

## BACKGROUND AND OVERVIEW

Peace is compromised through economic inequality and competition over non-renewable resources. Indeed, poverty and inequality lie in the background of the Maoist insurgency that has shaken Nepal for more than a decade. With hope from a recently achieved political settlement now growing, we propose to nurture peace in Nepal with a community system of solar-powered lights. The extended light hours provided will increase time for studying, reading and income-generating activities. By granting one impoverished part of the global south (the third world) a clean, renewable, and cost effective light source, this project will demonstrate how the sources of conflict can be reduced and opportunities for peace can be enhanced.

Worldwide, some 2 billion people are without electricity (*SEI: Energy Facts*) and are directly or indirectly dependent on fossil fuels for light. Approximately 80% of Nepal's 23 million citizens do not have electric lighting in their homes (*Central Bureau of Statistics, 2002*), which is one of the main reasons for poverty in this region. As Nepal recovers from conflict and moves towards peace, the use of renewable energy can be a major factor in eradicating abject poverty and sustaining peace.

Our group proposes to switch the kerosene lamps in a village in rural Nepal for solar *tuki*\*. Through our actions, we will raise the quality of life for the villagers and reduce dependency on non-renewable resources. This switch will directly address two different points of conflict: economic inequality, and struggle for resources. This project, using community charging centers and no-interest-micro-financing, will be the first of its kind. If successful, it will serve as a model implementation for the rest of the world. The extended light hours that the solar *tuki* generates can be used for reading, studying, and indoor household work. Such extra time will undoubtedly provide increased educational and income-generating opportunities for citizens living in the Kavrepalanchowk region of Nepal. As Thomas Edison's light bulb revolutionized the western lifestyle and quality of life, so may the solar *tuki* revolutionize the global south.

Our project alone will directly help over 1000 individuals and our national and international recommendations could help billions. The *rationale* for our proposal is that economic inequality and competition for limited resources cause conflict. By raising the quality of life for some of the world's poorest citizens by introducing a cost-effective renewable energy source, the solar *tuki* project effectively addresses a primary source of world conflict. In this way, solar *tukis* can contribute to peace in the global south.

To accomplish the objectives of this application our team will pursue three specific aims:

- I. Educate local citizens in the operation and maintenance of the solar *tuki*.
- II. Implement the first ever "solar *tuki*" lighting system with a community charging center in the Kavrepalanchowk district of rural northern Nepal.
- III. Create a documentary of our work to share with the Trinity community and all other interested parties.

## WHAT IS A SOLAR TUKI?

The solar *tuki*\* is a LED (light emitting diode) solar lighting system that consists of two 0.3-Watt lamps with built-in Nickel Metal Hydride rechargeable batteries, which are charged by a 3-Watt solar photovoltaic panel. It is safe, efficient, durable, low maintenance, inexpensive, and runs on renewable (solar) energy. It provides a clean and sustainable alternative to kerosene lamps, markedly raising the quality of life for those who would otherwise be without power. Several problems with kerosene lamps exist. The lamps are not clean burning; they give off CO<sub>2</sub>, contributing to global warming, and they emit particles that harm the eyes and lungs, especially hazardous because emissions are trapped indoors. Kerosene is costly, poses a fire hazard, and is an imported, non-renewable fuel.

The fully charged solar *tuki* provides eight hours of continuous bright light. The lamp provides sufficient light for cooking, studying, or any number of creative activities (*Environmental Camps for Conservation Awareness*). The solar *tuki* has been recognized and endorsed by the World Bank Development



A Solar *Tuki* Set © Winrock International

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\* *Tuki* means lamp in Nepali. The solar *tuki* consists of 2 LED lamps and runs on solar energy.

Marketplace. Moreover, the Nepalese government plans to support the implementation of the solar *tuki*; it is anticipated that 2.4 million households will rely on solar *tuki* by 2015(*Center for Renewable Energy*).

### **HOW DOES THE COMMUNITY CHARGING CENTER WORK?**

While plans exist to implement the *tuki* across Nepal, our group is attempting something unique: the community charging center. Grouping the solar panels together at an advantageous, centrally located, and often-frequented area of the village, perhaps at a school or the Village Development Committee's building, will dramatically reduce cost without inconveniencing individual families. By installing a community charging center instead of a solar panel in every home, there is an overall savings of roughly 20% on hardware and labor costs, as fewer solar panels need to be installed in order to achieve the same effective charging power. On top of this economic benefit, we feel that locating the charging center on or near schools would encourage the villagers to send their children to school, thereby increasing the literacy rate of the village. The citizens will directly benefit because the solar power generated will be used to light the community center building where income-generating activities, or adult literacy classes, could take place during the evening hours. In this way, our implementation of the community charging center would be a pilot project, used to assess the center's ease in operation, as well as evaluate additional social and economic benefits.

### **METHODS**

Now that we have secured letters of approval from Environmental Camps for Conservation Awareness (ECCA) and Youth Initiative (YI) [Attached], for resources and manpower respectively, we are set to fly to Nepal. Further information on the nonprofit groups we will be working with is available online. Once there, we will travel by public transportation to Banepa. We will then walk to the project site (8 miles). We will be able to hire people in Banepa, at minimal cost, to assist in the transportation of the equipment.

*I. Educate local citizens in the operation and maintenance of the solar tuki:* Once in the village, we will meet with the *mukhiya* (leader) and the school teachers to explain the project. With the help of the school administration we will have information sessions for students and parents on operation, maintenance, and benefits of the solar *tuki*. In order to do this most effectively, we will print informational (pictorial) pamphlets detailing use and maintenance. We will demonstrate to the heads of households how micro financing can make the solar *tuki* significantly more affordable than the kerosene lamps currently in use. Our group will front half of the cost of the solar *tuki*, and ECCA will front the other half. The villagers will pay ECCA back (with no interest) in installments smaller than that which they would have paid for kerosene. In this way, the money provides revolving funds for villages across Nepal long after our team is gone.

*II. Implement the first ever "solar tuki" lighting system with a community charging center in the Kavrepalanchowk district of rural northern Nepal:* We will then install the solar array community charging center and distribute the *tukis*. We will subsequently monitor the effectiveness of the *tukis* as to best make recommendations for future projects, and create groups in charge of maintenance and charging of the *tukis*. Finally, we will engage the villagers in discussions about community problems and adult literacy programs.

*III. Film and produce a documentary of our work, to share with the Trinity community and all other interested parties:* In order to further the impact of our project we will film both our travels, and the implementation of the solar *tuki*. We will edit the documentary upon our return, as the team will be living together at Trinity College for the remainder of the summer. The completed documentary will then be screened on the Trinity campus and made available at no cost to all those interested. In this way, we can not only help foster peace in Nepal, but also share the results of our work with our own country and the rest of the world.

### **GLOBAL IMPLICATIONS**

Our project will not only bring extended light hours to over 1000 people in Nepal, but it will pave the way for similar projects all over the world. Our documentary will not only bring back our insight from Nepal to the Trinity campus, but it will also be a fantastic learning tool for all those hoping to implement similar projects in the future. Nepal is safe for the first time in a decade, and is just beginning its journey towards peace. Given about four weeks in summer, and the support provided by this grant, bringing extended light hours to rural Nepal will be more than feasible. We have a bright and motivated team, including a native speaker of Nepali, and the full support of two nonprofit organizations. As such, we feel that we are uniquely poised to make a major stride towards peace in the global south. Peace is possible when economic inequalities and reliance on non-renewable resources are reduced. If awarded this grant, we will help bring light and peace to a small village in Nepal, and upon our return, work to propagate our idea throughout the rest of the world.