

# Transport and Alternative Energy for a Low Carbon Future - the role of autodependence

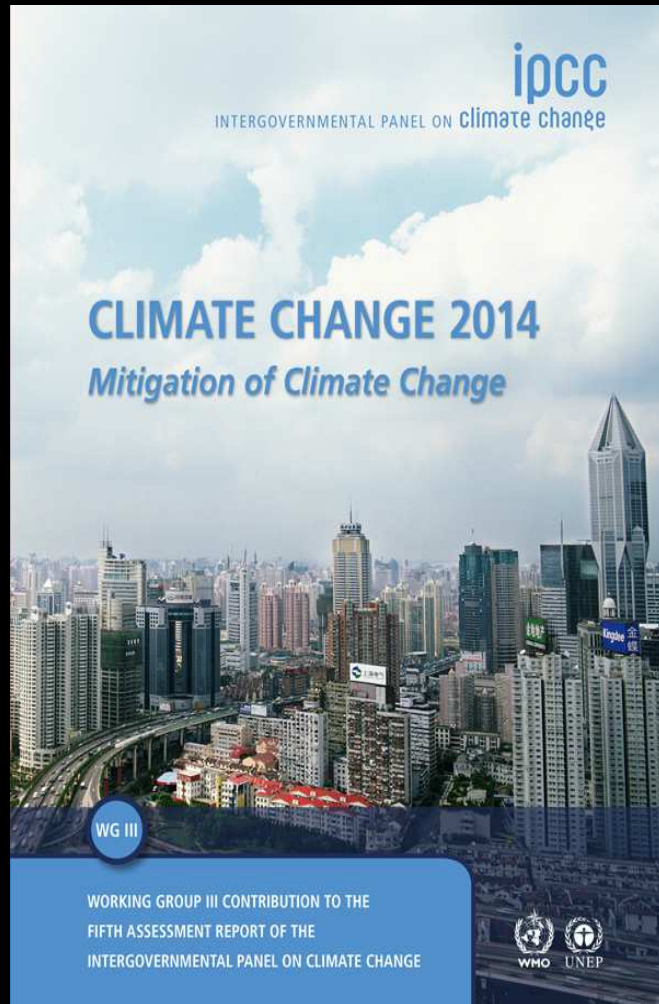
By

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Professor of Sustainability

CUSP, Curtin University

The challenge....

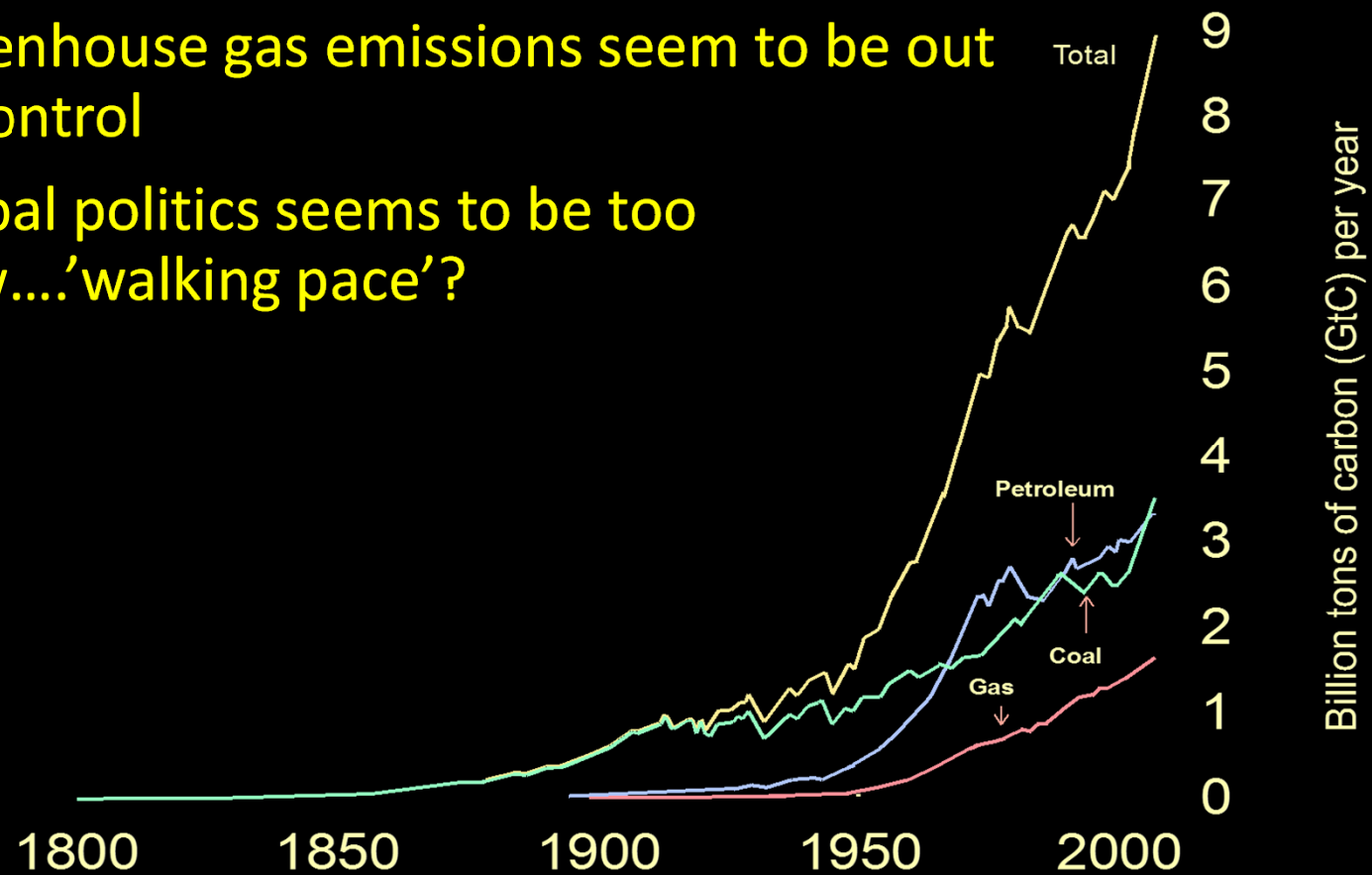


80% less  
CO<sub>2</sub> by  
2050  
to avert  
climate  
disaster



# The context...

- Greenhouse gas emissions seem to be out of control
- Global politics seems to be too slow....'walking pace'?



It seems too hard, but maybe not....



