

# Time to ring changes in engineering



## Gwendolen Reilly

Dr Gwendolen Reilly is Director of Women in Engineering, and Senior Lecturer in Bio Engineering, at the University of Sheffield.

THE PRIMARY aims of the Government's Year of Engineering campaign are to widen the pool of young people who join the profession and celebrate everything it has to offer.

As Director of Women in Engineering at the University of Sheffield, I'm particularly excited about the campaign's aim to encourage more women and people from ethnic minority backgrounds to pursue an education and career within a industry in which they are woefully underrepresented.

The UK's engineering workforce is currently 94 per cent white and 91 per cent male; these are concerning statistics. Firstly, they don't represent the diversity in our country.

More worryingly, these statistics could be intimidating to those under-represented groups of people who have aspirations of becoming an engineer but have few role models within the field. We need to show young people that engineering is an accessible and exciting career and we do this by celebrating a diverse workforce. However, in order to do this we first need to create one.

There is no doubt that engineering is vital to our economy and future success. Last year's Engineering UK report revealed that it contributes 26 per cent of the UK's GDP – more than

the retail, financial and insurance sectors combined. Yet according to skills organisation, Semta, the UK's engineering industry is facing a skills shortage of

unprecedented levels – with the need for 1.8 million people trained by 2025.

It's clear from these figures that it's not only diversity we need to improve on, we also need to encourage more young people to study engineering across all disciplines because the number of engineering graduates is well below demand with an estimated shortfall of around 200,000 each year.

At the university, we have some amazing female engineers researching and teaching on fascinating subjects such as the safe disposal of nuclear waste,

3D printing for healthcare and the 'fake news' spread by social media.

We regularly celebrate the achievements of our female academics, students and alumni in a bid to inspire young girls. We need to reach young people before societal and gender stereotypes about engineering set in.

As Professor Mike Hounslow, Vice-President and Head of Engineering at the University, said: "We need to be talking to kids in primary school about what engineering is and what engineers do, particularly to girls in primary school. They make up half the population, they should make up half the engineers."

At Sheffield, we are spearheading several key initiatives to hopefully inspire the next generation. In March, we are holding an interactive event aimed at female pupils in Years 9 to 11, designed to inform and spark their curiosity in Science, Technology, Engineering and Maths, and we are also working with local companies to look at ways of increasing the number of women studying and working in engineering.

We are happy to see that our efforts to make engineering more accessible are beginning to have an effect. For example, around 40 per cent of students doing our Masters in general engineering are female. We're very proud that this is higher than the national average for

similar general engineering courses, which is only 27 per cent.

It is fantastic that we are seeing positive changes such as this in women studying on engineering programmes.

Unfortunately, it is far from the norm. In the UK, just 15.8 per cent of engineering and technology undergraduates are female. Compare this to India, where over 30 per cent of engineering students are women. The UK also has the lowest percentage of female engineering professionals in Europe, at less than 10 per cent, while Latvia, Bulgaria and Cyprus lead with nearly 30 per cent.

Now is time for change. We need a spotlight on engineering and a concerted effort among all interested parties – schools, teachers, parents, industry, government and academia – to effect this.

In the last century, many significant engineering achievements have become commonplace globally and are often taken for granted, namely: Safe drinking water, a reliance on electricity, safer use of the internet and air travel made easier and faster. These are all remarkable and engineers continue to push the boundaries, seeking to make a difference by solving the big challenges of the future in areas such as healthcare, sustainability, infrastructure and artificial intelligence.