

**ENGINEERING  
CHANGE**

**OUR STRATEGY  
2016-21**



UK  
**ENGINEERS**  
WITHOUT BORDERS



**2**

**OUR VISION  
OUR MISSION  
OUR GUIDING PRINCIPLES**



**4**

**INTRODUCTION**



**6**

**GLOBALLY RESPONSIBLE  
ENGINEERING**  
why engineering is vital to  
addressing global social  
challenges



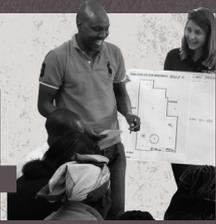
**11**

**OUR THEORY FOR  
ENGINEERING  
CHANGE**



**12**

**OUR STRATEGIC  
OBJECTIVES**



**14**

**DEVELOPING OUR  
ORGANISATION**

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# OUR VISION

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

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# OUR MISSION

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

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# OUR GUIDING PRINCIPLES

All that we do is shaped by our guiding principles:

**We will maximise** our impact by collaborating with others in the pursuit of common goals.

**We seek to** fundamentally transform the world around us, using engineering as a catalyst for change.

**We will work** towards a creative vision for the future that is distinct from the status quo.



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## INTRODUCTION

**People everywhere deserve a world where they can achieve their potential and live healthy, happy lives. The reality today is far from this and some of us still lack access to basic services. All of us are at risk from resource constraints, the effects of climate change, increasing urbanisation and a global population that is rapidly expanding.**

We know that engineering is the solution. We know that engineering is capable of addressing global challenges and enabling sustainable human development. Engineers Without Borders UK is using engineering as the catalyst for the change that the world needs.

More than 12 years ago our organisation started with an ambitious idea to use engineering and technology to improve

people's lives around the world. Since then, in collaboration with our members, our partners and our supporters, we've inspired thousands of people and achieved much that we are proud of. We have worked with international partner organisations to deliver collaborative development projects in more than 30 countries and we have changed the way that thousands of engineering students think about engineering and its application.

Our achievements give us the confidence to launch this ambitious five year strategy. We are placing a greater emphasis on the concept of global citizenship and on inclusivity, on the idea that we are all part of one global community and that we must work together if we want to change the status quo. We commit to bringing people, ideas and engineering together

in order to respond to the world's most pressing problems and we want engineering and engineers to be centre stage in the response to these complex social challenges.

We are leading a growing movement for change and we need your support. This strategy serves as a call to action for engineers, for the engineering community and for the whole of society. Together, we can work towards a world where people, everywhere have equal access to the benefits of engineering.

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**NOW IS THE  
TIME AND  
WE ARE THE  
ONES WHO  
CAN ENGINEER  
CHANGE.**

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# **GLOBALLY RESPONSIBLE ENGINEERING**

**why engineering is vital  
to addressing global  
social challenges**

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Since 1990 more than **one billion people have been lifted out of extreme poverty** through collective action<sup>1</sup>. **2.6 billion people have gained access to improved drinking water** and nearly as many have access to improved sanitation<sup>2</sup>.

**Despite these achievements, many of the global challenges that we face today are larger in scale than they ever have been<sup>3</sup>.**



## GLOBAL

## CHALLENGES

There is consensus that if we carry on as we are, the world in 2050 will be more crowded, with **70% of an estimated total population of 9.2 billion (2.2 billion higher than today), living in cities**. There will be a billion people who lack adequate access to basic services such as water, sanitation and energy, mostly in rural areas and **3 billion people will still live on less than \$2 per day**. We can expect to see an **80% increase in our energy demands with the majority of that demand still expected to be met by fossil fuels**<sup>4</sup>. The quality of our air will continue to deteriorate and less of our planet will be covered with vital primary forests and more with agricultural land. We can expect to see further **erosion of biodiversity, accelerations in global warming and a collapse in ocean fisheries**.



