Parallel Session (C.131)

Responsible & Alternative Metrics for Impact

James Wilsdon

Director, Research on Research Institte (RoRI),
Sheffield University, United Kingdom

RoRI RESEARCH ON RESEARCH INSTITUTE

Metrics for impact: aligning indicators & incentives.

AESIS Impact of Science, 23 June 2022.

James Wilsdon, RoRI & University of Sheffield
@RoRInstitute @jameswilsdon

157 UK universities made submissions to REF 2021, the UK's framework for assessing the quality of higher education research. In total, they submitted over 185,000 outputs from research and over 6,000 impact case studies detailing where their research had benefitted wider society, across 34 subject-based units of assessment.

This latest publication includes the REF impact case study database, a searchable tool which will support wide-ranging analysis of the manifold contributions made by UK university research to the economy and society, in the UK and worldwide.

Preliminary analysis of the impact case studies highlights the diversity of areas in which research has made a key difference – from advancements in health and technology, to legislative and political change, societal, economic and cultural benefits, and environmental impact – and their global reach, with UK research making a contribution in every country worldwide. The database offers the potential for 'deep dives' into key topics

European Commission

Next-generation metrics:

Responsible metrics and evaluation for open science

RoRI RESEARCH ON RESEARCH INSTITUTE

RoRI Working Paper No.3

The changing role of funders in responsible research assessment:

progress, obstacles and the way ahead

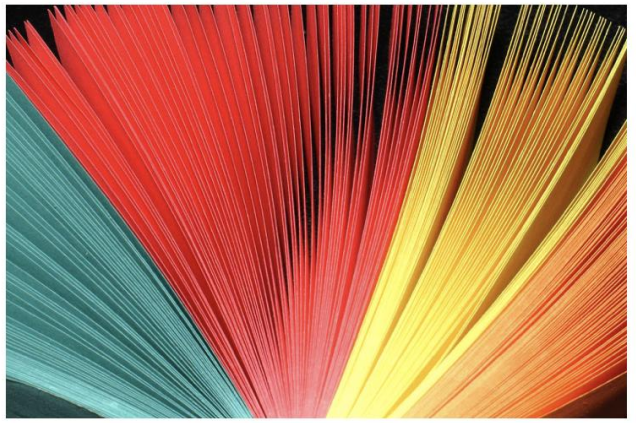
Stephen Curry, Sarah de Rijcke, Anna Hatch, Dorsamy (Gansen) Pillay, Inge van der Weijden and James Wilsdon

November 2020

Produced in partnership with:

GLOBAL RESEARCH COUNCIL · DORA · UK Research and Innovation · NRF National Research Foundation

Reviewing the role of metrics in research assessment



17 May 2022

As part of FRAP, an expert panel has been invited to lead a review of the role of metrics in research management and assessment.

Related content

- Future Research Assessment Programme: UKRI
- Future Research Assessment Programme: JSC

Shanthi Ramanthan

Health Research Economics Impact Assessment Specialist,
Hunter Medical Research Institute, Australia

Starting with the End in Mind: how prospectively planning for impact assessments can optimise societal impact

Dr Shanthi Ramanathan
Research Impact Specialist, Hunter Medical Research Institute

AESIS International Impact of Science Conference,
Leiden, The Netherlands
22-24 June 2022

In partnership with our community

Key definitions (Australian)

Research impact

…The verifiable outcomes that research makes to knowledge, the economy and/or society. **(i.e. a societal perspective)** Impact is the effect of the research after it has been adopted, adapted for use, or used to inform further research.

NHMRC, 2018

Research translation is a precursor to impact. Without translation there is no impact.

This presentation takes a health and medical research perspective

Why the focus on translation and impact?

