

PUTTING ENERGY AT THE HEART OF DEVELOPMENT

ANNUAL REVIEW 2018



OUR VISION AND MISSION

Our vision is a better quality of life for everyone through access to clean energy.

Universal access to energy is one of the international community's Sustainable Development Goals. That may sound like a remote, high level aspiration, but at Energy 4 Impact, we see energy access as personal and practical.

For us, it's about the difference energy makes to people's lives every day. It's about smoke-free homes, lit up in the evening. It's about more productive farms, businesses, schools and health clinics, able to operate the equipment they need and to function after dark. Africa needs better access to energy to solve its challenges in health, education, water supply, food security, environmental sustainability, gender equity, livelihoods and poverty reduction. So, universal access to energy is not an end in itself – it's about the *impact* it can have. That's why we call ourselves Energy 4 Impact.

In this report, we discuss how our activities are addressing key development challenges.

We believe that efficient markets, served by successful private enterprises, can contribute significantly to development challenges, and result in longer-lasting and better value solutions than more traditional aid-led approaches.

That's why our mission is to help local businesses and markets deliver, or capitalise on, expanded access to energy in Africa, improving the quality of life for millions of people.

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THE ENERGY ACCESS CHALLENGE

There are more than a billion people around the world who don't have electricity and 2.8 billion people without access to clean energy for cooking.



1.1BILLION
without electricity



2.8 BILLION
relying on biomass



3.8 MILLION
premature deaths

- Poor energy access is bad for:
- Households, which need lights after dark, a smoke-free environment, and power for mobile phones and appliances
 - Health centres, which need energy to store medicines and power life-saving equipment
 - Schools, which need energy for lights, laptops and learning resources
 - Farmers, who need power to pump water, process crops and access information
 - Businesses and entrepreneurs, which need energy to expand and improve productivity
 - Women and girls, whose household chores are harder and less healthy without modern energy, and for whom energy-related livelihood opportunities can offer a path to economic empowerment.

The United Nation's Sustainable Development Goal number seven (SDG 7) aims to change this. It calls for everyone to have access to affordable, reliable, sustainable and modern energy by 2030. On pages six and seven, we discuss our impact in relation to this SDG target.

"We are firm in our belief that business can offer the best long-term solution to the energy access problem. We develop the capacity of enterprises to deliver that access. Our support to energy businesses, investors, policymakers and consumers builds both the demand and supply sides of the market."

Ben Good, CEO, Energy 4 Impact

OUR APPROACH TO TACKLING THE ENERGY ACCESS CHALLENGE

What we do

Supporting businesses is core to nearly everything we do, as it is key to delivering lasting change. Here's how we work:

We advise businesses of all sizes	We develop and deliver innovative financing solutions	We support innovation and advocate for change
We offer:	We offer:	We offer:
Business advisory services to small and medium-sized energy enterprises	Support with crowdfunding	Prizes for innovative clean energy solutions
Mentoring and capital access support to micro-enterprises	Advice on capital raising and transactions, including investment readiness and introductions to investors	Incubation support for climate technology start-ups
Advice to project developers, especially those working with mini-grids , during both development and operations phases	Credit enhancement such as partial risk guarantees to support lending	Research and field testing for companies pioneering new technologies and innovative business models
	Help with securing energy access grants	Policy work – we advocate for policy interventions which support energy access markets, and gender and social equity.

Financing energy access

To achieve universal access to sustainable, clean energy there needs to be significant capital investment – by governments, development finance institutions and the private sector. Current investment levels are not enough.

Despite a substantial increase in capital invested over the last five years, it is very challenging for early stage, pioneering companies in the energy access market to get the right types, amount, and mix of capital to grow their businesses. Most of the capital invested has been debt. It was concentrated in a few companies with more established business models, mainly on solar home systems and pay as you go in East Africa, and was in hard currencies.

Research conducted by Wood Mackenzie and Energy 4 Impact found that of the \$1.6 billion of capital deployed in energy access firms to date, 31% is accounted for by just 10 transactions, and less than 15% by non-US dollar deals.

Grants can help young companies develop, validate, and establish new business models. But they also need early stage capital, from a range of private, philanthropic and public sources, to help finance their development until they are ready to attract follow-on commercial investment – equity and debt – to achieve scale.

The growing role of crowdfunding in financing energy access

Crowdfunding is becoming increasingly popular with energy access companies that seek to raise funds to grow their businesses, in many cases with our support.

Our research shows that the amount of money raised through crowdfunding for energy access projects grew from \$3.4 million in 2015 to \$13.7 million in 2017. This still represents only a fraction of total off-grid market capital, but crowdfunding, undoubtedly, has an important and growing role to play in closing the energy access finance gap.

Crowdfunding has caught the eye of the development community as a serious vehicle for energy access finance. The UK's Department for International Development (DFID) funds our Crowd Power programme, which provides direct financial support to renewable energy campaigns. DFID is also matching money raised through Energise Africa – a crowdfunding programme supported by Energy 4 Impact, which offers an incentive for UK private individuals to finance solar energy companies in Africa.

OUR IMPACT

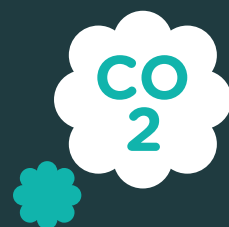
ENERGY 4 IMPACT HAS HELPED 4,800 BUSINESSES TO:



provide 17 million
people with access to
energy



create 10,000 jobs



save 13 million tonnes
of CO₂



raise \$136 million
through grants, equity
and debt finance

"We could not have been more impressed with the level of service and professionalism we received from the team at Energy 4 Impact, through the Green Mini Grid Helpdesk. Their assistance with the design and costing of an electrical distribution network, mini-grid financial modelling and productive use business models was essential for start-up companies like ours in this emerging market. We look forward to further collaboration in the future."

Craig Morgan, CEO, Vero Grid Ltd.

We work with a wide range of organisations in sub-Saharan Africa – from big businesses to local entrepreneurs. Through practical support, partnerships and advisory services, we bring access to clean, affordable and sustainable energy to schools, hospitals, local businesses and family homes.

In the last year...

We worked with **105 mini-grid developers across sub-Saharan Africa**. We supported them with everything from demand assessment and productive use of energy, to technical design and site selection, to regulatory advice and capital raising.

We supported **30 pico-hydro systems developers** in Rwanda to access finance for construction and technical assistance.

Throughout East and West Africa, we supported **800 businesses** to use electricity and

electrically powered equipment to increase productivity. These include welding, carpentry, food services, shops, agro-processing, refrigeration, clean water kiosks, water pumping, tailors and hair salons. Of these businesses, **331 are owned by women**. A further **122 are run by women's groups**, with 6,442 members.

