Developing integrated anaerobic digestion and aerobic granular sludge technology for textile wastewater treatment in Indonesia

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The Indonesian textile industry generates an annual turnover of £113 million, with small and medium sized enterprises (SMEs) contributing approximately 98%. These textile industries directly discharge the wastewater to the nearest watercourse/river, causing serious water pollution. If the textile wastewater can be used to produce bioenergy, meanwhile, its effluent is able to meet safe discharge standard, the textile industry, the surrounding community and the environment would be all greatly benefit. This project thus aims to develop an integrated anaerobic digestion and aerobic granular sludge technology for textile wastewater treatment in Indonesia for both bioenergy production and high effluent quality for safe discharge.

Left: Dr Liu giving a research presentation at Universitas Brawijaya. *Right*: visiting the Batik Blimbing plant

To achieve this, the proposed project will involve a programme of researcher exchange and mentoring, academic and student visits, experience-sharing events and activities, knowledge, skills and technology relating to cost-effective and sustainable wastewater treatment. For research part, this will include the characterisation of textile wastewater, digestibility, bioenergy potential, aerobic degradation and the development of integrated technology (anaerobic digestion combined with aerobic granular sludge technology) to create and facilitate technology transfer from academia to industry.

Mass and energy balance, as well as economic analysis will also be carried out to investigate the feasibility and potential of technology scaling-up for demonstration. Investigation into the acceptable treatment efficiency, and possible use of biogas on-site produced from AD, will enable

academia to support the industrial partner for technology translation and transfer to improve its environmental performance, energy efficiency, and sustainable development in the circular economy context.

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Partners

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