

ANNUAL REVIEW 2016:

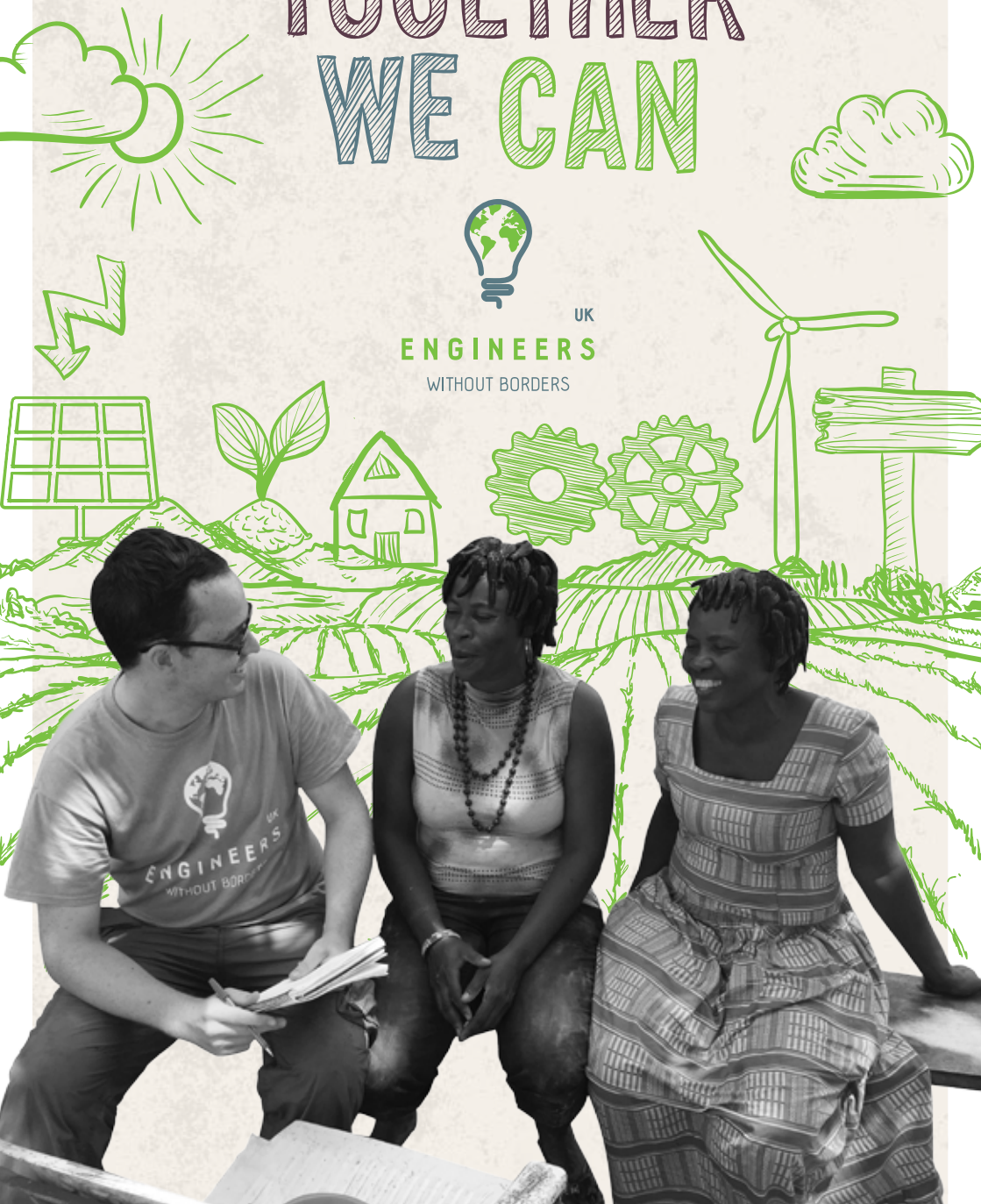
# TOGETHER WE CAN



UK

ENGINEERS

WITHOUT BORDERS





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Front cover: Engineers Without Borders UK volunteer Patrick Sharkey talking to community members in Kumasi working on water, sanitation and hygiene project with in collaboration with WSUP

