13.45pm – 15.00pm

National Assessment Systems

David Sweeney(Chair) – Research England

Patrick Macguire - CFI

Bartolomiej Banaszak – Ministry of Science and Higher Education Poland

AESIS – Impact of Science and Humanities

National Assessment Systems

David Sweeney, Research England

14 October 2020

Research England

Why Research Assessment?

- Accountability for Public Investment
- Allocate public funding
- Benchmarking
- Evidence for investment by others
- Performance incentives
- Influencing cultures and behaviours (e.g. Impact, Open Science)

UKRI Research England

National objectives (1)

- ‘Intellectual leadership in the development of new knowledge
- International comparative performance of the UK research base’– ‘better than world average in all subject fields based on field-weighted citation impacts
- ‘Well-rounded portfolio’

UKRI Research England

National objectives (2)

- Optimal contribution to society from that new knowledge – ‘Impact’
  - Culture change & broad engagement of universities/academics
  - Greater investment from business, not just to capture cash but to support shared objectives
- ‘When do we want it’ – now, of course, but recognizing that is based on past investment.
- Long-term success e.g. e-infrastructure, graphene

UKRI Research England

Determining a strategy

- Performance-based funding
  - Past success is a good guide to future success in a stable environment with long cycles
  - A mixture of metrics, peer judgement and expert advice to determine ‘excellence’
- Public funding to unlock private funding
- Investing now for long-term success

A protected sector

- Research funding has been relatively protected
- The deal:
  - Universities engines of economic growth
  - Commitment to better meet needs of society

UKRI Research England

What kind of research impact

- Our starting point is that an optimal submission should include a portfolio of excellent research and build on that excellent research to deliver benefits which contribute to society
- Contribution must be linked to high quality research
- Assessed at the level of whole units (not individual outputs or researchers)
- Equally demanding standards to the assessment of outputs

UKRI Research England

What kind of research impact

- Impact not evaluation
- Assessment not measurement
- Institutions (not universities) not projects
- Retrospective not prospective (can’t predict impact…)
- All disciplines, not some
- Comparative, not absolute

UKRI Research England

Impact Background (2)

- Definition: ‘Research impact is the demonstrable contribution that research makes to the economy, society, culture, national security, public policy or services, health, the environment, or quality of life, beyond contributions to academia.’
- REF definition: ‘Effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life beyond academia’
- ARC at http://www.arc.gov.au/general/impact.htm

UKRI Research England

Research Assessment (UK)

- Research Assessment Exercise – RAE
  - Periodically since 1986 – approximately every 6 years
  - Primarily a peer review exercise for all disciplines – metrics play a strictly limited part
  - Carries the confidence of academics and universities – because it is run by academics
  - A selective exercise, not an assessment of all UK research
  - The single most important driver for academics and universities in the United Kingdom.
  - Liked by Government as allows funding based on quality, unlike teaching.
  - Reputation attached is now a significant factor
  - Embedded in university management systems
  - Now the Research Excellence Framework - REF

