RESEARCH in the national interest – enabling the future

Australian Government
Australian Research Council

Excellence in Research for Australia

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Outline

- Background
- Consultation outcomes
- System to Evaluate the Excellence of Research (SEER)
- Indicators
- Outlet Ranking Consultation
- Indicators Development Group (IDG)
- Where are we now?

ERA Initiative

Announced by the Minister - 26 Feb 2008

Consultation Paper released - 4 Jun 2008
Submissions closed - 30 Jun 2008

Consultation period on a draft journal rankings list began on 12 Jun 2008 and closed on 14 Aug 2008

Objectives of ERA

- Identify excellence across the full spectrum of research activity
- Compare Australia's university research effort against international benchmarks
- Create incentives to improve the quality of research
- Identify emerging research areas and opportunities for further development

Important considerations

- Promote collaboration between institutions and between university researchers and end users
- Encourage scale and focus and thereby efficient use of research infrastructure and resources
- Facilitate interdisciplinary research
- Minimise the burden on individual researchers, institutions and expert reviewers

Proposed approach

- Evaluation by discipline (ANZSRC) and institution of the outputs of research
- Evaluation to be completed on a rolling basis by Research Evaluation Committees (RECs) in eight discipline clusters
- Indicators and measures to be specific to each discipline
- Initially decoupled from research funding

ERA Liaison Officers

At the beginning of the consultation, each institution nominated an ERA Liaison Officer to assist the ARC in coordinating feedback from their institution

Clusters

- Physical, Chemical and Earth Sciences (PCE);
- Humanities and Creative Arts (HCA);
- Engineering and Environmental Sciences (EE);
- Social, Behavioural and Economic Sciences (SBE);
- Mathematics, Information and Communication Sciences (MIC);
- Biological Sciences and Biotechnology (BSB);
- Biomedical and Clinical Research (BCR); and
- Public and Allied Health and Health Services (PAHHS).

Consultation outcomes

Sector feedback

The ARC received:

– 103 submissions to the Consultation Paper

– 110 submissions to the journal rankings process

Issues arising from the consultation

Following feedback from the sector, the Minister has agreed to the:

- movement of some disciplines between clusters
- inclusion of categories 2-4 research income, with further work to do on ‘category 5’
- collection of all ERA data at four-digit FoR

Other (bigger) issues

- Attribution of research outputs
- Evaluation and reporting of cross-disciplinary research
- Collection of measures related to scale and focus
- Inclusion of staff FTE
- Inclusion of non-salaried staff

Outcomes of consultation so far

- Data should be collected at 4-digit FoR
- No clear consensus on the inclusion of non-salaried staff
- Some concern over the use of an input (i.e. research income) as a measure of quality
- Additional quality indicators should be kept to a minimum

Outcomes of consultation so far

- A three-year evaluation period for research income and other non-publication data was favoured
- Collection of grant numbers was favoured, particularly for those disciplines that do not typically have large grant amounts

Key policy decisions

- the attribution of publications will be determined based on the location of researchers as at a staff census date
- outputs from non-salaried staff will be included provided these staff meet specified criteria
- Australian competitive grant information will be collected for all disciplines
- all ERA data will be collected at the 4-digit FoR level (there are 157)

ANZSRC – two-digit level

01	Mathematical Sciences
02	Physical Sciences
03	Chemical Sciences
04	Earth Sciences
05	Environmental Sciences
06	Biological Sciences
07	Agricultural and Veterinary Sciences
08	Information and Computing Sciences
09	Engineering
10	Technology
11	Medical and Health Sciences
12	Built Environment and Design
13	Education
14	Economics
15	Commerce, Management, Tourism and Services
16	Studies in Human Society
17	Psychology and Cognitive Sciences
18	Law and Legal Studies
19	Studies in Creative Arts and Writing
20	Language, Communication and Culture
21	History and Archaeology
22	Philosophy and Religious Studies

ANZSRC – 4-digit level

DIVISION 01 MATHEMATICAL SCIENCES

This division covers mathematics, statistics, and mathematical aspects of the physical sciences.

