TOWARDS A STRATEGIC ACTION AGENDA FOR SCIENCE AND INNOVATION IN WA.

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CHIEF SCIENTIST, WA.

March 13, 2003.

The Purpose of This Meeting is:

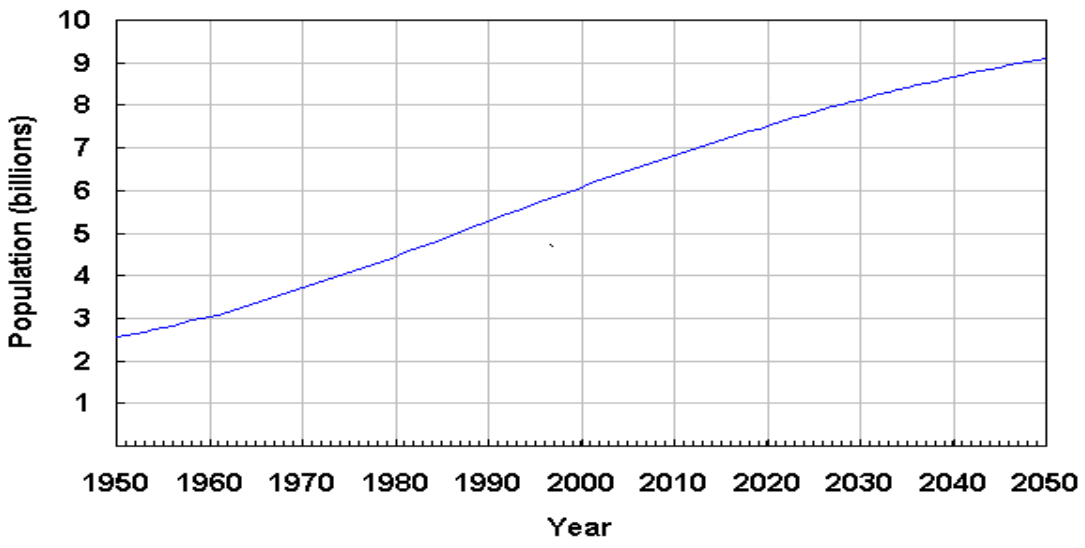
- To develop a shared vision of the future of Science and Innovation in WA.
- To develop a helicopter view of what we would like WA to look like twenty years hence.
- To enunciate, in broad terms, the developments in Science and Innovation that have to occur, and their timing, in order to achieve that helicopter view.

My Challenge:

- Outcome, as opposed to output, oriented research
- Building world class capability and critical mass for WA
- Making an impact on the well being of Western Australians through clearly attributed developments in Science and Innovation

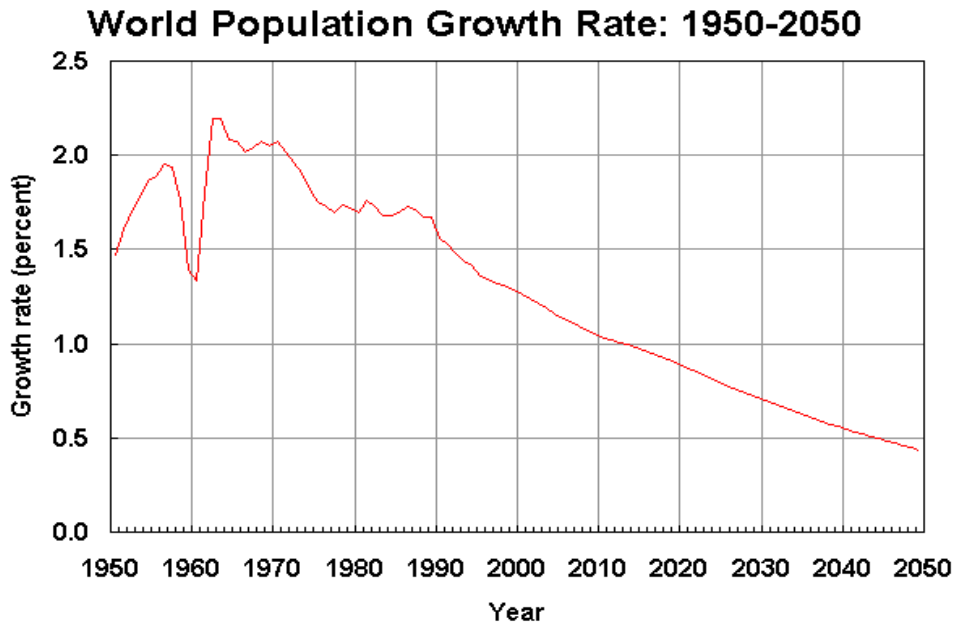
The outcomes of this process will be:

- A Strategic Action Agenda, signed off by the Premier and the Premier's Science Council, that maps out actions that will occur to develop Science and Innovation in WA.
- This Agenda will map out the processes and structures that enable high impact, critical mass facilities to be developed in this state with clearly defined outcomes for the well being of Western Australians.



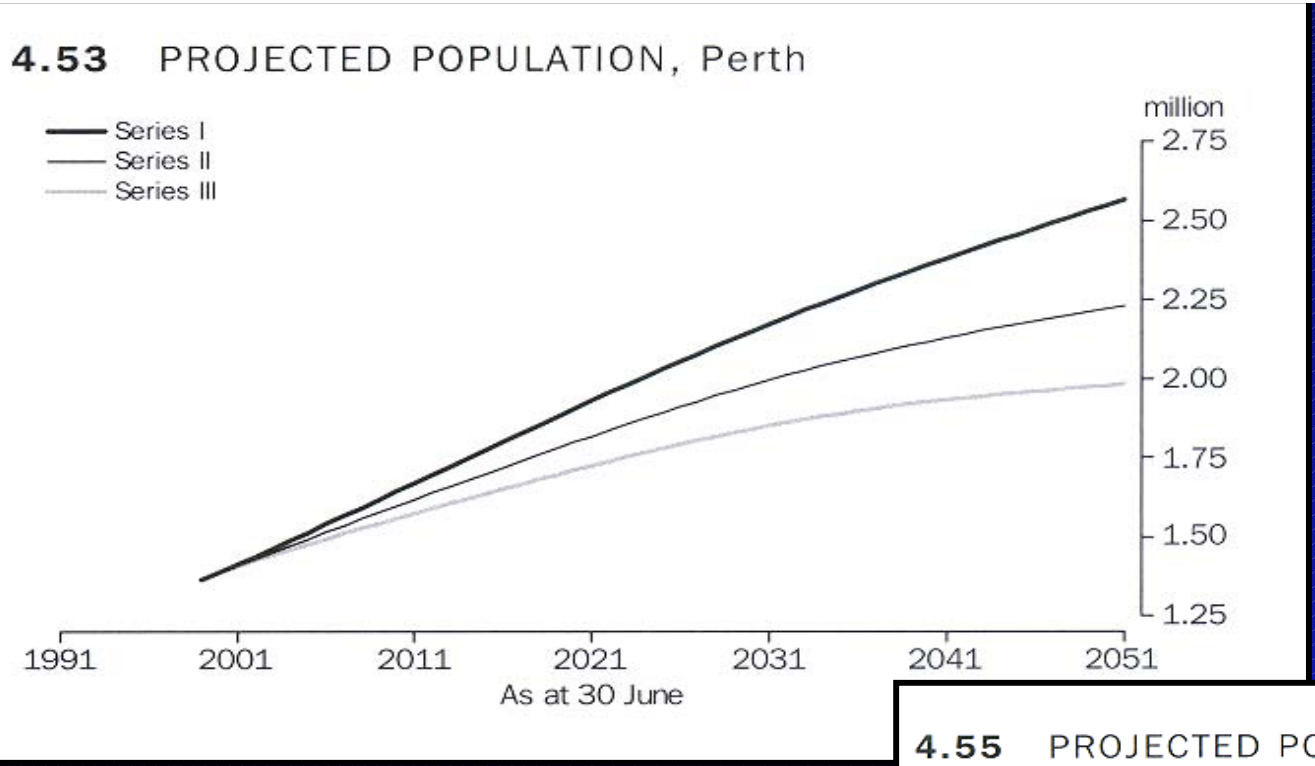
Source: U.S. Census Bureau, International Data Base 5-10-00.

The populations of developed countries willslowly begin to decrease from 2020 onwards



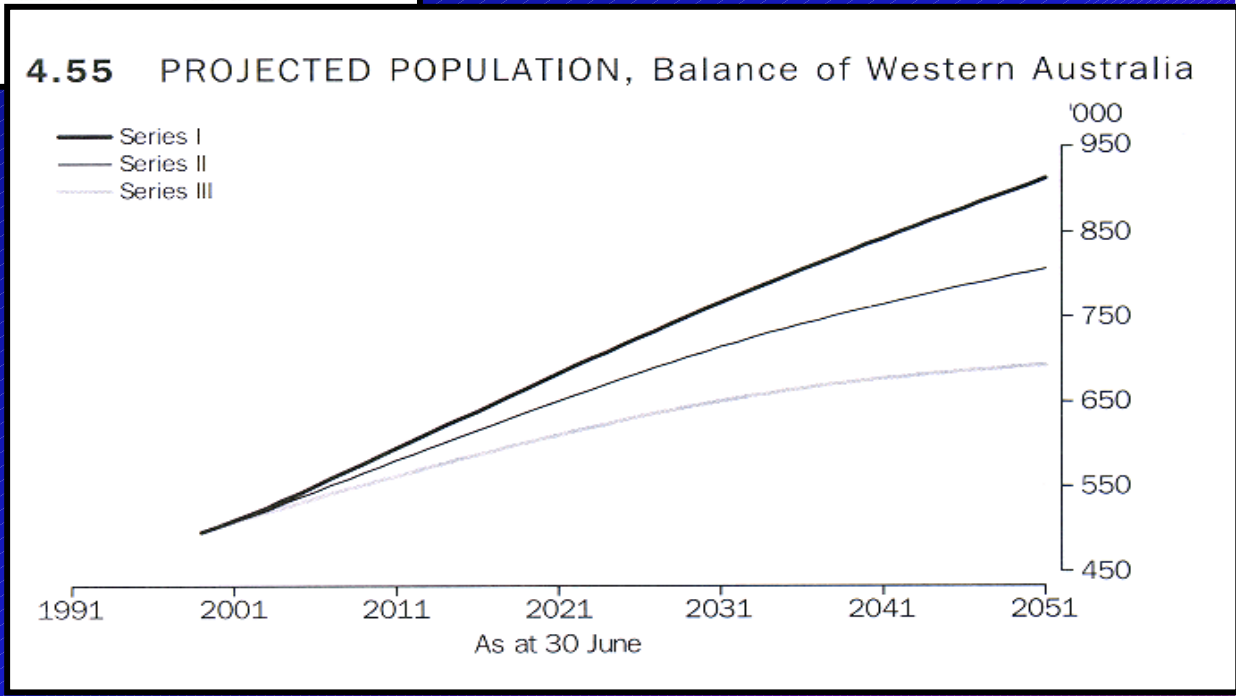
Source: U.S. Census Bureau, International Data Base 5-10-00.

GLOBAL POPULATION GROWTH RATE IS SLOWING BUT GLOBAL POPULATION IS 33% GREATER BY 2025.

