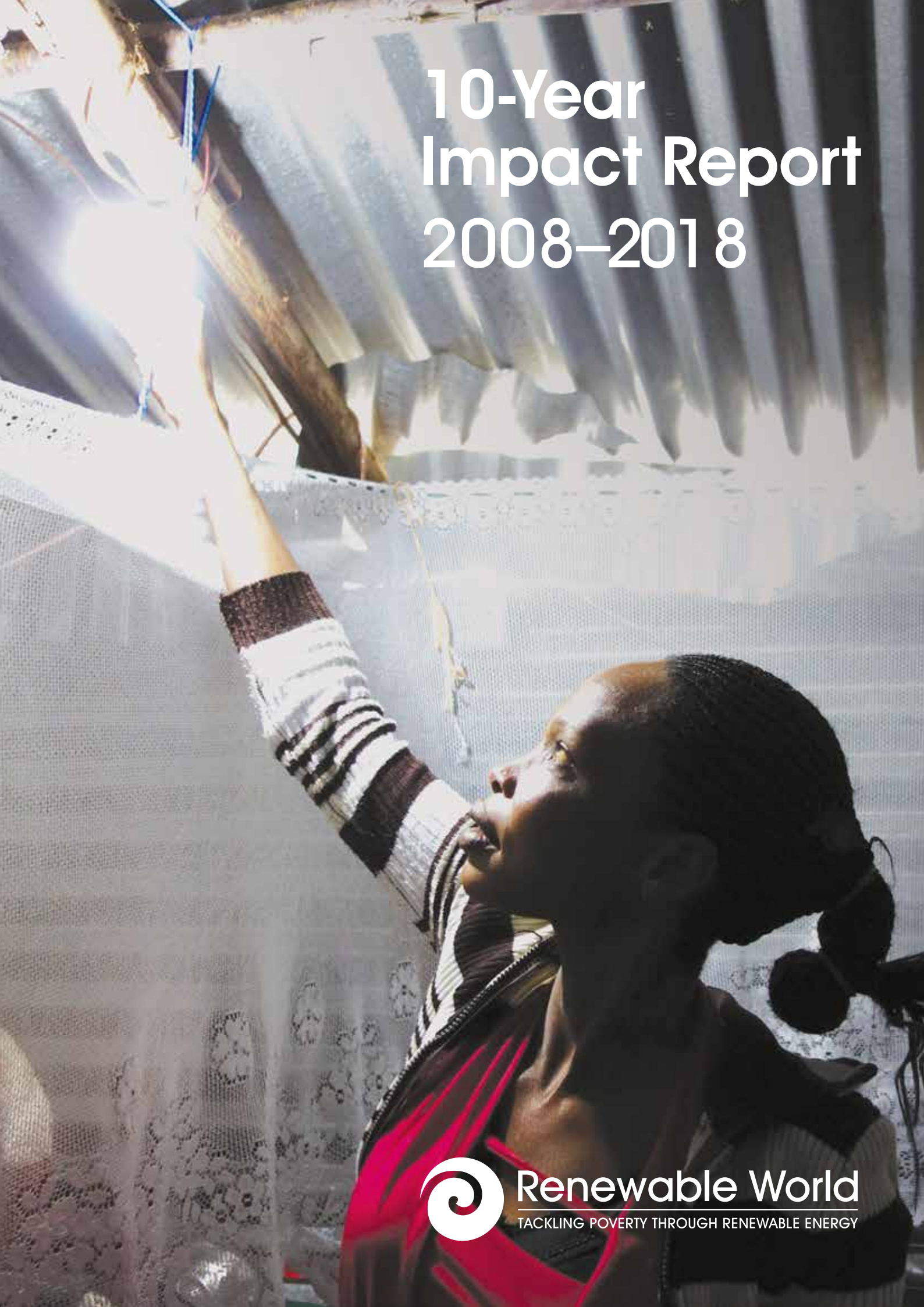


10-Year Impact Report 2008–2018

Renewable World

TACKLING POVERTY THROUGH RENEWABLE ENERGY

Our Vision

A world where renewable energy is readily accessible to all, helping to end extreme poverty and reduce climate change.

Our Mission

We will lead in developing and deploying effective ways of bringing renewable energy at scale to poor communities, empowering them to achieve sustainable and resilient livelihoods.

Our Goal

To increase access to clean, affordable and sustainable energy to tackle poverty for 100,000 people by 2022.

1.1 billion people around the world lack access to electricity – 77% are in rural areas

UNDP

200 million hours spent per day by women and girls fetching and carrying water

UNICEF

844 million people do not have access to clean water

World Health Organization

"Quite frankly, there is no answer to climate change without substantially, dramatically, increasing the amount of renewable energy in the global energy system"

Christiana Figueres
Executive Secretary of the United Nations Framework Convention on Climate Change

3.8 million people die prematurely each year from indoor air pollution caused by burning biomass
World Health Organization

Chair's Statement

Stephen Balint
Renewable World Chair, August 2016-present

As Renewable World marks its tenth year of tackling poverty through renewable energy, it is timely to reflect on our achievements since 2008. In total, almost 40,000 people have now benefitted from Renewable World's programmes, transforming people's health, education and economic security. Sometimes it is difficult to believe just how transformational our impact can be. In South Asia alone, Renewable World project sites now pump roughly 700 tonnes of water every day! Just imagine how that has totally changed the lives of the women and children who used to walk long distances to collect water and carry it back, often uphill, to their homes. Now, just like you or I, they can simply turn on a tap, leaving more time to study, earn income and spend time with their loved ones.

Our achievements are remarkable because the organisation started operating in the year of the global financial crisis and we still live in profoundly uncertain times. Inevitably, this has affected the availability of funding of all types, from international aid to individual donors. That we have achieved so much is a credit to the dedicated and passionate people who have been part of Renewable World over the last 10 years. To the staff, volunteers, ambassadors and trustees, and to the organisations and individuals who have had the faith to donate a total of £5,329,669[1], I would like to take this opportunity to thank you all.

