

Sustainable Transport: Challenges and Policy Principles

Flavio M. Menezes

Professor of Economics

The University of Queensland

<http://ideas.repec.org/e/pme33.html>

Email: f.menezes@uq.edu.au

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

	Melbourne	São Paulo	Delhi	London	Boston	Copenhagen
Cardiovascular disease (ICD-AM I00-I99)	622 (312 to 1071)	363 (14 to 915)	565 (169 to 1117)	582 (244 to 1053)	765 (355 to 1386)	337 (4 to 832)
Type 2 diabetes (ICD-AM E10-E14)	86 (40 to 159)	55 (-9 to 155)	28 (-10 to 91)	27 (7 to 61)	94 (41 to 189)	53 (-4 to 146)
Respiratory disease (ICD-AM J30-J98)	2 (1 to 4)	3 (1 to 5)	22 (8 to 42)	8 (4 to 14)	3 (-1 to 5)	2 (1 to 4)
Road trauma (ICD-AM V00-V89)	-34 (-64 to -7)	-4 (-71 to 62)	2 (-48 to 51)	-41 (-64 to -19)	-34 (-66 to -1)	-1 (-22 to 20)
Total	679 (330 to 1181)	420 (12 to 1029)	620 (167 to 1233)	581 (216 to 1084)	826 (352 to 1553)	393 (5 to 967)

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 concernsVS
 - 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 practiceVS
 - 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

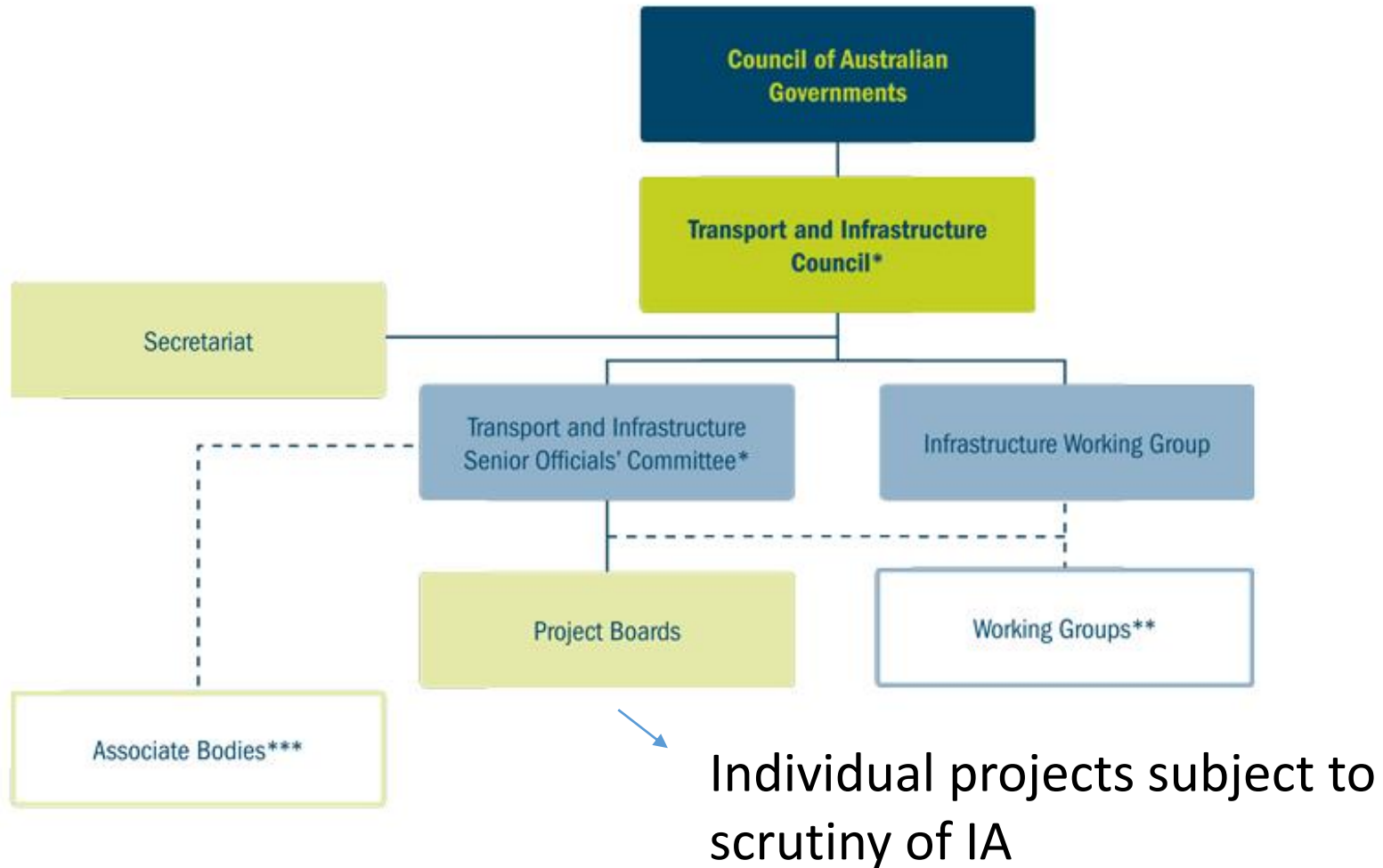
Transport Governance in Australia

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

Governance Model



* The National Transport Commission reports to either the Transport and Infrastructure Council or the Transport and Infrastructure Senior Officials' Committee.

** Time Limited.

*** Strategic Vehicle Safety and Environment Group, Accessible Public Transport Jurisdictional Committee, Data Action Network, Transport Security Committee.



Infrastructure Australia

- Independent statutory body with a mandate to prioritise and progress nationally significant infrastructure – not limited to transport
- Current priority list available at <http://infrastructureaustralia.gov.au/projects/infrastructure-priority-list.aspx>
- 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.

Location	Proposed Project & Status	Date business case received
Victoria	Western Distributor Awaiting further information from proponent	26 November 2015
Queensland	Brisbane Metro Evaluation underway	29 August 2017
	Cunningham Highway (Yamanto to Ebenezer Creek) Awaiting further information from proponent	31 August 2017
	Beerburrum to Nambour rail upgrade Evaluation underway	19 July 2017
South Australia	South Road Upgrade – Regency to Pym Street Awaiting further information from proponent	22 June 2017

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.

Proposed project	Location	Problem description	Proponent's proposed delivery timescale	Problem category
Sydney Metro: City and Southwest	NSW	Sydney rail network capacity	Medium term	Urban Congestion
M4 motorway upgrade (Parramatta to Lapstone)	NSW	Connectivity in outer western Sydney	Near term	Urban Congestion
WestConnex	NSW	Sydney inner west road congestion	Near term	Urban Congestion
Melbourne Metro Rail	Vic	Melbourne rail network capacity	Medium term	Urban Congestion
M80 Ring Road upgrade	Vic	Melbourne M80 Western Ring Road congestion	Near term	Urban Congestion
Ipswich Motorway Rocklea–Darra Stage 1c	Qld	Southern Brisbane-Ipswich road network capacity	Near term	Urban Congestion
Western Sydney Airport	NSW	Sydney aviation capacity	Medium term	National Connectivity
Perth Freight Link	WA	Perth freight network capacity	Near term	National Connectivity

Priority Projects

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 Priority Project addresses a nationally-significant problem or opportunity.

Proposed project	Location	Problem description	Proponent's proposed delivery timescale	Problem category
Armadale Road upgrade	WA	Perth urban road network capacity	Near term	Urban Congestion

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!