Charles Sturt University

22 October 2013

Professor Aidan Byrne
CEO, Australian Research Council
Overview

- ARC
- Current landscape
  » Programs
  » ERA
  » Impact
  » Q&A
Government Investment in R&D 2013-14

- ARC: 10.2%
- NHMRC: 9.9%
- Other health: 1.0%
- Block Funding to Higher Ed: 21.9%
- Other Higher Ed R&D Support: 0.9%

- CSIRO: 8.8%
- DSTO: 4.9%
- Other Govt R&D: 7.4%

- Industry R&D Tax Measures: 19.4%
- Other Industry R&D support: 0.1%
- Other Innovation Support: 5.0%

- Multisector Science Support: 2.4%
- Energy and the Environment: 2.4%
- Rural: 3.9%
Trends in Government Investment in R&D 2004-14

- Black line: Industry R&D Tax Measures
- Red line: NHMRC
- Blue line: ARC
- Green line: CSIRO
- Brown line: DSTO
- Green line: Rural
- Yellow line: CRCs
- Red dashed line: Block Funding to HE
Trends in Government Investment in R&D 2004-14

ARC & NHMRC ($M)
ARC funding awarded by program – last 5 years

- Discovery - Projects: 41%
- ARC Future Fellowships: 16%
- Linkage - Projects: 18%
- Centres of Excellence: 7%
- Australian Laureate/Fed Fellowships: 5%
- Linkage - Infrastructure Equipment and Facilities: 4%
- Special Research Initiatives: 4%
- Discovery Early Career Researcher Award: 3%
- Other: 2%
Total number of proposals received by the ARC by (expected) commencement year

- Technology
- Studies in Human Society
- Studies in Creative Arts and Writing
- Psychology and Cognitive Sciences
- Physical Sciences
- Philosophy and Religious Studies
- Medical and Health Sciences
- Mathematical Sciences
- Law and Legal Studies
- Language, Communication and Culture
- Information and Computing Sciences
- History and Archaeology
- Environmental Sciences
- Engineering
- Education
- Economics
- Earth Sciences
- Commerce, Management, Tourism and Services
- Chemical Sciences
- Built Environment and Design
- Biological Sciences
- Agricultural and Veterinary Sciences
Humanities and Social Sciences (roughly) % ARC funding

- Psychology and Cognitive Sciences
- Economics
- Commerce, Management, Tourism and Services
- Education
- Studies in Human Society
- Built Environment and Design
- Law and Legal Studies
- Studies in Creative Arts and Writing
- Philosophy and Religious Studies
- Language, Communication and Culture
- History and Archaeology
Average Grant Size - DP11 to DP13 - By 2 digit FOR
showing awarded amount as part of requested amount

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National Competitive Grants Program

**Discovery Projects**
- Laureate Fellowships
- Future Fellowships
- DECRA
- Discovery Indigenous

**Linkage Projects**
- Centres of Excellence
- Co-Funded & SRI
- ITRP
- Linkage Projects

5 year averages
First-time awardees on DECRA and DP

- 2008: # DECRA first-timers (400) and # DP first-timers (400)
- 2009: # DECRA first-timers (450) and # DP first-timers (450)
- 2010: # DECRA first-timers (500) and # DP first-timers (500)
- 2011: # DECRA first-timers (550) and # DP first-timers (550)
- 2012: # DECRA first-timers (600) and # DP first-timers (600) with a peak of 40%
- 2013: # DECRA first-timers (450) and # DP first-timers (450) with a decline to 16%

% first-timers:
- 2008: 16%
- 2009: 16%
- 2010: 16%
- 2011: 16%
- 2012: 40%
- 2013: 16%
DP13 - Submission and success rate by gender and career age

- Male proportion
- Female proportion
- Male success rate
- Female success rate

Bar chart: 0-5 Yrs, 5-10 Yrs, 10-15 Yrs, 15-20 Yrs, 20-25 Yrs, 25 Yrs plus

Graph shows increasing success rates for both genders with career age.
Collaborating Countries on ARC Linkage Projects Grants 2005-2013

- United States: 26%
- United Kingdom: 15%
- Canada: 7%
- Germany: 6%
- New Zealand: 5%
- China: 5%
- France: 4%
- Switzerland: 2%
- Netherlands: 2%
- Italy: 2%
- Sweden: 2%
- Japan: 3%
Working Separately, Working Together

Challenge:

How do we setup meaningful collaborations with international partners?

- Researcher level
- Institutional level
- Funding agency level
- Government level
ERA 2010 & 2012 National Reports
Income and Quality

HERDC income Cat 1-3 by rating - 2010

2010

- National Competitive
- Other Public
- Industry
Income and Quality

HERDC income Cat 1-3 by rating - 2012

ERA rating

- National Competitive
- Other Public
- Industry

2012
ERA 2012 ARC/NHMRC research funding by discipline
ERA 2012: Two Digit FoR codes
No. of Universities rated at world standard or higher

