



# Sustainable Land Use and Transport Planning for High-Density City

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## Abstract

Air pollution has become a pressing issue, and the transport sector is an important source of emissions. Because of the strong interactions between land use and transport, it is useful to develop an integrated model for the land use, transport, and the environment. The prediction of housing location choices is important for making decisions on how to allocate resources for land use developments, and the spatial analysis of air pollution and housing location choice in urban cities becomes an interesting but challenging problem. In this study, we adopt an alternative continuum modelling approach, in which we consider a city with several central business districts (CBDs) serving several classes of road users. The road network is relatively dense and can be approximated as a continuum. Transport demand and housing provision are continuously distributed outwards from the CBDs, and the commercial activities are concentrated in the CBDs. People travel between their homes and the CBDs along the least costly route during rush hours. We establish a bi-level model to determine the transport demand, traffic intensity, and CO<sub>2</sub> emissions with an optimized housing development pattern that minimizes total greenhouse gas emissions. In addition, we also attempt to develop a model that takes explicit account of the dispersion pattern of pollutants in the city, and the effect of air quality on housing location choice.

## Biography

Professor S.C. Wong is Chair Professor and Head of the Department of Civil Engineering, and was conferred the Francis Y S Bong Professorship in Engineering, at the University of Hong Kong. He received his BSc(Eng) and MPhil degrees from the University of Hong Kong and a PhD in Transport Studies from University College London. Professor Wong has published extensively in reputable international journals with high impact factors. He has published more than 270 papers in refereed journals, in addition to numerous conference papers and presentations, including 50 keynote and invited talks. His journal articles have attracted more than 3,700 citations, garnering him an h-index of 32 according to the ISI Web of Science. He is currently Editor-in-Chief of *Transportmetrica A: Transport Science*, and *International Journal of Sustainable Transportation*, and serves on the editorial boards of other sixteen journals, including *IEEE Transactions on Intelligent Transportation Systems*, *Transportation Research Part B*, *Accident Analysis and Prevention*, *Transport Reviews*, etc. Locally, Professor Wong is currently a Justice of the Peace, and Vice-Chairman of the Town Planning Board of the Hong Kong SAR Government. In 2015, Professor Wong was awarded the Bronze Bauhinia Star by the Hong Kong SAR Government.