Through his imagination and drive one man has brought renewable light into the lives of 100,000 people round the world. But Dave Irvine-Halliday won't stop till he's helped 1.6 billion.

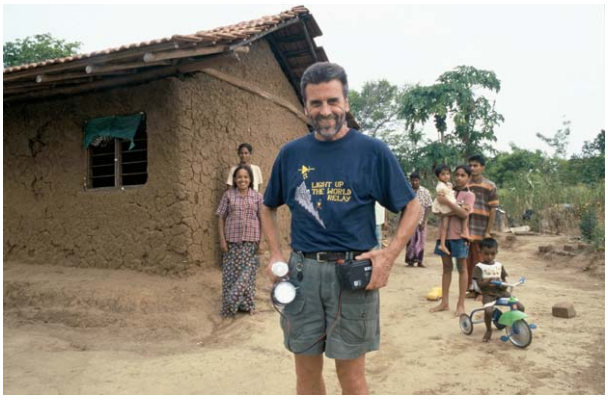
Francesco Raeli reports.

LIGHTING THE WORLD'S DARK PLACES

When night falls on Tembisa, only candles and kerosene lanterns light the shacks made from metal, wood and plastic sheeting in this township on the outskirts of Johannesburg, South Africa. Here electricity lights only a few streetlamps, and power cuts are frequent. In the darkness, the shack belonging to Michael and Poulina Mohlala shines like a beacon: each evening two powerful lamps shed light that attracts many of their neighbours.

"It's a small miracle," says Michael. "Even when the whole of Tembisa is plunged into darkness, my lights are working." Fitted with white-light-emitting diodes (WLEDs), the lamps are run from a battery that is recharged daily by a solar panel, and requires no conventional power supply.

Tens of thousands of people living in disadvantaged areas around the world now have reliable household lighting thanks to Scots-Canadian photonics engineer Dave Irvine-Halliday. For ten years he has been supplying low-cost lighting in developing countries through his foundation, Light Up The World, an achievement that has earned him a Rolex Awards for Enterprise.



It began on a trek through Nepal. Dave was passing a roadside schoolhouse with a sign inviting passing foreigners to stop and teach the children. Peering round the unlit classroom he thought: "Gosh, it's dark in here!" Then, inexplicably: "I wonder if I can help?" That simple question changed his life, and is now transforming the lives of thousands – bringing light, reducing poverty and curbing greenhouse gases.

Dave says his solid-state lighting sets are a cheap, reliable solution to the lighting needs of thousands of poor, isolated communities: "Diodes give hundreds of times more brightness than a kerosene lamp while using less than one 100th of the energy of an ordinary incandescent light-bulb," he explains. "They use batteries that can be recharged by sun, wind or hydro power – in other words, renewable, non-polluting forms of energy."

For several months each year he leaves his teaching job at the University of Calgary in Canada to shed light in remote villages. "Bringing light to the developing world is not easy. Each region has its own unique challenges - isolation, declining infrastructure or scarce resources." His

determination to illuminate the lives of poor people round the world has made him a laureate in the Rolex Awards for Enterprise.

"The financial support from the Rolex Award made it possible for us to spread Solid State Lighting in Nepal, India and Sri Lanka, and gave us international credibility in the eyes of those who had never heard of us before," he explains. Thanks to Light Up the World (LutW), some 20,000 houses sheltering 100,000 people in 43 countries across Asia, South America and Africa now have electric lighting.

In Andra Pradesh, India, for example, Dave's group has been working with non-governmental organisations to light a village of 110 houses inhabited by 700 Dalits – a particularly disadvantaged group once known as "untouchables". In the area around Mazar-e-Sharif in northern Afghanistan, solid-state lighting installed by LUTW has improved living conditions for about 100 craftswomen who embroider cloth at home. "They're not straining their eyes working on very small stitches in dim conditions any more," Irvine-Halliday says. And in the Chirripo region in the heart of Costa Rica, the group has installed lamps in 135 homes, giving 675 farm families safe, reliable lighting for the very first time.

