

Designing Transport Infrastructure through a Sustainability Lens: Balancing Ethics, Environment, and Economics

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Extended Abstract

Integrating sustainability into transport infrastructure design requires confronting a fundamental challenge: translating ethical, economic, and environmental values into measurable, traceable indicators that meaningfully inform decision-making. Once quantified, these indicators often conflict, particularly under tight budget constraints, forcing researchers and practitioners to address trade-offs that shape both infrastructure outcomes and user behaviour.

In this talk, I examine how transport systems navigate competing ethical considerations and demonstrate how the dynamic interplay among sustainability indicators influences public responses and long-term infrastructure performance. Drawing on selected Australian and international case studies, I highlight the need for a holistic, multi-criteria perspective in contrast to the traditional single-objective approaches that still dominate practice. The talk underscores the importance of embracing complexity to design transport infrastructure that is equitable, resilient, and truly sustainable.