Sustainable Transport: Challenges and Policy Principles

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What are some of the biggest issues in developing transport policy today?

• Can no longer consider transport policy in isolation

• Globalisation and densification

• Technological change

• Climate change

• Regulatory governance and funding – Biggest challenge for Brazil
  • Sustainability requires financial sustainability
Transport policy cannot be considered in isolation
What does the research say?

• Mark Stevenson et. al. , The Lancet, 2016

• Estimated the population health effects from alternative land-use and transport policy initiatives in six cities
  • Land-use changes were modelled to reflect a compact city
  • Land-use density and diversity increased and distances to public transport reduced to reduce motorised mobility
  • A modal shift from private motor vehicles to walking, cycling, and public transport

• Results show that trade-offs are complex
Estimated health benefits are significant

<table>
<thead>
<tr>
<th></th>
<th>Melbourne</th>
<th>São Paulo</th>
<th>Delhi</th>
<th>London</th>
<th>Boston</th>
<th>Copenhagen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular disease</td>
<td>622 (312 to 1071)</td>
<td>363 (14 to 915)</td>
<td>565 (169 to 1117)</td>
<td>582 (244 to 1053)</td>
<td>765 (355 to 1386)</td>
<td>337 (4 to 832)</td>
</tr>
<tr>
<td>Type 2 diabetes</td>
<td>86 (40 to 159)</td>
<td>55 (9 to 155)</td>
<td>28 (10 to 91)</td>
<td>27 (7 to 61)</td>
<td>94 (41 to 189)</td>
<td>53 (4 to 146)</td>
</tr>
<tr>
<td>Respiratory disease</td>
<td>2 (1 to 4)</td>
<td>3 (1 to 5)</td>
<td>22 (4 to 42)</td>
<td>8 (4 to 14)</td>
<td>3 (1 to 5)</td>
<td>2 (1 to 4)</td>
</tr>
<tr>
<td>Road trauma</td>
<td>-34 (-64 to -7)</td>
<td>-4 (-71 to 62)</td>
<td>2 (-48 to 51)</td>
<td>-41 (-64 to -19)</td>
<td>-34 (-66 to -1)</td>
<td>-1 (-22 to 20)</td>
</tr>
<tr>
<td>Total</td>
<td>679 (330 to 1181)</td>
<td>420 (12 to 1029)</td>
<td>620 (167 to 1233)</td>
<td>581 (216 to 1084)</td>
<td>826 (352 to 1553)</td>
<td>393 (5 to 967)</td>
</tr>
</tbody>
</table>

Data are 50th percentile estimates (95% CI). Aggregated individual estimates may not equal the total due to rounding and Monte Carlo estimation. ICD-AM=International Classification of Diseases, Australian modification.

Table 4: Disability-adjusted life-years (DALYs) gained per 100,000 population under the compact cities model

But road trauma deaths increase...need to provide safe walking and cycling infrastructure
Globalisation and densification
• Increased demand for and value of transport (relative to the rest of the economy)

• Increased costs of getting policy and regulation wrong

• More fragmented global supply chains that require pricing access to each type of infrastructure (ports, roads, airports, rail, etc.) correctly
  • Inefficiencies from ‘wrong’ pricing accumulate over the supply chain

• Economies of density that will change funding models for urban transport
  • Uniform pricing (e.g., registration fees or fuel taxes) won’t work
  • Greater opportunity to recover costs via value capture
Technological Innovation and Digitalisation
• Increased take up of electric cars
  • Undermines petrol excises as a funding tool for transport infrastructure

• The emergence of driverless cars and car sharing
  • Change in car ownership model undermines vehicle registration as a funding tool

• Need to provide infrastructure
  • smart city networks in urban areas
  • Large impact on logistics (rail, ports, rail,...)

