SUSTAINABLE TRANSPORT
Sustainable Development

- **Concerns**
  - Pollution
  - Space
  - Obesity
  - Sprawl v Density
  - Traffic congestion
  - Greenhouse gas and oil

- Need to look at options which address all of these..
Pollution problems...

Before..
Pollution Solution...

Before..

After..
Parking problems...

- Car parks take up 100 sq km of Sydney
- 3 car parking spaces for every car
- 95% of parking is free to the user
- Yet sometimes you still can't find a parking spot!
To solve parking problems...

MINI INTRODUCES VPL. VERTICAL PARKING LOCATOR.

Introducing a revolutionary new technology from MINI. The world’s first Vertical Parking Locator (VPL). With VPL, the MINI will be the first car in the world to be able to be parked vertically.

This technological breakthrough is the result of nine years of extensive research.

The technology works with the existing traction control (ASC+T), which electronically controls wheel spin under acceleration. VPL provides an extra sensory element which enables the tyres and wheels to literally cling to the side of designated buildings.

The Park Distance Control (PDC), a sonar device which allows the driver to know how far they are from other objects when they are parking, will be as effective whether the car is parked vertically or horizontally.

Altitude will in no way inhibit the accuracy of the device. MINI is working in conjunction with local councils and architectural heritage trusts to lease the sides of buildings for parking. They will also trial the first of these vertical parking spaces in George Street Sydney during April and May.

The new parking spaces will be electronically linked to the MINI’s satellite navigation system (GPS). Which, along with navigating drivers throughout the country and metropolitan areas will also be able to find these exclusive parks.

More specific information about VPL is available from Dr. Uwe Beinert at MINI Australia. Please note that the purchase of VPL is only available on April 1. So hurry to your nearest MINI Garage, you’ll be a fool to miss out.

MINI approaches wall.

MINI climbs wall.

MINI comes to rest on wall.
Parking

- Eliminate “free” parking

- Convert a small percentage (eg 5%) of current car parking every year to bike / scooter parking (good for local business as it increases number of customers)

- Change parking codes for new buildings – separate from the dwelling / shops / offices, with separate payment
Obesity is becoming a weighty problem...
Maybe we need a lighter solution…

Before..

GYM

After..

Bike
To solve greenhouse gases

- Increasing numbers of electric “gophers” are already appearing on our footpaths
- Electric bicycles, electric scooters are available and new mini electric vehicles are under development
- Bicycles are the ultimate “green machine”
To solve urban sprawl...

Consolidation doesn’t have to look like this…
It can look like this.. These are US examples

Source: Kaufman (2005)
Mangage the Traffic..

- Need to manage limited roadspace in favour of public transport and freight / commercial users.
- Singapore, London have introduced **congestion charging**
- Other cities like Stockholm have followed suit
- E-tags offer the prospect of efficient road pricing across the network
- **Car sharing** schemes and individual demand management schemes can also help moderate road demand
Other cities...public transport

- One hundred cities have built new or re-introduced light rail systems since 1994. 400 light rail systems now worldwide.

- Many large cities are installing metros, light rail, suburban rail or other rail systems (examples include Shanghai, Beijing, Madrid, Las Vegas, Denver, Houston etc).

- Bus-based systems also being built, including busways and guided bus systems.

- In some places freeway building has slowed or stopped, and some have even been removed (eg Seoul, San Francisco, Portland).
LRT in Bordeaux – under-track power supply
LRT in Budapest  -  54m long Vehicle
Brisbane’s “Green bridge” is just for buses, cyclists and pedestrians..
Bus-Tram in Tianjin, China
Greenpower for Public Transport

- Electric rail systems could be easily converted to 100% greenpower now
- Bus-based systems are being trialled – eg in Adelaide
- Could provide carbon-free travel options for medium - longer trips
Making space for cycling...
Greenways

- Need a complete network of “greenways”
  - 20 kph max speed
  - Priority for bicycles, electric bicycles and scooters, mobility scooters and pedestrians
  - High quality lighting, street design for safety and security
Demand-Responsive Transport

- Need to add flexible, on-demand services for low density areas, evenings/weekends, and for people with mobility difficulties.

- With new vehicles and advanced booking systems could create a form of Personal Public Transport (PPT).
New vehicles

- The ideal vehicles for PPT type services have only recently become available.
- Sydney is getting 400 maxitaxis to add to the fleet of wheelchair accessible vehicles. These include 11 passenger Toyotas, as well as new 7-9 passenger Chrysler Voyager and Mercedes Vito-based vehicles.
- New types of 15-18 passenger minibuses and 8-passenger maxitaxis are being produced in Sweden, which are fully low floor and full interior headroom.
DRT Options

Fixed route peak periods
maximum efficiency & capacity

Flex route day-off-peak periods
- door-door option at premium

Area-based at evenings
- door-door security & convenience
Moving Freight

- Rail is 3 times more energy efficient than truck for line haul
- Need innovative solutions to meet environmental and market needs
Fuel Rationing

If all else fails....