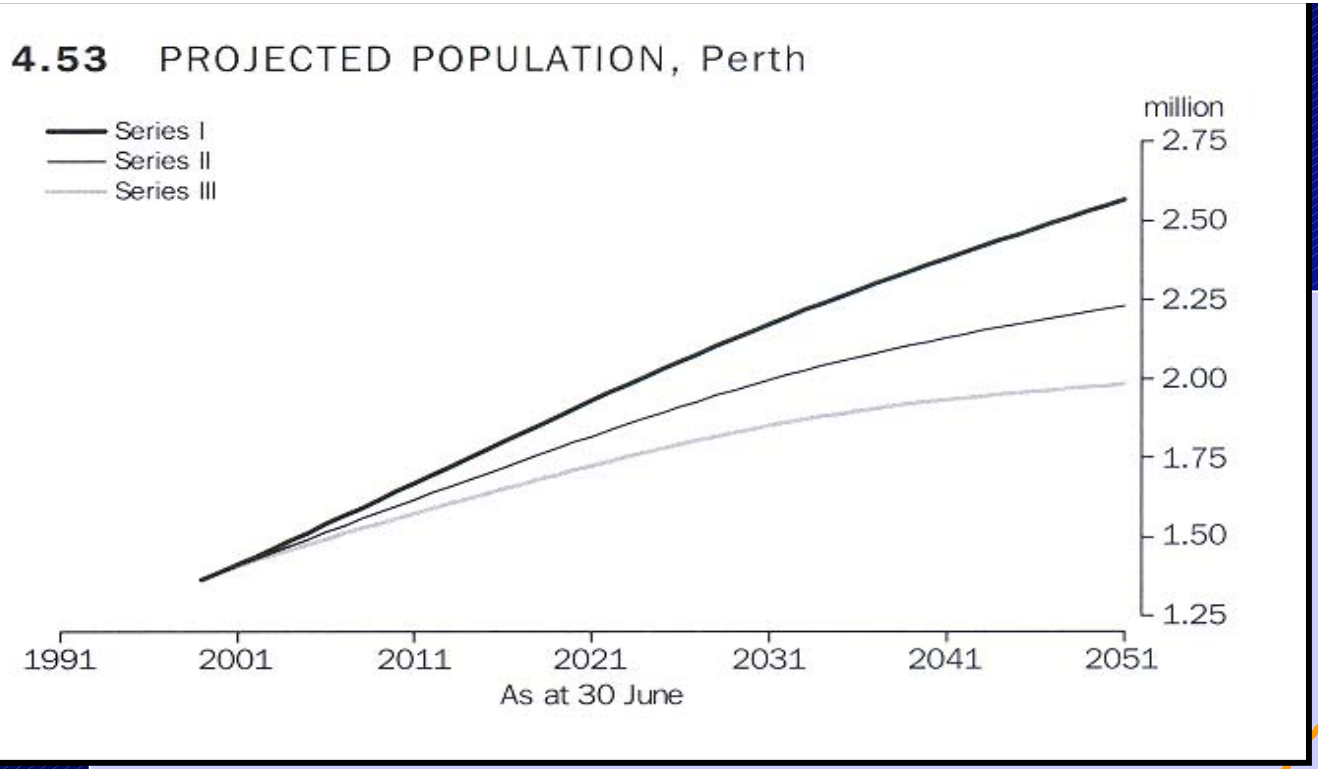


Australia is 2.5% of the World's Population. By 2025 this percentage drops to 0.25%.

Nevertheless, WA's population will grow 40% by 2025.



Australia's Projected Population



30

IV

III

II

I

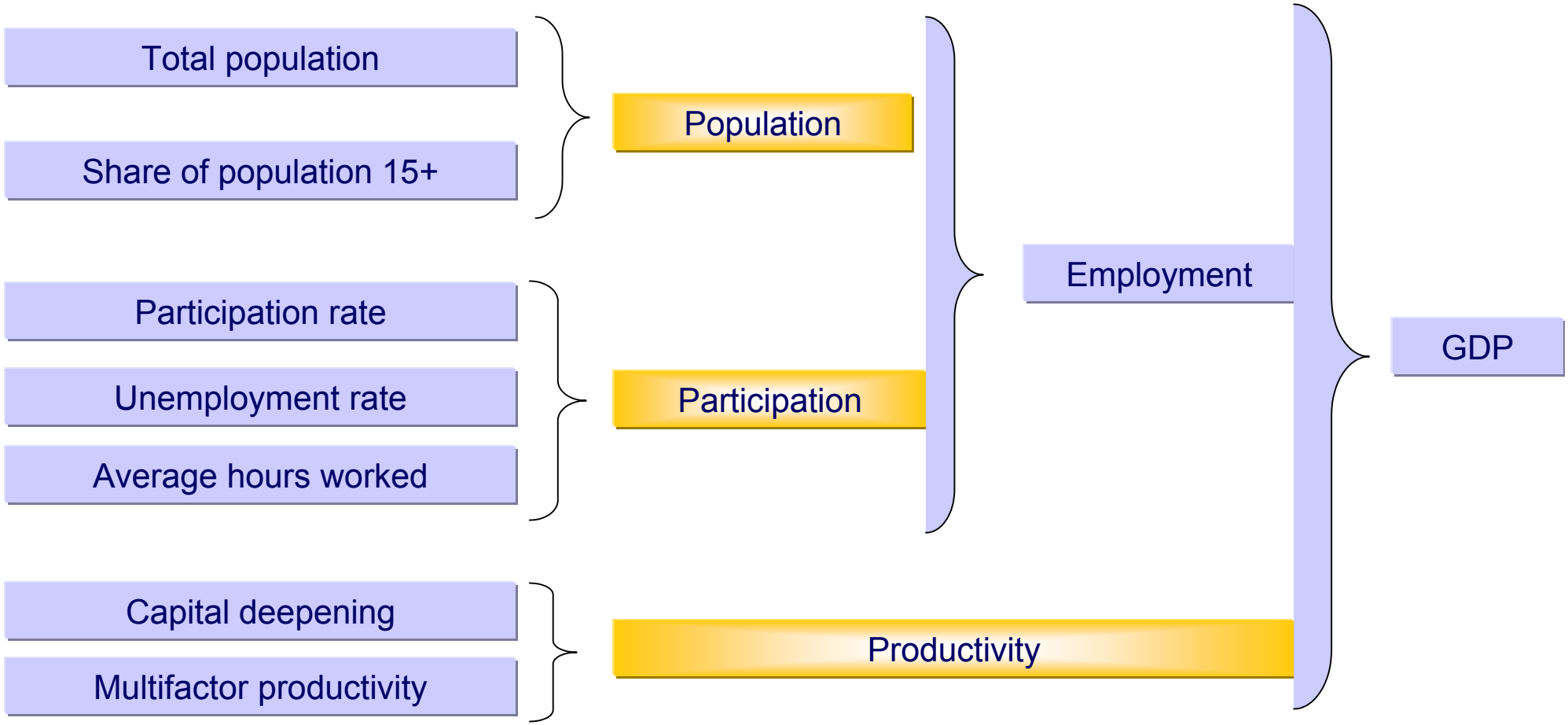
Million

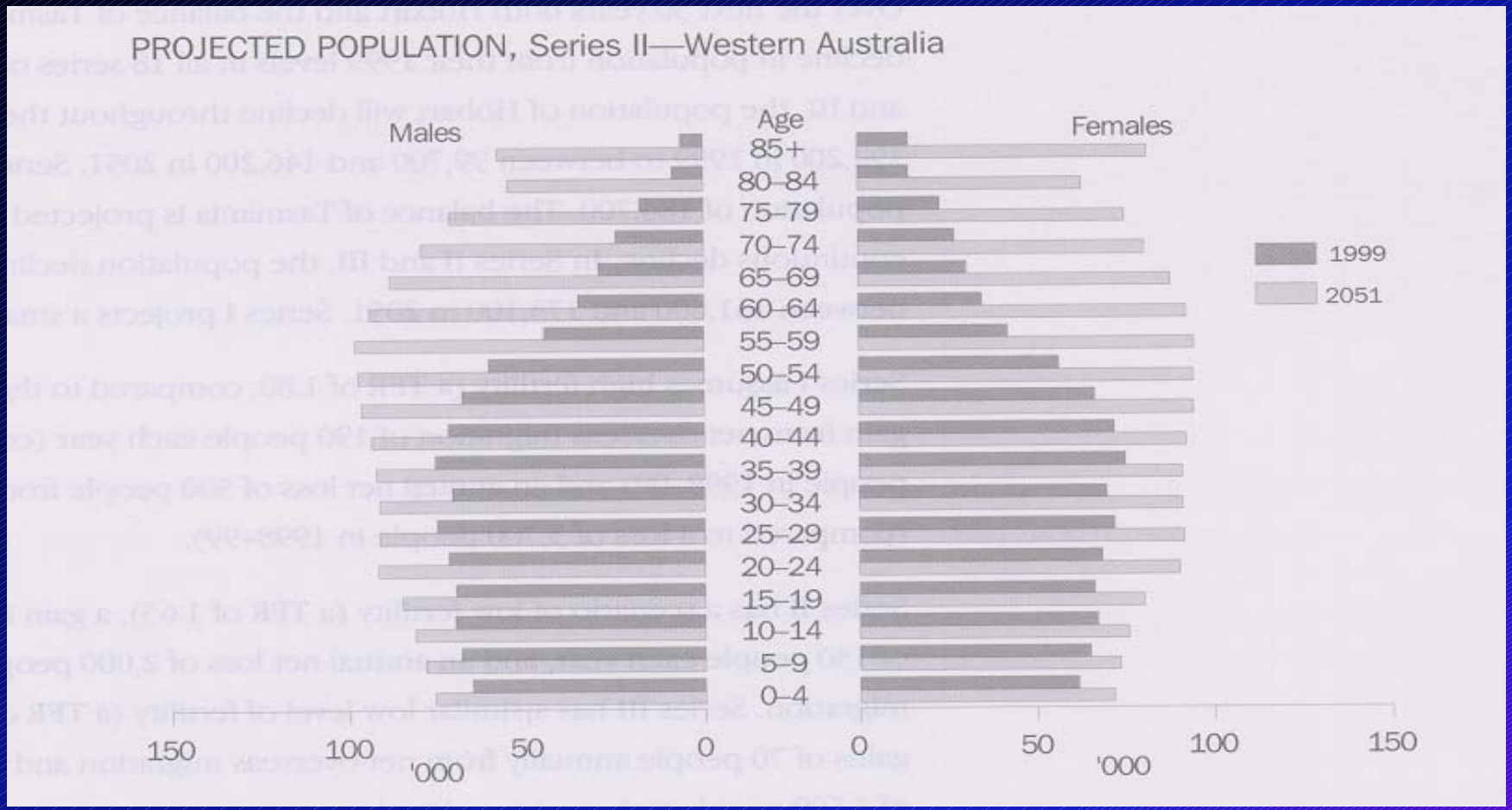
WA will still be 10% of Australia's total population in 2040 but WA's population will still be growing.