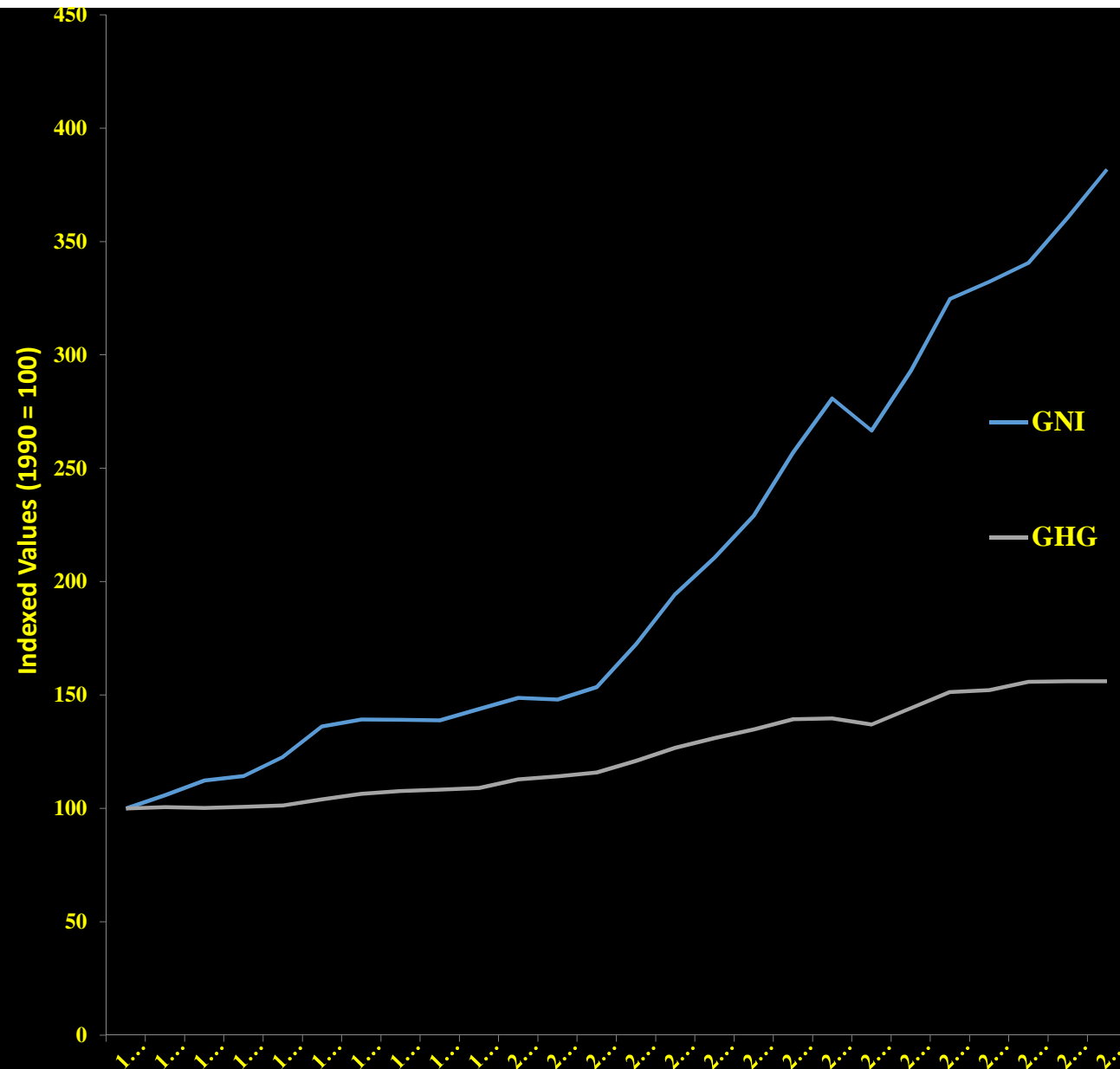


Turning  
point in  
**world  
history....**

GHG  
going  
**DOWN,**

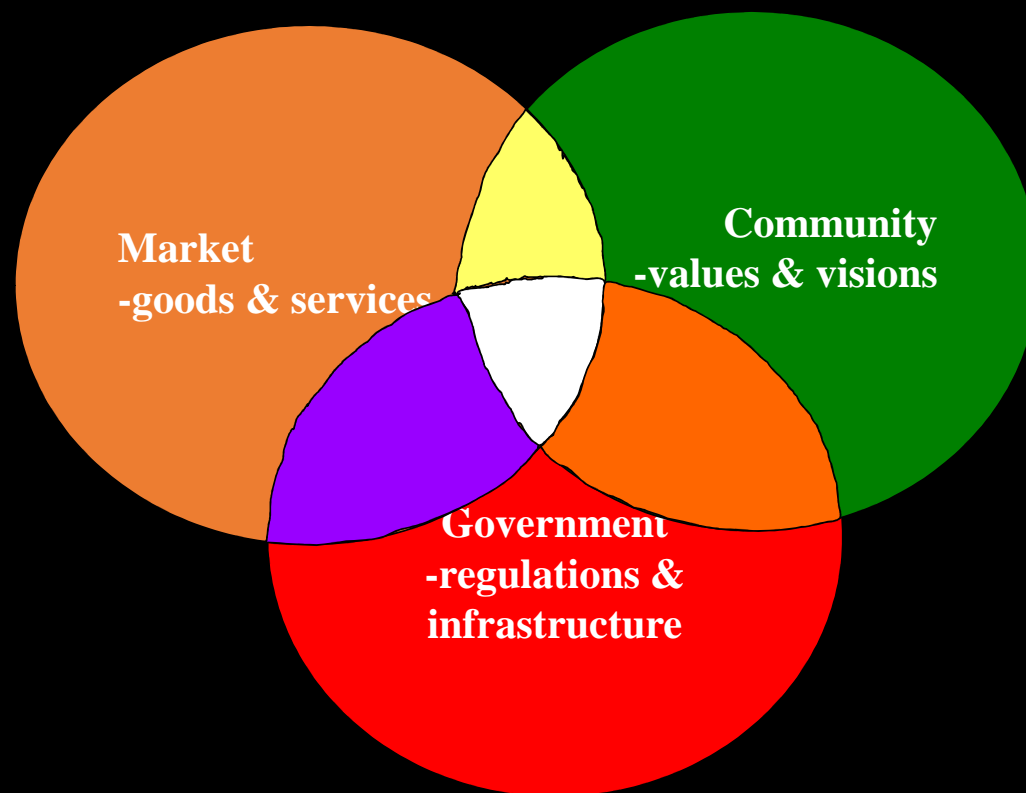
Wealth  
going  
**UP**

DECOUPLING...



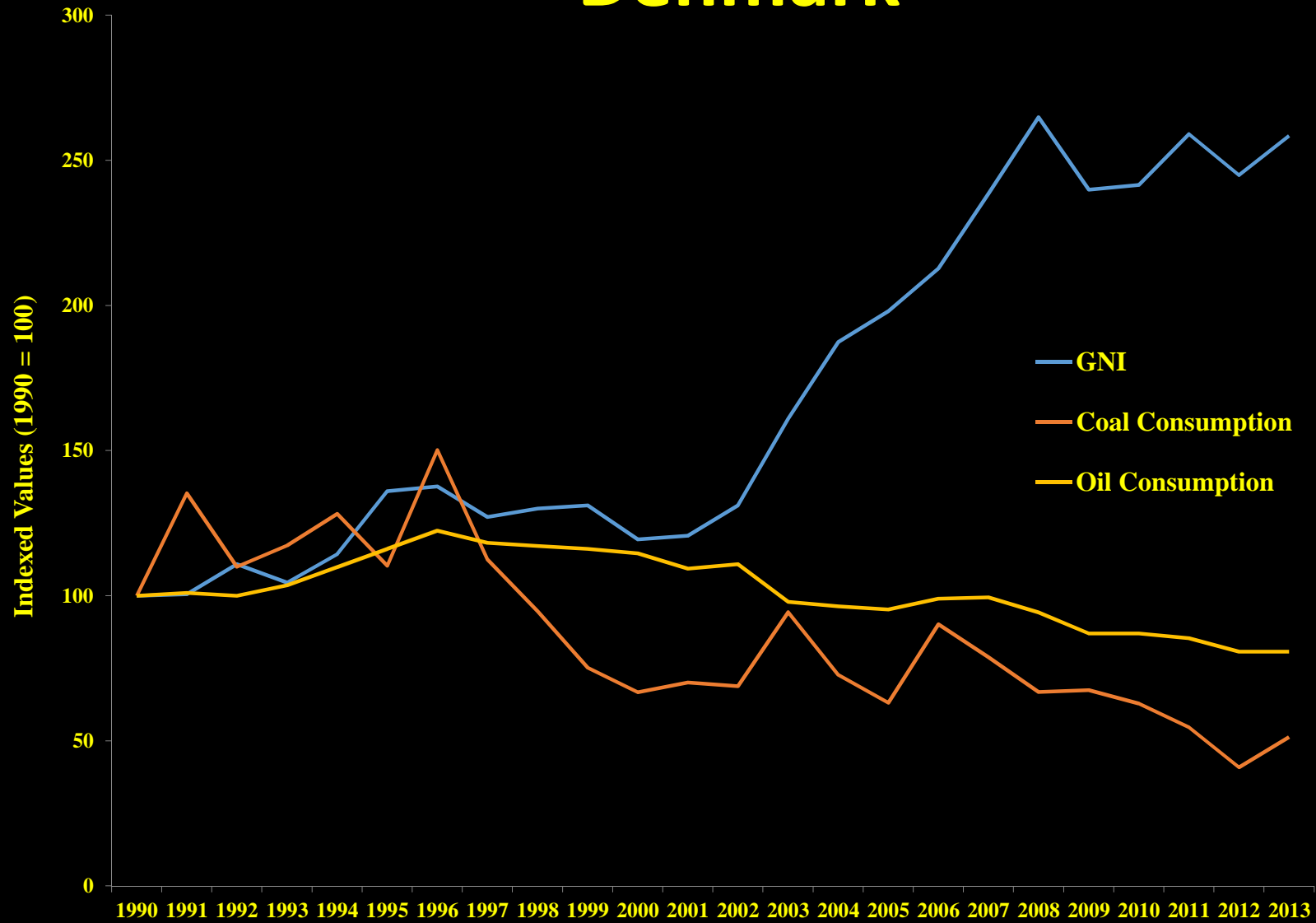
# *How does change happen?*

All three are needed – governments usually follow markets and community leadership

