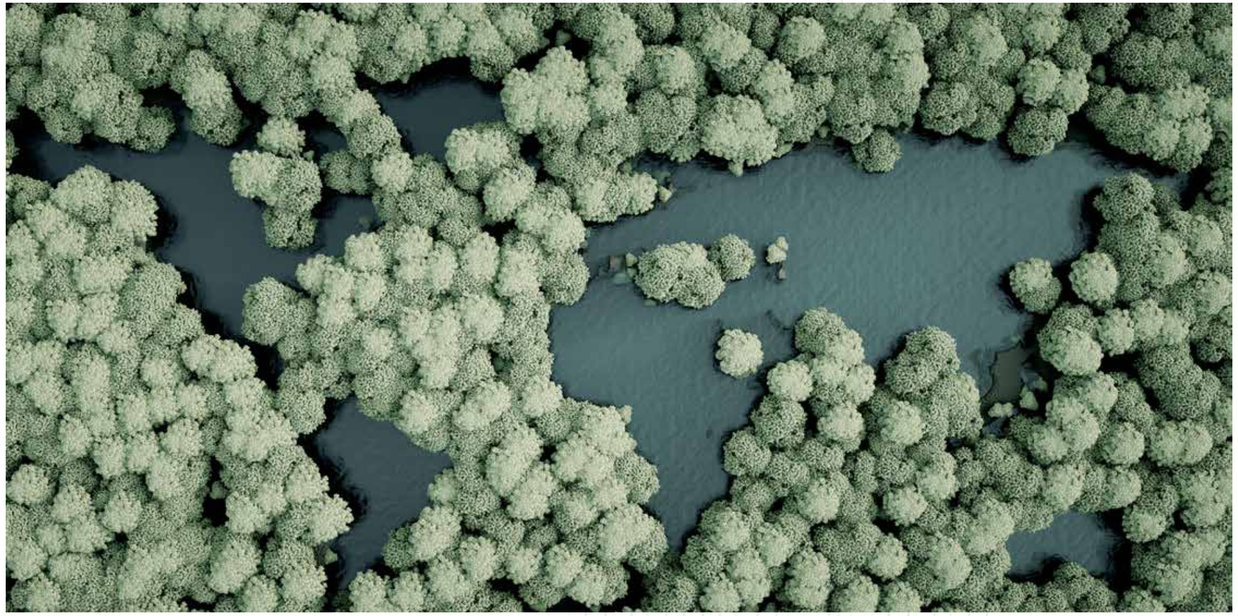
Zayed Sustainability Prize

Impact Book

Table of Contents



Highlights & Key Achievements

Food Security

Okuafo Foundation

2020 Winner

2 ZERO HUNGER

The United Nations' Sustainable Development Goal 2 seeks to End Hunger, Achieve Food Security and Improved Nutrition and Promote Sustainable Agriculture by 2030.

Background

According to the World Food Programme, poverty is a major cause of hunger and malnutrition in Ghana. Despite rapid urbanisation, poverty and food insecurity are largely rural problems, related to inefficient food systems. Farmers face challenges from climate change, low produce prices, poor road infrastructure, lack of access to finance, inadequate markets, post-harvest losses and unsustainable farming systems, amongst other factors.

The United Nations' Sustainable Development Goal 2 seeks to end hunger, achieve food security and improved nutrition and promote sustainable agriculture by 2030. However, there is a major threat to achieving this goal. Farmers in rural areas, who are mostly subsistence farmers, lose more than half of their crops to pest infestations - this increases the number of children who go to bed on an empty stomach.

The Challenge

Farmers in the Tano North and Tano South Districts in the Ahafo Region of Ghana primarily grow and cultivate cassava, maize, yam, cocoyam, and vegetables. In recent times, there has been a significant decline in production especially for smallholder farmers, due to several factors including pest infestations, poor infrastructure, post-harvest losses and lack of a ready market.

Farmers live in extreme poverty because they cannot produce enough to feed their families and sell the excess to earn a living. One of the key problems that was identified by the Okuafo Foundation was the fact that farmers in rural districts lacked access to real-time information about their fields. This resulted in poor management decisions and increased production cost. Secondly, pest control measures adopted by farmers were expensive, labour-intensive and not sustainable.

The Solution

Using high-precision drones, the Foundation mapped 84 farms in Tano South and 67 in Tano North as part of a case study and deployed Mobile Base Stations to improve accuracy and precision. Based on the findings, Okuafo Foundation provided sustainable action measures to help fight pests and identify over and under-watering, along with precise fertiliser application.

To help tackle these critical challenges, Okuafo Foundation proposed solutions to minimise these adverse effects by partnering with the Ghanaian Ministry of Food and Agriculture and a number of precision agriculture solutions were deployed including the use of drones, Multi-Spectral Imaging Sensors and High Precision Global Navigation Satellite Systems.

Through Okuafo Foundation's PrecisionAg tool, farmers could assess the level of pests spread, which greatly reduced the use of chemical pesticides, enabled early infestation detection, and paved the way for environmentally friendly control measures, such as simple handpicking.

The Impact

18,000
people now have access to safe and nutritious food through the 1,112 farmers that were reached

5,200
farmers participated in Okuafo Foundation's COVID-19 awareness programmes, which include tackling misinformation about the virus, as well as alternative ways of making reusable face masks

2,184
farmers from 38 communities were trained in effective pest control and the use of Okuafo Foundation's AI app

12,000+
hectares of agricultural farmland were mapped to check the accuracy of remotely sensed data, benefiting 800 smallholder farmers and 6 large-scale commercial farms, who witnessed a 40% production cost reduction coupled with a 45% increase in yield

Case Study

Mr. Kwasi Fobi is a 56-year-old cashew farmer from Akumadan Afrancho, a village in the Bosomtwe District in the Ashanti Region of Ghana. He is married to two wives with two children and has been in the farming business for 29 years.

Unfortunately, his first daughter, a police officer in training, died. His second daughter is a nurse in training. Mr. Kwasi and his wives work on his six-acre farm to support their family. When the farming season is off, he works as a driver and his wives engage in trade. In recent years, Mr. Kwasi's growing health conditions have rendered him incapable of work.

Due to his health conditions, the family's economic hardship worsened. His farm usually produces about 108 bags every season. His inability to work efficiently on the farm forced him to hire labourers. This increased his production cost and other factors reduced his output, such as pests, fertiliser cost, weed invasion and irrigation failures.

However, with Okuafo Foundation's intervention, in 2020 Mr. Kwasi started the season with experts on his side, providing him with support and timely information. Through Okuafo Foundation's PrecisionAg solution, Mr. Kwasi had insights into what was happening on his farm in terms of monitoring and pre-emptive action, which saved Mr. Kwasi a considerable amount of money, and at the end of the season, his harvest yield increased by 138%, compared to the previous season.

Since then, Mr. Kwasi and his family have become experts on the new technology and ambassadors in the Akumadan Afrancho community, as they spread awareness and highlight the benefits to other members in their community.

About Okuafo Foundation

The Okuafo Foundation is a Ghanaian small and medium enterprise (SME) that developed a smartphone application that utilises artificial intelligence (AI), machine learning (ML) and data analytics to predict and detect crop diseases, infestations, and offers recommended solutions, based on scientific knowledge, in real-time. The application was designed to be used by rural farmers and operates without an internet connection.

As the 2020 Zayed Sustainability Prize winner under the 'Food' category, the Prize enabled Okuafo Foundation to optimise operations and create a complete workflow for their solutions to work seamlessly, paving the way for the SME to add more value to the communities they serve.

Social Entrepreneurship

Bboxx

2019 Winner

7 AFFORDABLE AND CLEAN ENERGY

According to World Economic Forum insights, the real power of social entrepreneurs lies in their talent and ability to identify market failures that are holding communities back, and in turn, customising their approach and solutions to solve problems.

Background

For several decades, social entrepreneurs around the world have acted as enablers of social change.

By deploying localised and market-driven strategies to tackle critical social issues in brand new ways, social entrepreneurs have promoted a wide range of innovative solutions focused on sustainable development, decades before they were called 'Sustainable Development Goals'.

According to World Economic Forum insights, the real power of social entrepreneurs lies in their talent and ability to identify market failures that are holding communities back, and in turn, customising their approach and solutions to solve problems. This includes providing clean water, access to renewable energy, financial inclusion, high-quality educational resources, and critical information that allows life-giving agriculture to flourish.

Even though social entrepreneurship has matured, the task at hand for countries around the world is undoubtedly urgent and the need to develop and implement solutions to propel collective work forward is key. However, there are several hurdles that impede this progress, as the complexity and depth of the socio-economic challenges that communities and nations face, continues.

Proper infrastructure and the physical environment are key to overcoming these challenges as they create a conducive environment for social enterprises to operate and prosper, and there is a global consensus that energy access is the entry point to solving a host of global goals. This is particularly prevalent in developing nations where entrepreneurs often face a host of other restrictive challenges and an example of this is Africa.

Globally, 770 million people lived without access to electricity in 2019. Progress remains uneven, as 75% of the population without access now live in sub-Saharan Africa. We are falling far short of the UN's Sustainable Development Goals, while the World Economic Forum highlights that access to electricity creates economic prosperity by enabling local businesses to grow, in alignment with SDG 8: Decent Work and Economic Growth.

The Challenge

The International Energy Agency (IEA) projects that energy access policies continue to bear fruit, with 2019 data showing important progress, as the number of people without access to electricity dropped from almost 860 million in 2018 to 770 million in 2019, a record low in recent years. Nonetheless, past progress is being reversed due to the COVID-19 pandemic. In sub-Saharan Africa, while the number of people without access to electricity has steadily declined since 2013, it had been projected to increase in 2020, pushing many countries farther away from achieving the goal of universal access by 2030.

The Solution

One of the companies working tirelessly to empower and support social entrepreneurism in Africa and other parts of the world is Bboxx, a next generation utility with operations in 11 African and Asian countries, that is tackling energy poverty in all its forms and reducing inequalities in line with SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all. Bboxx manufactures, distributes and finances decentralised solar powered systems. By developing products that serve individuals and households at all economic levels, the company has partnered with governments and world-class corporations to roll out the use of subsidies in order to broaden energy access and power the needs of entrepreneurs that can function and thrive in sustainable communities and cities. The company is positively impacting the lives of more than one million people with its products and services, directly contributing to 11 of the 17 United Nations Sustainable Development Goals.