WITHOUT  
CHANGE  
OUR WORLD  
IN 2050



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**COLLECTIVE**

**RESPONSIBILITY**

These are not problems that will affect some of us but not others. Many of the natural resources that are at risk, such as oceans, the atmosphere and forests, are shared and we all lose out when they are degraded. Morally, we are all worse off when, in a global economy that is predicted to quadruple by 2050, we are reinforcing systems that are worsening income inequality rather than improving it<sup>5</sup>. **Our problems are shared. We all have a collective responsibility to act.**

**ENGINEERING**

**IS THE SOLUTION**

**Engineering has a pivotal role to play in the solution for every single one of these challenges.** From water supply systems to renewable energy provision. From efficient transport systems to digital infrastructure. From constructing resilient cities to the provision of sanitation facilities and from resource protection to effective agriculture, **engineering underpins the responses needed for us all to pursue a sustainable future.**

**At Engineers Without Borders UK we believe that engineers, everywhere, need to apply a globally responsible mindset to all that they do and invest their skills and talent in engineering that benefits our global community. We call this Globally Responsible Engineering.**

LET'S CREATE A  
**DIFFERENT  
FUTURE**



Globally responsible engineering is about **recognising that we are all citizens of one planet** and that **our actions affect the lives of others**. It is about consistently applying social and environmental considerations wherever we are and it is about using engineering as a catalyst to significantly alter the world around us and the way we live our lives.

To achieve this we believe that there **needs to be a fundamental change in approach**. We must change the way that we attract people to be engineers so that we can **encourage diversity in the profession** and we must **change the way that we educate our engineers** so that they give proper consideration to the social and environmental impact of their work.

Our task is complicated by the challenges faced by the engineering community. In the UK we

face a chronic shortage of people entering the engineering profession. In order to meet the anticipated demand for engineers in 2022 **an additional 180,000 people per year need to be inspired to pursue an engineering career**<sup>6</sup>. Diversity in the engineering sector remains poor, with women accounting for, at most, 9% of engineering and technology employees<sup>7</sup> and 94% of engineers working in the UK are white.

We believe these two factors are inextricably linked - the shortage of engineers and the lack of diversity are both results of the public perception of engineering. **83% of millennials are attracted to work for organisations that work to have a positive impact on society**<sup>9</sup>. For many, it is impossible to draw a parallel between that aspiration and an engineering industry that is still perceived as being dominated by hard hats and construction sites<sup>10</sup>.

<sup>6</sup>The Millennium Development Goals Report 2015, United Nations

<sup>7</sup>Ibid

<sup>8</sup>Back to Our Common Future: Sustainable Development in the 21st Century, United Nations

<sup>9</sup>Ibid

<sup>10</sup>Income Inequality - The Gap Between Rich and Poor, OECD 2015

<sup>11</sup>Engineering UK 2015: The State of Engineering, EngineeringUK

<sup>12</sup>Skills & Demand in Industry: 2015 Survey, The IET - the Engineering Council states only 6% of the engineering workforce are female

<sup>13</sup>Engineering UK 2015: The State of Engineering, EngineeringUK

<sup>14</sup>Mind the Gaps: The 2015 Millennial Survey, Deloitte 2015

<sup>15</sup>Changing Perceptions: Opening People's Eyes to Engineering, The ERA Foundation 2014

**Engineers** can transform lives

**Engineers** can make a positive difference to the world

**Engineers** can create a different future



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# OUR THEORY FOR ENGINEERING CHANGE



**By recognising and promoting the vital role of engineering and engineers in our collective future, Engineers Without Borders UK leads a movement for change.**

We believe that by highlighting the importance of putting people first **we can inspire** engineers to place much greater importance on whether engineering solutions are ethical, culturally sensitive and environmentally sound. We think that if people understand and appreciate the potential impact that engineering, and engineers, can have on our lives then more people will become engineers. **We can enable** our partners, and the communities they work in, to enhance their engineering

capacity and use it to catalyse the transformative change that we seek around the world. We also know that, through engineering, **we can influence** individuals to be active global citizens, and organisations and society to be more globally responsible.

We want the people for whom we are creating the future, our children and our grandchildren, to be informed and educated about what that future might look like and give them the opportunity and ability to change it. To create a different future, we need the next generation to be global citizens today and the globally responsible engineers of tomorrow.