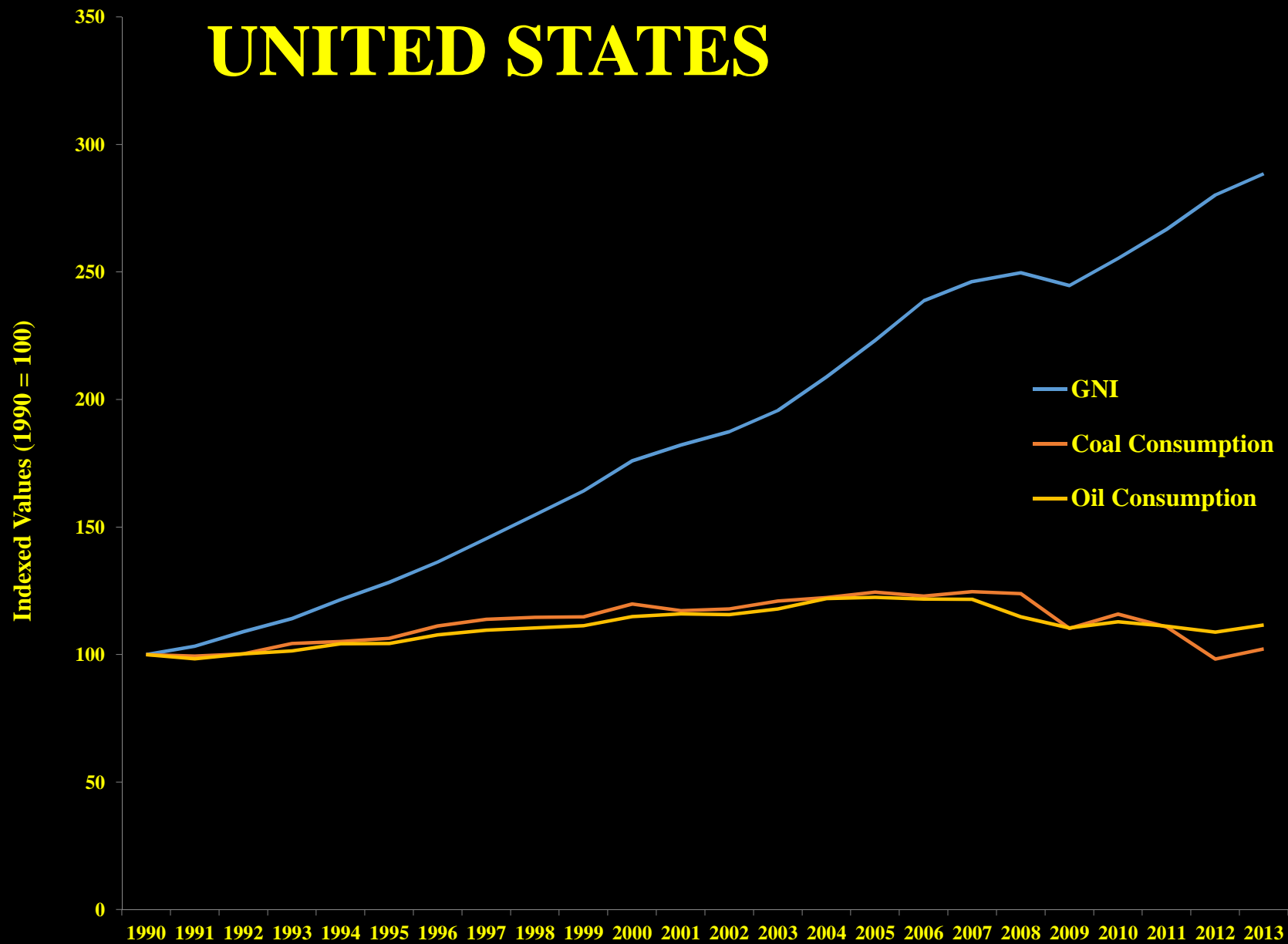


Where is decoupling happening?

