Dr Mwaffaq Otoom, Dean of Engineering, Yarmouk University
Championing sustainability in engineering education

A Professor of Computer Engineering and Dean of Engineering at Yarmouk University, Mwaffaq's goal is to enhance engineering education to build a pipeline of engineers with the right knowledge and skills to achieve the UN's Sustainable Development Goals (SDGs).

During Covid-19, Mwaffaq felt compelled to push for further progress toward the SDGs. He also knew that there needed to be an increased awareness among higher education institutions about their role to play in achieving the SDGs by incorporating sustainability in their curricula, empowering future engineers to respond to issues unique to the Middle East and North Africa (MENA) region.

The challenge
Engineers have a huge role to play in achieving the UN's SDGs, through developing technology and infrastructure, improving healthcare, and providing resources for clean water and cleaner energy. It is vital, therefore, that engineering students learn skills directly related to sustainability to enable them to implement practical solutions during their careers.

To prepare engineering students to contribute toward the SDGs effectively, a holistic framework for integrating sustainability within engineering curricula is needed. But developing a robust framework requires gathering contributions and commitment from a variety of stakeholders, including educational institutions, technical colleges, industry partners, government, and the wider public.

The ambition
Mwaffaq hopes to modernise and update engineering education in Jordan by providing a platform for experts in engineering education and sustainable development to meet and discuss the best practices for incorporating sustainability into the curriculum.

He began this project by inviting sustainability experts to talk to students and faculty members at Yarmouk University about incorporating sustainability concepts into the civil engineering curriculum. A series of workshops and meetings will be held to develop networks and share knowledge between educational institutions, industry partners, and policymakers.

Mwaffaq has developed a survey for industry stakeholders and academic institutions across Jordan to determine the current landscape of sustainability education. Jointly analysing the results with Brunel University London, Mwaffaq will publish a white paper with recommendations to policymakers for improving Jordan's engineering education to support the SDGs. Additionally, the white

paper will be targeted towards national accreditation agencies with the goal of including competencies related to sustainability within engineering accreditation schemes.

Mwaffaq hopes this research will have an impact beyond engineering, with other university departments across Jordan and the MENA region incorporating principles of sustainability into their programmes as well.

Relevant UN Sustainable Development Goals (SDGs)
- Quality education (SDG 4)
- Sustainable cities and communities (SDG 11)
- Climate action (SDG 13)

Involvement with the Royal Academy of Engineering
Mwaffaq first attended a Frontiers Symposium in 2018 and developed many international connections that he has collaborated with since. After partnering with Brunel University London, Mwaffaq decided to apply for Frontiers Champions.

Mwaffaq says, "My goal is to contribute to our institution, our country, and our region about this interesting topic that all nations are working together towards sustaining resources for the next generation. When you move towards a more resilient and sustainable environment, you have a global impact. We all have a share in this fight.

"This funding from the Royal Academy of Engineering was the tool to help contribute towards this goal. I encourage everybody to participate in these programmes."