Bboxx is driven by the belief that electricity is the foundation for modern life and the trigger for economic growth through the development of clean, affordable, and reliable solutions that facilitate opportunities, unlock potential and transforms lives.

Over a decade ago, Bboxx's founders began exploring energy solutions that would provide electricity and other utilities to the millions without them, realising that access to reliable electricity is what the world needs to end poverty. Through affordable, reliable, and clean utility provision, Bboxx is bringing people into the digital economy, creating new markets, and enabling economic development in off-grid communities and those living without a reliable grid connection.

As a result, they began delivering energy access in a scalable and distributed model to individuals, businesses, and communities by designing, manufacturing, distributing and financing decentralised energy solutions that enable next generation utility businesses to scale and reach their customers that are dispersed across remote locations.

Bboxx currently impacts and serves communities in Kenya, Rwanda, Democratic Republic of Congo, Togo, Pakistan, Guinea, Ivory Coast, Mali, Nigeria, and Senegal.

The Impact

47,918
people using Bboxx products to support an enterprise

$1,735,356
savings made on energy expenditure

90,222
jobs created with 113,806 people undertaking more economic activities on a broader level

500,000+
solar home systems installed

$113,311,252
additional income generated by using Bboxx products that include Bboxx Pulse®, bPower20, bPower50 and bPower100

1,452,880+
people gained access to affordable energy through electricity, positively impacting nearly 2 million people

467,694
school students impacted with clean energy

18.81 MWh
of energy generated and consumed, every day

642,236
CO2e (Carbon dioxide and black carbon) emissions avoided

Case Study

Amellia Auma Owuor is a small business owner from the Siaya county in Kenya, that has directly benefitted from Bboxx's technology that is securing energy access and driving social entrepreneurship in last mile communities.

As a customer of Bboxx since 2017, Amellia operates a local hotel and organises outside catering.

Speaking about her experience as an entrepreneur, Amellia says: "Bboxx has transformed my life. My business generates more sales now and higher revenue due to longer light hours."

Amellia is connected to the Kenyan grid but decided to buy Bboxx light packages after experiencing regular interruptions and power outages through the grid, because she wanted to significantly optimise her operations and capabilities.

Amellia is grateful to Bboxx solar home systems, highlighting that she never had any interruptions as was the case when she relied solely on the public grid. She also uses Bboxx solar home system to light her house and to help her children study at night.

"As a businesswoman, I need full-time light assurance, as my customers need to feel comfortable and see what they eat." She decided to upgrade to two torches and says that the torch is very helpful during the night, as she uses it when doing outside catering for funerals and other commitments.

Her motivation to buy Bboxx products was influenced by durability, flexibility in payment, affordability, and transparency in billing. A close friend of hers, and a fellow entrepreneur, had also recommended their solar solutions.

About Bboxx

Bboxx is a next generation utility, transforming lives and unlocking potential through access to energy. Bboxx manufactures, distributes and finances decentralised solar powered systems in developing countries. It is scaling through forging strategic partnerships and its innovative technology Bboxx Pulse®, a comprehensive management platform using IoT technology. Through affordable, reliable, and clean utility provision, Bboxx is bringing people into the digital economy, creating new markets, and enabling economic development in off-grid communities and those living without a reliable grid connection. The company is positively impacting the lives of more than one million people with its products and services, directly contributing to 11 of the 17 United Nations Sustainable Development Goals.

Since winning the Zayed Sustainability Prize in 2019 under the 'Energy' category, Bboxx has been able to further invest in the innovation of their product range, scale operations and accelerate the provision of reliable and clean energy to underserved communities across the globe.

Having celebrated their 11th anniversary in 2021, the company's ambition is still growing as it exists to solve the major global problem of energy poverty and aims to positively impact even more lives by scaling up through strategic international partnerships and its innovative technology Bboxx Pulse®, a comprehensive management platform that uses IoT technology.

Women Empowerment

Bright Green Energy Foundation
Dipal Barua

2009 Winner

5 GENDER EQUALITY

A recent report by the United States Agency for International Development, USAID, highlighted that in the last 20 years, Bangladesh has made remarkable progress towards improving the lives of women and girls.

Background

Gender Equality, the fifth of the Sustainable Development Goals put forward by the United Nations (UN), is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous, and sustainable world.

The UN states that there has been progress over the last decades: more girls are going to school, fewer girls are forced into early marriage, more women are serving in parliament and positions of leadership, and laws are being reformed to advance gender equality.

A recent report by the United States Agency for International Development, USAID, highlighted that in the last 20 years, Bangladesh has made remarkable progress towards improving the lives of women and girls.

Maternal mortality rates are falling, fertility rate is declining, and there is greater gender parity in school enrolment.

USAID reports that three million Bangladeshi women are employed in the lucrative ready-made garment sector, which is Bangladesh's largest export industry. Although increasing numbers of women are involved in small and medium-sized enterprises, the large finance gaps that women face, remain despite several government initiatives.

The Challenge

Despite notable gains made in terms of women empowerment globally, many challenges remain with discriminatory laws and social norms still being pervasive.

Like in other dimensions of development, the effects of the COVID-19 pandemic offset progress that had been made on gender equality and women's rights. The coronavirus outbreak exacerbated existing inequalities for women and girls across every sphere – from health and the economy to security and social protection.

Greater grassroots engagement, and the establishment of effective women empowerment roadmaps to achieve further progress is still a crucial area for both government and civil society, and the world's sustainable development community are looked upon to advance gender resilience.

The Solution

One of the entities that have been at the forefront of women empowerment for decades is Bright Green Energy Foundation (BGEF), a non-profit organisation established by the inaugural winner of the Zayed Sustainability Prize (known as Zayed Future Energy Prize, at the time), Dipal Barua. Mr. Barua is an avid entrepreneur who has dedicated his life to finding and developing sustainable, market-based solutions for the social and economic problems faced by rural people.

Winning the Zayed Sustainability Prize helped Mr. Barua create the Foundation to expand renewable energy programmes across Bangladesh and conduct training. He also introduced a local scholarship for young women, technicians, and entrepreneurs.

BGEF is active in promoting women's active involvement in renewable energy and has engaged thousands of women in its home base of Bangladesh through specialised training and capacity building opportunities in rural and remote parts of the country, in the field of home solar solutions.

Through the leadership and help of 'green' women technicians, the Foundation has successfully met internal demand of all solar accessories through its female workforce, such as charge controllers, compact fluorescent lamps and invertors amongst others, through production operations at 80 village-based, women-run Green Technology Centres.

Since its inception, the founder of BGEF has placed great emphasis on women empowerment along with the expansion of renewable energy across Bangladesh to improve lives. Female technicians at the Foundation are highly skilled engineers, who provide sales services and product support, including repair work and maintenance in their own communities to support families in rural households who use renewable energy technology for their various power needs.

In addition, the women at the Foundation provide other women with training for the assembly and repair of solar accessories, such as lamp shade circuits, switches, LED lamps, streetlights, inverters and other essential solar home systems spare parts.

The Impact

10,000+
women trained on solar home system installation and maintenance

8,000+
jobs created

8.5+ million
people have gained access to affordable energy as direct beneficiaries of Solar Home Systems (SHS), Solar Street Lights, Solar Irrigation Pumps (SIP), Solar Rooftop AC Systems, and Solar Big DC Systems

17 MW
of renewable energy approx. installed and 155 GWh of electricity generated

25,000+
direct beneficiaries from Improved Cooking Stoves (ICS) with 4,300 stoves deployed to improve the health of women and children, while protecting the environment

5,000
households, shops and other commercial entities that are in the proximity of the project area benefit directly from the establishment of Bangladesh's first grid integration with solar irrigation pumping systems

6,000
people benefiting from solar rooftop systems in flood shelter centres

46,500
tCO2 approx. were reduced by replacing diesel-run pumps with solar powered irrigation pumps in rural areas

Case Study

Safali Khatun is one of direct beneficiaries of the Bright Green Energy Foundation (BGEF) on several fronts. She lives with her family, including a young son, in the rural area of Phulpur Upazila in Mymensingh District, Bangladesh.

Safali received technical training from BGEF after passing her secondary school exams and underwent initial training to qualify for the job. After successfully completing the course, she joined the Foundation on a full-time basis and worked there for more than two years as a 'green' woman technician.

Her duties included assembling small parts, solar charge controllers, and fluorescent and compact lamps which were used in the production of solar home systems that are installed in residences throughout rural areas of the country.

Working at BGEF enabled Safali to advance her career and improve her economic situation and standard of living, paving the way for her to effectively support herself and her family. Safali's family have also been using BGEF Solar Home Systems to power their home and meet their energy needs for the last 11 years, improving their quality of life through better energy access.

Safali's determination and ambition over the years created new opportunities for her after BGEF, as she currently works in a leading microcredit-based company. Today, Safali represents an inspiring role model for women empowerment and gender equality in her local community.

About Dipal Barua & Bright Green Energy Foundation

For more than 35 years, Dipal Barua has been dedicated to finding and developing sustainable, market-based solutions to the social and economic problems faced by rural people. Mr. Barua won the Zayed Sustainability Prize (known as the Zayed Future Energy Prize, at the time) in 2009 for his work as the Founding Managing Director of Grameen Shakti, a clean energy company.

By developing an innovative installment-based payment plan for solar systems, he was able to lower the monthly cost of solar to the equivalent of kerosene. Through Grameen Shakti, he facilitated the construction of 245,000 solar electricity systems on homes in Bangladesh, bringing electricity to 2.2 million people. Among his achievements was the development of an innovative biogas process to convert cow dung and poultry waste into gas for cooking, lighting, electrical generation, and slurry for organic fertiliser, in addition to an improved cooking stove programme to promote low-cost, cleaner stoves in rural areas to protect women from indoor air pollution and reduce the effects of deforestation.

BGEF has also expanded its network of local and international partnerships that today include the Infrastructure Development Company; the Sustainable and Renewable Energy Development Authority; the United Nations Development Programme for Grid Integration with Solar Irrigation Pumps; Heriot-Watt University (UK) for the Solar Powered Arsenic Treatment Plant, and the Bangladesh Solar and Renewable Energy Association.

