



Left to right: Deputy Minister of Science, Technology and Innovation, Dr Nomalungelo Gina, Dr Emmanuel Kweinor Tetteh and Prof David Lokhat, representative of SAYAS as the prize sponsor, at the 2025 NSTF-South32 Awards.

Environmental researcher

recognised for turning wastewater into **ENERGY**

On World Environment Day on 5 June, the NSTF highlighted a South African researcher who grew up watching wastewater destroy communities in a Ghanaian mining town and went on to win one of the country's most prestigious science awards for turning that problem into a solution.

Dr Emmanuel Kweinor Tetteh, Senior Researcher in the Green Engineering Research Group at the Durban University of Technology (DUT), received the TW Kambule–NSTF Emerging Researcher Award at the 2025 NSTF-South32 Awards – widely known as the “Science Oscars” of South Africa. The award recognises his multidisciplinary research in sustainable environmental engineering.

His flagship innovation is the Smart Wastewater-to-Energy System (SWTES), developed during his doctoral research. The system treats industrial wastewater

while simultaneously generating renewable biogas and producing clean water suitable for irrigation – a practical example of circular economy thinking that reduces waste, lowers emissions and creates economic value all at once.

The technology has already been piloted at sugar refineries and oil-processing plants, where it has contributed to waste reduction, energy generation and resource recovery. Dr Tetteh's broader research programme extends into green hydrogen production, magnetic nanotechnology and plastic-to-energy innovations, all supported by institutions including the Water Research Commission (WRC) and the South African National Energy Development Institute (SANEDI).

“Waste in the environment was destroying communities, poisoning ecosystems, and perpetuating poverty,” says Dr Tetteh. “It was a pivotal moment that made

H₂ GREEN HYDROGEN GENERATION

Energy
Perspective



me realise how engineering solutions, particularly those linking water and energy, can change lives."

Dr Tetteh also highlights the pressure facing South African municipalities: "Particularly in KwaZulu-Natal, they face immense challenges delivering water and sanitation services amid rising energy costs and ageing infrastructure." His research aims to provide practical, affordable engineering responses to exactly those pressures.

The NSTF profiled Dr Tetteh to mark World Environment Day on 5 June. "The award sends a powerful message to future scientists," he says. "Their work matters, their voices count, and their efforts are essential in building a resilient and sustainable future for South Africa and the continent." – **National Science and Technology Forum (NSTF)**

GREEN HYDROGEN PRODUCTION

How does it work? The Green Hydrogen production in a simple infographic.