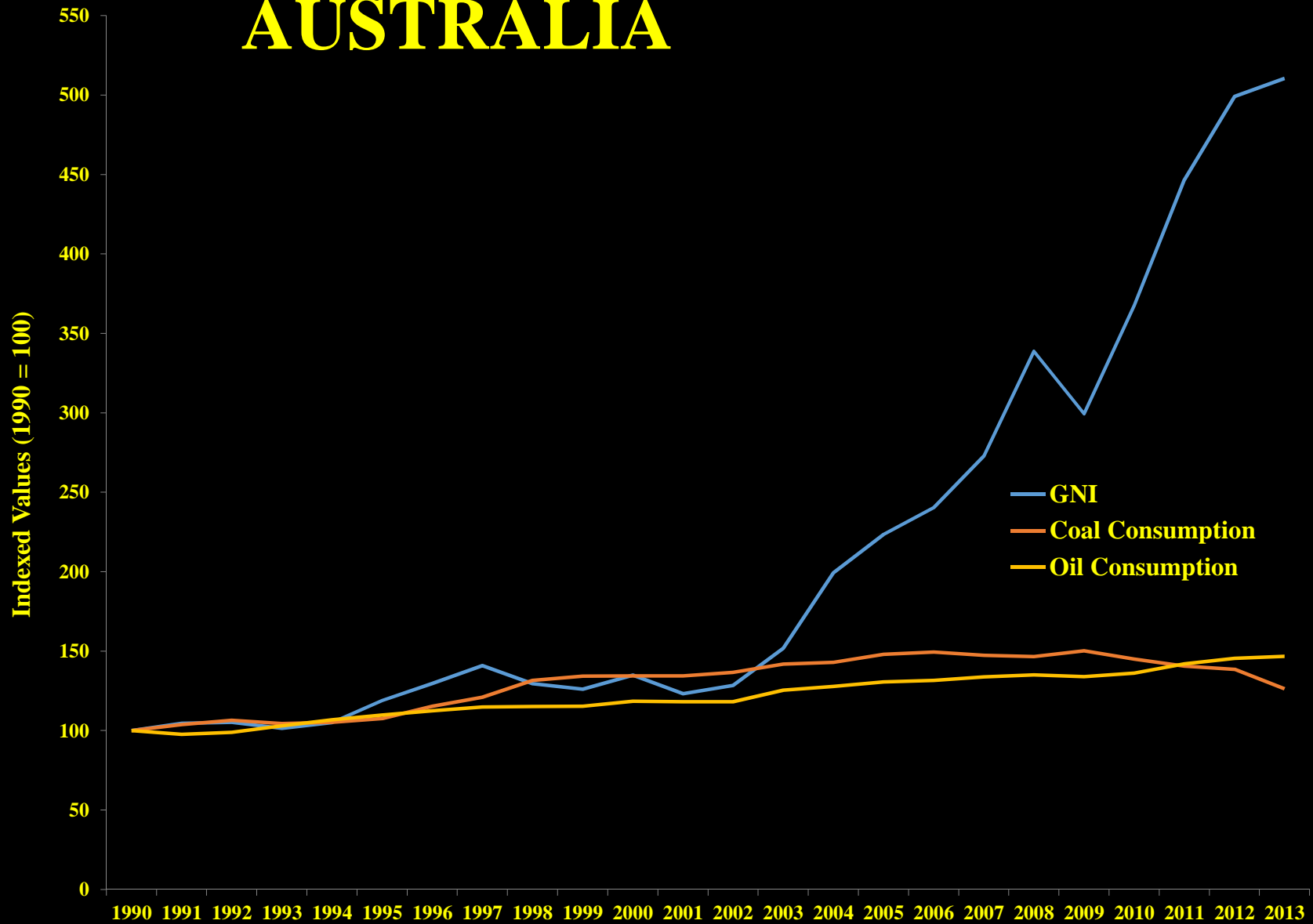
# Denmark



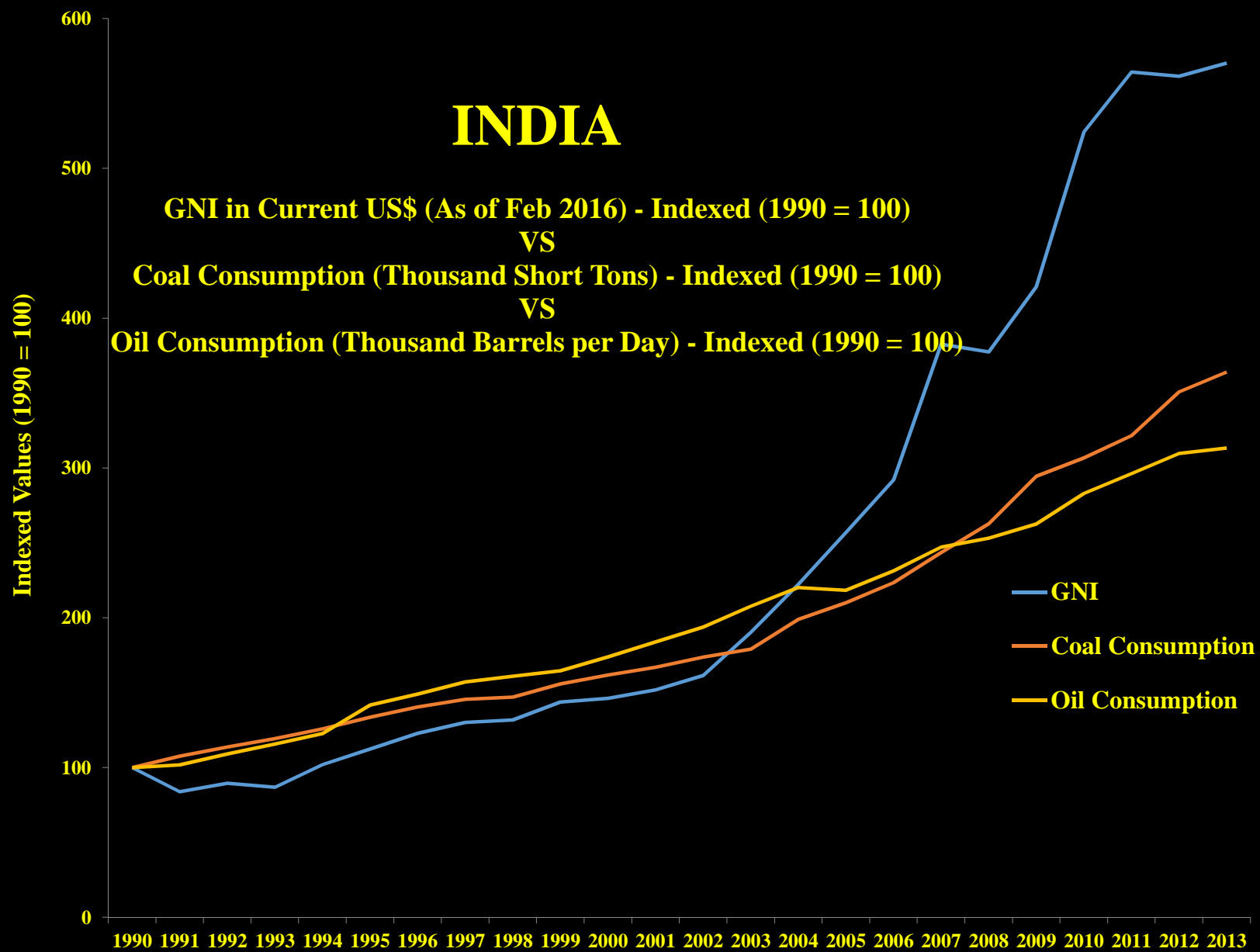
# UNITED STATES



# AUSTRALIA

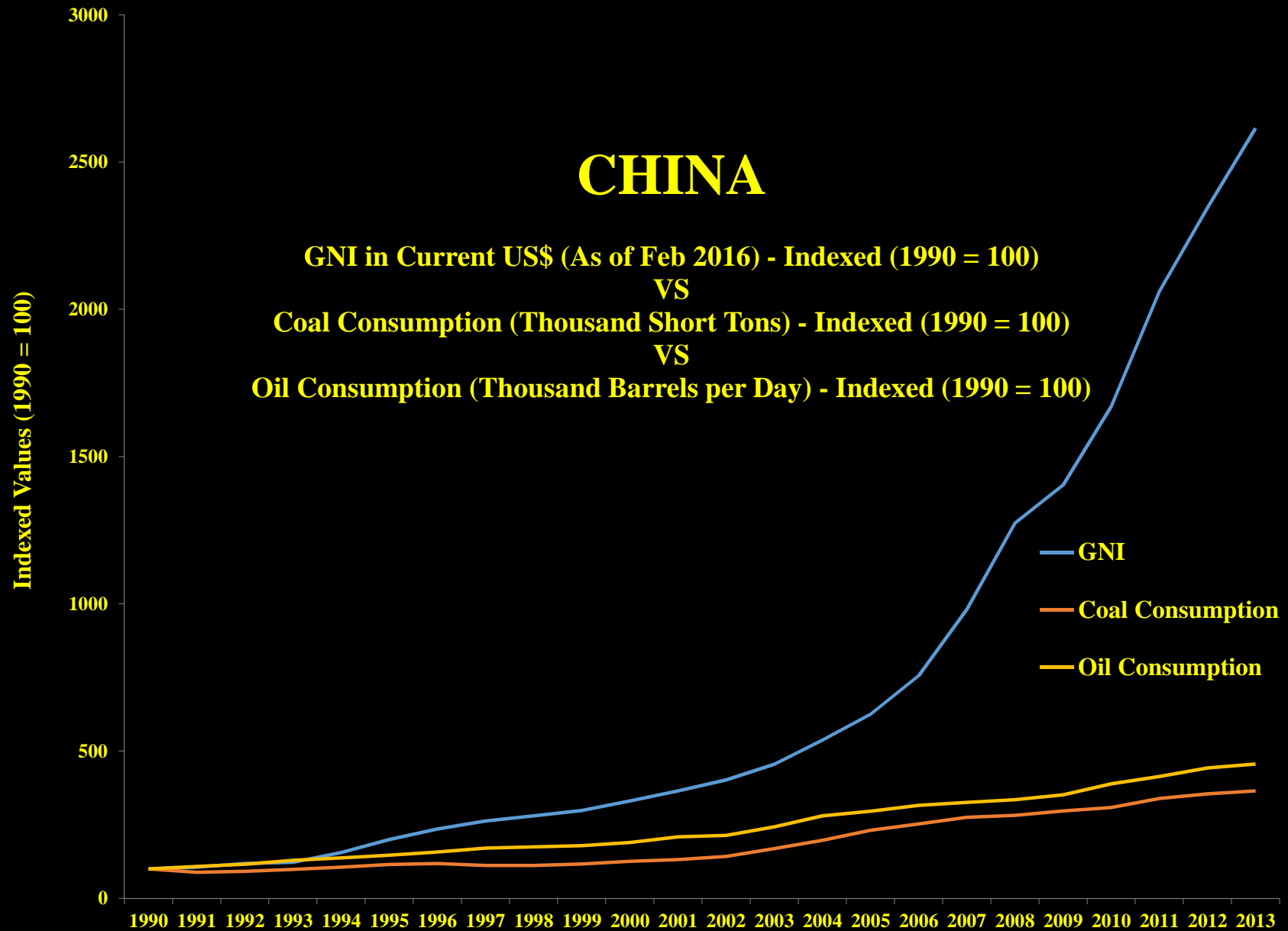


# INDIA





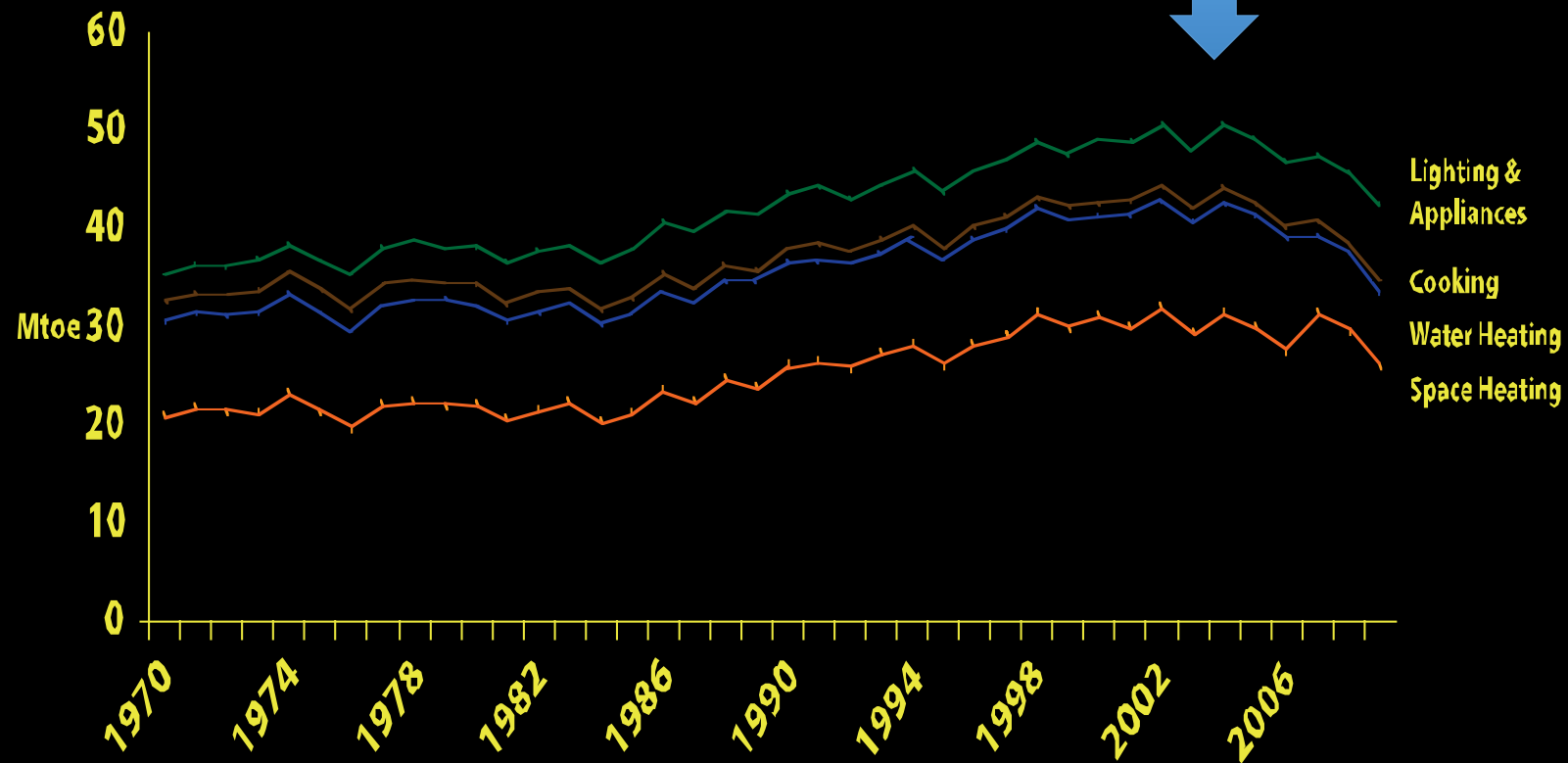
# CHINA



What can we learn from coal?  
How is coal decoupling so quickly?

