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Deeside Energy Firm Spearheads UN-Backed Decarbonization Project for Kenya's Tea Industry

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Compact Syngas Solutions (CSS), an innovative energy firm based in Deeside, has been selected to lead a pioneering project aimed at decarbonizing Kenya's vital tea industry. The initiative is backed by the United Nations Industrial Development Organization (UNIDO) through its new Accelerate-to-Demonstrate (A2D) facility, marking CSS as one of the first five projects under this program.

The three-year initiative, which also benefits from private sector funding, will see CSS collaborate with the International Institute of Tropical Agriculture and Supivaa Advisory Group to install a 500kW MicroHub at a Kenyan tea factory. This advanced system will convert locally sourced biomass, including waste tea prunings, into syngas. This syngas will serve as a lower-carbon alternative to the diesel and firewood currently relied upon by the sector.

Kenya's tea industry is a significant economic driver, generating £1 billion in annual exports, with a substantial portion destined for the UK. However, the sector faces challenges in decarbonization due to an unstable electricity supply, leading to a heavy reliance on diesel-powered generators and wood burners.

CSS's innovative gasification process offers a significant reduction in emissions, avoiding up to 2.8kg of carbon dioxide per litre of diesel and nearly two tonnes per tonne of firewood replaced. Furthermore, a valuable byproduct of the process, biochar, provides additional benefits by improving soil fertility, enhancing fertilizer efficiency, and sequestering carbon in the ground. The generation of tradable carbon credits from biochar will also provide producers with an additional revenue stream.

Each MicroHub is projected to create approximately 20 local jobs, with an estimated 300 new roles expected across Kenya within the next five years as the project scales. The system will incorporate a digital tool for real-time monitoring of biomass supply chains, energy consumption, and emissions, empowering tea factories to reduce their environmental footprint while ensuring energy reliability.

The project also emphasizes a gender-intentional approach, with the goal of increasing the representation of women in Kenya's engineering and energy sectors. Currently, women constitute only 7% of the workforce in these critical areas.

Supivaa-Co-REGEN will play a key role in overseeing site visits and evaluating the environmental and financial impacts of the project. The International Institute of Tropical Agriculture will manage the biomass supply chain, biochar application, and provide guidance on carbon credits. Following a successful pilot phase in Kenya, similar projects are planned for Malawi, Uganda, and South Africa.

This UN-backed initiative builds on Compact Syngas Solutions' recent success in securing nearly £4 million in UK government funding to further develop its hydrogen-from-waste systems through the integration of carbon capture technology.

The announcement was marked by an event attended by key stakeholders, including UNIDO Director General Gerd Müller, Ambassador Lindsay Skoll CMG representing the UK in Vienna, and Kenya's Deputy Head of Mission Valerie Rugene, as highlighted in an image shared by CSS. This project underscores CSS's commitment to providing innovative and sustainable energy solutions globally.