

Innovations in Sustainability in Cities and Regions: some reflections on the US

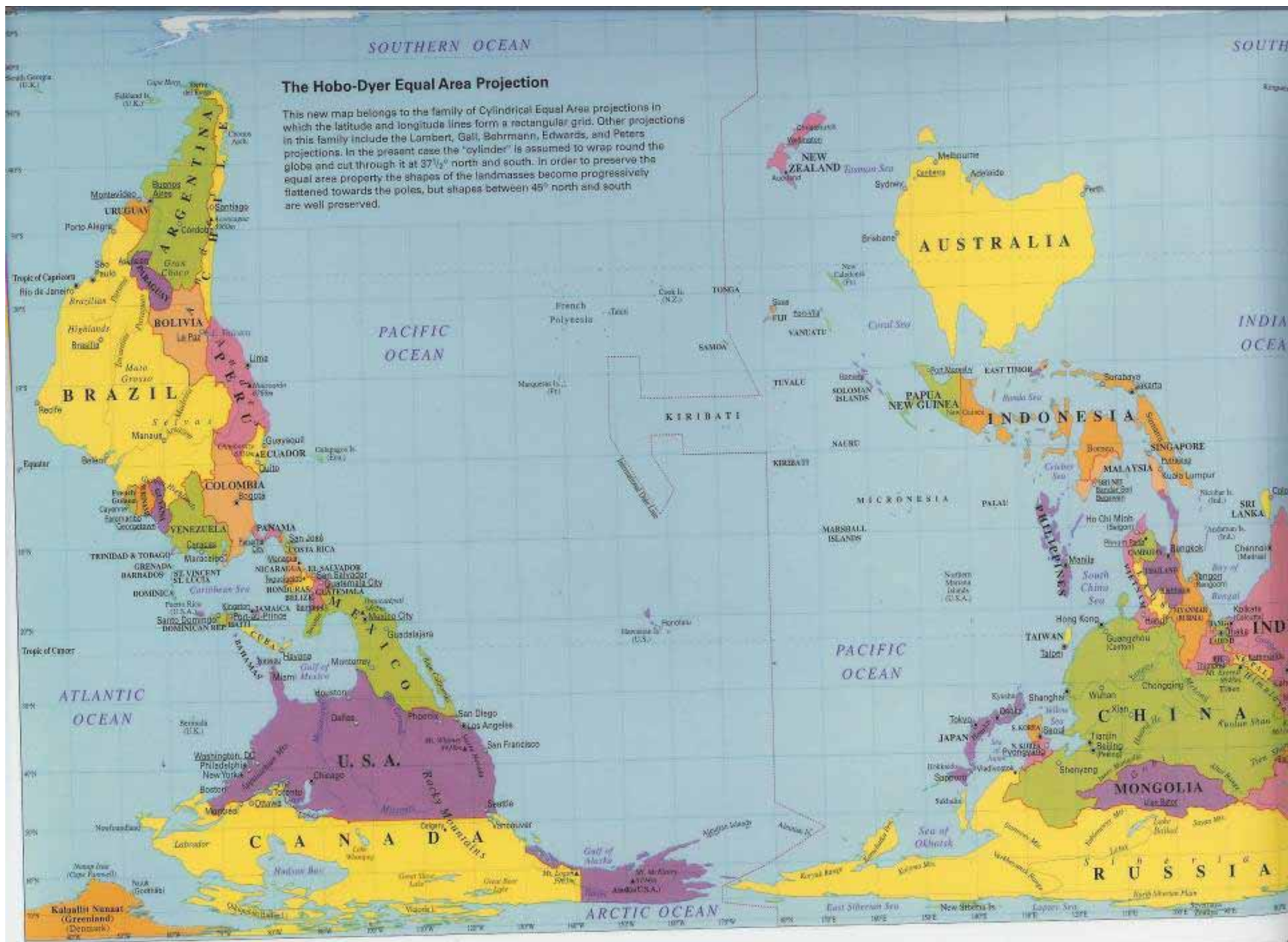
By

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**Institute for Sustainability and Technology Policy, Murdoch
University;**

Fulbright Scholar, School of Architecture, UVA.

This new map belongs to the family of Cylindrical Equal Area projections in which the latitude and longitude lines form a rectangular grid. Other projections in this family include the Lambert, Gall, Behrmann, Edwards, and Peters projections. In the present case the "cylinder" is assumed to wrap round the globe and cut through it at 37°N north and south. In order to preserve the equal area property the shapes of the landmasses become progressively flattened towards the poles, but shapes between 45° north and south are well preserved.



Want to make a difference?



ISTP started on sustainability in 1990; now has 80 PhD students; 200 masters students and 200 undergrads studying sustainability.

The sustainability era has arrived...

- Failure of modernism to solve the big problems.
- Fifth Cycle is IT-ET-ST together with 'sustainability thinking'.
- Integration of economic, social and environmental to solve long term problems.

The problems requiring innovations in sustainability.

- Fractured governance.**
- Climate change and oil vulnerability.**
- Urban sprawl and automobile dependence.**
- Regional disparities and inequity.**
- Loss of biodiversity and bioregional decay.**
- Loss of local identity and community.**

1. Fractured governance.

- Reagan 'forebad' use of 'sustainability' in US in 1980's – loss of global leadership.**
- Innovation moved to Europe, Canada, Japan, Australia...New Zealand.**
- States, regions and cities filling the vacuum where national govt is weak..**

- **Sustainability re-emerging in the US as a word of politicians in cities and regions, eg New York.**
- **SustainLane sustainable cities list.**
- **42 cities with sustainability programs (Portney)**
- **Australia a head start.**

Hope for the future

The Western Australian State Sustainability Strategy



A VISION FOR QUALITY OF LIFE
IN WESTERN AUSTRALIA



September 2003

A better place to live

**WA State
Sustainability
Strategy was the
first of its kind in the
world. Why?
Global resource
companies, and
green election in
2001...**

www.sustainability.dpc.wa.gov.au

2. Climate change and oil vulnerability.

Solar Urbanism in Europe



Healthier buildings...

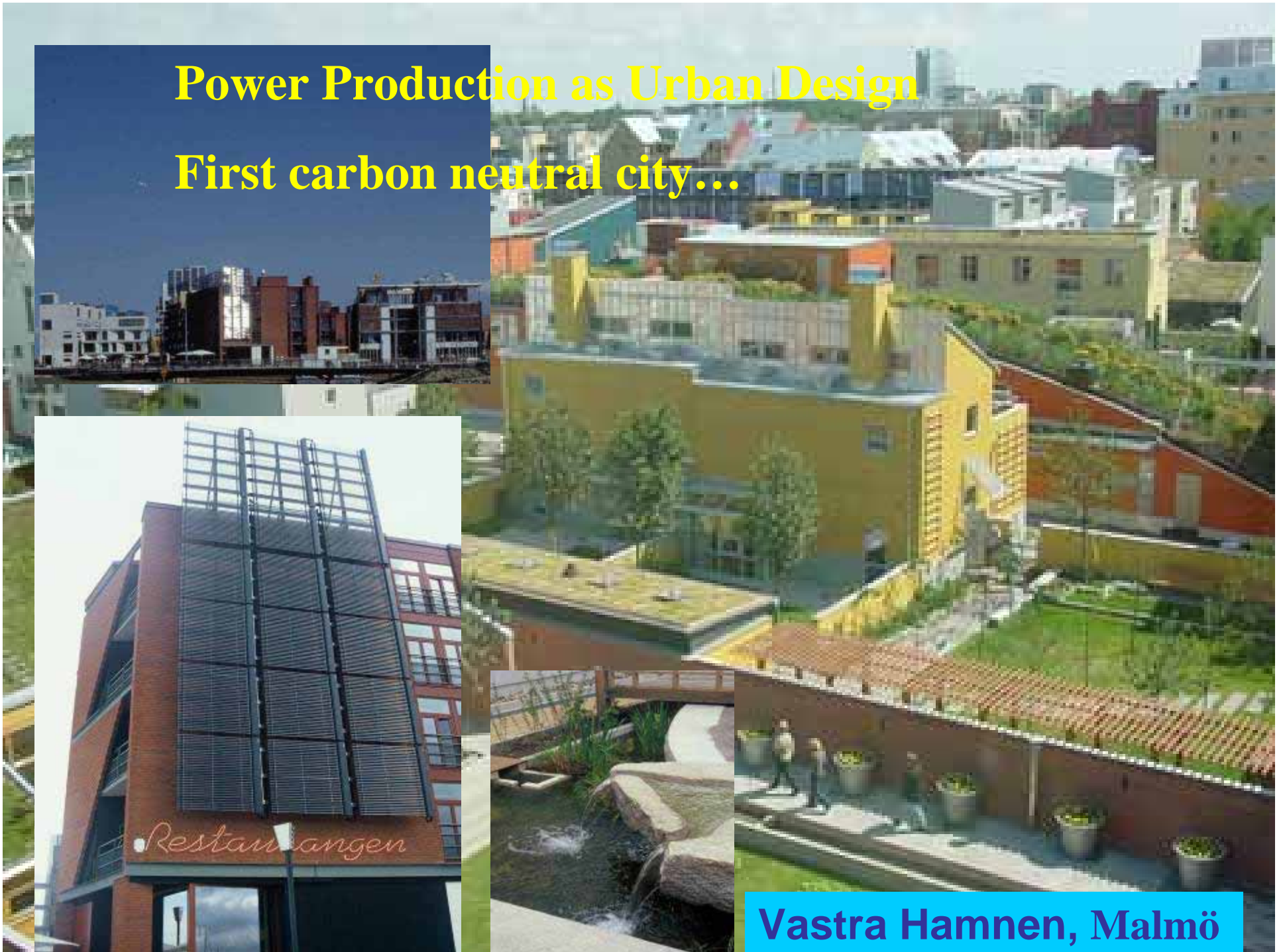


Beddington Zero-Energy Development, London

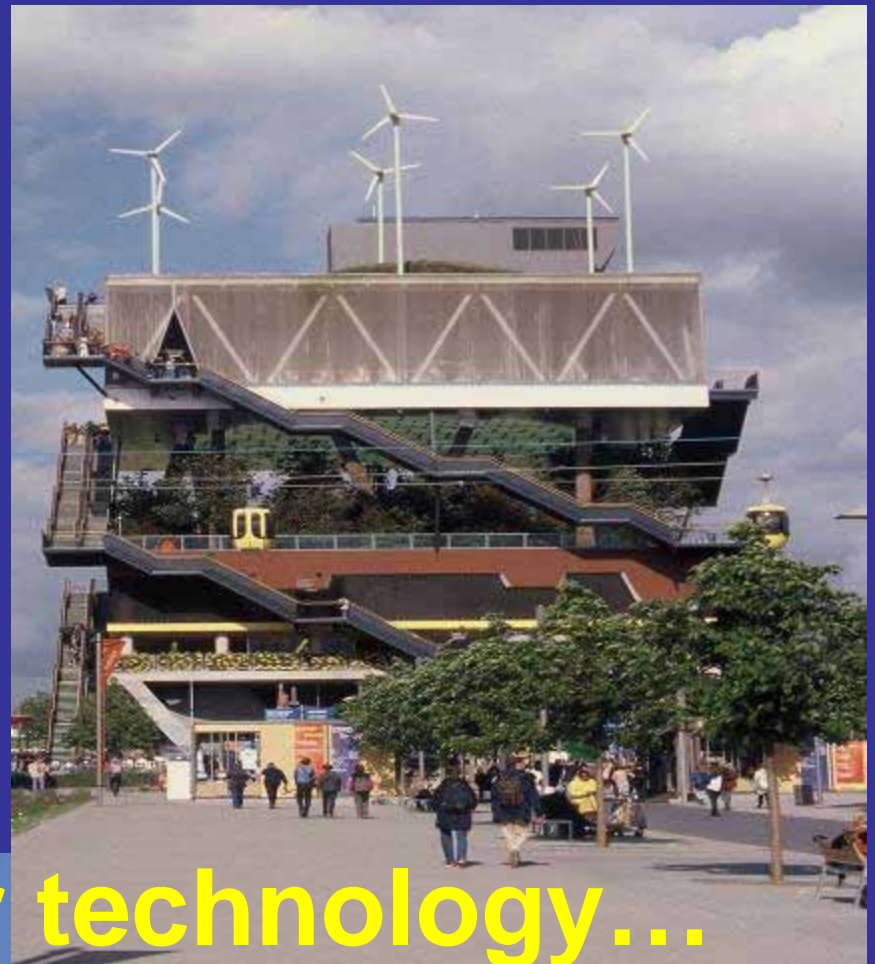


Power Production as Urban Design

First carbon neutral city...