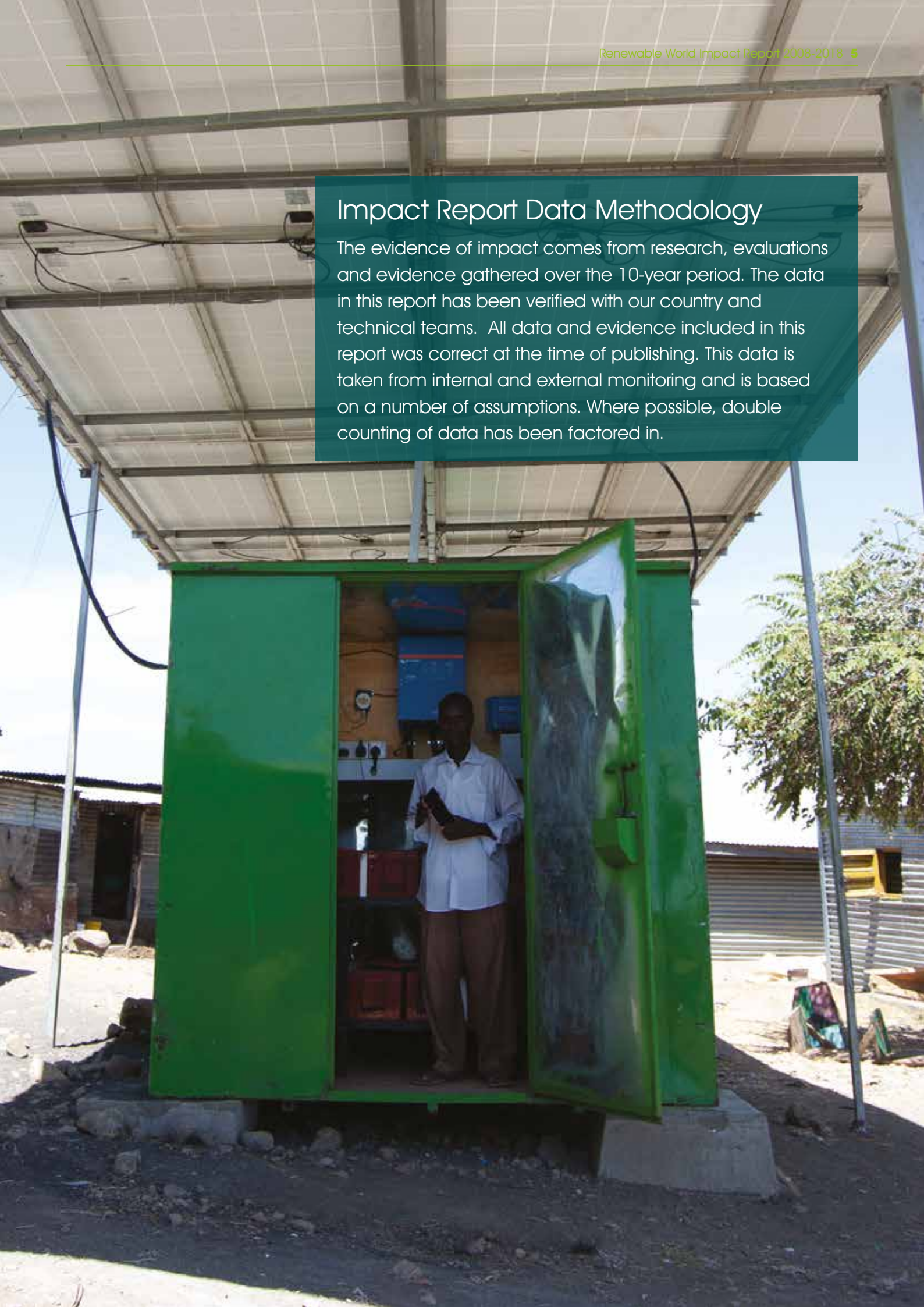
Looking forward, with over one billion people globally still without access to electricity, we will not relent in our ambition to move 100,000 people out of energy poverty by 2022. Achieving this target will require us to add further skills and capacity to our committed teams. The greatest challenge will be the scale-up of the funding required to support our programmes, but with your help we will succeed.

I believe there also needs to be a more radical change in the way renewable energy is delivered to communities. We need work more in partnership with governments to realise their contributions to the Sustainable Development Goals (SDGs). We also need to work with the private sector to ensure costs are affordable for the communities we serve, ideally to levels where grant funding is no longer required.

Can such a transformation be achieved? In the 1990s, I was privileged to set up some of the first UK renewable energy projects, built only with the help of generous subsidies. In 2018, renewable energy in the UK can now produce cheaper electricity than coal, gas or nuclear and the subsidies are rapidly coming to an end. I believe that a similar transformation can be achieved in South Asia and sub-Saharan Africa. It is my hope that Renewable World will play a key part in making it happen.

