



Australian Government
Australian Research Council

Science Meets Parliament

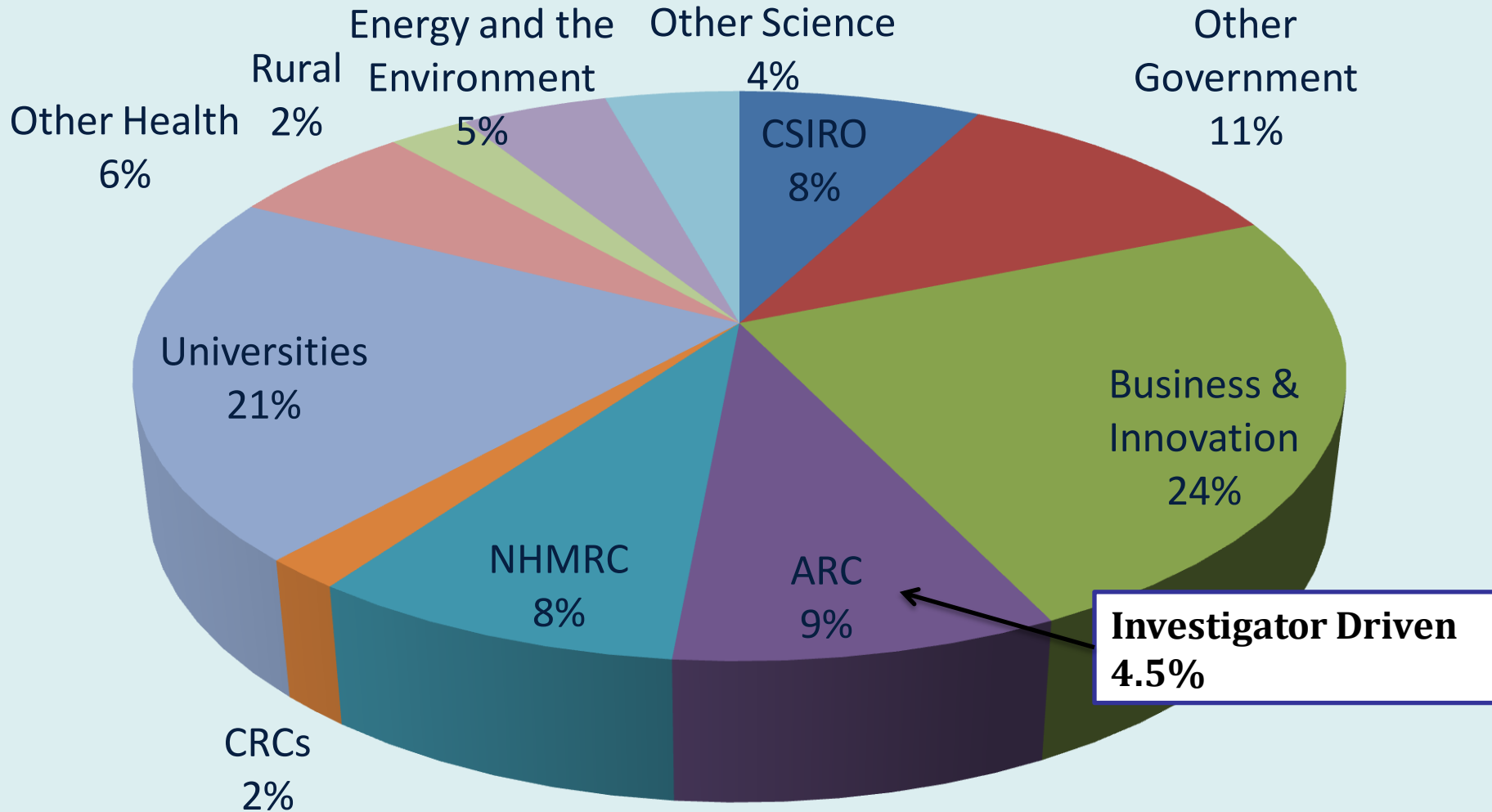
21 June 2011

Professor Margaret Sheil
CEO, Australian Research Council

Research

- **Promoting the broader benefits of research?**
- **How can scientists engage in policy development?**
- **ERA - a Case Study?**

Government Investment in Research 2011-12



Avoid sense of entitlement

We need to do this because the rest of the world is doing it...