In Kenya, Tanzania and Senegal, we supported **436 women entrepreneurs** and **108 women's groups** (with around 6,000 members) to capitalise on the livelihood opportunities offered by growing energy access

markets. They received technical assistance, mentoring, advice on advanced cookstove technologies, and access to capital. Their work provided **735,000 people** with access to energy.

In Uganda, we helped **16 stove makers** get advice on manufacturing, design, marketing, business acumen and ways of offering credit that made their products affordable to schools. As a result, **787 schools** have been able to install clean cookstoves. This has **saved them 40% on fuel costs and benefited 530,000 students and staff**.

With our support, **20 solar photovoltaic (PV) systems** were installed in schools and health clinics in Turkana and Kilifi, the poorest counties of Kenya, benefitting **18,000 students and 760 patients every day**.

In the refugee camps of Burkina Faso and Kenya, we **supported six projects**, including an information, communications and technology hub, solar-powered clinics and hospitals, irrigation facilities, and energy for businesses and households. **Thousands of displaced people are benefitting from this access to energy**.

We shared our expertise through **16 research and knowledge reports**, covering everything from energy in a refugee setting to crowdfunding, productive use of energy, and barriers to scaling up green mini-grids in sub-Saharan Africa.

WHERE WE WORK



- Country offices
- Recent project experience

ENERGY AND SUSTAINABLE DEVELOPMENT: LOOKING AHEAD

Besides energy access, there is a much wider set of concerns which will dominate the development agenda over the next decade. For example:

- **Feeding a growing population in a world where agricultural productivity is undermined by climate change and war.** According to the Food and Agriculture Organization of the United Nations, 224 million people in Africa are suffering from malnutrition. The continent's population is expected to exceed 2.5 billion by 2050.
 - **Rural-urban migration.** Sub-Saharan Africa is the world's fastest urbanising region. Its 472 million urban population is set to double over the next 25 years. In East Africa, the number of people living in big cities will increase sevenfold in the next 12 years. Without adequate infrastructure, people will be exposed to high levels of risk and inequality.
 - **Climate change resilience.** The Intergovernmental Panel on Climate Change recently reported that global warming will result in large-scale drought, famine, heat stress, species die-off and loss of entire ecosystems and habitable land, throwing more than 100 million into extreme poverty.
 - **A young population.** Africa is projected to have over 840 million young people by 2050, the youngest population on earth. The African Development Bank has called this a 'ticking time bomb'. The continent needs to harness its young population to stimulate economic growth and drive development.
 - **Poor education standards and underachievement.** According to UNESCO, 88% of children in sub-Saharan Africa will enter adulthood without basic proficiency in reading and numeracy. Social and economic progress will be stifled without a literate and numerate population.
 - **Gender equality.** In sub-Saharan Africa, just 14% of women on average are in full-time formal employment, compared with 33% of men, according to the Overseas Development Institute. As UN Women states, reducing the gap between women's and men's participation in the labour force will result in faster economic growth.
 - **Equitable access to healthcare.** Life expectancy in Africa is 15 years lower than the global average because the continent has to deal with significant health risks without the infrastructure to fight them.
 - **Displaced people.** In addition to the 6 million refugees in sub-Saharan Africa, there are also over 14 million internally displaced people (refugees in their own country).
- As a list of problems, the above is both daunting, and a clear call for our support, not least because energy access can contribute to solving all of them. But, because the list is so long, we need to focus our efforts.
- ## Our focus
- In this annual review, we discuss a small number of very large development challenges and show how our programmes help alleviate them. These are:
- **Climate change resilience.** Climate change will have increasingly severe consequences for people's daily lives. How, and with what technologies, can better energy access mitigate some of those problems?
 - **Livelihoods.** Ending poverty and achieving equitable economic growth means creating income opportunities for all. How can better energy access be combined with other measures to enhance livelihood opportunities?
 - **Women's empowerment.** Giving women the opportunity to participate in, and contribute to, economic growth results in better outcomes for everyone. How can developing off-grid energy markets enhance gender equity?
 - **People living in poverty.** Even as economies develop, some groups in society can get left behind, because of who they are, or where they live, or how little they possess. What should be energy access' contribution to achieving social equity?

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- **People living in poverty.** Even as economies develop, some groups in society can get left behind, because of who they are, or where they live, or how little they possess. What should be energy access' contribution to achieving social equity?

CLIMATE RESILIENCE: DELIVERING FOOD SECURITY

AGRICULTURE IS AFRICA'S LARGEST ECONOMIC SECTOR...



Small-scale farmers account for approximately 80% of farmland in sub-Saharan Africa.

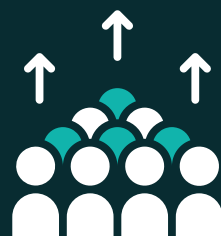


Agriculture employs 65% of Africa's labour force and contributes to a third of the continent's gross domestic product (GDP).

...AND YET:



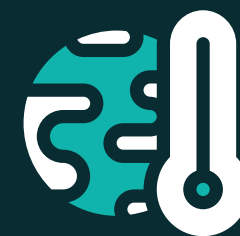
One in four over 15-year-olds in sub-Saharan Africa is chronically undernourished.



Africa's food system will be further strained by a population that is projected to double by 2050.



96% of arable land in sub-Saharan Africa is not irrigated, which makes it vulnerable to droughts and less productive.



According to the World Bank, 1.5 to 2°C global warming could lead to a 40 to 80% reduction in the area of land suitable for growing maize, millet and sorghum, the main staple foods in Africa.

THE ISSUE

Africa's agricultural sector is vast. But it is marked by low productivity, the lowest globally. It fails to feed its population properly, and is threatened by climate change.

Strategies that allow businesses in Africa to transform and modernise agricultural practices and intensify production sustainably, without harming the environment, are needed. They can have a huge impact on livelihoods, resilience to climate change, and food security.

Promoting climate-smart agriculture through practices which can improve yields, enhance resilience to climate shocks and reduce carbon emissions must be a priority for African governments.

Renewable energy technologies and systems can:

- power drip irrigation systems to increase yields and reduce vulnerability to droughts
- provide cold storage for perishable food products, reducing losses and increasing income
- power equipment for drying and milling and other crop processing
- increase the amount of high value processed products that can be produced in rural areas.

OUR SOLUTIONS

We support businesses that adopt, develop and market sustainable, cost-effective solutions for agricultural production, as well as post-harvest and storage processing. This includes solar pumping, cooling, chilling and drying.

We advise agri-businesses on everything from how to enter new energy markets to getting funding for equipment. We are also driving innovation and building new markets for solar refrigeration by conducting research and competitions.



MAKING SOLAR IRRIGATION SYSTEMS MORE AVAILABLE AND AFFORDABLE

In Rwanda, small-scale solar irrigation has the potential to improve food security and increase the income of people living in rural communities. It helps farmers to become more resilient to climate change because they can better deal with increased periods of drought.

