

Development and commercialisation of rechargeable wooden LED lamps

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ABSTRACT: The focus of this project was to work with local staff at Kathmandu Alternative Power and Energy Group (KAPEG) to sell a product which would create an on-going financial option for the organisation. This will allow staff to learn the process of changing practices and to provide jobs and skills in the local community. Rechargeable light emitting diodes (LED) were considered a good option due to many electrical blackouts in the local area however an alternative approach was taken due to international competition. Due to various issues, it remains to be seen if the lamps will provide an on-going financial option.

INTRODUCTION: Kathmandu Alternative Power and Energy Group (KAPEG) is a small company found in a village near Dhulikhel, Nepal, which tries to help people in Nepal improve their access to electricity. KAPEG is a staff owned organisation that states that all profits will be invested back into the community.

To sell complex engineering products, it requires the staff from KAPEG to market their products to the local community. Long term success of the company relies on a different form of income instead of the one-off sums of money that they receive for research grants. A volunteer from Engineers Without Borders Australia (EWB) worked with a team at KAPEG for 5 months to begin the process of making a form of recurring income by selling products to the local community. It was found that a rechargeable LED would be a good product to sell in this community.

METHODOLOGY: Research into Nepal found that lack of safe drinking water options, sanitation and access to lighting are major challenges faced in the community. Villages use kerosene lamps for lighting that cause health problems. Load-shedding means that electricity is shared amongst different districts, meaning households do not have electricity for 2 to 16 hours per day.

Solar lighting projects run by non-government organisations (NGOs) have been successful to the point that people do not need help from NGOs any more. LEDs are the lighting choice due to its low power needs and long bulb-life. However, it was found that it was impossible to create lamps that were cheaper than imports from India or China.

An alternative plan was suggested due to competitive international prices. A study found that wooden off-cuts would be a better option than the plastic versions from overseas; and could potentially make more money.

A study was then completed considering different designs for lamps made from wooden off-cuts. The study used simple parts that were easily purchased locally. An LED was included into the lamp to prove that the lamp was actually charging.

The final lamps run for around 20 hours, providing enough light to read by and enough light to light an entire average sized room. The price was set at NRs 2500 (A\$28.64) – a high price compared to plastic lamps available, but comparable to wooden souvenirs.

The initial response was positive, with orders for around 12 desk lamps and 6 salt lamps being sold. From the initial feedback, various changes were made to improve the quality of the lamps. It was around this stage that the volunteer from EWB returned to Australia however continual communication between KAPEG and the volunteer is still on-going.

CONCLUSIONS AND EVALUATION: Work in Nepal has continued since the author left Nepal, however at a reduced speed. This is due to a change in staff at KAPEG and also that KAPEG are currently dedicated to many other projects at the same time.

It remains to be seen whether the LED lamps will make recurring income for the above reasons. In order for the lamps to make money they will have to be made by the local people rather than KAPEG Engineers.

Although the lamps are not used in the remote villages of Nepal, they have helped achieve the aim of this project: to build a product within KAPEG that will provide on-going money for the organisation. Also, it is good that this product uses wooden off-cuts that are disposed of, and has provided jobs and training to villagers near KAPEGs office.

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