Other recent accomplishments include starting the Thanchi Upazila Health Complex Electrification project which provides critical renewable energy at the complex for COVID-19 patients and others, such as uninterrupted electricity supply in the operation theatres.

Innovation & Knowledge Transfer

GLOBHE

2020 Winner

3 GOOD HEALTH AND WELL-BEING

According to the World Health Organization, an estimated 3.4 billion people in 92 countries are at risk of being infected with malaria and developing disease, and 1.1 billion are at a high risk of getting the disease in a year.

Background

Essential data for health risk mitigation and the prevention of disease outbreaks is indeed a critical and lifesaving endeavour. A key example of a prevailing health threat is malaria, a serious and sometimes fatal disease caused by a parasite that commonly infects a certain type of mosquito which feeds on humans. According to the World Health Organization, an estimated 3.4 billion people in 92 countries are at risk of being infected with malaria and developing disease, and 1.1 billion are at a high risk of getting the disease in a year.

In Malawi, this health threat still represents a clear and present danger to many in the southeastern African nation. Malawi's Ministry of Health and Population reports that the disease continues to be endemic, with an estimated 4 million cases occurring annually, and is still a leading cause of morbidity and mortality, especially in children under five years of age and pregnant women.

Similarly, cholera, an acute, diarrheal illness caused by infection of the intestine due to a lack of clean water for drinking and sanitation, registers up to 4 million cases and up to 143,000 deaths each year around the world, according to the World Health Organization. The infection is often mild or without symptoms but can be severe.

Cholera continues to be a global public health threat, with 150,000 cases per year reported from Sub-Saharan Africa, and a large number registered in Malawi as well.

The Challenge

The need for innovative sustainable solutions to tackle the deadly threat of these two diseases is as urgent as ever with governments and communities burdened by the impact of the ongoing COVID-19 pandemic. There is an underlying need to engage communities at the grassroots level in order to assist them with transferring knowledge, capacity building and empowering them to protect themselves and their respectiveommunities.

In recent years, smart drone technology has been at the forefront of artificial intelligence innovation and continues to serve as a key platform for hazard assessment and disaster management. However, there was an absence of an entity that could provide early detection and disease prevention through drones. This is coupled with the need to expedite and effectively roll out drone usage in remote areas of the world which remains a challenge for many and requires both collaborative efforts and local community empowerment to optimise results.

The Solution

One of the leading organisations working to tackle these challenges is GLOBHE, a Swedish-based SME that is deploying its 'Crowddroning', an innovative cloud-based solution that uses drones and aerial data to update population data in areas where key information is either unknown or outdated.

GLOBHE offers a unique value proposition through Crowddroning technology and is the first of its kind drone industry. The SME is also the first and only global on-demand platform using drones to detect and predict disease outbreaks by monitoring water pollution in Malawi and other parts of the world, such as Southeast Asia and Europe.

In addition, Crowddroning is used to identify risk zones such as water and sanitation sources as well as identifying access to health centres - this information is key for the government, healthcare centres and aid relief organisations to properly plan and respond to pandemics.

Through the collaborative efforts of several international partners, Crowddroning is a continuation of water monitoring efforts by GLOBHE drones in Malawi for UNICEF between 2017-2020, where the solution was used to identify risk spots during a cholera outbreak, monitor flooding and locate malaria mosquito breeding sites.

Even though the past two years presented a host of challenges associated with COVID-19, the future of drones looks bright, according to the SME. This sustainable solution is creating hope for communities to better help them cope with various health risks, while also powering the global gig economy by providing paid freelance gigs and knowledge transfer to local drone pilots around the world. In 2020, and despite the global pandemic, GLOBHE's global community engagements continued through virtual training opportunities to ensure the continuity of the learning process to empower individuals and save lives.

Moving forward, GLOBHE will continue to gradually scale its cloud platform for essential healthcare data and emergency response to additional countries, which today connects 3,801 drones in 77 countries, collecting drone data-on-demand for end-users, such as government authorities, humanitarian organisations and corporations, with the goal of detecting and predicting disasters around the world.

The Impact

3,851
drone pilots registered to Crowddroning by GLOBHE

25%
of GLOBHE's total 3,851 drone pilots are female and GLOBHE is working on growing these numbers through different outreach and training programmes

40
country-growth; the SME grew from drone pilots in 48 countries to drone pilots in 88 countries over the past year

1,800
drone pilots trained and educated to-date through virtual sessions

Case Study

GLOBHE has set out to drive interest in drone technology and showcase the range of health and safety benefits it can bring to people in local communities in Malawi. The SME has been working on encouraging this interest, offering specialised training opportunities and creating job opportunities.

Rhoda Nkhambule, from the Thipa village in Malawi expressed her excitement to see the small planes flying in her village, highlighting the positive changes introduced to her local community with the aim of improving people's healthcare and wellbeing through precise data collection and early detection of threats.

Grace Ghambi, a drone pilot in Malawi said, "Being a drone pilot means a lot to me with very few female pilots in the rapidly emerging drone and data domain. I am proud to be an inspiration and a motivation to many young girls who are pursuing Science Technology Education and Mathematics subjects in my local community."

Ghambi added, "The use of drone technology is a cost-effective and an eco-friendly way of providing essential services such as mapping, which fosters the development of the country by not only conserving the environment but by the creation of jobs as well."

About GLOBHE

GLOBHE is a small to medium-sized enterprise (SME), drone service company that has developed the world's first Crowddroning platform for global health disaster prevention and response. Data is uploaded to the platform, analysed using technologies such as Artificial Intelligence (AI), through automatic object detection, and shared with clients through a download link to a high quality "Google map" in real time with relevant insights marked out. Such insights include malaria mosquito breeding site locations, or the number of houses located within a cholera outbreak hotspot.

Since winning the Zayed Sustainability Prize under the "Health" category in 2020, GLOBHE has been able to optimise its offerings and reach, while scaling up its ability to create freelance employment opportunities for drone pilots in an additional 40 countries.

Disaster Relief & Emergency Response

Electriciens sans frontières (Electricians Without Borders)

2020 Winner

7 AFFORDABLE AND CLEAN ENERGY

According to the World Bank (2020), chronic power shortages affect household welfare and business activities posing significant fiscal pressures on the economy and creating a public trust deficit.

Background

On the 4th of August 2020, Beirut's harbour was hit by two violent explosions, claiming nearly 200 victims, and leaving at least 6,500 wounded - as per reports by Lebanon's Ministry of Health and the Lebanese Red Cross. The Lebanese Prime Minister at the time, Hassan Diab, called for the help of the international community immediately. The shockwave led to the complete or partial destruction of entire buildings, fires, and disrupted the entire city. Beirut's Governor, Marwan Abboud, estimated that between 250,000 and 300,000 residents were made homeless by the event.

The total or partial destruction of buildings aggravated local energy needs that were already high before the explosion. According to the World Bank (2020), chronic power shortages affect household welfare and business activities posing significant fiscal pressures on the economy and creating a public trust deficit. Lebanon's national energy company, Electricité du Liban, is powered by two fuel plants limited to a production capacity of 2GW, although the country's energy demand is up to 3.5GW.

To avoid suffering as a result of the power breaks and their consequences, a number of Lebanese households have to resort to securing two power meters: an official meter that provides power for about 3 hours a day, and another one linked to a private generator for the remaining 21 hours. The market for individual generators is officially illegal in Lebanon but largely spread due to the high level of energy needs. The existing power grid has not benefitted from any reform since the 90s and a number of existing infrastructures have deteriorated.

The double explosion worsened an already dire situation for Lebanon which was suffering from a devastating economic crisis and a worrying health crisis. To confront the COVID-19 pandemic, the country resorted to a national lockdown and suffered from the repercussions of the economic slowdown. Hospitals that were already at their breaking point with patients due to the pandemic, were overwhelmed with the medical needs caused by the double explosion.

The Challenge

The immediate aftermath of the explosion was brutal: 300,000 were made homeless, according to the World Health Organization, while critical health infrastructure and medical supplies were severely damaged. These people saw their homes seriously damaged or destroyed by the explosion and found themselves having to live in damaged spaces, without windows or roof tops or having to live with relatives. In light of the other prevailing challenges, the country's electricity network was now even more fragile. In addition to regular power cuts, the areas devastated by the explosion no longer had any power, and many indoor electrical installations were dangerous.

The Solution

Electriciens sans frontières (or Electricians Without Borders), an international aid non-governmental organisation (NGO), mobilised its experience and expertise to answer the call for help, building on their vast experience in intervening in emergency and post-emergency response to bring back power to populations affected by disasters. The NGO operates under a partnership with the French Foreign Ministry's Crisis and Aid Center who deploy a number of French private entities that are active in the field of energy and emergency response.

Five tons of electrical equipment was shipped to Lebanon as fast as possible after the explosion by humanitarian freight.

A team of five expert volunteers were sent to be available on the ground from the 3rd to the 25th of September 2020, working in close collaboration with local humanitarian organisations such as the Lebanese Red Cross and the Lebanese Popular Relief to identify the affected populations' most pressing needs. Having access to a secure source of lighting and power was a unanimously expressed priority.

The Impact

2,500

people in vulnerable households impacted by the explosion, benefitted from the distribution of 500 high-quality solar lamps with adequate user training

5,000+

beneficiaries' lives were improved with access to energy, from families to medical personnel and patients in the medical services of the Red Cross and Popular Relief Centres

56

emergency medical services of the Lebanese Red Cross and 5 Lebanese Popular Relief Centres were reinforced through the installation of power generators

4,500

students a year continue to benefit from essential education services in 6 schools in Beirut that are part of a longer-term intervention by Electriciens sans frontières

138,500

people have benefitted from Electriciens sans frontières' solar interventions in direct response to the COVID-19 pandemic and the explosion in Beirut in August 2020

Case Study

Commenting on the impact of Electriciens sans frontières' disaster relief and emergecy response efforts in Beirut in the wake of the explosion, a resident of the La Quarantaine (Karantina) neighbourhood, expressed his thoughts upon receiving an individual solar lamp for his home: "Our neighbourhood is located right next to the Beirut harbour. My parents are devastated, the destruction is causing us several problems. Thanks to this solar lamp, we have access to essential communication and lighting. Thank you so much, this light represents sunshine and life for us during these difficult times."