# 2016: THE STORY IN NUMBERS

1



**NEW organisational strategy:**  
Engineering Change

900



**VOLUNTEERS** become Engineers Without Borders UK Ambassadors

Delivered programmes in

10



**COUNTRIES:** Benin, Ghana, India, Ireland, Kenya, Malaysian-Borneo, Mexico, Mozambique, Peru, Philippines, Rwanda and the UK.

2,091



**YOUNG PEOPLE** reached through our Youth Outreach programme

4,653



**STUDENTS** participate in Engineering for People Design Challenge

31



**UNIVERSITY and Regional Network Member Groups** supported our movement

46



**INTERNATIONAL** placement volunteers supported our local partners in Africa, Asia and Latin America.

160,000



**VOLUNTEER HOURS** provided to our international projects

110



**ENGINEERS**, technicians and practitioners received training from our volunteers





Engineers Without Borders UK volunteer Rosie Goldrick working on construction site in Rwanda in collaboration with our partner MASS

# READ ALL ABOUT IT!

## Our Chief Executive wraps up the year

Our year was punctuated by a number of significant achievements that demonstrate perfectly our continued ability to have an impact that belies our size. We have been recognised as a Nesta 'New Radical' for our innovative work in engineering education, commended for our collaborative projects in Kenya's slums and shortlisted for a number of other national awards. We launched the Engineers Without Borders Ambassador scheme to improve the quality and reach of our outreach activities and we consolidated our international work around three themes; water, sanitation and hygiene (WASH), clean energy and the built environment. We attended festivals and fairs, hosted events and workshops, engaged and reached more students and young people than in any year in our history. We also launched our new five year strategy, 'Engineering Change', with which



Our Chief Executive Doug Harper

issues a clear and ambitious call to action to all those involved in the engineering profession.

The following pages all illustrate our commitment to one of the guiding principles of our organisation - collaboration. You'll read about how we work with educators, students, partners, member groups and supporters. You'll understand the difference that supporting our work, be it as an individual or an organisation, can make to the world we all share. Above all, you'll see that, when faced with challenges as complex as climate change and population growth, resource depletion and urbanisation, working together is the only choice.

**Thank you to all of you that supported us during 2016. I look forward to what we can achieve together over the next 12 months.**





Work on our collaborative project with Konkuey Design Initiative (KDI) underway in Kibera, in Kenya, improving waste management for community members

# ENGINEERING CHANGE TOGETHER

Our vision is a world where people everywhere have equal access to the benefits of engineering

Our mission is to lead a movement that inspires, enables and influences global responsibility through engineering.

We believe people everywhere should be able to enjoy clean water, sleep with a roof over their heads, be able to study with a light or use electricity to generate money for their family. These are the benefits engineering and we believe people everywhere should have them. Unfortunately this is not the case and we're working hard to change this.

Our solution starts with two things; encouraging the engineering sector to think in a different way and get the wider public engaging with engineering and understanding its capabilities. We know that when people are excited about the social impact of engineering, more of them will choose it as a career and more people will be able to access the benefits of good engineering.

We bring people, ideas and engineering together to respond to the complex challenges that we face as a global community. We work at all levels of education to inspire young people to become engineers and transform the UK's approach to engineering education. We are addressing the global imbalance of engineering skills by supporting local partners in Africa, Asia and Latin America with vital engineering capacity. We achieve all of this in collaboration, supported by over 31 members groups across the UK in universities and regional networks our ambitious goals can only work with support.

