
ZAYED FUTURE
ENERGY PRIZE
2008-2018
SPECIAL 10TH ANNIVERSARY EDITION

...go the extra mile and try something new, you will discover that there is something hidden in you that makes you outstanding.

Riziki Mwaka Kitondo, Solar Pioneer, Starehe Girls Centre, Nairobi, Kenya.

FOREWORD

TEN YEARS OF IMPACT

Students in rural Africa are now able to do their homework at night using affordable solar-powered lamps. Local women in Malawi have been taught to install solar panels, extending energy access far from the electricity grid. A school in Nova Scotia is using sustainable air conditioning to cool its classrooms. A village community in typhoon-hit Tacloban is rebuilding thanks to renewable energy.

This is just a snapshot of the human impact of the Zayed Future Energy Prize.

A decade ago, the leadership of Abu Dhabi established the Zayed Future Energy Prize to carry forward the sustainability vision of Sheikh Zayed bin Sultan Al Nahyan, the Founding Father of the United Arab Emirates.

Since then, the Prize has earned a global reputation as a clean technology and sustainability catalyst – identifying, celebrating and amplifying the work of others, from multinationals to schools and individual entrepreneurs.

The Zayed Future Energy Prize allows winners to expand their operations, helping them to buy better equipment, improve their facilities, and conduct R&D.

The results have been spectacular.

Since the first awards were presented in 2009, the winners of the Zayed Future Energy Prize have impacted the lives of more than 300 million people around the world.

They have helped to reduce carbon dioxide emissions by a staggering 1 billion tonnes. They have supplied 1.2 billion MWh of clean power, while extending energy access to 27.5 million people in some of the poorest communities in Africa and Asia.

Countless humanitarian initiatives around the world now bear Sheikh Zayed's name, inspired by his legacy in environmental conservation and determination to realise a better and more sustainable future.

Behind the statistics are the lives of millions of people, whose prospects and welfare have been transformed thanks to the countless projects of our prize recipients.

And so it is by understanding the impact of the Zayed Future Energy Prize at the grassroots level that we gain a clearer picture of its real significance.

The pages that follow showcase the prize winners' outstanding achievements, share some of their insights and words of inspiration. In short, they capture a sense of the global goodwill that has been generated through the Zayed Future Energy Prize over the last decade.

The UAE continues to make remarkable progress in building a prosperous, sustainable future for its people, while forging partnerships with other nations to advance innovative energy solutions around the world.

As we celebrate the 10th anniversary of the Zayed Future Energy Prize, we look towards the next decade, confident in the knowledge that the prize will project the sustainability vision of our nation's Founding Father long into the future.

H.E. Dr. Sultan Ahmed Al Jaber
Director-General
Zayed Future Energy Prize

LEGACY

Those who appreciate the responsibility and privilege they have been given by God should be prepared to embark on the path of responsibility for the world we live in and pledge accountability for its welfare to look after, protect and improve the quality of life for everyone.

SHEIKH ZAYED BIN SULTAN AL NAHYAN
The late president and founding father of
the United Arab Emirates
1918 – 2004

SHEIKH ZAYED

Great leaders are distinguished by exceptional vision and impact. In the centenary '**Year of Zayed**', we are reminded that **Sheikh Zayed** embraced sustainability and conservation long before others. The impact of this commitment continues to echo around the world, as the Zayed Future Energy Prize and its winners celebrate **10 years of positive impact on 307 million people** through the use of renewable energy.

M-Kopa

10
YEARS OF THE PRIZE

THE GROWTH AND EVOLUTION OF THE ZAYED FUTURE ENERGY PRIZE SPANNING A DECADE

Since 2008, the Zayed Future Energy Prize has made it its mission to embolden those who strive towards innovation in sustainability and renewable energy development. It has done so by evolving to meet the current needs of the world and inspiring a new generation of energy leaders. Knowing our history allows us to better plan for the future, and to set a clear path for generations to come.

2008

The beginning

The Zayed Future Energy Prize was established to inspire innovation and affect impact in the field of renewable energy and sustainability. The Prize received 150 entries in the first year.

2009

The first year

The Zayed Future Energy Prize's first two winners were announced in January 2009 at an inaugural awards ceremony in Abu Dhabi.

2010

Online submissions

The Zayed Future Energy Prize online submission portal went live to expand its reach globally.

2011

Four-tier review

Strengthened the Prize's evaluation process by introducing a four-tier review.

2012

Brand refresh

Introduced the new Zayed Future Energy Prize logo in gold.

Evolution to categories

The Prize evolved into distinct five categories to widen its reach and encourage participation from different levels of society. The Global High Schools programme was created to empower the next generation of energy innovators, awarding winners from five regions: Asia, Africa, The Americas, Europe and Oceania.

2013

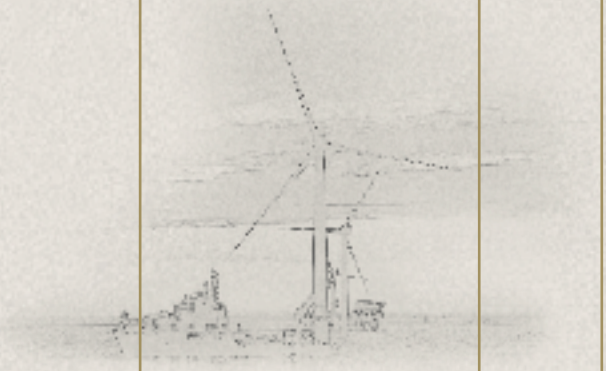
Global High Schools

The first awards ceremony that includes Global High Schools winners.

2014

Lifetime Achievement

A nomination process was put in place for the Lifetime Achievement category to consider notable achievements by a wider network of renewable energy and sustainability champions.



2015

Large Corporation

Similarly, a nomination process was implemented for the Large Corporation category to give recognition to businesses that have demonstrated leadership in advancing sustainability and clean tech by investing in R&D.

2016

Record entry numbers

The traction of the prize continued to increase with a record number of over 1,000 entries and 10,000 cumulative entries over the years. Its past winners are testaments to the diversity and innovative projects that has helped in shaping the future of many communities.

2017

307 million people impacted

With 57 winners to date, over 307 million of lives have been changed and each and every one of our winners continues to expand and reach even more people.

2018

A decade of impact

As the Prize celebrates its 10th anniversary, it aims to foster a strong community that encourages sustainable innovation and address the global challenges of energy and environment through the implementation of renewable energy and sustainability. In conjunction with the Year of Zayed, the Prize and its winners continue to honour Sheikh Zayed's environmental stewardship by transforming the lives of people across the world using clean tech.

ZAYED FUTURE ENERGY PRIZE


Practical Action

10
IMPACT STORIES

GENERATING PASSION

Nola Smart is part of a student group that proposed installing a wind turbine, rooftop solar PV panels and piezoelectric floor tiles at their school, Cashmere High School in Christchurch, New Zealand. Their goal wasn't just clean energy, but also to promote awareness and education.

Students are inspired by the project, and the overall vision is that this will motivate them to entertain other innovative ideas for sustainable energy in their own lives and future careers.

The piezoelectric floor tiles, which generate electricity from the force applied by the footfall of students and teachers, don't produce as much energy as solar, but "the educational impact is huge" and it is with this mind-set that students are challenged to sustain their passion in renewable energy.

The enthusiasm from students and teachers alike is clear, as they do regular check-ins using the school's online dashboard to see in real time how much electricity the different renewable power components are generating.

Participating in the project has had a big impact on Nola, who is now studying urban planning and urban design at university and hopes to work with non-profit organisations focused on making cities around the world more sustainable. "I've been shown through this project that implementing new ideas can lead to unexpected outcomes that can really change your future."

"All you need to do is start the conversation about sustainability. The support out there for a more sustainable society is overwhelming."

Cashmere High School

Location	New Zealand
Year / Category	2016 / Global High Schools – Oceania
Project	Installed 25 kW solar panels, 2 kW wind turbine, piezoelectric floor tiles
SDGs	


WHAT IS SUSTAINABILITY?

SUPERHERO IBU BEKTI

When Ibu Bekti first learned about the Kopernik Wonder Women programme, she was already a passionate, widely respected and highly effective advocate for the empowerment of Indonesian women and children.

It was no surprise, then, that the Kopernik programme resonated with her. The Wonder Women initiative trains Indonesian women to become micro entrepreneurs by selling simple solar lanterns, water filters and clean cookstoves in their communities.

"I saw how these technologies could be an enabling factor for women to become independent – to be able to save money and energy, and to live a healthier life," she says. With access to safe drinking water still limited on Flores Island, and electricity equally unreliable, water filters and solar lamps "are extremely useful for us."