Valley of death

- Research does not magically translate to policy and practice. Even flow of knowledge across the research pipeline does not just happen

There is much to do

- Around 43% of adults and 40% of children in Australia receive less than appropriate care in clinical encounters. We can do better

(Runciman, Braithwaite)

Value for money

- Suboptimal translation = suboptimal impact = poor returns on research investment = waste (Chalmers & Glasziou, 2009)
- Research not benefitting society

Other good reasons for a focus on translation and impact

Adapted from Guthrie et al., 2013 and borrowed from Ken Knight's AAMRI presentation, 5 April 2022

What are key challenges with impact assessment?

- **Lag to final impacts**
  - An average of 17 years to move 14% of research into policy or practice (Morris, Wooding, Grant, 2011)
- **Attribution versus contribution**
  - Research does not occur in a vacuum, how do we “accurately” claim and evidence impact of our research?
- **Resource intensive**
  - Requires time, resources and skill. What do researchers forego to invest in this activity? How do they develop these additional skills? Are we expecting too much from them? Are these activities adequately resourced and rewarded? Who should shoulder the burden?
- **Value judgement**
  - What does societal benefit even mean? Benefit from whose perspective? How do we balance the needs of various stakeholders? What about cost-effectiveness? Not everything that is worthwhile is affordable. Every decision is a tradeoff. What is good for one group may not be good for another…what about equity, social justice?
- **What are we trading – independence, value of negative findings, jumping the gun?**
  - Does a focus on impact cause researchers to oversell the results and outcomes from their research? When co-creating research – are we losing independence? Are we missing the value of negative findings that tell us “what not to do”? Are we causing researchers to jump the gun just to achieve “impact”?

HMRI
Hunter Medical Research Institute

HMRI's response to the challenge

In partnership with our community

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

NSW GOVERNMENT Health
Hunter New England
Local Health District

What we already knew

End user engagement

- Engaging end users all the way through the research process optimises translation and impact

Prospective orientation

- Assessing impact at the end is problematic and costly
- Planning for impact upfront is the way forward