**But we can not achieve any of this alone. Together we can engineer change.**



# TRANSFORMING ENGINEERING EDUCATION



Students participating in our Youth Outreach workshop, Power for Everyone Everywhere, at Ronald Ross Primary School

## VOLUNTEERS AT THE READY!

We had a phenomenal uptake of volunteers, with over 900 people joining us as Engineers Without Borders Ambassadors to deliver our Youth Outreach workshops in primary and secondary schools across the UK. This success was achieved through our partnership with the national STEM Ambassadors Programme and enabled us to reach over 1,800 young people in the year.

## ENGINEERING FOR PEOPLE DESIGN CHALLENGE

Our Engineering for People Design Challenge (formerly known as the EWB Challenge) engaged more 4,600 students in 2016 as students up and down the UK and Ireland participated as part of their design modules. This equates to 16% of engineering undergraduates and our largest number of students in one year to date. The year also saw us received recognition as a NESTA New Radical that is actively changing the UK for the better. This achievement exemplifies the positive impact we are having on engineering education and ensuring that we are creating globally responsible engineers.



Our crowned winners of the Engineering for People Design Challenge, Sheffield Hallam, with Duncan Wanbland and Jon Samuel from the Anglo American Group Foundation

Our education programmes bring to life the social impact of engineering to ensure young people and engineering undergraduates are inspired and leave education workplace ready.



# BUILDING ENGINEERING CAPACITY AROUND THE WORLD

## INTERNATIONAL PROJECTS

We were supported by 45 volunteer engineers to deliver our 26 international projects in 2016. Our collaborative project with Kounkuey Design Initiative in Kenya was “highly commended” at the Innovate to Collaborate Awards.

In 2016 our work in clean energy has focused on off-grid power and innovation. This included the development of remote monitoring systems to increase the lifespan of remote solar technology in Rwanda and Peru. In Kenya we provided management support to entrepreneurs and SMEs providing energy to over 10 million people across East Africa. We also investigated the viability of social-enterprise models to deliver solar power to some of Peru’s 3 million people lacking energy access.

In our WASH (water, sanitation and hygiene) area of work we investigated the failure of the only liquid waste treatment system in Ghana’s second largest city Kumasi, and made recommendations on improved sanitation and rehabilitation for the plant.

Our built environment projects in Rwanda brought the knowledge of

seismic design and construction to projects such as community libraries, schools and health clinics.

## SUPPORTING THE DEVELOPMENT OF UNDERGRADUATE ENGINEERS WITH OUR DEVELOPMENT PROJECTS

We piloted a new model for students to engage with our international projects, Global Engineer Fellowships. The programme places Senior Fellows (professional engineers) together with Junior Fellows (engineering students) to add skills and knowledge to life-changing engineering projects.

In Mexico our Fellows worked on water filtration and rainwater harvesting to improve the health of hundreds of rural Mexican farming communities by providing low cost alternatives and education around contaminated water consumption. In Malaysian-Borneo they successfully developed an electrical load controller design to reduce the cost of micro-hydro systems to enable local community members to access the off-grid power supply. In Kenya we worked on the design and construction of a school for over 350 students in Kibera. These incredible projects positively impacted the lives of over 1,200 people.

Engineers Without Borders UK volunteer Stuart Llewellyn inspiring young people in Peru whilst working on our collaborative energy project with WindAid

Our international projects address the lack of engineering capacity in Africa, Asia and Latin America. Working in collaboration with our local partners we provide qualified and experienced volunteer engineers to work on projects in water and sanitation hygiene (WASH), energy and the built environment.



# OUR COLLECTIVE RESPONSIBILITY

## A FESTIVAL FIRST

For the first time ever we were at Glastonbury festival as part of our strategic objective to inspire more people to understand engineering and its role in human development. We spoke to over a thousand people about vision to ensure everyone, everywhere has equal access to the benefits of engineering.

## OPENING UP OUR HOUSE

In July we opened up our office to the public as part of the IET's Engineering Open House Day. As part of a series of events taking place across London, we gave parents and children the opportunity to learn just what being an engineer entails.