To date, she's responsible for the distribution of more than 300 clean energy technologies to small communities on Flores Island, Indonesia.

Her commitment to improving lives and her entrepreneurial spirit led her to use these technologies to help small farmers who often carry a lot of debt, in part because they spend valuable cash to buy kerosene for lighting.

Her solution was to trade Kopernik solar lamps for the farmers' produce. This then created another opportunity, and she and a partner launched a café in 2016 that not only uses the produce but also educates customers on healthy eating.

Having worked with thousands of low-income women since the 1980s, Ibu Bekti is leveraging the Kopernik Wonder Women programme to continue empowering women, support communities and care for the planet.

Kopernik

Location	Indonesia
Year / Category	2016 / Non-Profit Organisation
Impact	Reached 200,000 lives, lighted up homes, provided clean water and empowered women to be entrepreneurs, mentors and trainers
SDGs	

LIGHTING UP LIVES

Myrna Gayoso is an expert in assembling small solar PV lighting systems that are positively impacting lives across the Philippines and around the world. It's a skill she says she couldn't have imagined as child and one that she learned as an inmate at the Correctional Institute for Women near Manila.

She was one of the first women in the facility to be trained by the non-profit organisation, Liter of Light in the technique that uses recycled plastic bottles, small solar panels and simple electronics to create 'light bottles' for homes and streetlights. While at the correctional institute, Myrna not only learned a valuable skill, but also earned income as part of the programme run by the Philippines-headquartered organisation.

After her release following a government pardon, Myrna joined Liter of Light full time and is today responsible for training new suppliers, overseeing the supplier network and managing inventory.

Over the years, she's helped develop training materials used to teach other women how to make the lights and has helped make lights given to communities devastated by Typhoon Haiyan (Yolanda).

"What motivates and inspires me on difficult days are my memories working with Liter of Light. Even though I can't give money to the poor or needy, I can still help them by making solar lights for those that otherwise have no electricity."

She can hardly believe the turn her life has taken: "I'm so happy that having been an inmate is no hindrance to my helping people as part of an organisation with such wonderful goals that are being felt throughout the world."

Liter of Light

Location	Philippines, projects in more than 25 countries
Year / Category	2015 / Non-Profit Organisation
Impact	Reached 752,000 households, lighted up hundreds of streets
SDGs	

21ST CENTURY WIND TOWERS

Passive-cooling wind towers (Barajeel in Arabic) have been part of local architecture in the United Arab Emirates (UAE) for generations, and one school in the country is pioneering a modern take on the technology that could dramatically lower the cost of air conditioning.

The Shaikh Khalifa Bin Zayed Bangladesh Islamia School is leveraging its Zayed Future Energy Prize award to put itself on the front lines of a cutting-edge cooling innovation that could make it the first passive-cooling school in the UAE.

The school installed a 12kW rooftop solar PV system to generate some of its own electricity, but it's the wind tower project that seeks to dramatically reduce electricity demand for air conditioning in the first place.

The project will bring the traditional wind tower into the 21st century, "aiming to develop a leading alternative to energy-intensive mechanical air-conditioning systems," says Dr Ben Richard Hughes, the project leader and a director at Free Running Buildings, the company designing and innovating the technology in partnership with the school.

Students are playing a critical role in the project that will install 24 FREECOOL wind towers at the school. Firstly, they were key in bringing the out-of-the-box idea from concept to reality and are now providing crucial feedback during the pilot and subsequent implementation phases of the project.

Dr Hughes noted that the Zayed Future Energy Prize award not only inspired the students to imagine a better future; it also demonstrated a confidence in the technology that has "given the project team the ability to design improved innovations in development of the system, emboldening them to pursue more creative solutions to problems encountered."

Shaikh Khalifa Bin Zayed Bangladesh Islamia School

Location	United Arab Emirates
Year / Category	2013 / Global High Schools – Asia
Project	Installed 12 kW solar PV and working on an innovative wind tower system for cooling the school
SDGs	

GROWING AMBITIONS

When the students from Belvedere College in Dublin, Ireland came to Abu Dhabi for the Zayed Future Energy Prize awards ceremony, their project proposal sought to use sustainable urban agriculture as a learning tool.

After meeting other Prize winners, they were inspired to think bigger. Now, their goal is urban farming that will rely almost entirely on inputs from natural resources, renewable power and waste streams available on the school grounds.

Sonnen, a Small and Medium Enterprise from Germany, was one of the winners. Since then, the company has provided valuable input, consulting and site visits, and has given Belvedere one of its storage batteries.

A conversation that began with 2016 Global High Schools winner Schüler-Forschungs-Zentrum Südwürttemberg (SFZ) of Germany continues today. SFZ's project included student-built wind and hydro power generating facilities, and an online system to monitor the power plants.

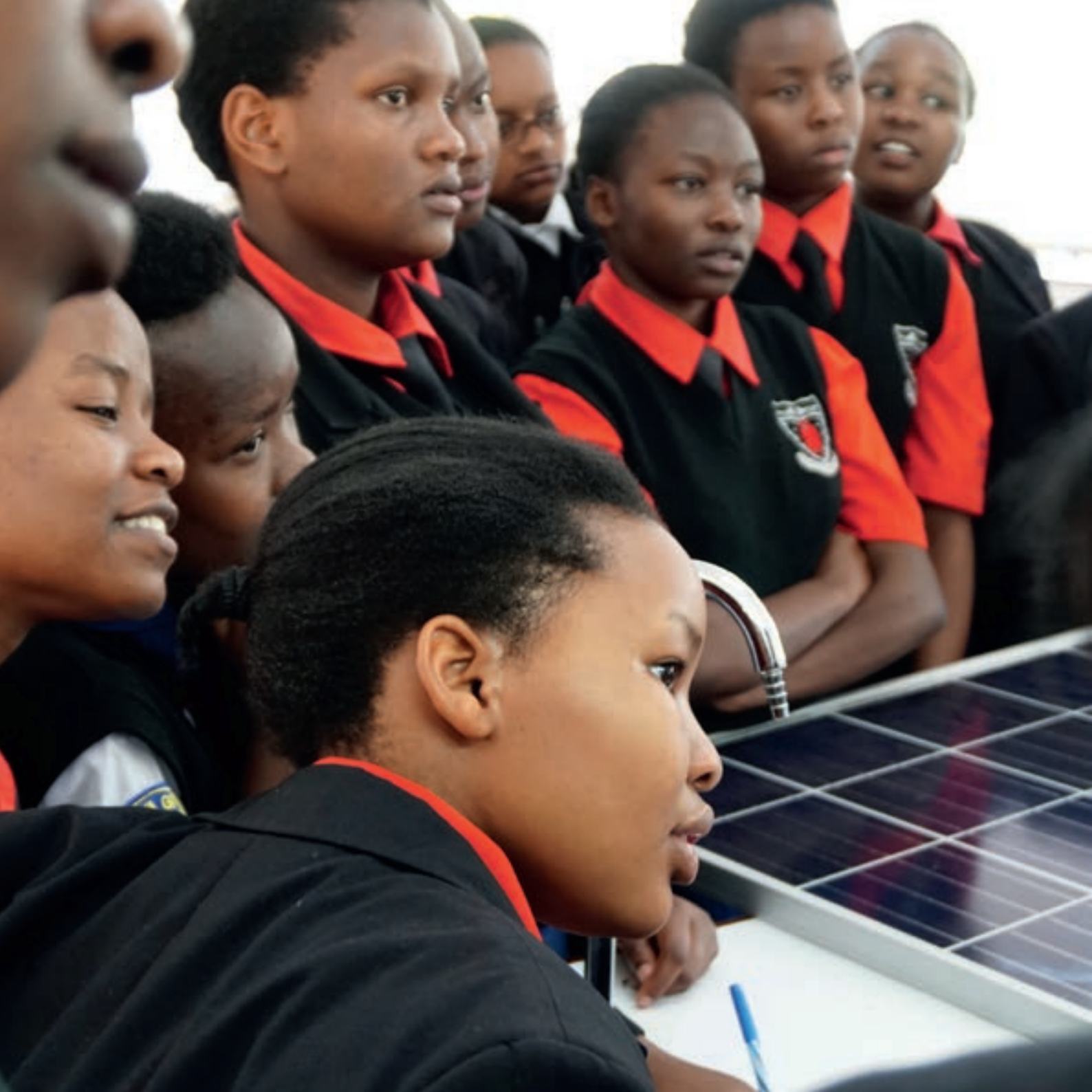
Working together, Belvedere and SFZ sought and received a European Union Erasmus grant to support cooperation between the two schools.

