

Engineers 2030 - Open Community Response

Thursday 04 July 2024

Engineers Without Borders UK and the Engineering Professors Council are in strong support of the National Engineering Policy Centre's [Engineers 2030](#) project. Its ambition to act as a catalyst for change within the engineering sector is not only commendable but urgently necessary.

In the five years since the UK government declared climate and ecological emergencies, the call for profound and rapid systems change has only intensified. We believe the Engineers 2030 project has the potential to embody the bold leadership required to confront and navigate today's complex global challenges, should its ambitions be matched with action.

Core elements of the Engineers 2030 project

Evidence base:

- A literature review on future skills needs [here](#)
- UCL's Centre for Engineering Education's review of teaching of sustainability in UK engineering higher education [here](#)

Exploration:

- A report from [visioning workshops](#) (including timelines for change and day in the life narratives)
- [Systems Change Lab](#), exploring and testing how and why to integrate global responsibility as a central feature within university engineering education.

Action-orientated tools:

- [Reimagined Degree Map](#), a guide to aid engineering departments navigate the decisions that are urgently required to educate students for 21st-century challenges.
- [Sustainability toolkit](#), a teaching tool to ensure that sustainability is essential to and fully integrated within the learning of engineering students.

Our response to the consultation

To help shape the vision and principles of the Engineers 2030 project, the National Engineering Policy Centre conducted a consultation from March to July 2024, which welcomed contributions from all parts of the engineering community and beyond.

In response, Engineers Without Borders UK and the Engineering Professors Council collaborated closely to develop a unified response drawn from public engagements and written feedback from over 75 individuals in our communities. This collective approach has allowed us to integrate the expertise and insights from both organisations and ensure our recommendations are more impactful.

Additionally, we provided feedback on critical aspects such as timelines for change and "day-in-the-life" narratives from the visioning workshops, enriching the consultation with more practical and forward-looking insights.

Summary and recommendations

Our response identifies six areas for improvement:

- Strengthen the vision by making it more concise and bolder
- Reframe the principles to be 'qualities' of engineers / technicians
- Strengthen the focus on global responsibility in engineering
- Prioritise upskilling / reskilling the current workforce
- Prioritise systems change in higher and further education
- Be more action-oriented by connecting with existing change efforts.

On the following pages, please find details of the six recommendations above. We have now provided the Engineers 2030 working group with specific suggestions for enhancing their vision and principles.

Recommendation	Reasoning
<p>1. Strengthen the vision by making it more concise and bolder</p>	<p>We received regular feedback that the vision statement was too long, and therefore not memorable. There was also an overarching demand for the working group to go further and be bolder in their aspirations, and for the statements to be more concise and action-oriented.</p>
<p>2. Reframe the principles to be 'qualities' of engineers / technicians</p>	<p>It was felt that the principles were not guiding principles, but qualities of engineers, which should be reflected in the language of the project. In addition, we call for the following points to be woven into the qualities of engineers:</p> <ul style="list-style-type: none"> • A greater emphasis on critical thinking as a fundamental cornerstone of engineering competence – critically analysing and critiquing the role of engineering, its relationship with humanity, and its impact on our past and potential futures. • A deeper comprehension of the ethical issues inherent in engineering due to the relationship between engineering, people and the planet, and a greater focus on developing the skills necessary to navigate these complex issues. In particular, technology stewardship and intergenerational issues inherent in engineering. • Strengthening the interdisciplinary nature of how engineers can address our most complex challenges is understated. Engineers 2030 provides an opportunity to expand both the distinctiveness and commonality of the work of engineers with other practitioners and professionals. Broader appreciation for the knowledge needed to make effective engineering judgments, including explicitly acknowledging the value of other people and disciplines. • Include aspirations for engineers to become change-makers who are empowered to reshape practices and cultures to be more inclusive, ethical and equitable. • Include being guided by global responsibility to aid the just transition of the engineering sector in line with net-zero and other critical goals

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<p>3. Strengthen the focus on global responsibility in engineering</p>	<p>The vision and principles go a long way towards recognising the role engineers can and need to play. This alignment to existing change agendas (on sustainability, ethics and inclusive approaches to engineering) under the umbrella of "global responsibility" opens up the opportunity for a significant shift within engineering. We encourage Engineers 2030 to actively adopt the principles by which global responsibility in engineering is defined:</p> <ul style="list-style-type: none"> • Responsible. To meet the needs of all people within the limits of our planet. • Purposeful. To shape outcomes to be equitable and ethical throughout engineering and the life cycle of any project. • Inclusive. To ensure diverse viewpoints and knowledge are included and respected in the engineering process and outcomes. • Regenerative. To maximise the ability of all living systems to achieve and maintain a healthier state and naturally co-evolve. <p>These principles have been in use since 2021 and were developed collaboratively by the Engineers Without Borders UK community (this group is largely under the age of 45 and 30% are chartered engineers).</p>
<p>4. Prioritise upskilling/ reskilling current workforce</p>	<p>By 2030, global emissions must at least halve if we are to meet the Sustainable Development Goals. Failure to act swiftly may lead to irreversible climate tipping points. The next six years present a critical opportunity for existing workforces to adopt new practices and establish a sustainable path forward.</p> <p>The Engineers 2030 action plan must include an urgent and scaled approach to upskill, reskill, and nurture the current engineering workforce. This plan should focus on improving material and energy consumption in projects, engaging communities meaningfully, and advocating for broader changes in engineering practices and culture to develop globally responsible solutions.</p> <p>Additionally, the plan should facilitate transitions for individuals entering engineering from various backgrounds, and support inter-generational transitions between now and 2050 by increasing the participation of younger people in decision-making, ensuring a diverse and capable workforce for both present and future needs</p>

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<p>5. Prioritise systems change in higher and further education</p>	<p>Those graduating today will work until 2065 and beyond. With an estimated 250,000 individuals set to become engineers in the UK by 2030, the Engineers 2030 action plan must emphasise significant interventions in higher and further education to ensure those about to enter the workforce are motivated and equipped to tackle complex challenges.</p> <p>Given that only 7% of engineering companies with a sustainability strategy believe they have the skills to fulfil it (IET, 2020), we must bring in engineers who can plug existing skills gaps. This must include supporting and nurturing ongoing change efforts and valuing the role of high-quality educators within universities on par with other professionals (e.g. academic researchers) and at all levels.</p> <p>For changes in schools, guidance should be provided through Engineering UK, which focuses on earlier educational stages - arguably this does not need to be within the scope of Engineers 2030.</p>
<p>6. Be more action oriented by connecting with existing change efforts.</p>	<p>In order to shape how engineering is taught and practised in the next 25 years, Engineers 2030 must evolve to become a more action-oriented initiative. By connecting with existing change efforts, we believe Engineers 2030 has the potential to demonstrate responsible leadership.</p> <p>In addition to the launch papers and literature review, the National Engineering Policy Centre has already demonstrated leadership by funding and launching the Systems Change Lab (run by Engineers Without Borders UK and the Royal Academy of Engineering) in 2023 to explore and test how to put global responsibility at the core of engineering degrees. We know that UK universities evolve or progress at different paces (some are further ahead than others), yet do face similar challenges to improving degrees. Within six months, the Lab produced a Reimagined Degree Map (endorsed by the Engineering Council, IMechE and IOM3) - a guide to adapting degrees for those graduating before 2030, and helped to shape the Engineering Professors Council's teaching toolkits on Ethics and Sustainability.</p> <p>Building on this work, by collaborating with those responsible, would be a more sensible strategy for driving change than starting anew.</p>