In order to achieve systemic change, we act as a key influencer to the engineering community and wider society to think and act in a globally responsible way.



# SUPPORTING US TO ACHIEVE OUR VISION

## AWARD WINNING DONATION

In 2016, global engineering technologies company Renishaw, donated £16,500 to Engineers Without Borders. The donation was in lieu of the usual gift that Renishaw distributes to its employees worldwide to celebrate the company winning a Queen’s Award for Enterprise. For Renishaw, it was important that the donation went to a charity that acted globally so that its work would be recognised by all of their employees.

Director and General Manager for Renishaw’s Encoder Products

£16,500 DONATED

Division, Jim Henshaw commented “We strongly believe in the abilities of engineers to act as a force for good. Our people and products make a real difference to the world in which we live; therefore, we wanted to give support to people with engineering skills who are working to provide solutions to global challenges.”

Such a generous donation helps us to make a real difference - thank you!

“We wanted to give support to people with engineering skills who are working to provide solutions to global challenges”

The Renishaw team that contributed to the Queen’s Award-winning RESOLUTE product



## AMPLIFYING OUR MESSAGE

Our member groups support us to amplify our voice across the UK to ensure the impact of our work is sustained. One of our newest member groups, the EWB Reading Regional Network, held a series of talks aptly named the ‘Speaker Series’ to help get our message out across the region. Each event saw a special speaker highlight and explore the importance of globally responsible engineering. The talks covered a wide variety of topics from the sustainable and social entrepreneurship through to ethical consumption. Highlights included the

practical water filtration workshop along with a Q&A session with University of Reading PhD students, Antonio Luque and Stefano Piotrosanti, around the use and storage of wind energy.





# SOME OF OUR PARTNERS



Everyday three billion people cook their food over smoky open fires or inefficient cookstoves. Inhaling these fumes is equivalent to smoking 20 cigarettes per day and causes 4.3 million deaths per year. Our partner Prakti, a social enterprise that develops, manufactures and distributes clean and efficient cookstoves are changing this in India. Their stoves help protect the environment by reducing the consumption of biomass fuel, enable significant reductions of cooking fuel expenses, contributing to the economic empowerment of users and help protect the health of their users by reducing toxic smoke

We have been working with our partner Prakti for over four years to improve and optimise the efficiency of their clean cookstoves. We provide the much needed engineering capacity that Prakti require and below you can hear from their CEO Mouhsine Serrar about our partnership and achievements in 2016.

The most important thing about our relationship with Engineers Without Borders UK is the concrete tangible difference they make to the work of Prakti. The volunteers they send each year continue to get better and better.

In 2016 our work with Prakti focused on product development to reduce production costs of the cookstoves. Moushine highlighted that "this was an engineering task, something only engineers could solve and this is **where E**



**Our partner MASS** has a mission to research, build and advocate for architecture that promotes justice and human dignity. MASS designs innovative buildings such as schools, hospitals and low-cost housing that improve people's lives in measurable ways. Throughout its construction process, they collaborate with the communities their buildings serve in Rwanda. There is a shortage of qualified engineers and engineering expertise across East Africa, we provide valuable structural, seismic design and construction expertise to Mass' construction projects. Our volunteers help train local engineers and interns both on and off site to extends the engineering capacity and develop skilled Rwandan engineers. Kelly Doran, Senior Director of MASS' East Africa Programmes reflected on our partnership with Mass in 2016.

