# Impact Report Autumn 2015

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Solar Aid



# WELCOME

This year we are incredibly proud to have passed two major milestones. The first, **reaching 10 million people with solar light**, bringing transformational benefits to livelihoods, education, health and the environment for families across rural Africa. The stories of the individual impact of each and every light are countless and extraordinary.

The second is that, through our market building approach, **solar markets in Tanzania and Kenya have taken off**. In 2009 we had sold just 5000 solar lights in Tanzania, now we have sold nearly a million. For each of these, another 4 have been sold by other enterprises now able to enter the market. This cost-effective, rapid and extensive impact gives us more confidence than ever that we have seen the beginning of the end of the kerosene lamp.

Alongside this work, we have established SolarAid as a **world-class resource for research and policy**; providing advice to governments, commercial companies, international institutions and NGOs alike. And we have been recognised for our work as finalists in the Zayed Future Energy Prize, highly commended in the Unilever Global Development Award and received a platinum rating from GIIRS.

Yet we have also faced some major challenges. New market entrants have put our operations under pressure and, in Tanzania especially, we have seen low quality counterfeit lights damaging consumer confidence. This means we must adjust our model while maintaining our stand for affordable, quality products backed up by excellent customer service.

This year, with the Paris climate talks and with access to energy now recognised as a critical Sustainable Development Goal, there is no other time in history so in need of solutions to tackle both poverty and climate change. We know we still have a lot of work to do - and challenges to overcome - but communities leading the solar revolution across Africa suggest we might just have found one.



Andrew Webb, CEO, SolarAid

# LIGHT CHANGES EVERYTHING

SolarAid and SunnyMoney have now sold over 1.7 million solar lights. This report shows how this has lit up millions of lives, catalysed sustainable solar markets and enabled critical research and policy work.

10 million people with better access to clean, safe light
9 million of whom live below the poverty line
\$345 million saved by 1.5 million households reached
2 billion extra study hours for children
5.8 million people experiencing improved health
880,000 tonnes of CO2 averted, equivalent to eliminating almost 2 billion car journeys



"A light where currently there is darkness; the energy needed to lift people out of poverty - that's what opportunity looks like."

Barack Obama

# THE CHALLENGE

Today **600 million people** in Africa still have no access to modern energy; more than the populations of Mexico, Canada and the USA combined. Instead they rely on costly, toxic fuels such as kerosene to light their homes at night, severely impacting health, education and livelihoods.

Though solar alternatives are now available, awareness is low and the transport and communications infrastructure needed to reach rural populations is limited or non-existent. Getting products into the hands of those who need them most is a complex and difficult challenge.

SolarAid's approach to addressing this challenge has been to **kickstart markets for solar lights across the continent** - providing families with choice, opportunity and the chance to build a brighter future.

## "SolarAid's market-based approach, providing modern, affordable, and clean light to those most in need of it, is transformational."

Dan Murphy, Senior Energy Specialist, World Bank

# **Triple Impact**



# **Light up Lives**

Get safe solar light to rural families for the first time



Create jobs and kick start long-term sustainable enterprise



# **Drive the Sector**

Build leading research and policy to help drive markets across Africa

# The Story so Far

# Zambia:

The SunnyMoney team have helped thousands of rural families access solar lights, often covering large distances and difficult terrain. Recent power blackouts due to hydropower shortages have made solar lights increasingly critical in urban, as well as rural areas.

168,011 solar lights sold to date
1 million people with better access to clean, safe light
375,000 people experiencing better health



2

Our newest team has already reached families across the country and begun to establish a strong network of solar agents hitting the ground running with the weight of SunnyMoney's experience behind it.

**42,894 solar lights** sold to date **320,000 people** with better access to clean, safe light

50,000 tonnes of CO2 emissions averted



SunnyMoney is refocusing operations in Tanzania having kick-started a thriving solar sector. For every light sold by SunnyMoney, 4 more products were sold by other organisations now able to join the market due to increased awareness and demand for solar technology.

