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PROFILE

Distinguished International Associate

Thematic area: Architecture engineering

Project title: Initiative Sanitation and hygiene Networking in Jordan (ISNJ)

Strategic goals: To respond effectively to sanitation and hygiene challenges in Jordan, bringing together all stakeholders to collaborate and improve the lives of vulnerable people in poverty pockets across the country.

Background: I graduated with First Class Honours in architecture engineering from Applied Science University in Amman in 1998, before obtaining a master's in architecture engineering and completing my PhD in sustainable development at the University of Salford in 2017. I joined Amman Arab University in 2019 as an assistant professor in the Architectural Engineering School, while working on a range of civil and structural engineering projects in my role as a qualified engineer.

Previous Academy involvement: I worked with the Academy in the 2018/19 Industry–Academia Partnership Programme, focusing on IT and conservation of traditional architecture and heritage. Separately, I helped develop a new portal for city information modelling, optimising systems integration in industry and sustainable urban regeneration. Other Academy schemes I have been involved in are Transporting Systems through Partnerships, DIA Round 2, and two Engineering X funds.

About my project

Objectives: There is a serious need for improvement in the sanitation and hygiene system for vulnerable people in several regions of Jordan – specifically, poverty pockets (areas where at least 25% of the population are classified as poor) in Jeras, Irbid and Karak. COVID-19 has amplified the need to provide adequate and safe sanitation, to prevent spreading the virus and provide safety between residents. I have seen first-hand people living in unsafe, inadequate and crowded settlements with no water or sanitation. These experiences encouraged me to think about conducting research to improve the living conditions of people in poverty.

Jordan's population is expected to double by 2050, and the country already faces extremely scarce water resources with severe sanitation issues. I propose to develop an interdisciplinary platform for experts, academics, researchers, and policymakers, focusing on the value of networking. Participants can share disruptive technologies such as waterless toilets and 3D printing to articulate modern solutions to the existing challenges of sustainable sanitation.

On the UK side... I am in the process of collaborating with academics in the UK at institutions including UCL, finding experts in this area. Since the beginning of the project, I have built a network with more than 50 experts from different regions, including half a dozen virtual workshop speakers from the UK. I am still looking to find industrial bodies in the UK working in sanitation systems and rainwater harvesting.

Project output: I have divided this project into four packages:

- **Establishing ISNJ** – introducing ISNJ to all stakeholders, professionals and policymakers.

- **Collaboration and partnership** – workshops on policy, technical and environmental issues.
- **Dissemination** – a webinar, scientific articles, non-technical executive summary, and so on.
- **Proposal development** – collating findings for sustainable, innovative Jordanian sanitation.

I am partway through hosting five workshops, featuring a variety of guest speakers and covering issues like sanitation system infrastructure and finance. This reflects the collaborations and partnerships I have developed as a direct result of the ISNJ – around 20 in total, from NGOs, academics and humanitarian organisations.

I am also working with almost two dozen civil engineers, sanitation and water experts, architects, and urban planners, collectively spreading knowledge of the importance of hygiene and water management.

I am also promoting my findings through a dedicated website, alongside YouTube, Facebook and Twitter accounts.

Anticipated outcomes and impact: The overarching project goal is to reflect the challenges currently faced and provide solutions or suggestions. This will drive – and be driven by – collaboration and partnerships between sanitation stakeholders, professionals and policymakers around the world. Removing data silos and supporting a multidisciplinary environment will engender technology transfer and capacity development between Jordanian academics, industry sectors and other countries.

On the ground, ISNJ will showcase sustainable and

technology-driven water and sanitation solutions to households in poverty pockets, at the lowest practicable cost. It will be used as the basis for a larger international collaboration project, constructing a prototype of Jordanian innovative sustainable sanitation for testing and optimisation with potential for global outreach.

In the long term, I hope the ISNJ's impact extends to the establishment of a charity focused on less fortunate communities, with a participatory approach to improving their living conditions.

Final thoughts on the Distinguished International Associates programme: DIA is a huge opportunity to achieve my ambitions by applying my knowledge and leadership skills. It will allow me to capitalise on my knowledge to help less

fortunate communities, and this project might become a foundation stone for a future charity or start-up.

About the Distinguished International Associates Programme

The Distinguished International Associates Programme is an award scheme for international engineers working across all sectors, who are at the cutting edge of engineering research or innovation.

Awardees are offered a grant to amplify the impact of an existing collaboration with the UK in an area that aligns with the Academy's new strategic priority themes.

The programme aims to develop a broad international network of excellent diverse engineers across countries and disciplines, with research and innovation links to the UK, to work alongside the Academy to enhance progress towards achieving its goals for an inclusive economy and sustainable society.