Reducing consumption of energy while getting richer

## UK Household Energy Use 1970-2009



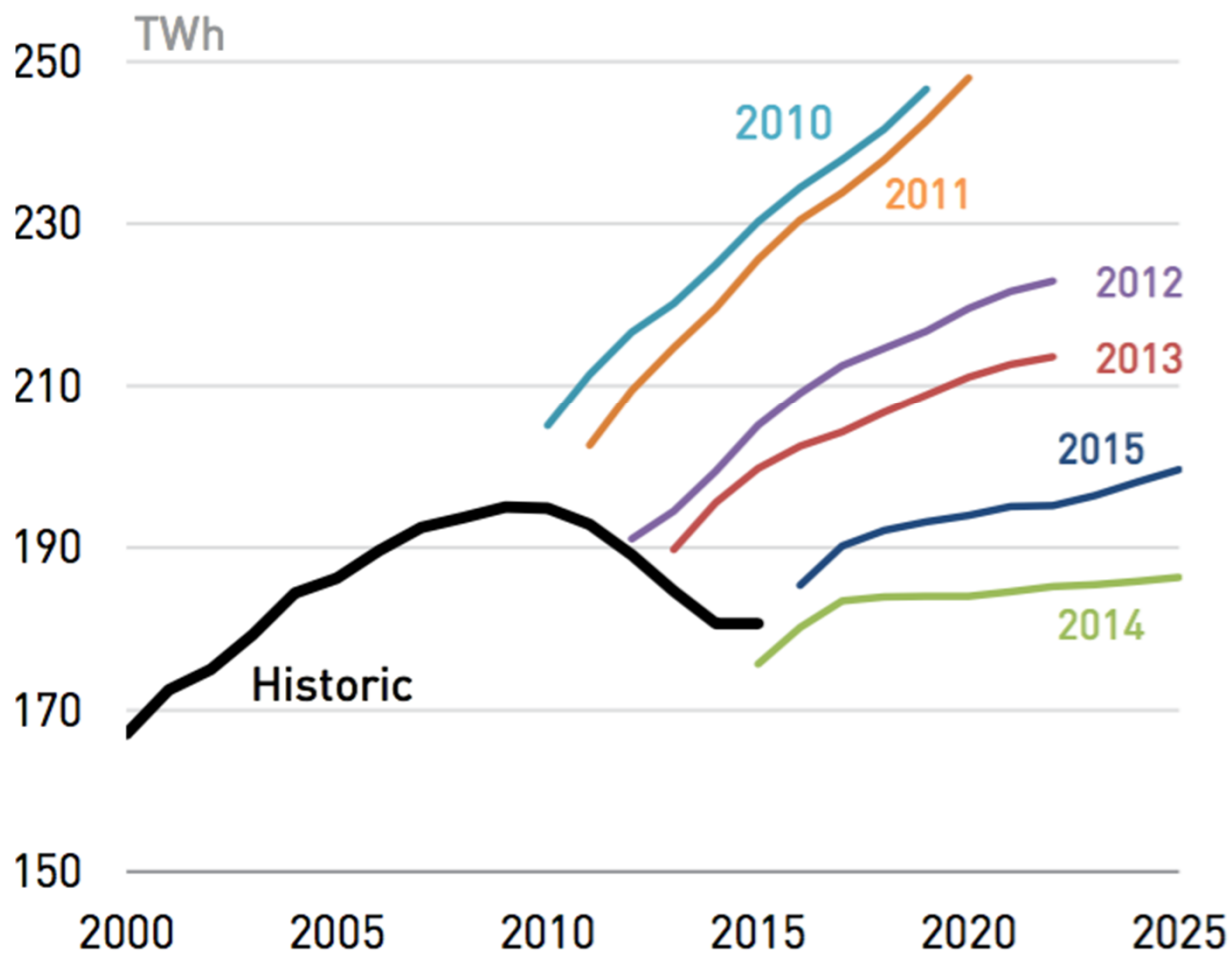
# Power investment 2:1 Renewables to Coal and Gas.



# Wind and Solar Are Crushing Fossil Fuels

Record clean energy investment outpaces gas and coal 2 to 1.

The combination of markets and cultural change is unstoppable...

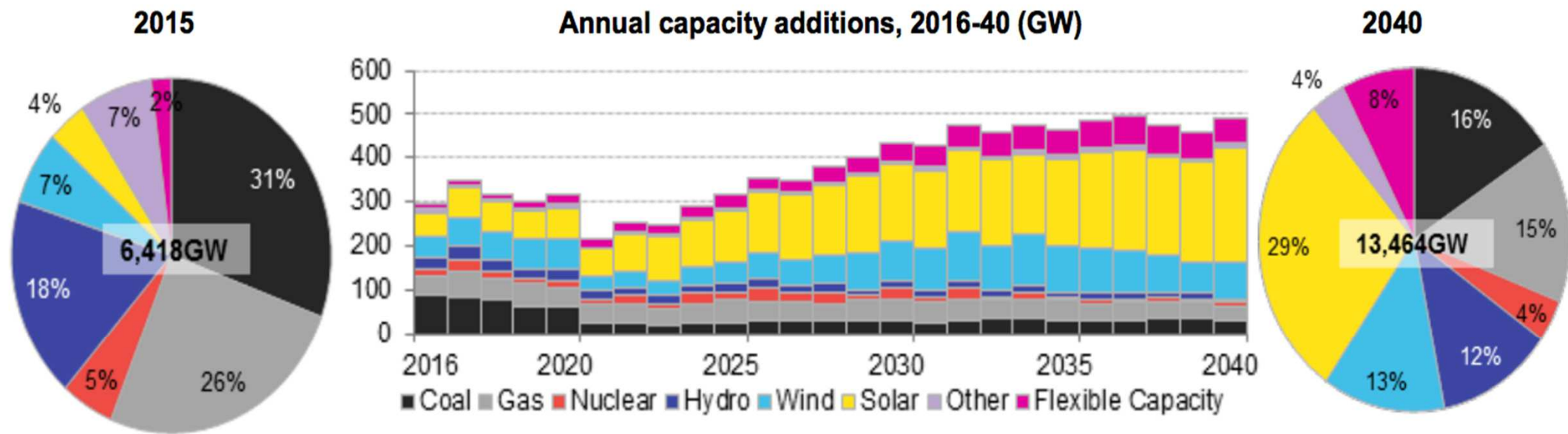


**FIGURE 37**

**Electricity demand and successive projections by the Australian Energy Market Operator<sup>67</sup>.**

Its hard to change old ways of thinking

**Figure 1: Global installed capacity in 2012 and 2040 and projected capacity additions, by technology (GW)**



Source: Bloomberg New Energy Finance. Note: Flexible capacity includes power storage, demand response, and other potential resources.

Put your money on solar....

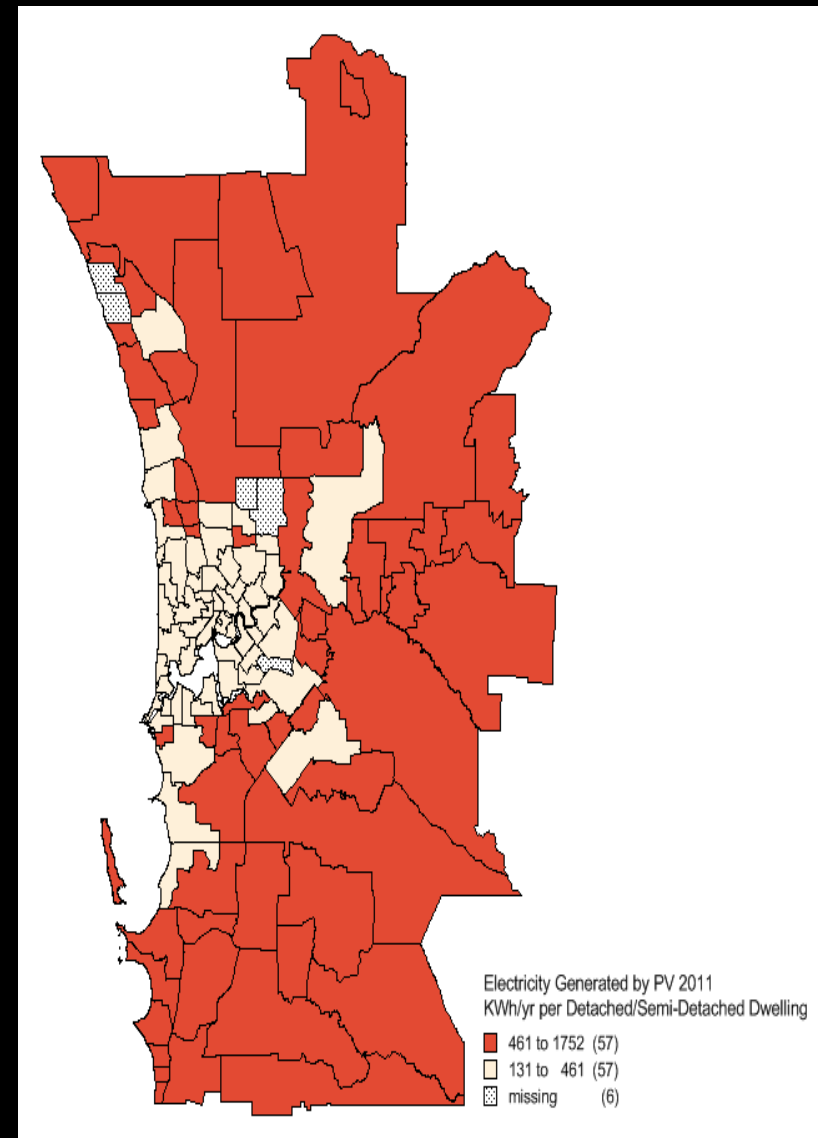


# Solar power (PV)

25% of Perth homes  
550 MW in 4 years...  
Largest power station in WA

70% by 2025  
'It is inevitable...'  
Minister for Energy.

Coal assets stranded.