0

1788 1830 1872 1915 1957 2000 2042

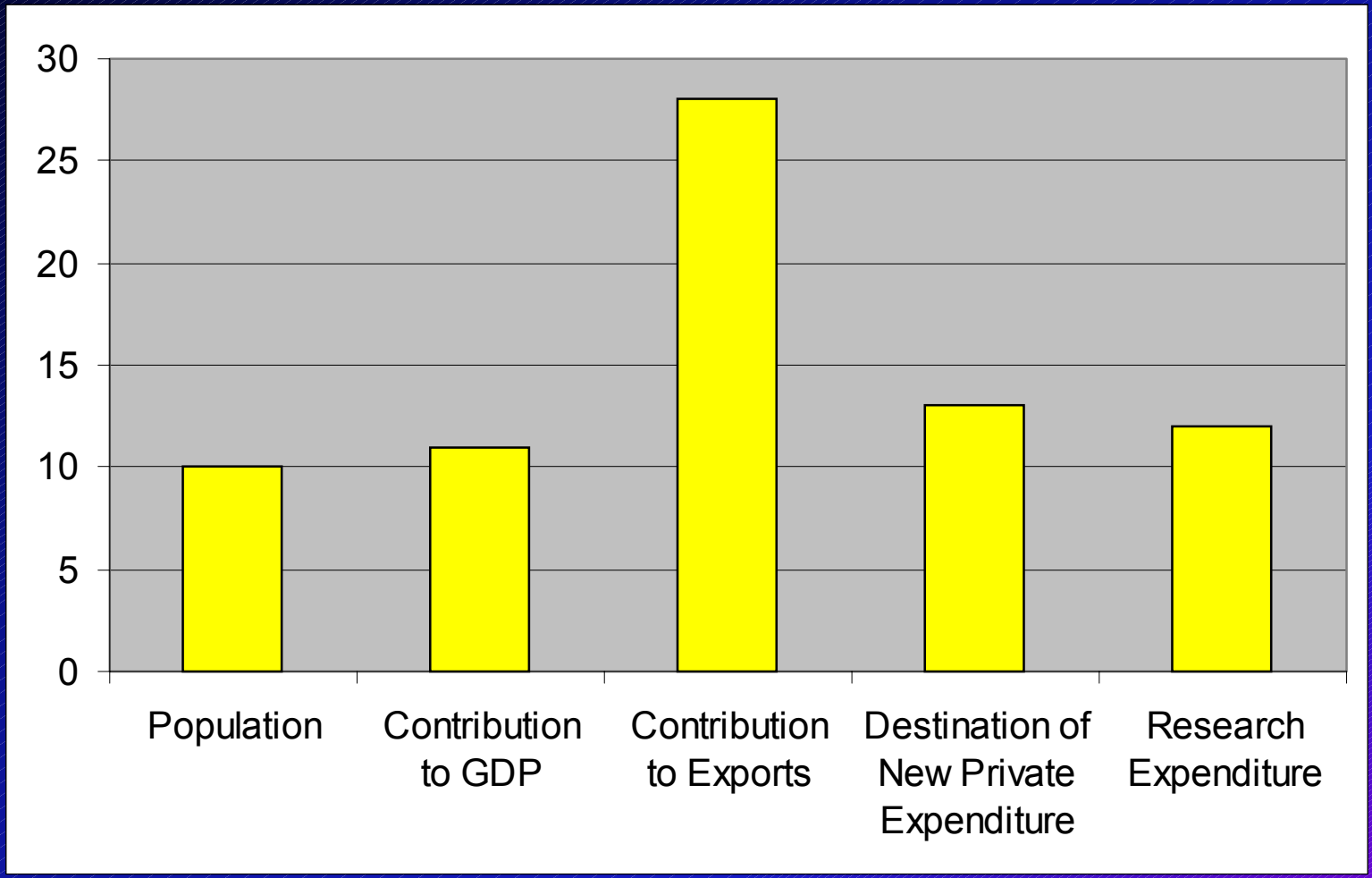
Determinants of GDP



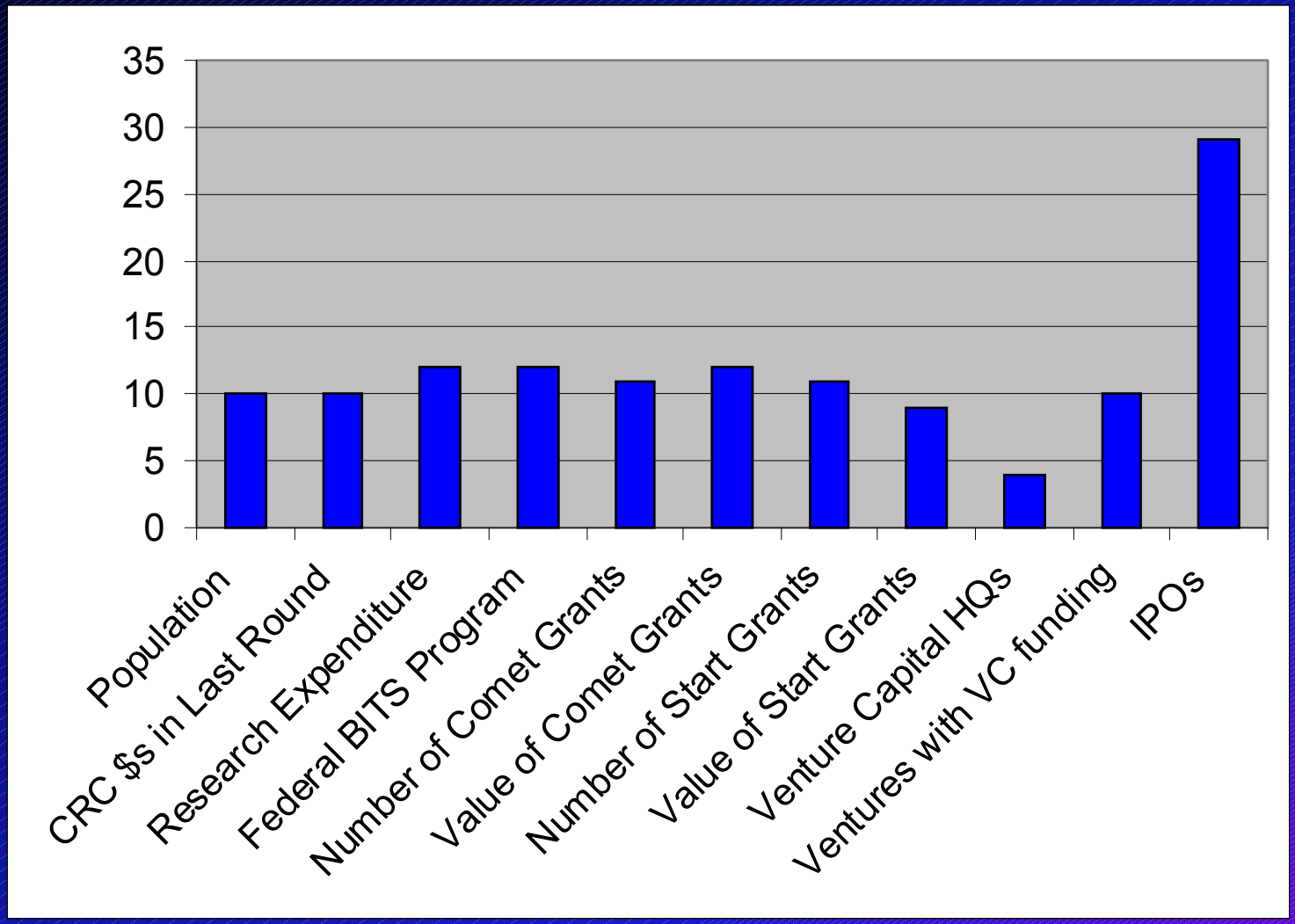


In keeping with the rest of Australia, Western Australia has an aging population. By 2025 approximately 25% of the population will be older than 65.

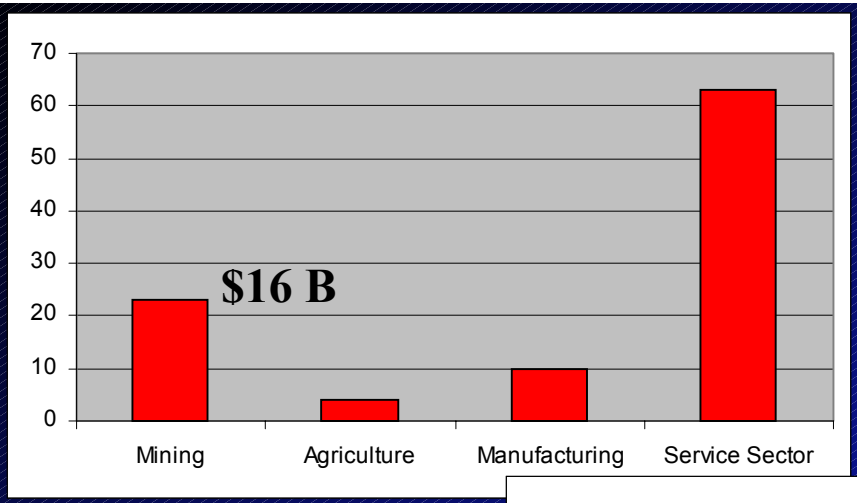
Contribution of WA to National Picture



Contribution of WA to National Picture

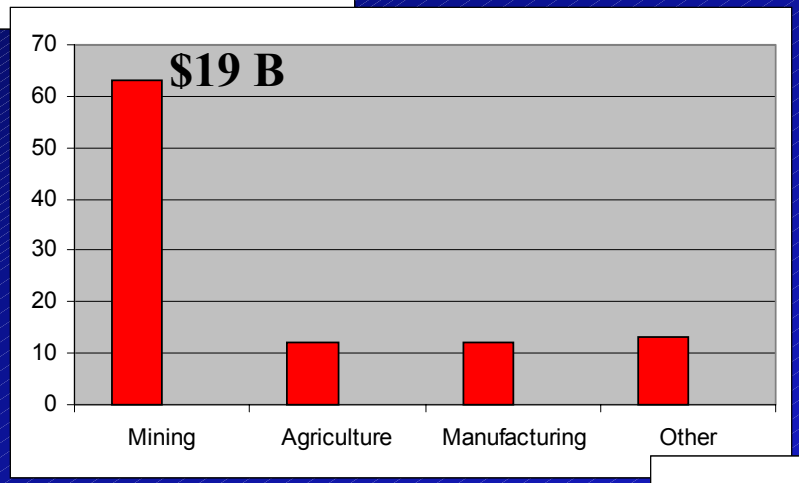


Composition of the WA Economy

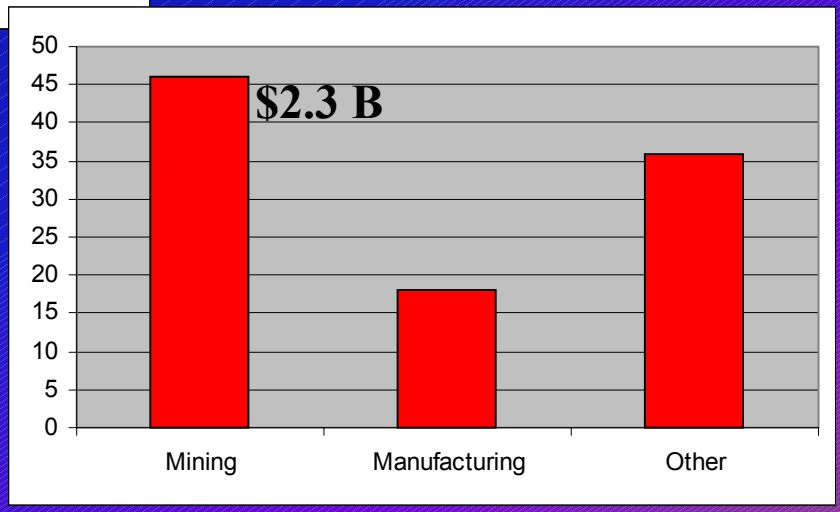


WA GSP approximately $77 Billion.