Another local resident of the same neighbourhood highlighted the change and impact that he and his family felt, as expert volunteers from Electriciens sans frontières were installing a generator in the hall of his building:

"These solar solutions will immediately provide us with light again, which is definitely a huge source of comfort and safety for us. We can use the refrigerator again and cook in our own home."

About Electriciens sans frontières (Electricians Without Borders)

Electriciens sans frontières is an international non-governmental aid organisation which has impacted the lives of millions of people throughout its 30 years of presence in more than 50 countries. Targeting the most isolated and vulnerable, it improves their access to safe, sustainable, and clean energy and water, for public services (education, health) and income-generating activities.

Even though energy is key to UN Sustainable Development Goals, 770 million people still lacked access to it in 2019. The NGO partners with other local NGOs and authorities as well as the private sector to offer experience-based scalable solutions with the latest technologies and high-quality equipment adapted to local needs, from emergency to development.

Winning the Zayed Sustainability Prize in 2020 under the 'Energy' category allowed Electriciens sans frontières to strengthen its international partnerships, such as with the French Agency for Development, Schneider Electric company, the International Solar Alliance and the French Ministry of Foreign Affairs, and to secure additional resources in its fight against energy poverty throughout the world, by achieving a higher level of notoriety and winning new financing.

Access to Healthcare

We Care Solar

2019 Winner

7 AFFORDABLE AND CLEAN ENERGY

According to a 2018 study, only 58% of health facilities in 79 low- and middle-income countries lack access to reliable electricity.

Background

According to a 2018 study, only 58% of health facilities in 79 low- and middle-income countries lack access to reliable electricity (Cronk R, Bartram J, 2018). The World Health Organization (WHO) reports that in Sub-Saharan Africa, 72% of health facilities lack reliable electricity, while one in four facilities has no electricity at all. Uganda's electricity access stands at 45% at the national level with only 8% of the rural population having access to electricity. Despite an increase in grid electricity access over the last couple of years, a large number of the relatively widely dispersed rural population is unlikely to be able to access the national grid in the near term.

Being a healthcare provider without electricity poses several obstacles. For vulnerable communities across the world, it means working by the glow of a candle, the dim light of a kerosene lantern, or basic light from a mobile phone. It means postponing critical procedures for hours, until they can be conducted by the light of day. It means being unable to use essential medical devices or your cell phone to call for help and being afraid to work at night because you know it's impossible to provide optimal care.

The Challenge

Every day in 2017, approximately 810 women died from preventable causes related to pregnancy and childbirth, according to the World Health Organization. Uganda has one of the highest maternal mortality rates at 336 per 100,000 live births. In many parts of Sub-Saharan Africa including Uganda, fewer than one-third of health facilities have reliable access to electricity. Without power, many midwives and doctors have to treat patients in the dark. This makes deliveries and treatment more difficult and dangerous for mothers and children. Lack of sufficient lighting increases the risk of infection and birthing complications. In clinics and hospitals without electricity, such difficult working conditions means turnover rates among midwives, doctors, and nurses can be high, disrupting the availability of healthcare providers for patients in need.

The Solution

We Care Solar, a US-based non-profit organisation and the 2019 Zayed Sustainability Prize winner under the 'Health' category, envisions a world where all mothers have access to prompt, appropriate obstetric care provided in well-equipped health centres. Since 2010, the non-profit has designed technology and developed programmes to bring compact rugged solar electric systems and "Solar Suitcases", to last-mile health centres in developing countries.

With funding from the Zayed Sustainability Prize, 162 "Solar Suitcases" were shipped to and installed in health facilities in Zimbabwe, Nepal, and Uganda. Solar Suitcases are a robust, easy-to-use solar electric system that provides last-mile health facilities with highly efficient medical lighting and power for mobile communication and small medical devices. They are specifically designed to assist midwives and medical professionals in fetal monitoring while acting as a communication device.

We Care Solar's "Light Every Birth" programme complements government efforts to bring modern electricity to health facilities as their solutions improve maternal-newborn care by empowering health workers and enabling timely referrals of complicated cases to higher level facilities, and improving the uptake of facility-based care.

The organisation has documented improvements in maternal and child healthcare in three areas: (1) enhanced capacity of health workers to provide care (2) improved quality of care, and (3) reductions in maternal and newborn mortality.

With the advent of the COVID-19 pandemic, energy installations are considered a vital health service and We Care Solar has been following stringent safety protocols and guidelines for their installers in the field to minimise risk for all parties. We Care Solar strongly recognise that rural, marginalised communities need access to reliable electricity more than ever.

Dr. Charles Olaro, Director of Health Services – Clinical at the Ministry of Health in Uganda, requested solar electricity for isolation centres and primary health care facilities. Dr. Olaro said: "Electricity even without COVID-19 is one of the essentials you need for effective service delivery. But now with the pandemic, it is more essential in terms of infection prevention and control, which requires electricity at a greater rate both at the points of isolation and quarantine."

The Impact

216,000
mothers and newborn supported directly through the Prize fund

6,304
health centres equipped with Solar Suitcases and 26,309 health workers trained in equipment use, globally

162
health centres equipped with Solar Suitcases in Uganda, Zimbabwe, and Nepal and 336 health workers trained in equipment use

Case Study

Balawoli HCIII is a clinic in the Kamuli district of Eastern Uganda and offers maternity and childcare services, inpatient care, and basic laboratory services to a catchment population of 62,400.

Namatende Tabitha has been a midwife for ten years, and reflected on her choice of profession: "Being a midwife gives you the important responsibility of helping bring life into this world which gives my life purpose." Tabitha went on to elaborate that no matter how much you love your job there are some challenges that demoralise you, including the lack of electricity. Working at night without adequate light affected her efficiency, the overall quality of healthcare that could be provided, and her morale. Tabitha was inclined to refer patients regardless of whether they were complicated cases or not to avoid errors.

This is not the case anymore; she has not referred any patients ever since she joined Balawoli HCIII where the major source of electricity in the maternity ward is from the Solar Suitcase. The Solar Suitcase has significantly improved her work and boosted her confidence and morale during the night.

Tabitha is very grateful and happy to be at a facility that has reliable light and electricity because as she says: "the bright light from the Solar Suitcase assures me of safe deliveries." She uses the light for monitoring both mother and fetal wellbeing during labour, charting the labour progress, suturing, weighing the baby, cleaning after deliveries and charging her phone in case the mothers want to reach her during emergencies. "I do not have to strain to find the fetal heartbeat, it is digital and very easy to use."

The impact of the Solar Suitcase has been amplified by Village Health Teams (VHTs) who have raised awareness about the 24-hour MCH services now available at the health facility. As community members learned about the bright light and fetal Doppler, the number of deliveries in the facility increased.

About We Care Solar

We Care Solar promotes safe motherhood and reduces maternal mortality in developing countries by providing health workers with reliable lighting, mobile communication, and medical devices using solar electricity.

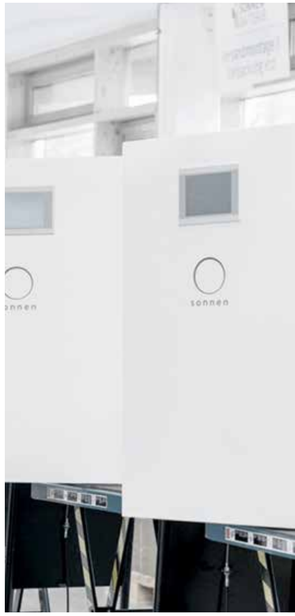
Since 2011, We Care Solar has been conducting Solar Suitcase installation programmes with dozens of partners around the world. We Care Solar won the Zayed Sustainability Prize in 2019 in the 'Health' category.

The non-profit organisation was founded in 2010 to provide the first 100 watts of electricity to energy deficient health centres, creating a rugged, simple and dependable solar energy kit that could be transported anywhere for light and power. What started as a backyard project blossomed into an international movement to empower health centres, and eventually schools, around the world, inspiring students to become global changemakers.

Emergency Response – Energy Focus

sonnen

2017 Winner



11 SUSTAINABLE CITIES AND COMMUNITIES

According to the World Bank, Dominica's total damages and losses from the hurricane are estimated at a devastating US$ 1.3 billion or 224% of its GDP.

Background

Hurricane Maria was a deadly Category 5 hurricane that devastated Dominica, Saint Croix, and Puerto Rico in September 2017. It is regarded as the worst natural disaster in recorded history to affect those islands.

According to the World Bank, Dominica's total damages and losses from the hurricane are estimated at a devastating US$ 1.3 billion or 224% of its GDP. When it reached Puerto Rico, Maria was still a category 4 hurricane, and was classified the strongest storm to hit the island since 1928, and by far the most destructive.

At its peak, the hurricane caused catastrophic destruction and numerous fatalities across the northeastern Caribbean, compounding recovery efforts in the areas of the Leeward Islands that were still recovering from Hurricane Irma.

The Challenge

According to Puerto Rican government figures, total losses from the hurricane were estimated at upwards of $91.61 billion, mostly in Puerto Rico, ranking it as the third-costliest tropical cyclone on record and causing mass interruptions to essential utilities, including power.

In March 2020, more than 120,000 Puerto Ricans still did not have electricity as a result of Hurricane Maria, according to Vox, an American digital media group, highlighting the need for urgent intervention and immediate energy solutions in the wake of the deadly natural disaster.

One specific community of approximately 7,000 residents and rural farmers in Bartolo, a mountainous area in the Lares region of Puerto Rico, who mostly grow coffee, were severely impacted by the hurricane. With most land ownership being passed down through generations via handshake agreements and no legal paper trail, many area locals did not qualify for US Federal Emergency Management Agency (FEMA) grant money.