904,528 solar lights sold to date
5.1 million people with better access to clean, safe light
1 billion extra study hours for children



Since 2013 solar ownership in areas SunnyMoney works has tripled from 20% to 60%, with 79% of traders now stocking solar products. The team is now focusing on those regions the market has not yet reached.

"In Kenya we will focus on strategic partnerships to distribute more lights at lower cost to reach the very last inch of the very last mile". Dr Caesar Mwangi, CEO, SunnyMoney

494,802 solar lights sold to date 3 million people with better access to clean, safe light \$160m saved for the households reached

All figures are estimated based on our research with solar light users and show benefits over the lifetime of the solar light.



The team has now reached hundreds of thousands living below the poverty line with clean solar light, also providing humanitarian assistance to regions hit by the devastating floods in early 2015.

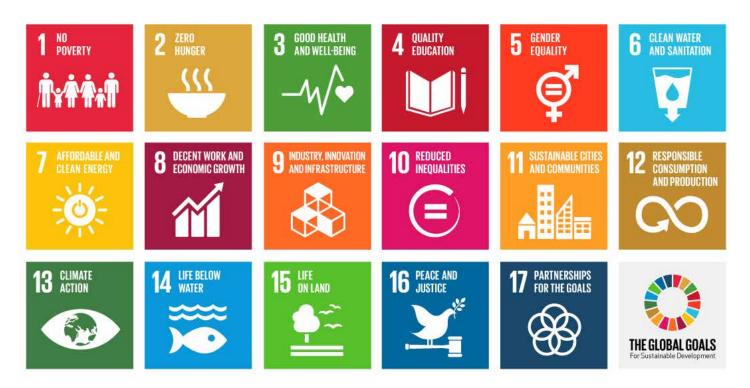
142,917 solar lights sold to date 720,000 people with better access to clean, safe solar light 115,000 households reached

# **LIGHTING UP LIVES**

Solar lights do far more than light up homes, they transform lives; improving educational opportunities, health, savings, welfare, safety and the environment. At the same time, a flourishing solar sector creates jobs and kick-starts enterprise. SunnyMoney has sold over 1.7 million solar lights providing families with clean, affordable energy, paving the way for even greater levels of energy access.

# SUSTAINABLE DEVELOPMENT GOALS (SDGS)

This year the world unites behind the Global SDGs. SolarAid's work helps to provide energy access, directly underpinning Goal 7, but solar lights also help meet many other SDGs.



## Economic Impact

When a family switches from kerosene to solar light they save an average of \$70 a year - around 10% of their annual income. With 90% of SunnyMoney customers living below the poverty line, the impact of this can be life-changing. Additional income is commonly spent on food, education and investment in livelihoods, helping reduce poverty and improve long-term health. Increased productive hours also encourages enterprise, while the growing solar market provides jobs and opportunity. SunnyMoney now supports over 600 solar agents across East Africa whose income has risen by 30% on average.

## Goals 1 2 3 4 8

# *"I have decided to use the savings for my livestock, I buy grass and medicine for my cows."*

Agatha Lyimo, Tanzania

# Education

Access to clean, safe light helps students to do their homework for an extra hour a night. Headteachers at the schools SunnyMoney works with report improvements in pupils performance, attendance and motivation. In addition, 28% of solar light customers interviewed use savings (from no longer needing to buy kerosene) on school fees and education. In rural areas of Kenya, 75% of headteachers reported that recruiting and retaining teachers was a problem - but 60% said better lighting would encourage teachers to work in remote regions. Over a third of teachers said that they use a solar light for marking, lesson planning and extra classes.