This division contains six groups:

- 0101 Pure Mathematics
- 0102 Applied Mathematics
- 0103 Numerical and Computational Mathematics
- 0104 Statistics
- 0105 Mathematical Physics
- 0199 Other Mathematical Sciences

Key policy decisions

- All discipline clusters will use the same reference dates for determining eligibility of outputs, regardless of when the evaluation takes place
- The ARC is doing more work on the evaluation of interdisciplinary research
- Further consultation necessary on the collection of research income in categories other than Australian competitive grants, including:
  - International peer reviewed grants
  - Grants in collaboration with industry and government

ERA Guidelines

- Key decisions incorporated in Guidelines
- First draft of ‘Submission Guidelines’ released in September 2008
- Additional guidelines released as decisions are ‘locked in’ (e.g., which metrics will be used)

ERA/SEER Pilot

Is confined to the Physical, Chemical and Earth Sciences Disciplines (Cluster 1)

The principles and procedures underlying the Pilot will strongly inform the formal ERA process

Only collecting data from institutions. No analysis will be conducted of data for the Pilot

Using an ARC-developed IT system, known as the System to Evaluate the Excellence of Research (SEER)

Institutions participating in the ERA Pilot are able to submit data from Wednesday 1 October until Friday 14 November 2008

Why an ERA/SEER Pilot?

- facilitate the sector's feedback on an early draft of the ERA Submission Guidelines;
- ensure that institutions can successfully make submissions through SEER
- test that the SEER technology works in terms of core submission functionality (proof-of-concept)
- will allow early testing of SEER access to research outputs in institutional repositories

Other factors that may influence ERA

- National Innovation System Review – Green Paper
- Mission-Based Compacts
- Accessibility Framework

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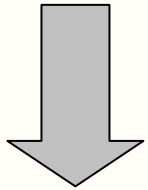
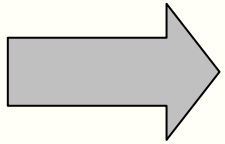
ERA indicators development

Process Overview

Metrics Profile 1	Metrics Profile 2
Metrics Profile 3	Metrics Profile 4
Metrics Profile 5	Metrics Profile 6
Peer Review	



Research Evaluation Committee



Final report

Indicators 1 – Publications

Research Publications data

Books, book chapters, journal articles and refereed conference publications as a minimum

Publication Reference Period(s)

A fixed reference period will be used for all clusters

1 January 2002 – 31 December 2007

Attribution:

- staff affiliation at census date

Indicators 2 – Publications

Data Supplier

ARC will examine the use of multiple citation data suppliers to ensure broad coverage

Outlet Rankings

A range of research output types profiled across four tiers

Includes journals and where relevant publishers, refereed conference proceedings, and other outlet types

Indicators 3 – Publications

Bibliometrics (where relevant)

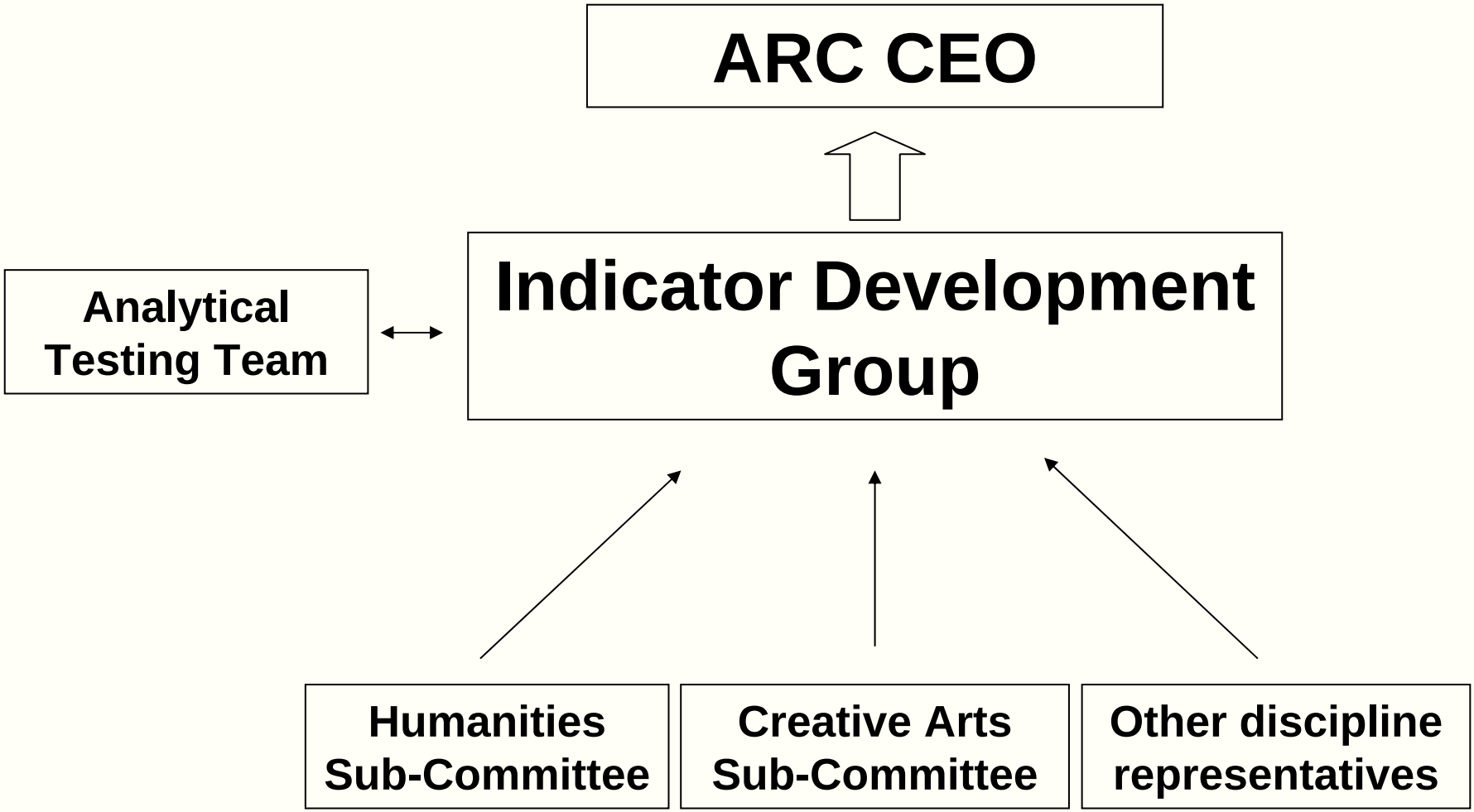
- Citations per publication against international benchmarks for each discipline
- Centile analysis