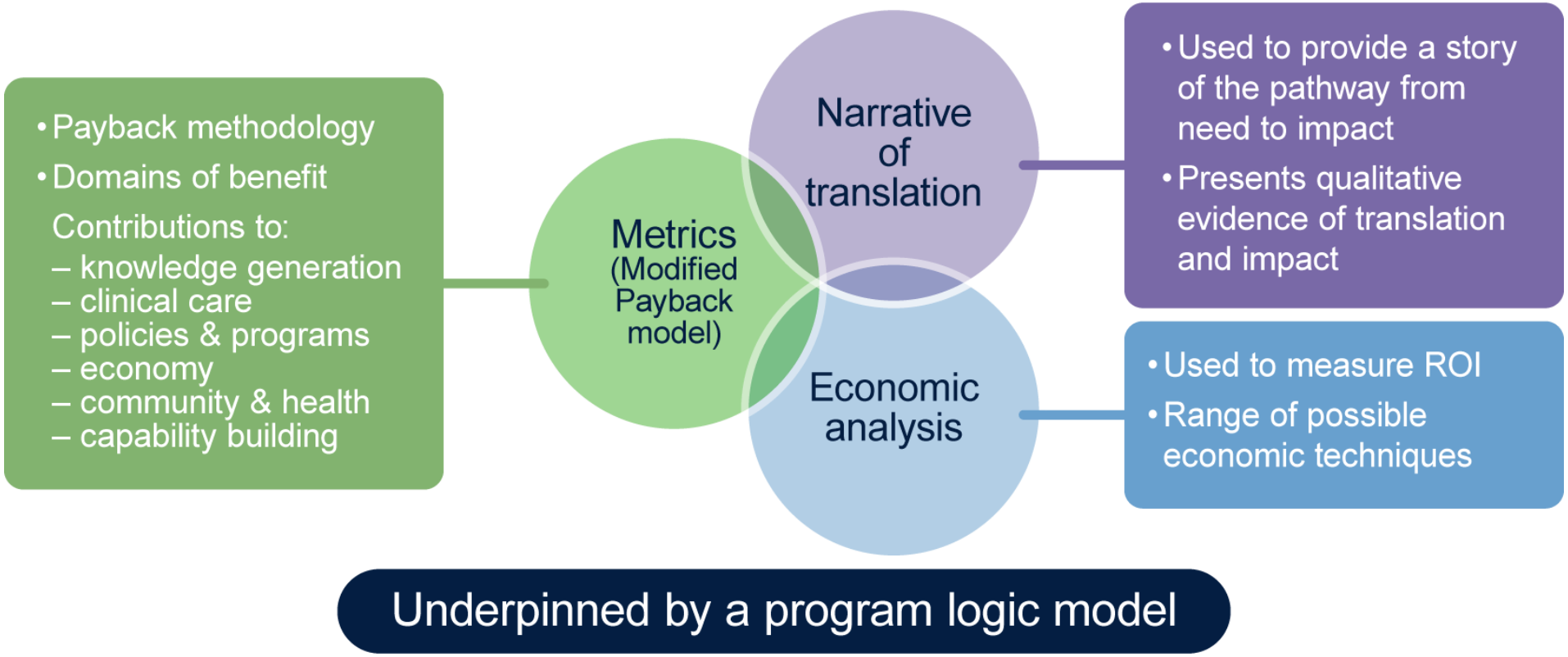
Focus needed

- Need to, adequately resource translation and incentivise impact

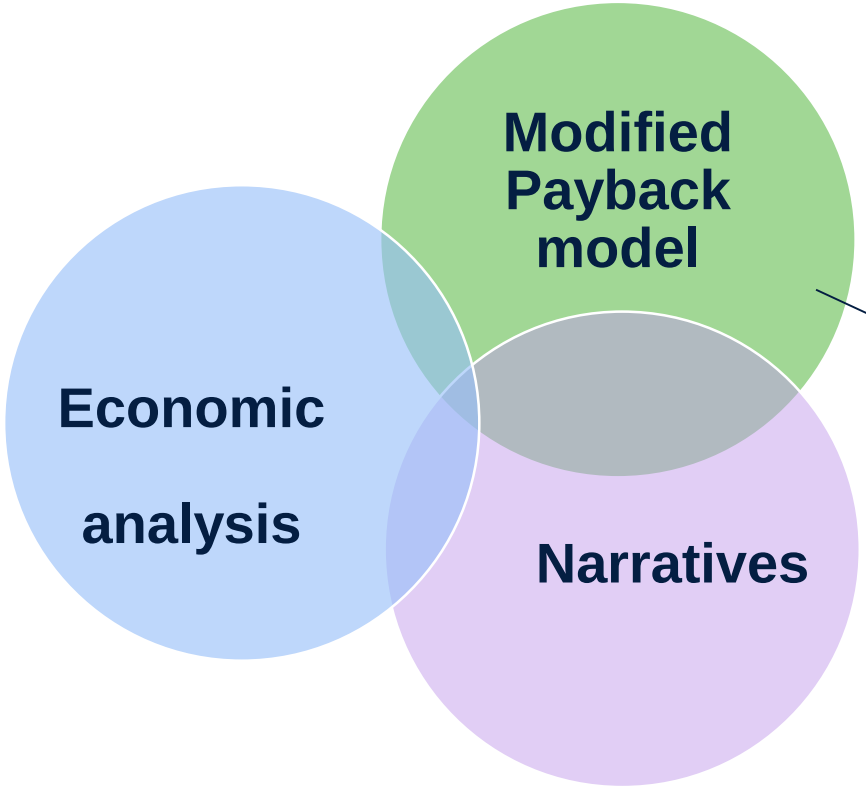
Guiding principles

- Wanted a way of capturing impacts across the spectrum of from discovery science to applied science;
- Encourage research translation
- Work alongside researchers, not just assess them
- Enable the implementation of improvement processes when research translation fails;
- Utilise cost-effective data collection techniques;
- Facilitate communication on research impact.