# Goals <mark>1 2 3 4</mark> 8

"The number of students who go to secondary school has gone up and our school has got higher student attendance." Patrick Nyerenda, Headteacher, Malawi

- 4 -

THE BIG PICTURE 2014/15 624,443 solar lights sold 3.9 million with better access to clean, safe light \$132 million saved for families 775 million extra study hours for children 2.2 million people experiencing improved health 330,000 tonnes of CO<sub>2</sub> averted

Figures are estimated based on our research with solar light users and show benefits over the lifetime of the solar light



## Health

60% of customers who used kerosene lamps before a switch to solar associated an **improvement in their health** with reduced use of kerosene, including a **reduction in coughing**, **flu-like symptoms, eye irritation and respiratory illness.** Kerosene lamps contribute to indoor air pollution that kills over four million people each year. UNICEF's recent predictions for 2030 show indoor air pollution will cause more premature deaths than HIV and malaria combined. SolarAid is undertaking research with leading academics at UC Berkeley to determine the contribution of kerosene lamps to indoor air pollution and health outcomes.

### Goals 1 2 3 4 8

"Nowadays we don't have allergies, coughing has reduced and we no longer have eye infections so my kids can study well." Jospeh Tuei, Kenya

# Environment and Climate

Each solar light sold **eradicates the use of a kerosene lamp**, which emit on average 370kg of CO<sub>2</sub> and equivalent in the form of black carbon, each year - the top two climate warmers. Eliminating toxic black carbon is a **quick and effective way to mitigate climate change**. Enabling families to access solar technologies, training communities on solar energy and establishing distribution networks also builds **low-carbon development** pathways. While reducing kerosene use will help minimise government expenditure on expensive kerosene subsidies.

### Goals 12 13

### "There are no magic bullets that will solve all of our greenhouse gas problems, but replacing kerosene lamps is low-hanging fruit."

Dr Kirk Smith, Nobel Prize Winner

# Well-being and Safety

With safer and brighter homes, children studying better at school and with more income available, many families tell us that solar lights have brought a **better quality of life**. Dim light can make even the simplest activities challenging, whilst volatile kerosene costs and supply can increase vulnerability. With bright, reliable light families gain a **sense of freedom**, can spend more time together and can undertake productive activities at night. Solar lights **reduce the risk of fire and accidents and improve safety and security**. For families living in some of the world's poorest countries, the knock-on impacts of improved welfare and opportunity can be extraordinary.

### Goals 1 2 3 4

"My lifestyle has changed, my kids eat well, study well and we are a happy family now." Dickson Murumbi, Kenya

# Equality, Women and Children

Early research indicates that solar lights may have significant impacts on inequality and gender.

A SolarAid study in Kenya found that half of head teachers interviewed felt that school attendance of girls who had access to solar lights was better, and that **girls' motivation and performance had improved**. Anecdotal evidence also shows that solar lights can improve the safety of women and children outside the home at night and that they can play an **important role in improving the safety of childbirth**. A Lighting Global pilot in Nigeria confirmed that solar lights and phone charging **helped midwives care for their patients**.

The World Health Organisation notes: "air pollution is a cause of global health inequities, affecting in particular women, children and older people, as well as low-income populations". SolarAid research shows that, the primary users of kerosene lamps are women and children from low-income families, suggesting that replacement with **solar lights can help reduce health inequalities in the home**.



# **BUILDING THE MARKET**



### A New Dawn for Energy Access?

From small beginnings, the impact of solar technology in East Africa has become an extraordinary success story. Just as a single solar light can encourage a whole community to move towards solar, so too the success of SunnyMoney has helped create the conditions for many more organisations to enter the market, in turn bringing investment to the sector and reaching ever more communities.

Since 2009 the African solar market has grown by 300%. Back then, when SunnyMoney was just starting out, there were around 40,000 lights on the market. Lighting Global data now shows that, by December 2014, that figure stood at over 7.2 million.

From Obama's 'Beyond the Grid' Power Africa initiative to rap star Akon's Lighting Africa, the solar market has come a long way since SunnyMoney first started breaking new ground with its pioneering community schools programme.