However, high upfront costs of solar irrigation systems, as well as marketing and distribution costs, combined with limited access to finance, have hampered the solar irrigation market in Rwanda.

We are working with farmers, technology providers, financial institutions and the government to tackle these barriers and build a sustainable market. With funding from the OPEC Fund for International Development (OFID), we are increasing awareness, availability and affordability of solar irrigation technologies in the country.

In the first phase, our aim is to help 3,000 smallholder farmers, technology suppliers and financial institutions to become part of the solar irrigation market. To make solar

irrigation products more affordable and available, we are creating a credit facility to support farmers to buy equipment, and an inventory financing facility for suppliers.

Our teams are setting up sites across the country to showcase products and train farmers in best agricultural practices. This includes how to manage water efficiently, integrate pest management, and introduce new crops. This will increase awareness of solar irrigation technologies and build demand among farming communities.

DRIVING INNOVATION IN THE SOLAR REFRIGERATION MARKET

Refrigerators reduce waste and increase choice. But traditional refrigerators are mostly too expensive to buy and operate for households, businesses and farms in off-grid areas. And global manufacturers have limited knowledge of what would work better in this context.

We're driving innovation in the solar refrigeration market through our involvement in two international competitions.

One competition aims to expand supply, drive demand and strengthen the market for small domestic refrigerators. It will identify products that are efficient enough to run economically on solar panels, and could also be suitable for small retailers.

The second competition is focused on larger, off-grid cooling technology for use in agricultural businesses.

For the refrigeration prize, we ran laboratory tests to examine the performance, including energy efficiency, of off-grid fridges. We then field-tested the shortlisted fridges by placing them with entrepreneurs in Uganda. Each fridge's performance was monitored through remote technology and researchers collected entrepreneurs' feedback on how the appliances affected their businesses.

Results showed that the fridges increased sales for the businesses and that entrepreneurs were selling a wider range of chilled products.

For the second prize, we shortlisted 10 off-grid energy-efficient, sustainable and cost-effective technologies which have the potential to meet the needs of African farmers and food suppliers. Finalists were awarded £10,000 to get their off-grid cold storage units to Kenya, Nigeria, Rwanda,



Uganda and Zambia where they will be tested in the field. The best performers will receive a further award.

Our assessment of their performance in the field will provide the solar refrigeration industry with much-needed parameters to develop off-grid cold chains.

TRANSFORMING MARKET GARDENS IN SENEGAL

Like other women in Niayes, Senegal, Rose Sagna grows fruits and vegetables to sell locally.

"With my sisters-in-law, I formed a family association, producing a variety of crops across our three hectares of land," says Rose.

However, labour costs and buying fuel for the generator didn't leave enough profit to reinvest in their business to grow it.

In July 2018, we launched a programme to empower 2,600 women like Rose, supported by the Swedish Postcode Lottery Foundation. The aim is to improve the productivity, resilience and viability of their businesses through investments in sustainable energy technologies.

Our mentors advised Rose on different energy equipment used in market gardening. They also provided training in entrepreneurship, managing finances, and using and maintaining solar pumps so she could expand her business.

We helped Rose's association to buy a solar pump by creating a partnership between technology supplier Bonergie and the URBIS Foundation, which funds renewable energies in Africa. Our mentors helped Rose create a sound business plan which demonstrated that the association can repay the price of the pump. After we validated the business plan, URBIS paid Bonergie 50% of the value of the solar pump. Rose's business will pay the rest in instalments.

The pump will allow the association to reduce monthly costs for fuel and wages, while our mentoring will help Rose explore new markets.

"Our subsidised solar pump is making a difference," says Rose. "We don't need to buy costly fuel, and the new equipment is helping to bring down our wage bills. Our Energy 4 Impact mentors are helping us find new ways to expand our business."



SUPPORTING AGRICULTURE THROUGH MINI-GRIDS, TECHNOLOGIES AND FINANCE

Off-grid energy companies can provide significant opportunities for farmers, fishers and food producers to expand and sustain their businesses. Mini-grids can power honey processing, milk chilling, oil extraction from foods like nuts, and removal of the chaff from rice.

We have worked with over a 100 mini-grid developers. In most cases, serving the needs of the local agricultural economy is key to the mini-grid projects' commercial prospects.

For example, we worked with mini-grid company JUMEME to spur growth in various agro-processing activities such as maize milling and fish chilling in Tanzania. We've done this by supporting local entrepreneurs to buy the necessary

equipment, which can be very difficult to source and finance. Accessing credit is a challenge because these entrepreneurs are considered high risk borrowers. As a result, JUMEME adopted an in-house financing scheme. It allows businesses to buy appliances on credit from JUMEME, paying for them over an agreed period.

"We held several discussions with JUMEME on how to best support businesses that wanted

to acquire new equipment," says Diana Kollanyi, Senior Advisor at Energy 4 Impact. "We undertook analysis to establish the viability of these businesses before they obtained the appliances. We also worked with business owners to strengthen their business plan and skills. This gave JUMEME the assurance that the entrepreneurs were in a position to pay for the equipment over an agreed period, pay their electricity bills and still make a profit."

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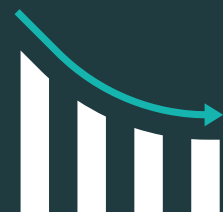
BUILDING LIVELIHOODS



Entrepreneurship in Africa contributes less to household income than in other developing regions: 15% compared to 51% in Peru, and 39% in Brazil.



Rural enterprises in sub-Saharan Africa are more than five times less productive than urban ones.



Rural enterprises must overcome considerable hurdles to grow and survive, particularly ones owned by women.



Unreliable electricity hampers Africa's manufacturing and service sectors, costing as much as 2% of their countries' GDP.

THE ISSUE

Creating more efficient businesses helps more people get themselves out of poverty. This includes manufacturing businesses, everything from carpentry to welding; agro-processing (such as milling and drying), and services such as shops, bars and restaurants. At the moment, businesses like these – unable to access power to function efficiently and profitably – remain small and aren't creating the jobs urgently needed.

Boosting economic development – helping enterprises to prosper and generate income, employment and livelihood opportunities – is a key rationale for rural electrification. This implies expanding productive use of energy (PUE) – a term used by the development industry for the use of energy for business-related activities. And when more power is purchased, the economic viability of electrification projects is improved.

However, access to energy alone, in most cases, does not automatically result in business expansion and increased economic activity. Often, we also need to build the capacity of those local businesses to take full advantage of the power supply, resolve issues around poor availability and financing of good quality equipment, and build local market awareness.

OUR SOLUTIONS

We combine strategies for supporting local enterprises and developers of rural electrification projects by:

- Helping local businesses and industries to use electricity to cut costs, grow and diversify. This might include advice on markets, supply chains, equipment, economics and accessing capital.
- Working with mini-grid developers, national utilities and grid-connected power distribution companies to stimulate demand for electricity from small industries and

businesses. This includes everything from analysing existing productive users to community engagement.