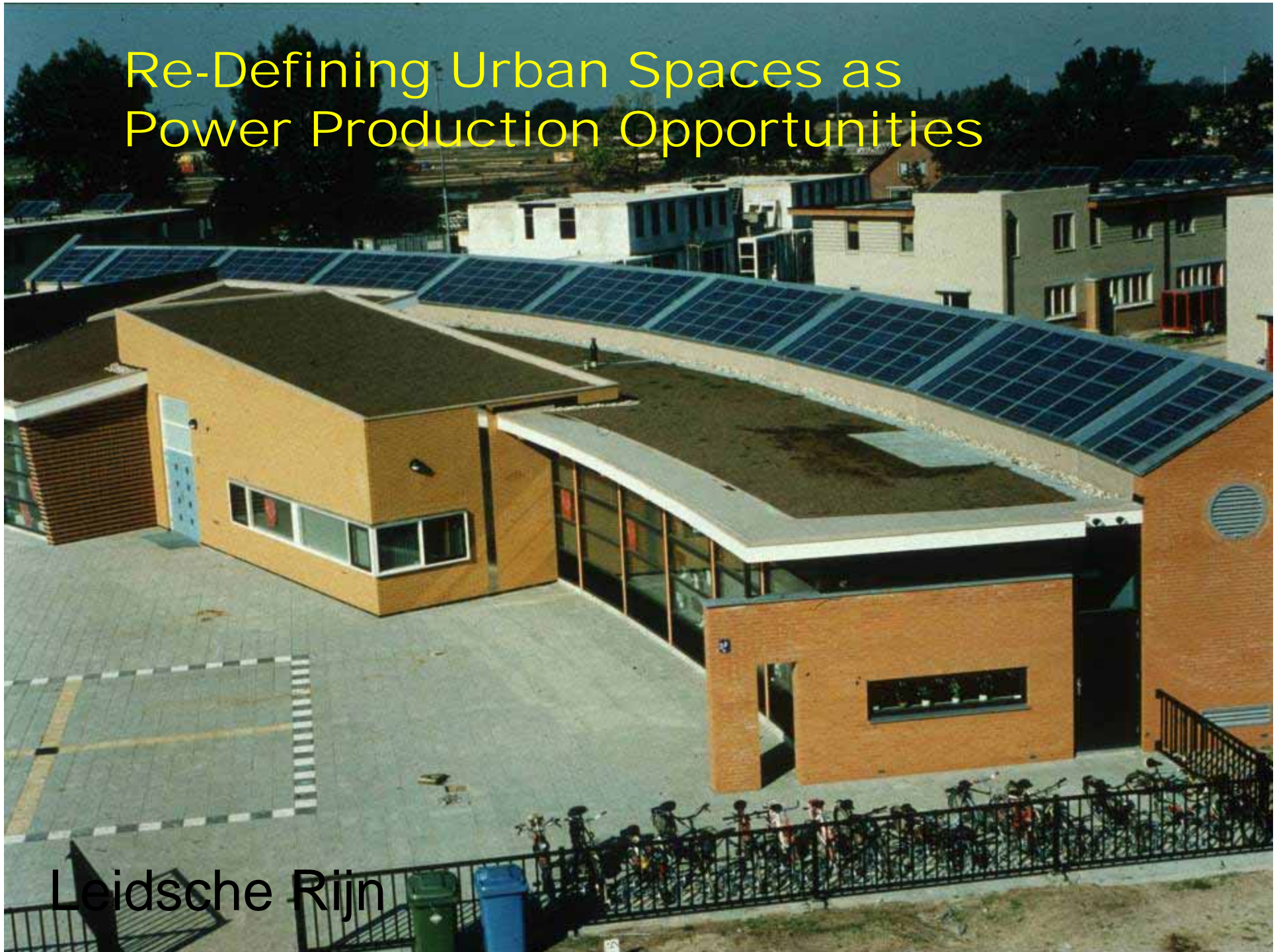


Vastra Hamnen, Malmö



European solar technology...

Re-Defining Urban Spaces as Power Production Opportunities



Leidsche Rijn



Rizhao Solar City, China

Remaking the Way
We Make Things

US leadership...

cradle
to
cradle

William McDonough & Michael Braungart













Chicago – goal to be US leader in green urbanism,



Bike facilities
Green Roofs

Worldwatch - SoW 2007 - Chicago



New York City - Green buildings and renewed transit with a Sustainability Plan to reduce 30% ghg by 2030



Millennium Towers



Freedom Tower



Bank of America Tower



The Solaire

US climate change and oil vulnerability....

- **The Al Gore ‘tipping point’.**
- **370 cities signed up for Kyoto.**
- **New York 30% by 2030.**
- **North East states climate change initiative – cap and trade.**
- **California ...**

California

- **California Solar Initiative 2006 - \$3.2 billion in rebates for solar technologies3000 MW.**
- **California vehicles regulation 2006 – 30% less ghg by 2016. Being challenged in court by auto co's and Federal govt.**
- **California Climate Bill AB32 2006 – sets cap of 25% less ghg by 2020. Innovative co's can trade with those who find it hard.**

- **Green building – 600 LEED certified; 14,000 attended Green Building Council conference, 2006.**
- **Big companies now lobbying Bush for a cap and trade scheme for national uniformity and opportunities in innovation.**



Bunbury Eco-Home, in partnership
with TAFE

WATCH "D-DAY: MEN & MACHINES" THIS MONTH ON NATIONAL GEOGRAPHIC CHANNEL

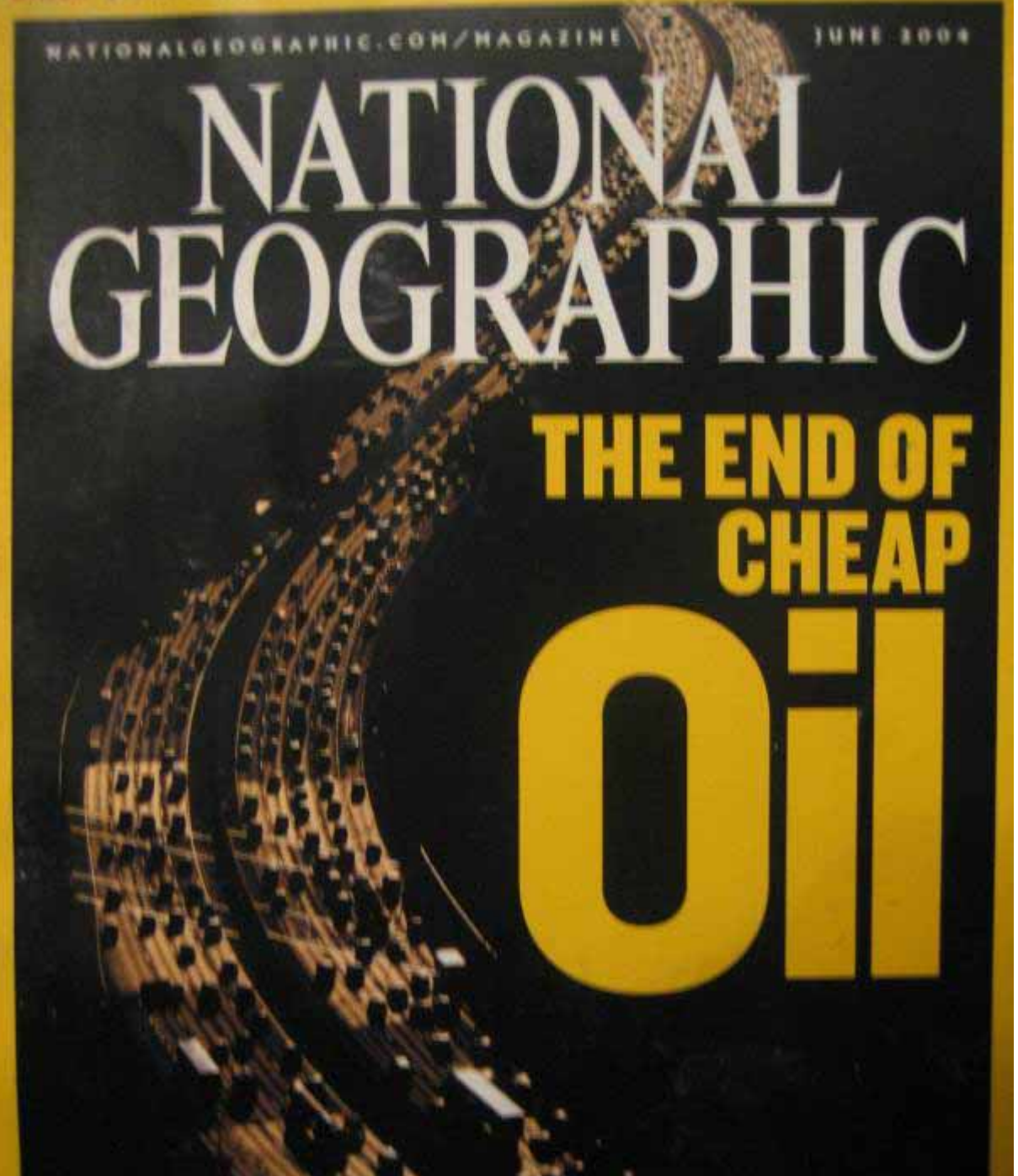
NATIONALGEOGRAPHIC.COM/MAGAZINE

JUNE 2004

NATIONAL GEOGRAPHIC

**THE END OF
CHEAP**

Oil



Peak oil...

- The elephant in the bedroom...
- Bush 20% gasoline reduction in ten years (State of Union, 2007) but no plan.
- 14 cities peak oil commitment.