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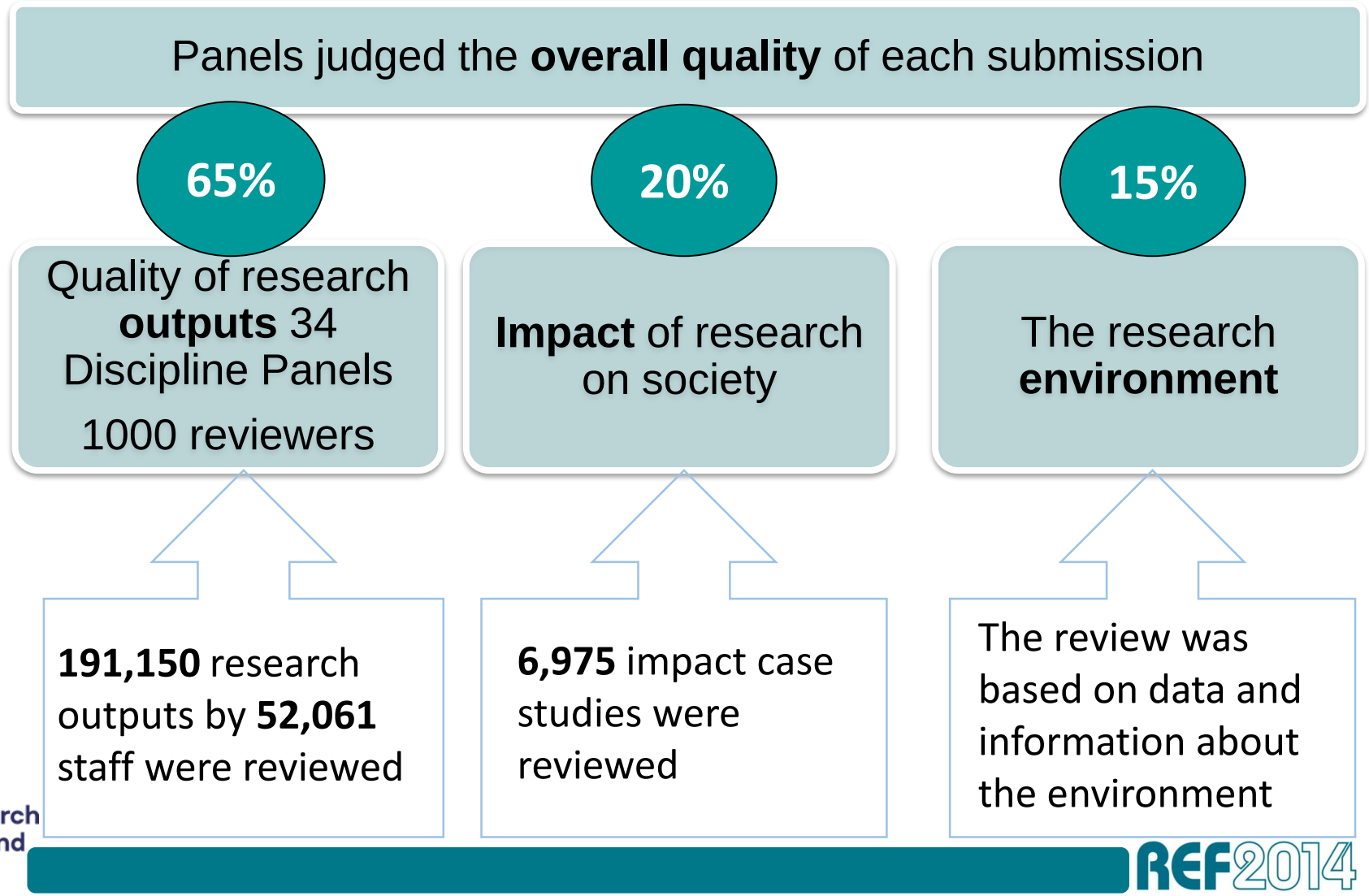
What was assessed:



REF2014
Research Excellence Framework

The research of 154 UK universities was assessed

They made **1,911** submissions including:

- **52,061** academic staff
- **191,150** research outputs
- **6,975** impact case studies

The **overall quality** of submissions was judged, on average to be:

★★★★ **30%** world-leading (4*)

★★★ **46%** internationally excellent (3*)

★★ **20%** recognised internationally (2*)

★ **3%** recognised nationally (1*)

UKRI Research England

REF2014

REF

- The benchmark for research assessment internationally – Japan, China, EU
- Efficient funding driver
- Key reputational measure both nationally and internationally
- Performance-based funding ‘drives up quantity temporarily’ but, if based on peer review, ‘drives up quality permanently’
- Increased benefit from use of REF information in UKRI
- Key part in the development of the impact agenda – culture change in universities
- A key way into EDI issues in universities

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Outputs – criteria

Originality	Significance	Rigour
• the extent to which the output makes an important and innovative contribution to understanding and knowledge in the field	• the extent to which the work has influenced, or has the capacity to influence, knowledge and scholarly thought, or the development and understanding of policy and/or practice	• the extent to which the work demonstrates intellectual coherence and integrity, and adopts robust and appropriate concepts, analyses, theories and methodologies