Stephen Balint – Chair

[1]Total income from financial years 2007/08 to 2017/18

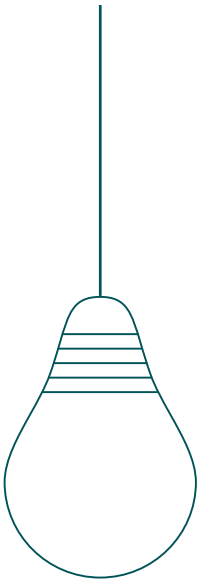


Impact Report Data Methodology

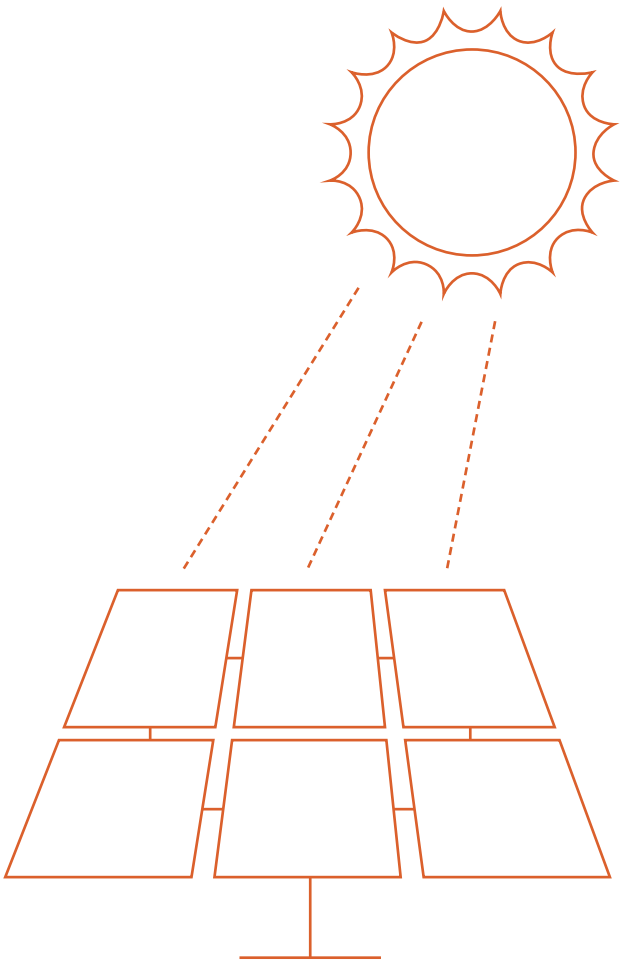
The evidence of impact comes from research, evaluations and evidence gathered over the 10-year period. The data in this report has been verified with our country and technical teams. All data and evidence included in this report was correct at the time of publishing. This data is taken from internal and external monitoring and is based on a number of assumptions. Where possible, double counting of data has been factored in.

Our Impact at a Glance

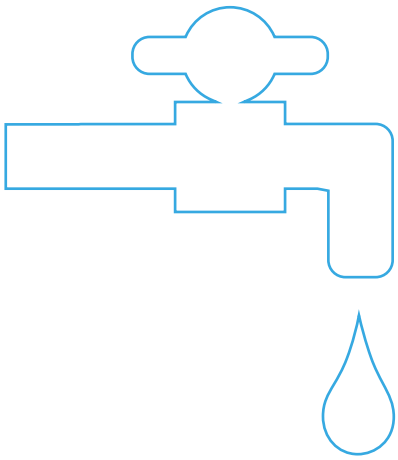
39,361 people reached through our work delivering renewable energy technology and associated services since 2008



3,420 households
reached



182 kilowatts of solar energy
installed



Over **450 million litres of water** pumped using renewable energy

222 institutions, small businesses and smallholders have benefitted from access to renewable energy through our projects

84 communities reached across South Asia, East Africa and Central America

Renewable World Timeline

2007

Officially established as The Koru Foundation in 2007 - Koru is the Maori name given to an unfurling fern and symbolizes new energy and hope.

2008

We begin work in 2008 by funding renewable energy projects with partners in Peru, Nepal, Uganda, Nicaragua, Mozambique and Tanzania.

2009

In 2009 we become the adopted charity of both the British and European Wind Energy Associations.

2010

The Koru Foundation becomes Renewable World, with a greater commitment to work with local partners.

We become the first non-Norwegian winner of the prestigious Statkraft Fund Award, enabling us to expand our programmes through partners in Nepal and Kenya.

2011

Renewable World facilitates a technology transfer project between the Alternative Indigenous Development Foundation INC in the Philippines and the Centre for Rural Technologies in Nepal. This brings the Hydraulic Ram Pump (Hydram) technology to Nepal.

2012

Renewable World plays an active role in the United Nations International Year of Sustainable Energy for All, presenting at one of the major Rio+20 side events, Fair Ideas, on innovative and affordable delivery models.

Renewable World opens its first overseas office in Kathmandu, Nepal, quickly followed by Nairobi, Kenya.

SUSTAINABLE ENERGY FOR ALL

Foundation and Partnering Phase: 2008-2012

12 projects delivered bringing access to renewable energy to **9,696 people**, across **16 communities** in seven countries.

2013

Renewable World launches the Comic Relief-funded RESOLVE Programme on the shores of Lake Victoria, Kenya.

The BBC Lifeline Appeal broadcasts on TV, narrated by TV personality Gethin Jones, focusing on our work in Nepal to bring water access to remote communities. This appeal raised £21,663.

2014

Renewable World becomes a partner to the UNICEF-led Adolescent Development And Participation project, setting up sites in Nepal to demonstrate solar water pumping, Hydram and biogas technology.

We become the technical partner to ADRA-led 'Initiative for Agriculture Productivity and Commercialization', overseeing the installation of 614 biogas units with benefits for 3,684 people.

The Community Biogas Programme commences in Nepal.

2015

Renewable World launches SolarMUS II in Nepal, our largest project to date, bringing water directly to 839 families.

A severe earthquake hits Nepal, killing around 9,000 people and causing relatively minor damage to water pumping infrastructure at nine sites installed by Renewable World. After raising almost £30,000 in an emergency appeal, Renewable World repairs these sites and provides much-needed emergency supplies.

Earth Wind & Tyre, Renewable World's flagship annual two-day cycle challenge from Durham to Edinburgh, is born.

2016

As part of the Mahogany Project in Nicaragua, Renewable World installs the first solar-powered home energy systems bought using micro-credit.

Levison Wood presents Renewable World's BBC Radio 4 Appeal. Overall, this raises over £30,000.