3. Urban sprawl and automobile dependence.

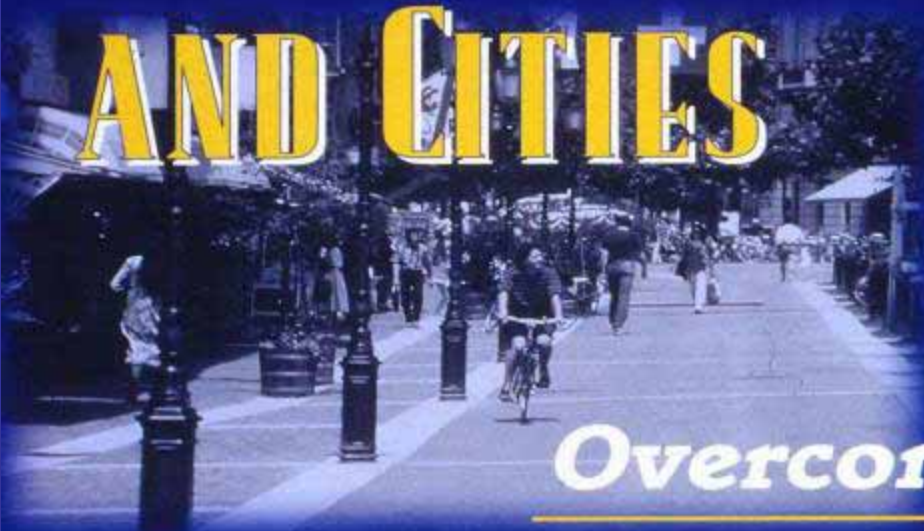
Hope in a time of oil-derived terrorism...?

Only if cities are
changed as well as
alternative fuels



Spencer Platt / Getty Images

SUSTAINABILITY AND CITIES

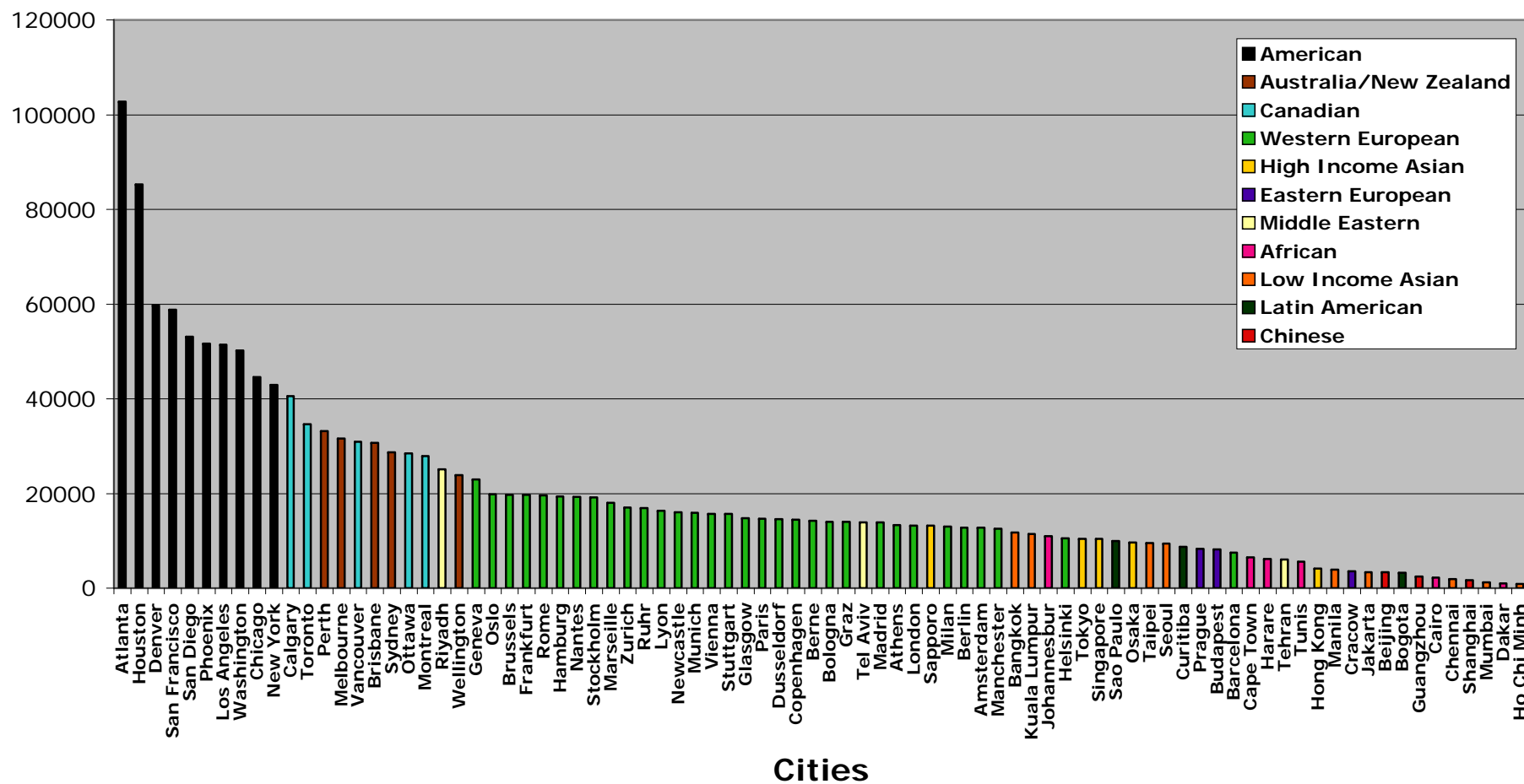


*Overcoming
Automobile
Dependence*

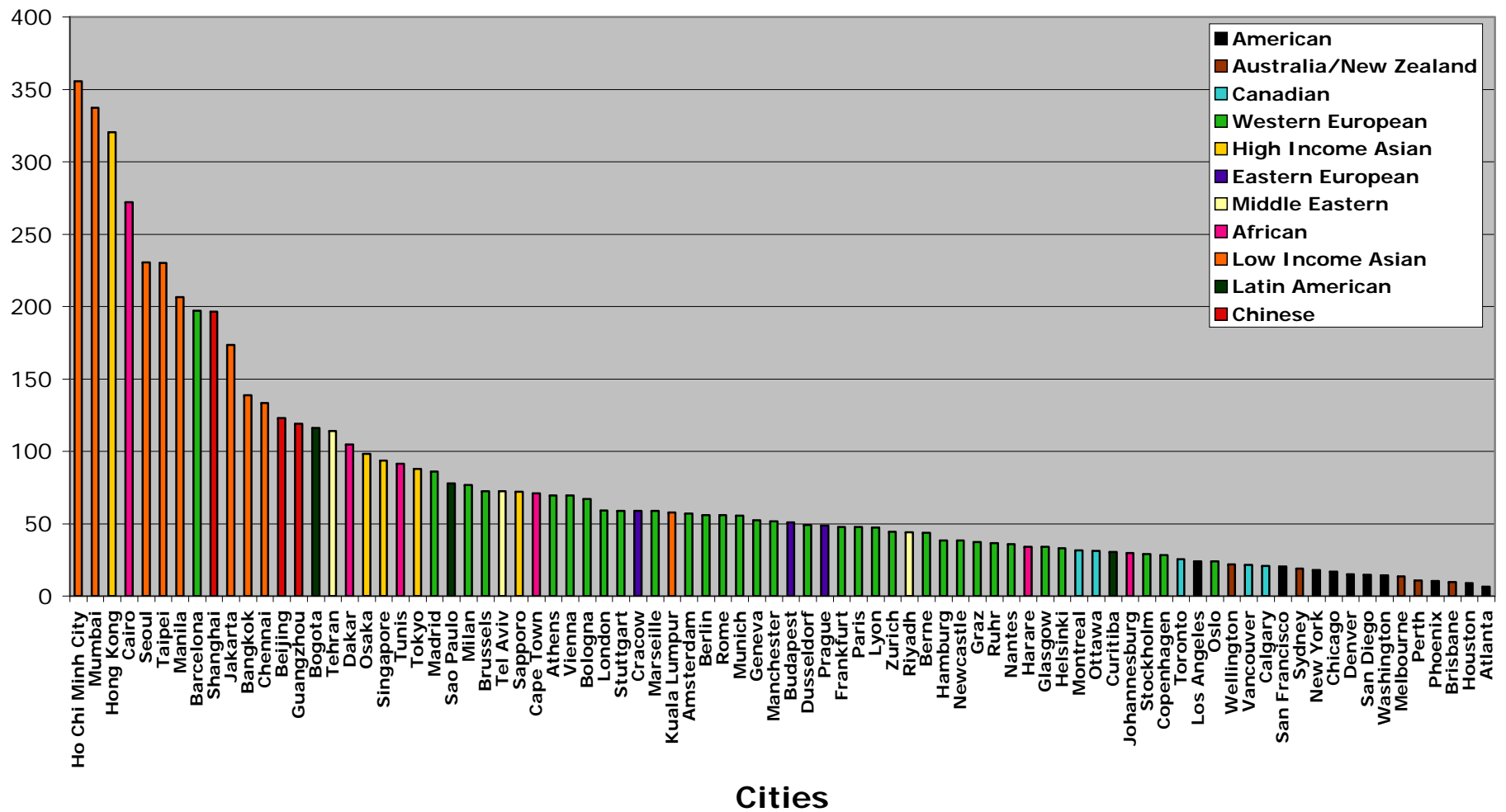


PETER NEWMAN & JEFFREY RENWORTHY

Private Passenger Transport Energy Use per Person, 1995

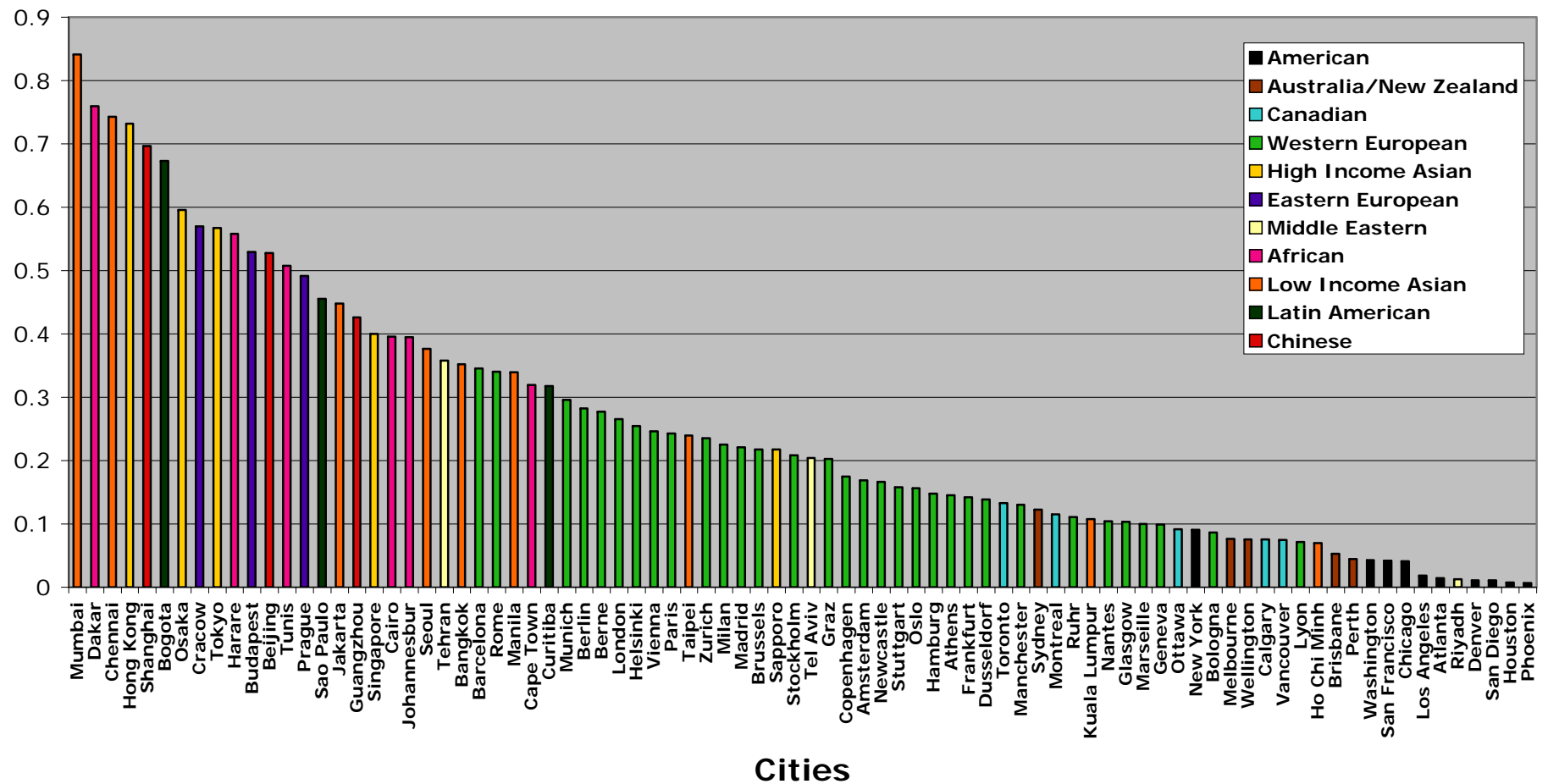


Urban Density, 1995 (Persons/Ha)