Demonstrate that your research offers a natural advantage for Australia

Would (why?)

- Outcomes
- Science and research
- Broader benefits
- Australian natural advantage

Should (why not?)

- Health
- Welfare
- Defence
- Infrastructure
etc.

Scientists contributing to policy

- Analytical skills
- Systematic approach
- Evidence/testing/new knowledge
- Communication of complex issues

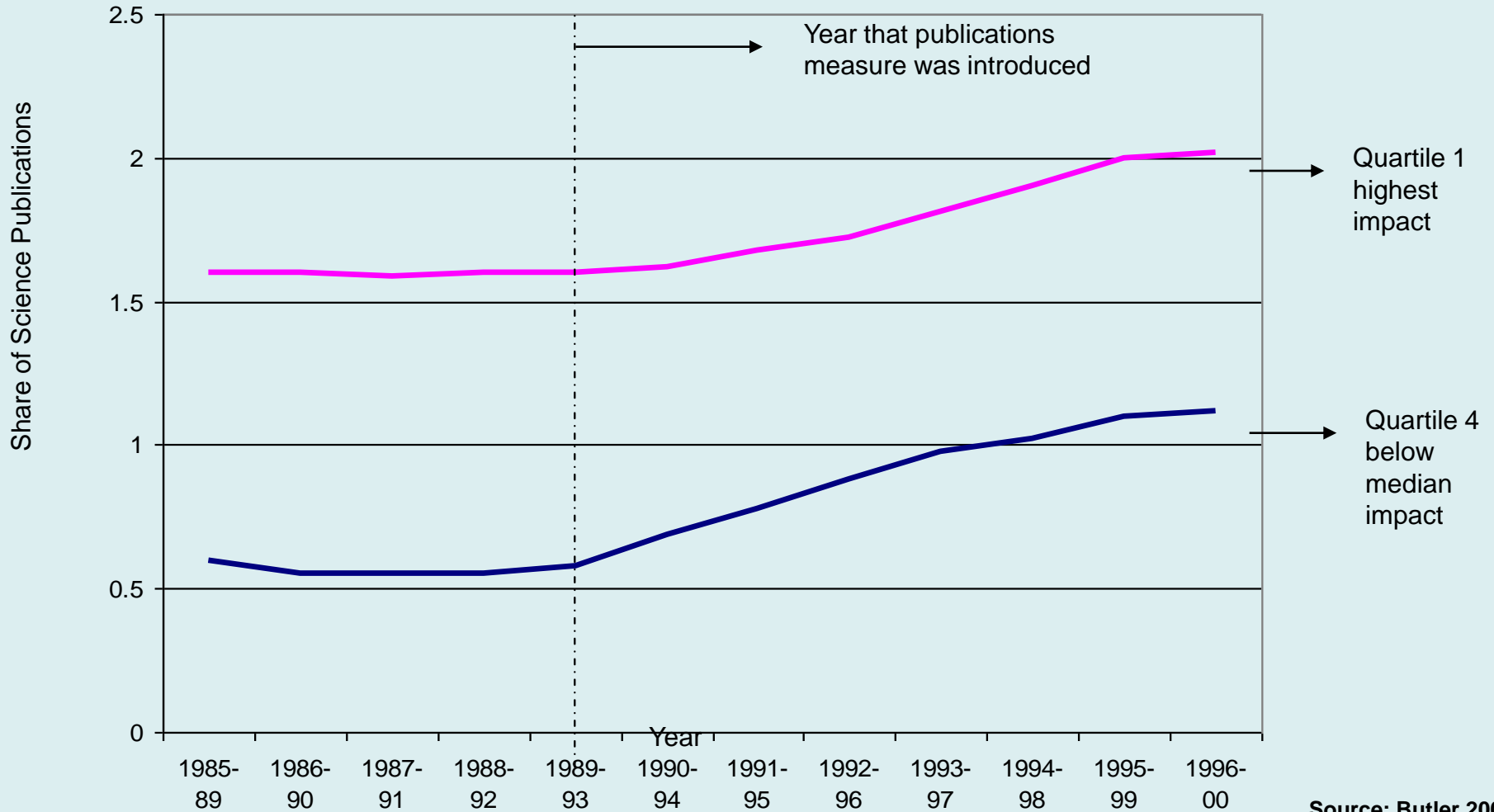
Objectives of ERA

- Establish an *evaluation framework*;
- Provide a *national stock take* of discipline-level research;
- Identify *excellence* across the full spectrum of research performance;
- Identify *emerging research areas* and *opportunities for further development*;
- Allow for *comparison* of Australia's research *nationally* and *internationally* for all discipline areas.

Aim: what problem were we trying to solve?

- Demonstrate quality/value of investment in university research to government
- Raise the quality of Australian research effort

Australian academic publishing practices



Source: Butler 2002

Method

- Timing/project plan?
- What resources are/were available?
 - People
 - Financial
 - Infrastructure
- Explore possible approaches?
 - Preliminary work
 - Literature

Excellence in Research for Australia

- 2007 New Government elected with a commitment to replaces RQF with a metrics based approach
- 2008 ARC given responsibility for quality framework
- 2008 Develop policy and case for funding and vice versa
