

# Australasian Centre for Governance and Management of Urban Transport



A Centre of Excellence in Future Urban Transport  
of the Volvo Research and Education Foundations,  
At the University of Melbourne



THE UNIVERSITY OF  
MELBOURNE

# What is GAMUT?

- A collaborative research centre dedicated to promoting and supporting sustainable urban transport in Australia and the Asia Pacific region.
- An emphasis on active and collective urban passenger transport.



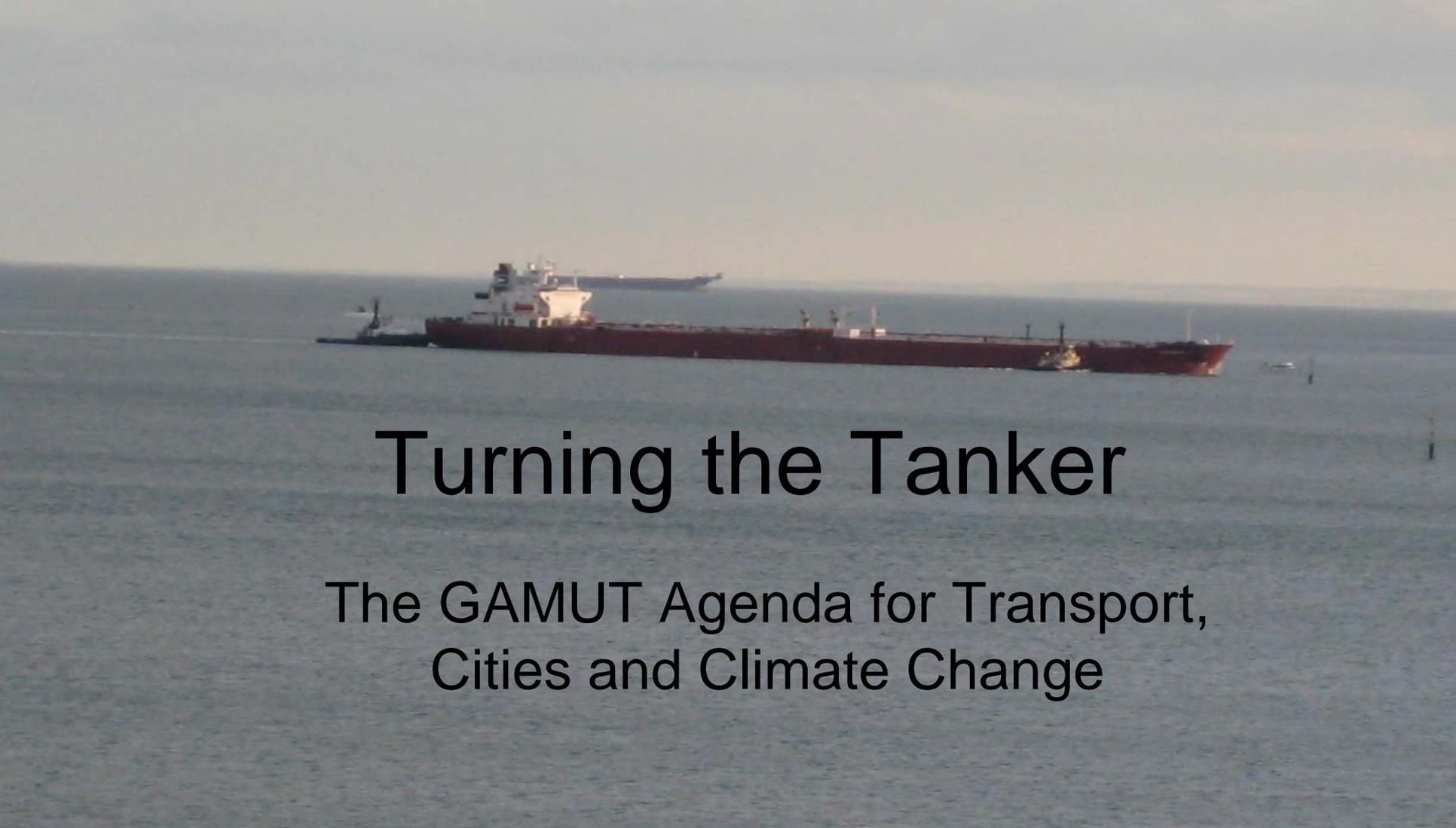
# Organization of GAMUT

- A hub at the University of Melbourne (in the Urban Planning Program).