Framework to Assess the Impact from Translational health research (FAIT)



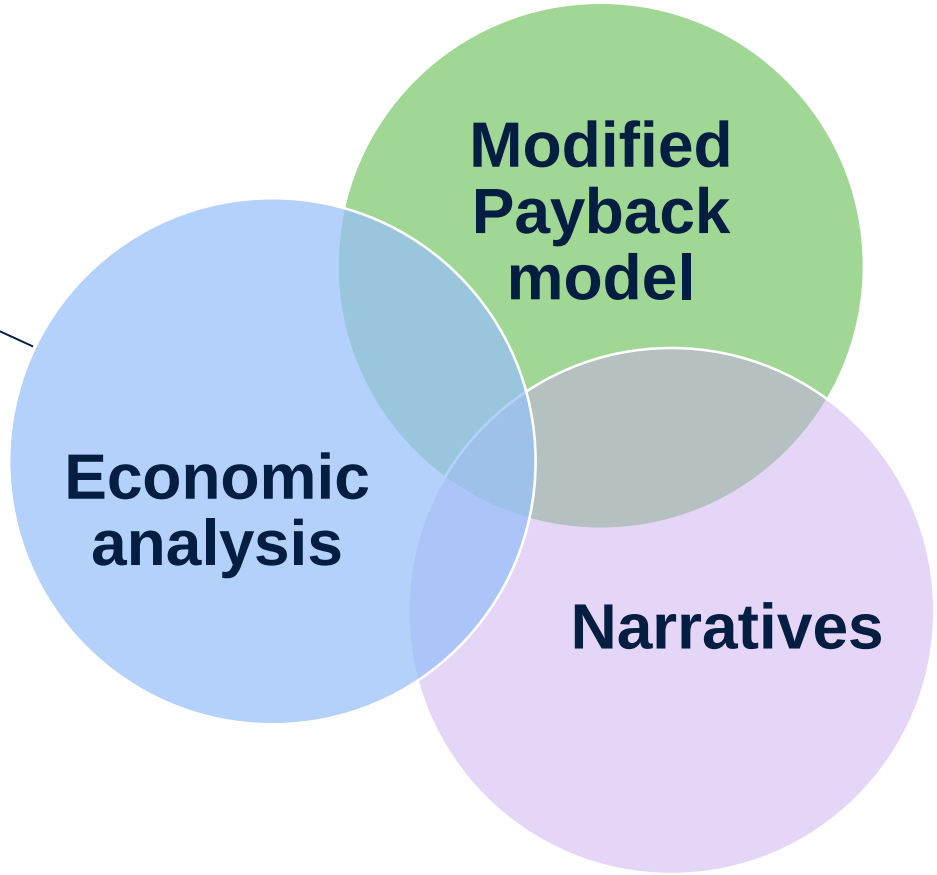
FAIT



- Expressed as metrics
- Domains include
  - Knowledge generation
  - Capacity building
  - Clinical Implementation
  - Policy & Legislation
  - Economic Impact
  - Societal Benefit
- Can also include output metrics and intermediate impacts (on the pathway to impact)

FAIT

- **Favours cost-benefit analysis to understand the return on research investment**
- **Takes a societal perspective**
- **Can be based on actual data &/or 'projected' future values**
- **Favoured by treasuries & research funders**