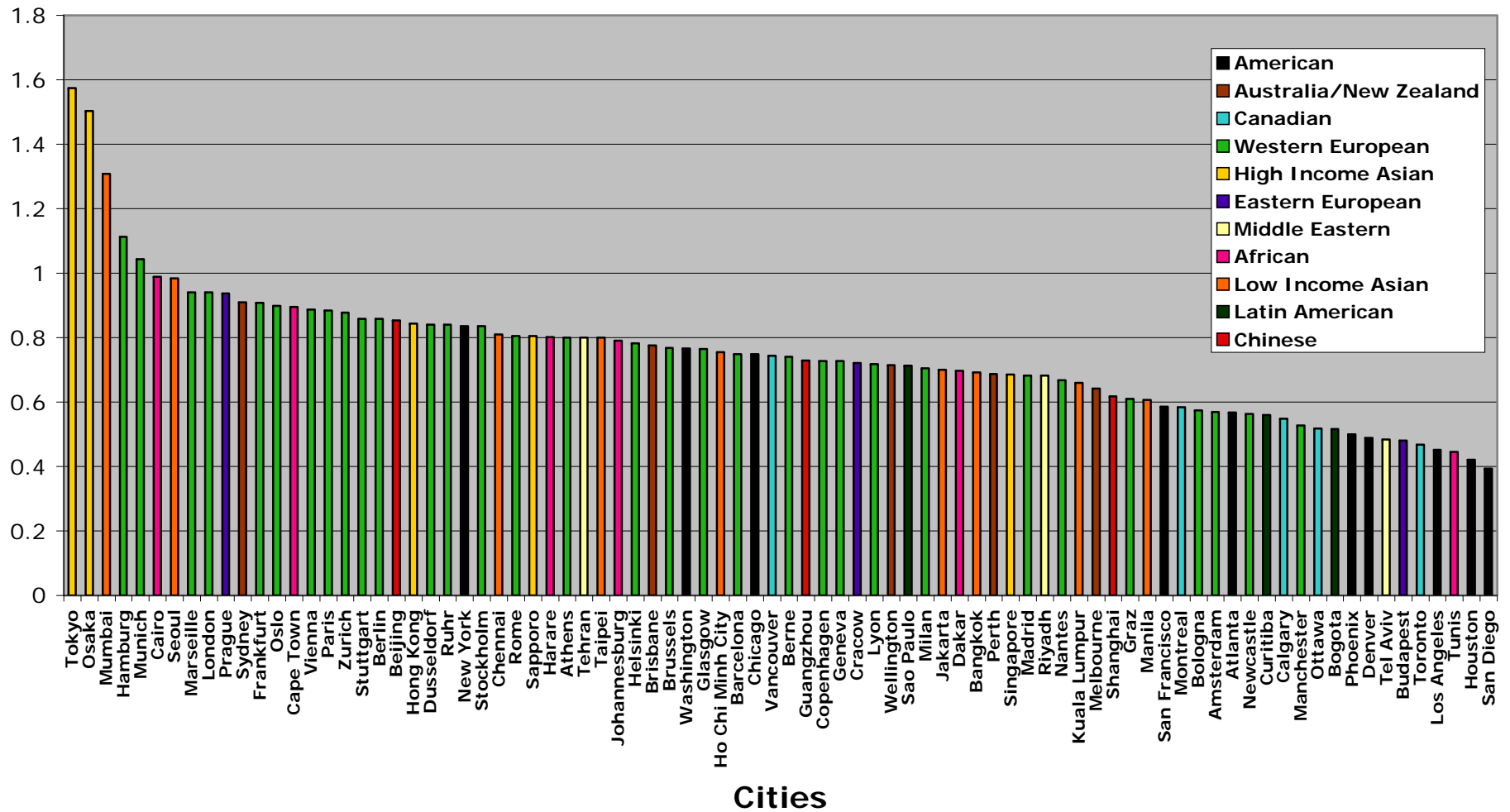




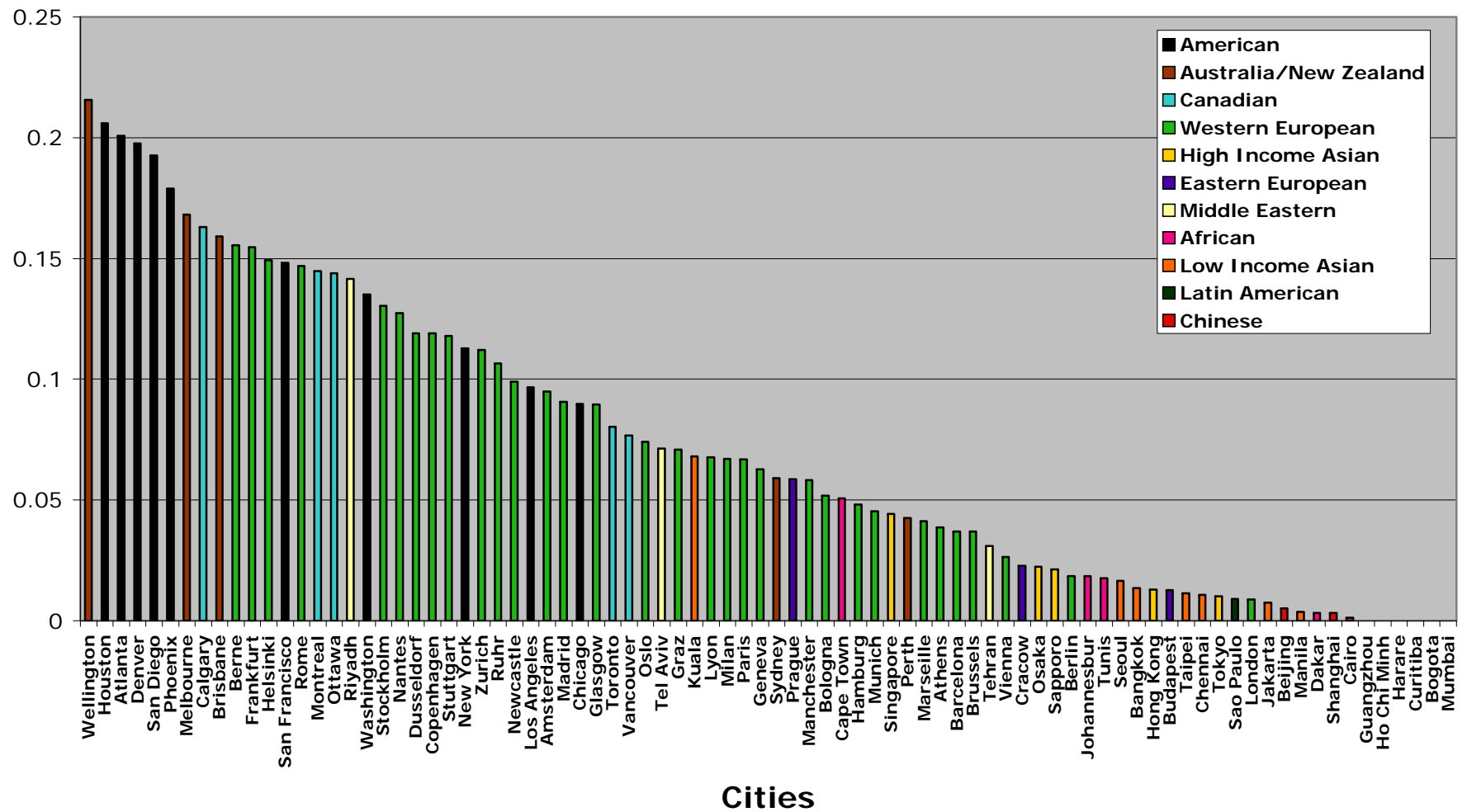
Proportion of Total Motorised Passenger Kilometres on Public Transport, 1995



Ratio of Public to Private Transport Speed, 1995



Length of Freeway per Capita, 1995 (metres)



Database on ISTP website:
sustainability.murdoch.edu.au

Two big policy areas...

- Transit
- Walking/cycling

**IT ALL DEPENDS ON TRANSPORT
INFRASTRUCTURE PRIORITIES.**

Transit revolution...chronology

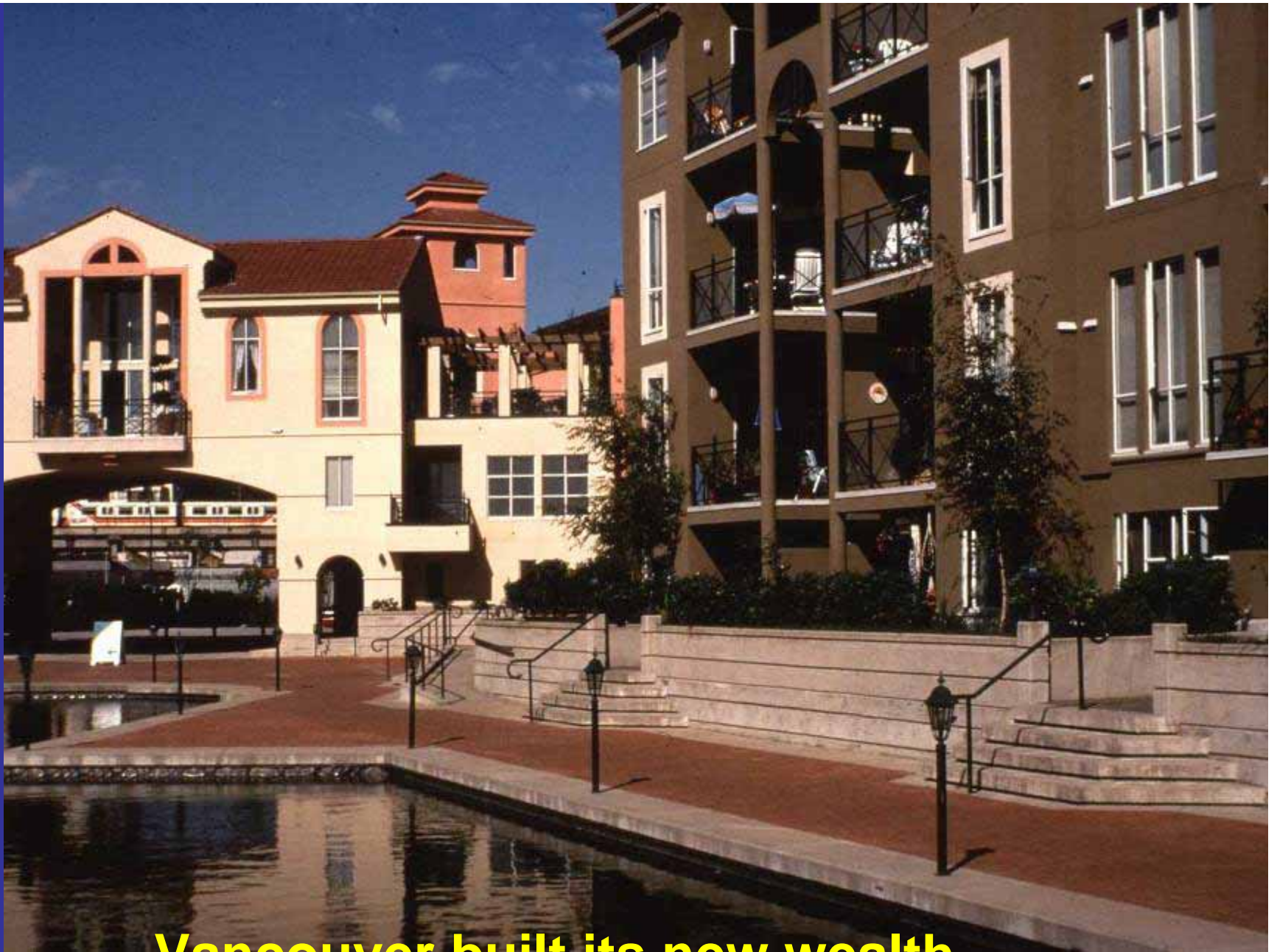
- Small European cities
- Canadian cities
- Washington, Portland and Perth
- Other US and Australian cities
- Big European and US cities
- Third world cities...