Scored one to four star (or unclassified)

- Each main panel sets out its own understanding of the starred quality levels
- All outputs meeting REF definition of research are eligible, with all forms of output considered equitably
- Panels will not use journal impact factors or hierarchies of journals in assessment

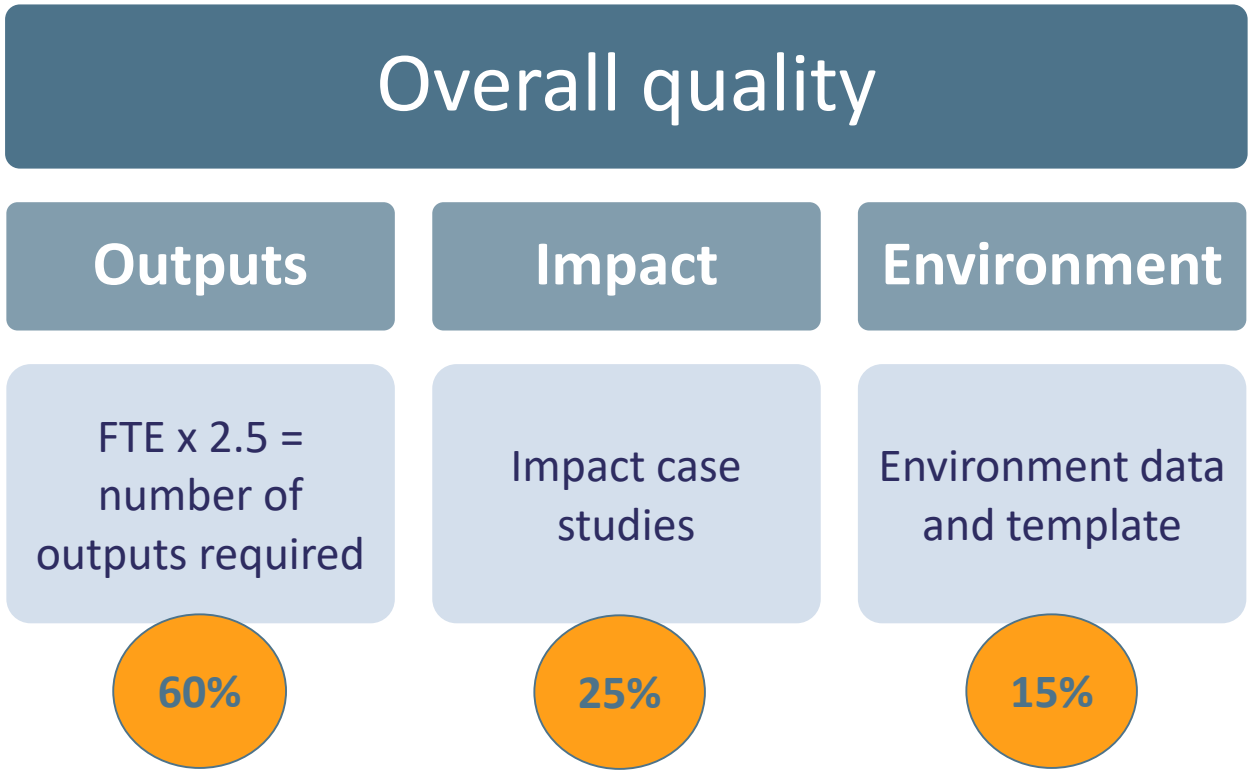
Impact – criteria

Reach	Significance
• the extent and/or diversity of the beneficiaries of the impact, as relevant to the nature of the impact. (It will not be assessed in geographic terms, nor in terms of absolute numbers of beneficiaries.)	• the degree to which the impact has enabled, enriched, influenced, informed or changed the performance, policies, practices, products, services, understanding, awareness or well-being of the beneficiaries.