# US coal major Peabody files for bankruptcy★1

725  
Shares



Published on 13/04/2016, 9:28am

**World's largest private coal mining company is mired in debt after failing to anticipate price downturn**



# WGV solar-storage, electric vehicles and 'Citizen Utilities'

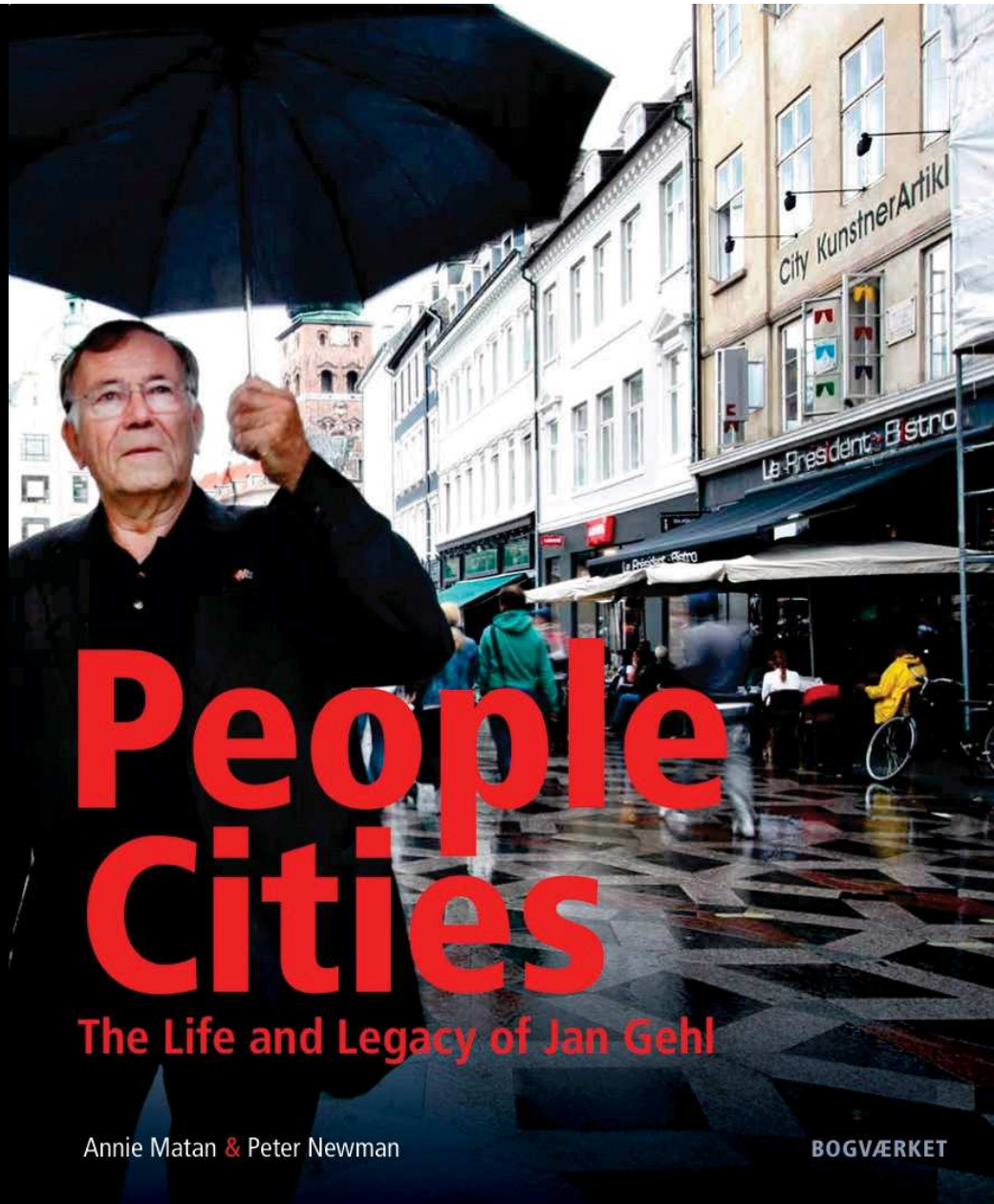


# What about oil?

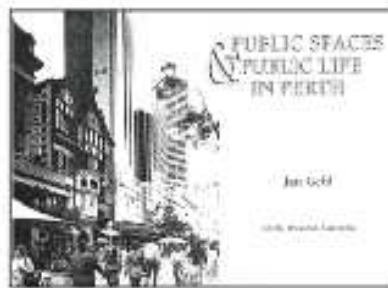
How can we reduce GHG from oil?

Through creating walkable and transit oriented cities.... And low carbon fuels and vehicles





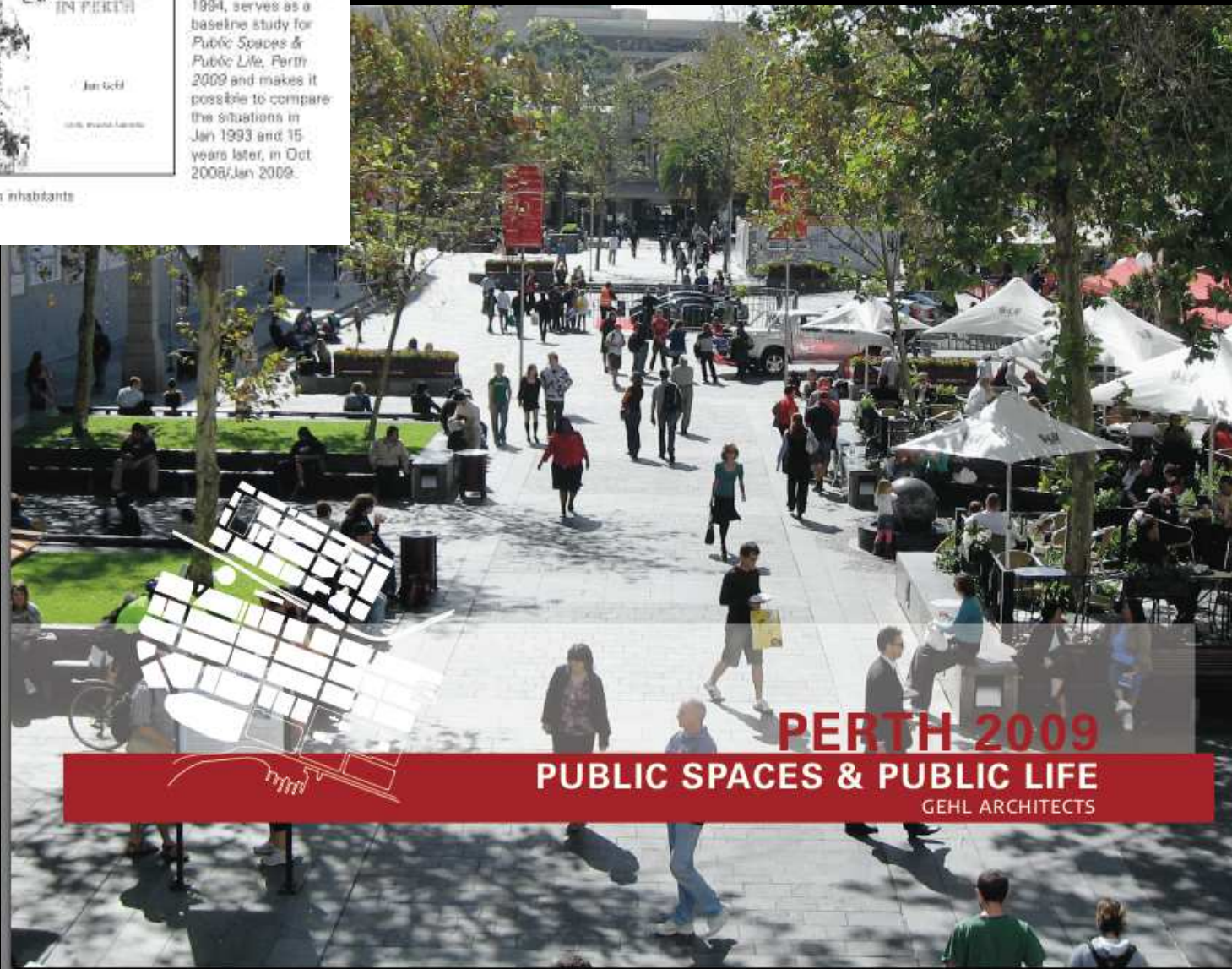
The walkability specialist...



Perth - 1984 - 1,2 million inhabitants

*Public Spaces & Public Life in Perth, 1984, serves as a baseline study for Public Spaces & Public Life, Perth 2009 and makes it possible to compare the situations in Jan 1993 and 15 years later, in Oct 2008/Jan 2009.*

## The revival...1990's...





# Life in the malls...





# Magic in Forest Place...





# The narrowing of St Georges Tce – better for walking, transit and coffee







Street trees  
and  
walkability



The top 6 most walkable cities in the US  
have 38% higher GDP.

70% of knowledge economy workers in  
Boston live in walkable areas.

