

Impact of Science

5-7 June 2019, Berlin

Konfernzraum, 11:30-12:45

National Research Policy

Sarah Foxen (Chair)
Sarah Howard
Barend van der Meulen





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Sarah Foxen (Chair)

Knowledge exchange manager, Knowledge Exchange Unit, UK Parliament



National Research Policy

Sarah Foxen, Knowledge Exchange Manager, UK Parliament Sarah Howard, Branch Manager at the Australian Research Council Barend van der Meulen, Head of Science at the Rathenau Instituut and endowed professor of Evidence for Science Policy at the Centre for Science and Technology Studies, Leiden University.



Q: Are you aware of the national policy or policies in your country which drive/s or demand/s impactful research?

Yes Possibly No



Q: Do you think this policy or policies is/are effective*?

*effective = leading to science research having a greater impact on society

Yes
To a certain extent
No



A volunteer, please?

To take notes on insights around:

- * Necessary conditions for developing successful national impact policies
- * What **defines** a successful national impact policy



REF2021

- * An assessment for all higher education institutions, which assesses the quality of their research.
- * Last one in 2014
- * Next one in 2021
- * In REF2021 'Impact' will count for 25% of overall score



REF2021 – two observations

- * Impacts on structures and HR in higher education institutions
- * Impacts on framing of research funding



REF2021: good thing or bad thing?

* Depends on your perspective...



Necessary condition?

* Developed in consultation with those the research impacts on

Definition of success?

Rewarding and encouraging impact in *all* academics – might be one for the KEF (Knowledge Exchange Framework).



Sarah Howard

Branch Manager at the Australian Research Council



Barend van de Meulen

Head of Science at the Rathenau Instituut and endowed professor of Evidence for Science Policy at the Centre for Science and Technology Studies, Leiden University.



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National Research Policy

Sarah Howard

Head of the ERA programme, Australian Research Council

AESIS



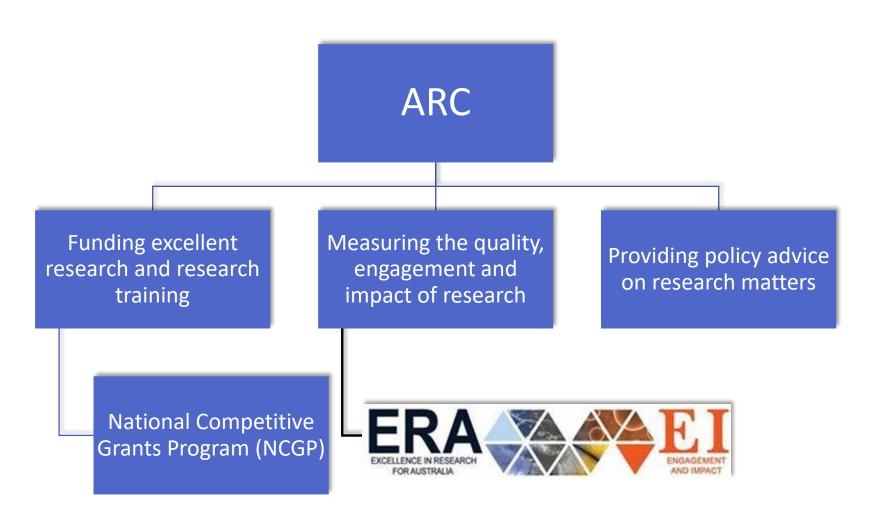
National Research Policy

Conditions for developing national Impact policies

7 June 2019

Sarah Howard
Branch Manager | Research Excellence Branch
Australian Research Council

ARC responsibilities



To understand the conditions for a successful national research impact policy... you need to understand the national research environment....

Key Facts and Figures

- Population 25 million
- GERD/GDP 1.88%
- GERD/GDP rank 13th in OECD
- 42 universities 38 public, 4 private

Australian higher education research sector Funding

- Majority of funding provided by Government
- Dual funding model:
 - block grants (\$1.9b allocated in 2019)
 - competitive grants (\$1.6b reported in 2017)
- Block grants support research and research training
- Block grant funding formula—
 - \$ excellence (47%) and \$ end user engagement (53%)

The policy environment...

Science and Research policy in Australia

National Innovation and Science Agenda

24 measures

Innovation Science Australia (ISA)

Review of Research Policy and Funding Arrangements (Watt Review) ISA 2030 Strategy

Australia 2030: Prosperity through Innovation

National Innovation and Science Agenda

- Announced 7 December 2015
- \$1.1 billion over 4 years

NATIONAL INNOVATION & SCIENCE AGENDA

- A range of new initiatives to:
 - support research
 - encourage innovation and entrepreneurship
 - reward risk taking
 - promote science, maths and computing in schools.