Strasbourg recreated its city center
around an LRT

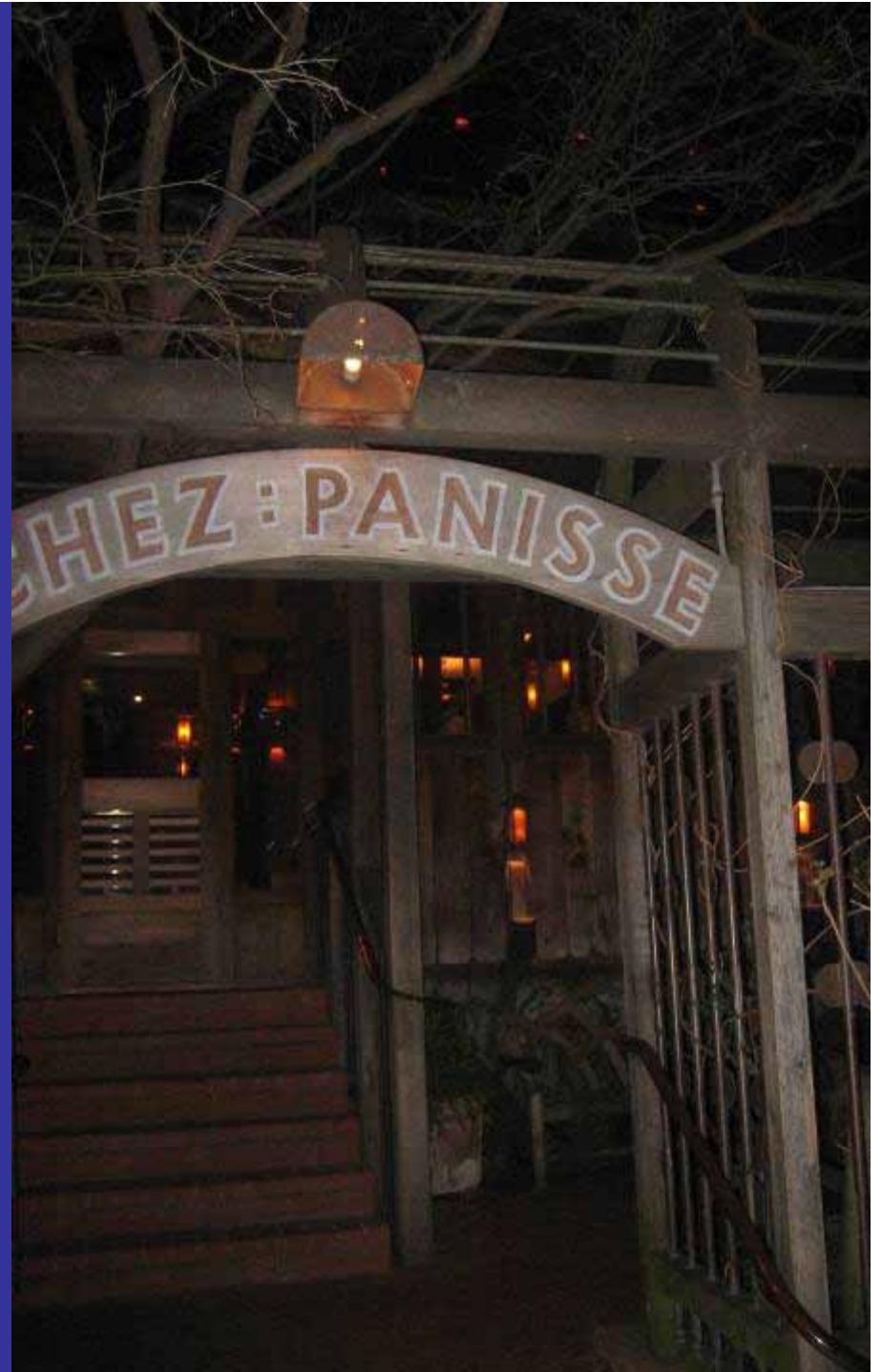


Many European cities such as Zurich have developed new urban villages around light rail.



**Vancouver built its new wealth
around it...**

Alice Wood
started slow food
restaurant in
Berkeley and
moved into
schools –The
Edible
Schoolyard...
now the whole
school district.



100 mile menu and thanksgiving...



The Kodja Place



© Craig McVee Kodja Creations Kojonup Western Australia

Noongar Seasons
Kojonup Western Australia









Indigenous employment is a key sustainability issue...

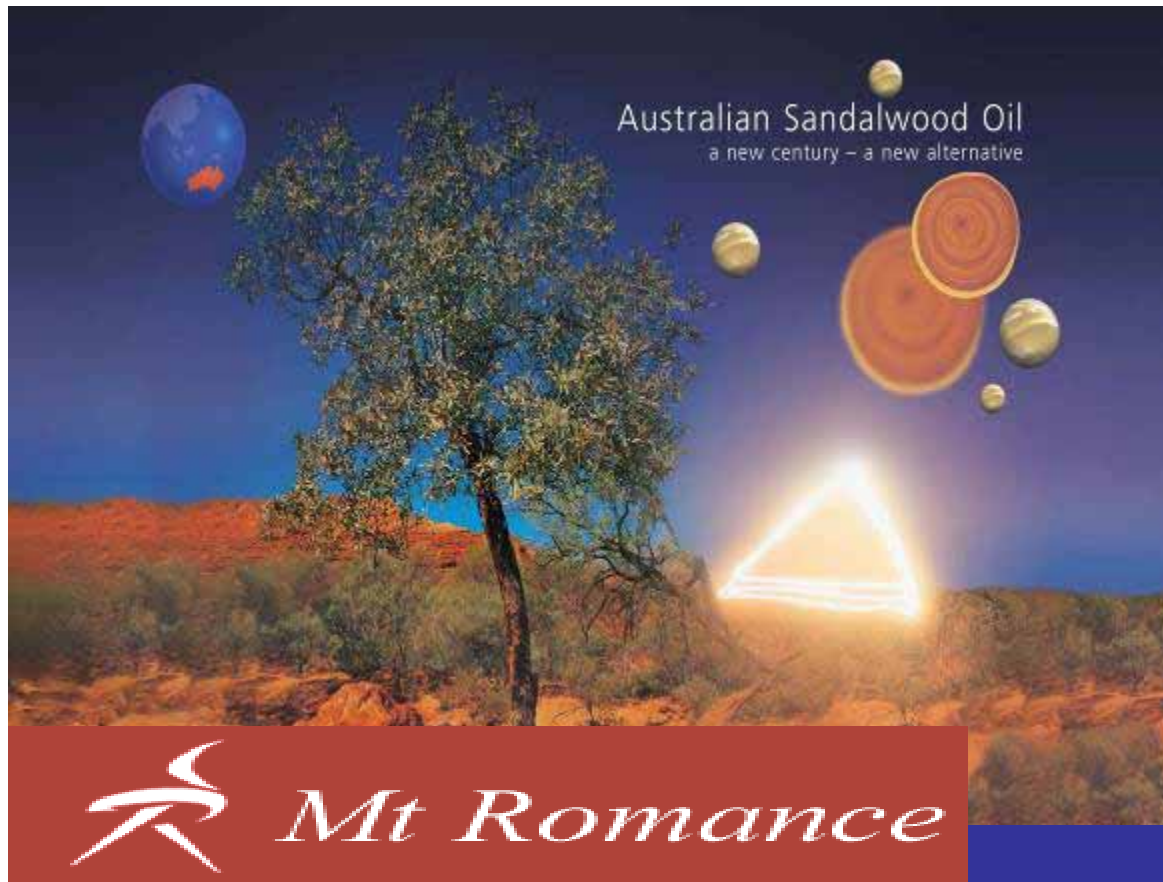


‘Unless mining can create a legacy of social value we have no right to mine.’ Brendan Hammond, CEO Argyle Diamonds.

The Argyle story...

- Largest diamond mine in the world.
- Stopped closure in late 90's by having a 'sustainability makeover'.
- Concluded that their legacy or 'enduring value contribution' would include Indigenous employment skills.
- From 0% to 25% in 5 years; goal 40% and 80% local.
- Shareholder value went from \$200m to \$2b in the 5 years.





Indigenous Protocol



Protocol has been developed and approved by the Kutkububba community (Mardu people) that provide royalties and heightened environmental management of the sandalwood species in harmony with the land's custodians.

Is anyone doing it all?

European leadership... Vauban Freiburg Eco-village with car-free housing.













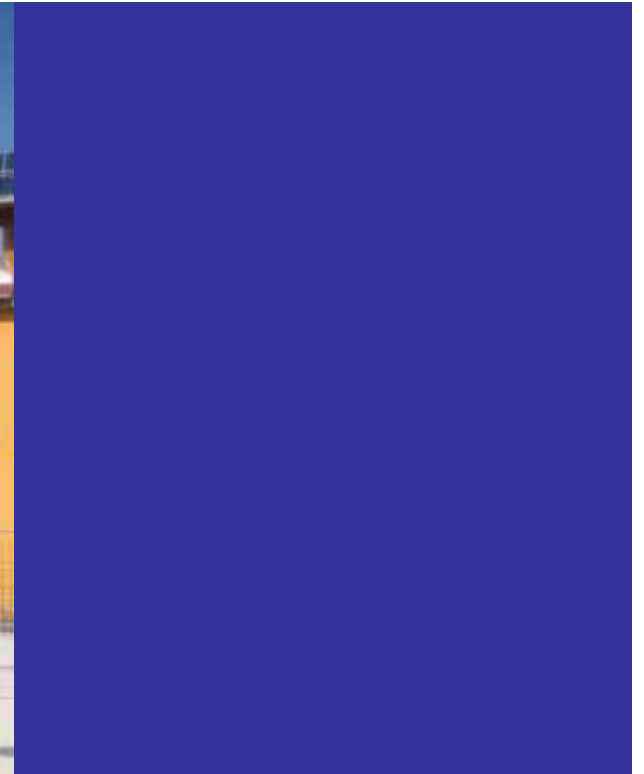














The new 'resilient, sustainable, solar city' demonstrations will be the global leaders in innovation.