- 2009 ERA Trial in physical sciences and humanities and creative arts
- 2010 ERA Full Evaluation
- 2011 Refinements to framework
- 2012 Next ERA round

Scale of ERA 2010

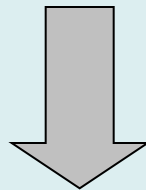
- All 41 eligible institutions submitted data
- Over 330,000 research outputs
- Approximately 55,000 researchers represented
- 2,435 units of evaluation assessed at the 2- and 4-digit level
- 149 Research Evaluation Committee (REC) members
- 500+ Peer Reviewers contributed evaluations
- All aggregated data presented in the *ERA 2010 National Report*.

The ERA 2010 Clusters

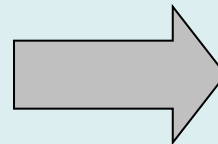
Cluster 1	Physical, Chemical & Earth Sciences
<i>Cluster 2</i>	<i>Humanities and Creative Arts</i>
<i>Cluster 3</i>	<i>Engineering and Environmental Sciences</i>
<i>Cluster 4</i>	<i>Social, Behavioural and Economic Sciences</i>
<i>Cluster 5</i>	<i>Mathematics, Information and Communication Sciences</i>
Cluster 6	Biological Sciences and Biotechnology
Cluster 7	Biomedical and Clinical Research
Cluster 8	Public and Allied Health, and Health Sciences

ERA 2010 Process Overview

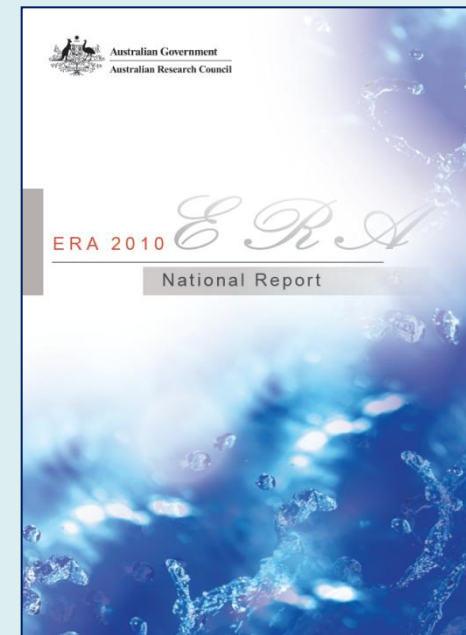
Volume & Activity	Ranked Outlets
Citation Analysis	Esteem
Research Income	Applied Measures
Peer Review	



Research Evaluation
Committee



**Please note –
no weightings**



Results

- ✓ National Report released in January 2011
- ✓ Outcomes broadly accepted
- ✗ Averages and Rankings
- ✗ Sciences v. Social Sciences & Humanities