- Designing a working capital facility to support developers to provide credit to local businesses to buy productive use appliances. This makes appliances available to remote customers whose low incomes make upfront cash purchases very difficult.
- Piloting a tariff buy-down facility to help consumers afford and use more power.

Some businesses are pioneering new technologies and innovative business models and need support with research, field-testing and finance. Others need bespoke or longer-term mentoring, so we share our knowledge of business, financial or technical issues, and help raise capital or develop new routes to market, supply chains or partnerships.

SUPPORTING MINI-GRID DEVELOPERS IN OFF-GRID AREAS

For Africa to achieve sustainable energy for all by 2030, 40% of new connections will have to be through mini-grids, according to the International Energy Agency.

However, few mini-grid projects have been commercially successful in Africa. This is because of the many challenges developers face, including gaps in policy and regulatory framework, a lack of proven business models, insufficient market data and links, the lack of capacity of key stakeholders, and difficulty accessing finance.

We have supported over 100 mini-grid developers – big and small – to overcome obstacles and advance projects towards commissioning. This work has been funded by the African Development Bank (AfDB), International Finance Corporation, Swedish International Development Cooperation Agency (Sida), Power Africa, Rockefeller Foundation, the World Bank, and Mott Foundation. It involves advising mini-grid developers on everything from market size to regulatory compliance and research.

We've also helped over 800 businesses in the communities that developers serve to grow and make better use of the new power supply.

In Rwanda, for example, we are supporting small, isolated mini-grid projects expected to provide electricity to around 77,000 people. Funded by Sida, we provide early project development support to mini and micro-grid utilities, and help business in the communities they serve to develop productive use activities.

Across Africa, we are working on a market development project to address the technical, policy, financial and market barriers to scaling-up mini-grids in the continent. Financed by the AfDB, it consists of a business, financial and engineering advisory service; sector-specific research, and an online portal providing developers and policymakers with remote support and access to extensive information on mini-grid regulations, policies and markets.



PROMOTING PRODUCTIVE USE OF ENERGY IN NEWLY GRID-ELECTRIFIED AREAS

Our work on livelihoods is not only in off-grid areas. We are also working in Tanzania on opportunities offered by expanding the main grid.

In partnership with the Rural Energy Agency's grid densification programme, we are providing business development support to local business owners following their first-time connection to the main power grid. We're helping them diversify, increase productivity and boost profit margins.

We've run roadshows with demonstrations of common electrical appliances, such as fridges, juice blenders, hair clippers, hair dryers and fryers, to create awareness of their commercial potential.

Many of the businesses have no bank account and credit history, so getting funding to buy this equipment is a challenge. To change this, we're working with a local micro-finance provider to offer finance to the small businesses. We are providing 300

enterprises with tailored business and mentoring support, including analysis of their value chain, an evaluation of their financial needs and links with financial institutions. The aim is to grow electricity consumption for commercial use in targeted villages by 15%.

ADVISING SMALL BUSINESSES TO BUILD ENERGY MARKETS

Technology trends such as decreasing product costs and mobile banking are transforming people's purchasing power and energy markets. But people living in poverty still face challenges taking advantage of these advances, despite needing them the most.

Remote locations, lack of local infrastructure and low literacy levels are just some of the reasons it's hard for providers to reach people and raise awareness of products.

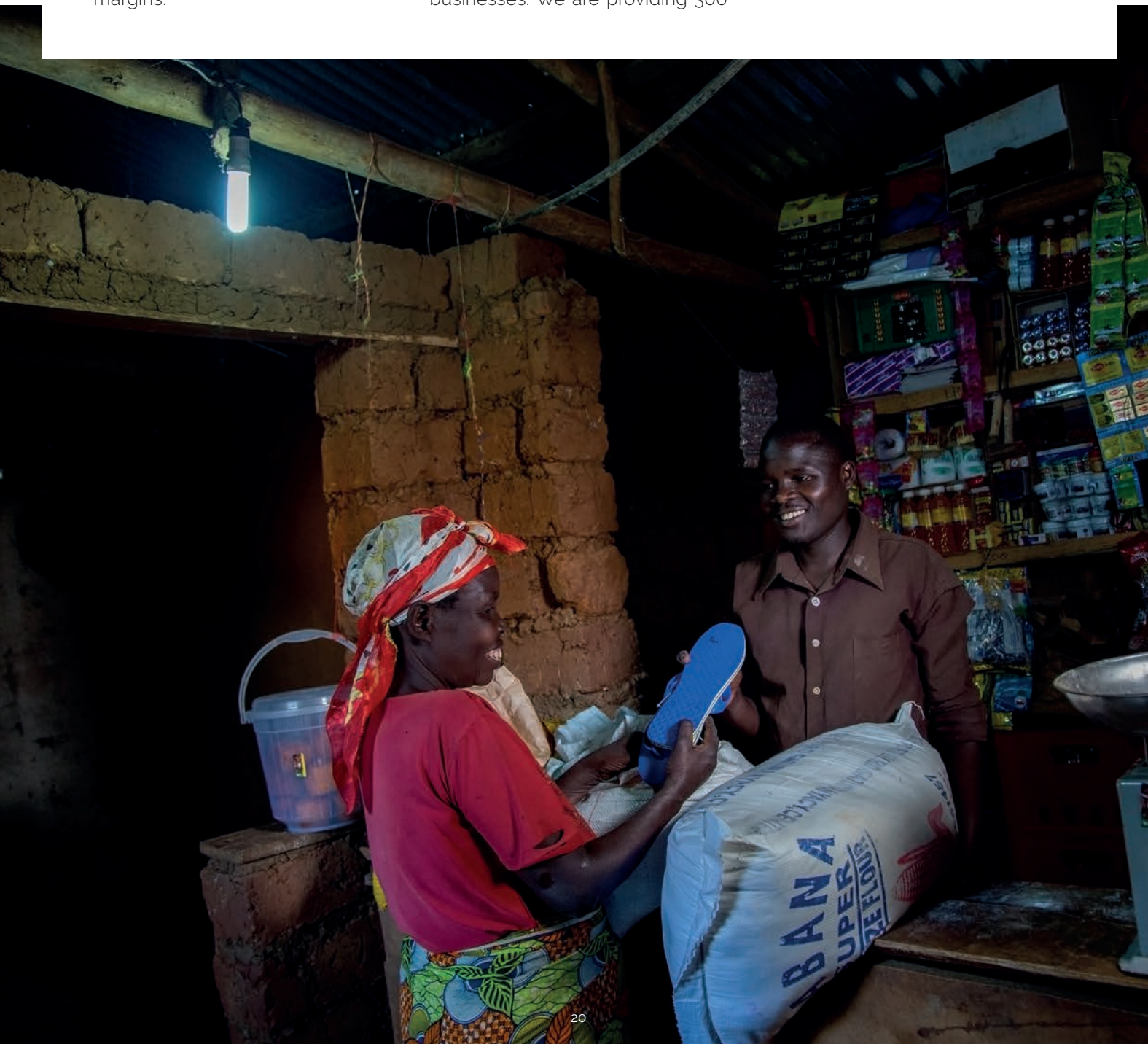
So, we use local entrepreneurship to develop networks of 'last mile agents'.