• New markets may emerge, but government may be tempted to regulate

• Digitalisation allows for efficient pricing and use

• Recovery of capital costs of public transport will become harder
  • ...But it may still be more efficient than car transportation

• Complex interface with safety, environmental, legal, and privacy issues
  • Regulator’s role as ‘rule maker’
Climate Change
• Transport pricing to cover social marginal cost
  • Price to reflect network externalities, pollution, and marginal cost
  • Difficult to price ‘correctly’ as there are choices and the regulator does not control all relevant prices

• Funding of infrastructure subject to greater risk
  • How to design PPPs under climate change risk?
  • Who bears the CC risk in the case of private infrastructure (toll roads, railways, ports, airports?)

• Other regulatory roles (e.g., safety standards)
Regulatory Governance
Transport: Complex and Overlapping Institutions

• Three layers of government (local, state and national)
  • Ports and airports are easier - typically regulated at the national levels, except for dedicated ports (e.g., coal), which are often regulated at the by state level
  • (Below) rail is typically either state or federal (if it crosses state boundaries)
  • Intercity transport (buses, rail) is often not regulated (usually privately owned)
  • Urban transport (e.g., buses, trams, trains) at state level with some aspects (e.g., traffic management) and public ownership at the local level (e.g., NY subway)
  • Local roads, arterial roads, state and federal freeways, private toll roads

• Cars, trucks and buses cross city and state boundaries
  • Need mechanisms to coordinate regulation across jurisdictions

• Risk of ‘politicalization’ of infrastructure choice
Governance in Transport

• Initial step is to ask what are the aims of transport policy
  • Allocative efficiency, dynamic efficiency, and social/health/environmental concerns
    VS
  • Ill-defined goals (e.g., ‘transport for all’). What type of transport? At what price? At what level of emissions?

• Second step is to build institutions that can deliver on the aims
  • Independent regulators, robust processes to develop policy based on research, empirical evidence and informed by world’s best practice
    VS
  • Infrastructure projects and pricing decisions based on political horse trading

• Third and final step is to work out a feasible transition
• Often focus is on overcoming the latest ‘crisis’ or pointwise initiatives
  • Difficult to think about the future … but crucial to ensure sustainable economic growth
Transport Governance in Australia

This is simply to provide insights into what takes to develop good institutions .... Not a recipe to be followed...Different countries face different challenges
Overview

• Local governments own and maintain about 650,000 kilometres of local road, a significant amount of public transport infrastructure and more than 200 airports
• At the state level, statutory authorities (e.g., Translink in QLD created to coordinate and integrate bus, ferry and rail services)
• At the national level, the Transport and Infrastructure Council facilitates policy development in the context of the Council of Australian Governments (COAG) – Federal, state governments, local government representative and New Zealand
  • Supported by an independent advisory body (NTC) and DIRD
• Individual projects subject to independent assessment by infrastructure Australia
Individual projects subject to scrutiny of IA
Infrastructure Australia

• Independent statutory body with a mandate to prioritise and progress nationally significant infrastructure – not limited to transport
• Robust process for evaluation of business cases
CURRENT BUSINESS CASES BEING EVALUATED BY INFRASTRUCTURE AUSTRALIA

Updates to this table reflect the status of a business case evaluation at a point in time. This information is correct as at 10/01/2018.

<table>
<thead>
<tr>
<th>Location</th>
<th>Proposed Project &amp; Status</th>
<th>Date business case received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>Western Distributor</td>
<td>26 November 2015</td>
</tr>
<tr>
<td></td>
<td>Awaiting further information from proponent</td>
<td></td>
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<tr>
<td>Queensland</td>
<td>Brisbane Metro</td>
<td>29 August 2017</td>
</tr>
<tr>
<td></td>
<td>Evaluation underway</td>
<td></td>
</tr>
<tr>
<td>Cunningham Highway (Yamanto to Ebenezer Creek)</td>
<td>Awaiting further information from proponent</td>
<td>31 August 2017</td>
</tr>
<tr>
<td>South Australia</td>
<td>South Road Upgrade – Regency to Pym Street</td>
<td>22 June 2017</td>
</tr>
<tr>
<td></td>
<td>Awaiting further information from proponent</td>
<td></td>
</tr>
</tbody>
</table>
### High Priority Projects

High Priority Projects are potential infrastructure solutions for which a full business case has been completed and been positively assessed by the Infrastructure Australia Board. A High Priority Project addresses a major problem or opportunity of national significance.