# How do walkable cities lead to decoupling?

Human connection needs walkable spaces



PETER NEWMAN *and* JEFFREY KENWORTHY

# THE END *of* AUTOMOBILE DEPENDENCE

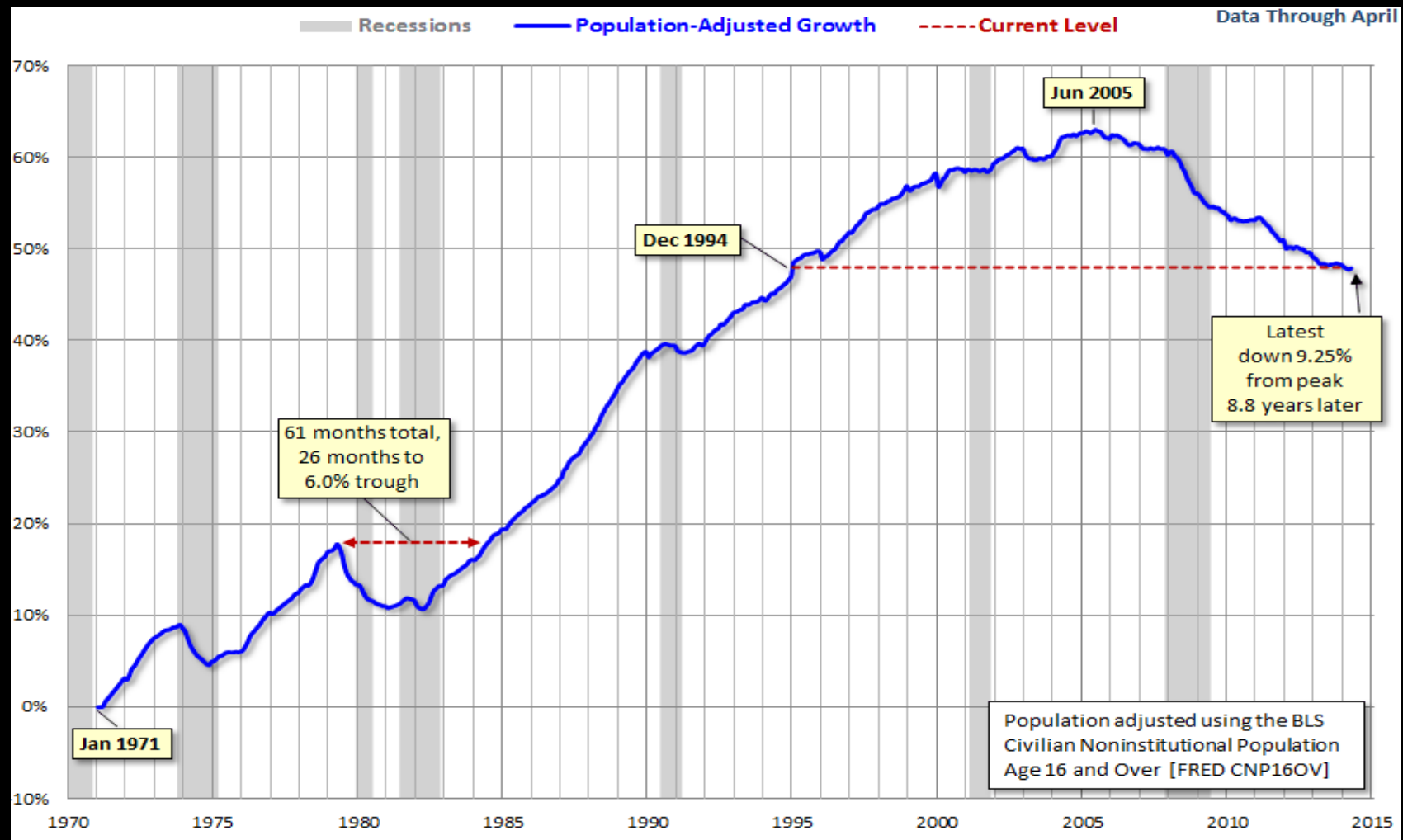
*How Cities are Moving  
Beyond Car-Based Planning*



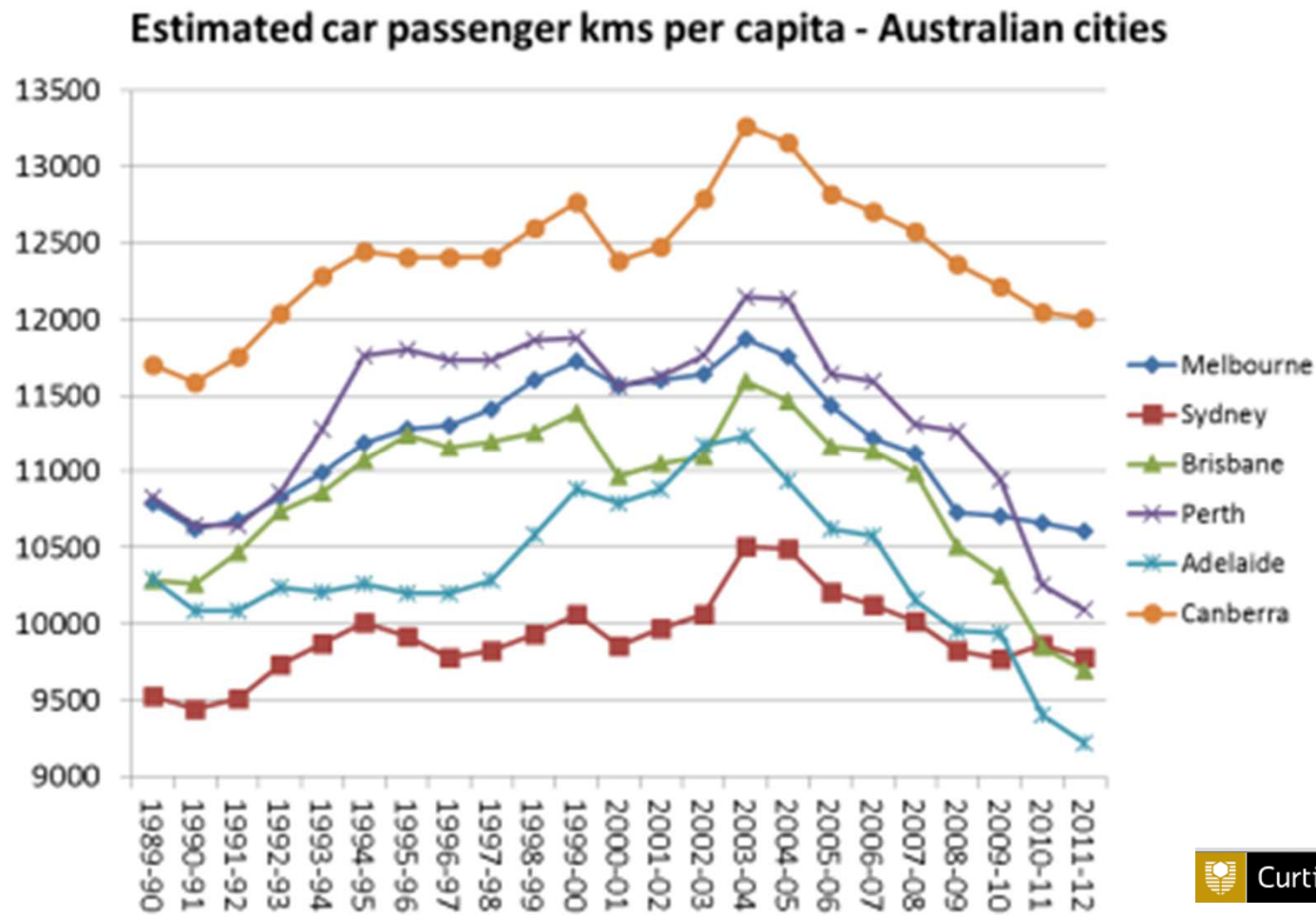
New era  
emerging...

The third in a trilogy....

# THE USA IS DRIVING LESS



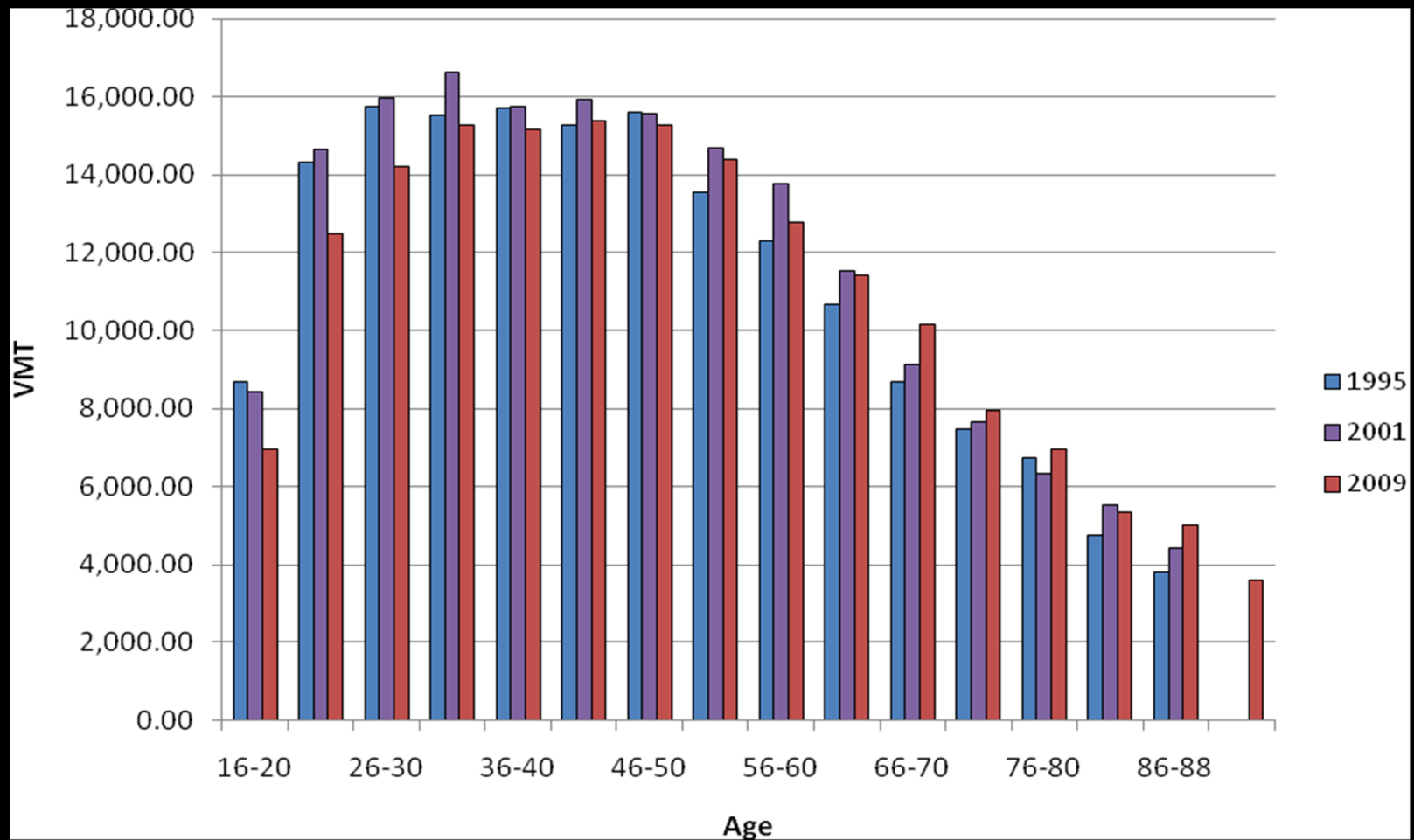
Australian city car use peaked the same year...