Australia 2030: Prosperity through Innovation

Education

• skills in 2030

Industry

 ongoing prosperity through growth and productivity

Government

innovation service delivery

Research and development

Increasing translation and commercialisation

Culture and Ambition

National missions



Image: Biotext, Canberra

source: https://www.industry.gov.au/sites/g/files/net3906/f/May%202018/document/pdf/australia-2030-prosperity-through-innovation-full-report.pdf

ERA 2018 National Report

El 2018 National Report



State of Australian University Research **2018-19**

ERA National Report





Engagement and Impact Assessment

2018-19

National Report

ERA 2018



What is ERA?

First implemented in 2010, ERA evaluates the quality of the research undertaken in Australian universities against **national and international benchmarks**

ERA is a **comprehensive** collection. The data submitted by universities covers all eligible researchers and their research outputs

ERA assesses the quality of research disciplines at each university—it does not assess or rate individual researchers

ERA Indicators and Assessment

EXPERT REVIEW

Explanatory Statement

Key Quality Indicators

Citation Analysis

OR

Peer Review

Supporting Indicators

Volume and Activity

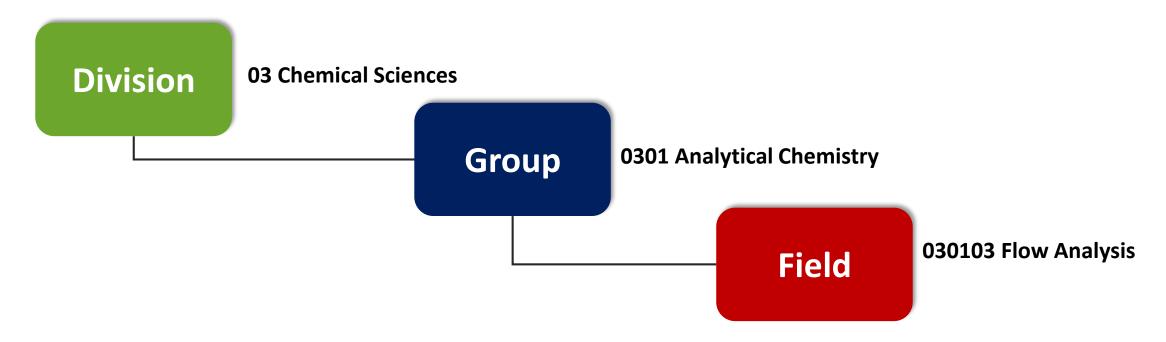
Publishing Profile

Research Income

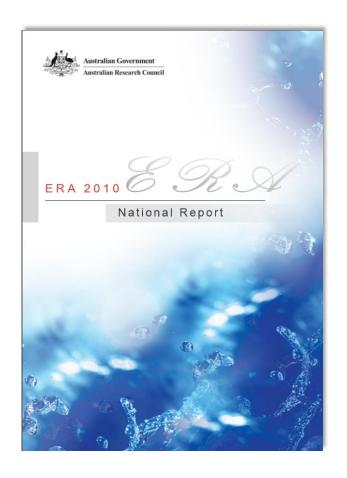
Applied Measures

Useful Background and Terminology

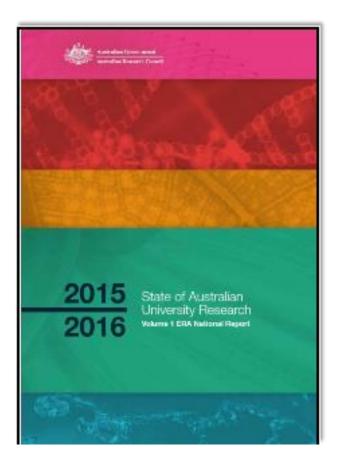
- FoR stands for Fields of Research from the Australian and New Zealand Standard Research Classification (ANZSRC) 2008
- Structure of ANZSRC is:



ERA Rounds







2010 2015

2018 ERA Highlights



42 Australian Institutions





2,603

Units of Evaluation (UoEs) assessed



506,294

Unique research outputs submitted



\$10.9b

Income reported



76,261

Researchers

How ERA drives behavior change

Reputational lever for policy change

Originally moderated the calculation of a small proportion of Research Block Grants (SRE only) – ERA 2012 and ERA 2015

Universities incorporate ERA outcomes into their strategic planning

Some questions –

Do reputational drivers work?

Is a link between assessment outcomes and funding required?

Do assessment outcomes and formula based funding mechanisms need to interact? If so, how?

EI 2018



Aims of the El Assessment

- how well researchers in Australian universities engage with end users beyond academia
- What kinds of impacts are occurring outside of academia as result of research undertaken by Australian universities
- how well Australian universities support their researchers to deliver research which has an impact beyond academia

Thereby encouraging collaboration by university researchers with end-users, driving innovation and entrepreneurship......