Their collaboration includes connecting the two schools' renewable power projects via SFZ's online system, developing project-based-learning curriculums based on their projects, and setting up an online platform for students from the two schools to exchange experiences and ideas.

Looking at how much has been achieved in a short amount of time, Tobias Beck of SFZ sees these initiatives as "fertilizer for new student ideas and projects ... and a model of sustainable behaviour in school education."

Simon O'Donell of Belvedere adds, "It's this kind of collaboration and sharing of sustainability visions among peers that will nurture the innovation that is essential to a sustainable future."

	Belvedere College	Schülerforschungszentrum Südwürttemberg	Sonnen GmbH
Location	Ireland	Germany	Germany
Year / Category	2017 / Global High Schools - Europe	2016 / Global High Schools - Europe	2017 / Small and Medium Enterprise
Project	Sustainable urban agriculture and installation of solar panels	Developed and installed wind and hydro power plants at different sites and a data monitoring and measuring system for the plants	Smart energy homes and storage system impacted 100,000 people globally, implementing 36 MW
SDGs			



STUDENTS, SOLAR PIONEERS, HEROES

When students of the non-profit Starehe Girls' Centre & School outside Nairobi, Kenya pressed their principal to allow them to apply for the Zayed Future Energy Prize, Sister Jane Soita initially rebuffed them, recalling that she said: "'How can we, as a small school, beat all the schools in Africa?' They said 'Sister, let us try', and still I said 'No.' Finally, I gave in and said, 'Yes'."

The result? The group of 10 students – who became the school's "solar pioneers" – prepared an application, submitted it and won. Today a 25kW solar PV array funded by the Prize, along with solar water heaters installed in the school kitchens and 10 solar street lights have cut the school's electricity bill in half.

With these savings, Sister Jane was able to educate 10 additional girls at the boarding school, which educates academically gifted girls who come from financially poor families across the country.

Nora Magwere, a renewable energy business partner to the solar pioneers, says that as a result of the project, "Many of them want to be engineers, and as a woman in this industry, I am very encouraged. These students are my heroes."

Their work continues in other ways, as they coach younger students to take up their new "Cool Green Campaign", an effort to spread the word about renewable energy to other schools in the region.

Speaking of the pioneers, who are soon off to university, Sister Jane says: "I'm so impressed. I'm so happy for them. I've come to believe that poverty is not a hindrance to success. These girls have brains. Everything they put their hands on, they win."

Starehe Girls' Centre & School

Location	Kenya
Year / Category	2017 / Global High Schools – Africa
Impact	Installed 25 kW of solar panels, 10 solar street lights and solar water heaters
SDGs	

CHAIN REACTION

The wind turbine and solar PV panels generating electricity at the Waterford Kamhlaba School in Swaziland, and the school's bio digester, which produces cooking fuel from waste, are having a huge impact at the school and beyond – in ways you might not expect.

Implemented after the school won a Zayed Future Energy Prize Global High Schools award, the sustainability projects themselves provided an opportunity for students to "learn by doing," says Aya El Alami, a member of the student team on the project.

The group not only identified school energy needs, but also designed solutions, and installed and tested the equipment, giving them early experience in project management, resource optimization and supplier management.

Beyond the school walls, the project serves as a model for the wider community as it continues to "trigger a considerable chain reaction" in Swaziland, encouraging people to become more sustainable at home and work.

Further afield, the success of the projects inspired the 17-school United World Colleges association, of which Waterford Kamhlaba is a member, to commit to making their school campuses carbon neutral by 2030 and carbon negative by 2050.

For Aya, the project solidified her passion for renewable energy. After graduating high school, she spent a year working at the climate-focused non-profit Germanwatch, and is now in university at Sciences Po – Paris, studying climate policy.

"Working on the Zayed Future Energy Prize project with a team of talented students enabled me to expand my entrepreneurial orientation and my interest in the field of sustainable development, convincing me of my goal to have a leadership position in the field of climate finance and politics."

Waterford Kamhlaba

Location	Swaziland
Year / Category	2015 / Global High Schools – Africa
Project	22 kW solar panels, 800W wind turbine and a biogas system to supply cooking gas
SDGs	

ELECTRIFYING GRANDMOTHER

Joyce Mhango is a solar electrical technician from rural Malawi who can assemble, install, maintain and repair solar PV home systems. She's also a widow, a grandmother and a mother of six that is helping to bring electricity to her community.

This work is crucial, since only 1% of rural communities in Malawi are connected to the national grid, forcing children living in villages to study and read by candlelight or with a kerosene lamp, if available, and compelling the workday to end at sunset.

Joyce is part of a first-of-its-kind programme established by the Zayed Solar Academy to provide an all-women's programme to train rural solar electrical engineers through hands-on learning for women of all ages and education levels.

It's a new model designed to serve people just like Joyce who live in the most rural communities, and often are the most vulnerable and hard-to-reach, poorest, least mobile and least educated.

The programme also provides business training, so the women are prepared to run their own businesses selling and installing solar equipment.

Since winning the Zayed Future Energy Prize in the Global High Schools category in 2014, the Zayed Solar Academy has grown into a technical college, developed the first solar curriculum for Malawi, and won European Union funding to develop solar training centres in six institutions around Malawi. Future plans include developing the Zayed Solar Research and Training Centre for Rural Electrification for Africa, a think tank and research centre.

Once upon a time, Joyce supported her family by selling bananas and used clothes. Today, she's not only earning a better income, but she's also helping to bring the transformative power of solar energy to her entire community.

Nkhata Bay School Authority

Location	Malawi
Year / Category	2014 / Global High Schools – Africa
Impact	Established the Zayed Energy & Ecology Centre and the first Zayed Solar Academy, training solar technicians.
SDGs	


THANK YOU
ZFEP

LIGHTING THE WAY

Adan Musa, Principal of the SOS HG Sheikh Secondary School in Somaliland, is saddened when he recalls his childhood – a time when lions and other wild animals roamed the vast forest that covered much of the country. Today, the forest is entirely gone.

Charcoal production and a heavy reliance on livestock, especially goats, have left just ten per cent of the original forest cover.

SOS Sheikh, nicknamed "the Eton of Somaliland", is pioneering ways to combat the problem. The school recently installed a biogas plant that uses waste food from its kitchen, and local manure, to produce biogas for cooking in the kitchen.

Combined with the installation of a 30kW solar array, the school has succeeded in reducing its fuel costs from its diesel generator and gas stoves by 50 per cent.

But more importantly, the 2016 Zayed Future Energy Prize winner is acting as a beacon of education and community outreach.

Hassan, a student at the school, is part of the Energy Management Club. He and his friends train other schools on how to become energy champions. "We learned so much from winning the prize... I think we have a responsibility to share that knowledge."

Many of SOS Sheikh's pupils will end up in leadership roles, whether in government or business, and will carry with them a resolve developed during their learning at SOS Sheikh that Somaliland must transition towards a sustainable future.

Winning the Zayed Future Energy Prize was the first and vital step on that journey.

SOS HG Sheikh Secondary School

Location	Somaliland
Year / Category	2016 / Global High Schools - Africa
Project	Installed 30 kW solar panels and a biogas system
SDGs	

FLOWING ELECTRICITY

The village of Chipendeke is a world away from Zimbabwe's power plants and the national electricity grid they supply. However, right by Chipendeke's backyard is a natural energy source that local citizens have tapped to bring electricity to this community of about 100 thatched-roof homes. Within this context, harnessing the waters of the Wengezi Chitora River, took a full year of gruelling effort by Noah Senga Senga and 12 other hardy volunteers, who worked up to 18-hour days to build a micro-hydroelectric plant.

Working with UK-based non-profit organisation and Zayed Future Energy Prize winner Practical Action, Noah and his team built the plant, based on a community ownership model. Practical Action provided the technical expertise and the hydroelectric plant equipment. The impact on the community has been dramatic, bringing a long list of benefits, says Noah, the secretary of the power plant.

"With electricity, farmers can power workshops to repair damaged tools and can power grinding mills, which vastly increases their productivity.

"It's possible now to use refrigerators to store vaccines and drugs, hence reducing the distance travelled to the national grid-electrified health centres. Lighting at the health centre makes it possible to have [lighted] 24-hour maternity delivery services." Previously it was done by candlelight.

"Our schools have retained experienced teachers, hence an improvement in pass rates."

Local shop owners have electricity for refrigerating their products, much to the joy of their customers, who have boosted purchases. These shops have derived extra business through television shows and cell phone charging.

Summing up, Noah says, "I feel very happy and proud because we are seeing our creation working, and we are showing people our success story."