This involves honing entrepreneurs' business skills, developing their market awareness and customer care practices, and linking them to others in the supply chain. We have also helped them access finance, provided technology support and promoted research to increase their effectiveness.

In Senegal, supported by funds from ENERGIA, we created a partnerships with solar home system supplier Baobab+ to expand their reach into rural areas. We helped build a cost-effective distribution network in last mile

rural areas by training local women to sell the products. This created a new network of female distribution agents for lower cost pay as you go solar home systems and lanterns and improved cookstoves in a remote region of the country.

We also designed a supplier's credit guarantee that allows female entrepreneurs in East and West Africa to buy small solar products, such as lanterns, and improved cookstoves on credit. They can then extend this credit to customers.



EMPOWERING WOMEN



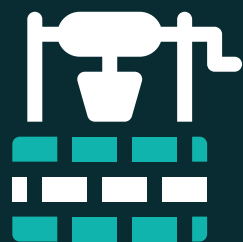
In sub-Saharan Africa 74% of women work in informal, often unpaid, employment.



Despite accounting for 50% of the agricultural labour force in Africa, women control only 20% of the land and have limited access to resources, credit and services.



In households that cook with solid fuels, girls can spend an average of 18 hours a week gathering fuel.



Women in 25 sub-Saharan countries are estimated to collectively spend at least 16 million hours a day collecting drinking water; men spend 6 million hours; and children, 4 million hours.



Six out of 10 of the 4.3 million premature deaths caused by indoor air pollution were women and girls.

THE ISSUE

Access to affordable, clean energy is a vital component of sustainable development for everyone. But it's particularly important for women. Women often bear the brunt of 'energy poverty' as they are the ones that spend hours each day collecting firewood, cooking on unsafe stoves and doing chores in bad lighting.

Sustainable energy also offers life-changing opportunities for women to generate income – both by selling energy products and services, and by working in enterprises powered by energy.

But there are challenges for women trying to get established in these markets:

- Women are often side-lined – they only make up 15% of the workforce in the renewable energy industry and markets in sub-Saharan Africa.
- According to the World Bank, only 37% of women in sub-Saharan Africa have a bank account, compared to 48% of men. They're also less likely than men to have access to other financial services, business networks or mobile phones.

The development sector is looking at ways to engage and empower women, knowing that the knock-on effect can be huge. Evidence from a range of countries shows that when you increase the share of the household income that's controlled by women, spending changes in a way that benefits children and whole communities.

OUR SOLUTIONS



We recognise the impact women can make at every level of the business value chain – as suppliers, leaders, employees, customers and community members. That's why we've developed a range of solutions to address the challenges women face when accessing energy and succeeding in business. With funding from ENERGIA, the Swedish Postcode Foundation, UN Women Tanzania and other donors, we support women to develop and grow their businesses, so they can provide, or increase, access to energy in their communities.

Our solutions include:

- Strengthening the business skills of women entrepreneurs and supporting them to develop local energy markets for solar products, efficient cookstoves and fuels.
- Running programmes to help women overcome business challenges that result from inequality, and supporting them to set up effective networks and partnerships with manufacturers, suppliers, retailers and consumers.
- Working with financial institutions to design and manage lines of credit, loan guarantee funds and seed capital grants that

work specifically for women in sustainable energy businesses.

- We also support non-energy businesses, in rural and poor areas, on productive use of energy. Their businesses include farming, agro-processing, dairy production, shop keeping, weaving, trade and entertainment. As well as energy use, we advise on increasing productivity and diversification through investment in solar-powered equipment, such as fridges, driers and phone charging kits. We also develop financial mechanisms, such as supplier's credit guarantees, to help them invest in their businesses.

We recognise the impact women can make at every level of the business value chain – as suppliers, leaders, employees, customers and community members.



Advocating for women's empowerment in energy access

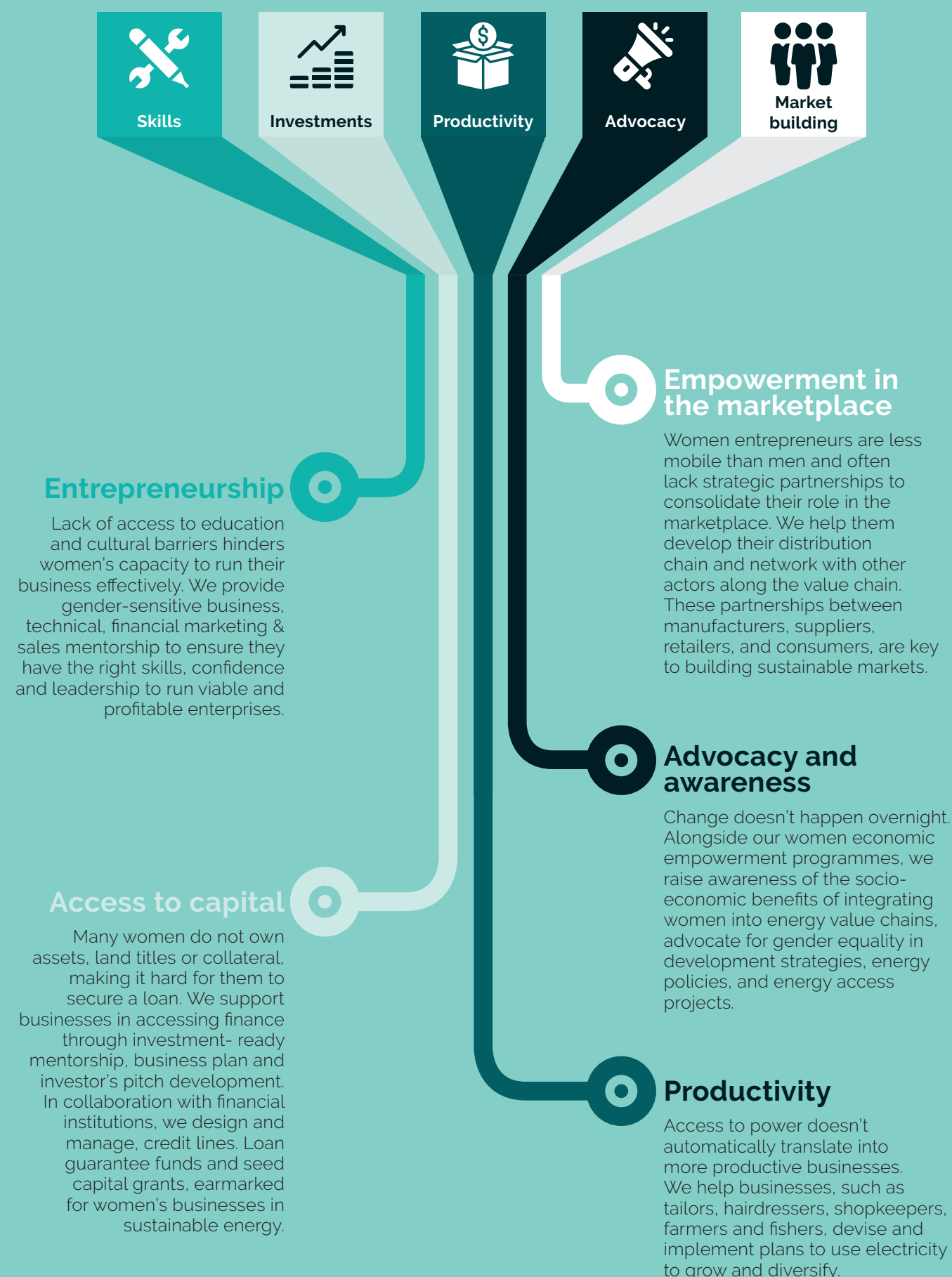
Governments have a critical role to play in mainstreaming gender energy access policies.