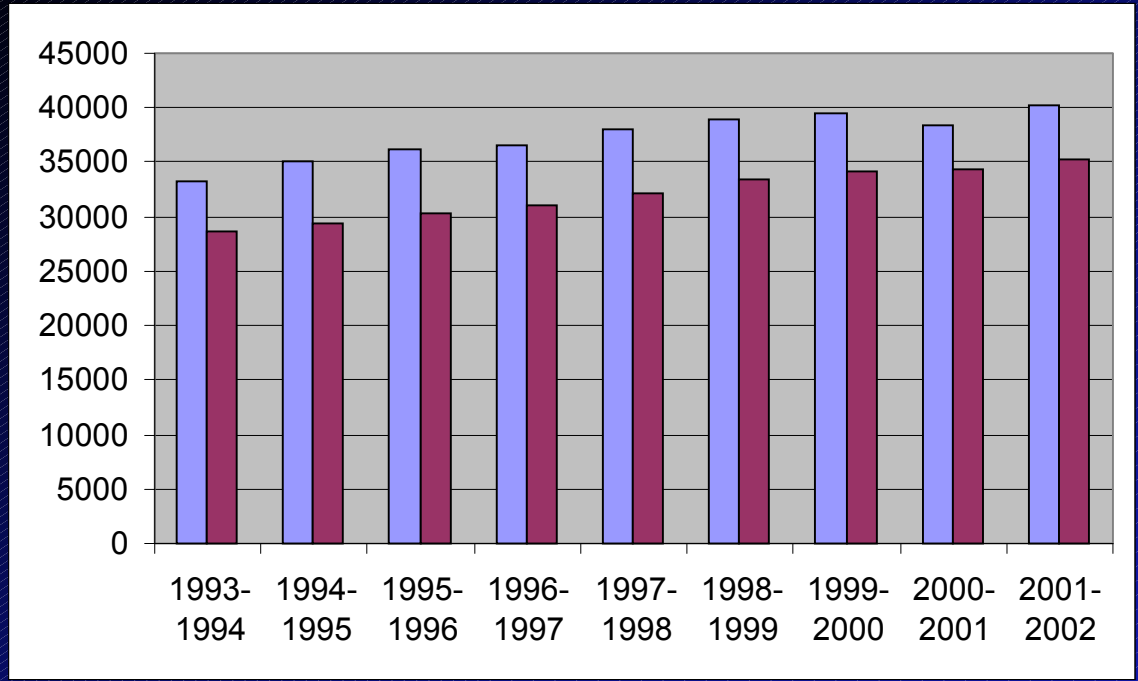
WA GSP



Export Revenues

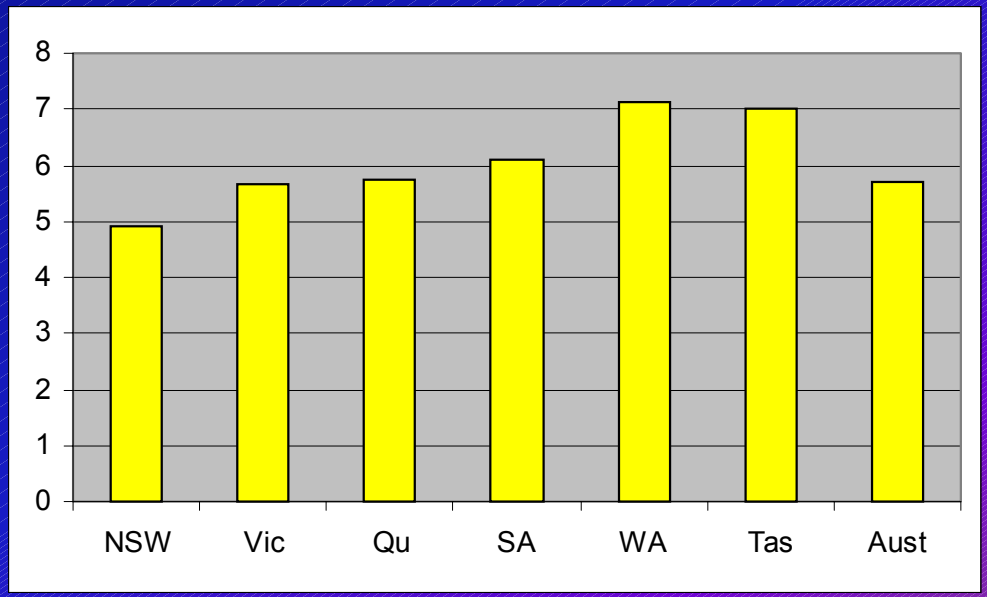


New Private Capital Expenditure



WA GSP per capita (in blue) has traditionally outstripped the Australian GDP per capita (in red).

State Investment as a proportion of GSP



The outcome of this brief survey is:

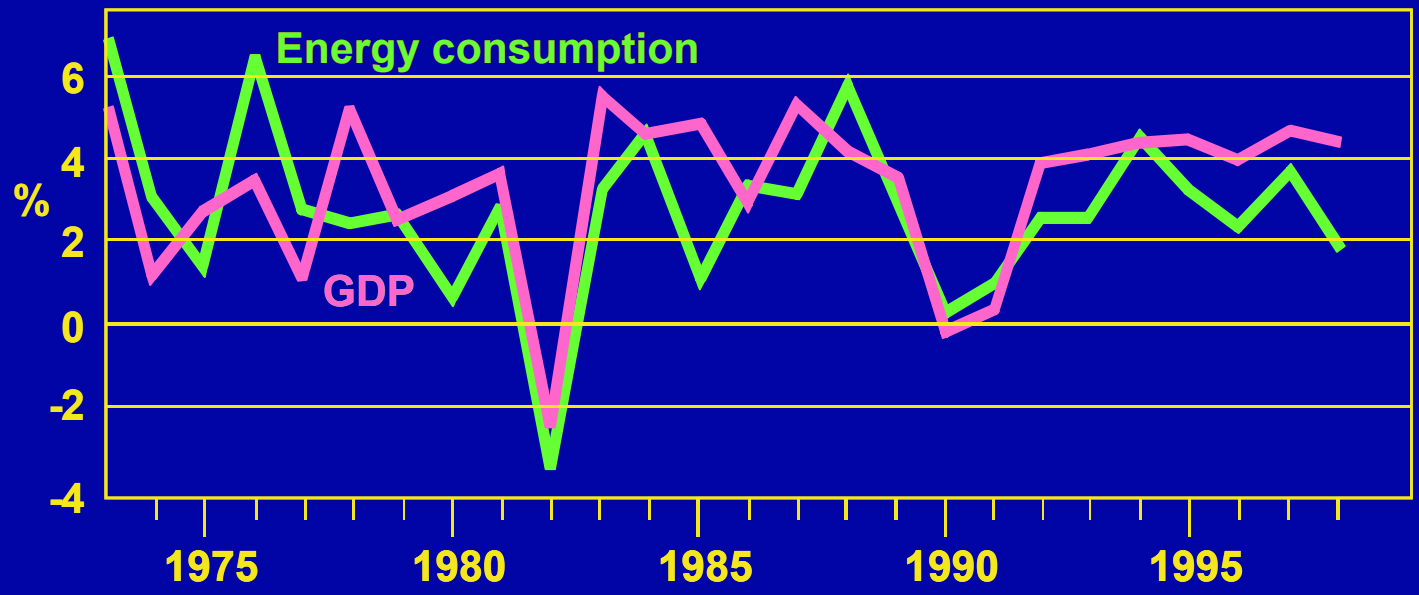
- WA scores at around average on a per capita basis although there are areas where we fall short.
- This situation exists despite the rather ad hoc basis for past operations. The hint here is that some planning and focussing could produce better than average outcomes in the future.
- The state's economy is built on "mining" and diversification is essential while we continue to support our strengths.

Energy Research

Competitive, Clean Energy

GDP and Energy are intimately linked

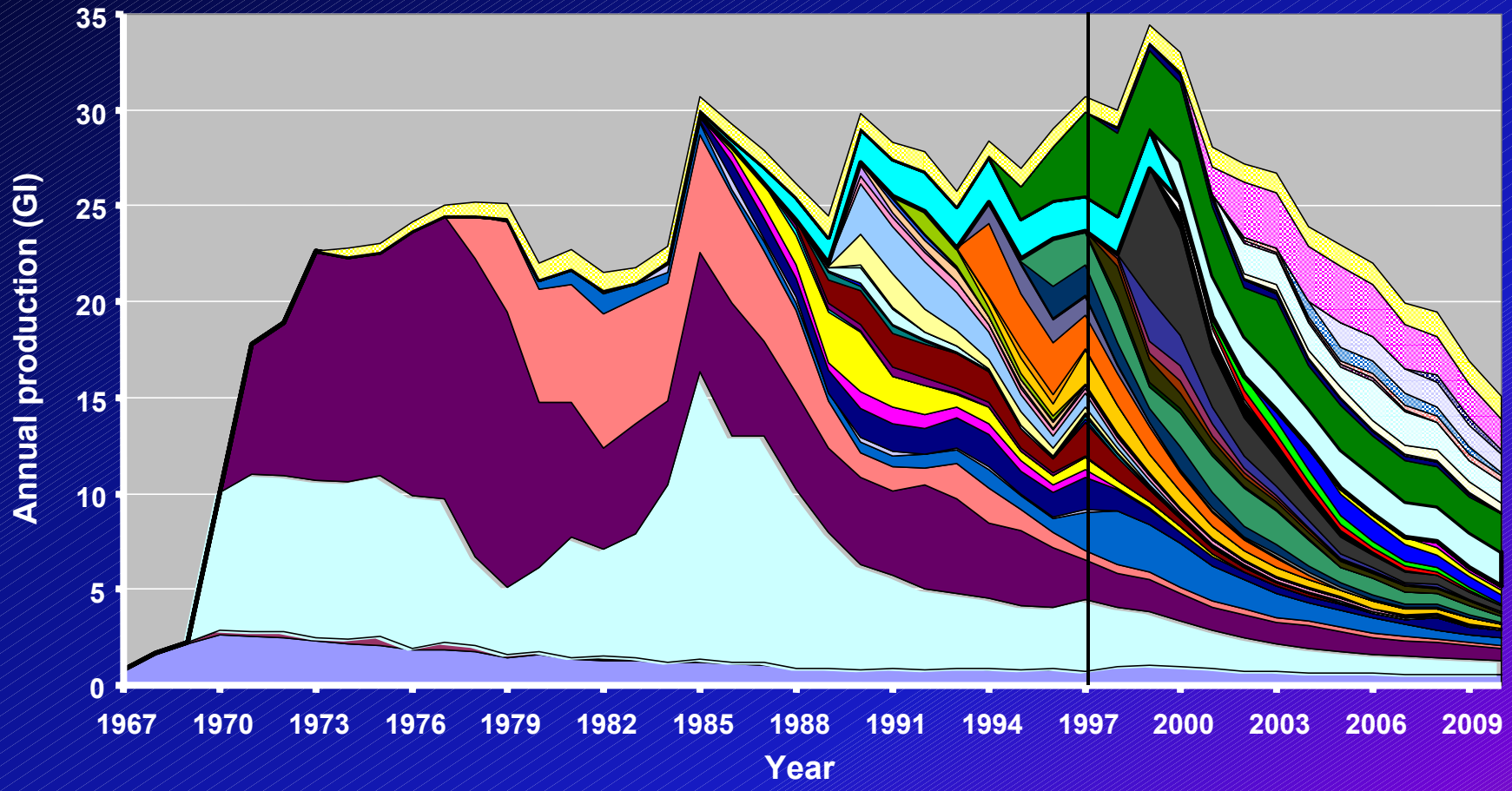
New energy supply must have a lower greenhouse signature



Australia:

- Abundant coal – but dirty image
- Gas rich – but remote with relatively low market penetration
- Oil poor – an economic and potential security threat
- Technology adept – ability to implement radical energy system changes

Australian oil and condensate production profile by field



Data from AGSO, 2000.