Practical Action

Location	UK, projects globally
Year / Category	2017 / Non-Profit Organisation
Impact	Reached 2.8 million people, including 1.2 million through improved access to energy
SDGs	


d.light

10
MEMORABLE PHOTOS

© Altar Solar Project – Orb energy, India

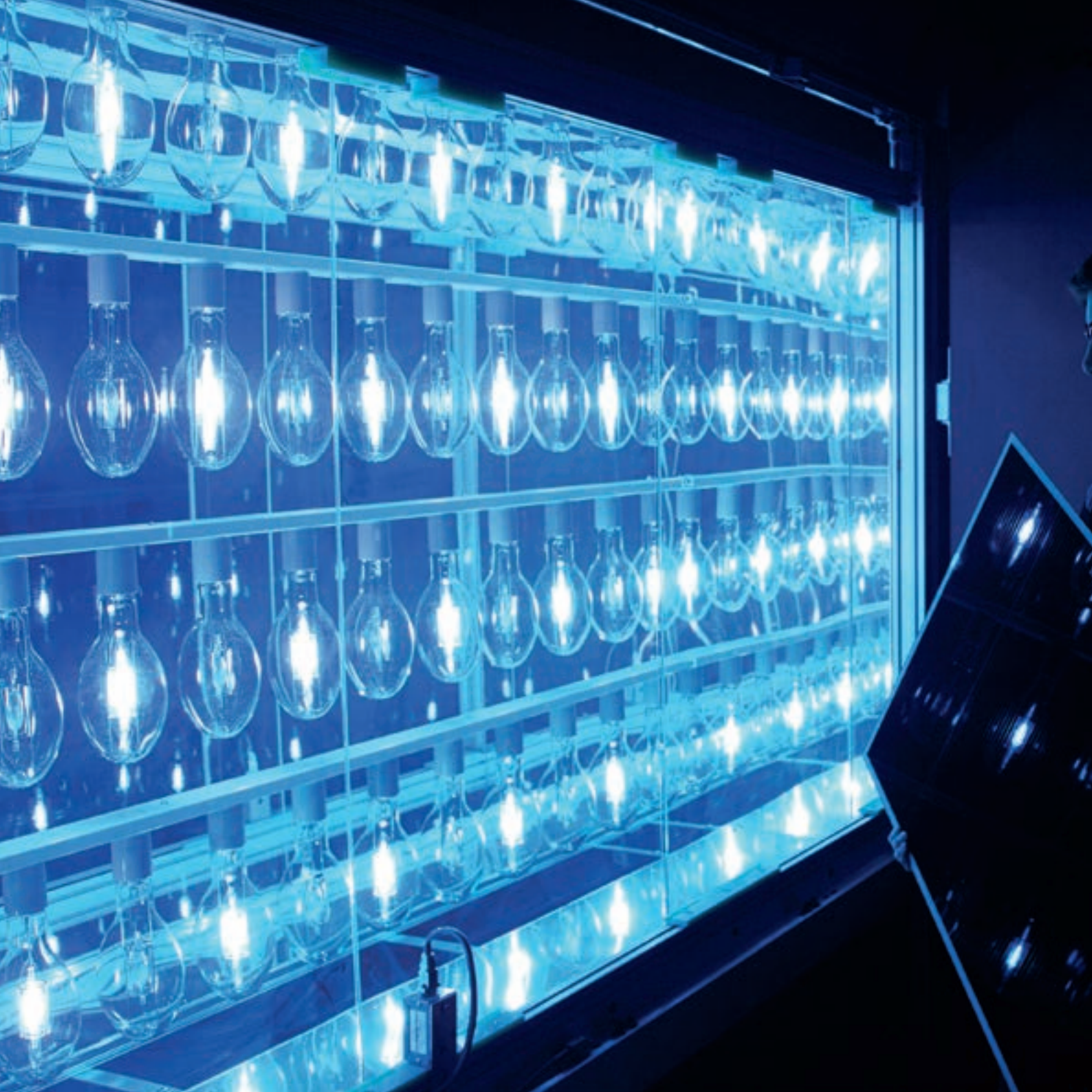
Angchuk and his wife Dolma are from a remote village in Ladakh, North India. They received an Orb Energy Plug and Play solar home system, with the switch to solar providing multiple benefits to 15 families in the village including dramatic improvements in terms of health and virtually unlimited light.

The mission of the Korea Science Academy is to nurture creative leaders who will contribute to a global society. To accomplish this mission, the Korean Science Academy embodies creativity, passion and services, as key spirits to all its students.

As a global supplier of power and technologies, ABB is one of the global leaders providing solutions in renewable energy and energy efficiency markets.

More than 2.8 billion people rely on wood, charcoal, dung and coal for cooking, using very inefficient cooking facilities that are harmful to the environment.

Ashok Gadgil and his team from the Environmental Energy Technology Division of the Lawrence Berkley National Laboratory developed the "Berkley-Dafur" fuel efficient cooking stoves, with more than 45,000 units distributed to women in refugee camps over the past years.



Research and development are paramount for an industry to grow.

Fraunhofer Institute for Solar Energy Systems is Europe's largest solar energy research institute. It believes that renewable energies, especially solar energy, are indispensable for an economically sustainable future.

Off grid Electric provides solar power services to off-grid customers, lighting up the homes of 50,000 people every month.

M-Kopa has connected more than 500,000 homes to affordable solar power. This has enabled people to light up their homes for 50,000,000 hours per month in a fume-free environment.

The Zayed Solar Academy has had a major impact on the future of renewable energy in Malawi.

Since being awarded the Zayed Future Energy Prize in the Global High Schools Category in 2014, the Academy first tackled the issue of the lack of trained rural Solar Engineers in Malawi and has now grown into a technical college. They have since initiated the development of the first solar curriculum for Malawi which is now being rolled out throughout the country.

Since winning the prize in 2013, d.light design has touched the lives of 65 million people, providing light to 20 million children, who are now able to study after sunset.

Dikirani Thaulo, a solar technician from the Zayed Solar Academy, gave a keynote speech at the Sustainable Energy for all Forum in 2016 at the UN General Assembly Hall in New York.

"My fellow graduates and I can now bring light to those without it. This is because of the funding my community received from the Zayed Future Energy Prize to create the Zayed Solar Academy."

10 QUOTES

We are beginning to see first hand new generations of students applying Sheikh Zayed's principles in sustaining our natural resources and preserving this planet. Through this prize, a global community has been established, enabling us to work hand in hand as one humanity.

Shaikh Khalifa bin Zayed Bangladesh Islamia School

We are honoured to belong to an inspired and passionate club of institutions that are taking action towards a sustainable, better future. We know that the ripples the prize is making are growing, and aspire to amplify these until it cannot be ignored.

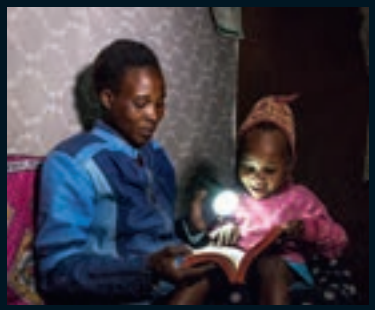
Green School Bali

Sheikh Zayed's legacy is impacting on the future leaders of our world – connecting, empowering and challenging young people to control their future in innovative and collaborative ways to address climate change and sustainability.

Huonville High School

Sheikh Zayed's belief in social, economic and environmental sustainability motivates our mission to make high quality energy affordable to everyone. We are inspired by his tireless efforts in environmental stewardship and aim to reach greater heights in fusing technology and environmental responsibility.

M-Kopa



The Zayed Future Energy Prize is the 'Oscars of renewable energy and sustainability'. We hope that the prize can serve as a model for other countries and leaders to support those who are tackling the massive environmental challenges facing the world today.

Kopernik

The Zayed Future Energy Prize is today the biggest and most relevant Prize of the energy economy, generating attention for green ideas, clean energy and a sustainable future. Our hope is that together with our newfound partners and friends we can build a better future, now.

sonnen

Implementing the Zayed Future Energy Prize project has taught me that sustainability is a global issue that requires everyone's action. Sheikh Zayed's vision has motivated me to embark on a career path in alternative energy engineering, which will enable me to join the next generation of leaders in sustainability by influencing other people to shift towards clean energy resources.

Starehe Girls' Centre and School

The Zayed Future Energy Prize is a noble effort to give students around the world the opportunity to realize their visions for a sustainable future, giving hope to those who have bright ideas but may lack the resources to bring them to life.