With this year's volunteers it is very easy to see the difference their 1-to-1 mentoring has made to our local trainee engineers, both in confidence and design. This year our volunteers focused on designing a cancer treatment hospice and



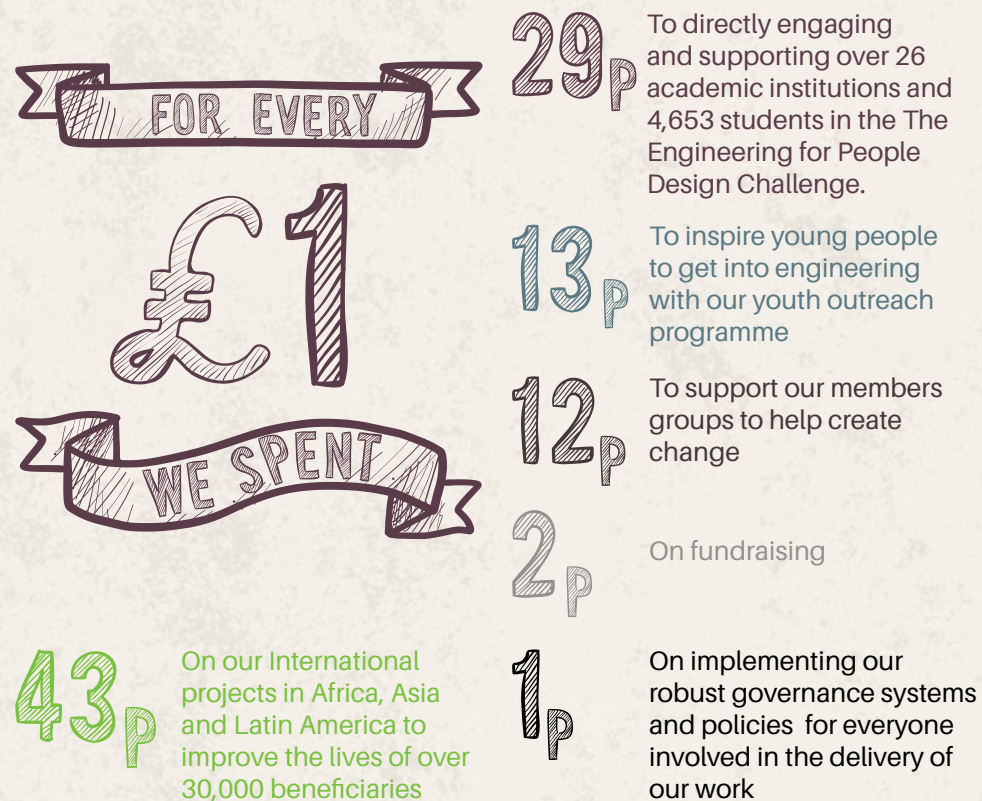






# FINANCES FOR THE FINANCIAL YEAR APRIL 2016

We spent a total of **£684,733** during the 2015/16 financial year.



You can read our full 2015-16 Financial Accounts on our website at:

[www.ew-uk.org/who-we-are/publications-and-accounts](http://www.ew-uk.org/who-we-are/publications-and-accounts):







## OUR SUPPORTERS IN 2016

The following organisations, trusts and foundations generously supported our work with donations and sponsorship during 2016:



### PLATINUM (£100,000+):

The Anglo American Group  
Foundation  
The Bechtel Foundation



### GOLD (£50,000-£99,999):

The Department for  
International Development



### SILVER (£20,000-£49,999):

Arup  
Black and Veatch



### BRONZE (£5000-£19,999):

The Alcoa Foundation  
Johnson Matthey  
The Happold Foundation  
Newton Consultants  
Renishaw Plc  
TetraTech



### FRIENDS (£365-£4999):

BDI Structural Solutions  
Bain and Company  
The Channel Islands Group of  
Professional Engineers  
The Chartered Institution of Building  
Services Engineers  
Delphi Diesel Systems  
Engineering Showoff  
Heritage Without Borders  
Mott MacDonald  
J A Clark Charitable Trust



### IN KIND SUPPORT:

Arup  
Bristows LLP  
Bain and Company  
Decherts LLP  
Google  
Shearman and Sterling LLP  
The Salesforce Foundation  
The Worshipful Company of  
Management Consultants



We are also very grateful to the following people who make regular donations to our work:

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Daniel Lockwood  
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