- Two outlying Australian foci at Curtin University in Perth, and Griffith University in Brisbane,
- Two Asian foci at Hitotsubashi University, Tokyo, and Tongji University, Shanghai.
- Joint research with the OMEGA (VREF) Centre, University College London.
- Connections with Singapore via Prof. Sun Sheng Han.
- Growing links with the China Urban Sustainable Transport Research Centre in Beijing



# Who we are



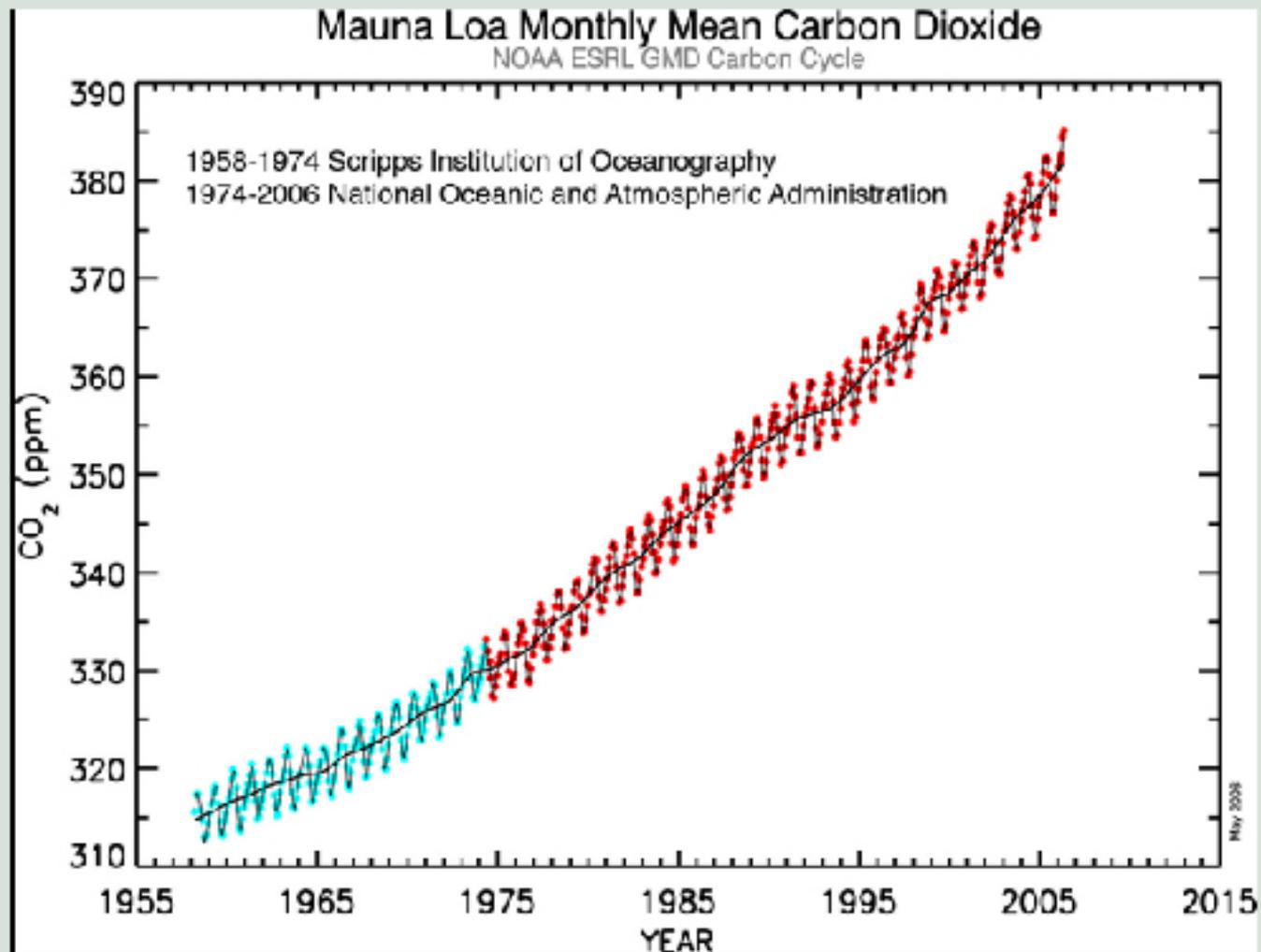
A large red tanker ship is sailing on the ocean. The ship is long and narrow with a white superstructure. The sky is overcast and the water is a greyish-blue.