El development timeframe

- Consultation—
 universities,
 end-users,
 public,
 international
- Pilot methodology developed

Pilot undertaken

- Review of pilot
- El 2018 submission guidelines

• El 2018 assessment

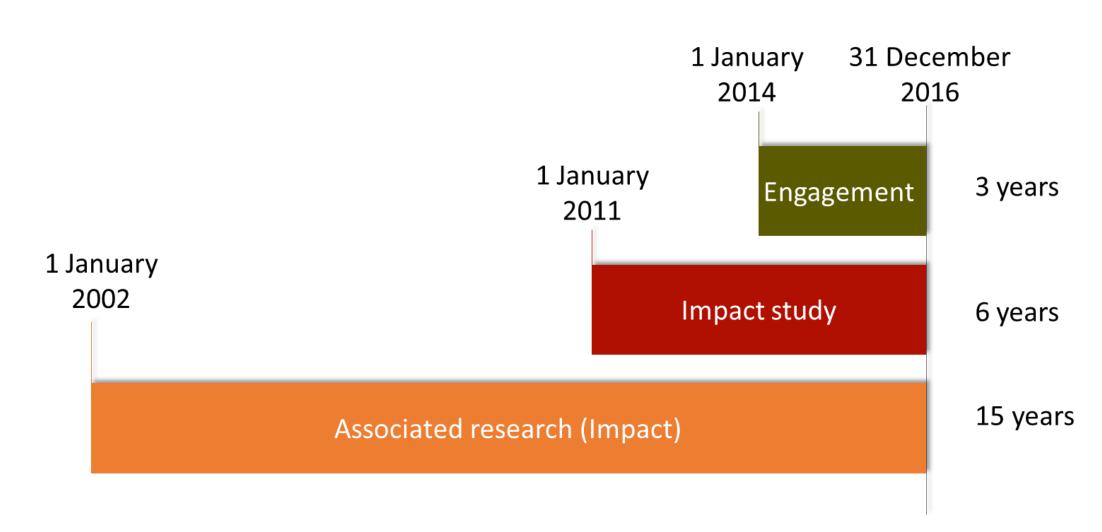
2016

2017

2018

Overseen by Steering Committee and Working Groups

El 2018 reference periods



El 2018 assessment framework



Engagement

Impact

Engagement narrative

Suite of indicators and indicator explanatory statement

Impact (and associated research)