- 01 Mathematical Sciences: 11 (World standard), 8 (Above world standard), 3 (Well above world standard)
- 02 Physical Sciences: 10 (World standard), 4 (Above world standard), 6 (Well above world standard)
- 03 Chemical Sciences: 15 (World standard), 4 (Above world standard), 6 (Well above world standard)
- 04 Earth Sciences: 4 (World standard), 9 (Above world standard), 5 (Well above world standard)
- 05 Environmental Sciences: 10 (World standard), 9 (Above world standard), 4 (Well above world standard)
- 06 Biological Sciences: 9 (World standard), 15 (Above world standard), 10 (Well above world standard)
- 07 Agricultural and Veterinary Sciences: 12 (World standard), 10 (Above world standard), 2 (Well above world standard)
- 08 Information and Computing Sciences: 9 (World standard), 8 (Above world standard), 5 (Well above world standard)
- 09 Engineering: 9 (World standard), 4 (Above world standard), 5 (Well above world standard)
- 10 Technology: 1 (World standard), 4 (Above world standard), 4 (Well above world standard)
- 11 Medical and Health Sciences: 13 (World standard), 5 (Above world standard), 8 (Well above world standard)
- 12 Built Environment and Design: 13 (World standard), 3 (Above world standard), 10 (Well above world standard)
- 13 Education: 11 (World standard), 4 (Above world standard), 1 (Well above world standard)
- 14 Economics: 7 (World standard), 5 (Above world standard), 4 (Well above world standard)
- 15 Commerce, Management, Tourism and Services: 5 (World standard), 5 (Above world standard), 2 (Well above world standard)
- 16 Studies In Human Society: 11 (World standard), 17 (Above world standard), 3 (Well above world standard)
- 17 Psychology and Cognitive Sciences: 10 (World standard), 3 (Above world standard), 4 (Well above world standard)
- 18 Law and Legal Studies: 15 (World standard), 8 (Above world standard), 5 (Well above world standard)
- 19 Studies In Creative Arts and Writing: 15 (World standard), 8 (Above world standard), 9 (Well above world standard)
- 20 Language, Communication and Culture: 12 (World standard), 6 (Above world standard), 6 (Well above world standard)
- 21 History and Archaeology: 12 (World standard), 5 (Above world standard), 3 (Well above world standard)
- 22 Philosophy and Religious Studies: 12 (World standard), 5 (Above world standard), 3 (Well above world standard)
Variation at Four-dgit Level: STEM v HASS

Mathematical Studies (01) and Language, Communication and Culture (20)
Number of Universities Rated at World Standard or Higher

- **0101-Pure Mathematics** - 2012
  - At World Standard: 6
  - Above World Standard: 6
  - Well Above World Standard: 2

- **0102-Applied Mathematics** - 2012
  - At World Standard: 7
  - Above World Standard: 11
  - Well Above World Standard: 2

- **0103-Numerical and Computational Mathematics** - 2012
  - At World Standard: 3
  - Above World Standard: 1
  - Well Above World Standard: 1

- **0104-Statistics** - 2012
  - At World Standard: 2
  - Above World Standard: 6
  - Well Above World Standard: 1

- **0105-Mathematical Physics** - 2012
  - At World Standard: 3
  - Above World Standard: 3

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- **2001-Communication and Media Studies** - 2012
  - At World Standard: 5
  - Above World Standard: 6
  - Well Above World Standard: 2

- **2002-Cultural Studies** - 2012
  - At World Standard: 10
  - Above World Standard: 7
  - Well Above World Standard: 4

- **2003-Language Studies** - 2012
  - At World Standard: 1
  - Above World Standard: 2

- **2004-Linguistics** - 2012
  - At World Standard: 7
  - Above World Standard: 5
  - Well Above World Standard: 2

- **2005-Literary Studies** - 2012
  - At World Standard: 9
  - Above World Standard: 3
  - Well Above World Standard: 5
ERA Outcomes by Cohort

- Regional Universities Network
- non-alliance
- Innovative Research Universities Australia
- Group of Eight
- Australian Technology Network
Collaboration – ERA 2012

Research Output patterns - all output types
## Interdisciplinary activity

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Legend:
- **20-29%**
- **30-39%**
- **> 40%**
## Interdisciplinary activity

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Colors represent:
- Light blue: 20-29%
- Light green: 30-39%
- Dark green: > 40%
Quality is multidimensional

- Quality in ERA is multidimensional
- Publishing profile, income sources, background statements and applied measures all contribute to understanding the UoE
- Applied/researcher-led research is recognised in ERA
- Quality underpins evaluation across the spectrum of research activity
ERA is multidimensional

- Citation data
- Peer assessment
- HERDC Category income 2-4
- Research Commercialisation income
- Patents
- Plant breeder’s rights
- NHMRC endorsed guidelines
- Non-traditional research outputs (extended trial in ERA 2012)
Universities are multi-dimensional

We need a better and more complete description of activity.
Linkage - Instances of Collaboration by Org Type

- Other
- Non-Profit - International
- Non-Profit - Australian
- Higher Education - International
- Government - State & Local
- Government - International
- Government - Commonwealth
- Company/Industry Body - International
- Company/Industry Body - Australian
Mapping Engagement:

Linkage Projects vs. Discovery Projects

Strength in scheme
avg. p.a.
$LP + $DP

Linkage: $112m
Discovery: $50m
Strength: $12m
Engagement by Cohort
Strength in Linkage and Discovery Schemes

Group of Eight
Non-Aligned
Innovative Research Universities
Regional Universities Network
Australian Technology Network

Discovery
Linkage
Open Agendas

• Open Access to publications
  – Starting in January 2013, it is mandated by ARC funding rules that completed projects must make their publications available on an open access repository
    http://www.arc.gov.au/applicants/open_access.htm
  – Implementation

• Open Data

• Open Innovation
Q&A session

- Making applications shorter, faster
- Factors affecting the success rate
- Health & medical research
- Defence Trade Control Bill
- International linkages (Asian White Paper)
Thank You

Professor Aidan Byrne
CEO, Australian Research Council