Belmont Park Eco-City



- Perth's biggest TOD.
- Total water cycle approach with storm water retention, grey water recycling to track, groundwater recharge....
- Foreshore protection and restoration, groundwater 'soil curtain'..
- Vision Keeper for on-going governance and sense of place.

TRAVEL SMART



How have you got there this morning?

Developed first in Western Australia
Social marketing based on direct
intervention with householders receiving
educational materials on alternatives to
the car.

Consistent reductions in car use of 15-
20% when co-ordinated by local govt-
based programs.

- **Being applied to workplaces also.**



4. Regional disparities and inequity.

Most sustainability transitions require regional plans and governance...

- Transport, biodiversity, affordable housing, water, waste, energy...
- Regional governance based on voluntary commitments from local govts or goodwill (eg NRM) rarely works.
- Failed dismally in the US.

Solutions...

- **Forming regional governance around groups of councils with statutory powers to manage sustainability issues.**
- **WA has this model. Perth regional planning, now Bunbury...Ningaloo Coast.**
- **Need to extend to all regions.**

5. Loss of biodiversity and bioregional decay.

- **Using native plants.**
- **Bush regeneration in cities.**
- **Water sensitive design.**
- **Cities as arks.**
- **Bioregional links.**

Lady Bird Johnson Wildflower Center Austin Texas.



classrooms
located
downstairs





**Native plants
for home and
bush
preservation**



Clear Paddock Creek, Fairfield, Sydney.

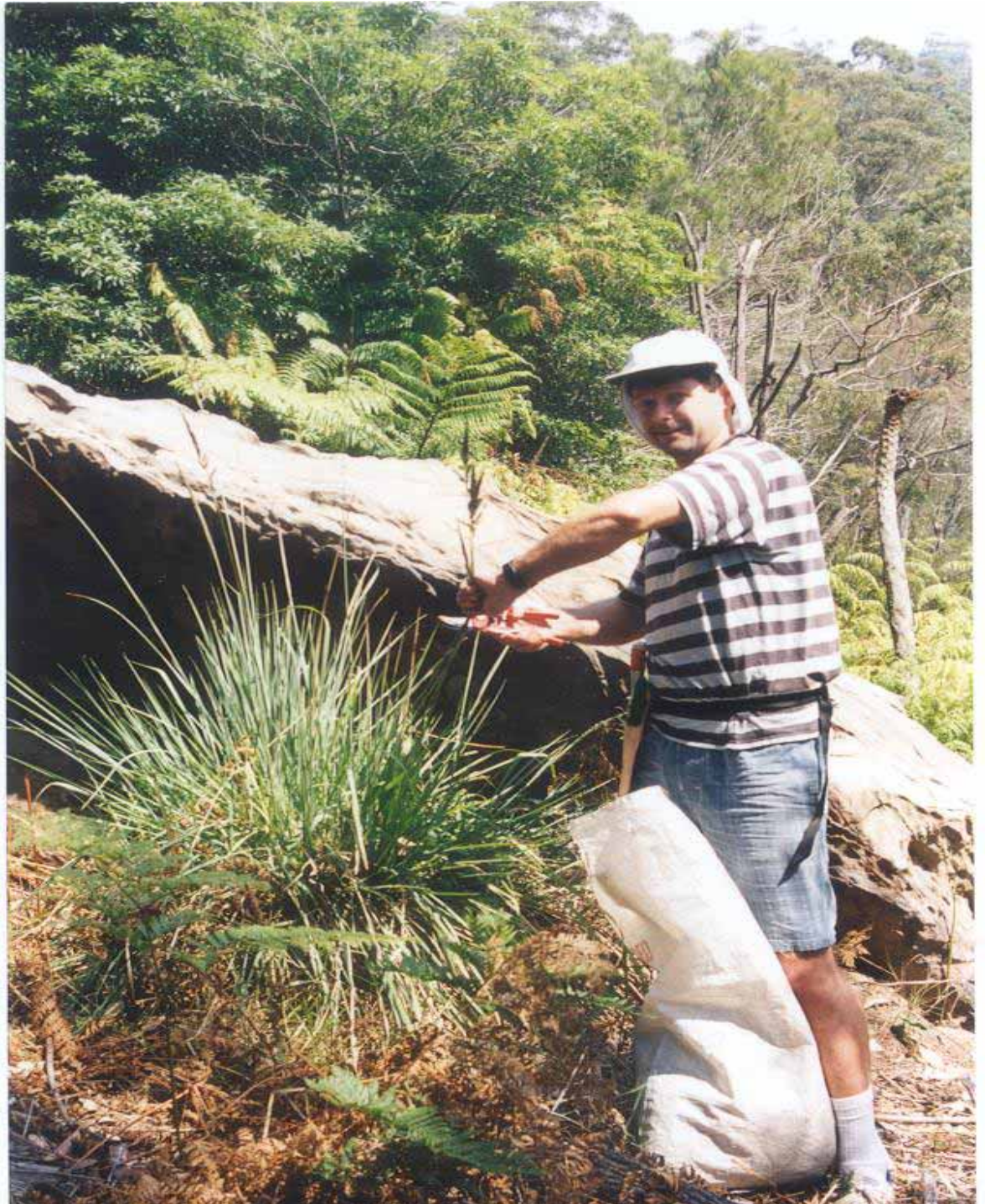








Volunteer
eradicating
weeds in
Hornsby Shire
– part of the
Biodiversity
Conservation
Strategy and
Action Plan.



Woylie and WA orchids – using the city as an arc.



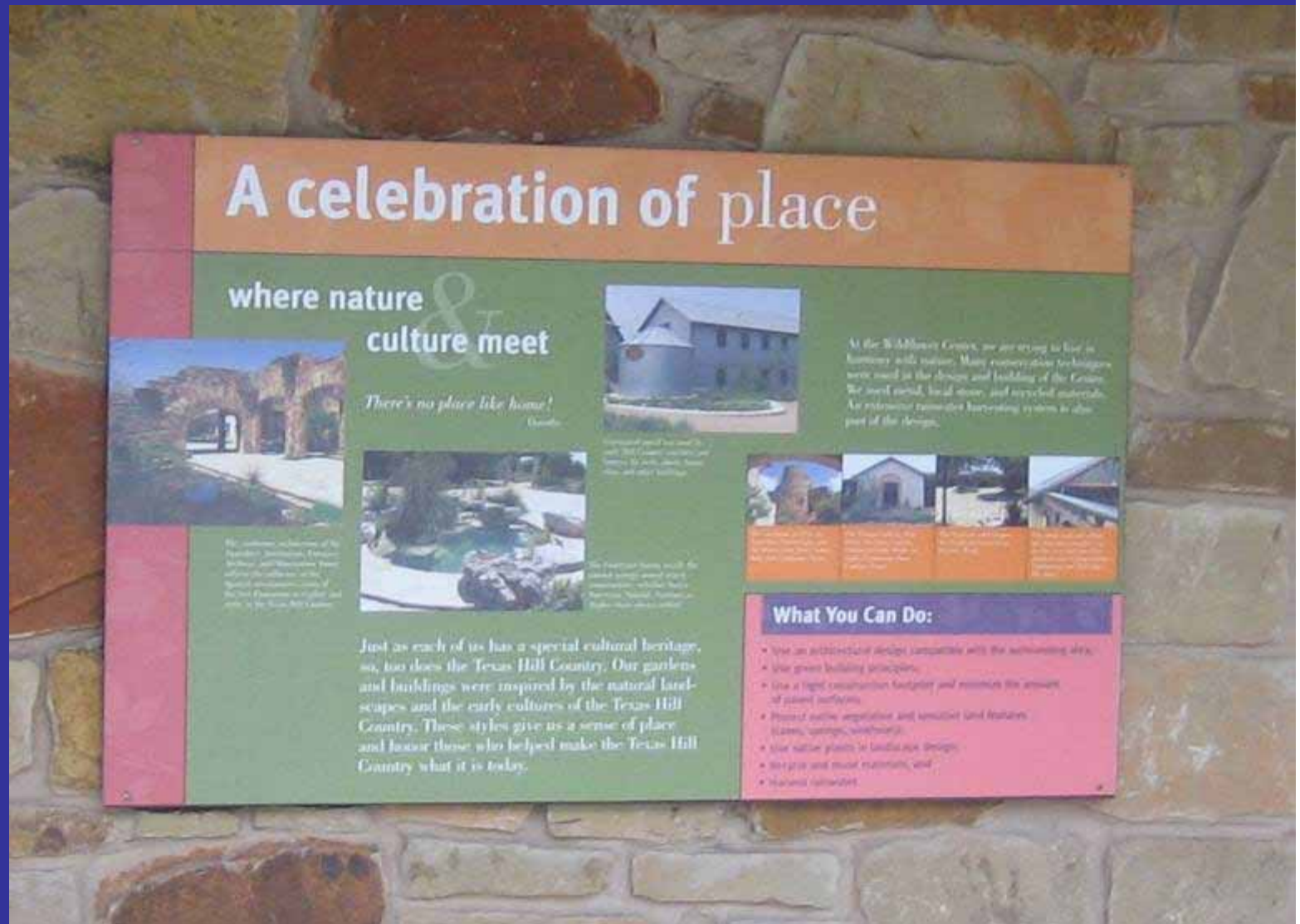
Gondwana Links....



6. Loss of local identity and community.

- **Creating sense of place with museums, educational centres, story telling...**
- **Local products.**
- **Local food.**
- **Indigenous innovations.**

Creating 'sense of place'



Buying and promoting local products made with local materials



Fine woodcraft movement



**Local food movement...
slow food.**

The High Energy Cost Of Food





The SUV in the Pantry

Food in the US travels an average of 1500-2500 miles From field to plate....