Renewable World commences work as a partner on the DFID-funded Building Resilience and Adaptation to Climate Change and Disasters (BRACED) programme, with iDE Nepal.

We launch our first project in Bangladesh, Powering Aquaculture, in partnership with iDE Bangladesh.

2017

We start work on four new solar microgrids (Energy Hubs) in fishing communities near Lake Victoria, Kenya.

Renewable World East Africa begins work with Renewvia Energy on an eight-site minigrid feasibility study funded by the United States Trade and Development Agency.

Renewable World wins the Energy Institute's Community Initiative Award for our community energy implementation at our Lake Victoria Energy Hubs.

2018

Renewable World begins piloting solar-powered ice-making and efficient cold storage in Kenya, alongside other programmes to deliver irrigation. We also start implementing our first solar microgrid in Nepal.

We commence work on four more SolarMUS sites in Nepal.

Piloting Phase: 2013-2018

18 projects delivered bringing access to renewable energy to **29,665 people**, across **68 communities** in four countries

Our Approach

Our Community-Centred Model was developed with academic partners and has been adapted through action-learning cycles over the last five years as a project implementing organisation. The award-winning[2] Community Centred Model is a structured framework and toolkit covering the stages of designing, delivering and maintaining community renewable energy projects.

Driven by our organisational values – sustainability, passion, enterprise, delivery and teamwork – we work systematically to create long-lasting social change. To achieve this, we follow our Organisational Theory of Change, explained on the right.

1. Catalyse

Catalyse initial change through clean energy-based innovations. Our first step in any project is to find the best ways to drive community-level innovation and enable social change using renewable energy. We ask communities about their needs and assess the resources available to them, planning their renewable energy systems to address their energy requirements whilst ensuring they will not deplete or redirect other communities' resources. We also complete Environmental Impact Assessments in each project to anticipate and minimise all environmental impacts. By piloting new technologies and business models in remote and challenging social settings, we deliver sustainable programmes capable of catalysing the development of some of the poorest communities.

2. Transform

Build partnerships to ensure community-centred transformation. We build resilient partnerships with stakeholders to create impact through the power of renewable energy. We include government, civil society organisations and non-governmental organisations who work across agriculture, education, water and health themes.

3. Include

Ensure equitable and just distribution of results through our Community-Centred Model. We then work with community stakeholders to implement these systems and train them in good governance. The communities manage the energy systems themselves to increase crop yields and varieties, pursue education, and start and grow businesses. Better and more diverse income streams boost community-wide resilience to economic difficulties and help them prosper. This step-by-step process enables us to include all members of the community at each stage of a project, helping to promote community ownership and inclusive access to these services.

4. Sustain

Achieve sustainability and drive future scale-up through evidence-based approaches. Finally, to achieve technical, financial and social sustainability, we are guided by our Sustainability Toolkit. We ensure that:

- The technology is accepted and valued by the community
- All members of the community are involved in the design process and have access to the energy
- Communities agree a fair price for their water or energy and introduce affordable tariffs which they pay into a collective account for ongoing maintenance and repair
- A governance structure is introduced that must be made up equally of men, women and young people
- Community members have the financial and technical capacity to maintain the system and use the energy to start or upgrade small businesses and generate income

We share our results and key learning with governments, civil society and businesses to support other projects. Overall, this evidence-based approach tackles energy poverty and water scarcity using tailored and appropriate technology to achieve positive impacts on health, education and livelihoods.

[2]Community Initiative Award – Energy Institute, 2017

"Gender equality is a basic human right. Based on this understanding, Renewable World believes that only by directly addressing gender discrimination and promoting gender equality and social inclusion can we advance our vision."

Renewable World's Gender Policy Statement

South Asia: Nepal & Bangladesh

Overview

Renewable World began implementing projects in Nepal in 2012 in partnership with iDE, and later in Bangladesh in 2015. Overall, we have delivered nearly 102KW of energy to 56 communities using a portfolio of community-owned technology, including hydraulic ram pumps (known as "Hydram"), large-scale community biogas, and solar microgrids and water pumps.

Impact

21,606 people reached in South Asia

54 communities in 20 districts **in Nepal**

2 communities in 2 districts **in Bangladesh**

16 projects

696,455 litres pumped per day

[3]The Human Development Index 2018

[4]The Global Multidimensional Poverty Index Data Bank 2018

[5]The Global Multidimensional Poverty Index Data Bank 2018

[6]The World Health Organisation, 2018

Need

Nepal and Bangladesh rank 149th and 136th respectively in the Human Development Index[3]. Despite their recent success in reducing poverty, the quality of their education, health care and infrastructure remains low, especially for the rural poor. Both countries suffer from challenging internal landscapes and are susceptible to natural disaster such as earthquakes and severe flooding. Today, around 35% of Nepal's population is understood to be poor in terms of health, education and living standards[4]. This is referred to as multidimensionally poor, accounting for health, education and living standards. This is even higher at 40% for Bangladesh[5].

In rural areas, people depend on small-scale agriculture and polluting cooking methods to meet their basic needs. Women and girls are forced to walk long distances to collect water, often for over four hours a day, just to maintain their garden plots and households. Climate change now poses a daily threat to many of these communities as traditional crops begin to fail under erratic rainfall and intense flooding, undermining their income and food security.

Our Action

Renewable World has installed locally made Hydrams and one UK-manufactured Papa Pump in 13 communities across five districts in Nepal. The technology works by using energy from water naturally flowing downhill to lift a smaller amount to a much greater height, making it highly appropriate for some remote communities. A single Hydram can typically lift 20,000 litres of water a day (the equivalent of filling 250 baths) up to 200m. Our Hydrams and Papa Pumps now lift 259,612 litres of water a day, benefitting 2,538 people, with communities now able to grow crops on land that was previously barren during the dry season.

