

# How solar power shines a light into the heart of darkest Africa

The Times Christmas Charity Appeal begins today with **Matthew Syed** visiting Tanzania to discover how solar power is transforming the lives of some of Africa's poorest communities

It is only when I walk into someone that I realise we are not alone. It's dark. Totally, impenetrably, fearfully dark. "Who's that?" I ask. I can hear a young boy murmuring. "It is a group of schoolchildren," says our guide, whose eyes are better adjusted to this infernal darkness. "They are queuing up for their evening meal."

As we make our way along the line a lantern looms into view, like a firefly in the distance. An adult is kneeling over two vast pans, ladling out small portions of rice. His face is ghostly in the shadows. The children wait patiently in the long line, but we can no longer see their faces in the gloom.

Out here in the vast hinterland of rural Tanzania it is as if Edison never existed. Electricity is the invention of a distant dream. These villages are not on the grid and thus the gift of light disappears with the setting of the sun. Work ceases. Education ceases. Everything ceases.

But what is this? As we make our way past the primary school and into the hub of the village, the occasional wisp of light punctuates the darkness — small, flickering lights emanating from the mud and stone hut dwellings. We approach a window of one of the huts and a scene reveals itself: a family — two adults and six small children — are gathered around a small kerosene lamp.

These are the wealthy of Idodi. Kerosene lamps are not cheap. The oil costs about 300 shillings (14p) a day, about 20 per cent of disposable income, but the outlay is worth it. This family can see during the long evenings. They can mix the pig feed more efficiently. The children can

reading school books into the night. But even as the young draw closer to the lamp, they become deeply enmeshed in a hidden tragedy that is unfolding across Africa every day. A tragedy that is claiming more lives each year than unclean water. It is, in fact, the greatest killer of all.

Look a little closer and you can see it. As the lamp burns, small but visible plumes of black smoke disperse into the room. The family members are smiling as they sit and converse, grateful for the gift of light. But they are also inhaling — their young children are inhaling — air laced with poison.

Andy Hart, a Cambridge-educated doctor working in Tanzania, explains the biochemistry of this tragedy. "There are two defence mechanisms that keep your lungs healthy," he says. "One is cellular immunity. But the lungs have another defence mechanism, which allows them to remove infection and particles by coughing them up. The toxic smoke from kerosene lamps knocks out this protection.

"This is particularly dangerous for children under 3 months old because their lungs are not fully developed. The mother will be cooking over an open fire every day and she will be burning a kerosene lamp. The baby will be inhaling just as many fumes as her because she is tied to her back. Think of how we are told not to smoke in the house when there is a baby. Now imagine a tiny house chock-full of kerosene fumes."

Respiratory diseases caused by toxic smoke kill 1.5 million women and children every year. Many more suffer with related illnesses. The reason is simple: with less than 2 per cent of the



Idodo Secondary School, where 12 students died in a kerosene lamp fire

cess to electricity, numerous millions breathe in poisonous fumes every day.

But the uplifting message from this year's *The Times* Christmas Charity Appeal is that there is an alternative — so simple, so cheap, so staggeringly effective that you want to jump up and down and proclaim its existence. You can even see it in action if you walk to the other side of the village. Here is a hut belonging to Imbogu, a nurse who works at the local dispensary, and she is beaming as she answers her door.

Inside there is a surprise. A light bulb — attached to the ceiling and shining bright. The light is clean. It is pure. It is bright enough to illuminate the entire room. "I can read, work or talk with friends as long as I like with the light on," Imbogu says. "If I want to turn it off I can flick this switch."

you discover a small, rectangular piece of glass with lines running up and down. "You just place this in the sun during the day," Imbogu explains, "and by sun-fall you have enough power in the batteries to run the bulb for the next few evenings. At first I did not believe it, but now I use it every day. It has transformed my life."

This is solar power, a solution to Africa's energy problems that is both simple and elegant. Tanzania, along with much of sub-Saharan Africa, benefits from some of the highest levels of sun exposure in the world, making solar ideal as a main source of electricity. It is also green and durable. The solar panel lighting up the home of Imbogu is guaranteed for 25 years, but will probably last at least twice that.

It is the economics, as much as the

single-use batteries costs a small fortune for villagers living on the edge of subsistence. The power of the sun, on the other hand, is free. "The only cost of solar is the panel and kit," Imbogu says. "And it pays for itself within a matter of weeks."

Over in another village, the scale of the potential savings hit home. We are in Homboza, 50km (30 miles) from Dar es Salaam. We meet Amina, a beautiful 43-year-old mother of eight, who is among the first in the village to go solar. "I am saving 600 shillings a day," she says. "All my savings go into a fund that is used to educate my children. Without the panel they would not be able to go to school."

SolarAid is the evangelical force behind solar power in Africa. It identifies entrepreneurs and helps them to set up businesses so that they can build and sell solar lights and chargers. The solar equipment is built from local materials and imported solar glass and can fulfil the vast majority of the average household's energy needs.

SolarAid also provides heavily subsidised solar installations for larger facilities, enabling schools to teach in the evenings, community centres to offer vocational training and health clinics to power medical equipment such as vaccine fridges. "We are applying to get a solar installation at our dispensary," Imbogu says. "Now, if we have to deliver a baby at night, the nurse has to deliver the baby with one hand while holding a lamp in the other."

The UK-based charity is only three years old but has already reached 150,000 people who benefit from its work. With the help of *Times* readers it hopes to reach more than 400,000 of Africa's poorest within a year and give them power for their schools, community centres and clinics. By 2012 it hopes that figure will be 1.5 million.

As we leave Idodi, six villagers have come to the truck to obtain their own solar panels. "I am really excited," says