Alongside our women economic empowerment programmes, we also advocate for gender-focused targets and investments in national development strategies. We want to make sure any new planning or policies take into account gender inequalities, so

they can provide opportunities that benefit the whole population.

Our awareness campaigns promote positive female role models, strengthening women's visibility, collective voice and representation; tackling adverse gender norms; and changing business culture and practices.

TACKLING THE BARRIERS TO WOMEN'S PARTICIPATION IN THE RENEWABLE ENERGY SECTOR



LIGHTING THE WAY FOR SOLAR POWER ENTREPRENEURS

Kerosene lamps are a common way to light homes in rural Kenya. But they are inefficient, expensive and dangerous.

With funding from the Adventure Project and the US Government, we're supporting female entrepreneurs to develop the market for solar alternatives. Lilian Wangeci began selling solar lanterns in her village in Ngurubani, central Kenya. Demand was high, but she struggled to raise money to buy good quality products from reputable dealers, and to find customers who could afford to pay for them upfront.

So, we introduced entrepreneurs like Lilian to reliable solar light suppliers, such as Greenlight Planet. The women became the company's sales officers, which means they don't have to pay upfront for products. The pay as you go system accepts repayments from customers over an agreed period, typically six to 36 months. The products can be monitored and controlled remotely, which helps to manage the risk of non-repayments.

We also helped the women with their business and marketing skills to raise their professionalism and build trust between entrepreneurs and suppliers.

"The Energy 4 Impact training has given me the confidence to approach potential buyers and talk about the cost-effectiveness of quality solar products, and to explain the payment terms and the installation process," says Lilian. "It has also boosted my credibility with my suppliers. My sales have tripled and I am now thinking about other products to sell."

HELPING WOMEN BRING CLEAN, AFFORDABLE WATER TO RURAL SENEGAL

We're supporting women entrepreneurs to set up solar-powered clean water kiosks in remote areas of Senegal, through a partnership with Oshun Senegal, a company franchising solar-powered water filtering technologies. Most people in the

area rely on water from unsafe and often expensive sources.

When women take on a kiosk franchise, we provide technical and financial mentoring, including management, accounting and marketing coaching, to help them manage their business.

We also help to build demand for clean, affordable water by raising awareness of the risks of unfiltered water, such as contamination and waterborne diseases. Oshun Senegal provides ongoing technical support, including repairs and filling filter cartridges.

WOMEN'S FOOD PROCESSING BUSINESS REVITALISING SENEGAL'S RURAL ECONOMY

Five women from Khelcom Birane, a village in central Senegal, set up a small farming cooperative to dry their unsold fruit and vegetables, to sell in town.

However they struggled to make a profit. "Our lack of technical skills, poor knowledge of conservation processes, and inadequate equipment impacted the quality of our products," says Fatou Ndiaye, the cooperative's president.

Energy 4 Impact advised them on areas including processing and packaging techniques, sales and business management and helped them diversify and strengthen their operations. By connecting them with new buyers, we helped them to access international markets.

We also helped them obtain a loan from a local microfinance business to buy a solar drier, which cut down the time and labour needed to dry the produce, and improved its quality.

There are now 15 products in the cooperative's range, which they market across several regions, for a healthy monthly profit, and the cooperative itself has expanded to 30 members.

"The advice, training and access to finance that we got from Energy 4 Impact has turned around our business," said Fatou. "We can now offer distribution jobs to young people in the village and our ambition is to establish ourselves nationally and certify our products for export."

LEAVING NO ONE BEHIND



736 million people worldwide live on less than \$1.90 a day. More than half of people in extreme poverty live in sub-Saharan Africa



Over 90 million children in sub-Saharan Africa go to a primary school that lacks electricity and almost 60% of health facilities have no access to power.



Over 68 million people worldwide have been displaced from their homes. Around 80% of people living in refugee camps have minimal access to energy for cooking and heating, and 90% have no access to electricity



64,700 acres of forest, equivalent to 49,000 football pitches, are burned each year by displaced families living in camps.



For households earning \$2 a day (the typical wage for casual agricultural labour in East Africa) an average pay as you go solar product would take up 20% of their wages.

THE ISSUE

The world's most vulnerable people are disproportionately affected by a lack of access to clean, affordable energy.

Energy poverty is not only expensive, it's inefficient and dangerous, with poorer people using lower quality fuel and equipment. Unable to afford better products and services to improve their income, people remain trapped in a cycle of poverty.

Inadequate energy limits the poorest people's opportunities for education, and deprives them of decent healthcare – and so it increases inequality.

Rapidly growing populations are making the situation worse, particularly in cities. Africa's urban growth is estimated at 3.9% a year, leaving infrastructure service providers severely stretched.

Access to energy can help to alleviate poverty. But for this to happen, energy needs to be affordable for the lowest income households.

The tens of millions of refugees are one of the most likely groups to be left behind in the drive for better energy access. For them, energy access might mean the difference between being able to go to school or start a business.

There has been amazing progress in off-grid markets but current prices are still too high for poor households. One of the challenges is how to build markets that successfully serve poorest communities.

As markets 'take care' of the needs of better-off consumers, donors, governments and businesses need to collaborate more strategically to deliver pro-poor energy access.



OUR SOLUTIONS

To tackle these issues and challenges, we are developing partnerships with donors, governments and private sector businesses and are trialling a range of initiatives, business models and financial inclusion strategies. These are helping to make energy products and services more affordable for people who are poor or displaced.

IMPROVING HEALTHCARE AND EDUCATION IN REMOTE KENYA

Last year, we launched a pioneering new project to install solar PV systems in schools and health clinics in off-grid, remote and deprived parts of Kenya.