Renewable World has also installed biogas facilities with a total capacity of 4,049m^3, providing clean cooking energy and fertiliser for 4,217 people in Nepal. Biogas is a methane-rich combustible gas with a low carbon footprint, produced by anaerobic digestion of organic matter, such as manure and sewage. Community-owned biogas systems and the training we offer alongside installing the system offer a healthy alternative to cooking indoors with harmful wood, dung cake or kerosene that kill 3.8 million globally each year[6]. Overall, Renewable World has installed 624 household or community-level systems.

In Bangladesh, we worked with two fish hatcheries and surrounding villages to install two solar microgrids to increase the productivity of these businesses. This subsidised the installation of 26 energy connections to enhance the productivity of small businesses, reduce energy costs and increase household access to energy for 167 people in the villages.

Photo: Biogas systems are well received in Nepal

Funders

USAID (Powering Agriculture), Big Lottery Fund, Jersey Overseas Aid, NCell, UNICEF, Guernsey Overseas Aid, ESB, Sylvia Adams Charitable Trust, Allan and Nesta Ferguson Charitable Trust, European Wind Energy Association, Evan Cornish Foundation, International Power, Statkraft AS, Zurich Community Trust, ADRA

Partnerships

We have chosen our strategic partners carefully to ensure we deliver impact which can be taken to scale. Our partners include: Adventist Relief and Development Agency (ADRA), International Development Enterprises (iDE), the United Nations Children's Fund (UNICEF), and NCell. Renewable World has also played a key role in providing renewable energy technical expertise on projects including the DfID-funded BRACED programme, which is helping people become more resilient to climate extremes.

Photo: A beneficiary enjoys pumped water in Magare, Nepal

Next Steps

Renewable World will continue to evolve and grow in South Asia, with new partnerships remaining core to our CCM. For example, with funding from EKOEnergy we shall develop our first solar microgrid in Nepal, building on our learning from Kenya. The project, 'Solar Energy for Community Resilience in Nepal' (SECuRE), aims to catalyse community development by powering households, small enterprises, a health centre and a flood warning system, benefitting around 2,750 people by 2020. We also plan to deliver innovative Nepalese technology combining wind and solar power as part of our commitment to support local partners in the renewable energy supply chain to deliver community-scale solutions.

Finally, we will broaden our existing programmes. For instance, we will adapt our biogas programmes to include community-driven business models and expect our proven water pumping programmes to be deployed in new places such as schools, health centres and agro-processing plants. By developing bold partnerships, particularly with companies and financial institutions, we will utilise community contributions through affordable finance and enable enterprises to become equity stakeholders. The result will be less reliance on grants and subsidies, bringing community-centred renewable technology to even more people that truly need it.

"I have been interested in water and electricity ever since I was young. Renewable World has given me the ability to explore both for the purpose of socioeconomic development, whilst enriching my understanding of people, policy and strategy."

Baburam Paudel
Global Technical Manager

Yo Maya's Climate-Smart Start-Up

In 2015, Renewable World installed a Hydram in the village of Eladi, Syangja district. The Hydram lifts water to her community before being distributed for everyday use, such as washing, cooking and watering kitchen gardens. The Hydram is inexpensive to install and maintain, with low environmental impact.

Yo Maya explained, "Before the project, life was difficult and there was no time to work. Chores were hard and never-ending, especially when we had to carry water to irrigate our vegetable garden. I used to spend two hours a day carrying water for a small plot near my house. I could only grow vegetables for one season a year – just enough to eat at home.

"Now, I have water all year round. My agriculture training taught me the best crops and practices for my climate, which encouraged me to try vegetable farming on a commercial scale. Being able to grow in the dry season has made a huge difference to my income. I am now confident enough to negotiate prices in the market and sold my last produce for NPR 14,000 (£100) in one season!"

South Asia:
Solar Water Pumping with Multiple Use Systems (SolarMUS)

Overview

SolarMUS is Renewable World's largest and highest impact programme. This simple system uses solar energy to pump water to storage tanks in hilltop communities, which then uses gravity to transport the water for washing, cooking and agricultural purposes. The potential to lift water over 200 vertical metres with equipment lifetimes of up to 20 years makes SolarMUS a highly practical solution. To date, we have delivered 29 SolarMUS, lifting an incredible 436,843 litres of water per day (enough water for 7,000 showers) to a total of 8,475 people.

Impact

Average **£240 increase** in annual **household income**

82% increase in households growing vegetables as a result of improved access to water

68% decrease in illness and injuries from water-carrying

82% of women and girls **saved** an average of **2.4 hours per day** that was spent collecting water

44% of the **executive members** in water user committees are **women**

SolarMUS II: Actions and impacts

Between 2015-18, Renewable World partnered with the Big Lottery Fund to deliver phase two of our SolarMUS Programme, which alone lifts 284,787 litres of water per day.

Guided by our Community-Centred Model, Renewable World also delivered livelihood training to 2,927 people, with the support of local partners, to ensure longevity of impact at each project site. This has improved people's knowledge of which crops are best to grow in their climate conditions and helped families sell crops at their local market, with clear results. For example, the communities reported an impressive 70% increase in household income, with 43% of households reported a greater consumption of fresh vegetables and 85% declaring they now feel healthier than before. Additionally, a huge 95% time saving from collecting water was reported, creating room for income-generating activities and more family time. Overall, the project has directly increased these vulnerable communities' resilience to climatic and socio-economic shocks.

Through SolarMUS II, Renewable World also developed a viable scale-up model to guide future programmes. By part-funding the costs of capital infrastructure with grants and then supporting communities in sourcing funding from locally available grants and subsidies, we encourage community involvement on each project. We support community-level contributions in cash and in kind and we have seen that this helps to ensure long-term community ownership and sustainability of each project.