# Turning the Tanker

The GAMUT Agenda for Transport,  
Cities and Climate Change

A highway with a truck and cars in a rural landscape. The road is paved and has a guardrail. The surrounding area is grassy and flat under a clear blue sky.

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This simple graph of the Mauna Loa Carbon Dioxide Record documents a 0.53 percent or two parts per million per year increase in atmospheric carbon dioxide since 1958. This gas alone is responsible for 63 percent of the warming attributable to all greenhouse gases according to NOAA's Earth System Research Lab.

[High resolution available.](#) (311KB, 1583x1220).

**This drives our agenda**

## The Climate Context

- By 2030 global emission of GHGs may need to be 25% their current value if dramatic climate change is to be avoided: *eg a 4-fold reduction.*
- Such a reduction will commit us to a temperature rise of about 1-2°C above year 2000 levels, about 2-3°C in total, by 2030.
- High emitting developed countries like Australia may further be required to reduce emissions to those much closer to the world average: *eg contraction and convergence means we decrease while others increase.*
- For Australia this would mean a 4.7-fold reduction on present emissions.
- Total reductions for Australia could be  $4 \times 4.7 = 18.8$ -fold on current levels.

*By 2030 transport emissions may have to be reduced by a factor of almost 20 if we are to have a sustainable transport system.*

# Research questions

# What is the future of the car?

1. To have a sustainable Australian transport system by 2030, transport GHGs may have to be reduced 18.8-fold.
2. At best, passenger cars in 2030 could emit 2.5 times less per passenger-km than current cars, but 1.5 times less is more likely.
3. At best, public transport in 2030 could emit 6 times less per passenger-km than current cars.

*Since reductions from both passenger cars and public transport are insufficient to provide a sustainable transport system by 2030, demand for motorised travel must be reduced.*

# What changes to mobility behaviour could help mitigate climate change?

Some city comparisons

Melbourne compared with some European cities 2001	Daily trips per inhabitant	Daily mechanized trips per inhabitant	% of daily trips on foot and by bicycle	% of daily trips by private motorized modes	% of daily trips by public transport
<b>Melbourne</b>	<b>3.72</b>	<b>3.09</b>	<b>18</b>	<b>76</b>	<b>6</b>
Amsterdam	2.9	2.15	51.4	33.9	14.7
Brussels	2.82	2.08	27.5	58.9	13.6
Copenhagen	3	2.44	39	48.9	12.1
Helsinki	3.1	2.41	29	44	27
London	2.65	1.86	31.1	50.2	18.8
Munich	3.2	2.3	37.5	40.6	21.9
Stockholm	2.77	2.07	31.4	47.1	21.6

(Source: UITP, *Mobility in Cities Database* 2001)

# How can integrated transport principles be applied to dispersed cities?

- Mixed modes: exploiting the different quality and capacity aspects of the various modes.
- Easy and comfortable transfers between modes.
- A simple network with a clear line structure which is easy to learn and remember.
- Direct route alignment and fastest possible speed of vehicle operations with reliable timetables.
- High frequency services where and when the demand is reasonably high.
- Co-ordinated pulse timetables where the demand is weaker.
- Efficient pendulum lines running through city and suburban centres and major public transport interchanges connecting housing and work areas
- Supporting 'soft' measures such as fare structures, ticketing systems, information and marketing combined with restrictive policies towards car use.