- Case studies describing **any type(s)** of impact welcomed (extensive – but not exhaustive – list of examples of impact and indicators at Annex A)
- Case studies describing impacts through public engagement welcomed
- Case studies must provide a clear and coherent narrative supported by verifiable evidence and indicators

2021 framework

REF2021



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Checchi, Malgarini & Sarlo

Performance-based funding

- *‘is a very useful instrument to steer the university system’*
- *‘increase the overall impact of the scientific research of a country on a permanent basis’*
- *‘more efficient the higher the share of the funds which is distributed on the basis of the results of the evaluation’*
- *‘less expensive than relying on ex ante evaluation’*

UK is the only country to have been deploying peer-review-based performance-based funding since before 1995

Higher Education Quarterly Vol 73:1 Jan 2019

UKRI Research England

UKRI Research England

Thank you

@Re Research England

CFI IMPACT EVALUATION ON A NATIONAL LEVEL

Patrick MacGuire
Senior Evaluation Analyst, Performance, Evaluation and Analytics

October 14, 2020

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CANADA FOUNDATION FOR INNOVATION

-Created by Government of Canada in 1997

-invests in **research infrastructure** (e.g., equipment, laboratories, computer hardware) across Canada in all areas of science, humanities, health, engineering and the environment

-build Canada's capacity to undertake world-class research and technology development that benefits Canadians

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CANADA FOUNDATION FOR INNOVATION | FONDATION CANADIENNE POUR L'INNOVATION

CFI OBJECTIVES

- Support economic growth & job creation, health & environmental quality
- World-class research & tech development
- Development of highly qualified personnel
- Promote productive networks & collaboration

CFI EXPECTED RESULTS

- Attract & retain top researchers
- Train next generation of researchers
- Enable researchers to undertake world-class research & tech development that benefit Canadians
- Support private sector commercialization & innovation

CFI FUNDING DISTRIBUTION

CFI allocations
(as of September, 2020):

$6.1 billion* in capital to
11,351 projects at **160** institutions

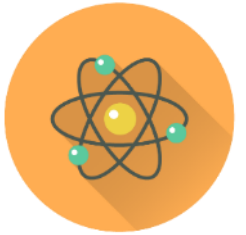
* Does not include Infrastructure Operating Fund (IOF) and Major Science Initiatives (MSI) Fund.

Engineering
2,334 projects
$1,259,085,883

Environment
1,060 projects
$363,019,984

Health
4,876 projects
$2,906,882,441

Humanities & Soc. Sciences
771 projects
$156,468,915



Sciences
2,300 projects
$1,419,005,631

CFI FUNDING – RANGES

Awarded amount ranges	# Awards	% Awards	CFI Amount	% CFI Amount
< 1 Million	10,482	92%	$1,906,606,381	28%
1 – 10 million	815	7%	$2,681,904,918	38%
> 10 million	85	1%	$2,334,216,927	34%

Awarded by Fund	# Awards	% Awards	CFI Amount	% CFI Amount
Innovation Fund	1,194	10%	$3,365,266,659	49%
John R. Evans Leaders Fund	9,785	86%	$1,607,929,035	23%
Major Science Initiatives Fund	31	1%	$818,265,372	12%
Other	372	3%	$1,131,267,160	16%

TOTAL	11,382	100%	$6,922,728,226	100%

MEASURING RESULTS

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MEASURING RESULTS:

- Project Progress Reports
  - Annual on-line project progress reporting for the majority of our projects
  - Annual MSI progress report
  - CIIF 18, 36 & 60 month progress report

- Other External data including;
  - Surveys, interviews, focus groups
  - Statistics Canada, OECD, bibliometrics

INFRASTRUCTURE PROJECT PROGRESS REPORTING

WHY?

To gather project data to demonstrate the results of CFI investments in the institution's research infrastructure and to support accountability requirements of the Government of Canada

HOW?