The Solution

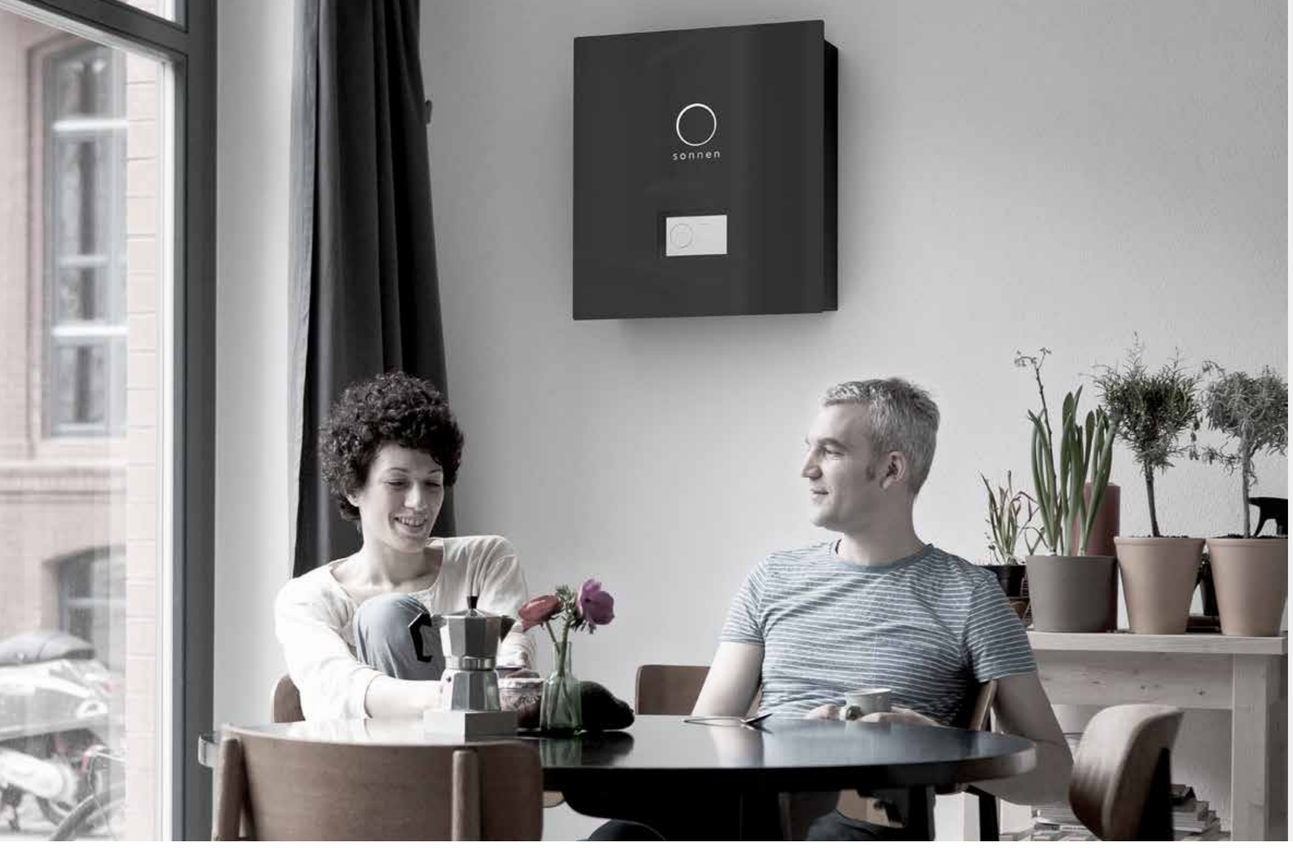
In April 2018, sonnen Inc., the US subsidiary of sonnen GmbH, partnered with the del Sol Foundation for Energy Security to bring resiliency to Puerto Rico. sonnen GmbH, a German-based small and medium-sized Enterprise (SME) was the 2017 Zayed Sustainability Prize winner under the 'SME' category. sonnen worked with Pura Energia, a leading renewable energy contractor on the island, and the del Sol Foundation to design, install and commission a solar and smart energy storage solution that brought energy security and sustainability to the rural farmers in Bartolo, securing dependable electricity in the form of microgrids to this community. The microgrid, established by repurposing an abandoned school, provided housing for families who lost their homes to Hurricane Maria six months prior to the del Sol Foundation's and sonnen's intervention.

sonnen has been selling storage systems in Puerto Rico since 2016, so when the hurricane hit in September 2017, the company had already forged solid relationships with local installer Pura Energia and other businesses. The del Sol Foundation, which has no legal affiliation with sonnen outside of the debt facility required to build the Puerto Rico microgrids, saw it as its mission to help however it could in the aftermath of Maria.

In the wake of the devastation caused by Hurricane Maria, Centros de Apoyo Mutuo had been rebuilding Puerto Rican communities across the island and partnered with del Sol and Pura Energia to sustainably power a community hub for Lares, providing immediate and long-term relief for local residents while revitalising the community.

The microgrid served as a model for the resiliency created by solar storage technologies, as it represents a fully off-grid site deep in a remote area of Puerto Rico.

By developing the Lares project, sonnen was able to repurpose two sonnen storage units that had been providing short-term relief at previous microgrid sites. The site is located at a school that had been shuttered since 2014, one almost all area residents had attended since its opening in the 1920s. Remaining areas of the former school were also redesigned as a disaster relief and recovery centre with the kitchen being used as a community food distribution centre and the administrative offices being used as an art classroom.



The Impact

12 kW

of energy generated and financed by sonnen were donated in partnership with the del Sol Foundation, and paired with a 9 kW rooftop solar system donated and installed by Pura Energía

7,000

people have gained access to a community garden built to assist in feeding the community, while enabling the creation of a trade school to teach sustainable farming practices

14

local families are housed in classrooms converted by the community into apartments, with assistance from Centros de Apoyo Mutuo

11

microgrid systems have been installed by the del Sol Foundation and Pura Energía on the island since Hurricane Maria struck in September 2017, with financing and support from sonnen

Case Study

Pura Energia President, Jose Henry Garcia, said that the day before Hurricane Maria made landfall in Puerto Rico, he got on a conference call with sonnen. Garcia told them "It would be a disaster and it would be a catastrophe, but the electrical infrastructure would suffer the most and there will be people without power that may face life-threatening conditions. I presented them the scenario that might happen…and it did happen."

A week after the hurricane, when they regained communication, sonnen told Pura Energia it would like to work with the del Sol Foundation to install five sonnen battery systems on the island. After it realised the scope of the damage, the number was raised to 15.

"The del Sol Foundation has been not only able to supply or donate sonnen equipment, but sonnen also was able to support us because they were here with us," Garcia said.

"We are installing systems every day since Maria. I mean, we haven't stopped," Garcia said. "People realise the value. And Puerto Rico, I will say, is the best market in the United States at this time."

About sonnen

sonnen is one of the world's leading manufacturers of smart energy storage systems and a pioneer of clean, decentralised and networked energy system technologies. As one of the fastest growing tech companies in Europe, sonnen has received numerous internationally recognised awards. With its virtual battery, which consists of digitally networked home storage systems, sonnen offers new and highly innovative energy services for network operators and customers. sonnen's products are available in many countries and has offices located in Germany, Italy, Australia, the UK and the USA. As of March 2019, sonnen is a wholly owned subsidiary of Shell within its Renewables and Energy Solutions division.

Youth Empowerment

The ‘Living Machine’

African Leadership Academy-North Africa

2019 Winner

6 CLEAN WATER AND SANITATION

A 2020 UN World Water Development Report reveals that global water use has increased six-fold over the past century, rising by one per cent a year.

Background

Water scarcity is one of the most critical challenges of our time. According to the World Health Organization (2019), close to 800 million people worldwide do not have access to clean drinking water, 40% of whom live in Sub-Saharan Africa. A 2020 UN World Water Development Report reveals that global water use has increased six-fold over the past century, rising by one percent a year. Africa has more water-stressed countries than any other continent, with an estimated 320 million people living in a water-stressed environment.

Specifically in Sub-Saharan Africa, a rapidly growing population exacerbates the water and sanitation crisis by placing more strain on existing challenges including lack of water resources, high levels of poverty, increased pollution and the impact of natural disasters. Urgent action is required to achieve Goal 6 of the United Nations' Sustainable Development Goals, which is to ensure access to water and sanitation for all by 2030.

The Challenge

Between 2017 and 2018, the city of Cape Town in South Africa experienced a severe water crisis that saw dam water levels hover between 15 and 30 percent of total dam capacity. The city was faced with the stark reality of planning for "Day Zero" when water levels of major dams supplying it would fall below 13.5 percent.

This would cause Cape Town to become the first major city in the world to run out of water. Such a situation would see severe water restrictions, with municipal water supplies largely switched off while residents would need to queue for their daily ration of water.

The Solution

Jesse Forrester and Wuntia Gomda, two students of the African Leadership Academy (ALA), first learned about the Cape Town water crisis in 2017. They were shocked to hear that a major coastal city could reach a point of running out of usable water.

Determined to contribute to a solution, the young leaders began conversations with Academy faculty to devise an action plan. They set out to create a project that would make water usage on the ALA campus more environmentally sustainable, as a test case for what could be implemented in cities across the continent. They conceived the idea of The Living Machine, a wastewater treatment system that converts greywater to clean water.

After several months of work with a team of scientists and a construction company and with extensive support from the ALA faculty advisors, Wuntia and Jesse's design of The Living Machine was implemented in December 2019 and now forms an integral part of the African Leadership Academy campus.

The Living Machine exemplifies leadership learning through authentic projects while it demonstrates the value of entrepreneurial thinking and practice, and a commitment to investing in sustainability.

Students learning biology at ALA can be routinely found beside the machine, experiencing concepts that would otherwise have been explained only through a textbook.

The Impact

300,000

litres of greywater are recycled and reused annually on campus, providing water for crops, and supplying the sprinkler system

5,000

people positively impacted by 'The Living Machine' over the next 10 years, enabling people to grow crops and gain improved access to quality food

Case Study

As Head of the Science and Technology Department at ALA, Hans Sowder led The Living Machine installation. He has now incorporated this machine into the school's biology curriculum to enhance experiential learning. "At the beginning of the Biology class year, one of the first things I did was to take students down to The Living Machine, explain it to them, and then have them come up with a mind map with biology chapter summaries and how they link to this sustainable solution," says Sowder.

With this teaching method, Sowder explains, students are able to work with something tangible to which they can attach basic biological concepts. "Yes, we could draw on paper what happens when an enzyme meets a substrate and we can memorise the drawing, but it becomes a whole new thing when we can go down to The Living Machine to see this mechanism in real-life and learn in that way."

