

Environmental Research, Technology Demonstration and Conference Project

ECF Project:	ECF 2022-88
Project Title:	Environment and Conservation Fund - Developing a low-carbon smart-waste system for carbon MRV (monitoring, reporting and verification): community demonstration and strengthen the public participation
Principal Investigator:	Dr Dong Liang, Department of Public and International Affairs, City University of Hong Kong
Total Approved Grant:	\$731,200
Duration:	1/7/2023 to 30/6/2025
Project Status/Remarks:	On-going
Project Scope:	Monitoring, reporting and verification (MRV) for carbon emission was highlighted at COP-26, as a critical approach to account for CO2 emissions more accurately and encourage citizens to promote pro-environmental behaviour. This project aims to develop and demonstrate a smart-waste system. Based on the life cycle of waste management, the project integrates the Internet of Things (IoTs), life cycle assessment (LCA) on environmental benefits, and data science approach & tools (e.g., blockchain-based data analytical tool) into waste management system design, to develop a smart recycling system. The system enables simulation (via LCA) and monitoring (via real-time data management) of the CO2 emission mitigation effects under smart recycling scenarios. Finally, this project builds these into an online data management and end-user data visualisation system (e.g., an APP for smart end-use devices like smartphones and tablets). The system is able to examine (Monitor) and visualise (Report & Verification) the CO2 mitigation effect of the proposed smart-waste recycling. The developed smart-waste system is expected to realise smart and efficient waste management in the smart city context. With the collaboration of other stakeholders, a small-scale community-level demonstration & environmental education event will be conducted to verify the system, test the feasibility and promote the knowledge transfer for pro-environmental behaviour improvement via education events.
Summary of the Findings/ Outcomes:	To be available upon completion of the project