Approach to impact

Assessment Panels



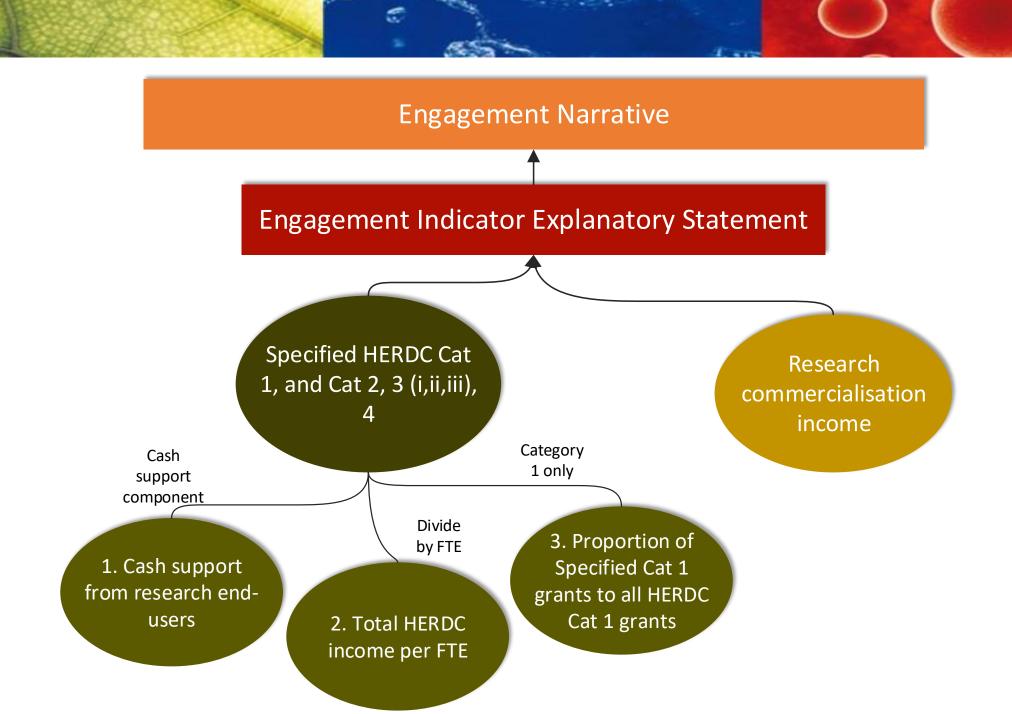
Rating for engagement



Rating for impact



Rating for approach to impact



Impact studies

Three types of impact studies—

Broad discipline

Mandatory if meets low

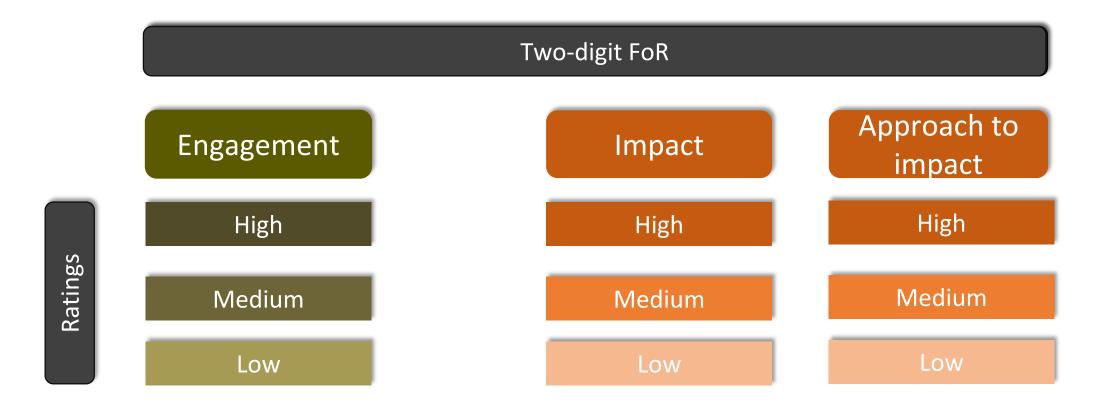
volume threshold and opt in

Aboriginal and Torres
Strait Islander
research
Opt in

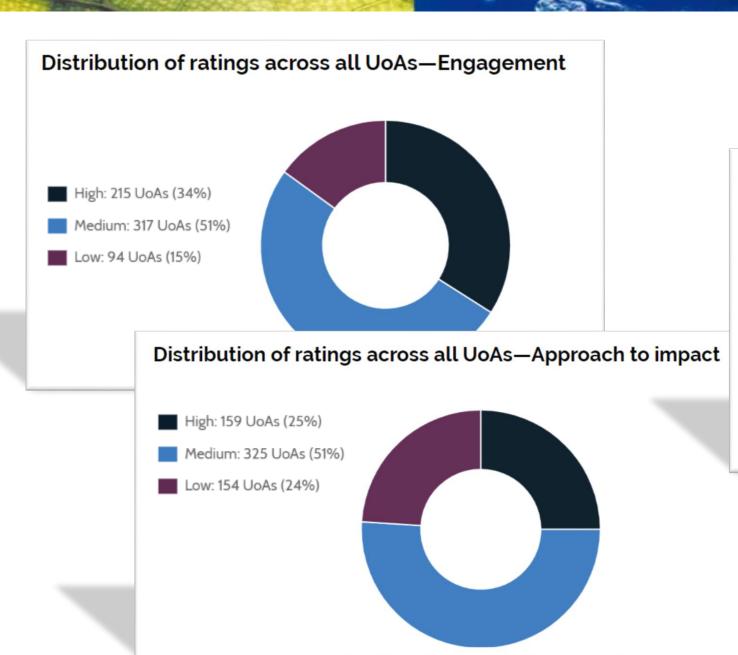
Interdisciplinary Opt in

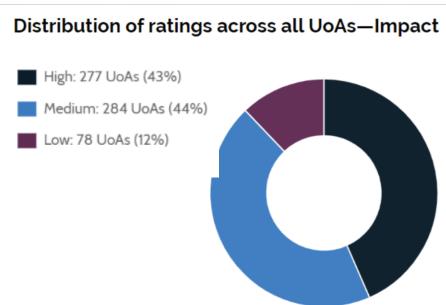
El 2018 rating scale

Ratings made by panels of experts based on narratives and indicators provided.