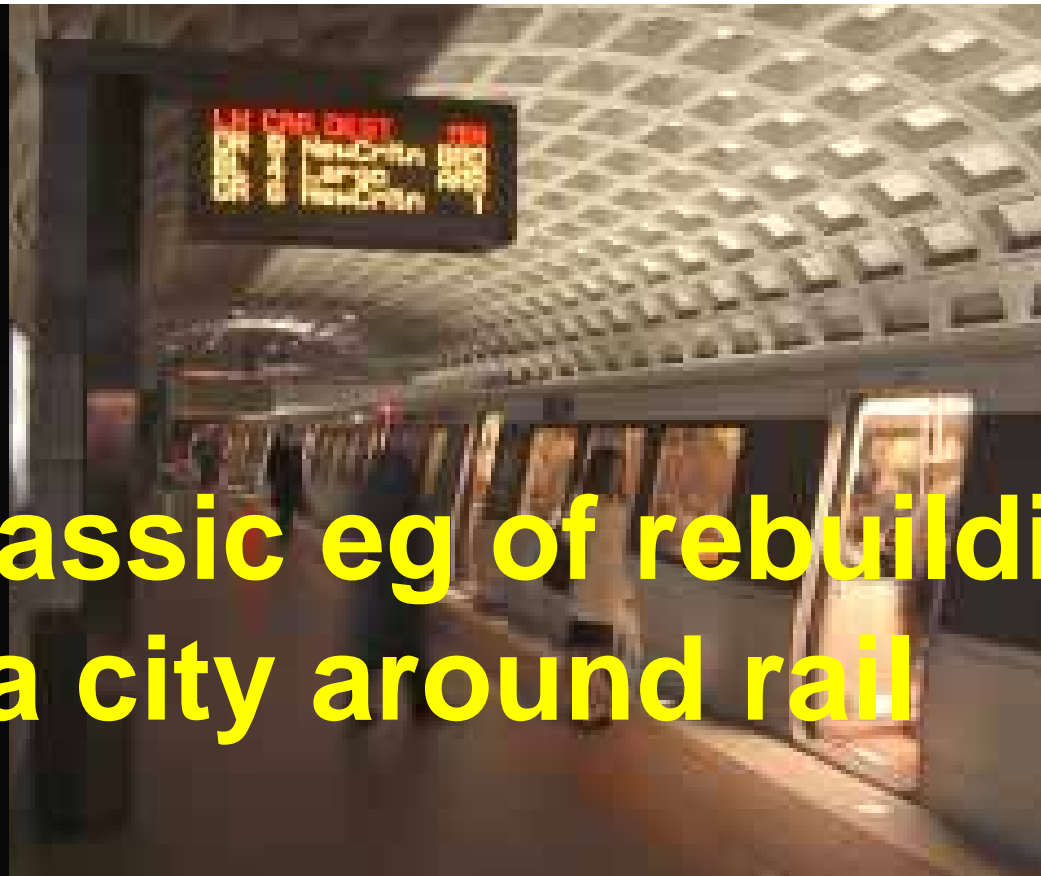
**Local food from the bioregion adds
Sense of Place and identity.
And reduces oil...**





**Community
supported
agriculture**

**DC classic eg of rebuilding
a city around rail**



Washington DC cf Atlanta

- 1960's similar sized cities – both looked at transport future.

- DC chose Metro – controversial.

From 0 to 206 mill trips/yr since 1976,
86 stations, 106 miles.

- Atlanta went with freeways until recently.

38 miles transit, 50 million passengers *in inner ring only*. 18 counties of sprawl with no transit.

- DC 50 GJ/person Atlanta 103 GJ/person.



Portland..

**Even Minneapolis
now...**





**Perth began its rail revival in 1983; rebuilding and extending created 182 kms electric rail.
7 mill pass/yr to 47 mill/yr in 15 years**

“You cannot have great cities without great transport access. Any City that is predominantly car-dependent will be at a major disadvantage in the 21st century.”

Stephen Roulac. 1999

Australian Financial Review, July 1.



New southern line will complete 180 kms of electric rail with 72 stations in 20 years.



SUSTAINABLE
TRANSPORT
ENERGY
PERTH

DAIMLERCHRYSLER



MURDOCH
UNIVERSITY
PERTH, WESTERN AUSTRALIA



Natural Heritage Trust

Helping Communities Help Australia
An Australian Government Initiative



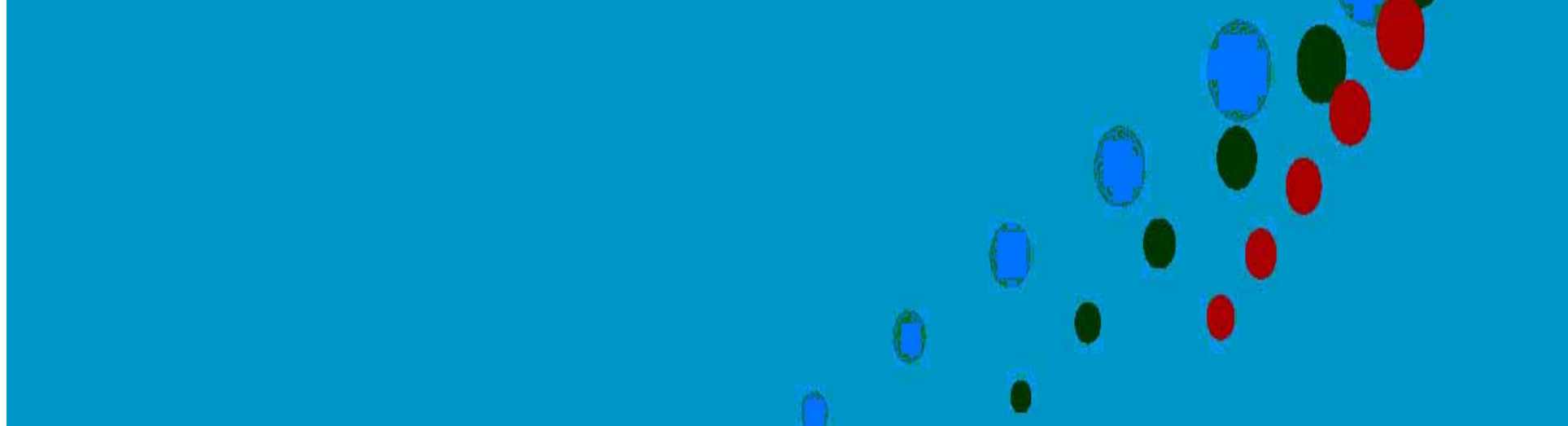
Australian Government
Australian Greenhouse Office



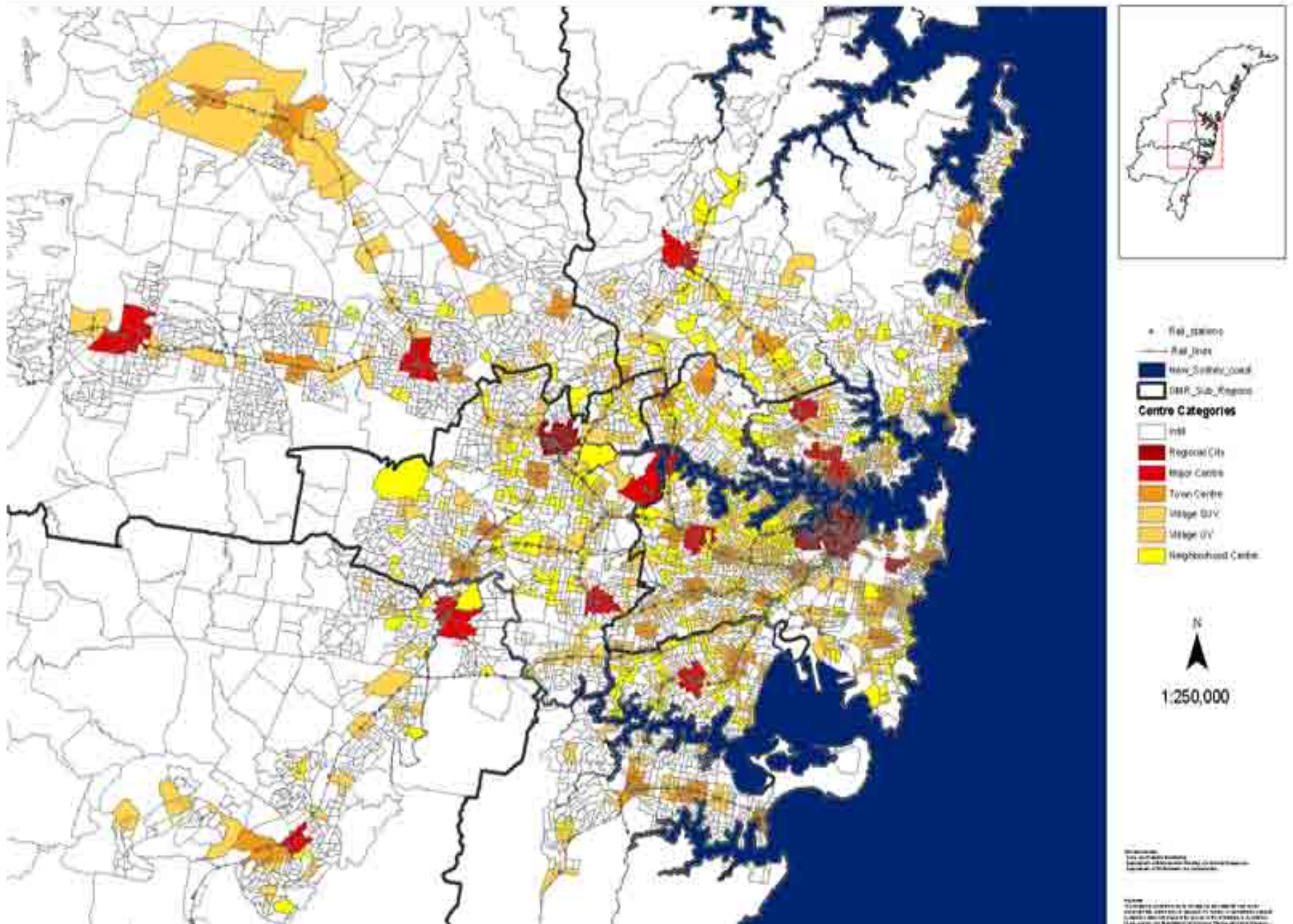


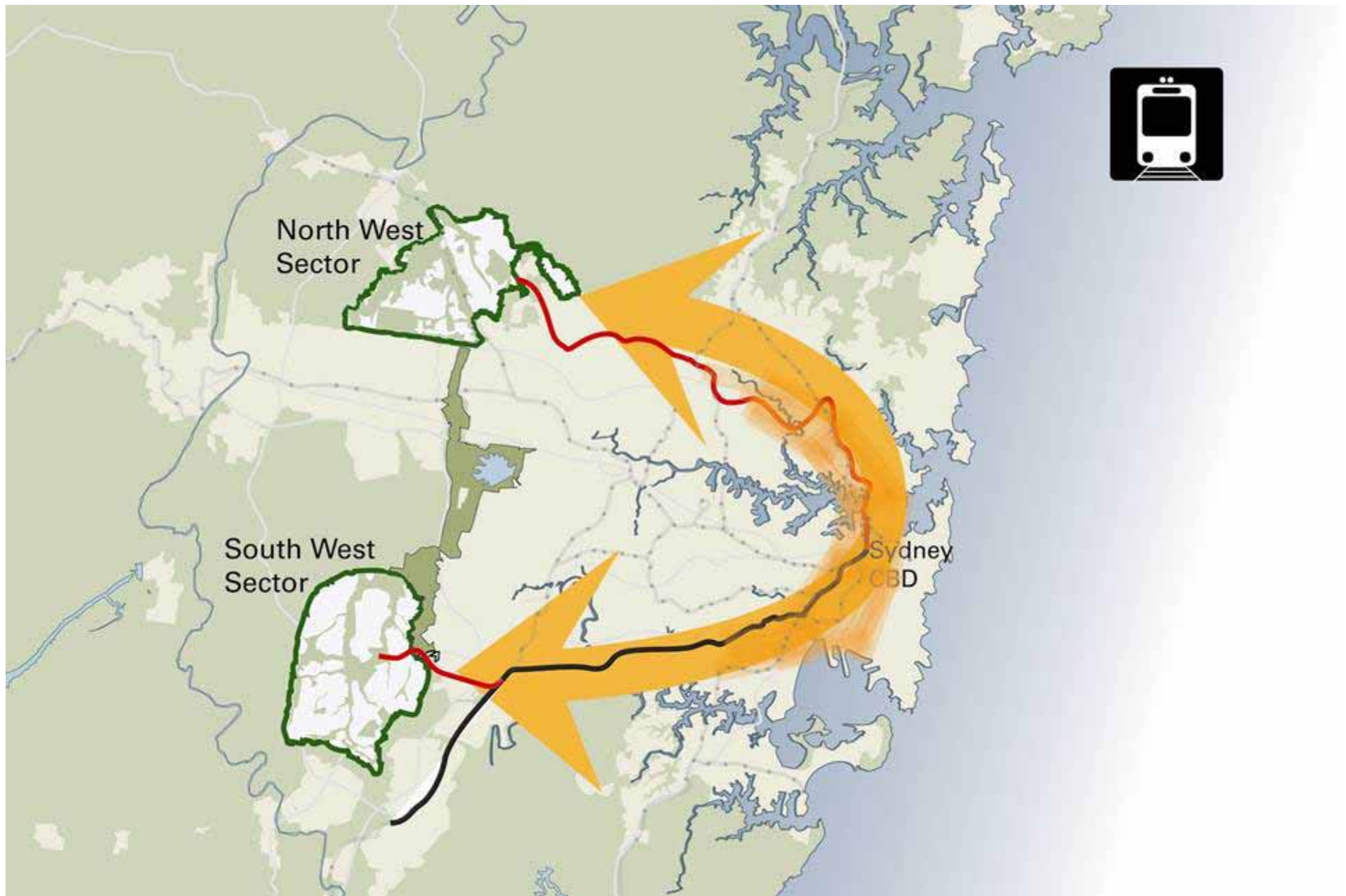


metropolitan STRATEGY



Model of the city showing centres and corridors





'GLOBAL ARC' RAIL

US cities

- 100 new rail projects.
- 25% increase in transit patronage 1995-2005.
- Between 2000 and 2030 between 25 and 42 extra fixed transit systems.
- 3,349 stations and an extra 720 being built. 'Beacons of living' Neil Pearce.