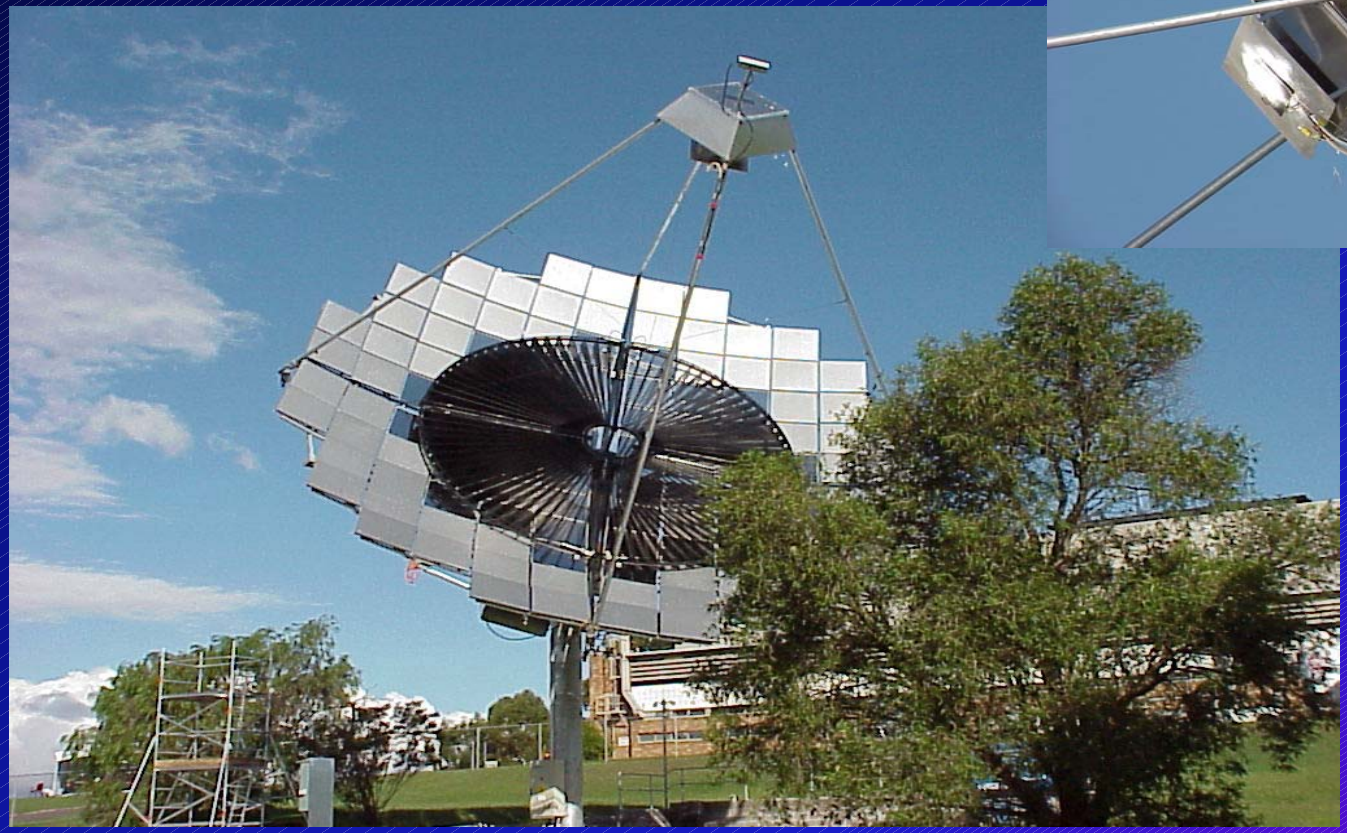
IMPLICATIONS OF LIQUID HYDROCARBON SHORTFALLS IN AUSTRALIA.

- 1% INCREASE in IMPORTS=$100 MILLION pa in BoP.
- BoP problem $2 billion pa by 2010.
- Rising prices as we pay to access more costly reserves.
- Higher domestic raw material input costs.
- Negative effect on international competitiveness.
- Strategic impact.

Gas to Liquids
National Priority

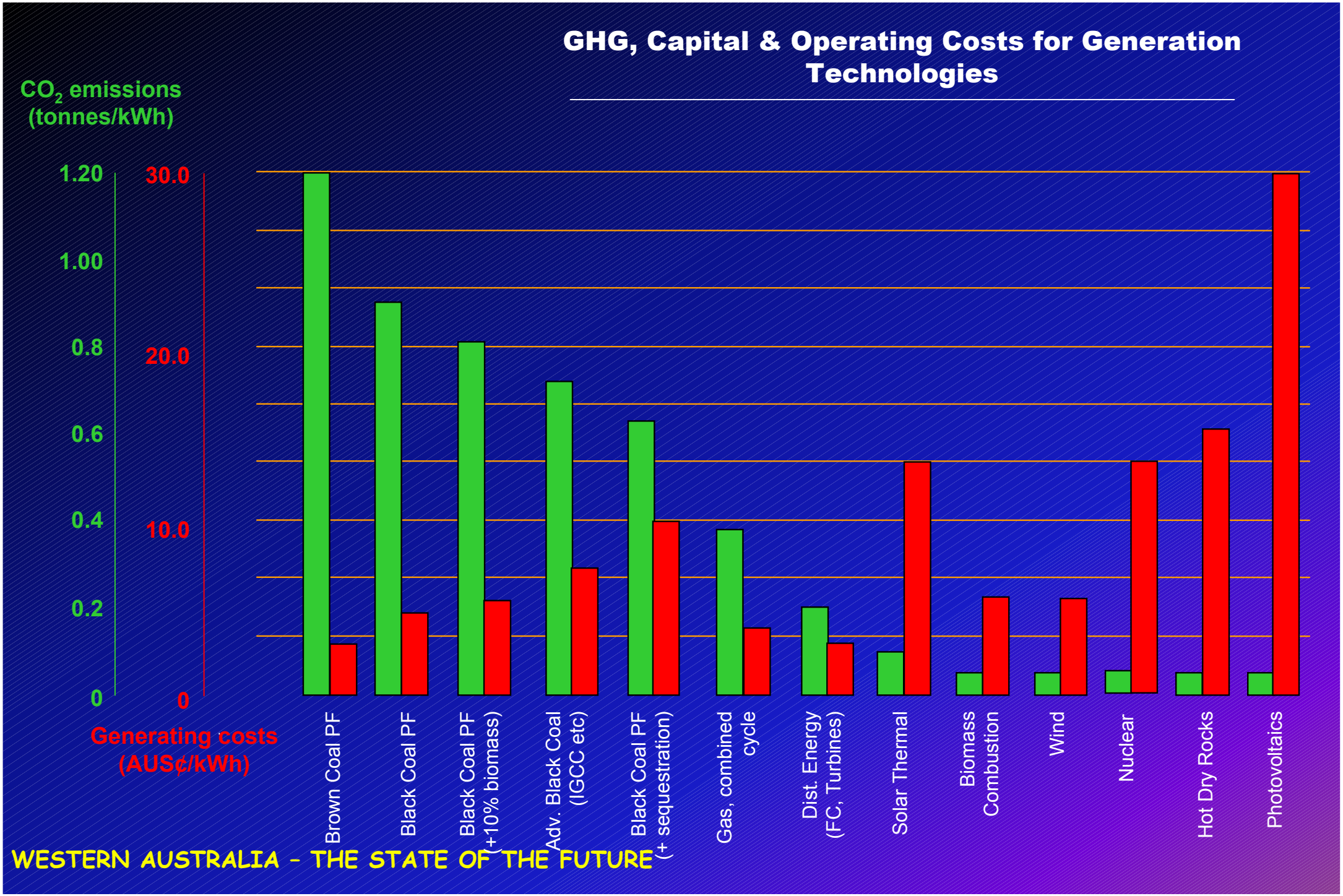
WESTERN AUSTRALIA – THE STATE OF THE FUTURE