Next Steps

Launching in 2018, Renewable World is delighted to announce a new partnership with Jersey Overseas Aid (JOA) and the Unica Foundation. Building on the strong foundations of SolarMUS I and II, this new chapter will place climate change resilience, environmental protection and safe water use at the heart of a project to provide direct water access. This will benefit at least 550 households in four communities in Surkhet that are situated above their water source. We expect this to enable these communities to increase their food security and generate income, whilst dramatically reducing the daily burden faced by women and girls when fetching water from distant sources. This will also offer us the opportunity to pilot 'real time monitoring' to determine the efficiency and effectiveness of each system.

Sabitri's Story

"I used to get up at 4.00am and sometimes even 2.00am to get in the queue to collect water. It meant I could do nothing else other than just survive." Sabitri Nepali lives in Naram Gaun, in Gulmi district, Nepal. A year ago, her life was dominated by a two hour round trip to the nearest water source four times a day. Sabitri's 15-year old son, Rashkumar often collected water up to four times a day. *"There were fights over others pushing in the queue. I got very tired and very fed up, and I missed lessons and whole days of school."*

Last year, Renewable World installed a solar-powered water pump in Sabitri's village, one of 17 in Nepal supported by the BIG Lottery Fund. The community contributed 480,000 Nepalese Rupees (about £3,132) in cash and sourced 1,610,000 Nepalese Rupees (about £10,512) of in kind contributions. Renewable World's Team supported the community to access locally-available grants, funding 57% of the infrastructure costs. The community also helped to clear ground, mix cement and dig trenches for pipes. Renewable World then organised finance and governance training for the Community Water Users Group.

Fast forward to Summer 2018. Sabitri now has a vegetable garden full of lush beans, tomatoes and cauliflowers, irrigated by her new tap stand. After she takes her produce to the village vegetable collection centre, it is crated up and delivered to the market. Last year, village's vegetable sales totalled 12,500 Nepalese Rupees (around £82). This year, their sales have already reached 30,000 Nepali Rupees (around £196). All three boys have stopped collecting water and no longer miss school. As Rashkumar says, *"I have time for homework and playing volleyball with my friends. There is a local competition and we have time to practice. This year, we are going to win!"*

East Africa: Lighting up Lake Victoria

Overview

Renewable World has supported small scale energy projects across Kenya, Tanzania, Uganda and Mozambique since 2008. Recently, we have focussed on improving access to renewable energy for fishing communities through our Lighting up Lake Victoria programme. This began in 2013 with 'Renewable Energy Solutions for Lake Victoria Ecosystems' (RESOLVE), and later, 'The Energy Hubs Programme' since 2017.

RESOLVE Funder: Comic Relief

Impact

12,274 people reached in East Africa

14 communities reached

81 institutions, small businesses and cooperatives reached

44 kW capacity installed

Need

Kenya may have access to the vast resources of Lake Victoria, the world's largest inland fishery, but it still experiences extreme poverty. Today, roughly one in three Kenyans live below the international poverty line of $1.90 a day[7].

In fact, the vast, calm waters of Lake Victoria belie the hardships faced by its communities. Since the soil is hard to cultivate, fishing provides the main source of income. Yet, with little or no electricity fish traders cannot preserve the value of their catch, forcing them to sell at unfair prices. With few alternative livelihoods available and high levels of malnutrition, unemployment and HIV/AIDS, the area has become known as 'the belt of poverty.'

Actions

In May 2013, Renewable World launched RESOLVE to provide six remote lakeside communities with access to clean energy by installing community-owned solar/wind microgrids. The project aimed to improve health, income and education for those living on the shores of Lake Victoria.

First, we identified the communities through pre-feasibility studies and worked with them to understand their needs. We then helped them establish six legally-registered community-based organisations, who after appropriate governance and financial training were able to manage their renewable energy systems. Today, RESOLVE provides power for 1,734 people, including 64 households and 32 businesses.

RESOLVE Impact

The average increase in the communities' income was 18.9%, resulting primarily from new businesses like mobile phone charging, hairdressing and new cinema halls, as well as improved demand for fish and fishing gear. In addition, the 96 new energy connections have reduced people's average monthly spend on lighting by over half to 470 Kenyan Shillings (£3.41).

Communities have also enjoyed reduced indoor air pollution and combustion-related injury as their reliance on traditional, polluting kerosene lamps has decreased, with over a quarter of beneficiaries reporting less illness or injury.

An independent evaluation of the RESOLVE project commissioned for funder Comic Relief found that:

- Our approach is cost-effective and comparatively cheap (to available fossil fuels) for users both in terms of the cost of connecting households and the ongoing cost of energy
- Incomes increased for all people in the project sites by between 9.4% and 16%
- People felt more confident and optimistic about the business and income generating opportunities created by the hubs.
- The learning from RESOLVE provided an invaluable foundation for Phase II of the programme

[7]Kenya National Bureau of Statistics, 2018

Business Time for Rose

Rose established a small bar on the shores of Lake Victoria over five years ago. In 2015, as part of Renewable World's RESOLVE project, Rose gained access to the newly installed solar energy hub in her village, Ragwe, which has radically improved her life.

Whereas Rose used to rely on an expensive diesel generator for electricity, following her switch to clean, renewable energy, her daily energy costs have dropped by 75%. With these savings, Rose has been able to invest systematically in her business resulting in an incredible 250% increase in profits!

In addition to her vastly improved disposable income, Rose's switch to solar power means she's escaped her noisy, polluting diesel generator. *"I used to have lots of chest problems because of the smoke, but since the solar light I have not had health problems"* she says, explaining that this means her customers also wish to stay longer.

"Because the business is doing well, my life is now comfortable. I use the extra income to pay for school fees for my kids," Rose says proudly. The solar-powered hub, described by Rose as "the light", has brightened up her family's life meaning they all feel confident about the future.