- Structured reporting through the CFI awards management system
- Mainly closed ended questions
- Annual reporting for 4-5 years
- Completed by researchers, submitted by Institution

Collects data on:

- Researcher attraction & retention
- Training
- Operations & maintenance
- Infrastructure quality, remaining useful life & use
- Research dissemination outputs
- Collaborations & research agreements
- Intellectual property & spin-off companies
- New jobs
- Benefits
- Users of research outcomes
- Challenges

PPR DATA COMPARISON

PPR Item Examples	SSH Projects (2019; n=110) Average	All other projects (2019; n=1,534) Average
Peer reviewed publications	5.6	8.7
Research or tech reports	1.6	1.3
Reference/ training tools or materials	1.0	0.4
Internet publishing	**4.0**	0.9
Other (research outputs)	**4.8**	1.8
New job creation	4.3	3.0

Examples of SSH Project Benefits Reported in 2019:

- Projects most reported cultural or intellectual enrichment benefits (35%) and public education and awareness initiative benefits (34%)
- Examples of benefits reported include:
  - new microphone techniques for immersive audio recording for music production;
  - open source platform for creating smartphone apps that conduct daily life studies; and
  - new automated system to track complex movement patterns of animals in the wild

MAJOR SCIENCE INITIATIVE REPORTING

WHY?

To inform MSI oversight framework and performance monitoring strategy by obtaining annual summaries of each facility's operations, progress, key achievements and future activities.

HOW?

- Structured report form accessed through CFI website
- Includes both open and closed questions
- 6 standard indicators and up to 6 facility specific indicators
- Submitted annually by project leader

Collects data on:

- Summary of activities (occurred and planned)
- Changes or improvements to governance, management and strategy
- Operations (optimal use, maintenance, level of user satisfaction)
- Advancement of research / knowledge transfer
- Contribution to training highly qualified personnel (HQP)
- Technology transfer
- Benefits to Canada
- Facility specific metrics

ASSESSING IMPACT

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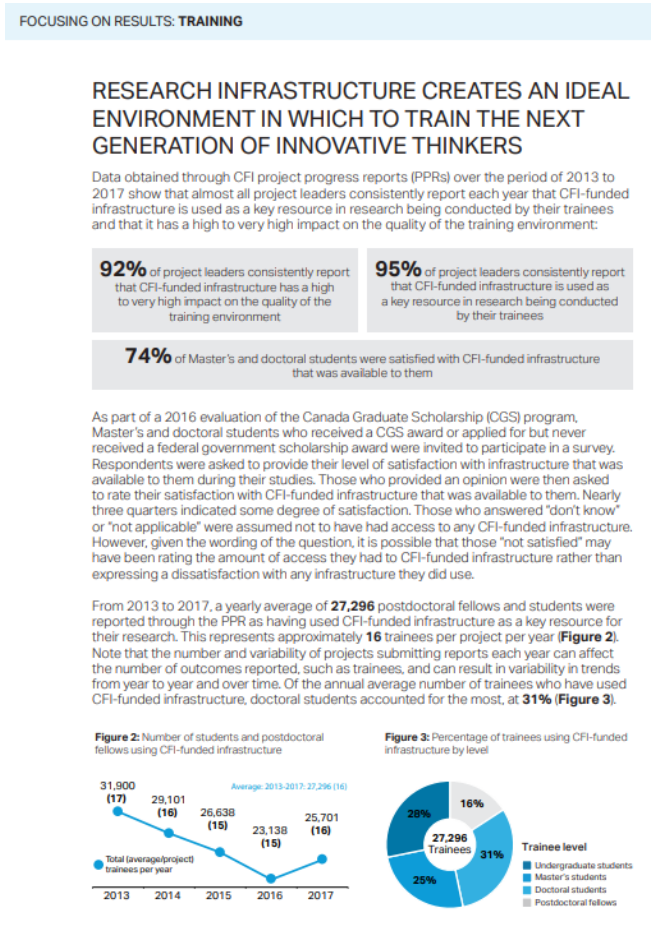
FOCUSING ON RESULTS

WHY?

To demonstrate how the CFI is meeting its objectives and expected results.

HOW?

- Each report includes information on one or more related outcomes in the CFI logic model.
- These studies rely on data from various sources.



