

## Environmental Research, Technology Demonstration and Conference Project

<b>ECF Project:</b>	ECF 2018-22
<b>Project Title:</b>	Road network assessment and optimisation with air pollution performance Measure
<b>Principal Investigator:</b>	Dr Andy H F Chow, Department of Systems Engineering and Engineering Management, City University of Hong Kong
<b>Total Approved Grant:</b>	\$500,000
<b>Duration:</b>	1/7/2019 to 30/6/2021
<b>Project Status/Remarks:</b>	Completed
<b>Project Scope:</b>	The project aims to investigate the road network performance assessment and optimisation problem with incorporation of measures related to air pollution. A set of software tools will be developed for analysing the relationship between road traffic and air pollution, investigating how inclusion of air pollution measures would change the current practice of road network design and operations, and facilitating communication between transport and environmental engineers on environmentally sustainable road network management through use of visualization techniques. The project adopts the Hong Kong Harbour Crossing Network as a case study with data obtained from open sources available from the Hong Kong SAR Government.
<b>Summary of the Findings/Outcomes:</b>	<p>The project aimed to develop a set of practical tools for analysing, visualising, and optimising mobility and eco-efficiency of road network with use of open data in Hong Kong. Tools had been developed for analysing the relationship between road traffic and air pollution, investigating how inclusion of air pollution measures would influence the current practice of road network operations, and facilitating communication between transport and environmental engineers on environmentally sustainable road network management through use of visualisation techniques. The project adopted the Hong Kong Harbour Crossing Network as a case study with data obtained from open sources available from the Hong Kong SAR government.</p> <p>The project had been able to produce the following deliverables:</p> <ol style="list-style-type: none"> <li>1. a network model of the Hong Kong Harbour Crossing Network with both mobility and environment measures calibrated by open data in Hong Kong;</li> <li>2. a multi-objective optimisation framework with consideration of road users' responses that could generate optimal network operational plan with consideration of both mobility and environmental perspectives;</li> <li>3. a visualiser of results for facilitating communication between transport and environmental engineers, government, and general public, on environmentally sustainable road design and management practices.</li> </ol>