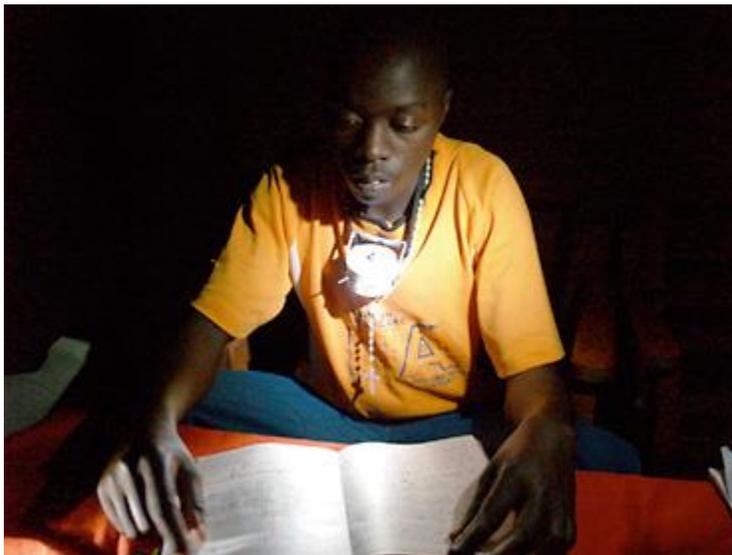


## LIGHTING THE WORLD



Imagine living without any electricity to your home – no lights at night, no sound system, no TV, no computers . . . Instead you huddle over a kerosene lamp in a smoky, dark room trying to read. Your family even goes without many basic necessities to buy the kerosene. Your mother and baby brother are coughing badly from all the smoke in the room. You hope they won't die like many others in the village. . .



This may sound drastic, but in fact this is what life is like for millions of families across the world, including three quarters of all African households.

But slowly this situation is changing for many families, thanks to two young Australian engineers, Stewart Craine and Harry Andrews, who went to Papua New Guinea and then Africa as consultant engineers, saw some massive problems, and did something about it. With the support of others, their vision is becoming a reality. This is their story.

## ***The problems they discovered:***

- 1.6 billion people in 300 million households in developing countries across the world do not have access to electricity.
- A large majority of these people rely on kerosene lamps to provide light at night, even though the light is poor and not very suitable for reading or close work. Those who cannot afford the kerosene cannot do any work or read at night, which means their employment and education opportunities are very limited.
- Running a kerosene lamp costs impoverished people up to around 20% of their very limited income - about \$US50 per year. Between these households, this amounts to about \$US38 billion per year and perpetuates the poverty cycle.
- One kerosene lamp emits over 100 kg of CO<sub>2</sub> each year, as well as many other harmful chemicals.
- Studies have shown that in poorly ventilated dwellings, burning kerosene results in serious levels of indoor pollution. The smoky conditions result in a much higher incidence of serious health problems. The World Bank notes that 780 million people in the developing world, mostly women and children, are exposed to kerosene lantern fumes equivalent to two packs of cigarettes a day. In a recent report the World Bank suggests that this results about 1.6 million deaths worldwide each year.
- Each year 15 000 people die from burns injuries from using kerosene. Far more endure serious burns.

## ***What was their solution?***

People in this situation need help urgently. They do not have time to wait for power stations and power grids to be built! They cannot afford to pay huge electricity bills in any case. So Stewart and Harry developed a very bright, easy-to-use LED lamp powered by a rechargeable battery that is recharged by a robust, potable solar panel. The 'solar light' will last more than 4 years if used just one hour each night. This combination of a solar panel and LED lights is a highly efficient system.



## ***With the switch from kerosene to a 'solar light':***

- Each household can save over \$US200 they would have spent on kerosene over the life of the 'solar light' (4 years+). The cost of the 'solar light' is equivalent to what they would spend on kerosene over a 3-6 month period. This investment in their own future, which can be funded in advance with a small loan, enables people to maintain their dignity and independence by paying for their own solar light, and can help break the poverty cycle.
- Burn and pollution health hazards are eliminated.
- People's homes are no longer in danger of burning down as a result of fires caused by kerosene lamps that have been accidentally knocked over.
- The risk of malaria may be reduced because mosquitoes are attracted to kerosene lamps but not to LED lights, which are cold.
- Students can study an extra 1 hour or so per day, and more income can be earned at night by different family members.
- CO<sub>2</sub> emissions are reduced by 400 kg over the life of the solar light.
- Household well-being is transformed.

Their solution has already won awards from the World Bank, which started its 'Lighting Africa' campaign in 2008 when it found that three quarters of African households had no access to electricity.

## ***Barefoot Power***

In order to carry out their vision, in 2005 Stewart and Harry established a power company for the poor, which they called **Barefoot Power**. Their solar lamps were featured on the ABC program 'The New Inventors' on 14 July 2010.

By the end of 2012, Barefoot Power will have provided solar lights to one million households in up to about 20 countries in Africa, Central America and the Asia-Pacific region - an amazing achievement!

But their vision does not stop there. Stewart and Harry plan to enable households within a village to connect together in a mini-grid system and eventually connect with other villages. In Australia, we generally build power stations then a power grid to deliver the electricity to households. Once these are established, households can then connect to the grid and then turn on their lights. Stewart and Harry say that their model is the reverse of this, because the lamp goes in first, not last. It therefore might be called a 'reverse electrification system'.

To achieve their vision, Stewart and Harry spend much of their time and resources in assisting rural communities and leaders in developing countries to plan and establish sustainable renewable energy projects, and in establishing partnerships. They work with a number of microfinance companies, which provide small loans to households to enable them to invest in solar lamps. (This money is repaid from savings made by no longer purchasing kerosene.)

For information about Barefoot Power, and its ground-breaking, award-winning work in producing and distributing affordable renewable energy technologies for the disadvantaged, explore its website at: [www.barefootpower.com](http://www.barefootpower.com).