FOCUSING ON RESULTS: **TRAINING**

RESEARCH INFRASTRUCTURE CREATES AN IDEAL ENVIRONMENT IN WHICH TO TRAIN THE NEXT GENERATION OF INNOVATIVE THINKERS

Data obtained through CFI project progress reports (PPRs) over the period of 2013 to 2017 show that almost all project leaders consistently report each year that CFI-funded infrastructure is used as a key resource in research being conducted by their trainees and that it has a high to very high impact on the quality of the training environment:

92% of project leaders consistently report that CFI-funded infrastructure has a high to very high impact on the quality of the training environment

95% of project leaders consistently report that CFI-funded infrastructure is used as a key resource in research being conducted by their trainees

74% of Master's and doctoral students were satisfied with CFI-funded infrastructure that was available to them

As part of a 2016 evaluation of the Canada Graduate Scholarship (CGS) program, Master's and doctoral students who received a CGS award or applied for but never received a federal government scholarship award were invited to participate in a survey. Respondents were asked to provide their level of satisfaction with infrastructure that was available to them during their studies. Those who provided an opinion were then asked to rate their satisfaction with CFI-funded infrastructure that was available to them. Nearly three quarters indicated some degree of satisfaction. Those who answered "don't know" or "not applicable" were assumed not to have had access to any CFI-funded infrastructure. However, given the wording of the question, it is possible that those "not satisfied" may have been rating the amount of access they had to CFI-funded infrastructure rather than expressing a dissatisfaction with any infrastructure they did use.

From 2013 to 2017, a yearly average of **27,296** postdoctoral fellows and students were reported through the PPR as having used CFI-funded infrastructure as a key resource for their research. This represents approximately **16** trainees per project per year (**Figure 2**). Note that the number and variability of projects submitting reports each year can affect the number of outcomes reported, such as trainees, and can result in variability in trends from year to year and over time. Of the annual average number of trainees who have used CFI-funded infrastructure, doctoral students accounted for the most, at **31%** (**Figure 3**).

Figure 2: Number of students and postdoctoral fellows using CFI-funded infrastructure

Figure 3: Percentage of trainees using CFI-funded infrastructure by level

FOCUSING ON RESULTS: **ATTRACTION AND RETENTION**

CFI INFRASTRUCTURE ENABLES INSTITUTIONS TO RECRUIT RESEARCHERS FROM DIFFERENT COUNTRIES AND DIFFERENT SECTORS

Researchers recruited by country

Project progress report data collected between 2013 and 2017 (**Figure 5**) reveals that CFI-funded infrastructure has helped Canadian institutions recruit a total of 976 researchers. Of those recruited, 533 researchers (55 percent) came from foreign countries, the majority of whom (65 percent) came from the United States. Fifty-one percent of these foreign recruits were Canadian citizens or permanent residents returning to Canada. This suggests that CFI-funded infrastructure provides an incentive for Canadian researchers residing abroad to repatriate to Canada.

Figure 5

The early career researchers who participated in our focus groups confirmed that the competitiveness of offers made by Canadian institutions to early career researchers, particularly in relation to other offers from outside of Canada, rely heavily on the inclusion of a CFI award component.

> "This infrastructure was critical to establish my research program. It weighed enormously in my decision to come back to Canada to establish my own group.
>
> — Andrés Finzi, PhD, Université de Montréal, reported in 2013 project progress report

PLATFORM STUDIES

WHY?

Demonstrate the impact of sizeable investments made by CFI in platforms (long lifetimes, unique capabilities, multiple users/awards)

HOW?

- Holistic view of platform activities
- Contextualized approach structured around three core outcome categories
- Customization and partnership
- Pilot in 2012

QUESTIONS?

For more info on the results and impacts of CFI investments visit:

https://www.innovation.ca/results-impacts

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CONSTITUTION FOR SCIENCE

Ministry of Science and Higher Education
Republic of Poland

Social and economic impact in Poland's New Model of Research Quality Assessment

Bartłomiej Banaszak
Director, Department of Science, Ministry of Science and Higher Education, Poland

www.gov.pl/web/science

Contents

1. The new Polish Law on Higher Education and Science – comprehensive reform of the science and higher education system
2. Research Quality Assessment – the focal point of the reform
3. Research impact evaluation
4. Preparation to the impact evaluation

1.1. The New Law on Higher Education and Science – rationale behind the reform

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- The New Law on Higher Education and Science was a response to the call of the academic community in Poland for a new comprehensive regulatory framework
- Systemic challenges concerning i.a.:
  - overcomplicated regulations limiting the organisational and financial autonomy of Higher Education Institutions (HEIs),
  - unsatisfactory visibility of outcomes of research carried out in Polish institutions (with implications i.a. for rankings),
  - concerns regarding the quality and relevance of study programmes and the efficiency of doctoral training,
  - obstacles for young researchers to become established researchers,
  - the need of better alignment of the structure of the HE system with current socioeconomic situation.