With grant funding from the OVO Foundation, the aim was to improve education and healthcare for some of Kenya's most vulnerable communities through reliable power.

In schools, tablet-based learning and educational software are set to become important teaching aids – but are impossible to operate without electricity. Health service providers, meanwhile, need power to operate basic equipment to diagnose and treat illnesses.

We contracted a local company to install the solar PV systems and provide ongoing maintenance for three years to guarantee the power supply. We also tracked and evaluated how each school and clinic uses the power to see if there's anything we need to do to increase the impact they are having.

So far, we've installed 20 systems in 16 schools and four clinics in Turkana and Kilifi counties:

Mouneal Shapel boarding school in Turkana county previously had a

large solar PV system installed, but their inverter and batteries were no longer working and the school's 346 students relied on power from a diesel generator. The school is now saving money and boosting digital learning as students can now power computers and tablets.

In Kilifi county, Migodamani Primary School had been given tablets by the government but did not have reliable energy to use them. The school was connected to the grid, but after a few months the local transformer blew up and left 290 students, some boarders, without access to power. With an 800 watt system now installed, staff and students were excited to see their tablets finally come to life.

The government-run Mitsajeni Clinic in Kilifi sees around 80 patients a week and used to rely on kerosene lights and bottled gas. With their new solar installation, the clinic provides a higher level of service, especially after dark.

"We are very thankful for this help," said a staff member. "We had been unsure when we would get access to electricity, and be able to use some of the equipment we had. This marks a new era for our medical operations at Mitsajeni Clinic."

Gaby Sethi, Head of OVO Foundation and CSR, is hopeful about the difference this project could make to health and education in rural Kenya. "OVO Foundation views energy as one of life's essentials and we're passionate about bringing reliable, renewable energy to rural communities. We don't think it's right that schools and health clinics should be left off the grid and we're excited to see the impact this project has on learning environments and local health services."

Daniel Kuria, Project Manager at Energy 4 Impact, added: "Without grant funding from OVO, the schools and clinics in the poorest parts of Kenya simply wouldn't have been able to access electricity."

For projects like this, ensuring the long-term care and maintenance of the system is critical. Building on this experience, and on our work on productive use of energy, we are now advising the UN Foundation on whether the surplus power from the solar systems they have installed on around 60 health clinics in Ghana and Uganda can be used to generate income to help fund the systems' long-term maintenance.

The government-run Mitsajeni Clinic in Kilifi sees around 80 patients a week and used to rely on kerosene lights and bottled gas. With their new solar installation, the clinic provides a higher level of service, especially after dark.

BRINGING SOLAR SOLUTIONS TO KENYA'S POOREST COMMUNITIES

Kenya has one of the most rapidly growing and innovative solar markets in the world. But despite over 1 million solar home systems being sold over the last five years, there are still 3 million households without access to energy. We're helping change this.

One way the Kenyan government is tackling poverty is through cash transfers – payments made to the

country's poorest 20% as part of the National Safety Net Program. Working with UNICEF and with funding from the government of Sweden, they are providing a 'top up' to the existing programme to improve energy access for the most vulnerable communities in Garissa and Kilifi counties.

Energy 4 Impact has been contracted to design and

implement a pilot project to help households who receive the cash transfer to use the top-up payments to purchase solar products on a pay as you go basis, whilst minimising market distortions. The programme will help determine what impact the cash transfer will have on repayment rates and quality of life indicators, such as learning for children and health, for households that receive it.



ACCESS TO ENERGY FOR REFUGEES

Food. Shelter. Medical care. These are the top priorities when it comes to supporting refugees and displaced people. Energy access generally features lower on the agenda.

When energy is provided in refugee camps, it's often uncoordinated, fragmented and inefficient, regularly relying on wasteful diesel generators. Costs are unnecessarily high – financially, but also in terms of people's health and the environment. Limited funding and short-term budgets also mean energy investments can be very difficult to plan and fund.

Poor energy access affects quality of life negatively and limits livelihood opportunities. This is as true in refugee camps as it is in any other setting, but for a refugee family with its limited choices, we see this as particularly unfair. It is also unnecessary.

The expertise to create clean and financially sustainable energy

services can often be found in the private sector at a local level, so finding the right model for public-private partnerships and outsourcing services is critical.

To respond to these gaps and challenges, we set up the Moving Energy Initiative (MEI). We work in partnership with the United Nations High Commissioner for Refugees (UNHCR), Chatham House and others, with financial support from DFID, to try to change the way the humanitarian system delivers sustainable energy to refugees and local host communities.

MEI focuses on:

- **Improving data and information** – the MEI aggregate research findings act as a knowledge hub for best practice in providing energy in humanitarian contexts.
- **Creating energy markets** – by building local markets and the entrepreneurship of displaced, as well as local people, relevant solutions can often be quickly found and scaled up.

- **Changing policies and practices** – we work with humanitarian agencies and donors, suggesting improvements to ways of working, based on evidence from practical projects.
- **Improving energy security** among both local and refugee communities, by cooperating with host governments and national NGOs.

The MEI partnership has also contributed significantly to the development of the Global Plan of Action for Sustainable Energy Solutions in Situations of Displacement. This is an exciting commitment by a wide range of humanitarian agencies to achieve the vision that every person affected by conflict or natural disaster has access to affordable, reliable, sustainable and modern energy services by 2030.