Strengths in Australian universities

- Astronomical and Space Sciences
- Optical Physics
- Quantum Physics
- Macromolecular & Materials Chemistry
- Physical & Structural Chemistry
- Geology
- Ecology
- Evolutionary Biology
- Plant Biology
- Zoology
- Clinical Sciences
- Electrical and Electronic Engineering
- Historical Studies
- Cardiovascular Medicine and Haematology
- Human Movement and Sports Science
- Immunology
- Oncology and Carcinogenesis
- Pharmacology and Pharmaceutical Sciences
- Medical Physiology

Gaps

- Agriculture, Land and Farm Management
- Automotive Engineering
- Maritime Engineering
- Engineering Design
- Complementary and Alternative Medicine

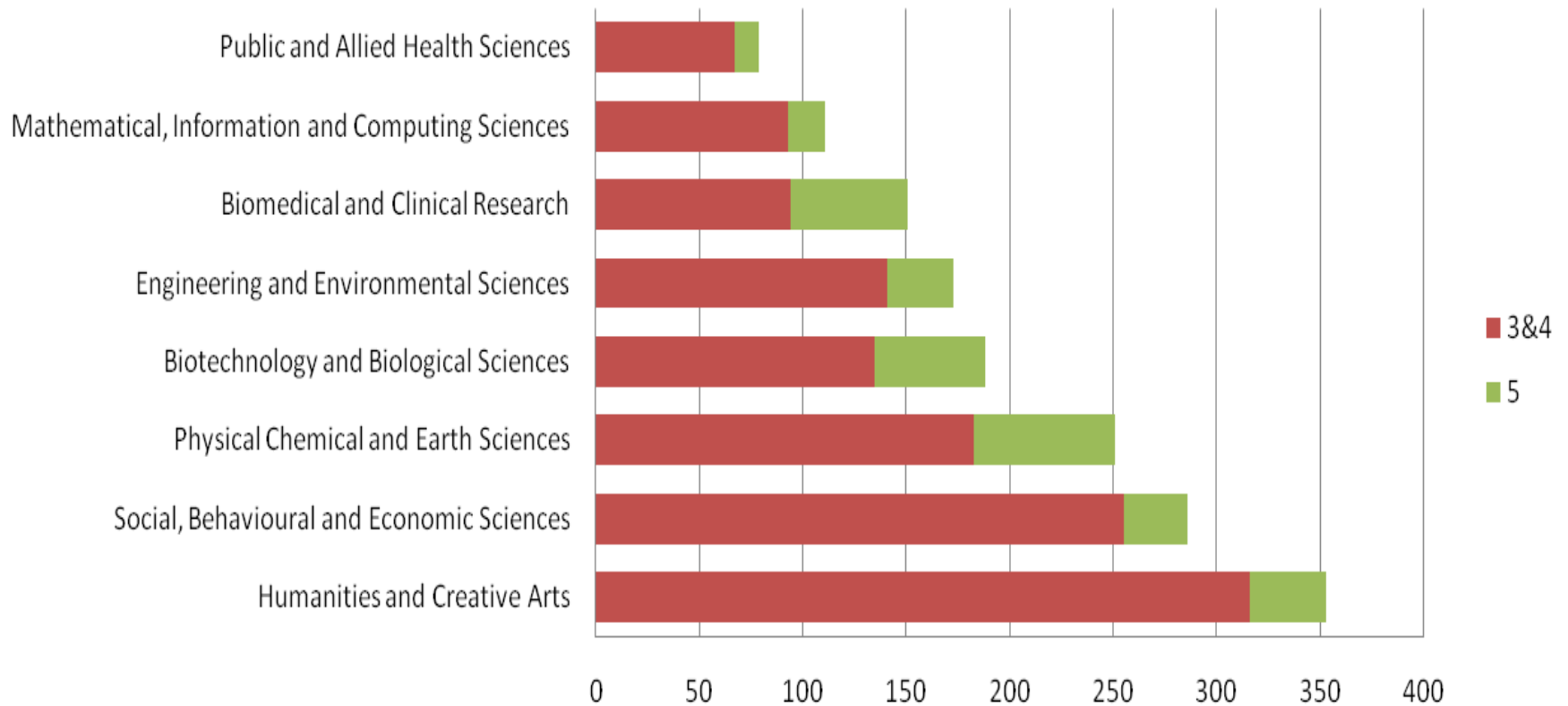
Pockets

- Classical Physics
- Aerospace Engineering
- Transportation and Freight

Strong Applied Research

- Electrical and Electronic Engineering
- Crop and Pasture Protection
- Resources Engineering
- Materials Engineering
- Extractive Metallurgy
- Nursing