Hybrid Solar/Fossil Power

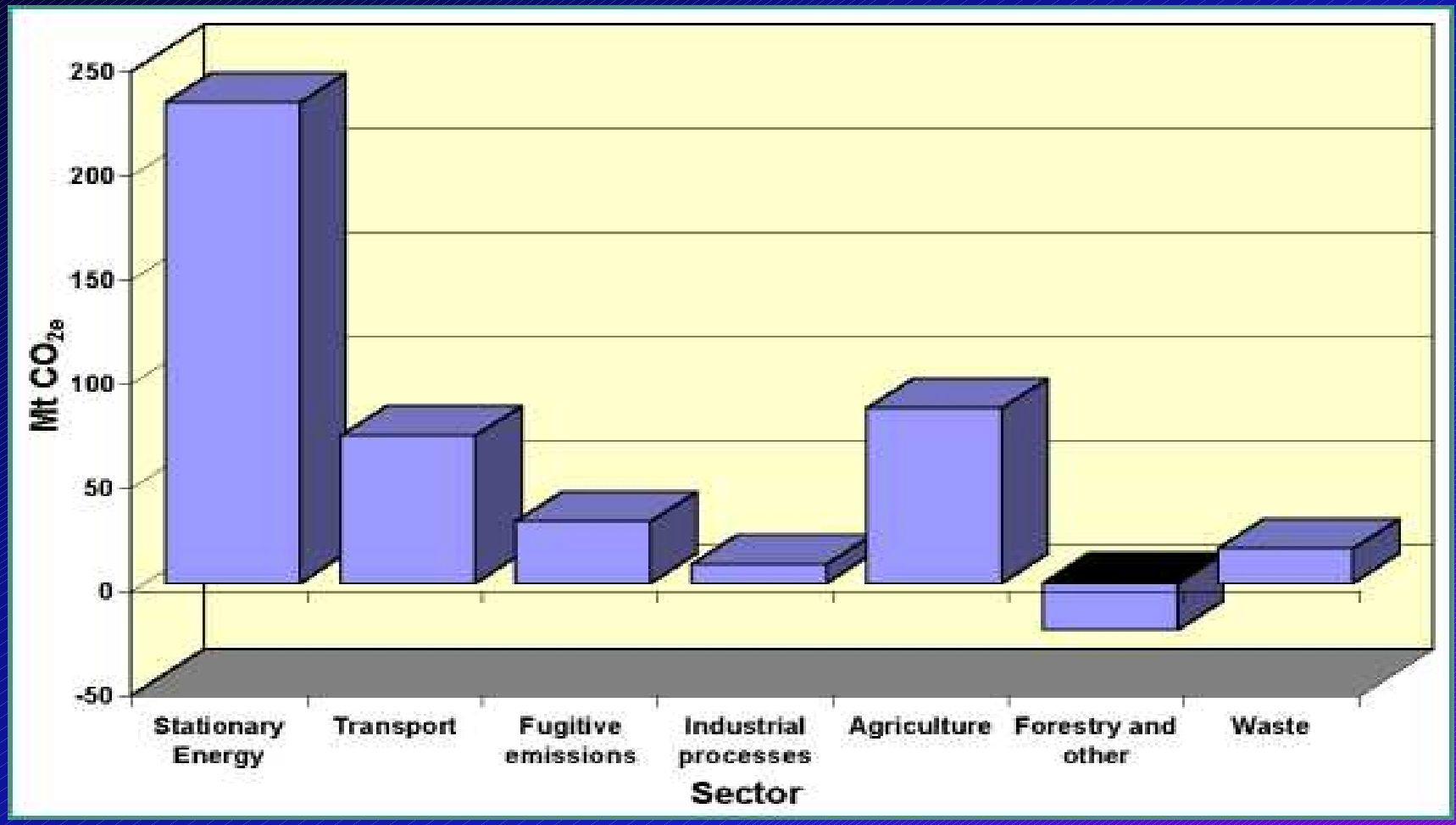


Facility to demonstrate the use of solar energy to boost the energy of natural gas and test the concept for zero CO_2 production.

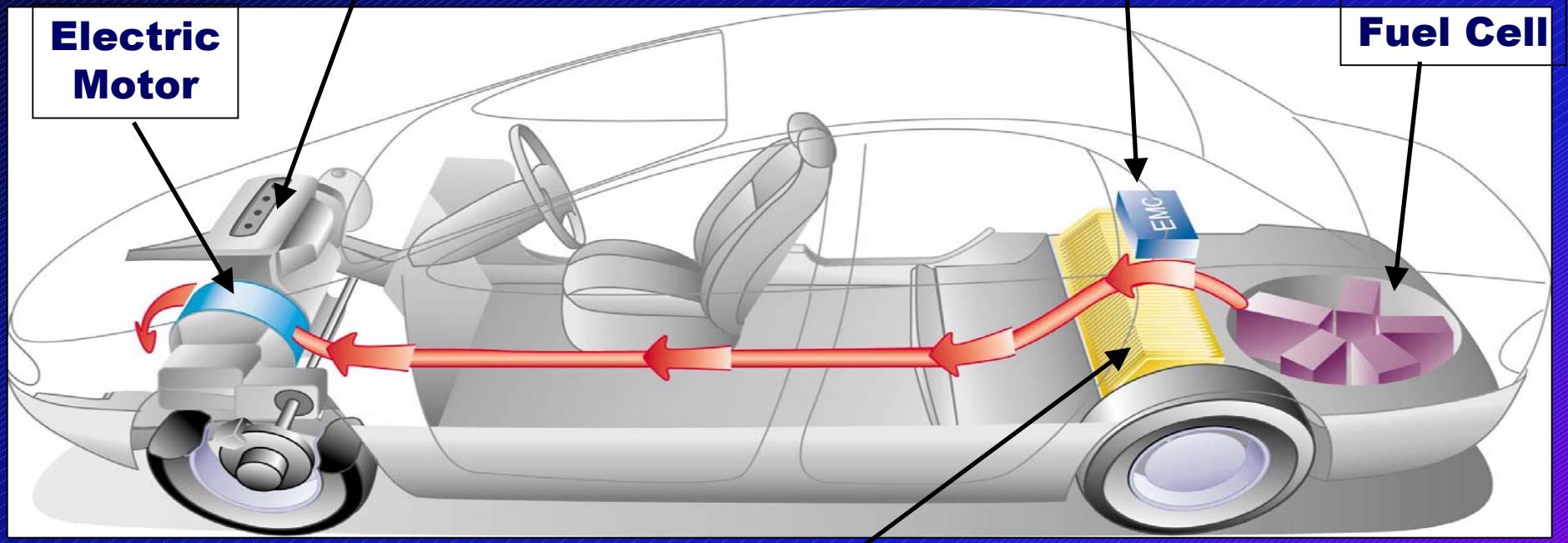
GHG, Capital & Operating Costs for Generation Technologies



