

# Café Scientifique Headingley

Monday 9th October 2023

## Use of Life Cycle Assessment (LCA) in comparing the environmental impacts of commuting

By Yue Huang



**Outline:** Electric bikes (e-bikes) represent an increasing share of urban mobility due to their small sizes and clean fuels. An environmental life cycle assessment LCA model was used to compare and evaluate e-bikes powered by lithium-ion battery, petrol cars and a battery electric vehicle (BEV) for commuting. The system boundary, including vehicle lifecycle and fuel lifecycle, was defined to represent vehicle supply chain, fuel efficiency and energy mix in the UK. The model also included emissions from tyre and brake wear, and noise impacts in a case study of a commuter route. Results showed that BEVs and e-bikes reduce CO<sub>2</sub> significantly, and this reduction can increase with change in electricity mix and battery recycling. E-bikes have lower environmental footprint, and the advantage is not proportional to the weight of the vehicle. Non-exhaust emissions are significant to respiratory effects and human toxicity. Noise reductions due to the use of electric vehicles are also significant.

**Speaker:** *Yue Huang* is an Associate Professor at the Institute for Transport Studies (ITS), University of Leeds. His research areas include LCA, pavement recycling and road safety. He is the Programme Leader of MSc Transport Planning and Engineering, and Deputy Director of Postgraduate Research Studies at ITS. Dr Huang obtained his Bachelor and Master Degrees from Chang'an University, China. After completing his PhD at Newcastle University in 2007, he started his career as a Research Engineer at Scott Wilson (now AECOM) until 2011 when he became a Research Fellow at the University of Nottingham. He became a Senior Lecturer at Liverpool John Moores University in 2012 and joined ITS in Leeds in 2018.

**Venue:** The New Headingley Club, 56 St Michaels Road, LS6 3BG

**Time:** Room opens 7:30pm, Talk begins promptly at 7:45pm

**Entry:** Donation please for room hire and expenses: £4 at the door



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