Yet between July and December 2014, 78% of solar products sold on the continent were sold in only 3 countries and a number of challenges, such as the emergence of fake products, are yet to be resolved.

Growing solar markets are now reaching millions, but more support is needed to ensure that the benefits of quality solar products are seen right across the continent.

## CASE STUDY: Lake Zone, Tanzania

"The work of SunnyMoney in the Lake Zone has been transformational in putting kerosene lanterns on the pathway to extinction. Placing clean lighting tangibly and affordably into the hands of young people has brilliantly turned solar from a far off dream into the start of an everyday reality for literally thousands of Tanzanian families."

Josh Sebastian, Tanzania Programme Manager, SNV

The change in energy use for lighting in the Lake Zone of Tanzania over the last three years has been described as 'the difference between night and day'. In 2012 a baseline study by the Dutch development organisation SNV showed that only **3% of households** were using solar products. Three years later, following SunnyMoney Schools Campaigns, SNV follow up research found that over **50% of households** in the region now use solar lighting products.

Solar is now the most desired energy source in the region, with 41% of rural respondents to the SNV survey viewing it as the most affordable and easy to use energy source, a far higher percentage than electricity (17%).

### SunnyMoney's Crucial Role

SunnyMoney's hybrid social enterprise model enables us to do what no other can do. We build trust and absorb the cost of creating demand for solar products in rural communities where for-profit businesses cannot venture; building a market until it is mature enough for other, more traditional, enterprises to join.



The SunnyMoney approach has been cited as best practice by UNEP, UNDP and UNICEF.

"SolarAid's SunnyMoney non-profit business model acts as a market primer for companies like ours. We have found it much easier to penetrate markets where customers have already had a positive experience with solar products. We spend much less time educating customers about the benefits of solar in areas where they have worked, as they have already built trust in solar technology and there are much higher levels of demand."

COO of Off-Grid: Electric, Erica Mackey

Leveraging development finance and private capital, social enterprise Off-Grid: Electric is working with the Tanzanian government to implement the One Million Solar Homes initiative, aiming to provide 10% of the population with solar electricity and create 15,000 solar jobs.

# THE SUNNYMONEY WAY



### The Clean Energy Ladder

The small hand held solar lights that SunnyMoney sells are designed for families in some of the world's poorest regions. They help communities take their first step on a clean energy ladder, providing an opportunity to make valuable savings, study longer and set up businesses. This can help families to invest in bigger and better products, such as lights with phone charging capacity and solar home systems.

Our research in Zambia shows that over 60% of pico-solar light users said they wanted to buy a solar product with more capacity, and 90% felt more able to do so.

*"I am more able to afford a higher capacity product since buying my SunnyMoney solar light. I spend nothing on lighting nowadays so I have been able to save money."* 

Emeldah Akabondo, Zambia

# **LEADING THE SECTOR**

# **Impact Research**

Since 2012 the Research and Impact team has undertaken over 30,000 research interactions - surveys, observations and interviews - developing the world's most comprehensive data on the impact of rural energy access and gaining international recognition.

By engaging solar light users, headteachers, solar agents, the public and traders across rural Africa, this data has helped establish a picture of solar light impact on income, education, health and the environment - crucial for informing poverty reduction strategies and government policy.

As well as providing the foundations of sector knowledge, our research is communicated to leading institutions around the world and provides critical insights for organisations such as the World Bank, UK Department for International Development (DFID) and Global Off-Grid Lighting Association (GOGLA).



## Some studies and collaborations:



SolarAid are managing a three year, large-scale randomised control trial into the impact of pico-solar lights on poverty alleviation. ETH Zurich are delivering the study in Kenya. Results and publication June 2016. **Funded by Google**.