• Assessments are ratings <u>not</u> rankings of either universities or disciplines





El data—additional data

Keywords listed in impact studies—
All Units of Assessment

```
Informed Decision Making
                                                                                                                                  Water Security Stakeholder Engagement Renewable
                                                                                                                                   Threatened Species Pharmaceuticals Medical Physics
                                                                                                                                                                                                                                                                                                                                         Risk Management
                                                                                                                                                                             Infrastructure Information Technology
                                                                                                                                                                                                                                                                                                                         Literature Teacher Development
                                                                                                                                    Environmental Monitoring Crop Production
                                                                   Motion Capture Engagement Healthcare Commercialisation Anxiety Young People Secondary School Consumers Oncology Occupational Health And Safety
                                                                                Health Policy Family Greenhouse Gases
                                        Nanotechnology Equity
                                                                                                                                                                                                                                                       Wastewater Northern Australia Machine Learning
                                                                                                                                                                           Rehabilitation Social Cohesion Aquaculture Bushfire Empowerment Twitter
                                        Cultural Heritage Management
                                                                                                                                                               Manufacturing Environmental Management Epidemiology Intelligent Systems
         Climate Policy
Cyber Security

Agriculture Optimisation
Native Title Health Services
Solar Sustainability
Water Supply Digital Health Archaeology
Wellbeing
Safety
Children

Culture

Culture

Control of Mining Teacher Professional Learning Diabetes Environmental Education
Mining Teachers E Health Big Data Aboriginal Health
Youth Modelling Teacher Education Water
Drug Development Industry
Stroke Artificial Intelligence
Professional Development
Heritage Management
Robotics Resilience

Culture

Control of Mining Teacher Stroke Artificial Intelligence
Professional Development
Following Teacher Education
Water Supply Digital Health Archaeology
Stroke Artificial Intelligence
Professional Development
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Stroke Artificial Intelligence
Professional Development
Following Teacher Education
Water Supply Digital Health Archaeology
Stroke Artificial Intelligence
Professional Development
Following Teacher Education
Water Supply Digital Health Archaeology
Following Teacher Education
Water Supply Digital Health 
Physical Activity

Assessment Schools

Coastal Management Medicine Regulation Intervention Curriculum

Preservation Automation Technology

Ferforming Arts

Gender Equality Violence Numeracy History

Wireless Communication Training Monitoring

Advanced Manufacturing Marketing

Advanced Manufacturing Marketing

Aged Care

Advanced Manufacturing Marketing

Obesity

Evidence Based

Obesity

Ferforming Arts

Cultural Heritage Tourism

Energy

Museums

Prevention

Innovation

Prevention

Innovation

Prevention

Innovation

Prevention

Innovation

Prevention

Innovation

Prevention

Innovation

Advanced Manufacturing Marketing Aged Care

Water Quality

Marine

Evidence Based

Obesity

Food Security Building Law

Community

Augmented Reality

Social Media

Social Justice Suicide
                                                    Risk Productivity Ecology Capacity Building Law Community Augmented Reality Rural. Social Justice Suicide
                    Urban Design Conservation Aboriginal And Torres Strait Islander
                                                                  Citizen Science Engineering Public Policy Biodiversity Engineering Great Barrier Reef Clinical Trials

Policy Development From Collaboration Wetlands Astronomy Employment Professional Learning Nutrition Engrave Efficiency Review Residue Collaboration Finance Formation Finance Filipped Collaboration Finance Filipped Collaboration Wetlands Astronomy Employment Professional Learning Nutrition Finance Filipped Collaboration Wetlands Astronomy Employment Professional Learning Nutrition Finance Filipped Collaboration Wetlands Astronomy Employment Professional Learning Nutrition Finance Filipped Collaboration Wetlands Astronomy Employment Professional Learning Nutrition Finance Filipped Collaboration Wetlands Astronomy Employment Professional Learning Nutrition Filipped Collaboration Wetlands Filipped Collaboration Wetlands Astronomy Employment Professional Learning Nutrition Filipped Collaboration Wetlands Filipped Col
                                                                                                                                                                                                                                                                    Nutrition Energy Efficiency Road Safety
                                                                                             Logistics Hospital Autism Spectrum Disorder
                                                                                     Student Indonesia Defence Aboriginal And Torres Strait Islander Communities
                                                                                        Schizophrenia Documentary Water Management Radiotherapy Reconciliation
                                                                                                  Public Health Policy Emissions Allied Health Efficiency Rural Health Drug Discovery
Invasive Species Autonomous Vehicles
Traumatic Brain Injury Genomics Biological Arts

Creative Arts Visual Arts
                                                                                                                                                                                   Industrial Relations Economic Evaluation
                                                                                                                                                                          Murray Darling Basin
```

Additional data

Additional Fields of Research - impact

Additional Fields of Research – associated research

Socio-Economic Objectives (SEO) codes

Australian and New Zealand Standard Industrial Classification (ANZSIC) Codes

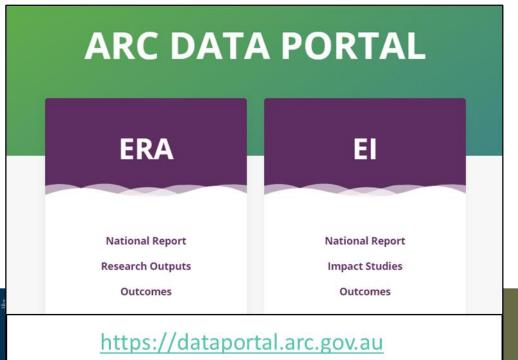
Science and Research Priorities

Keywords

Beneficiaries

Countries where impact is occurring

ERA and El outcomes published





Engagement and Impact Assessment 2018-19

National Report

Reflections on conditions for a successful impact policy

Was it a success?