# What are the institutional barriers to integrated transport?

## Path dependence: strategic irrationality

Technical: cities' existing patterns of physical infrastructure 'lock in' certain development paths for the future.

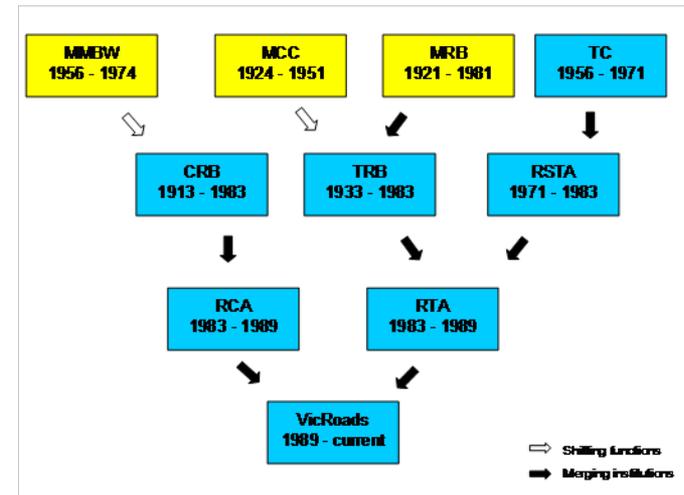
Institutional: the structure and powers of organizations shape the funding of infrastructure by governments.

Discursive: patterns of thought and reasoning shape the way problems are defined and solved. Ultimately the solution comes to define the problem.

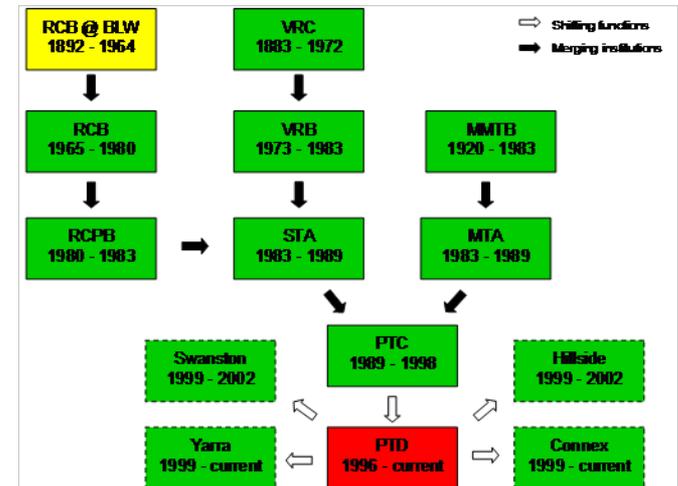
Following a three year longitudinal study of transport planning institutions in Sydney, Melbourne and Perth, we are now examining in finer detail the barriers to implementing integrated transport created by the structure of horizontal and vertical governmental relationships.

This work will link up with some of the institutional analysis being carried out in Shanghai, Tokyo and Hong Kong.

## STRUCTURAL CHANGE OVER 50 YEARS



Road planning agencies (Melbourne)