The Living Machine has proven incredibly useful in providing many examples in which biological concepts can be seen in action. Designed to mimic the very best of nature, The Living Machine provides a unique opportunity for students to see how living things are connected to sustain life. "With each chapter we go through, from how blood carries oxygen, to how organisms strip proteins and carbs from food, I always seek to ask; where do we see this at play in The Living Machine?", Sowder adds.

Since graduating from ALA, and inspired by the experience of applying a solution to a real world problem, Jesse has been focused on developing green-tech solutions for Africa. He established Mazi, a tech-enabled company in mobility. Mazi is on a mission to provide efficient, affordable and clean transport for all in every country in Africa. They are starting by converting Kenyan minibuses (known as matatus) into electric vehicles.

Also building on the lessons learned from The Living Machine project and seeking to leverage technology as a tool in the pursuit of environmental sustainability in Africa, Wuntia joined Safi Sana Ghana, a waste-to-energy company where he has been contributing to research and development. In this role, he coordinated the creation of a data collection and analysis system to track the sources of waste used in Safi Sana's waste-to-energy process in collaboration with the Bill & Melinda Gates Foundation.

About the African Leadership Academy

African Leadership Academy (ALA) seeks to transform Africa by developing future leaders from all backgrounds who will work together to create lasting peace and shared prosperity on the African continent. Each year, ALA combs the African continent to identify young people with potential, develop their skills and confidence in a two-year residential program, and connect them with lifelong opportunities that enable their impact.

This model has closed the opportunity gap for promising youth; the Academy's young leaders, many of whom come from highly disadvantaged backgrounds, access world-class universities with generous scholarships, progressing through university faster than high-performing peers. Following graduation from college, they are connected to career opportunities and networks, which enable them to secure impressive career placements and pursue post-graduate studies. To date, ALA has enrolled 1,309 leaders representing 46 countries in Africa since 2008.

Food-Waste Management

American School of Dubai-United Arab Emirates

2019 Winner

4 QUALITY EDUCATION

In 2010, a small group of parents and faculty at the American School of Dubai (ASD) deemed it appropriate to create a small garden to foster the connection of students to the natural world.

Background

Owing to the combination of a desert ecosystem and thriving human activity, food in the UAE is often imported. This puts food security in the nation's focus. Children in Dubai often live and learn in urban settings, largely removed from the natural world. As such, they risk becoming disconnected from increasing global environmental challenges, including those related to food production to feed the world's ever-growing population.

It is thus important to intentionally develop children's understanding of organic principles, pesticide use and consequences, and how diet contributes to climate change and impacts personal wellness. It is equally important to grow the recognition that there are alternative options to linear production systems.

In 2010, a small group of parents and faculty at the American School of Dubai (ASD) deemed it appropriate to create a small garden to foster the connection of students to the natural world. Shortly after, a Garden Coordinator position was created to support this work, which expanded to include a kitchen classroom. Students are actively involved in the maintenance, support and planning of these learning spaces.

The Challenge

Involved in ongoing conversations about the school's impact on the environment, the American School of Dubai's priorities lied in minimising their waste-to-landfill stream and engaging the community in the important conversations and adjustments necessary to become sustainable. The school's size (approx. 1,900 students) and school community (approx. 4,000 including families) make it difficult to generate the deep reflection necessary to reassess and change the current systems.

A specific challenge faced was related to the mass of waste-to-landfill. At the time, data on the amount of waste generated was not gathered and, as such, assessing the impact of the school's waste on the local ecosystem was impossible.

To support the UAE's sustainable development plans and limit the waste headed to landfill, faculty determined the need to introduce structures to better support cyclical processes that emulate nature i.e. biomimicry. In particular, food waste from the cafeteria and landscaping waste generated from the campus grounds could be better supported to feed back into the school's system of needs due to their biodegradability.

The Solution

The solution comprised developing a cyclical approach to food waste that would benefit both living plants and animals (through the presence of pollinators) as well as the campus (through the presence of a composting system that could support all food needs and landscape waste). In doing so, faculty ensured not only that waste was being diverted from landfill, but also that they were able to generate learning for students and the community as a whole.

The plan, in particular, was threefold including:

1. The creation and establishment of a Bee Garden on campus to support the study of pollinators, focusing on food security and systems
2. The placement of an industrial composter on campus to support the compost of all food and landscape waste, thus eliminating it from the landfill waste stream
3. The creation of a data dashboard to support the ongoing learning of the community related to sustainability

The Impact

6,800
school visitors to the Bee Garden, sustainable garden and/or classroom kitchen, industrial composter

180,000
bees were reached in the winter

3
tonnes mass of landscape and food waste was diverted from landfill through the composting programme

300
kilos of compost were generated by the industrial composter in 2019/2020

Case Study

Though much of the school's work focuses on in-class use of the service learning, the process remains constant for advisories, student organisations, community partnerships and even service trips for ASD's Middle and High School experiential education opportunities. One example of an ongoing service-learning project is that of Ms. Kjorlien's advisory, which focused on food waste from home and collected food from home twice a week. The focus was not just on the collection, however, but also on the development of skills, in this case related to mathematics (i.e. data collection, data representation, analysis), language arts (e.g. script writing, public speaking) and technology (cinematography, editing, publishing). The net effect for Ms. Kjorlien's advisory was not just the reduction of food waste from home, but also the growth of skills and a greater sense of school community.

Yasmin Gulamhusein graduated from ASD in the Class of 2020 and is currently a student at the Georgetown University. She is an officer for Plan-It Earth, an annual environmental ideathon and a member of the Core Pathways Climate Change programme.

"During my time at ASD, I focused on garnering support from the ASD community for composting practices as well as streamlining the waste disposal system to support the usage of the industrial composter. My experience in the Zayed Sustainability Prize project has helped impact the path I have chosen to take at college, where I am part of the Core Pathways and have decided to pursue a major in environmental studies and economics. I take classes related to climate change, including climate change chemistry and ecology. I am currently working on a policy proposal about using datasets to minimise the effects of the urban heat island effect and the greater issue of climate change."

Zahira Nedjraoui is the Founder and President of the Beekeepers Association. She said that: "The Beekeepers Association's mission to bring the buzz into UAE schools was brought to life thanks to ASD's visionary leadership and their commitment to driving impactful, innovative and inspiring sustainable solutions. Providing an opportunity to understand firsthand the importance of bees through their efforts of keeping bees inside their campus and offering staff beekeeping courses from the Beekeepers Association has not only inspired pupils, parents, teachers and staff to become active members of the beekeeping community, but it has also helped pollinate their gardens, as well as those in the Barsha neighbourhood in a 5km radius. We hope that ASD's pioneering and successful endeavour will inspire other schools in the UAE to follow their path and welcome beehives into their campuses."

About the American School of Dubai

The American School of Dubai (ASD) is an independent, not-for-profit, PreK-12 US curriculum school, that offers what is best about American education to provide learning experiences designed to promote the maximum potential of its students.

Founded in 1966, ASD has a rich and vibrant history spanning more than 50 years of educating students in the United Arab Emirates.

ASD is accredited by the Middle States Association of Colleges and Schools. The school was the 2019 winner of the Zayed Sustainability Prize in the Global High Schools category for Middle East & North Africa.

Education and Gender Equality

MAIA Impact School - Guatemala

2019 Winner

5 GENDER EQUALITY

Less than 20% of Maya women complete high school in Guatemala according to local government figures.

Background

As the country with the worst gender equity gap in the Northern Hemisphere as per the World Economic Forum, Guatemala, a nation located in Central America, is in need of grassroots, transformational leadership to achieve effective, long-term change. Representing roughly 25% of the population, indigenous Maya women experience levels of exclusion that make them among the most marginalised on earth.

Less than 20% of Maya women complete high school in Guatemala according to local government figures. In the city of Sololá, Maya women average just four years of schooling, and 57% get married or become mothers by the time they are 18.

Guatemala is one of the most vulnerable countries when it comes to natural disasters and is particularly susceptible to the effects of climate change. With 30% of the labour force dependent on agriculture (and 60% of the population in poverty), even moderate variations in climate can be extremely disruptive, as per the World Bank. In 2019, approximately 2% (250,000 people) of Guatemala's population emigrated to escape poverty and drought.

The Challenge

The onset of COVID-19 has had detrimental consequences for girls seeking to stay in school in Guatemala.

The Guardian's Global Development research (supported by the Bill & Melinda Gates Foundation) indicates that the economic pressure to pull daughters out of school is now more intense than ever. It is estimated that 300,000 families in Guatemala dropped from poverty into extreme poverty in 2020 as a result of the pandemic. Even before the pandemic, malnutrition was a major challenge in Guatemala, with the country ranking 6th in the world in child malnutrition.

The Solution

The Guatemala-based MAIA Impact School has been unlocking and maximising the potential of young women to lead transformational change across their respective communities in the city of Sololá. Established in 2017, the MAIA Impact School, is Central America's first secondary school specifically designed to connect the talents of rural Maya girls with the opportunities of the 21st century. The school is designed, led, and run by women from the same communities as the students, with an emphasis on sustainable and replicable impact.

Leading its efforts is the MAIA Impact School 'Organic Garden Project' that was designed to be part of the project-based earth science curriculum and to provide nutritious food to students as part of the school breakfast and lunch programmes.

The garden soon became key to addressing the food crisis during the COVID-19 pandemic. It is now a vibrant training centre for students and their families to learn organic gardening and sustainable practices that can be easily replicated in their own homes.

MAIA's innovative response to the COVID-19 pandemic was recognised internationally by openIDEO, the International Youth Foundation and One Young World.

The Impact

186
families of Girl Pioneers (students at the MAIA Impact School) received 6 training courses in organic gardening and established their own organic garden in their homes in at least 42 surrounding rural communities across Sololá

98%
of participating students passed to the next grade (based on Guatemala Ministry of Education standards)

50
graduates of the MAIA Legacy Programme received organic gardening training sessions virtually

100%
of Girl Pioneers delayed motherhood and marriage to pursue education

Case Study

Glendy is a Natural Science Educator at MAIA who is involved in providing workshops for MAIA's Family Gardens Project using the Zayed Organic Garden as a training ground.

Glendy says, "The Zayed Organic Garden has allowed for Girl Pioneers and their families to maintain a healthy diet by planting and harvesting their own family herbs and vegetables during the pandemic. The development of family gardens has also supported families' economic growth and safety so that they do not have to leave their houses to purchase vegetables at local markets and risk getting sick."