id Transit

rapid transit (119 miles Rail, 18 miles Bus Rapid Transit)
54 stations
1 dollar
passes at transit jackson-bidder
it connects throughout the region

FASTTRACKS
POTENTIAL

Central Corridor



Denver
6 new lines
US \$5 b
voted
in.

Big European and US cities...

- London, Paris, Berlin...
- Chicago, San Francisco,
New York \$13 billion



China...

- Beijing building the biggest Metro in the world
- Most other Chinese cities hit the traffic wall and are now building transit.



Photo © Allen Zigel

**Curitiba:
left the
third
world
through
its transit
system.
BRT new
flavor...**



Hiawatha LRT MStP

Many LRTs are
being built as an
economic
development
mechanism.



State Center TOD, PB Placemaking



Street Cars...The new kid on the block.

- 11 present cities in the US
- 19 gaining approval SAFTEA-LU
- 9 committed but not at funding stage
- 15 evaluating...

Some very small cities eg Kenosha Wi





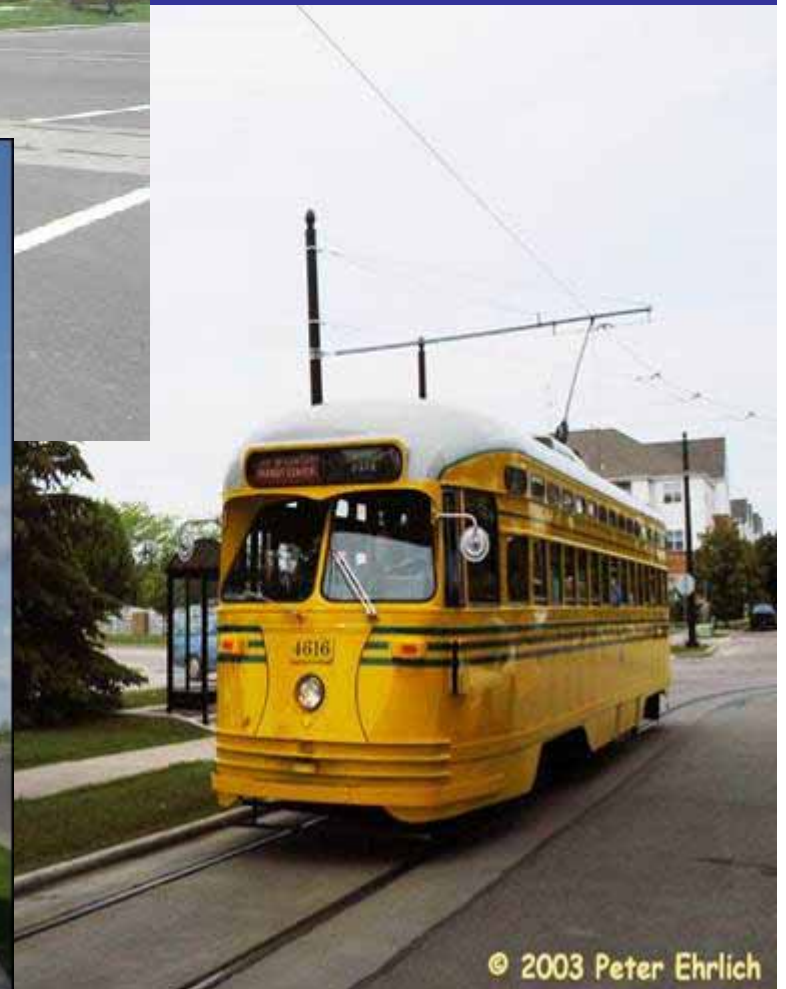
STREET SMART

STREETCARS AND CITIES IN THE TWENTY-FIRST CENTURY

*Edited by Gloria Ohland and Shelley Poticha
Reconnecting America*

The American Public

Kenosha, 90,000 pop



© 2003 Peter Ehrlich

Charlottesville Street Car







Importance of affordable housing for TODs

- **Increasingly dense central locations are being built for the wealthy.**
- **Lower income families on the fringe are using up to 40% of their income on transport.**
- **Need affordable housing strategies for all TODs.**

US rail revolution...

- **2000-2006 72% of transit ballot initiatives successful in 33 states (cf 34% in other initiatives).**
- **This is over \$110 billion of new transit.**
- **TOD's are happening... SAVING FAMILIES 20% OF THEIR INCOME.**

Centre for Transit Oriented Development and
Reconnecting America.

However...

- **Not enough to turn the titanic...**

Eg Virginia's transport budget is 8% for transit; California reduced transit budget as they announced their target for 25% greenhouse reductions by 2020.

- **MUST CONVERT MOST ROAD FUNDS TO SUSTAINABLE MODES.**



Walking and Cycling

- The forgotten child in transport...
- Changes the character of cities.
- Most cities have between 25% and 65% of trips walking/cycling, apart from American and Australian at less than 8%.



Vancouver lost 40,000 vehicles/day
and gained 100,000 walk/bike
trips/day in the 90's.



US cities have begun to remove freeways

- Milwaukee - helped revive city center.
- San Francisco - Embarcadero now a tree lined boulevard suitable for all modes.

‘COMPLETE STREETS’



People for Public Spaces:

- **‘Think of transportation as public space...’ David Burwell**
- **‘Road engineers are realising they are in the community development business not just the facilities development business’. Andy Wiley-Schwartz.**
- **The slow road movement.**

'Naked Streets'...



Copenhagen

30 year campaign to create people-oriented streets. Reduced car parking 2%/year



**27% use a car for work...the rest
use green modes.**





**Boulder: the first
small town
demonstrating
sustainability...now
the US 'most
desired city' to live
in.**



Pearl Street Mall-1976, Boulder, Colorado



Pearl Street Mall- present day

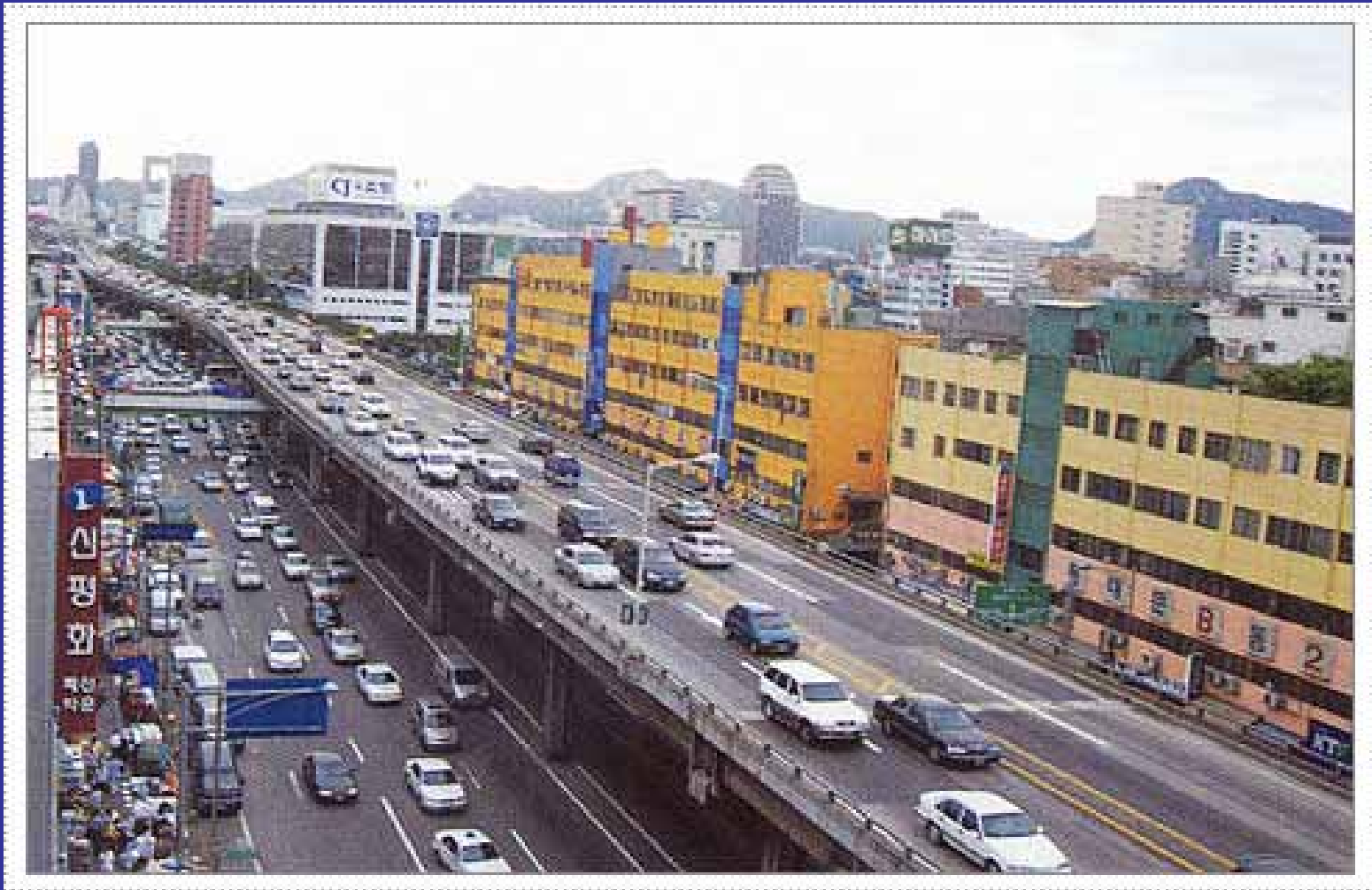
**Vision of 30% sust modes – so took
30% of transport budget. Bicycle
routes lace the town**





-1 Cheonggyecheon Area before Restoration

(<http://www.metro.seoul.kr/kor2000/chungaehome/en/seoul/2sub.htm/>)



-1 Cheonggyecheon Area after Restoration

(<http://www.metro.seoul.kr/kor2000/chungaehome/en/seoul/2sub.htm/>)



The re-opening of Aarhus River 1996 - 1998