SOS HG Sheikh Secondary School

In a world in which people are not willing or able to invest the resources required to address this critical development issue, the UAE has established itself as a pioneer in supporting renewable and sustainable energy.

Liter of light

The late Sheikh Zayed bin Sultan Al Nahyan remains a symbol of good governance, collaboration and vision. The Zayed Future Energy Prize is relevant now, more than ever, as the world looks to find solutions to create a new, sustainable energy future.

Schneider Electric

Sunna Design

10
YEARS OF WINNERS

Zayed Future Energy Prize is proud to support each of its **57 Winners** whose work has benefited the lives of more than **300 million people** over the last decade. These winners whose ambitions, whereby environmental, economic and social aspects come together and reinforce one another, are changing the world for the better. They are part of what has made the revolution in renewable energy possible over the last **10 years**, and it is their journey with which we are honored to be a part.

LARGE CORPORATION

GE, United States of America
BYD, China
Panasonic, Japan
ABB Automation LLC, Switzerland
Siemens LLC, Germany
Schneider Electric, France
Vestas, Denmark
Suntech Power Holdings, China
Toyota Motor Corporation, Japan

SMALL AND MEDIUM ENTERPRISE

sonnen GmbH, Germany
Off Grid Electric, Tanzania
M-KOPA Solar, Kenya
Abellon CleanEnergy, India
d.light design, United States of America
Orb Energy, India
CDP, United Kingdom
E+Co, United States of America
International Development Enterprises - IDEI, India

NON-PROFIT ORGANISATION

Practical Action, United Kingdom
Kopernik, Indonesia
Liter of Light, Philippines
Fraunhofer Institute for Solar Energy Systems, Germany
Ceres, United States of America
Environmental Defense Fund, United States of America

LIFETIME ACHIEVEMENT

Li Junfeng, China
Dr. Gro Brundtland, Norway
Al Gore, United States of America
Wang Chuanfu, China
Jose Goldemberg, Brazil
Dr. Ashok Gadgil, United States of America
Amory B. Lovins, United States of America
Dr. Martin Green, Australia
Dipal Barua, Bangladesh

GLOBAL HIGH SCHOOLS

Unidad Educativa Sagrado Corazone 4, Bolivia
Belvedere College, Ireland
Starehe Girls' Centre and School, Kenya
Green School Bali, Indonesia
Huonville High School, Australia
Institución Educativa Gabriel Plazas, Colombia
Schülerforschungszentrum Südwürttemberg (SFZ), Germany
SOS HG Sheikh Secondary School, Somalia
Korea Science Academy of KAIST, South Korea
Cashmere High School, New Zealand
Munro Academy, Canada
Petru Rares National College, Romania
Waterford Kamhlaba, Swaziland
Addu High School, Maldives
Melbourne Girls' College, Australia
Bronx Design & Construction Academy, United States of America
Gheoghe Rosca Codreanu National College, Romania
Nkhata Bay School Authority, Malawi
Kalkeri Sangeet Vidyalaya, India
Tonga High School, Tonga
Secundaria Tecnica 120, Mexico
Okehampton College, United Kingdom
Kirya Secondary School, Tanzania
Shaikh Khalifa Bin Zayed Bangladesh Islamia School, United Arab Emirates

Dr. Ashok Gadgil

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FACTS & FIGURES

GLOBAL IMPACT

SINCE 2009...

307 mill PEOPLE WERE POSITIVELY IMPACTED BY THE WINNERS OF THE **ZAYED FUTURE ENERGY PRIZE**

8.5 mill PEOPLE HAVE BEEN POSITIVELY INFLUENCED THROUGH **TRAINING AND ADVOCACY**

27.5 mill PEOPLE WERE CONNECTED TO ENERGY AND **MODERN TECHNOLOGIES**

1.1 billion TONS CO_2 HAVE BEEN SAVED

157,400,000 WERE CONNECTED TO RENEWABLE ENERGY

GLOBAL IMPACT

SINCE 2013, GLOBAL HIGH SCHOOLS PROJECTS...

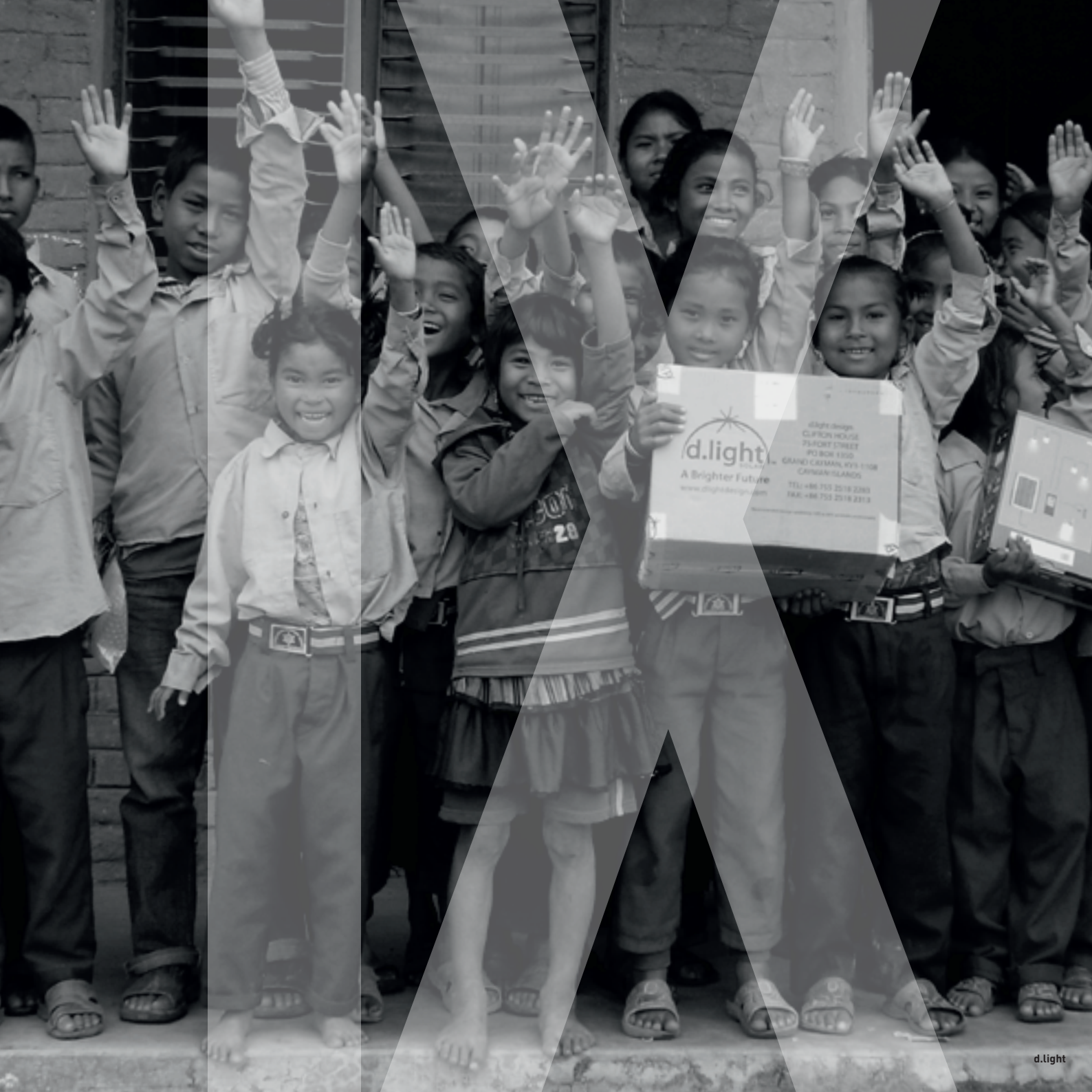
GENERATED **3 mill kWh**

3273 STUDENTS WERE INVOLVED

350000 PEOPLE WERE POSITIVELY IMPACTED **BY THEIR PROJECTS**

ABLE TO SAVE **2372 t CO_2**

INSTALLED 390kW OF SOLAR PANELS, WIND TURBINES, BIO-DIGESTER, IN THEIR SCHOOLS


d.light
A Brighter Future

2018 WINNERS


ZAYED FUTURE ENERGY PRIZE
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2018

2018 WINNERS

Many of today's energy issues can be addressed with sustainable solutions to produce clean, affordable energy in both challenging conditions and remote locations. The 2018 winners of the Zayed Future Energy Prize stand out as leaders in transcending these challenges with unique, innovative, and clean energy solutions that have long lasting impact for those in their direct surroundings, community, and, potentially, country. These winners are a few among many who continue to prove that with imagination, ingenuity and a strong will, it is possible to present brilliant solutions when solving the world's most urgent problems. They are the ones paving the way for those who will follow and strive to build a sustainable future...