- 40/42 universities participated
- Methodology was able to be applied to all disciplines

Benchmark of performance

 Outcomes for impact and approach to impact support policy analysis

Anecdotally, universities responding to incentives

Necessary conditions for impact policy

Extensive consultation

Commitment from sectors

- university
- industry/ end-user

Objective clear

 Assessment level discipline vs institution Realistic assessment parameters

Low Volume Threshold

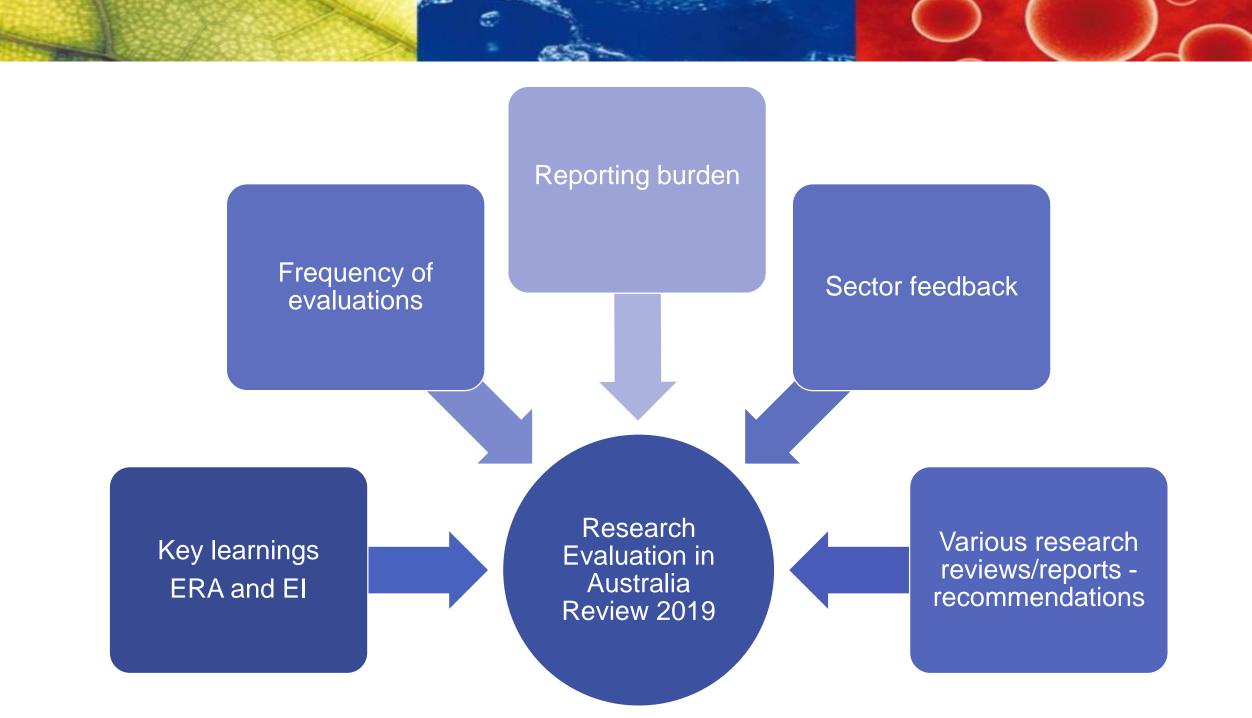
Option to request *not* to be assessed

Assessment design

Balance detail vs burden

Narrative based (supporting indicators)

Expert review



Questions—Discussion

What are the conditions you consider integral for a successful impact policy?

What do you consider is a measure of success?



Australian Government

Australian Research Council

Thank you



Impact of Science

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National Research Policy

Barend van der Meulen

Head of Research, Rathenau Instituut, The Netherlands

AESIS

Rathenau Instituut

Monitor national research policies for impact

Session: Conditions for developing successful national impact strategies

Barend van der Meulen

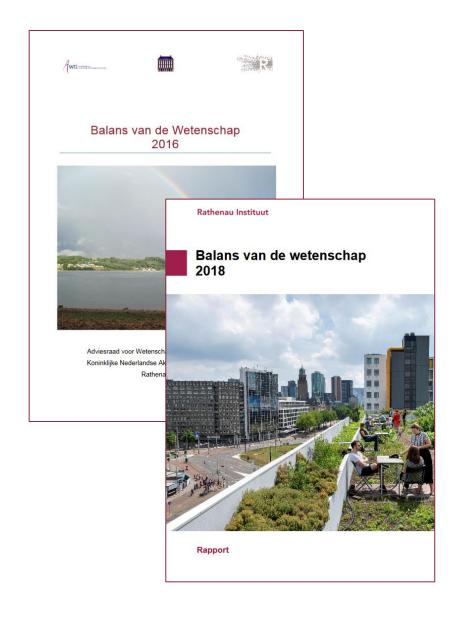


Content

- A monitor for national science policy
- Monitoring national policies for impact: our approach
- Some results
- Some reflections