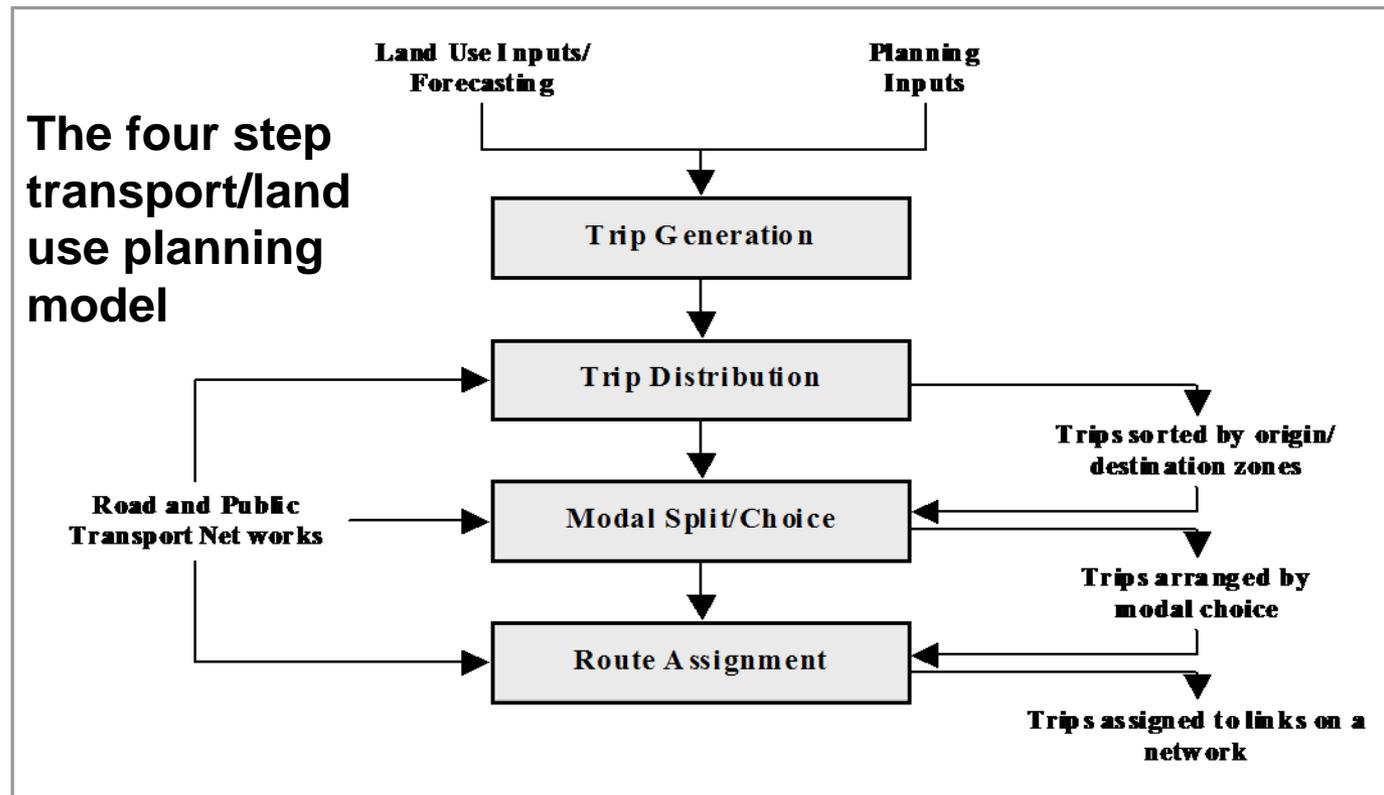


Public transport agencies (Melbourne)

# How should new infrastructure be planned?

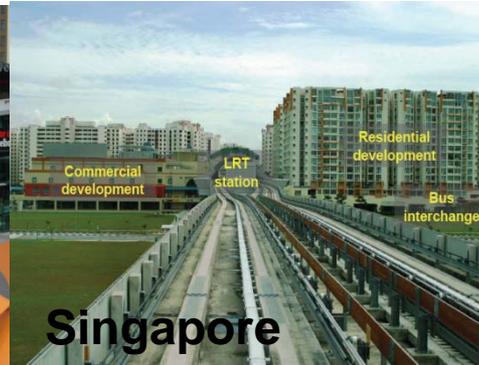
One of the most persistent barriers to integrated transport is the standard technical model for infrastructure planning.

The aim of the project is to develop an alternative technical model to the four step model to include social need and environmental capacity.