# OUR STRATEGIC OBJECTIVES

## 1 INSPIRE

To inspire students, educators and engineers at all levels about the principles and potential of ethical, environmentally sound and culturally sensitive engineering.

We need people in the engineering community who are able to address our most pressing global issues, and we also need to attract a more diverse cohort of talent to the engineering sector. To do this we must change how we educate our future engineers, and better inform those that are already in the profession. We will strive to transform how we inspire the next generation to become engineers and, once they are, we want to ensure they are able to apply their skills and ability in a globally responsible way.

### WHAT WE WILL DO:

- Embed programmes, projects and courses about globally responsible engineering in recognised educational opportunities
- Create and share new, credible knowledge and approaches around globally responsible engineering
- Broaden the profile of engineering and the wider understanding of the role it plays in society



## 2 ENABLE

**To enable partner organisations, people and communities to use and develop their engineering capabilities to address global challenges**

Engineers and engineering skills are not shared equally around the world and, as we strive to create an equitable global community, we must also work to ensure that engineering capacity is enhanced where it is lacking or where the benefits of engineering are needed the most. Where it is appropriate to do so, we will share the knowledge, skills and experience that we can leverage to ensure that people and communities, wherever they are, have equal access to the benefits of engineering.

### WHAT WE WILL DO:

- **Contribute to the technical aspects of development projects by providing suitably qualified and experienced people**
- **Build the capacity of our partners and their communities to deliver ethical, environmentally sound and culturally sensitive engineering solutions**



## 3 INFLUENCE

**To influence the engineering community to lead by example and make a positive contribution as responsible global citizens**

The problems we face are common to all of us and we have a collective responsibility to act. In order to create the lasting and systemic change that we need, everyone must work together. At Engineers Without Borders UK we undertake to act as a key influencer of the engineering community, and wider society, to think and act in a more globally responsible way. We want to use the powerful voice of a social movement to change the mindset characteristic of so many engineers and to challenge the status quo.

### WHAT WE WILL DO:

- **Lead a community that promotes, encourages and rewards a culture of collective action towards addressing global issues**
- **Connect a growing network of individuals, organisations and institutions who actively embrace, and apply, the concept of globally responsible engineering**



# DEVELOPING OUR ORGANISATION

To deliver against our objectives, Engineers Without Borders UK will continue to be a vibrant and positive organisation, true to our guiding principles. We will grow and develop where we feel we can best improve the impact we have on our mission:



## ENHANCING THE ENGINEERS WITHOUT BORDERS UK COMMUNITY AND CULTURE

Only by working collaboratively will we be able to catalyse lasting and systemic change. Over the next five years we undertake to foster a diverse, and growing, community and develop a culture that enables us to deliver the results we want to see. We will continue to create diverse and well-supported opportunities for our community to contribute towards our mission and we will encourage and support new, visionary ideas.



## INVESTING IN OUR PEOPLE, OUR ORGANISATION AND THE WIDER ENGINEERS WITHOUT BORDERS MOVEMENT

To maintain a viable and credible movement for change, we must build an organisation that has solid foundations and the capacity for future growth. To do this we will continue to invest in our team to ensure that we can recruit and retain passionate, qualified and inspirational employees. We will increase the reputation, recognition and reach of the Engineers Without Borders UK brand and we will work more closely with other national Engineers Without Borders organisations who share our principles and our approach.

## DEVELOPING EFFECTIVE SYSTEMS AND TOOLS TO SUPPORT OUR OPERATIONS

By 2021 we will have significantly improved how we monitor, evaluate, and communicate the impact of what we do. To do this we will hold ourselves accountable to performance indicators and we will invest in integrated systems and processes that improve our effectiveness and efficiency. We will incorporate learning processes into all that we do, including the strategic sharing of any lessons, improvements or failures that we identify over the next five years.



**GLOBAL  
CHALLENGES  
COLLECTIVE  
RESPONSIBILITY**

**ENGINEERING  
IS THE SOLUTION**

The Foundry, 17 Oval Way  
London, SE11 5RR  
+44 (0)203 752 5820

[www.ewb-uk.org](http://www.ewb-uk.org)

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**ENGINEERS**  
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