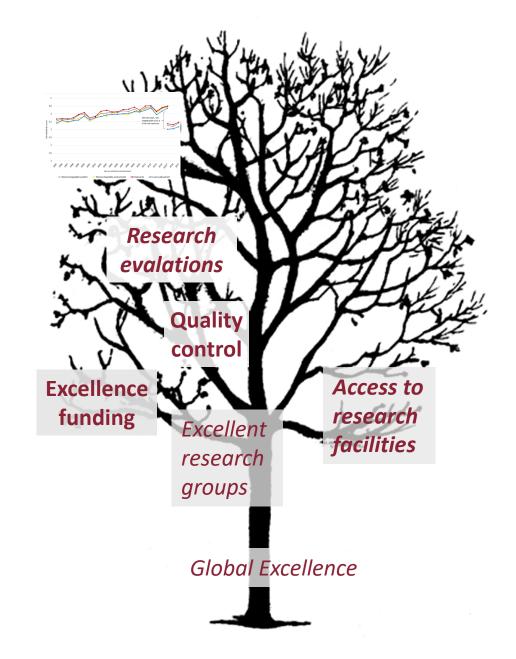
Monitoring national science policy

- Monitor to inform Cabinet and Parliament about the perforances and functioning of Dutch research system
- Three policy objectives
 - 1. Global excellence
 - Connected to industry and society, having maximum impact
 - 3. Developing academic talent
- Focus on national level!
- Monitoring "Global excellence" and "academic talent" not really difficult. Monitoring "impact" was and is.

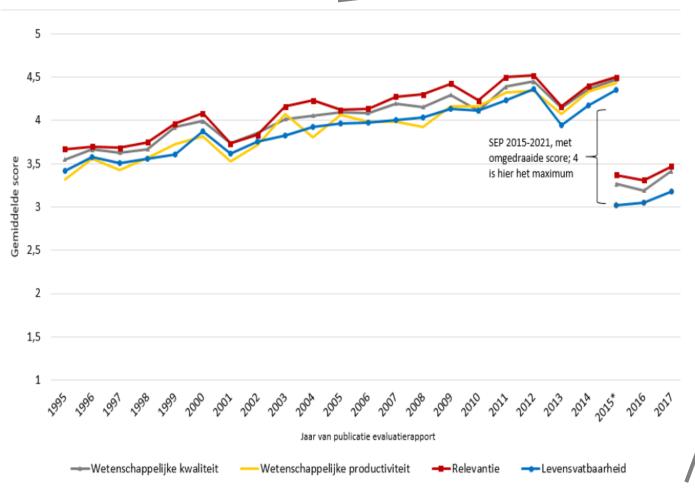


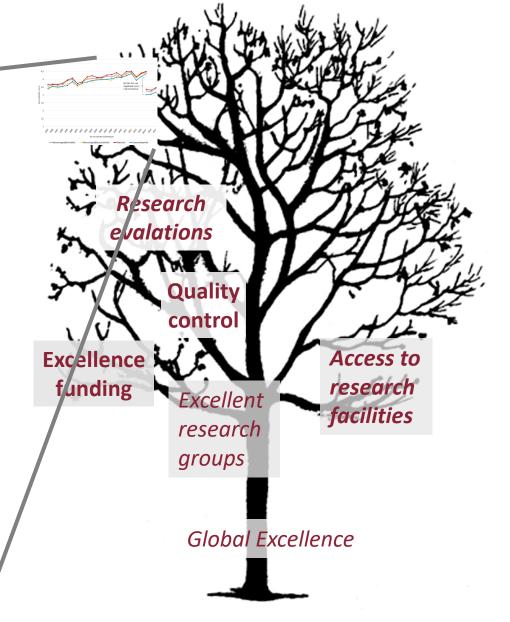
Connecting objectives and indicators

- Creating a "objectives tree"
 - Specifying the main objective into 3-5 objectives
 - Identifying actions and policy instruments linked to these specified objectives
 - Develop indicators measuring effects these instruments aim at.



