lives and mitigate climate change.

SOLAR HEATING TECHNOLOGIES

Simple and low cost solar heating technologies make a big difference. Heating water for bathing and tea in these cold mountains uses 15% of the fuelwood that households consume. Cooking uses another 25% of household fuelwood consumption. Low-cost solar water heaters constructed with locally available materials provide enough hot water for a household to use all day, and are easily repairable. Hot water from solar water heaters is also used for cooking to save fuelwood and time. Heating the home in the winter constitutes 60% of annual household fuelwood consumption. A panel of glass backed by a dark-heat absorbent material placed on a south-facing wall can raise the temperature in a cold room by 10°C. In the summer, as the sun rises in the sky, the heating effect on the vertical panel is less evident and the room does not overheat.

BIO-BRIQUETTES

Solar heating can only address part of the demand for fuel, of course. For reasons of convenience and culture, cooking and heating over a fire will always be a part of rural Himalayan lives. Recognizing this demand, Forest-PLUS has introduced bio-briquettes. This technology takes weeds, particularly the invasive species which are an increasing problem in India, and turns them into a combustible product using a simple process and mold that is easily manufactured in rural areas. In four days, a family can make all the briquettes needed for the month. This is comparable to the time required to collect wood, and is a safer alternative that keeps women closer to their homes. It also gives them time and a reason to clear weeds unpalatable for their milk cows from pasture, improving pasture and increasing yields of milk.



A WIN-WIN FOR WOMEN AND CLIMATE

For Mrs. Bimla Devi, Mrs. Rai and their neighbors, adoption of these technologies has been a revolution in their daily lives. Used in combination, these technologies could easily translate into a **50%** decrease in fuelwood consumption. This means instead of twelve hours a week spent gathering wood in the forest, they can spend eight, which translates to 204 hours saved per household in a year. With the additional time, they are able to pursue sustainable production of selected value chains such as mushroom cultivation, introduced by Forest-PLUS. In addition to the increased time available to them, their health is improved: these women and girls' vulnerability to accident or assault is much lower, and exposure to smoke released in cooking is reduced substantially.

The climate benefit is also significant- use of these technologies reduces a household's annual consumption of fuelwood by the equivalent to 6 young trees saved a year. It will also give the forest the opportunity to recover, facilitating sustainable use.

As Mrs. Bimla Dev put it, "Before we had these water heaters, I didn't even think about how much work I was doing for heating. That was our life. With the new water heater, I feel better because I am able to spend my time helping to improve my family's income so my children can have a better future; and, I can give my back a rest!"