Examples of our work with refugees

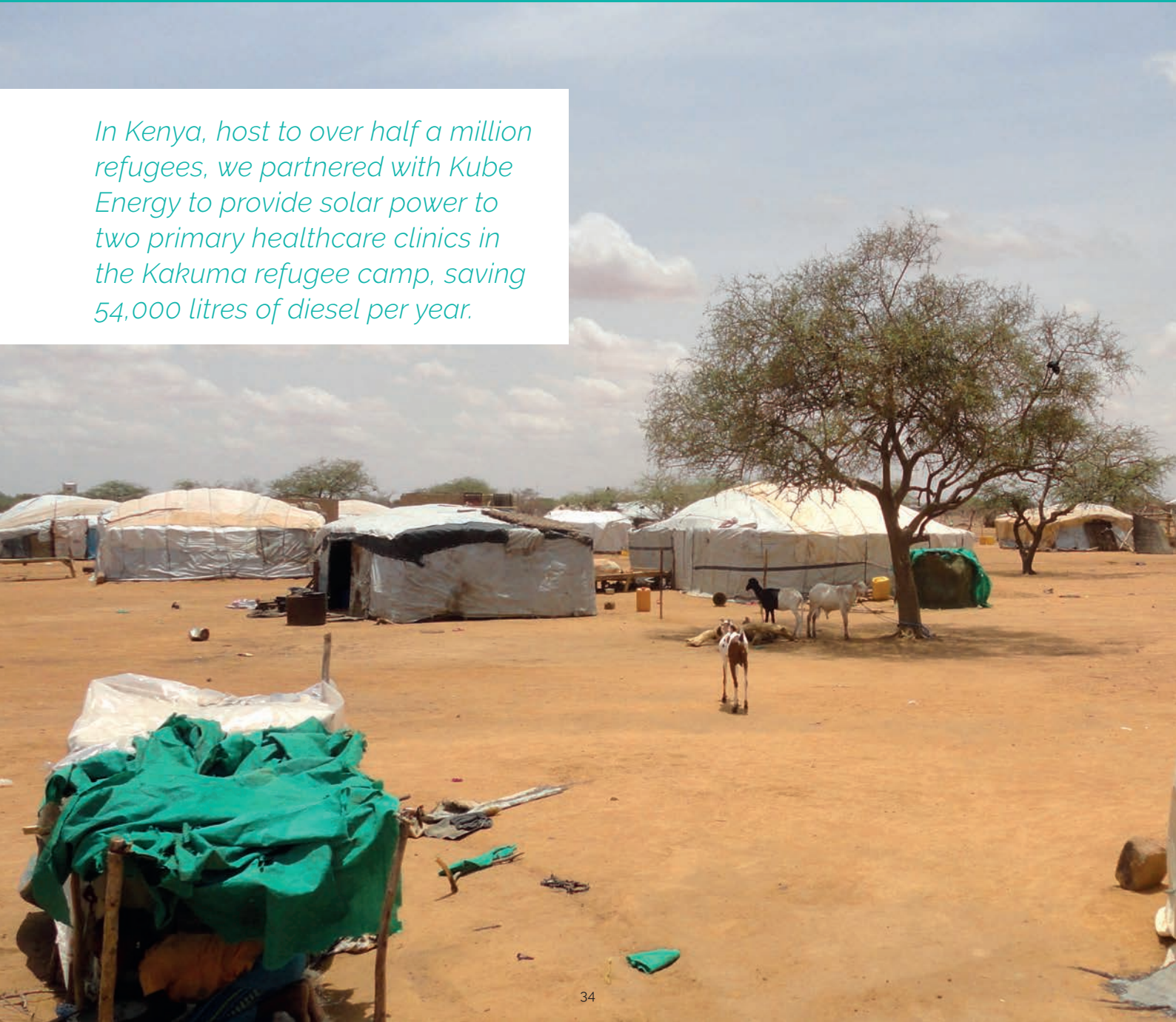
We have helped to deliver local market-based solutions for energy access, helping create jobs and business opportunities. For example:

- In Burkina Faso, we've built an enterprise centre in Goudoubo, one of the main refugee camps. This is a space for microbusinesses to work, hooked up to power. We've installed solar-powered irrigation systems for a vegetable production area, which will provide livelihoods for 150 households. There is also a solar-powered water pump, replacing a diesel-based generator, to provide clean drinking water for Goudoubo's 10,000 residents.
- In Kenya, host to over half a million refugees, we partnered with renewable energy company Kube Energy to provide solar power to two primary healthcare clinics in the Kakuma refugee camp. This saves 54,000 litres of diesel per year. A solar-powered information and communications technology and learning hub has been built in

the camp, which will also be open to the local community. The hub will provide services for local entrepreneurs, including an internet café, a solar home system membership plan, and a mobile phone charging point. We've also supported BBOX, a pay as you go solar home systems company, to increase distribution of its products in and around the camp. We provided seed funding to set up a shop, train staff and market their business.

• In Jordan, host to 700,000 asylum seekers and refugees, we've been working with the Jordan Green Buildings Council to introduce energy efficiency technologies in low-income households, including solar water heaters, rainwater harvesting systems, greywater systems, and solar PV panels. We have also installed solar systems at Al-Mafraq public hospital, with expected savings of over \$45,000 per year.

In Kenya, host to over half a million refugees, we partnered with Kube Energy to provide solar power to two primary healthcare clinics in the Kakuma refugee camp, saving 54,000 litres of diesel per year.



OUR PARTNERS

We are grateful to each of our donors and partners for supporting our projects:



OUR FINANCES

Our total income for 2017/18 was £7.257 million, an increase of £3.23 million, or 80%, compared to last year (March 2017: £4.027 million). This comprises £0.978 million in unrestricted income and £6.279 million in restricted income.

Total expenditure was £6.339 million, an increase of £1.6 million, or 34%, from last year's figure (March 2017: £4.739 million). This comprises £0.897 million of unrestricted expenditure, and £5.442 million of restricted expenditure.

Statement of financial activities (incorporating an income and expenditure account)
For the year ended 31 March 2018

	2018 Unrestricted £	2018 Restricted £	2018 Total £	2017 Total £
Income from:				
Donations and legacies	16,018	-	16,018	635
Charitable activities – grants	13,172	6,279,542	6,292,714	3,473,508
Charitable activities – consultancy	944,800	-	944,800	541,994
Investments	217	-	217	3,995
Other income	4,082	-	4,082	7,370
Total income	978,289	6,279,542	7,257,831	4,027,502
Expenditure on:				
Raising funds	101,882	-	101,882	150,583
Charitable activities	795,310	5,441,992	6,237,302	4,588,976
Total expenditure	897,192	5,441,992	6,339,184	4,739,559
Net income / (expenditure)	81,097	837,550	918,647	(712,057)
Transfers between funds	(6,570)	6,570	-	-
Net movement in funds	74,527	844,120	918,647	(712,057)
Reconciliation of funds:				
Total funds balances brought forward	440,305	160,818	601,123	1,313,180
Funds at the start of the year				
Total fund balances carried forward	514,832	1,004,938	1,519,770	601,123

OUR BOARD

- Anthony Marsh, Chair and Managing Director, Palus Limited
- Sheila Oparachoa, International Coordinator and Programme Manager for the ENERGIA International Network on Gender and Sustainable Development
- Dianne Rudo, Principal of Rudo International Advisors
- Richenda Van Leeuwen, Chair, International Institutions, Global LPG Partnership
- Emma Schofield, former Partner at PricewaterhouseCoopers.

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THANK YOU

As you have read in this annual review, access to energy changes everything.

We couldn't carry out our work developing markets to close the energy gap without the people who support what we do.

Thank you to every company, funder, practitioner, investor, donor, partner, business and entrepreneur we work with. You are helping to tackle one of the most pervasively debilitating aspects of poverty that holds back sub-Saharan Africa's development – you are changing lives.



Get involved

If you are a practitioner, investor or business involved in energy access and you're interested in collaborating with us, please contact our business development team on info@energy4impact.org.

Energy 4 Impact is a non-profit organisation working with local businesses to extend access to energy in Africa. Our work growing sustainable clean energy markets is creating jobs, accelerating economic growth and improving the quality of life for millions of people.



Visit our website: www.energy4impact.org

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