"I was rapidly confronted by the magnitude of the challenge that we faced," Dave says. "Almost a third of humanity – 1.6 billion people – has no access to safe, healthy and affordable lighting, so it was essential to find a way to spread solid state lighting on a much larger scale."

To do so he had to overcome the main obstacle to mass distribution: production and import costs. A lighting system typically consists of a 5-watt solar panel, a 12 volt-7 amp hour maintenance-free lead acid battery and two WLED lamps. It costs almost US$100 if manufactured in a developed country – far too much for people earnbing only $1-2 a day. The Rolex Laureate found that he could lower the price by decentralising production of the lamps. The diodes are made in the US and Japan, but the lighting sets are assembled far more cheaply in developing countries, reducing costs to users.

In Kathmandu, Dave and his wife, Jenny, set up a company called Pico Power Nepal (PPN) to produce lighting systems locally. The company was handed over to a local entrepreneur in 2000, and has made almost 6,000 sets. Profits have been reinvested in making new products appropriate to the needs of Nepalese people, different sizes of lamps, a system for recharging batteries using solar power, and solar systems that track the sun.

LUTW also went to Sri Lanka to develop lamps locally. After the Boxing Day tsunami hit the island in December 2004 LUTW distributed 1,000 lighting systems in the south and east of the country to light up the shelters occupied by refugees who had been forced to abandon their homes – a world-first application of the technology. To meet the needs of the local people, a small company in the capital, Colombo, Crystal Electronics, took on the task of manufacturing the lamps using designs supplied by Irvine-Halliday. By the end of 2005 more than 2,000 SSL systems had been distributed to 10,000 refugees, and production continues to this day. "Providing a reliable source of lighting for communities who find themselves in such a terrible situation does a lot to improve their physical, psychological and spiritual condition," says Irvine-Halliday.

Africa is a priority for lighting. The Foundation is active in Ghana and Central Africa – delivering light to 30,000 people – but Dave says there is still vast need for affordable lighting systems across the continent. South Africa has become Dave's launch-pad to meet this need. "I truly

believe that South Africa is the key: when it embraces solid-state lighting in a big way, the rest of the continent will follow."

Since 2005, he has worked with a number of South-African companies to introduce SSL, and the first lighting sets will be produced by the end of 2007. "In the shops you read on certain products: 'Proudly made in South Africa'," Dave says. "I'd love to put that on our lighting systems."

South Africa is also pioneering the distribution of SSL systems, via microcredit. By allowing people to take out loans for amounts that are to date too small to interest traditional banks, microcredit makes it possible for them to undertake small-scale economic initiatives – such as buying a lighting system. Poor people spend an average of $US77 a year on kerosene lighting, Dave says: "If the poor can use their kerosene funds to buy SSL systems, they can pay off all their lighting in around one year. Once paid, the lighting is virtually free in the following years, apart from the cost of replacing batteries, which amounts to about $10 every few years. The lamps and solar panels last for decades.

Introducing simple lighting sets could thus save billions of dollars for hundreds of millions of poor families, freeing up what they normally spend on lighting for food, education and other essentials. At the same time they would be helping to reduce global CO_2 emissions and climate change."

Eight households in Tembisa, Johannesburg, bought lighting sets on microcredit, and two have already paid off their loans in full. Dave believes that spreading that linking lighting systems with microcredit could make cheap lighting universal.

"Till now we've collected donations to install SSL systems free of charge. But this will barely scratch the surface of lighting needs in the long term, since we can never collect enough money to give lighting to everyone who needs it. So we have to provide people the means of financing their lighting themselves."

In Tembisa, Michael and Poulina Mohlala hope that with the money saved thanks to their SSL system, they can to leave the shantytown, where they have lived for 10 years, and find better housing. "These lights have brought joy, happiness and hope to my house," says Michael Mohlala.

For further information:
www.lutw.org

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