<table>
<thead>
<tr>
<th>Proposed project</th>
<th>Location</th>
<th>Problem description</th>
<th>Proponent’s proposed delivery timescale</th>
<th>Problem category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sydney Metro: City and Southwest</td>
<td>NSW</td>
<td>Sydney rail network capacity</td>
<td>Medium term</td>
<td>Urban Congestion</td>
</tr>
<tr>
<td>M4 motorway upgrade ( Parramatta to Lapstone)</td>
<td>NSW</td>
<td>Connectivity in outer western Sydney</td>
<td>Near term</td>
<td>Urban Congestion</td>
</tr>
<tr>
<td>WestConnex</td>
<td>NSW</td>
<td>Sydney inner west road congestion</td>
<td>Near term</td>
<td>Urban Congestion</td>
</tr>
<tr>
<td>Melbourne Metro Rail</td>
<td>Vic</td>
<td>Melbourne rail network capacity</td>
<td>Medium term</td>
<td>Urban Congestion</td>
</tr>
<tr>
<td>M80 Ring Road upgrade</td>
<td>Vic</td>
<td>Melbourne M80 Western Ring Road congestion</td>
<td>Near term</td>
<td>Urban Congestion</td>
</tr>
<tr>
<td>Ipswich Motorway Rocklea–Barra Stage 1c</td>
<td>Qld</td>
<td>Southern Brisbane-Ipswich road network capacity</td>
<td>Near term</td>
<td>Urban Congestion</td>
</tr>
<tr>
<td>Western Sydney Airport</td>
<td>NSW</td>
<td>Sydney aviation capacity</td>
<td>Medium term</td>
<td>National Connectivity</td>
</tr>
<tr>
<td>Perth Freight Link</td>
<td>WA</td>
<td>Perth freight network capacity</td>
<td>Near term</td>
<td>National Connectivity</td>
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</tr>
</thead>
<tbody>
<tr>
<td>Armadale Road upgrade</td>
<td>WA</td>
<td>Perth urban road network capacity</td>
<td>Near term</td>
<td>Urban Congestion</td>
</tr>
</tbody>
</table>
The National Transport Commission

- Provides advice on national land transport reform proposals to government through the Transport and Infrastructure Council
- Funded by the Commonwealth, state and territory governments
- The NTC is located in Melbourne and employs around 40 staff
- Approach includes stakeholder engagement with industry, jurisdictions and government agencies, and research
Examples of issues addressed by the NTC

- **Clarifying control of automated vehicles**: develop national enforcement guidelines to clarify if the human driver or the automated driving system is in control at certain levels of driving automation.

- **Who moves what where: Better informing transport planning for Australians discussion paper**: proposing a framework for data reporting.

- **Amendments to the light and heavy vehicle standards**: new ways to identify hydrogen and electric powered vehicles (for safety).

- **Cooperative Intelligent Transport Systems policy paper**: regulatory issues linked to the deployment and support of Cooperative Intelligent Transport Systems (C-ITS) in Australia
  - Key regulatory issues: privacy, liability, driver distraction and compliance and enforcement threats and opportunities.
10 principles for developing transport policy and institutions
1. Robust policy development process – driven by research, evidence and international best-practice
2. Inclusive policy development process: all represented not only special interests
3. Better integration of national rail, road, aviation, port and maritime supply chains, and between land use and infrastructure planning
4. Improving the transport network efficiency by better utilising existing infrastructure, but also meeting community expectations of safety, security, access and reliability
5. Individual projects subject to robust CBA
6. Developing sustainable, efficient funding and delivery models
7. Future-proofing infrastructure and transport systems to lessen the need for high cost new infrastructure
8. Mitigating adverse environmental effects
9. Monitoring technological developments
10. Removing barriers to innovation, and capitalising on new and emerging technologies
Thank You!