# How do Australian cities compare with East Asian cities in transport governance?

- GAMUT is developing profiles of transport governance and how governance structures have developed over time for Australian and selected East Asian cities.
- Histories of transport governance are already available for Sydney, Melbourne and Perth. Historical profiles of Shanghai, Tokyo, Singapore and Hong Kong are in preparation.
- Transport governance can be apparently quite fluid, yet bureaucratic silos persist. We have not yet reached the phase of comparison.



# How much freedom to move in cities do children have?

## Institutional Enablers for Children's Independent Mobility (photo credit: VicHealth)

Research Aim:

- To identify institutional interventions that facilitate children's independent mobility (CIM) within urban environments, and to determine whether there are principles across interventions that can be replicated
  - To do this by summarizing current Australian and international research on 'good practice'.
  - Investigating several programs operating in Victoria to find evidence as to 'what works'
- Includes the practical aim of increasing institutional awareness and action within Victoria and Australia.



# How are transport systems developed and funded?

## Transport systems in federations

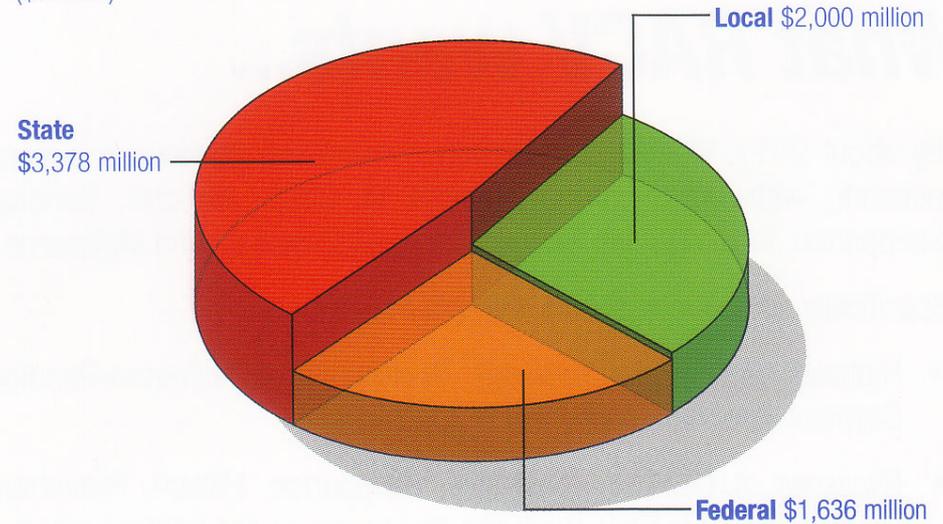
- How do federations fund major transport investments?
- Traditional arrangements?
- Emerging arrangements?
- Do emerging arrangements support a move toward sustainable transport?

Initial work concerns Australia only.

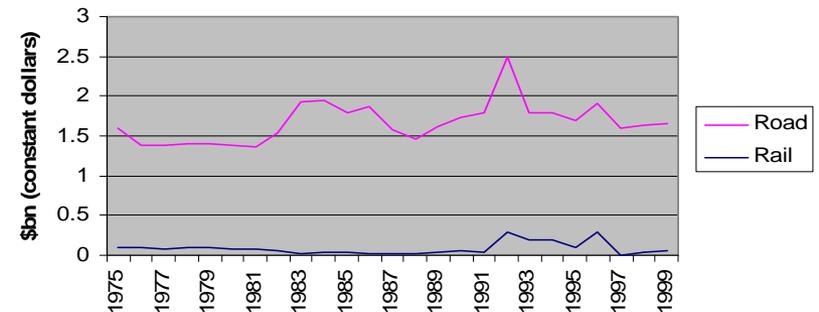
ROAD FUNDING BY LEVEL OF GOVERNMENT, AUSTRALIA

1998/99

(\$million)