East Africa: Energy Hubs Project

Overview

In Lake Victoria fishing communities, many women become fish traders but often struggle to sell at fair prices, with some forced into sexual favours just to close a deal. Due to limited agricultural experience and a lack of irrigation, people find it tough to cultivate crops for sale beyond subsistence levels. Since the communities' progress under RESOLVE proved so successful, the Energy Hubs project incorporated additional agricultural support.

Impact

14kW of generation installed

4 community-owned energy **systems** established

127 households connected to date with more planned in 2019

21 Businesses connected, including 4 agricultural co-operatives supplied with water pumping and irrigation

39% of people **in decision-making roles** in CBO and enterprise **are women**

50% of beneficiaries experienced a **decrease in frequency of illness or injury**

Actions & Impacts

The Energy Hubs Project built on organisational learning from RESOLVE with the aim of providing new energy connections and improving agricultural opportunities in the target communities of Ragwe, Mirunda, Kiwa and Sika. Renewable World installed four new microgrids complete with a water pump, storage tank, pipework and drip-irrigation kits to support crop cultivation in each of the communities.

Each community clearly articulated their need for improved water access to make agriculture commercially viable as an alternative livelihood. Since the women's agricultural cooperatives already existed, we provided agricultural training to improve their understanding of the best crops to grow and techniques to use, thereby maximising the benefits of the irrigation system. This has helped communities such as Kiwa to fulfil their agricultural potential. Thanks to the irrigation system, the Kiwa Women's Group grew an impressive 30,000kg of tomatoes in their first harvest and now expect an additional two harvests each year, effectively giving them the ability to triple their already record-breaking yield.

Funders

Acre Properties, Bentley Systems, The Charles Hayward Foundation, The Dulverton Trust, The Green Room Charitable Trust, Mitsubishi Corporation Fund for Europe and Africa (MCFEA), Paul Foundation, The Peter Sowerby Foundation, United States African Development Foundation

Next Steps

Over the next few years, The Energy Hubs Project aims to install 50 solar microgrids in fishing communities around Lake Victoria in Kenya, Tanzania and Uganda. These grids will each have a capacity of between 7kW and 15kW, necessary to power an estimated total of 4,500 households and 500 micro-businesses. By trialing new community-private sector ownership models, our target is to introduce clean, renewable energy to around 64,000 people in East Africa by 2022.

In Kiwa island, we are now also piloting an innovative solar-powered ice-making programme, which will involve the most vulnerable members of the community. This will enhance income generation for them, as well as others like fishermen and female fish traders, as they will be able to preserve the value of their catch for market. If successful, this project will be rolled out to a further 2,450 people in 17 poor fishing communities.

In order to increase opportunities, we will be piloting new social business structures closely aligned with Renewable World East Africa, which will maximise available funding.

Siprina Reaps Rewards

Siprina Omwanda lost her husband in 1999 and has raised her family of seven children and six grandchildren alone ever since. A true 50-year old matriarch, Siprina works up to five jobs and is the Chair of the Kiwa Women's Group – a farming cooperative of 23 women.

Without irrigation, the Women's Group rarely produced enough to sell regularly. Yet, because of the volatility of fishing-related income, agriculture has become increasingly attractive. *"Money from the group's work is important because it helps pay school fees, or you can exchange vegetables instead of school fees, whereas income from fishing is not guaranteed"* explains Siprina. Irrigation is essential as the land, although fertile, is hard to work. The only alternatives are to fetch water uphill from the lake or use an expensive diesel generator to pump water.

Siprina's family now not only benefit from their cheaper lighting that enables the children to study for longer, but also from their vastly improved agricultural income. It's now possible to grow onions, kale, cabbages and vegetables, meaning greater income diversity and food security for Siprina, her family and the entire cooperative.

Photo: Mary Odera, Mirunda Women's Group, harvesting the first crop of tomatoes

Central America: Nicaragua & others

Overview

Starting in 2009 under The Koru Foundation, our projects in Central America have included Cuba, Colombia and Peru, with a main focus on Nicaragua. Overall, we have used solar energy systems and piloted new credit mechanisms to improve health, education, nutrition and income for households, as well as rural communities' access to basic services.

Impact

9 projects

15 communities

5,908 beneficiaries

10 institutions and enterprises

36kW energy installed through 126 small scale solar energy systems

Need

Nicaragua is one of the most impoverished countries in Central America, ranking 124th in the Human Development Index[8]. For people living in isolated communities, fuel for energy and lighting is expensive and difficult to obtain, with fossil fuel prices fluctuating unpredictably. Limited access to energy severely inhibits rural communities and limits the services that local institutions, such as health centres and schools, are able to provide.

Actions and Next Steps

We have worked closely with partners to reach some of the poorest communities in Central America. We have funded wind and solar projects to improve educational opportunities for children and used solar energy to support health clinics and schools to improve their quality of service. We have also provided solar home systems to replace traditional polluting fuels. Overall, we have reached 514 households in 14 communities.

Renewable World will now shift focus back to East Africa and South Asia. We will use the lessons learned, such as the popularity of household solar systems and credit facility, to guide our global programmes to reach even more energy-poor communities.

Funders

Electric Aid, Gaelectric, Genesis Foundation, Open Gate Trust, RWE

The Mahogany Project

Started in 2014 and completed in 2017, the Mahogany Project supported three isolated businesses located within a forest reserve on the eastern coast of Nicaragua with access solar energy systems for homes and enterprises. The three remote communities of Magnolia, Belen and Hone Creek are extremely isolated, located inland along the vast Rio Escondido. For these communities, who are at least a four-hour boat ride away from the nearest big town, access to energy for even the most basic daily activity is challenging and expensive.