# Car Culture is changing

Car use by age group



*Cars are very greedy of space  
- roads and parking*

*ONE LANE -  
people per hr:  
Freeway 2,500  
Busway 5000  
LRT 10-20,000  
Train 50,000*



240 Persons travel  
to work:

-- in 177 Cars

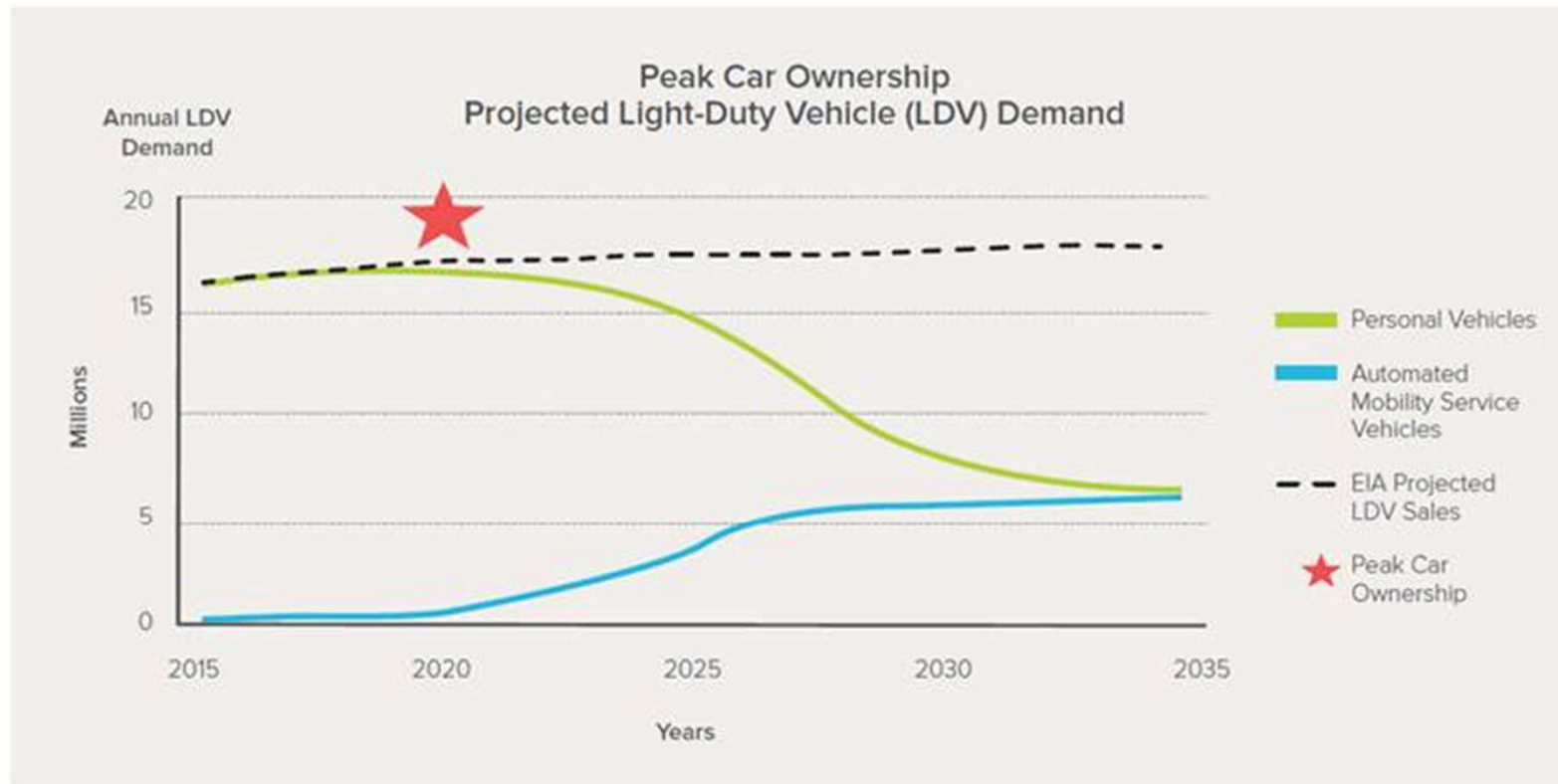
-- in 3 Busses

-- in 1 Tram



# The phasing out of private vehicles...

FIGURE 12:  
PROJECTED LIGHT-DUTY VEHICLE DEMAND



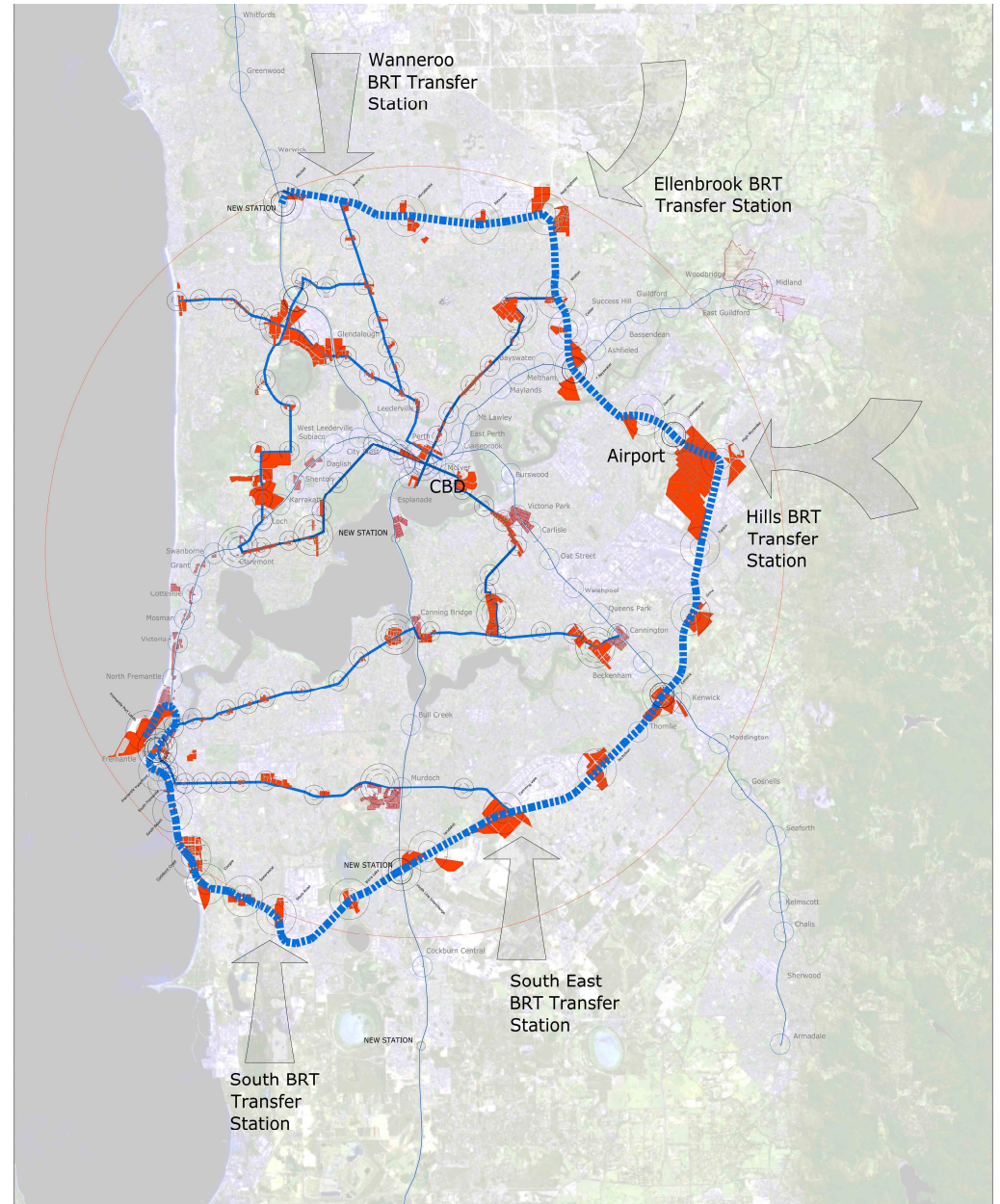
Rocky Mountains Institute, 2016

Everybody wants light rail...solar-powered





The Ring Rail,  
LRT and BRT  
plus  
development  
sites for the  
next 30 years  
growth in  
Perth



How do you fund  
something that will  
simultaneously create  
walkable, affordable,  
dense centres and zero  
carbon electric urban  
rail....?



## Prime Minister

Use land value creation....



From page 1  
Turnbull explores  
road, rail funding

ment, not least because of sharply constrained federal and state budgets.

Prominent economist Saul Eslake estimates Canberra could borrow an

economy from the end of the res investment boom.

Former Infrastructure Australia board member and Curtin Un



FEBRUARY 2016

# ENTREPRENEUR RAIL MODEL

A DISCUSSION PAPER



## *Tapping Private Investment for New Urban Rail*

Prepared by Peter Newman, Bran Jones, Jemma Green and Sebastian Davies-Slate for Curtin University



East Fremantle Now and After Light Rail - Images by Cole Hendtgen



With markets, culture and  
governments all wanting solar,  
walkable transit-oriented cities we  
can expect very rapid change....

## Predictions – After the Peak