GREENHOUSE EMISSIONS BY INDUSTRY SECTOR

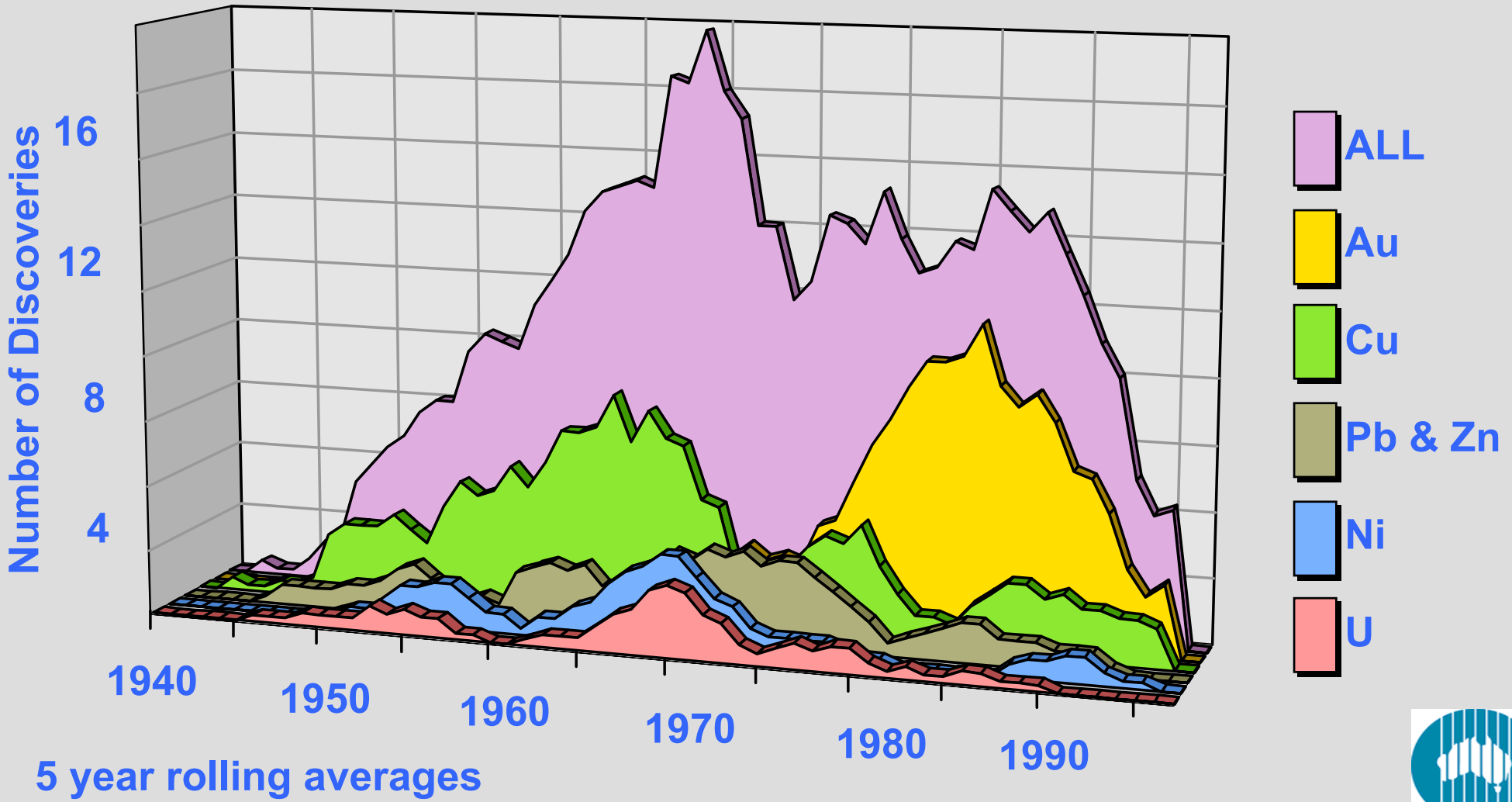


The Next Generation of Hybrid Car



Minerals Research

Discoveries By Commodity-World Wide 1940-1999



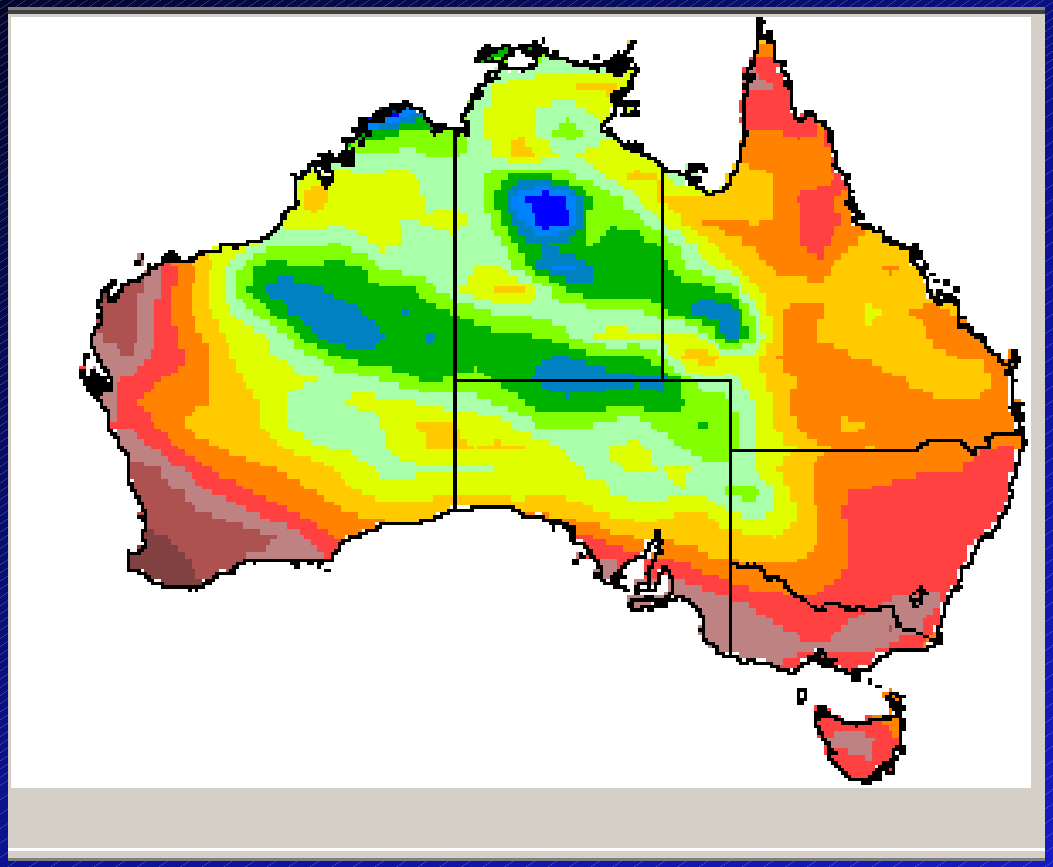
D. Haynes, BHP World Minerals

CSIRO

Water, Salt and Climate Change

Responses to large-scale changes

Climate change predictions



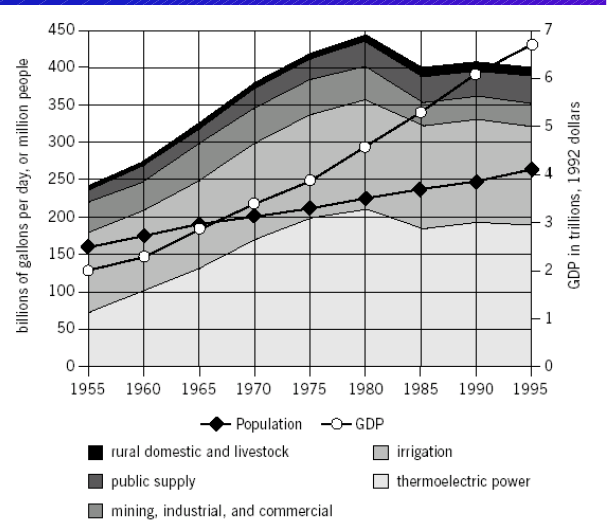
Red/grey/brown = reduction in rainfall

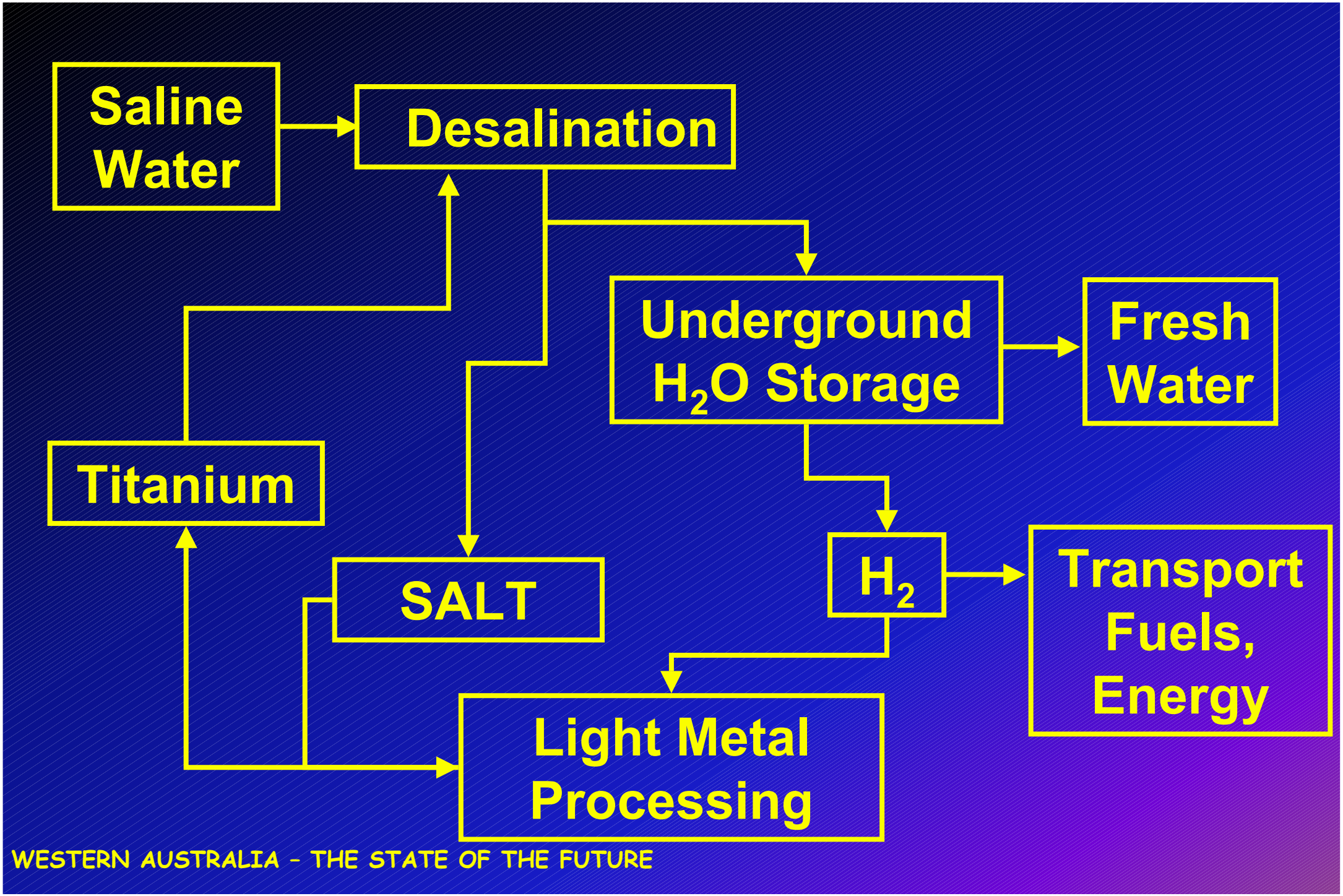
New land uses and, for WA, engineering solutions

New systems and engineering solutions

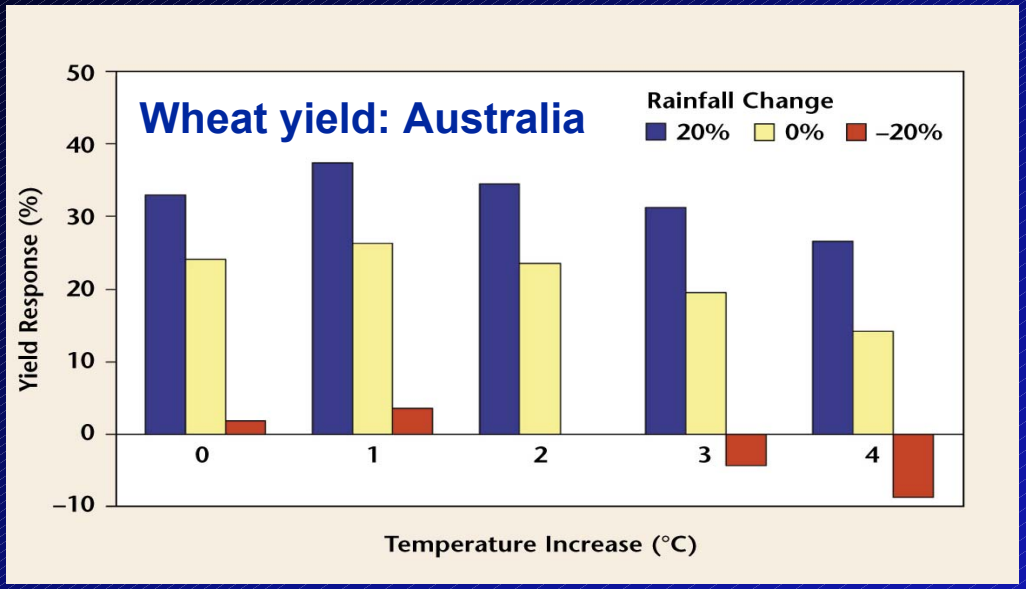
Water is not scarce

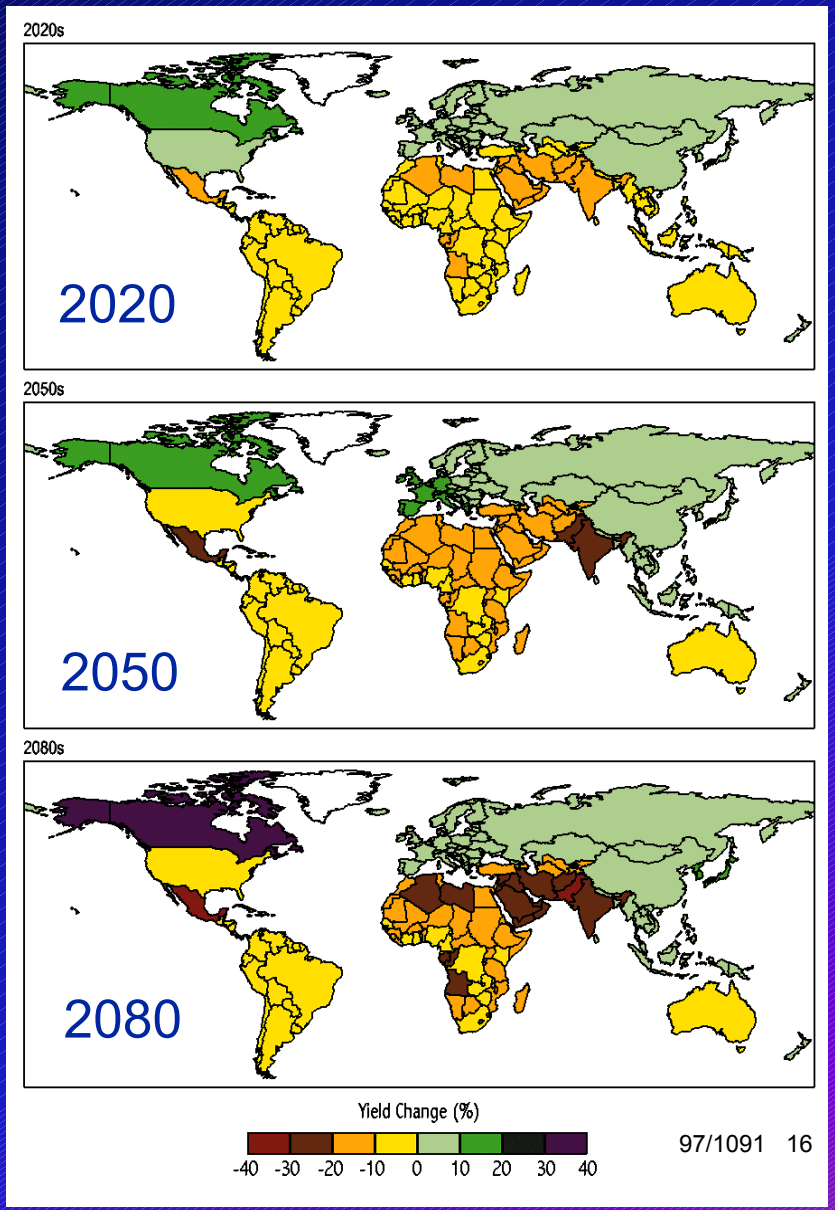
- We live on the *water planet*. 3/4 of the earth's surface is covered by water. Yet fresh, clean water is scarce and getting more so.
- Of all the water on earth, less than 3 percent is fresh, and all but three thousandths of that is locked up in glaciers and icecaps or is too deep in the earth to retrieve.
- Efficiencies help but the holy grail is desalination of salty water at 1/10 the present cost.




