

# Sustainable energy for developing countries

**Winners of the annual International Ashden Awards come from parts of the world where efforts are being made to find new ways to use energy sustainably. And they are ensuring that, as we push towards net zero, we leave no-one behind. It's crucial that those who need it most have access to the clean electricity that will save lives, bring joy and alleviate poverty.**

## **SMV Green Solutions – winner of the International Ashden Award for Sustainable Mobility**

SMV Green's vision is to provide affordable, clean and safe mobility for both drivers and users of rickshaws in India, eliminating the drudgery of driving a cycle rickshaw by facilitating a switch to electric propulsion. It does this by providing a 'one-stop-shop' for drivers that covers financing, vehicle supply, licensing/permits, money management training, road safety training, and post-sales service. More than 1,100 e-rickshaws have been sold so far.

Finance is provided at around 7% interest, and drivers pay a 10% deposit and the balance over 24–30 months. Training is given to help prospective drivers save for the 10% deposit, but for those where this is impossible, funds from the UK Department for International Development are used to help.

SMV Green offers two battery options: lead-acid or lithium which, while more expensive, is able to deliver a longer range. For those that choose lithium, the lifecycle cost is lower, and they can also access the battery swap service, where for a modest charge they can swap their depleted battery for a freshly charged one in just five minutes.

SMV Green is supporting the poorest and most marginalised people to own and operate e-rickshaws, in particular women who would otherwise have had little opportunity for satisfying work and a fair wage. Drivers can afford to charge passengers less than the typical auto-rickshaw fee while still making a good income. SMV Green uses an all-female team to recruit women owner-drivers, who often find their lives are transformed by owning an e-rickshaw.

Compared to conventional auto-rickshaws, both drivers and passengers benefit from the reduced noise and elimination of local pollution, and carbon dioxide



Electric rickshaw from SMV Green

All photos: Ashden Awards

emissions will also be reduced as the Indian electricity grid is decarbonised in future.

## **EQuota Energy – winner of the International Ashden Award for Sustainable Cities and Buildings**

China has seen an unprecedented shift to urban living over the last few decades, accompanied by a boom in construction. But, as in other countries, there is often an energy 'performance gap' in these buildings, resulting in significantly higher energy use than designed. Addressing this requires an understanding of where the problems lie but, while a large quantity of data is available from smart meters and building management systems, it is not often harvested and analysed.

EQuota Energy works with

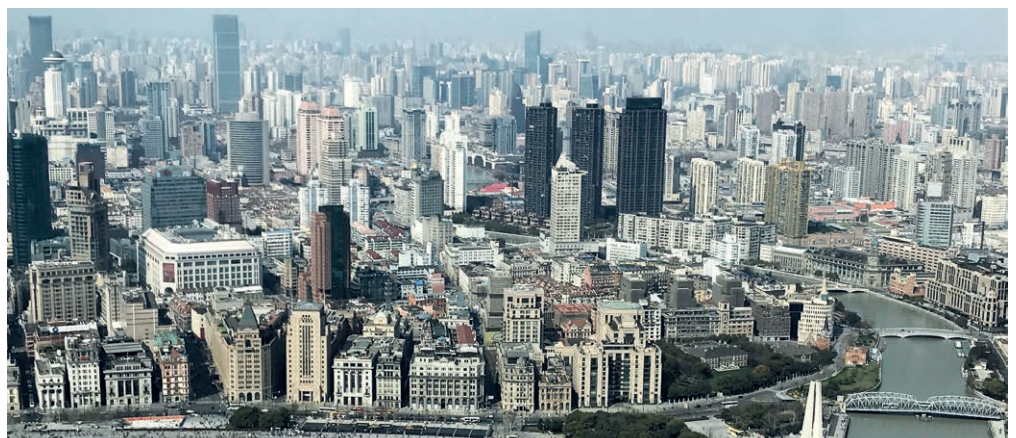
commercial buildings such as hotels, offices, shopping malls and factories to gather such data and analyse it to enable savings to be made.

The harvested data is transferred securely to EQuota's cloud computing facility, where intelligent software is used to process it. The first stage is 'disaggregation', where data from smart meters is broken down to identify individual pieces of machinery switching on and off, which is achieved by making use of data from other sources in the building and by the software learning from experience in other buildings.

The second stage is analysing the disaggregated data to identify where energy is being wasted, where the building's environment is not ideal, and where maintenance is required. The results of the analysis are presented to the client through a dashboard that allows them to explore the information and see where action is required.

EQuota is now managing over 3mn m<sup>2</sup> of floorspace, delivering annual energy savings worth over \$7mn to its clients and saving over 110,000 tonnes of carbon dioxide each year. Clients have also reported improved indoor environments, with better humidity control and lower pollution levels.

