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PROFILE

Distinguished International Associate

Thematic area: Construction business and project management

Project title: Strategies for improving the awareness of local building materials (LBM) in housing construction

Strategic goals: To improve the use of local building materials in housing construction, reducing environmental impact by raising awareness of LBMs and tackling existing policy challenges around their use.

Background: I have over 30 years of experience in practice, teaching and research. I am a professional construction project manager and mentor, registered with the South African Council for the Project and Construction Management Professions, and I'm also registered with the Council of Registered Builders of Nigeria.

Previous Academy involvement: I have worked on three projects with the Royal Academy of Engineering, on topics ranging from emergency sheltering for African citizens to long-term sustainable housing provision.

About my project

Objectives: I believe that the science of materials, infrastructure and construction businesses can change access to basic infrastructure and job opportunities across Africa. I've previously established that although LBMs are available, challenges to their adoption include:

- a lack of promotion and understanding
- a lack of subsidies and tax reductions
- lengthy planning and approval processes
- governmental and stakeholder policy challenges around complex certification
- a lack of importance attached to LBMs across the construction industry.

I wish to tackle this by improving the awareness and uptake of LBMs in housing construction, documenting their availability while developing technical reports and teaching materials outlining methods of construction. I want to publicise the use of selected LBMs, in particular sandbag building materials, furthering their use based on their environmental impact.

The project's main objective is to ensure the efficient delivery of more affordable, sustainable and adequate housing in accordance with UN Sustainable Development Goals 9 (Industry Innovation and Infrastructure) and 11 (Sustainable Cities and Communities). My activities will help provide a sustainable and affordable way of obtaining a balanced, fair, accessible, and better quality of life.

On the UK side... I have spent the last four years working closely with Dr Francesco Pomponi, the Associate Professor of Sustainability Research at Edinburgh Napier University. He is demonstrating cutting-edge tools and techniques used to analyse the environmental impact of LBMs, networking with UK academics and contracting practitioners.

Project output: I will produce reference materials on LBMs, improving the awareness of stakeholders and contractors.



Alongside this will be teaching materials and technical reports, which construction stakeholders can use to update their knowledge on LBMs. Preparing educational materials aligns with the Academy's priority themes of developing and shaping future engineering skills, which encompass sustainability and lifelong learning.

To date, I have already completed a sandbag building material technology textbook, providing information on standard methods of construction and physical properties.

I am currently planning a training workshop on LBM technology in South Africa, focusing on sandbags. A previous LBM workshop attracted over 50 attendees and concluded that the sandbag has more potential than any other building material: it's cheap and environmentally friendly, and can provide adequate housing in South Africa. Yet it has not found its way into the domestic construction market.

Anticipated outcomes and impact: The overall outcome is to develop strategies for improving the awareness of LBMs in sustainable housing development, furthering their

use based on their environmental impact. An international partner in my programme has already expressed interest in constructing a prototype of the sandbag building technology in Cape Town.

To support the findings of my research, I am developing a website where information about LBMs will be publicly accessible. I am preparing teaching materials and technical reports on sandbag building materials and other similar LBM technologies, including PowerPoint presentation slides.

Crucially, the programme will put LBMs at the centre of sustainable housing discussions, tackling lengthy planning and approval processes for LBMs amid a current lack of regulation.

A database of building materials will improve the understanding of both public sector officials and the wider public of the use and availability of LBMs. Funders will also obtain knowledge on non-conventional building materials used in housing construction.

Final thoughts on the Distinguished International Associates programme: The DIA programme has given me the necessary platform to showcase my research, communicate and undertake public engagement activities.

It has helped validate my standing as a researcher and

construction professional, and network activities undertaken through the DIA programme will produce reports and communiques that outline shared understanding and best practice on using LBMs in affordable and environmentally friendly housing construction.

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.