SolarAid are managing a health study delivered by the University of California, Berkeley in Kenya. The study uses trackers to understand rates of exposure to pollution from kerosene lamps, to enable a larger study linking exposure to health outcomes. Results and publication June 2016. **Funded by Google.** 



SolarAid are managing a study looking at the impact on education of pico-solar lights; specifically performance, attendance and dropout rates. A research team at Stanford University are delivering the study in Zambia. **Funded by Stanford and DFID.** 



The University of Edinburgh and SolarAid are managing a three year collaborative PhD project to look at the waste, recycling and repair of solar lights in Kenya. Results in summer 2017. **Funded by Economic and Social Research Council (ESRC) and SolarAid.** 



#### Uniting the Sector: Standardised Research Metrics

Our Director of Research & Impact, Kat Harrison, has played an integral role in developing the GOGLA harmonised reporting framework for the off-grid energy sector.

As Chair of the GOGLA Social Impact working-group, she worked with d.light, Osram and advisors from the World Bank and GIZ to create a priority set of metrics to calculate sector data in a consistent way, enable the industry-wide aggregation of results and equip stakeholders to communicate impact. This is critical for understanding and communicating social outcomes, attracting investment and evaluating regulatory support.

A pilot of the GOGLA Framework was launched in June 2015. The working group are now developing reporting protocol and further refining research and processes. A public launch will take place later in the year.

# **Policy and Innovation**

SolarAid has profiled the potential of off-grid solar technology on the world stage and given a voice to those living without energy. Our knowledge and experience has been used to support businesses, aid agencies and public sector organisations, building a greater understanding of off-grid solutions at local, national and international level.



# **Shaping Policy**

#### VAT / tariffs:

We helped maintain zero VAT and tariffs on lights in Kenya and Tanzania, lobbying for a supportive enabling environment for solar energy.

#### **US Energise Africa Act:**

We successfully called for the eradication of the kerosene lamp to be recognised and included in the US Energise Africa Act.

#### **Regional Policy:**

Having worked with the World Bank on Light Library Programmes in Senegal, our Policy Team helped ensure that the ECOWAS Regional Efficient Lighting Policy addresses off-grid lighting.

### **Power for All**

SolarAid is a founding member of the Power for All advocacy campaign. Power for All is a multistakeholder alliance of companies and NGOs which calls for increased policy focus and investment in offgrid renewables.

Off-grid solutions have been estimated to achieve Sustainable Energy for All at 10% of the cost

anticipated by the International Energy Authority, in two thirds of the time.



## Sharing Knowledge

#### Sustainable Energy for All:

Head of Policy, Charlie Miller - co-Chair of GOGLA's Policy Working Group - led a panel on the evidence of solar light impact, focusing on links with mobile phones and access to finance, at the UN SE4All Forum in New York.

#### **UN International Year of Light:**

Linda Wamune, SunnyMoney's Kenyan Operations Director, was the keynote speaker at the launch of the UN International Year of Light and one of only 38 civil society representatives invited to attend UN Climate Week 2014.

#### Advising Key Stakeholders:

We have provided advisory support and market insights to grantmaking aid agencies, foundations and NGOs including DFID, GIZ, UNDP and UNICEF.

#### **Driving Investment:**

We worked with GOGLA to help attract \$100 million in commercial investment to the industry in 2014.

### **Driving Innovation**

#### Pay-As-You-Go:

To provide energy solutions for the very poorest, SunnyMoney has led various field trials of pay-as-you-go technology in small solar lights, aiming to create a model with repayments from as little as \$1 pcm. A recent trial in Malawi showed 0% default rates.

#### **Recycling:**

Working with Waste Electrical and Electrical Equipment Centre, SunnyMoney became the first solar light distributor to recycle products. It is supporting PhD research on the disposal of e-waste using pre-existing structures to avoid infrastructure costs.

#### E-waste:

SunnyMoney created a partnership for e-waste and worked with key players, Total (Africa's second largest solar light distributor), mobile company Safaricom and Nakumatt, Kenya's largest supermarket chain, on a partnership with East Africa Compliant Recycling.