ERA 2010 Rating by Cluster - at, above, or well above world standard (i.e. 3s, 4s, & 5s)

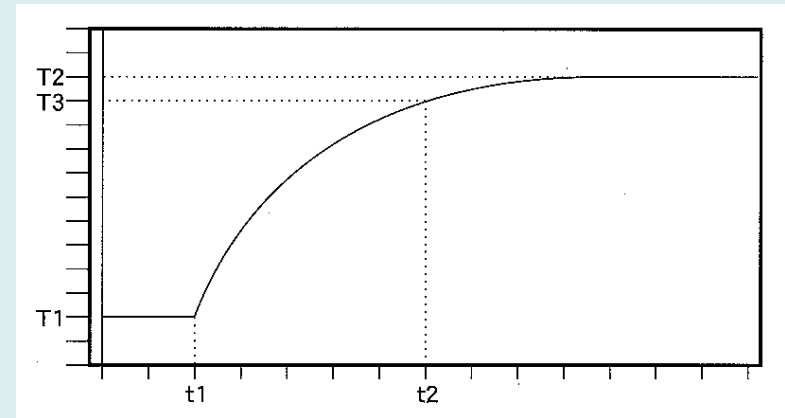


Conclusions

- Evaluation demonstrates quality of outcomes from government investment
- More to do on interdisciplinary and applied research
- Reports of influence of journal rankings are exaggerated
- Some issues for specific disciplines (eg. Computer science)

Unintended consequences-journal rankings

- Journals only easily accessible information
- Rapid response time
- Codified existing behaviour/practice
- Simplified application



ERA 2012 response to feedback

- Changes to the ranked journals and conferences
- Interdisciplinary Research
- Raising the Threshold
- Eligibility for fractional staff
- Capturing Applied Research

The refined journal indicator

Example of the draft refined journal indicator for FoR 0201 for University Y				
University of Y		0201	Astronomical and Space Sciences	
	Journal title	Papers	Contribution	Cumulative
1	Advances in Space Research	171	27%	27%
2	Applied Physics Letters	90	14%	41%
3	Nature	72	11%	52%
4	Astronomy and Astrophysics: a European journal	69	11%	63%
5	Geophysical Research Letters	51	8%	71%
6	Mathematics and Computers in Simulation	27	4%	75%
7	The Astronomical Journal	27	4%	79%
8	Planetary and Space Science	18	3%	82%
9	Monthly Notices of the Royal Astronomical Society	18	3%	85%
10	Earth and Planetary Science Letters	12	2%	86%
11	The Astrophysical Journal: an international review of astronomy and astronomical physics	12	2%	88%
12	Journal of Atmospheric and Solar - Terrestrial Physics	12	2%	90%
13	Publications of the Astronomical Society of Australia	12	2%	92%
14	Journal of Geophysical Research	9	1%	93%
15	Physical Review D (Particles, Fields, Gravitation and Cosmology)	9	1%	95%
16	Solar Physics: a journal for solar and solar-stellar research and the study of solar terrestrial physics	9	1%	96%
17	Astronomy and Geophysics	6	1%	97%
18	Astrophysical Journal Supplement Series	6	1%	98%
19	Apeiron	3	0%	99%
20	Science	3	0%	99%
	Total	642		
<i>Please note that this is not based on any university's submission to ERA 2010</i>				

ERA 2012 – still to do

- Expanding peer reviewer pool
- Making peer review more robust (selection of outputs, reviewers)
- Draft Submission Guidelines to be issued to the sector in July for comment
- System development and testing



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ARC Welcomes your feedback

info@arc.gov.au

era@arc.gov.au

Professor Margaret Sheil
CEO, Australian Research Council

Research