1.2. The New Law on Higher Education and Science – the consultations

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- The academic community and other stakeholders were strongly involved in each stage of drafting the Law 2.0.
- More than 1,5 year of “pre-consultation” process which embraced:
  - A competition for draft guidelines for the new act („Law 2.0”/”Constitution for Science”) -> three variants of guidelines developed by expert teams coming from the academic community;
  - National Congress of Science: a cycle of 9 conferences devoted to particular areas, organised in different Polish cities (5,500 participants) and National Congress of Science (19-20 September, Kraków; almost 3,000 participants);
- Approximately 3,000 remarks and opinions were received in the course of the formal public consultations;
- The new law was adopted by the parliament on July 20, 2018;
- The European Cammission and the OECD consider these consultations a role model.

1.3. Objectives of the reform

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- More freedom for universities: i.a. organisational and financial autonomy;
- Improving the quality of education provided for students and of doctoral training: new model of doctoral training based on doctoral schools;
- Increasing the impact of research performed in Polish institutions on world science: i.a. Excellence Initiative – Research University programme, new model of research quality assessment.

2.1. The New Model of Research Quality Assessment

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- Research quality assessment is central to the reform of the science and higher education system:
  - all HEIs and a large part of research institutions employing at least 12 scientists (FTE) who carry out research in a given discipline subject to the assessment (approx. 1,200 assessment units);
- Every institution will be rated in each of disciplines subject to assessment
  - the rating scale: A+ (best), A, B+, B, C (worst)
- **Allocation of research block grants** based on results of the research quality assessment
  - no research block grants for disciplines rated C
- Institutions authorised to **confer scientific degrees** and to **conduct doctoral schools** only in these disciplines, which received a rating not lower than B+;
- Entry conditions for the **"Excellence Initiative – Research University"** programme (the 1st competition concluded a year ago) based on ratings (number of A ratings, no rating below B+) and range of disciplines which are subject to the assessment;
- The forthcoming assessment will be conducted in **2022** and will cover the period 2017-2021;
- **Three assessment criteria with weightings varying between broad fields of science.**

2.2. Assessment Criteria and Weights by Fields of Science

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Assessment criteria \ Fields of Science	**Social Sciences and Humanities (incl. Theology)**	Natural Sciences, Medical and Health Sciences	Engineering and Technology, Agricultural and Veterinary Sciences	The Arts
Quality of research outputs and development works or artistic works (publications, patents, art works)	70%	60%	50%	80%
R&D income (grants awarded by the competitive procedure, revenues from R&D commercialisation)	10%	20%	35%	-
Impact of research on the society and the economy	20%	20%	15%	20%

2.3. Quality of research output

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- **Quality of research outputs and development works or artistic works based on publications (articles, monographs, chapters), patents, art works;**
- Two ministerial registers supporting evaluation of publications (**principle of prestige inheritance**):
  - register of scientific journals (based on indicators measuring impact of a journal, final score may be revised by an expert team),
  - register of publishing houses publishing scientific monographs;
- The best researchers' publications taken into account;
- Specificity of SSH (incl. theology) acknowledged:
  - different scoring for a monograph than in other disciplines,
  - higher share of monographs and chapters allowed among submitted outputs,
  - some types of outputs specific to SSH are recognised: source texts editions, scientific translations.