Shanghai, China – one city using EQuota technology to reduce energy bills



# Who says your energy expert is an expert?



**RPEC is the Register of Professional Energy Consultants, managed by the Energy Institute.**

RPEC consultants have a proven track record of providing effective energy assessment and reliable advice, translating into real savings and opportunities for businesses large and small. Everyone on RPEC is also approved to act as an ESOS Lead Assessor.

Because the emphasis is on high standards and integrity, there is a Code of Conduct, a customer guarantee, and annual checks. Our online database can be searched by location, experience in your sector and areas of expertise, so you can find the best fit for your organisation.

**Minimising energy costs is important, right?**

But how do you know you're getting the best advice? That you'll save money, not waste your time? If only you could get honest expert advice, someone to show you what to do, perhaps even manage it for you.



**Search the RPEC database at [www.energy-inst.org/rpec](http://www.energy-inst.org/rpec)**

## EnergyAware



### The EI's online staff-awareness tool

EnergyAware is an innovative 30-minute online tool designed to raise staff awareness of energy efficiency in the workplace.

Certificated by the Energy Institute, EnergyAware will help your organisation demonstrate its commitment to efficiency while reducing both its energy costs and carbon footprint.



**[energy-inst.org/energy-aware](http://energy-inst.org/energy-aware)**





**Resham Sutra – winner of the International Ashden Award for Powering Business**

Silk production is the largest generator of rural employment in India, after agriculture. Cutting imports through more local production of silk could create millions of rural jobs, but there are major barriers to this. Techniques used for silk reeling and weaving are inefficient and arduous, meaning workers in the industry, mostly rural women, are limited in what they can produce.

Now, Resham Sutra designs, manufactures and commercialises machines for silk yarn and fabric production that are up to ten times as energy efficient as pre-existing options – and most are solar-powered. These machines help operators improve productivity, income and health by replacing the harmful process of thigh-reeling as well as the inefficient and unreliable motorised machines that are useless during frequent power outages.

The company marshals an ecosystem of finance providers, NGOs and government partners to ensure the machines are affordable and supply chains run smoothly. The machines are mostly distributed through partners, who bring part or total funding, or help facilitate other financing. Over 70% sales to date have been eligible for a government subsidy, which Resham Sutra often helps to facilitate.

One key to Resham Sutra's success has been recognising that technology is only part of the solution to boosting rural livelihoods. They have also built in holistic support for their customers, helping them access raw materials and find markets for their products.

In many cases, Resham Sutra's technology is more than doubling productivity and income for those at the base of the textile supply chain. Their machines mean women are able to re-invest in their business, often for the first time. They are able to purchase cocoons wholesale, rather than in small amounts, and can sell the yarn to weavers directly. Over 9,000 people are already benefitting from improved income and health as a result of their machines.

New silk weaving machines are changing lives in India

**REEEP – winner of the International Ashden Award for Financial or Business Model Innovation**

Nearly 70% of Zambians, 11.8mn people, live without modern energy access and grid extension to rural areas is technically and economically unfeasible. Decentralised clean energy solutions can offer a reliable, clean and affordable alternative and people are willing to pay for them.

The \$22mn Beyond the Grid Fund for Zambia (BGFZ) provides incentives to de-risk companies'

REEEP is installing solar home energy systems like this one in Zambia



entry into, and expansion within, Zambia. It is implemented by the Austrian NGO REEEP, with funding from the Swedish International Development Agency. The aim of BGFZ is to bring energy access to 1mn Zambians by 2021 and, in the long term, to kick-start a sustainable market for clean energy services in the country.

The fund has the principal of 'reaching the last mile' at its very core, closing the viability gap for reaching geographically or economically challenging parts of the country and incentivising companies to serve areas that would otherwise not represent viable markets.

The fund requires companies to demonstrate that they are able to provide a set level of energy service for their customers, for the long term. Their technology solutions must come with stringent quality and warranty guarantees and long-term service contracts. Four companies are currently contracted under BGFZ, offering solar home systems, solar micro-grids and clean cooking solutions.

The customers of the companies operating under BGFZ have access to energy services such as lighting, mobile phone charging and better access to information and communication via radios and TVs. Micro-grid connections are supporting a range of small businesses from barbershops to small cinemas, and around 1,200 local jobs have been created in operations, sales and marketing.

**Sistema.bio – winner of the International Ashden Award for Clean Cooking**

Sistema sells a prefabricated modular biogas package that includes a suite of biogas appliances and connections. Easy to install and use, the patented biogas digesters receive organic waste and transform it into renewable biogas and a powerful organic fertiliser.

Sistema enables farmers to utilise animal waste in a way that creates gas for cooking and heating water, as well as providing a source of organic bio fertiliser. With a biogas digester, farmers and their families that previously had to live with the smell and flies associated with having piles of manure on their farms, can now live in a healthier, more sustainable environment. Biogas burns with a clean flame, only producing carbon dioxide and water residue, so families are able to cook in a smoke-free environment.

Customers pay for their digester monthly, at a cost roughly the same as what they were spending on