"The parents who attended the workshops also had a lot of ancestral knowledge on the use of medicinal plants for the temazcal (Maya sweat lodge) to cure diseases, so it is important to build on that knowledge using the local culture and languages during the workshops."

Allan is the Project Coordinator responsible for overseeing the Zayed Organic Garden at MAIA and replicating this model with MAIA families during the pandemic. He explained: "The Family Garden Project has generated a positive impact in the lives of the MAIA families because many had never had the opportunity to harvest their own crops due to having limited space. However, this was not a limiting factor in developing a family garden at home. It is also important to highlight the opportunity for all participating families to have the joy of being able to grow their food in a healthy and organic way. This strengthens food and nutritional security within the rural communities of Sololá."

Recounting one of the key beneficiaries of the project, Allan highlighted Doña Claudia, one of the first mothers to participate in the Family Garden workshops, who had never cultivated any plants at home, and on one occasion her son became ill. She took one of the medicinal plants that were in her garden and with that her son healed; she then understood the importance of this project in her home.

Another story of impact was the family of Don Matías. Don is the father of a Girl Pioneer who also benefitted from having a family garden. He managed to produce all his vegetables to the point that the surpluses could be sold in his community, and in this way, he was able to get a source of employment and income for his family.

About MAIA Impact School

The MAIA Impact School was the 2019 winner of the Zayed Sustainability Prize under the 'Global High Schools' category. The school's guiding principle is that the best way to address the world's challenges is through the education of girls. MAIA Impact School is redefining the word "school" in rural Guatemala through a holistic educational model with an equal focus on academics, culture, identity, and personal development; together, these elements are key to creating a generation of empowered female leaders who will lead systemic change.

Some of the defining features of the MAIA Impact School include approximately three times the amount of instruction (compared to public schools), equal emphasis on crucial non-academic content such as competencies, reproductive health education, financial literacy, and civic awareness.

In addition, the Impact School runs a highly innovative approach to classroom instruction through student-centred classrooms that emphasise dynamic levels of student involvement and the mastery of seven core competencies (critical thinking, excellence, resilience, growth mindset, vocal empowerment, cross-cultural code-switching, and negotiation).

The MAIA Impact School's programmes and innovations are grounded in four goals for Maya girls in rural Guatemala. This includes economic autonomy, lifelong learning, the 'Her Family on her Terms' concept that enables girls to make informed choices to prevent early marriage and motherhood, in addition to 'Empowered to Empower', which provides girls with the tools to become leaders in their homes, schools, and communities to create a more equitable society.

Achieving the Sustainable Development Goals

Since 2008, the Zayed Sustainability Prize has been at the forefront of facilitating, enabling, and driving sustainable development around the world. The Prize's mandate is inspired by the legacy of the UAE's founding father, the late Sheikh Zayed bin Sultan Al Nahyan, whose values were rooted in the belief that as nations pursue prosperity and progress, no one should be left behind. This guiding philosophy is the foundation on which the UAE's sustainability framework has been built.

The Sustainable Development Goals (SDGs) are an urgent call for action requiring unprecedented global partnerships. Reaching the targets set forth by the goals must go hand in hand with strategies that prioritise health and education, champion equity and eliminate inequality, and spur economic growth – all while mitigating climate change and supporting sustainable development on multiple fronts.

To date, 86 winners of the Prize from around the world have directly and indirectly impacted the lives of more than 370 million people across different communities by deploying sustainable solutions that expedite humanitarian development and intervention, and effectively address pressing issues related to health, food, energy and water, while advancing education.

Through its global community of pioneers, the Prize has brought together small and medium-sized enterprises, not-for-profit organisations, and the youth, to respond to the United Nations' call for increased collaboration. Today, the Prize stands at the forefront of actionable global sustainable development through its winners who help communities and countries move forward in achieving 14 of the 17 global SDGs.

From Zero Hunger to Good Health and Well-being, and from Gender Equality to Clean Water and Sanitation, the Prize has established itself as an enabler for international sustainability efforts.

As a key contributor to the UAE's overarching commitment to sustainable development, the Prize is at the heart of the country's vision for its future and a living testament of the continuing legacy of the late Sheikh Zayed.

Winners

86 winners

to-date have been recognised by the Zayed Sustainability Prize in response to the United Nations' call for increased collaboration to advance global sustainability efforts

2009

Dipal Barua
Dr Martin Green

2010

Toyota Motor Corporation
Zhengrong Shi
International Development Enterprises India

2011

Vestas
Amory Lovins

2012

Schneider Electric
Carbon Disclosure Project
Orb Energy
Environmental Defense Fund
Dr Ashok Gadgil

2013

Siemens
Ceres
d.light
Professor Jose Goldemberg
Secundaria Technica 120 (Technical High school 120)
Sheikh Khalifa bin Zayed Bangladesh Islamia School
Okehampton College
Kirya Secondary School (Tanzania Green School Networkit

2014

ABB
Fraunhofer ISE
Abellon Clean Energy
Mr Wang Chuan-fu
Kalkeri Sangeet Vidyalaya
Gh. Rosca Codreanu National College
Nkhata Bay School Authority
Tonga High School

2015

Panasonic Corporation
M-KOPA
Liter of Light
Al Gore
Munro Academy
Melbourne Girls College
Waterford Kamhlaba UWCSA
Addu High School
Petru Rares National College

2016

BYD Company
Kopernik
ZOLA Electric (previously Off-Grid Electric)
Dr. Gro Harlem Brundtland
Schuelerforschungszentrum Suedwuerttemberg
SOS HG Sheikh Secondary School
Korea Science Academy of KAIST
Cashmere High School

2017

General Electric (GE)
Sonnen
Practical Action
Li Junfeng
Unidad Educativa Sagrado Corazon 4
Belvedere College
Starehe Girls Centre School
Green School Bali
Huonville High School

2018

Google
Sunna Design
SELCO Foundation
Shuji Nakamura
Centro Educativo Mbaracayu
Vladimir Nazor school
Aouda Saadia School
Bahrain Bayan School
Motufoua Secondary School

2019

We Care Solar
Sanku
BBOXX Ltd
ECOSOFTT (Eco Solutions for Tomorrow Today)
The Impact School - Estrella De Mar
Goethe Gymnasium
American School of Dubai
African Leadership Academy
SECMOL (Students' Educational and Cultural Movement of Ladakh)
Muntinlupa National High School

2020

GLOBHE
Okuafo Foundation
Electricians without Borders
Ceres Imaging
Air Batalla
United World College
Al Amal Junior High School
Hakimi Aliyu Day Secondary School
Bloom Nepal School
Eutan Tarawa Ieta Junior Secondary School

Global Impact

Over 370 million people's

lives transformed globally by the winners of the Zayed Sustainability Prize

The Prize is changing the lives of millions across different communities in 150 countries around the world by deploying sustainable solutions that expedite humanitarian development, and effectively address the most pressing challenges of our time in the fields of health, food, energy and water, while advancing education.

53 million homes powered by renewable energy

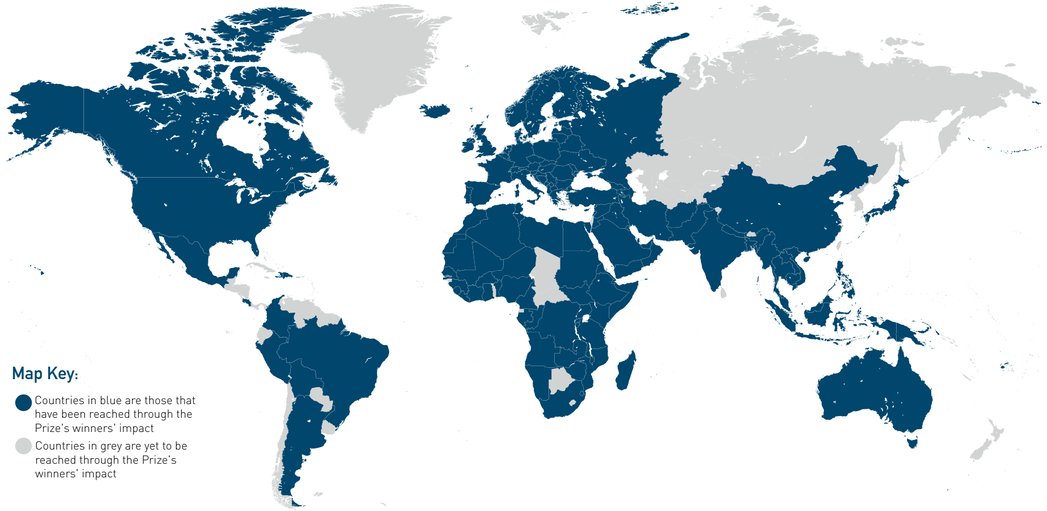
442,000 people gained access to affordable healthcare

11+ million people can access clean and affordable water

12 million people were upskilled through training and advocacy

2.3 million people were reached with nutritious food

216,000 women and newborns were provided maternal healthcare



Sustainable Development Goals Served

14 SDGs served across 150 countries

Through its network, the Prize is promoting actionable sustainable development helping communities and countries take meaningful steps toward achieving 14 of the 17 global Sustainable Development Goals (SDGs).

Africa

South Asia

Central Asia

East Asia

Southeast Asia

Middle East

North America

Oceania

South America

Europe

Testimonials

The Zayed Sustainability Prize is thankful to its robust network of stakeholders for their unwavering commitment and determination to amplifying the global vision and message of the Prize across geographies and sectors.

As we continue to pursue our mission of recognising excellence, we are honoured to be joined by some of the world's most inspiring sustainability leaders. Together we pledge to continue elevating the organisations and people who are reshaping the world's future, helping us achieve our sustainability potential for future generations.

H.E. Olafur Ragnar Grimsson

Former President of Iceland

Zayed Sustainability Prize Jury Chair

The inspiring success of the Zayed Sustainability Prize provides a strong foundation for the future in its remarkable evolution. The original vision will remain the core of the mission and the achievements of previous winners will encourage future candidates from all over the world. With its global reach, the Prize will continue to transform societies, countries and communities; making our planet a more sustainable home.