LIFETIME ACHIEVEMENT

SHUJI NAKAMURA

UNITED STATES OF AMERICA AND JAPAN

Born in 1954 in Japan, Shuji Nakamura is a Professor of Materials, Electrical and Computer Engineering at the University of California, Santa Barbara. He has dedicated his career to investigating and developing the potential of gallium nitride to produce blue LEDs, and, some years later, more powerful blue laser diodes.

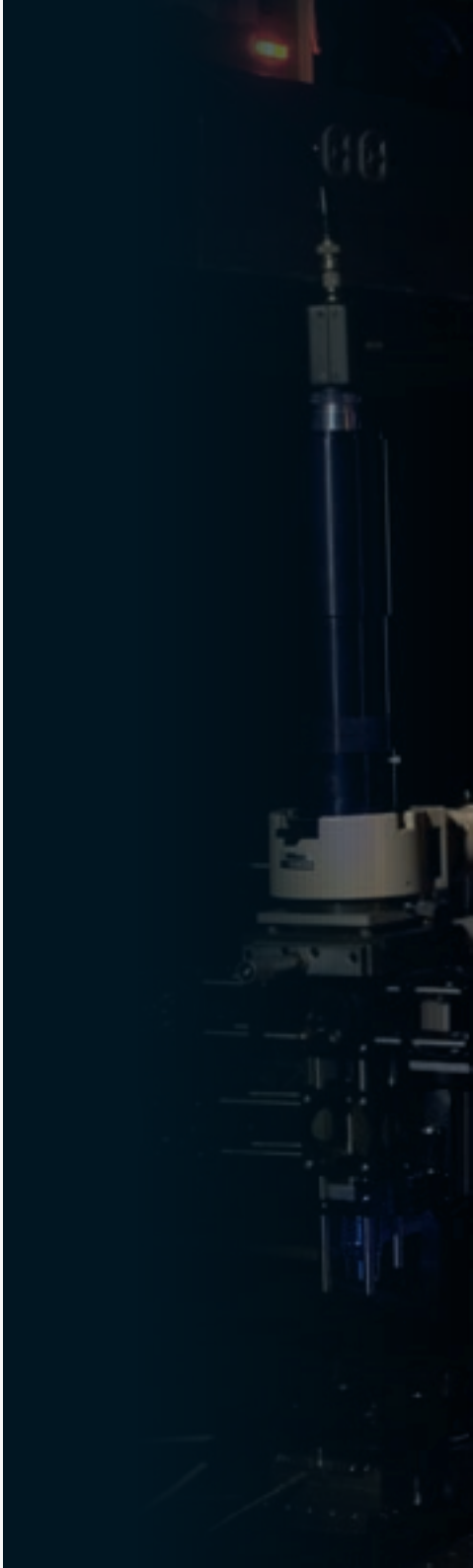
He shares the Nobel Prize for developing blue LEDs with Isamu Akasaki and Hiroshi Amano who worked at Nagoya University in Japan. Nakamura independently developed blue LEDs at Nichia Chemical Industries, a local company in Shikoku Island, Japan.

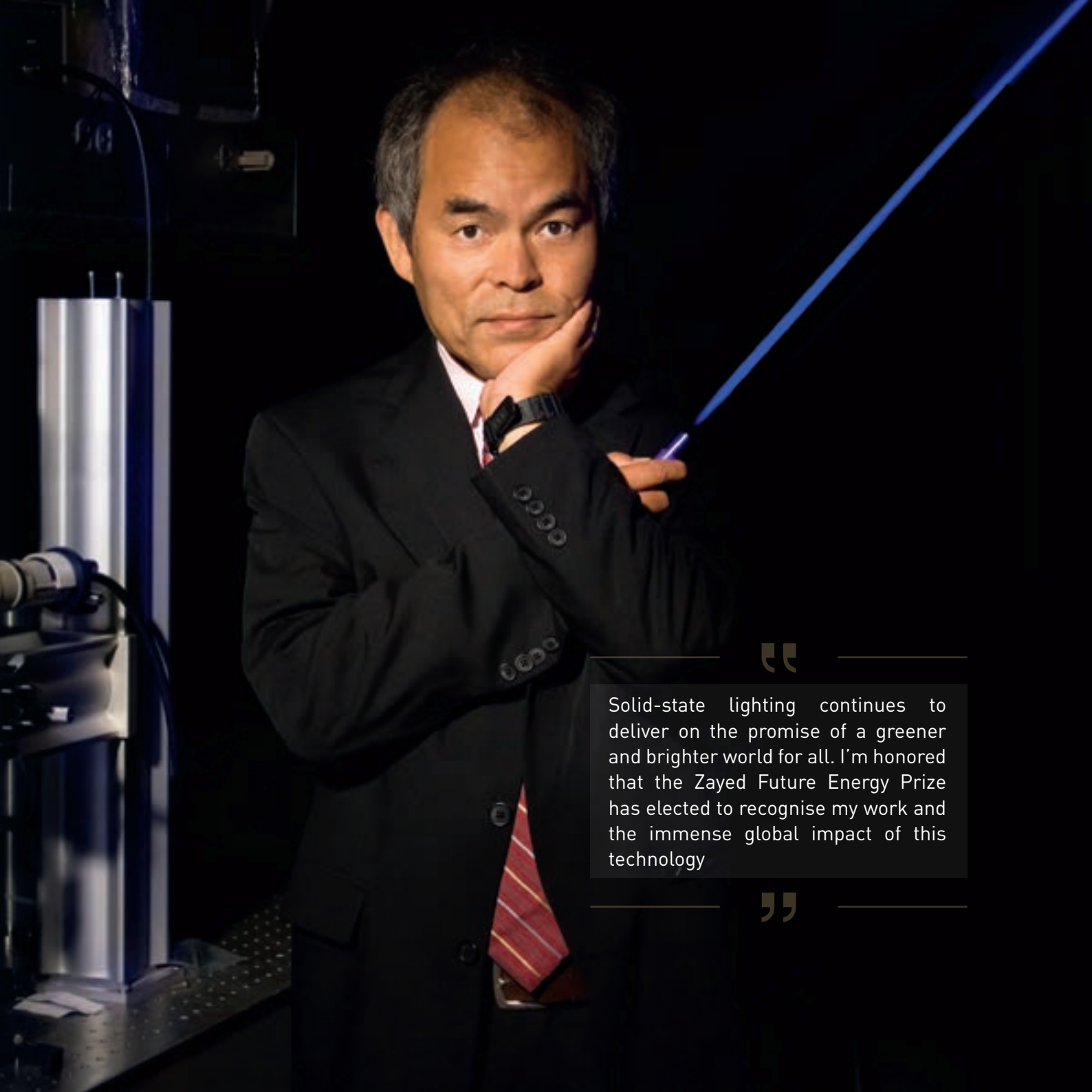
But it was not until the early to mid-1990s that Nakamura made the critical inventive step to produce a strong blue and green light, allowing red LEDs to be combined to produce any color of light including white. This invention has had, and will continue to have, a massive impact on global energy consumption, CO_2 emissions, and clean energy access for some of the world's poorest people.

LED lights consume far less energy and last far longer than conventional bulbs. They have the potential to vastly reduce carbon dioxide emissions, as well as enable cheap solar-powered lights to transform the lives of hundreds of millions of people who have no access to grid electricity.

Shuji Nakamura has commercialized some of his inventions through Soraa, a company he cofounded in the US, providing white LED lamps based on violet LEDs and high-tech competition for the enormous manufacturers that dominate the lighting industry.

In 1995, he went on to develop the blue laser diode, which, because of its short wavelength, is able to store data much more densely than infrared and red laser diodes, quickly leading to the development of the Blu-ray disc. Nakamura's research group at UCSB is now studying how to leverage blue lasers as the driving engine for a new generation of solid-state lighting.





> Solid-state lighting continues to deliver on the promise of a greener and brighter world for all. I'm honored that the Zayed Future Energy Prize has elected to recognise my work and the immense global impact of this technology

LARGE CORPORATION

GOOGLE

UNITED STATES OF AMERICA

Established in 1998, Google is one of the most famous American information technology corporations, with 75,606 employees and energy consumption greater than that of the entire city of San Francisco.

In pursuing the goal of greening its energy supply, Google established itself as the largest cumulative purchaser of renewable energy globally, through a combination of Power Purchase Agreements, direct purchasing of renewable electricity, and building renewable energy facilities onsite. It owns or has long-term offtake agreements for 2.6GW of clean energy—more than any other energy consumer.