Connecting objectives and indicators



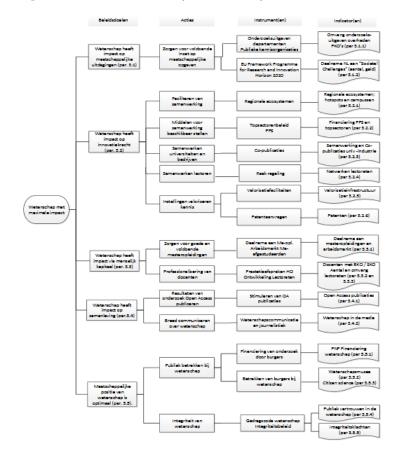




So how to do that for impact?

- Challenges
 - Impact policies are not well developed
 - There are many impacts possible
 - Many impacts are not documented
- Choices
 - Focus on three main areas of impact
 - Societal challenges
 - Innovation
 - Human Capital
 - Focus on conditions that facilitate impact
 - Funding
 - Interactions
 - Trust

Figuur 3.1 Schema ambitie 'wetenschap met maximale impact'

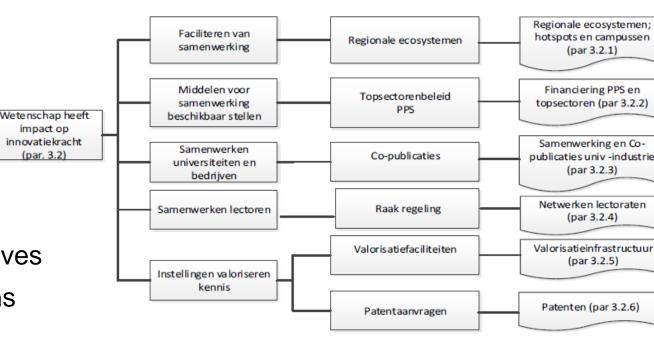


Branch 1 Impact on Innovation

Choice: Focus on Interactions

- 1. Facilities to collaborate:
 - ⇒ Health of regional ecosystems improves
- 2. Funding university-industry collaborations
 - ⇒ Public funding for UIC increases
 - ⇒ Private funding for HE-research declines
- 3. Collaborations between HE and industry
 - ⇒ Copublications indicate high level of collaborations
 - ⇒ Networks between Applied universities and SMEs grow
- 4. HE institutes aim at valorisation of knowledge
 - ⇒ Increase of Tech Transfer Offices in HE sector
 - ⇒ No Patenting by public research institutes and universities stabilizes

(par. 3.2)



Branch 2: Societal challenges

Instrument(en) Beleidsdoelen Indicator(en) Omvang onderzoeks-Onderzoeksuitgaven uitgaven overheden departementen PKO's (par 3.1.1) Zorgen voor voldoende Wetenschap heeft Publieke kennisorganisaties impact op inzet op maatschappelijke maatschappelijke Deelname NL aan "Societal uitdagingen (par. 3.1) **EU Framework Programme** opgaven Challenges" (aantal, geld) for Research and Innovation (par 3.1.2) Horizon 2020

- Choice
 - Focus on public funding targeted towards these challenges
 - Funding for government research institutes
 - Participation in EU funds related to Societal challenges
- Findings
 - Government funding for research institutes and for applied funding is declining.
 - Participation in H2020 funds for societal challenge above average, esp
 - Integrated transport program
 - Food safety program

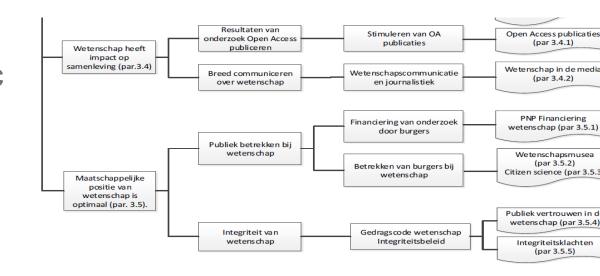
Branch 3 Impact on human capital



- Assumption:
 - main impact happens through Master programmes at universities
 - PhD training covered in policies for academic talent
- Indicators
 - quality of teaching: qualified teachers
 - participation in Ma-programs
 - labour market position of Ma graduates

Branch 4 & 5 relations with the public

- Open Access publishing
 - ⇒ No OA publications increase
- Science communication
 - ⇒ Science in the media: stable
 - ⇒ visitors science musea: increase
- Public attitude towards science
 - ⇒ Private non profit funding for research: stable
 - ⇒ Public trust in science: high and stable
 - ⇒ Integrity of science: No of cases low and stable



Some reflections on the monitor

- It is selective, structured and comprehensible.
- It covers wide range of impacts
- It can be repeated
- It structures the notion of impact, and
- can help governance actors to set objectives and create instruments more systematically
- All indicators are proxies
- Imported question like: does research support public health, quality of governance, climate change etc. not addressed

Thank you!

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