H.E. Ahmed Ali Al Sayegh

UAE Minister of State

Zayed Sustainability Prize Jury Member

Since the Zayed Sustainability Prize was formed more than a decade ago, schools, businesses, individuals and communities have come together to advocate the adoption of environmental stewardship and sustainable development and produce meaningful impact on climate change. It is my wish that, this global network continues to push the boundaries of innovation, deepens its commitment to renewable energy and delivers solutions that befit the vision of the UAE's founding father, the late Sheikh Zayed bin Sultan Al Nahyan.

Dr. Gro Harlem Brundtland

Former Prime Minister of Norway

2016 winner, Lifetime Achievement category

When it comes to sustainability and climate change, there needs to be action now, not tomorrow. I call for everyone to take personal responsibility in our journey towards a shared vision of the future of our planet because if the current situation continues, then the world will not be able to handle this burden.

Al Gore

Former Vice President of the USA

2015 winner, Lifetime Achievement category

The Zayed Sustainability Prize provides needed encouragement to people who are doing good work that benefits the future of humankind, recognises their contribution and inspires others to seek out the same kind of recognition and reward. We must make wise choices; the future depends upon the kind of vision that we have seen displayed by these award winners in the past. It's an impressive group and I am honoured to be part of it.

Sir Richard Branson

Founder of the Virgin Group

Zayed Sustainability Prize Jury Member

The Zayed Sustainability Prize sets aside a very generous fund to celebrate and encourage social enterprises, both small and medium-sized businesses and nonprofit organisations that are doing great work in the areas of health, food, energy and water for greater humanitarian impact globally, to come up with revolutionary ideas that can help make a profound change and transform the world in the long run.

Thomas Samuel

Founder & President of Sunna Design

2018 winner, Small & Medium Enterprise category

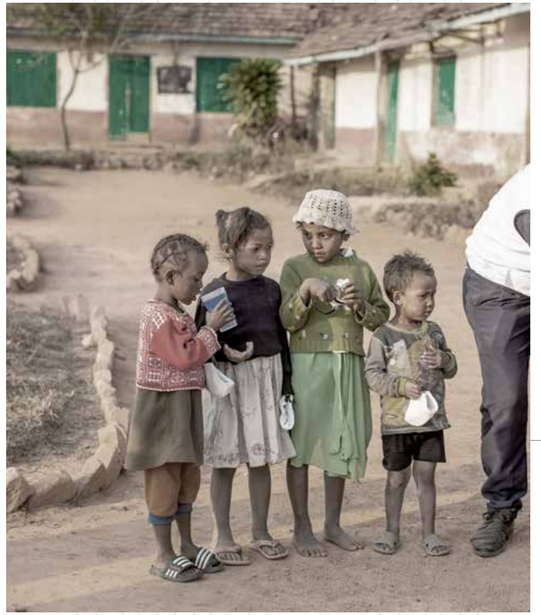
Winning the Zayed Sustainability Prize in 2018 added notable growth and value to Sunna Design's business as a whole, as we experienced several benefits across multiple streams, including our brand name becoming highly recognised in the field of smart solar technology and lighting and establishing a host of new strategic partnerships. Overall, the Prize has contributed to our ability to diversify, optimise and deploy our solutions to cater to both developing and mature markets through sustainable solar solutions.

Helena Samsioe

Founder & CEO of GLOBHE

2019 winner, Health category

The Zayed Sustainability Prize has truly helped GLOBHE reach new heights. We've been able to develop our Crowddroning platform further, connect to more drones and drone pilots around the world, and collect valuable data helping communities around the world to better detect and predict disease outbreaks. It has also resulted in new partnerships and an expanded client base.



United for a Sustainable Future

20by2020

In December 2019, a humanitarian UAE-led initiative entitled 20by2020 was launched to champion the enduring humanitarian and sustainability values of the UAE's founding father, the late Sheikh Zayed bin Sultan Al Nahyan. 20by2020 aimed to donate innovative solutions and technologies of previous Prize winners and finalists to vulnerable communities the world over in response to the most pressing global challenges in the key sectors of health, food, energy, and water.

20by2020 was led by the Zayed Sustainability Prize in partnership with Abu Dhabi Global Market, Abu Dhabi Fund for Development, Mubadala Petroleum, the UAE Ministry of Tolerance and Coexistence, Masdar, and BNPP Paribas; the last partner to join the initiative and the first international private company. Majid Al Futtaim also joined the initiative in support of projects in Jordan and Egypt, in late 2020.

Seeking to foster an environment of stability and empowerment within all communities where donation activities occurred, 20by2020 acted as a natural extension of the Zayed Sustainability Prize's ongoing commitment to work with its winners and finalists, by continuing to support their goals and allowing their solutions to reach a much wider number of people. The aim was to empower communities for sustainable growth and to aid in the fulfilment of key United Nations Sustainable Development Goals.

Since its launch, the initiative deployed technologies in eight countries as part of its first phase, ranging from critical lighting solutions to improved access to water and sanitation. Phase 1 of the initiative transformed the lives of more than 110,000 people in Nepal, Uganda, Tanzania, Jordan, Egypt, Cambodia, Madagascar, and Indonesia.

Beyond2020

In 2021, the 20by2020 initiative was rebranded to Beyond2020 to ensure its continuity and long-term impact.

As part of Beyond2020 another 12 countries were identified to amplify its international humanitarian drive and reach more vulnerable communities throughout the world, particularly as nations gradually transition out of the pandemic.

The initiative's second phase kicked off with deployments in Bangladesh, The Philippines and Rwanda, bringing its total impact to 150,600 lives. Additionally, deployments being rolled out under Beyond2020 include sustainable solutions in Costa Rica, Malaysia, Vietnam, India, Lebanon, The Sudan, Ethiopia, Colombia and Peru.

Deployments Map

The Beyond2020 Initiative has a truly global reach, deploying solutions across 11 countries and covering a large geographical scope across the Global South. The initiative offers critical, life-transforming solutions to a broad number of beneficiaries worldwide, providing tech for good and fostering development that is inclusive and sustainable.

1 NEPAL

Project: **Solar Suitcases**
Winner: **We Care Solar, 2019**
Category: **Health**
Impact: **6,000 mothers and their infants gain access to better healthcare**

2 TANZANIA

Project: **Flour Dosifiers**
Winner: **Sanku, 2019**
Category: **Food**
Impact: **50.000 adultsand children gain access to nutritious food**

3 UGANDA

Project: **Solar Suitcases**
Winner: **We Care Solar, 2019**
Category: **Health**
Impact: **12.000 mothers and their infants gain access to better healthcare**

4 JORDAN

Project: **Solar Streetlights**
Finalist: **Sunna Design, 2018**
Category: **Energy**
Impact: **3.000 people gained access to energy daily**

5 EGYPT

Project: **Solar Streetlights**
Winner: **Sunna Design, 2018**
Category: **Energy**
Impact: **3.500 people gain access to energy daily**

6 CAMBODIA

Project: **Water Filtration Units**
Finalist: **Agir Ensemble Association (Safe Water Cube), 2019**
Category: **Water**
Impact: **4.400 people gain access to clean water**

7 INDONESIA

Project: **Solar Home Systems**
Winner: **D.Light. 2013 with on-ground project execution by Kopernik, 2016**
Category: **Energy**
Impact: **20.700 people gained access to energy daily**

8 MADAGASCAR

Project: **Water Filtration Units**
Winner: **Agir Ensemble Association (Safe Water Cube), 2019**
Category: **Water**
Impact: **8.500 people gain access to clean water**

9 BANGLADESH

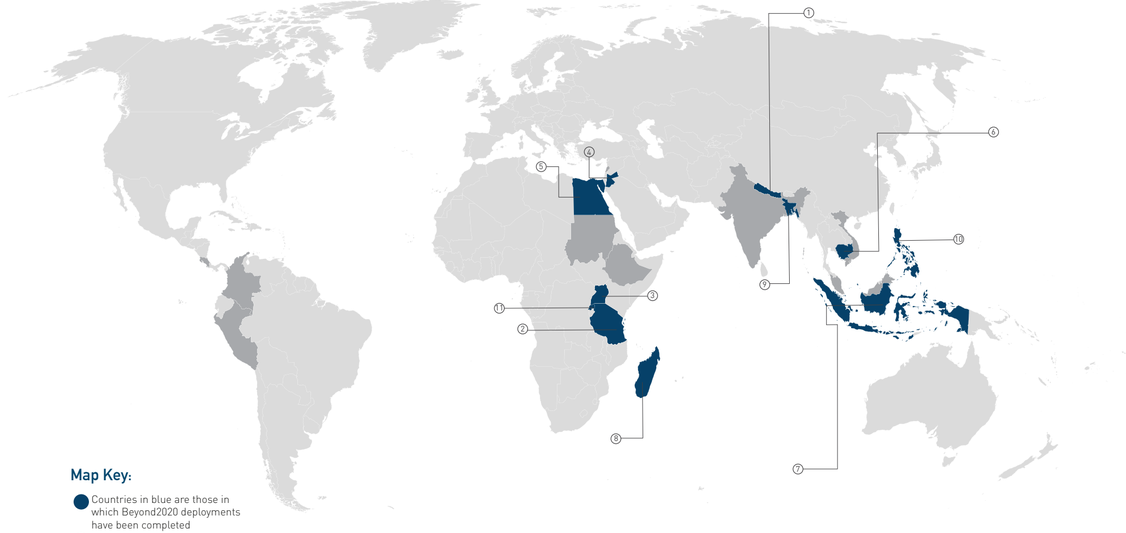
Project: **Solar Home Systems**
Winner: **Electricians Without Borders, 2020**
Category: **Energy**
Impact: **4.500 Rohingya refugees gain access to critical lighting solutions**

10 THE PHILIPPINES

Project: **Hydraulic Ram Pumps**
Finalist: **Alternative Indigenous Development Foundation, 2020**
Category: **Water**
Impact: **18.000 people gain access to water and improved sanitation**

11 RWANDA

Project: **Health Clinics**
Finalist: **One Family Health, 2020**
Category: **Health**
Impact: **20.000 people gain improved access to healthcare and essential medication. 4 nurse-entrepreneurs are empowered to open and manage their own clinics**



Map Key:

- Countries in blue are those in which Beyond2020 deployments have been completed
- Countries in grey are those in which Beyond2020 deployments are underway


The
Living Machine