Quality indicators relevant to discipline

- specific outputs

Examples of Indicators of Success in Applied Research and Translation Of Outcomes

- Indicators for practitioner-focussed outlets
- Patents produced (by type)
- Plant breeders' rights
- Licence income and other commercialisation revenues
- Research income awarded in collaboration with end users
- Exhibitions and/or performances with a research component and international recognition
- Other discipline-specific indicators as identified by the Indicators Development Group



Indicators Development Group (IDG)

Discipline-specific Indicators: to consider, test and recommend appropriate indicators (working with relevant REC)

Testing of Indicators: analytical testing of all indicators to identify anomalies within each discipline (supported by an analytical testing team)

Reporting Profiles: recommendations regarding appropriate reporting of indicators to ensure transparency and validity

Key outputs of the IDG

The **ERA Indicator Principles** document will be a recommendation to the CEO based on the issues outlined in the *Research Assessment Indicator Principles* paper

The **ERA Indicator Methodologies** will ensure international benchmarking, outline the calculations for each indicator and allow institutions to replicate calculations in-house

The **Discipline Specific Indicator Matrix** will include details of the citation database supplier to be used for each discipline and any irregularities for specific disciplines

Indicator matrix (example)

	discipline 1	discipline 2	discipline 3	discipline 4	discipline 5	discipline 6	discipline 7	discipline 8	discipline 9	discipline 10	discipline 11	discipline 12
ranked journals	■	■	■	■	■	■	■	■	■	■	■	■
ranked publishers			■						■	■	■	■
ranked conferences				■			■	■				
ranked venues											■	■
citation analysis	■	■	■	■	■	■		■		■		
research income	■	■	■	■	■	■	■	■	■	■	■	■
Patents			■	■	■							
Plant breeders rights			■									
Expert review						■	■	■	■	■	■	■

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Outlet ranking consultation

Draft journal ranking list

In late 2007 the four Learned Academies and a number of discipline peak bodies undertook a journal ranking exercise to develop draft journal rankings for their relevant disciplines

19,500 unique peer reviewed journals were identified to form a draft list of ranked journals. Each journal was given a single *quality rating* and assigned to one or more disciplines defined by *Field of Research (FoR)* code(s) (four-digit)

Quality rating

Journals relevant to a particular Field of Research have been sorted into tiers according to the following distribution:

- Tier A*
- Tier A
- Tier B
- Tier C

A Journal's *quality rating* represents the overall quality. This is defined in terms of how it compares with other journals and should not be confused with its relevance or importance to a particular Field of Research (FoR)