Saline Water
Desalination
Underground H_2O Storage
Fresh Water
Titanium
SALT
H_2
Transport Fuels, Energy
Light Metal Processing
WESTERN AUSTRALIA - THE STATE OF THE FUTURE

Crop Yield Change





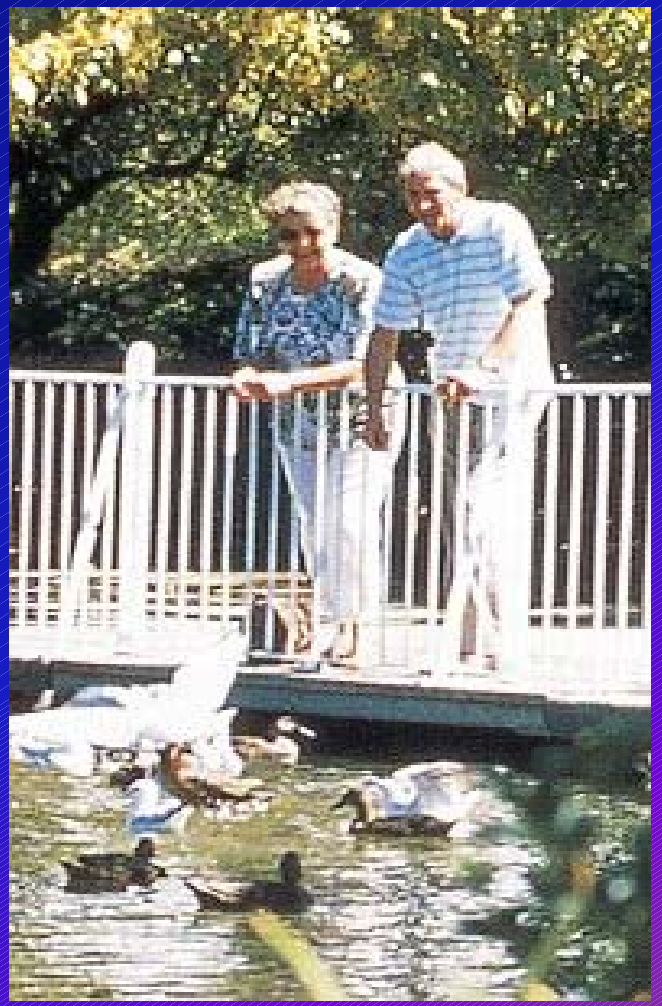
Percentage change in average crop yields for climate change scenario. Effects of CO_2 are taken into account. Crops modeled are: wheat, maize and rice.

CSIRO / Jackson Institute, University College London / Goddard Institute for Space Studies / International Institute for Applied Systems Analysis

Health Research

The setting for Health Care We need to:

- Reduce the costs
- Reduce the burden
- Capture the opportunities
  - Western Australia will have ¼ of its population (or 0.7 million people) over 65 by 2025
  - Care expenditure will increase by over 100% between 1997 and 2031



Health Research in WA

- Health represents ¼ of public expenditure in WA
- Opportunities exist in asthma research, population based research, improved indigenous health, and the link between specialised foods and health.

Barleyplus™ has nutritional benefits:

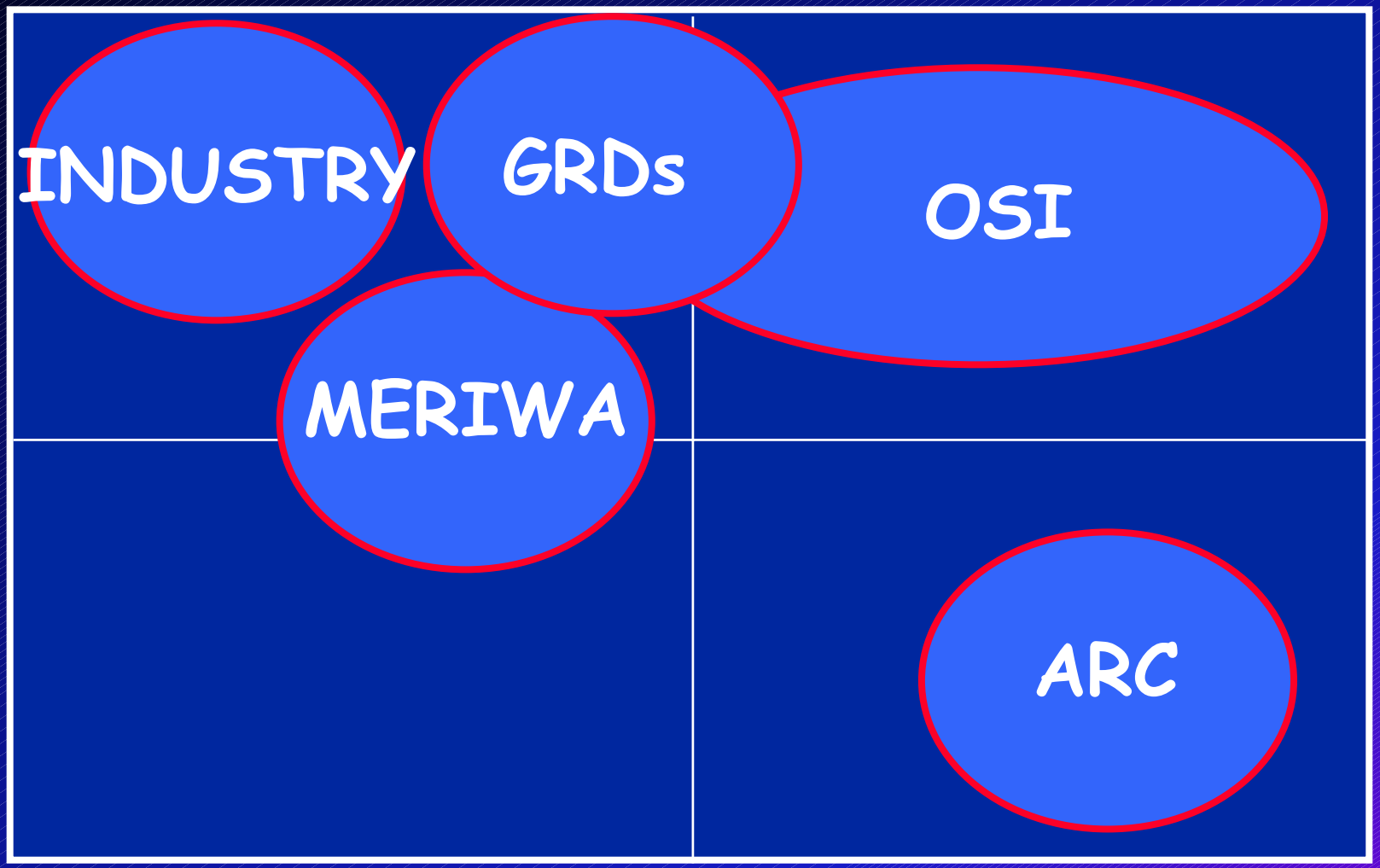
- Resistant starch - improved bowel health.
- High beta glucan - cholesterol reduction.
- Low glycaemic index and energy density.

ICT Research

New Communication Systems

- Western Australia already hosts a major tracking station for the European Space Agency
- An opportunity exists to build the Low Frequency Array Radio Telescope near Geralton; a $200 million investment
- There is an opportunity to build the Square Kilometre Array; a $2 billion investment in Western Australia
- These developments form the basis for new research areas in ICT and new commercial enterprises.
- It is essential that we ensure these investments in WA actually occur and at the same time maximise the impact these developments will have on the research infrastructure in WA

THE PORTFOLIO OF RESEARCH FUNDING SCHEMES



OUTCOME DRIVEN RESEARCH

CURIOSITY DRIVEN RESEARCH

The Strategic Intent of the WA Office of Science and Innovation is:

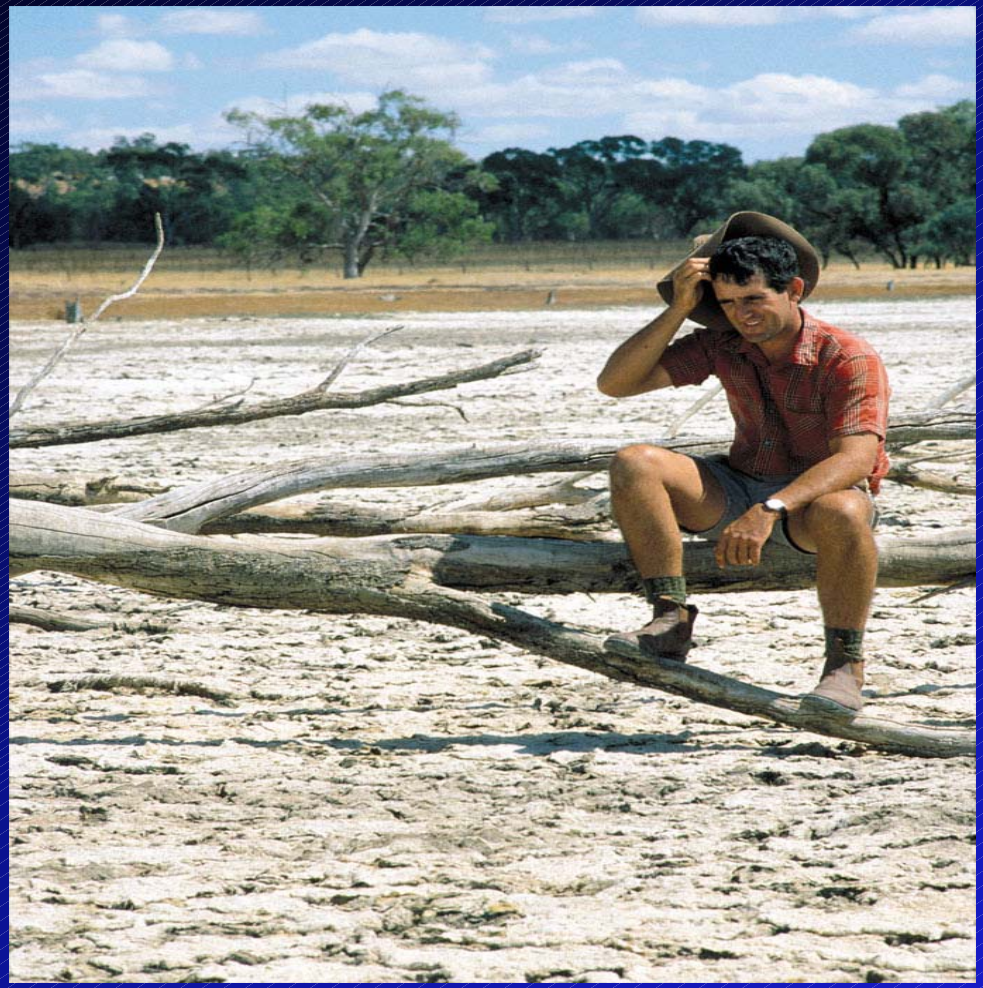
The State of Western Australia is recognised as a world leader in quality of life through investments in Science and Innovation.

The Goal of the Office of Science and Innovation is:

To be perceived, within the general community, as a facilitator of very large research programs that clearly have a significant positive impact on the well being of Western Australians.

Thank you

and may the next 20 years
involve great research
with high impact outcomes
for WA



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