Google uses innovative contract structures to bring new renewables online, including applying to the US Federal Energy Regulatory Commission in 2010 for market-based rate authority. This agreement allowed Google to reap the benefits of PPAs without having to sell the power to the utility at the point of generation and then buy it back at the point of consumption. Many corporations have since applied this model.

Google has also been innovative in applying its expertise to create products and tools that benefit the clean energy sector. Nest, which was acquired by Google in 2014, is the most popular smart thermostat on the market and triggered a wave of imitators. The uptake of smart thermostats is opening up new possibilities in residential demand response, offering cheap flexibility to the grid.

In 2016, Google cut cooling energy usage at one of its data centres by 40% without installing new hardware. It achieved this reduction by using machine learning to optimize the operations of its existing system of controls and sensors.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SMALL AND MEDIUM ENTERPRISE

SUNNA DESIGN

FRANCE

Created in 2010, Sunna Design is a French company located in Bordeaux that designs and manufactures innovative off-grid solar street lighting solutions specifically suited for extreme climate conditions.

Sunna Design has installed over eight thousand solutions in over twenty countries, won eight international awards (including ones from MIT, Ernst & Young and La Tribune), and worked with prestigious partners (Saft, Schneider Electric and Thorn). The company has filed 14 patents for breakthrough innovations and continues to abide by its mission statement: to deliver best-in-class, reliable and sustainable off-grid public lighting solutions that are affordable for all, even in rural areas in emerging countries, in order to value and foster development.

Sunna's patented breakthrough technology, an innovative and unique nickel-based battery, allows more than 4,000 charge/discharge cycles, meaning it has a lifespan of ten years or more. In addition, these batteries are particularly resistant to thermal variations and can withstand temperatures ranging from -20°C to 70°C, making them the ideal choice for developing countries. This technology allows for reduced total cost of ownership and an enhanced positive environmental impact. Finally, these small batteries don't need to be buried in the ground, or be put in a case, or be electrically connected to the light mast. They are simply integrated into the head and placed at the top of the mast.

To educate customers on quality and explain the value of Sunna's heat-resistant battery system, Sunna created the Sunna University, an online platform with e-learning, training and marketing material available for Sunna's partners.

We must constantly reinvent ourselves to hope to make a difference. The task is gigantic: we must electrify people without access to energy, imagine the future of smart cities, find business models as innovative as our technology, and transfer expertise to create jobs.

NON-PROFIT ORGANISATION

SELCO FOUNDATION

INDIA

The SELCO Foundation was registered in 2010, but started in 2008 as SELCO Innovation Labs—a hands-on working hub for finding tailored solutions for grass-root energy-driven problems. The Foundation specializes in creating solutions that are impossible to find, read or understand without first-hand experience of the rural field in which they arise. Moreover, the Foundation has a philosophy of sharing its innovations and learnings in order to help other organizations use energy access as a means of poverty relief.

The SELCO Foundation combines renewable energy technology and innovative financial models to serve off-grid communities in India and Africa and improve access to energy. The Foundation also works to alleviate poverty by providing financial products which are flexible around different earning profiles to increase market access to renewable energy. It provides technologies and implementing processes that improve energy efficiency and availability, such as shared lighting, mobile charging and refrigeration. The Foundation also delivers educational, literacy and healthcare programs to the community. As such, the Foundation has initiated a university program that encourages students to engage with sustainable issues and encourages innovative ideas and entrepreneurship.

The SELCO Foundation is active in rural and urban slum districts across 10 states in India and in four countries in Africa. By using philanthropic capital, it has implemented over a hundred projects based on its Integrated Energy Center or IEC model, which has directly impacted more than 100,000 people.

SELCO Foundation believes that there is a strong link between sustainable energy, development and poverty eradication. Over the last seven years, the Foundation has undertaken various interventions using renewable energies such as solar power. This has shown that poverty can be reduced, thus paving a path of sustainable development for the three billion poor people in the world.

> Development and environment go hand in hand. Achieving one without considering the other cannot bridge current gaps in social, financial and environmental sustainability.

GLOBAL HIGH SCHOOLS (AFRICA)

AOUDA SAADIA HIGH SCHOOL

MOROCCO

The promise that has come with significant advances in women's education in Morocco over the last two decades has yet to reach the country's rural outskirts where young girls and women still face barriers to accessing grade school, high school and university. However, because of the persistence at the institutional level to transcend these barriers, more promise is on the horizon.

Built in 1973, the Aouda Saadia School is a girls' school located in an underprivileged district of Marrakech. It includes a college, a high school and a boarding school—essential parts of the compound allowing the girls (who all come from farming families and modest means) to attend school when their homes are far away.

Since 2007, the school has been actively working on raising awareness, training students and implementing environmental actions through their student environmental club. The club's latest project aims to make the school a model of sustainability by replacing electricity with solar energy throughout the school's buildings.

It is meant to be carried out by students with the support of teachers and administrative staff, with short-, mid- and long-term goals being:

- Reduce electricity and water bills
- Enable students to develop their skills in project planning, organising and sharing tasks, seeking partners, communicating with different actors, and passing on the knowledge they acquire
- Enable two high schools specializing in technological training in Marrakech to benefit from field observation and practical work
- Raise awareness about sustainable development in schools, in the school's neighbourhood, and in students' communities, since most of these girls are future mothers, educators and homemakers

GLOBAL HIGH SCHOOLS (ASIA)

BAHRAIN BAYAN SCHOOL

BAHRAIN

In the face of population growth, industry expansion, and the impacts of climate-change - including scarcity of fresh water and desertification, The Kingdom of Bahrain has made great strides to establish programmes, policies, and strategies to achieve sustainable development.

Cultivating sustainable mindsets begins with students.

The Bahrain Bayan School, a K-12 non-profit bilingual school comprising 1,100 students, encourages its students to take on community outreach projects. The school educates students to be global citizens by structuring its curriculum to incorporate sustainable practices, such as vertical farming, rooftop solar or water flow regulations.

A pioneering hands-on student-developed sustainability education platform – Ecolab 360 – stands out. It functions to educate younger students on the use of renewable energy and the benefits of water conservation and food-waste recycling.

A first of its kind in the region, Ecolab 360 helps the larger community adapt sustainability measures into daily practice. Their efforts also effectively show others how micro, distributed solutions practiced in households and businesses can make a positive impact on sustainable development globally.

GLOBAL HIGH SCHOOLS (THE AMERICAS)

CENTRO EDUCATIVO MBARACAYÚ

PARAGUAY

In Paraguay, one of South America's poorest countries, almost 90% of the forest is gone. What remains is a protected area called Mbaracayú Natural Reserve; This small area is greatly threatened and inaccessible to local farmers. Furthermore, local communities see their boys go to cities to work; most of the girls remain, and they often get pregnant around the age of 15.

Established in 2009 and located inside the Reserve, the Mbaracayú Educational Center (CEM) is a boarding school for indigenous girls from ages 15 to 18. With a pedagogy that emphasizes learning while doing, the school offers a technical degree in environmental sciences and aims to empower girls to become forest protectors while helping their community develop.