Quality rating

Tiers for the Australian Ranking of Journals

A*

- Typically an A* journal would be one of the best in its field or subfield in which to publish and would typically cover the entire field/subfield. Virtually all papers they publish will be of a very high quality. These are journals where most of the work is important (it will really shape the field) and where researchers boast about getting accepted. Acceptance rates would typically be low and the editorial board would be dominated by field leaders, including many from top institutions

A

- The majority of papers in a Tier A journal will be of very high quality. Publishing in an A journal would enhance the author's standing, showing they have real engagement with the global research community and that they have something to say about problems of some significance. Typical signs of an A journal are lowish acceptance rates and an editorial board which includes a reasonable fraction of well known researchers from top institutions

Quality rating

Tiers for the Australian Ranking of Journals

B

- Tier B covers journals with a solid, though not outstanding, reputation. Generally, in a Tier B journal, one would expect only a few papers of very high quality. They are often important outlets for the work of PhD students and early career researchers. Typical examples would be regional journals with high acceptance rates, and editorial boards that have few leading researchers from top international institutions

C

- Tier C includes quality, peer reviewed, journals that do not meet the criteria of the higher tiers

Assignment of FoR for citation benchmarks

FoR codes were assigned to each journal based on the research considered **core** to the particular journal

The FoR assignment will be used to develop the ***Journal Sets*** used to derive citation benchmarks

Citation rates vary considerably across FoR and including journals not core to the field could diminish the quality and accuracy of the citation benchmarks

Finalising the ranked journal list

The ARC will consider submissions

Where there are conflicting recommendations, the ARC may contact institutions, Learned Academies or peak bodies to inform its decisions

The ARC will give weight to the *number of submissions* and the *strength of supporting information* in making changes to a **Journal ranking** or **FoR coding**

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Presenting indicators to RECs

Ranked journals

Tier	Number	Percentage
A*	82	23%
A	105	30%
B	104	30%
C	46	13%
Not ranked	13	4%
Total	350	100%

Citation analysis

Citations per publication (cpp)

Total Publications	Sum of Cites	Institutional cpp	World cpp Average	Australian ccp Average
337	2,871	8.52	5.08	4.53
Relative citations against world and Australian average			1.67	1.88

Centile analysis

	<1%	2-5%	6-10%	11-20%	21-50%	>50%	Total
Number	13	35	25	38	111	115	337
Percentage	4%	11%	7%	11%	33%	34%	100%

Research income

Profile for Research Income							
Institution: University of X **Discipline Cluster:** PCE **Two-digit FoR** Chemical Sciences 48.7 FTE							
Category	**Research Income Type**	**No of grants**	**Amount**	**$ per grant**	**Income per FTE**	**Discipline Benchmark Per FTE**	**Ratio**
Category 1 Total	Australian Competitive Grants	40	$22,617,000	$565,425	$464,415	$451,814	1.02
CATEGORY 1	Analytical Chemistry (4.2 FTE)	4	$1,515,000	$378,750	$291,346	$347,000	0.84
	Inorganic Chemistry (8 FTE)	9	$5,950,000	$661,172	$595,000	$545,010	1.09
	Macromolecular and Materials Chemistry (7.5 FTE)	3	$980,000	$326,666	$115,294	$190,070	0.60
	Medicinal and Biomolecular Chemistry (10.4 FTE)	9	$6,340,000	$704,444	$511,290	$356,008	1.43
	Organic Chemistry (5.2 FTE)	6	$2,870,000	$478,333	$239,166	$249,450	0.95
	Physical Chemistry (incl. Structural) (11 FTE)	8	$4,040,000	$505,000	$336,666	$302,500	1.11
	Other Chemical Sciences (2.4 FTE)	1	$922,000	$922,000	$271,176	$297,416	0.91

Next steps

- Release of ERA indicator principles
- Release of ERA citation data supplier tender
- Development of discipline specific indicators through the work of the sub-committees
- Indicator testing continues
- Finalise the journal rankings
- Continue SEER build

Analytical testing

- Whether interdisciplinary research is likely to be disadvantaged under ERA
- Examine the volume and type of research publications across all disciplines
- Examine citation data supplier coverage
- Examine a range of methods for deriving appropriate discipline specific citation benchmarks
- The ability to assign books/chapters to a FoR based on library cataloguing
- An appropriate method to re-assign publications to 4-digit FoR codes where they are currently assigned to multidisciplinary or a 2-digit FoR