The project, delivered with the support from our in-country partners blueEnergy, iDE-Al and FADCANIC, set up a bespoke micro-credit facility to enable families and small businesses to purchase high quality solar energy systems at an affordable rate. These solar PV systems replace traditional fuels used for lighting such as candles, kerosene and diesel, and have led to improved living conditions for families, reduced energy costs, and improved income generating opportunities. In total, 66 households, three enterprises and one community church have accessed the credit facility and solar energy systems installed.

The key impacts of the Mahogany Project include:

- 505 beneficiaries reached
- 70 solar energy systems installed
- 7 young adults trained as solar technicians
- 66% increase in time children spent studying or on homework after dark
- 19% increase in households using solar power for income generating actives at home

[8]The Human Development Index 2018

Bringing Light to the Heart of a Community

Magnolia village lies along the Rio Escondido on the eastern coast of Nicaragua and is one of the communities that has been supported through the Mahogany Project. At the heart of the community lies the Christian Evangelical Pentecostal Mission Church, which not only is a place of worship, but also acts as a community centre where youth groups and women's groups can gather, where health camps are held, and where community members take shelter during severe weather. A diesel generator used to be their only source of power and because of the high cost of diesel and the difficulty in getting hold of it, it was only used during allocated periods each day.

In 2017, the church community in Magnolia were able to come together and purchase a solar power system though the Mahogany Project credit facility, which now gives them more reliable and sustainable energy at a much more affordable rate. The solar power allows activities to carry on later into the evening and has meant more youth focused activities can now take place, including music and health classes. The system also powers two security lights outside the church, providing lighting and security for the community.

Our Partners

Our work would simply not be possible without the many individual donors, funders and partners whom Renewable World has worked with over the last 10 years. Whilst larger multi-year grants fund the bulk of our programmes, smaller regular donations provide a bedrock of income and financial stability to design and deliver our work.

We are especially appreciative of the following organisations:

Founding Partners

SSE Renewables, natural power, SeaRoc, Airtricity, ascot renewco

Renewable Energy Industry and Corporate Partners

SSE Renewables, res power for good, HFW, RINA, Acre Properties, renewableUK, scottish renewables, Statkraft, natural power, EDF renewables

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Implementing Partners

blueEnergy, iDE, BSP, ADRA, unicef, SAPPROS - NEPAL, OSIENALA, CRT

Our Flagship Event: Earth Wind & Tyre Cycle Challenge

Since 2015, Renewable World's annual wind energy-themed cycle challenge keeps going from strength to strength. This two-day road cycling event brings together teams and individuals from across the renewable energy industry and beyond to raise funds for our work.

In celebration of renewable energy and the power it holds to transform lives, the 216-mile route passes by 11 iconic wind farms as it winds its way up from Durham to Edinburgh. With leg-testing climbs and euphoric views, it's a truly spectacular event for all involved.

Since 2015:

204 participants have taken part

Roughly **40,000 miles** have been cycled

21 different **companies** have **sponsored** the event

We have **raised £277,500** to tackle poverty through renewable energy

Looking Ahead

Matt Stubberfield
Chief Operating Officer

When I joined five years ago our projects were small and innovative, now they are truly impactful - as the 8,475 people benefitting from solar pumped water in Nepal are now experiencing. In mid-2017, I had the pleasure of visiting one such Nepali hillside community, Magare, three months after systems had been installed. The colourfully dressed women had big smiles on their faces now that their daily life had been eased by energy, generating the valuable commodity of time! I was lucky to talk to Akash, a young migrant worker back with his family for the first time in over a year from working overseas on a middle eastern construction site. He was amazed by the transformation that pumped water gave. No one had cared to help his community before, now he hoped to stay home for longer. The community seemed so happy and energised. Unfortunately, although we had helped 23 households, some could not be connected as their houses were too far away and Akash's family was one of them.

Our challenge is to reach many more communities and as many people as possible within each community so that we don't leave people like Akash behind. We strive to make a meaningful contribution to achieving the 2030 Global Goals (or the SDGs) on Energy, Poverty, Water and more.

We will meet our own bold goal by scaling-up our existing water pumping and microgrid energy projects with technical and business model innovations. As well as more connections for households, we will provide even more renewable energy to power small-scale businesses to generate more income and employment in communities. This will include water pumping for irrigation and food, and ice-making or cold storage for food and fish preservation.

We will adapt our offering to benefit more people within community institutions, such as schools and health centres. Further, we shall broaden our reach by ensuring an inclusive approach so that everybody in the communities we work with can benefit, not just those in the centre of the village with a direct biogas, electricity or water connection. Working with communities, we will design and offer new cost-effective energy solutions, training and support for these in parallel to our core community energy systems. These are likely to include solar home systems for lighting and mobile charging, as well as cleaner cookstoves to ensure we leave no one behind.

We remain committed to our two regions in South Asia and East Africa. This is where the need for electricity, clean water and clean cooking is the greatest, and in some countries still growing, and where we already have a track record of delivery. We will work through our local team of experts and partners, and increasingly through strategic regional alliances for funding and implementation. We recognise our niche as community-scale renewable energy system experts and will use this to maximise our impact through carefully developed programme partnerships, ensuring the poorest benefit. Further, we remain committed to value for money in our UK centre and region programme teams.

We will continue to broaden our funding sources from grant and local subsidy, to obtain affordable community contributions either directly or through loans offered through local financial institution partners. Further, we will explore and test the potential of regional social enterprise organisations to accelerate our impact and generate a fair return and take a longer-term stake with our projects, e.g. through operations and maintenance.

We look forward to powering 100,000 people out of poverty though clean energy by 2022 and making our contribution towards the Sustainable Development Goals for 2030.

Matt Stubberfield – Chief Operating Officer

"By 2030, 2.3 billion people will still lack access to clean cooking facilities, with 2.5 million premature deaths each year still attributable to the resulting household air pollution."

Energy Outlook IEA, 2017

Photo: Irrigation tanks on Lake Victoria, Kenya.

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