- Priority for buses, commercial and emergency vehicles
- Private motorist hit
- Flow – on economic effects eg on tourism, recreational travel
- To avoid this we need to start adapting our cities NOW
Moving to sustainable cities?

Fed Govt

- **Carbon trading by 2010**
  - But caps (around $20 / tonne) and free permits, and petrol to be effectively shielded

- **20% renewable electricity by 2020**
  - But industry groups trying to eliminate

- **$500m green car fund**
  - But so far no real money for public transport, cycling etc

- **Cities unit and Infrastructure Australia established**
  - But yet to see whether they will really embrace major change
## An Alternative: Fuel and Climate Emergency Plan

<table>
<thead>
<tr>
<th>Setup</th>
<th>Bipartisan Climate Emergency Response Agency</th>
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<tbody>
<tr>
<td>Stop</td>
<td>New Fossil fuel power stations (except for CCS)</td>
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<tr>
<td></td>
<td>New freeway construction (at least 10 years)</td>
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<tr>
<td>Phase out</td>
<td>Existing coal fired PS within 20 yrs unless CCS</td>
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<tr>
<td></td>
<td>Existing cars within 20 years</td>
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<tr>
<td></td>
<td>Off-peak electricity rates within 5 yrs</td>
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<tr>
<td>Start</td>
<td>Major renewable energy systems</td>
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<td></td>
<td>Sustainable transport programs</td>
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<td></td>
<td>Green building and planning policies</td>
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<tr>
<td>Fund</td>
<td>$30b tax cuts to Sustainable Super Future Fund</td>
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<tr>
<td></td>
<td>Immediate carbon taxes then carbon trading</td>
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<td>Use fund for green incentives and transitional subsidies</td>
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Sustainable Futures Fund

- **A$40 / tonne CO\textsuperscript{2}** tax/price generates **A$13 billion pa** in year 1 from electricity and transport only (i.e. ignoring agriculture and land clearing)
  - $130 / tonne coal (same as export steaming price now)
  - $30 / barrel of oil, cf A$118 / barrel now.

- Could raise estimated **$143 billion over 20 years**, even assuming **95% reduction in CO\textsubscript{2}** from electricity and transport by 2030

- Could be allocated to a **SUSTAINABLE FUTURES FUND** for:
  - Investment in **renewable energy** (wind, solar thermal, solar PV, geothermal, wave-power, hydro)
  - Investment in **sustainable transport**
  - Electricity and petrol **subsidies** for pensioners, low income households and those currently very car dependent.
Sustainable Futures Fund

Assumes $40/tonne CO2, with rapid reduction in emissions from year 3. Covers income from electricity and transport only. Revenue from agriculture / land clearing used for other purposes (e.g., reforestation etc).
What could this achieve?

- **Research & Development:** $2.7b over 8 yr for sustainable technologies
- **Renewable Energy:** $27.5b over 12 years for wind, solar and solar hot water, wave-power, geothermal and energy storage.
- **Freight Rail:** $15.6b over 20 years for upgrades to the main north-south route (Melbourne – Cairns) new inland route (Melbourne – Brisbane), new rail links to ports etc
- **Public transport** – $31.7b extra over 20 years for NW-SW rail line and metro lines in Sydney, Brisbane’s new underground and more busways, electrification and extension of Adelaide’s rail system; tram, train and bus upgrades in Melbourne; light rail in Gold Coast, Canberra and Perth, demand responsive services in smaller settlements
- **Greenways** – $7.4b pa over 20 years would fund comprehensive Greenway networks across Australia’s cities and towns
- **$1,000 pa electricity rebate** for 4 million lower income households, declining to zero over 10 years. Total of $22b.
- **$1,000 pa petrol rebate** for 4 million low income outer suburb and non-metro households, declining to zero over 10 years. $22b
- **$13.7b of regional and industry adjustment** subsidies to regions and industries particularly impacted by climate change
Sustainable Futures Fund Allocations

Expenditure Profile

- Regional & Ind Adj Sub
- Petrol Subsidies
- Elect Subsidies
- Greenways
- Public Transp
- Rail Freight
- R&D
- Sust Energy

Year

A$ Billion
Other Steps

- The above assumptions do not rely on other sources, e.g., transferring the $30b tax cuts into superannuation investment in the Sustainable Futures Fund.

- Complementary international actions required
Conclusions

- The world has been built on using up the store of easy to reach, low cost fossil fuels, especially oil.

- China and India are just entering a rapidly urbanising and industrialising phase, and will push energy demand higher.

- We are close to peak oil production. We are close to (or past) the limit of absorption of CO2

- We have just a few decades to revamp the world economy

- These will dominate the next few decades, with profound implications for our how we build and live in our cities.

- There are solutions – but only if we move fast!