Commonwealth Road vs Rail Funding 1975-99

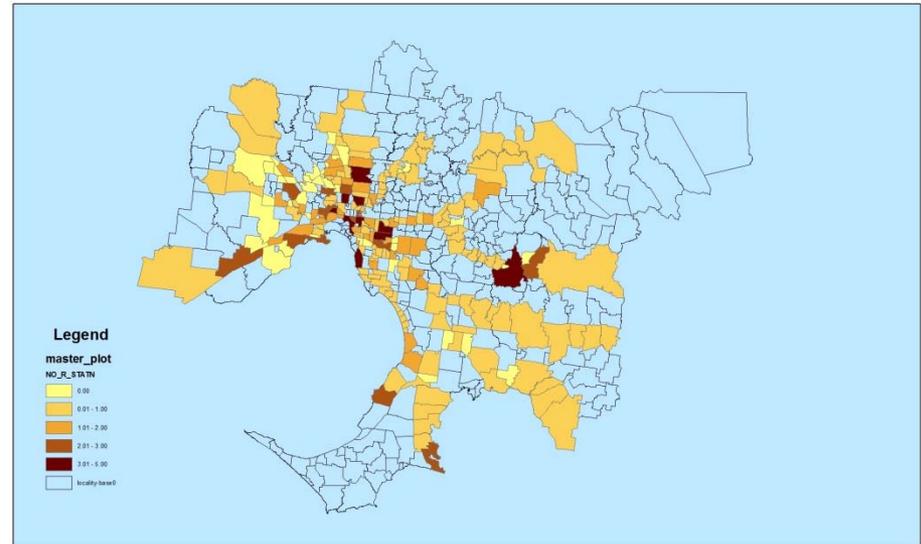


# An alternative mechanism for funding public transport

Recognising that *location, location, location* drives residential and commercial investment, and that *location* is shaped in part by the provision of public transport infrastructure.

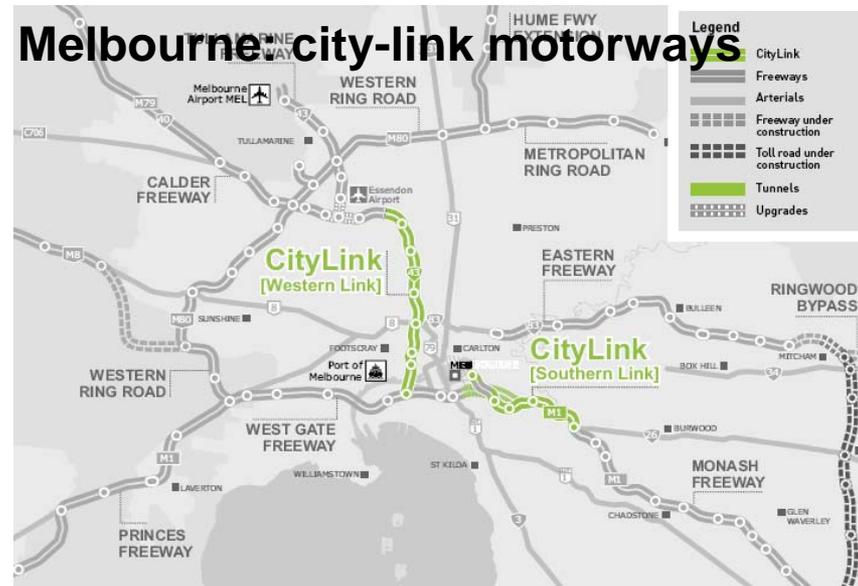
**AIM: To develop a mechanism to collect income from capital value or change in capital value on sites within a metropolitan area.**

Number of train stations - grouped by absolute number



Length of rail lines per sq km - grouped by standard deviation





**GAMUT's contribution to OMEGA: 3 case studies, a PhD dissertation, 2 major working papers**

# Summing up the GAMUT Program

- Developing a new ideal model of sustainable urban transport to implement now.
- Understanding future environmental and resource constraints.
- Preparing an approach that could work within the constraints.
- Finding 'best practice' examples.
- Understanding and overcoming barriers to change.
- Finding better ways of planning and resourcing solutions.

# End of the GAMUT presentation