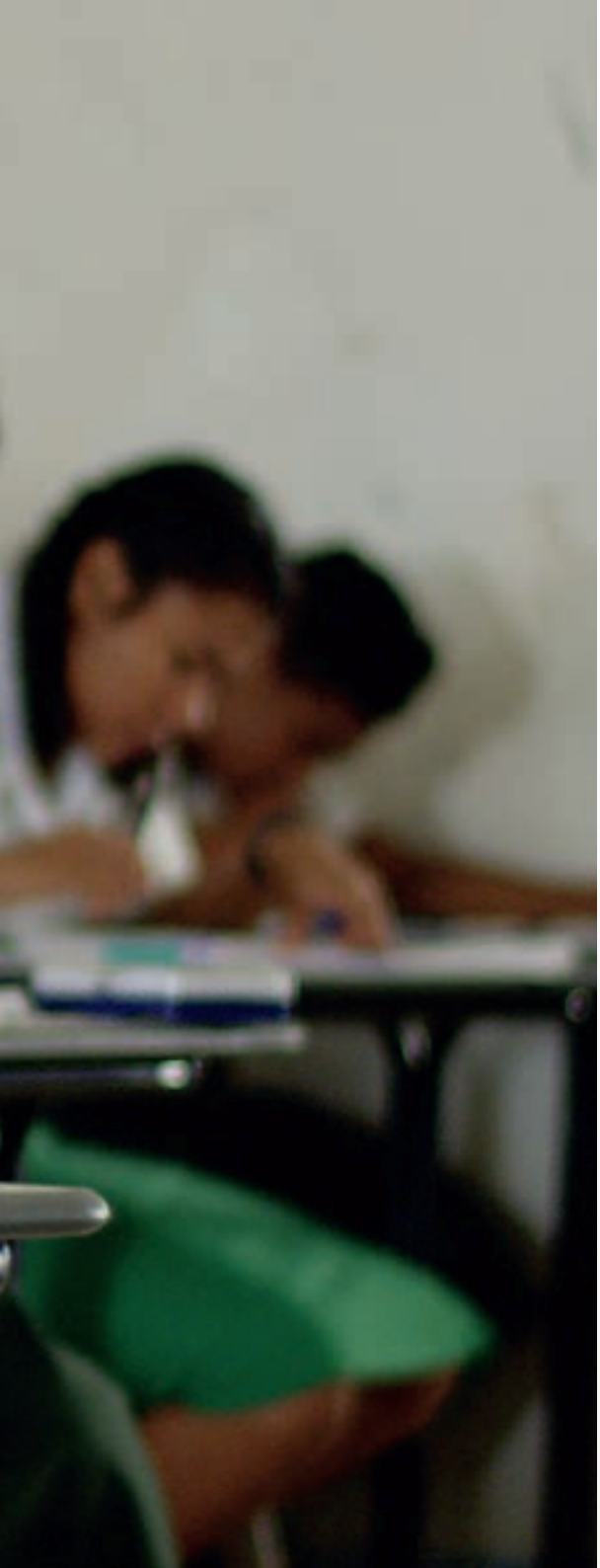
The school faces a consistent lack of energy and hot water, and needs to strengthen community action to raise awareness about the sustainable use of natural resources in the area. In response, students and teachers came up with a three-fold project to create an alternative energy system, comprising:

- A Hybrid PV technology to supply electricity and hot water with innovative dual system technology
- The generation of light through gravity, with no need for the sun or batteries
- The production of biodiesel from the oil of a native tree locally known as kupa'y

By creating an educational kit made up of comics, a puppet show and an audio recording to share lessons learned, this outreach program impacted the lives of hundreds, increasing awareness of sustainability solutions among students, staff, parents and the broader community.

"It is like seeing the small seed from the Kupa'y tree (diesel tree) that we planted few months ago germinating with its first leaves. We cannot wait to see the fruits that will carry that seed with our care, dedication and commitment."

Take part in the competition! It's a good experience and provides exposure for your work, helps inspire others and share ideas. Whether we win or not, the act of preparing a submission brings together staff, teachers, students and some community members. In the process, any school's practical understanding of sustainability issues gets stronger.



GLOBAL HIGH SCHOOLS (OCEANIA)

MOTUFOUA SECONDARY SCHOOL

TUVALU

Tuvalu is a group of nine small coral islands lying south of the Equator in the western Pacific Ocean, forming a chain over a distance of approximately 676 km between Hawaii and Australia. This remote "Polynesian Paradise" is one of the smallest nations in the world, and is on the front lines of climate change with the UN having included it on a list of places most threatened by rising sea levels.

Motufoua Secondary School (MSS) is the Tuvalu government's only secondary school, with 236 students from different islands. It is a co-educational boarding school located on a difficult-to-reach island, Vaitapu.

The school has two key problems: power cuts that disrupt lessons, especially in technical workshops, due to the school's unreliable generator, which is dependent on fuel availability and an inconsistent solar supply. And, expensive, unreliable power for the school kitchen.

Currently, the school is almost self-sufficient in terms of food because it has a vegetable garden, as well as a large piggery. And, recently, a student group has proposed a fixed-dome anaerobic digester that would produce lighting for the piggery and surrounds, and a water pump to clean the piggery and water vegetable garden. This sustainable energy solution would eliminate the school's use of fossil fuel.

Monitoring and data collection on energy production, waste input, and so forth will be used as teaching material with student leaders also demonstrating the outcomes and impacts of the new installations to the whole school's student body.

GLOBAL HIGH SCHOOLS (EUROPE)

VLADIMIR NAZOR SCHOOL

CROATIA

During the war for independence in Croatia (1991 to 1995), villages, school territories and agricultural lands were planted with land mines. It took years to deactivate most of the landmines, with financial setbacks and unfortunate incidents. The last demining activities took place in 2016.

Within this historical context, the Vladimir Nazor School, which counts 110 children ages 12 to 15 years, was reconstructed in 1997. It is located in the small village of Skabrnja, 15 km away from the Adriatic coast.

In spite of a Mediterranean climate, with approximately 2,550 hours of sun per year, the school's biggest expenses are lighting and imported fuel for heating purposes. To cut those huge expenses, and to no longer rely on the electrical grid, students have started a project to build a new innovative solar PV-T system with the purpose of generating renewable energy.

In terms of sustainable mobility, students will integrate an electric mobile pick-up truck that will be connected to a PV-T solar system and will serve for the student's cooperative, school's kitchen and transport to Zadar.

By being directly involved in the project's implementation, students will gain hands-on experience in sustainable energy generation which will in turn, open up better education prospects for them later in life, as well as make them active agents of change in their local communities.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WISHES FOR THE FUTURE

1.

"The inspiring success of the Zayed Future Energy Prize provides a strong foundation for the next decade 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. Olafur Ragnar Grimsson, Former President of Iceland and Chair of the Zayed Future Energy Prize Jury

2.

"A positive energy future, one that motivates and empowers the next generation to become more sustainable citizens by believing in the power of people working together."

Toby Thorpe, Zayed Huon Energy Futures Team, Huonville High School

3.

"To solve the world's most pressing energy challenges, we must develop energy technology innovations that are technically feasible, economically viable, environmentally sound and socially acceptable.

This grand transformation towards sustainability starts by having a 'sustainability mindset' to guide our individual and collective actions towards our shared planet Earth, no matter how unconventional that pathway seems to be now."

Noura Y. Mansouri, Member of the Review Committee

4.

"The Zayed Future Energy Prize has been honoring the legacy of Sheikh Zayed for the past ten years and it is the evolution of this prize that will be key in inspiring future generations to complete the journey of the awarded energy leaders."

Fatima Al Kaabi, Youngest Emirati Inventor

5.

"To all global institutions – if we as students are able to take a firm step towards a greener, cleaner future, then as a nation and together as a world, we can indefinitely put in place best sustainability practices in all our systems.

It is important to remember that what may be seen as 'little' actions can be the stepping stones towards an evolution."

Thirumagal, Arunachalam Elanthendral, Student, Melbourne Girls' College

6.

"It is the responsibility of governments across the globe to put ten times as much effort into promoting ten times as many brilliant companies and entrepreneurs in the worlds of renewable energy and energy efficiency.

We need investors to provide ten times the current flow of resources, whilst ensuring that ten times as many schools, colleges and universities can become ardent climate champions. Given the state of climate science today, that's literally the minimum we should be pressing for to ensure a more stable climate for ourselves and all future generations."

Jonathon Porritt, Founder Director, Forum for the Future, Member of the Selection Committee

7.

"Since the Zayed Future Energy Prize was formed 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 in the next 10 years, 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 Prize's founder, the late Sheikh Zayed bin Sultan Al Nahyan."

H.E. Ahmed Ali Al Sayegh, Chairman, Abu Dhabi Global Market (ADGM), Jury member

8.

"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."

Dr. Gro Harlem Brundtland, Former Prime Minister of Norway

9.

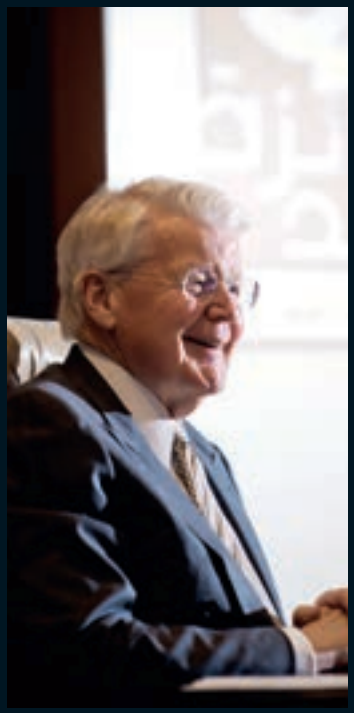
"Our wish is that, through the Prize, more people discover the legacy of our founding father, Sheikh Zayed and realise that although we are a Prize focused on renewable energy, we are making tangible impact on humanity and the environment globally."

Zayed Future Energy Prize Team

10.

Be part of our journey and make a difference by sending us your wish for the Prize and the work it does.

ZAYEDFEP | ZFEP | TZFEP | ZFEP




#FESTIVALATMASDARCITY