### **Sector Wide Resource**

The Research and Policy teams at SolarAid were developed to fill a gap in knowledge on the impact of solar light solutions and a need to share findings at a policy level. Over the last 3 years, our data has provided invaluable insights, and advocacy efforts have contributed to rapid market expansion.

This work is just the beginning. At the end of this year specialists from SolarAid's Research and Policy teams will be transferring to a new organisational home to enable this function to thrive and to ensure that capacity and knowledge is shared more widely across the sector.

# WHAT YOU HELPED ACHIEVE

2006	Solarcentury founds SolarAid as an independent charity committing to an annual donation of 5% of its profits
2007	SolarAid secures additional funds from a range of donors to build programmes in Africa
2007	SolarAid supports Neema crafts pico-solar assembly project in Tanzania and installs a macro solar system on a Community centre in northern Malawi
2008	SolarAid sets up its first pico-solar programme in Malawi and establishes operations in Tanzania, Zambia and Kenya
2009 - 2011	SolarAid undertakes 416 solar installations on rural schools, community centres and clinics across Tanzania, Malawi, Zambia and Kenya
2009	SolarAid creates the SunnyMoney programme which focuses on rural distribution of pico-solar lights and systems
2010	SunnyMoney sells <b>three thousand solar lights</b> in just three days during a pilot on Mafia Island, Tanzania
2011	SunnyMoney is launched as a social enterprise, owned by SolarAid, and starts to replicate the successful Mafia Island pilot across Tanzania, Malawi, Zambia and Kenya
June 2011	SolarAid sets 'BHAG' goal to eradicate the kerosene lamp from Africa by 2020
Summer 2013	SolarAid wins Guardian Sustainable Business Award, Ashden Gold Award and Google Global Impact Challenge
December 2013	SolarAid partners with Google on the largest ever Randomised Control Trial study for pico-solar lights
January 2014:	SolarAid and SunnyMoney design and deliver new Light Library model in Senegal with the World Bank / Lighting Africa
April 2014	SunnyMoney sells its <b>millionth solar light</b>
June 2014	SunnyMoney receives Platinum GIIRS social impact rating, the highest possible
November 2014	SunnyMoney opens its office in Uganda
January 2015	SolarAid is a finalist in the Zayed Future Energy Prize
January 2015	SolarAid launches UN International Year of Light in Paris and London alongside HRH Duke of York
April 2015	SolarAid reaches <b>10 million people</b> with clean, safe solar light
July 2015	SunnyMoney is Highly Commended at the Unilever Global Development Award
July 2015	SolarAid's catalytic work brings solar markets in Tanzania and Kenya to a 'tipping point'
September 2015	SolarAid is a finalist in the UN Powering the Future Award





In 1997, Solarcentury, a small UK company set itself a goal - to give 5% of its profits to combat poverty and climate change. From those small beginnings, solar lights have lit up millions of lives and numerous individuals, groups and organisations have joined the journey, enabling communities across Africa to lead the way towards a brighter future.

### Here are guotes from just some of those who have supported this extraordinary Solar Revolution:

"With each agent I recruit and train I feel I am getting closer to the ultimate goal of eradicating the kerosene lamp." Ronald Isabirye, SunnyMoney Operations

"Today innovative

climate change could

Twice' Initiative 9BAR

who need it most."

Mark Gould,

CEO. Wholebake

are delighted to support SolarAid as they deliver clean, safe light to those



solutions to poverty and not be more important. With our 'Good Energy,



"What a great, practical and empowering way to reduce carbon emissions. We will spread this through our climate leaders to get Africa off kerosene and light the lives of millions!" Africa Climate Reality Project



"Nairobi Serena Hotels is excited to partner with SunnyMoney on the Hotel Room to Classroom initiative, equipping rural schools with solar lights and helping students pass their Kenya **Certificate of Primary Education** examinations."

Serena Hotels, Kenya

SERENA HOTELS

"Scotland Lights Up Malawi is proudly and wholeheartedly committed to supporting SolarAid in their efforts to combat poverty and climate change."

