



Project Title: Development of Renewable Energy for Decarbonising and Modelling Sustainable Transport and Logistics Operations in Smart Cities of Greater Bay Area
研究項目: 開發於可持續運輸及物流作業的脫碳與可再生能源並分析及應用於大灣區智慧城市中
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Funding Scheme: Institutional Development Scheme (IDS) Collaborative Research Grant
Project Reference No.: UGC/IDS(C)14/B(E)01/19

Abstract

The need for sustainable low-carbon transport and logistics has become one of the top priorities in most countries since emission targets were set at the Conference of Parties to the United Nation Framework Convention on Climate Change (COP21). Many have also set policy goals to ban new petrol and diesel cars by 2030 or 2040. Carbon mitigation in the transport and logistics sector was emphasised in the recent World Economic Forums, as this sector is the second-largest carbon emitter in the world. Promoting the development of renewable energy as an integral part of mitigating climate change was also stressed in the Policy Address of Hong Kong in 2018. With a target set in Hong Kong to reduce carbon intensity by between 65% and 70% by 2030 compared with the 2005 level, exploration of the use of renewable energy in major vehicles in transport and logistics is critical to achieve Hong Kong's long-term decarbonisation strategy and to become a smart city with low-carbon transport and logistics. This project aims to develop a vehicle product carbon footprint model for selected types of vehicles used in transport and logistics, design a renewable energy hydrogen-powered fuel cell prototype for motor cars and trucks, develop a sustainable transport research database, and analyse the economic and environmental effects on Hong Kong and cities in the Greater Bay Area (GBA). The project deliverables will have great value and high impact in academic research, industry and the community. The novel vehicle product carbon footprint method, the development of solid-state hydrogen fuel cell as a renewable energy source for vehicles and the economic and environmental impact of advanced vehicles on Hong Kong and cities of the GBA will provide valuable academic insights and findings. The project will supplement teaching materials on sustainable transportation, corporate social responsibility and shipping and transport logistics with useful materials and case studies. It will also provide a good reference for policies of sustainability in transport and logistics. In the long run, the project will contribute to achieving zero-carbon transport and logistics in the smart cities of the GBA, including Hong Kong.