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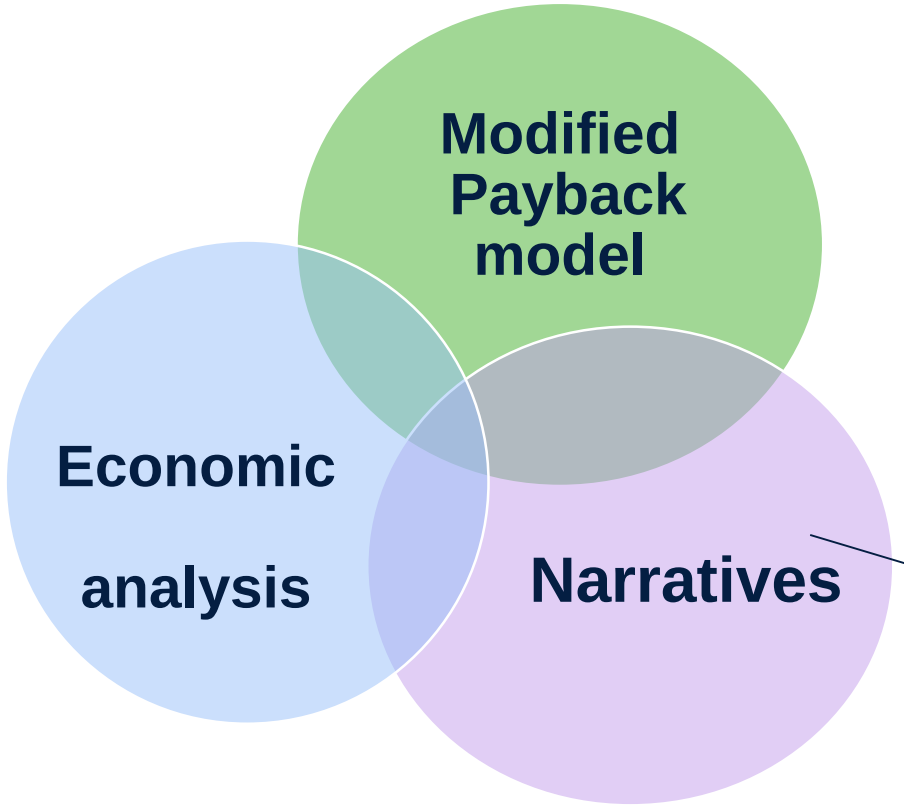
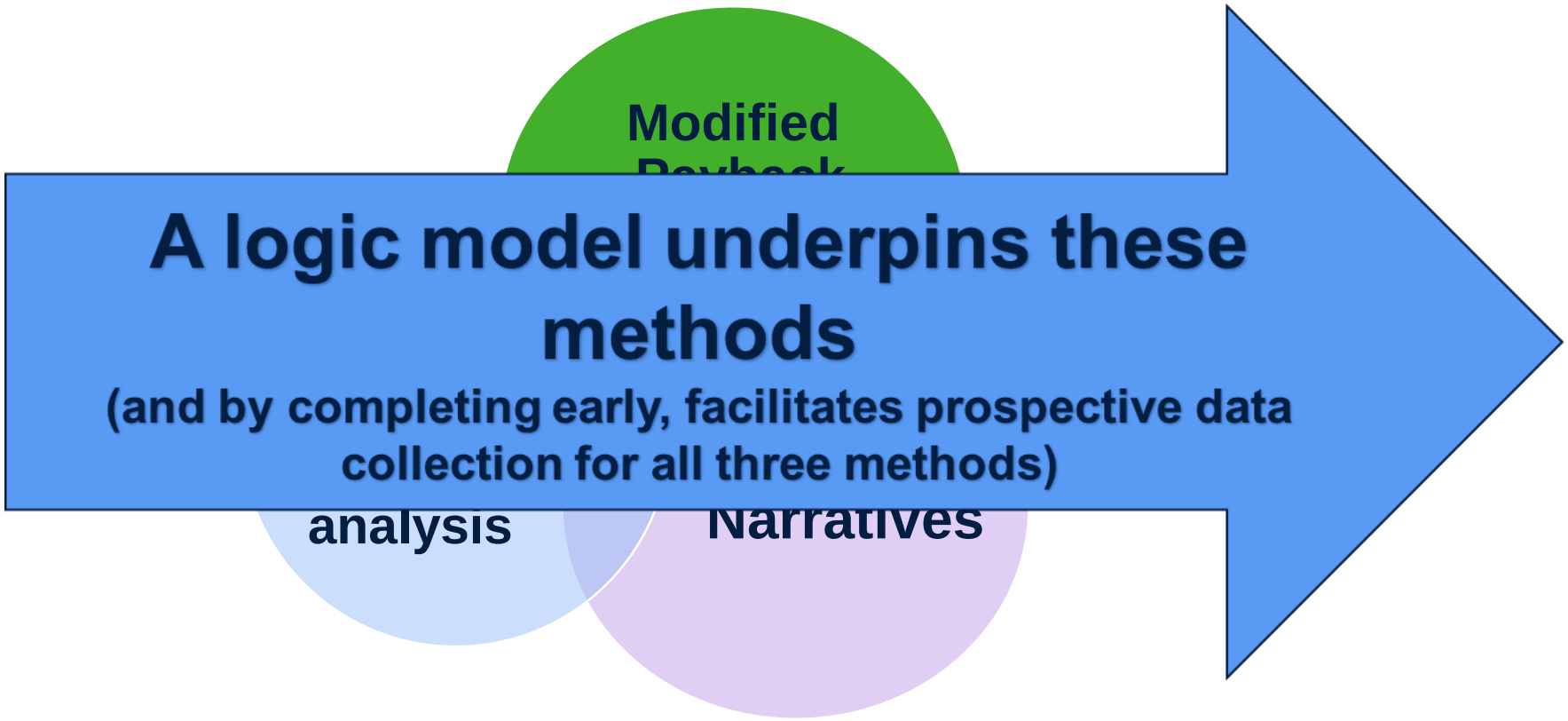