Scotland Lights Up Malawi





"Solar lights have made my community healthier and are helping give people jobs and income. I will work to sell as many lights as possible to full-stop the use of kerosene." Leah Rono, Solar Entrepreneur, Kenya

# Thank you!

"Without our supporters, donors, partners, advocates and families all across Africa sharing the message about solar light - none of this would have happened. Already, this incredible mix of people have achieved more than anyone thought possible. It makes me excited to think what else we can do if we keep working together!"

Richard Turner, Chief Fundraiser, SolarAid



"Few if any other businesses have launched a sustainable brand and enabled thousands of people to live more sustainably in such a short space of time." The Guardian



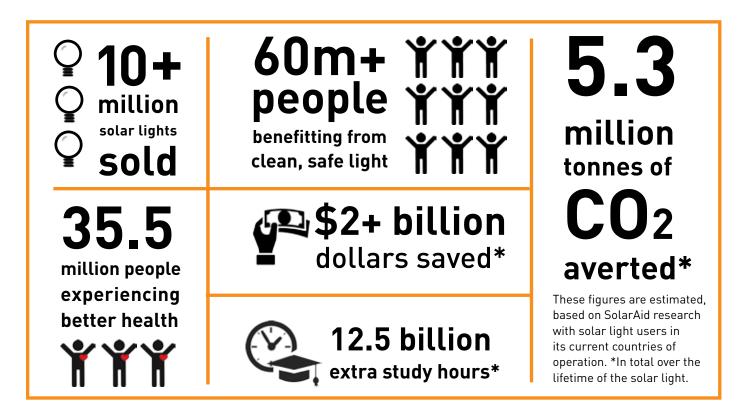
For a second year running the UK government supported our Christmas campaign, matching donations to help millions 'Light the Way' to a brighter future

# **A BRIGHTER FUTURE**

SolarAid and SunnyMoney are leading the way in eradicating the kerosene lamp from Africa by 2020.

We aim to sell over 10 million solar lights in 14 countries, benefiting over 60 million people.

# **Lighting up Lives**





# **Building Markets**

By continuing our critical role building demand and distribution networks, we will catalyse solar markets across the continent, helping to lift even more families from fuel poverty and making the kerosene lamp a thing of the past.

"Enabling pioneers such as SolarAid and Sunnymoney to do their ground-breaking 'grassroots' work is key, and perhaps the only way to ultimately reach universal energy access and a sustainable off-grid electrification market."

Koen Peters, Executive Director, Global Off-Grid Lighting Association.



# What's Next

# Enter New Countries and Regions:

We will continue our work to build offgrid solar markets in several new countries, reaching more communities with life-changing light and driving change at continent-level.

### Build a Sustainable Social Enterprise:

We will build on, and diversify, current revenue streams to ensure the sustainability of SunnyMoney operations in fast-moving frontier markets.

#### Develop Corporate Partnerships:

We will further develop our corporate and manufacturer partnerships, to enhance distribution networks and bring ever more efficient and affordable products to those in need.

#### Enhance NGO Partnerships:

We will build on our partnerships with NGOs to share knowledge, strengthen capacity and reach new communities with clean, safe light those at the 'very last inch of the very last mile'.

#### Create New Business Models:

We will develop new operational approaches to fit changing business dynamics and develop new funding mechanisms to drive growth.



# Be part of the Solar Revolution

Our market building approach has been proven as a quick, cost effective and sustainable way to get solar lights to rural families, kick-starting enterprise and low-carbon development.

Together we have the chance of a lifetime to help communities across Africa light the way towards a brighter future.

# Will you join us?

To find out more about SolarAid, please see www.solar-aid.org

For details of strategic plans and partnership / sponsorship opportunities, please contact info@solar-aid.org "SolarAid brings together the best of business and charity to tackle two of the world's biggest problems – climate change and poverty... I couldn't think of a better idea."

> Richard Branson, Entrepreneur

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