3.1. Impact of Research: What was assessed before?

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- Criterion of “Other effects of research” (other than practical effects) in the previous research assessment model (assessment carried out in 2017):
  - weighting from 10% (STEM and life sciences) to 15% (SSH and the arts)
- “Application of the results of the R&D works of high social impact” assessed within the criterion…
- … but also publications of major importance for the development of science, culture, art or national heritage; organisation of (international) conferences; disseminating knowledge; popularising science; (international) research collaboration included in the criterion

3.2. Impact of Research: What is to be assessed now?

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Impact of research on:

- the economy,
- public policy and services,
- health care,
- culture and art,
- protection of the natural environment,
- public security (incl. national defence),
- other areas of social development

as a separate criterion within the research quality assessment.

3.3. Impact of Research: How it is to be assessed

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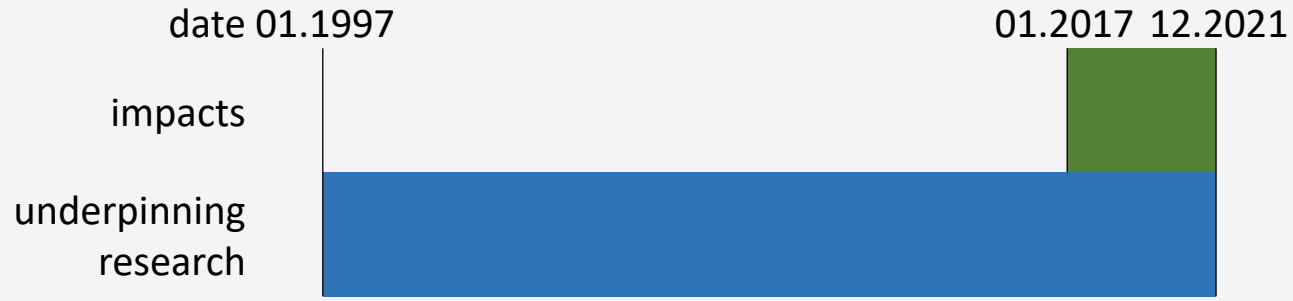
- **Case studies** demonstrating **evidence of impacts** (reports, scientific publications, citations etc.) achieved during the assessment period that are underpinned by research in the period from 20 years before the assessment period to the end of this period



- Assessment of case studies based on the expert judgement.

3.4. Impact of Research: № of case studies to be submitted

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FTE ≤ 100

2

100 < FTE ≤ 200

3

200 < FTE ≤ 300

4

FTE > 300

5

Expected number of case studies to be submitted in 2022 – not less than 2,700.

3.5. Impact of Research: № of case studies to be submitted and calculation of final score for an entity

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- However, there is an opportunity to submit more case studies: institutions assessed in disciplines within **SSH** can submit **3 additional case studies** describing impacts underpinned by outstanding scholarly books, biographical and bibliographical dictionaries etc.

- **Final score**

$$= \frac{\text{sum of points for all case studies}}{\text{№ of require case studies} + \text{№ of optional case studies submitted}}$$

4.1. Pilot impact evaluation

- 42 out of 47 scientific and artistic disciplines
- Participants:
  - Nicolaus Copernicus University in Toruń,
  - West Pomeranian University of Technology,
  - Academy of Arts in Szczecin
- A report on results of the evaluation was published in June 2020. The results were taken into account in **amending the model of research quality assessment and will serve to form impact evaluation guidelines** for peer reviewers of case studies

4.2. Amendments to research quality assessment

- In the original version of the new model of research quality assessment, the scope and significance of the impact were treated as a single criterion. The results of the impact evaluation pilot showed that the assessment of the scope and significance of the impact can be radically different. Therefore, separate assessments have been introduced for the scope of the impact and the significance of the impact.
- Other issues addressed in the pilot taken into account on revising the model:
  - cooperation of experts assessing a case study,
  - provision of access to evidence of impact to experts,
  - a bonus for interdisciplinarity.
- Detailed information on the results of pilot will be presented during the „Impact of Science" conference organised in Cracow on 4-6 November

4.3. Next preparatory steps to the impact evaluation

- Preparation of **evaluation guidelines for experts**, which include the conclusions of the pilot
- **4-6 November 2020 – the Impact of Science conference** at the AGH University of Science and Technology in Cracow (in cooperation with AESIS)
- **Training** for universities and research institutions that are subject to the assessment

Thank you for your attention!

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