Theme 3

National capacity, competitiveness and scientific excellence

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OECD/IMHE Trends in the Management of Human Resources in Higher Education
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Competition in the global marketplace

- National economies need ongoing access to highly skilled labour, particularly in science, engineering and technology.

- How best to grow the national capacity of knowledge workers and recruit, manage and retain highly-trained professionals is a major challenge everywhere.
Structure of presentation

- Contextual information on Australia, its R&D & govt. policy intentions

- Some of the main issues and challenges facing Australia in ensuring that it has the quality scientific and engineering workforce needed to fuel its national innovation system
Australia …

~19 million with a Diaspora of ~4%
1% of the continent contains 84% of the population

Overseas profile

- **Sporting achievements**
  particularly cricket, rugby, tennis, swimming and track and field, surfing, grand prix

- **Entertainment**
  Steve Irwin, Nicole Kidman, Kate Blanchett, Kylie Minogue, Joan Sutherland, Russell Crowe, Jeffrey Rush, Toni Collette, Baz Luhrman - great film locations - e.g. The Matrix

- **Fashion Industry**
  Elle McPherson, Sara O’Hare, Megan Gale, Collette Dinnigan
Less well known

- 8 Nobel prize winners
- Black-box flight recorder (1961)
- Sarich orbital engine
- Polymer banknotes
- Wine casks with plastic sacs
- Pacemakers
- Spray on skin
- Ultrasound Imaging Equipment
- Racecam TV Sport Coverage
- IVF embryo freezing
- Flu vaccine
Migration Policy - responsive to:

- Manpower Needs of a Knowledge Economy
- Ageing population
  Shift towards skilled & business & temporary
Expenditure by R&D Sector, 2002-03

- **Private non-profit**: 3%
- **Business**: 48%
- **Higher Education**: 28%
- **State/Territory**: 8%
- **Commonwealth**: 12%

Source: AUSSTATS 8112.0 Research and Experimental Development, All Sector Summary, Australia

EMBARGO: 11:30 AM (CANBERRA TIME) 13/09/2004
GERD 2002-03

GERD as a percentage of the GDP was 1.62% in 2002/03

BERD is the largest single component of GERD but low by OECD standards

Great deal of R&D undertaken in the public sector
Figure 2

Time series of Australia's GERD as a percentage of GDP compared with the OECD weighted average

OECD weighted av

Australia
BERD as a percentage of GDP - by OECD countries, 2001

Source: OECD, Main Science and Technology Indicators Database, 2003
Reviews, Inquiries, Issues & Discussion Papers - we’ve had a few!!

- Review of the National Protocols for Higher Education Approval processes and the way in which universities should be defined into the future

- Building Better Foundations for Higher Education: a discussion about re-aligning Commonwealth-State responsibilities

- Review of the Corporate Governance of Statutory Authorities and Office Holders (Uhrig Report)
Reviews, Inquiries, Issues & Discussion Papers - cont.

- Industrial relations reform agenda
- Proposal to establish a Research Quality Framework
- Audit of Science Skills in Australia
- Senate Inquiry into Australian Expats
- Economic Impacts of Migration and Population Growth (The Productivity Commission)
Research Quality and Accessibility Framework

To develop the basis for an improved assessment of the quality and impact of publicly funded research and an effective process to achieve this

The RQF will be used in making decisions about research funding to universities

Introduction - likely 2007
RQF - A number of concerns

- the large research universities better able to compete than small regional universities
- measurement and weighting issues
- focus on research outputs and impacts - time issues for some research fields
- possibility that the RQF will not be conducive to high-risk/high-impact research
RQF - A number of concerns cont.

- Encourage universities to ‘buy in’ stars
- Direct costs are estimated to be $20 million per exercise
- Potentially a mechanism for govt to avoid providing real increases in public funding to the sector

How does the RQF fit with strategies needed to produce ‘world class universities’ as per Jiao Tong and THES rankings?
Skills Audit 2005

- determine the extent to which the needs of Australia industry and research bodies for graduates in science, technology and engineering are being met.

- evaluate the supply and demand of graduates from the major scientific disciplines and also report on skills shortages in sub-disciplines such as statistics, organic chemistry, horticulture, applied physics, power engineering, and entomology.