- Good for non- quantifiable impacts – expressed in the words of the beneficiaries
- Can explain complex and lengthy translation pathways and unexpected outcomes and impacts
- Brings together quantitative and monetary results and explains them in context

FAIT


Modified
analysis
Narratives
A logic model underpins these methods
(and by completing early, facilitates prospective data collection for all three methods)

Modified Program Logic Model

Engagement of end users across the path to impact

NEED	AIMS	ACTIVITIES	KEY OUTPUTS	END USERS	PATHWAY TO ADOPT	IMPACTS

Where has/is FAIT being used?

- **Centres for Research Excellence**
  - Stroke rehabilitation and Indigenous primary healthcare
  - Aphasia, Treatable Traits (resp), Implementation Science, Digestive Health
- **Projects/Programs**
  - Salt reduction in the Pacific, Cardiovascular care in Indonesia, Lessons from the Best, Breathing for Life, SENSE Connect & SENSE Partnership, Medical Practice Assistance, Calcium channels, ASPREE Trial, Valid BP devices, Heart transplant using DCD hearts
- **Organisations/Groups**
  - NSW Regional Health Partners, Hunter Cancer Research Alliance, Agency for Clinical Innovation
- **Funding schemes**
  - NSW Health – MRSP, PRSP, TRGS, MDF, COVID-19 and a range of OHMR Schemes (e.g. Cardiovascular Grants, Biobanking Grants)

FAIT Resources: where to find them

FAIT Seminal paper
https://pubmed.ncbi.nlm.nih.gov/27507300/

FAIT Resources to apply the Framework
https://hmrihre.thinkific.com/

FAIT website containing other impact assessment resources
https://hmri.org.au/FAIT

HMRI
Hunter Medical Research Institute

Questions?

