

# Sustainable Civil Engineering

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## Sustainability and urban land use and transport planning in Australia: Progress over 25 years and future prospects

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In response to the recommendations of the Brundtland Report (1987) Our Common Future, the Australian National Government established Ecologically Sustainable Development Working Groups on which the presenter represented the Australian Council for Social Service (ACOSS) on the transport advisory group. The recommendations were primarily goals and objectives driven together with potential urban form and transport mode solutions – although neither giving much thought to evidence-based policy analysis nor novel methodologically approaches. In the following quarter of a decade considerable academic and practical developments have occurred in urban land use and transport planning, project evaluation and financing. These major developments in methodology, such as the statutory requirement to undertake economic, social and environmental evaluations of major infrastructure proposals, or in solutions, such higher density residential and commercial developments especially around rail stations (transit orientated developments) are summarised. Specific examples drawn from Australian cities are used to illustrate developments in methodology (including the author's scientific contributions to "sustainable urban transport") and in sustainable outcomes. As for future prospects, a case study of Canberra, Australia's capital city is presented where future challenges and solutions are addressed into making what is today essentially a low-density, car dependent city into a more sustainable city. Such challenges are common to Australian cities and indeed in many cities in the world.

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## Cost benefit analysis combined with 3D design software reports triple bottom line value of projects on demand

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Every infrastructure and major building project today competes for scarce financing. Teams that convince stakeholders of maximum financial and sustainable returns achieve more wins. But the true scope of valuation is complex. Significant elements of public value are often discounted, not quantified, or overlooked. For example, improved water quality and increased recreational and property value, the natural outcomes of green storm water infrastructure projects, are often not factored in or are left to subjective evaluation. This makes comprehensive comparisons of sustainability driven projects to traditional projects difficult. Highlights of solution to be presented is to translate economic, social, and environmental value to financial metrics Inform analysis and design iterations with rich data from 3D models, view full costs and benefits by stakeholder group, bring economists' expertise in-house with transparent data sources and compare the value of various design options and different project. Custom economic and risk assessment studies that are meant to resolve this complexity are too costly for ongoing use. They tend to be one off efforts that end up having little relationship to what is ultimately built. Justin will cover a solution that will help infrastructure professionals to understand TBL values without costly economic consulting, achieve more sustainable, profitable results in less time, reduce pushback and costly delays by addressing community concerns, present your case with confidence backed by credible data and prioritize competing projects for financing based on societal value.

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