- provide a clear understanding of where shortages lie and allow government, industry and research organisations to better meet skill needs.
Inquiry into Australian Expatriates -

- the extent of the Australian diaspora; their needs & concerns; & the variety of factors driving more Australians to live overseas

- the costs, benefits and opportunities presented by the phenomenon

- the measures taken by other comparable countries to respond to the needs of their expatriates; and

- ways in which Australia could better use its expatriates to promote our economic, social and cultural interests
Economic Impacts of Migration and Population Growth (The Productivity Commission)

the nature of international migration flows over the last decade, in particular, flows of skilled migrants and the impacts this has had on skill levels in the Australian population generally, as well as within different industries and occupations.
Brain Drain / Gain / Circulation/Waste /Exchange/ Loss/ Retention

- Human mobility is a complex, multifaceted phenomenon
- Poaching & skimming of skilled labour
- ‘Circulators’ are of increasing importance
- Problems of lack of adequate statistics/indicators
- Undue focus on negatives
Australian Studies

- Mostly ad hoc
- Conflicting outcomes
- Constrained by lack of sophisticated mobility statistics
Examples of surveys on mobility issues

- Victorian Endowment for Science, Knowledge and Innovation; Australian Society for Medical Research; Chifley Research Centre

- Dept. of Immigration and Multicultural and Indigenous Affairs - several studies including Skilled Labour: Gains and Losses 2001; Immigration in a Time of Domestic Skilled Shortages 2005

- Several expat surveys - ACCI - why do one million Australians live overseas; Lowy Institute - Diaspora: the world wide web of Australians
Human Factor

- Marie Curie Fellowship Association
- Bernard Gregory Association
- ERA-MORE - the researcher’s mobility portal
`BEYOND BRAIN DRAIN`

MOBILITY, COMPETITIVENESS
&
SCIENTIFIC EXCELLENCE

‘Beyond Brain Drain’

- What we know about brain drain, gain, churn, waste, loss etc issues

- What are the barriers to effective recruitment, management and retention strategies

- Compare ways in which a range of organizations attempt to create value in their capacity to attract personnel

- Consider ways in which Australia can build national capacity regarding its pool of highly trained SET personnel
Signals about Australia & its R&D - Positives

- Stable albeit conservative govt

- By and large personal and company taxation are not high - although ‘bracket creep’ is an issue

- Migration policy increasingly responsive to changing labour market requirements for skilled professionals

- Established albeit aging highly skilled workforce

- World class, leading research in areas such as medicine and biotech
Positives

- Standard of living comparatively high - reasonable access to health and education, good housing, relatively low crime and pollution levels

- A number of States are committed to realising KBEs

- There are still opportunities for involvement in cutting-edge research - particularly in CRCs & biomed res institutes

- Ethnically diverse mix in the metropolitan centres with associated support networks
Positives

- Receptiveness for using Virtual Centres of Excellence for trans-institutional collaborations

- Wonderful climate, spectacular landscapes and friendly locals
Negatives

- Migration policy geared more towards short term circulators rather than investing in a stable pool of national SET personnel

- Few political champions for investment in higher education and recognition of importance of its knowledge workers (eg current HE reforms)

- Universities are not happy places to work - Low salaries, inadequate funding support for research, heavy teaching loads, research infrastructure inadequate in some areas to be truly internationally competitive
Negatives

- ‘In an open market of innovation, most of the stars - including our own - still quite understandably bypass Australia’.

- If the stars are leaving this sends messages about where the best facilities & cutting edge research are located.

- Career potentials, particularly for ECRs are not great.

- Reduced commitment of foreign companies to Australian R&D evidenced in closure of labs and downsizing of high tech personnel.
Negatives

- Lack mobility stats which could provide info needed over time about skilled labour circulation.

- Mobility schemes to enhance public/private sector mobility are limited both nationally and for international developments.

- Many of the positives identified about Australia are also present in other countries but those countries also offer subsidies and other incentives to attract both R&D investment and recruit personnel.
Some issues for Australia

Need a more systemic approach to addressing the human resource needs of KBEs - one that provides a broader perspective from schooling to career management and also one that is integrated with a wider range of innovation policies.
Issues continued

• The whole demand/supply issue regarding scientists and engineers needs to be carefully examined - are we training too many in particular fields? What are the arguments for ‘home grown’ vs ‘buy in’?

• Need to be aware of ‘brain loss’ - where students opt for soft sciences or for careers that provide more attractive prospects in finance, law, etc
Issues cont.

Need to fully appreciate the implications of the massive increase in the international transfer of highly skilled managerial and professional workers in the last 2 decades.

It is the highly skilled who will be measuring what Australia has to offer vs other countries - we simply can’t afford obstacles.
Issues cont.

* EU (Lisbon strategy 2000) to become by 2010 the most competitive & dynamic KBE in the world

* Canada to be amongst the five most innovative countries by 2010

Is it feasible for Australia to set similar targets???
Addressing skills shortages

- Train more - but there is a long lead time
- Buy in - if can compete for the ‘best’ in a global market
- Minimise attrition
Minimising Attrition

- Greater flexibility in employment practices including competitive salary packaging
- Greater flexibility in career pathways, including re-entry
- Recognition of pressures on people with families
- More sophisticated approaches to re-training/professional development - e.g. soft skills training