Contact: the HRE FAIT team
E: fait@hmri.org.au

Andrew Plume

Vice President of Research Evaluation at Elsevier, United Kingdom

Aligning indicators and incentives to amplify impact: 3 practical contributions

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June 2022

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UNIVERSITY of TASMANIA

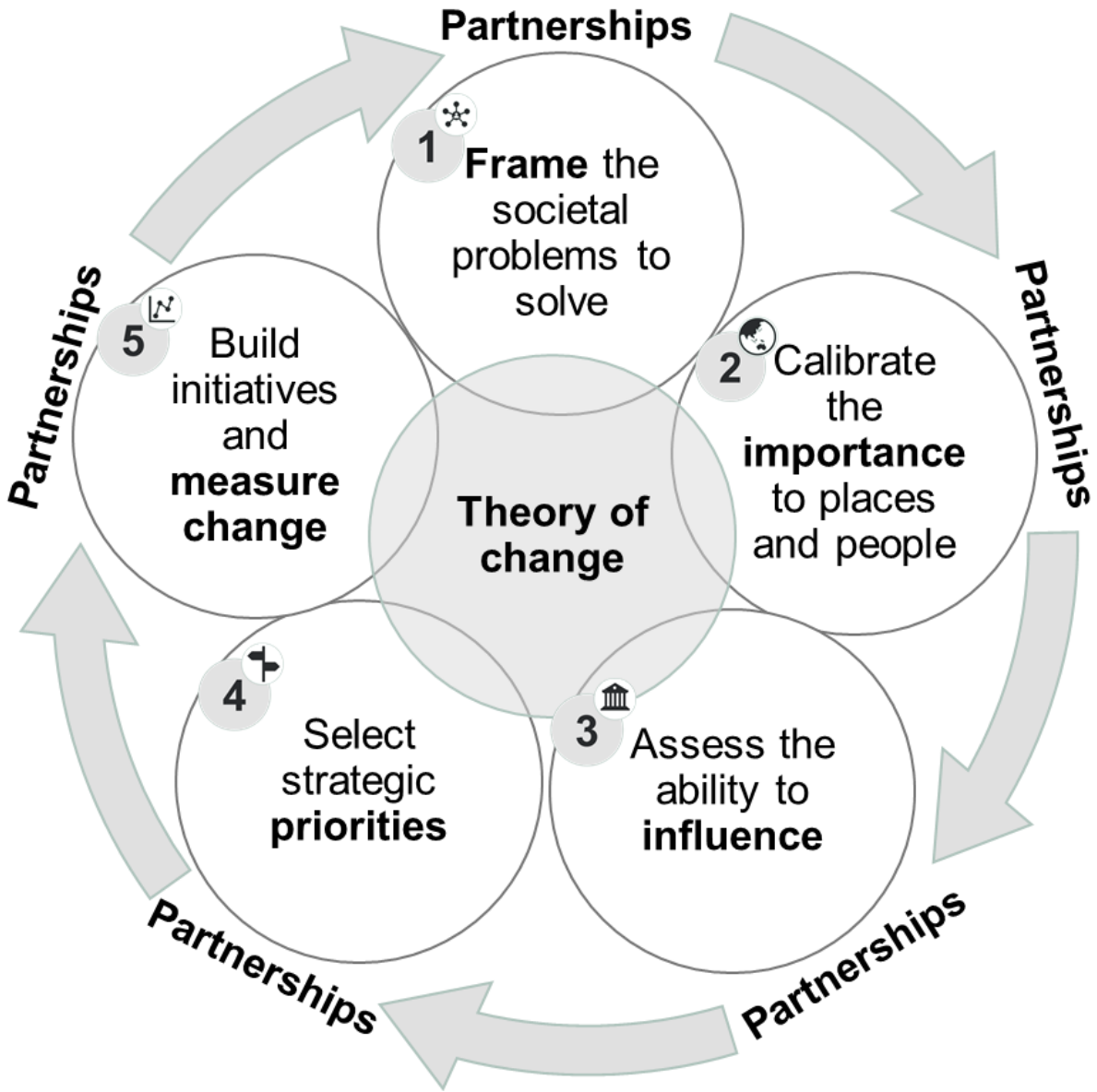
The Tasmanian Societal Impact Model

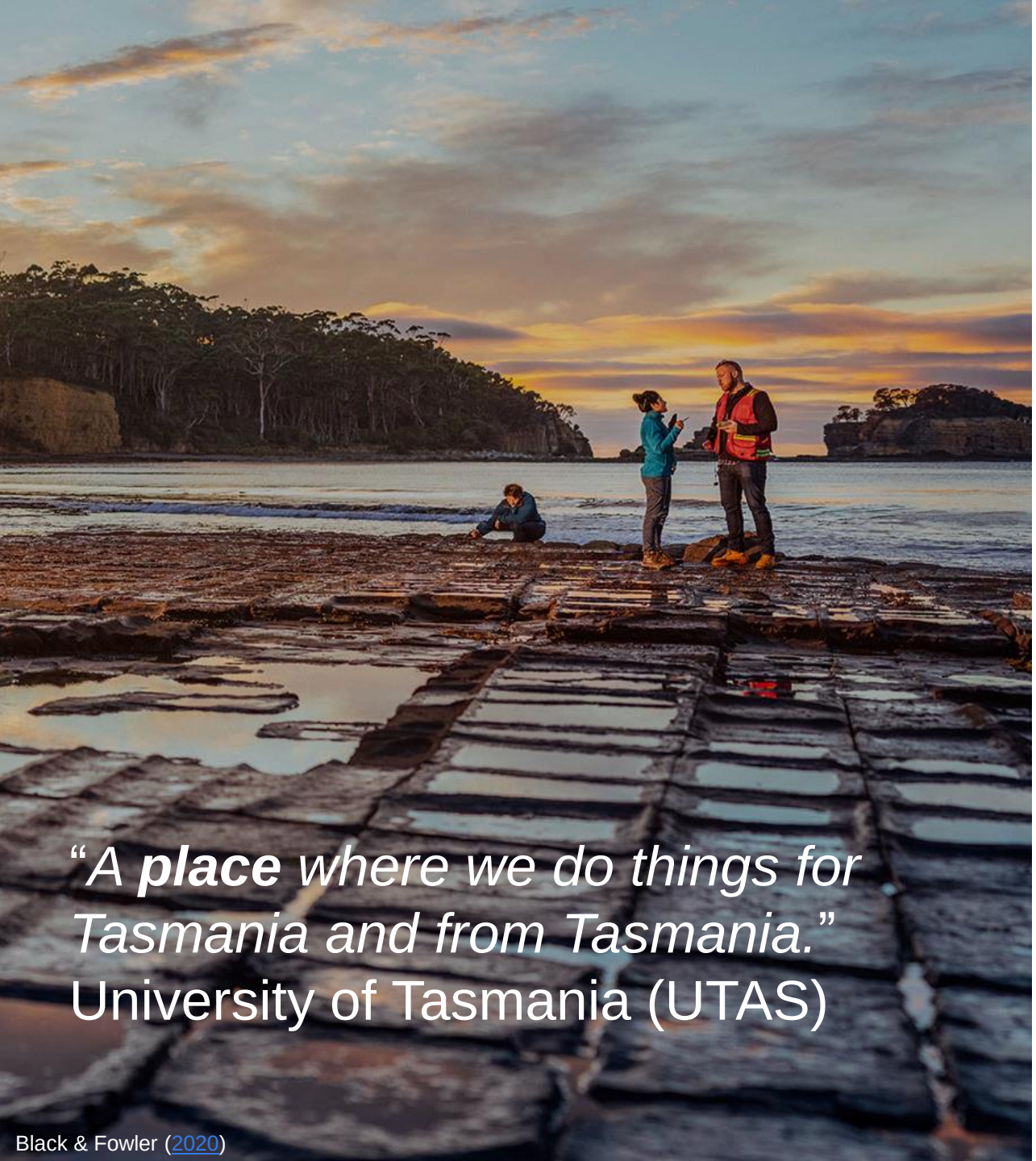
A systematic, rigorous and scalable approach to amplifying impact

Global Expertise | Local Impact

Local Expertise | Global Impact

Tasmanian Model





Black & Fowler (2020)

UNIVERSITY of TASMANIA

Tasmanian Model

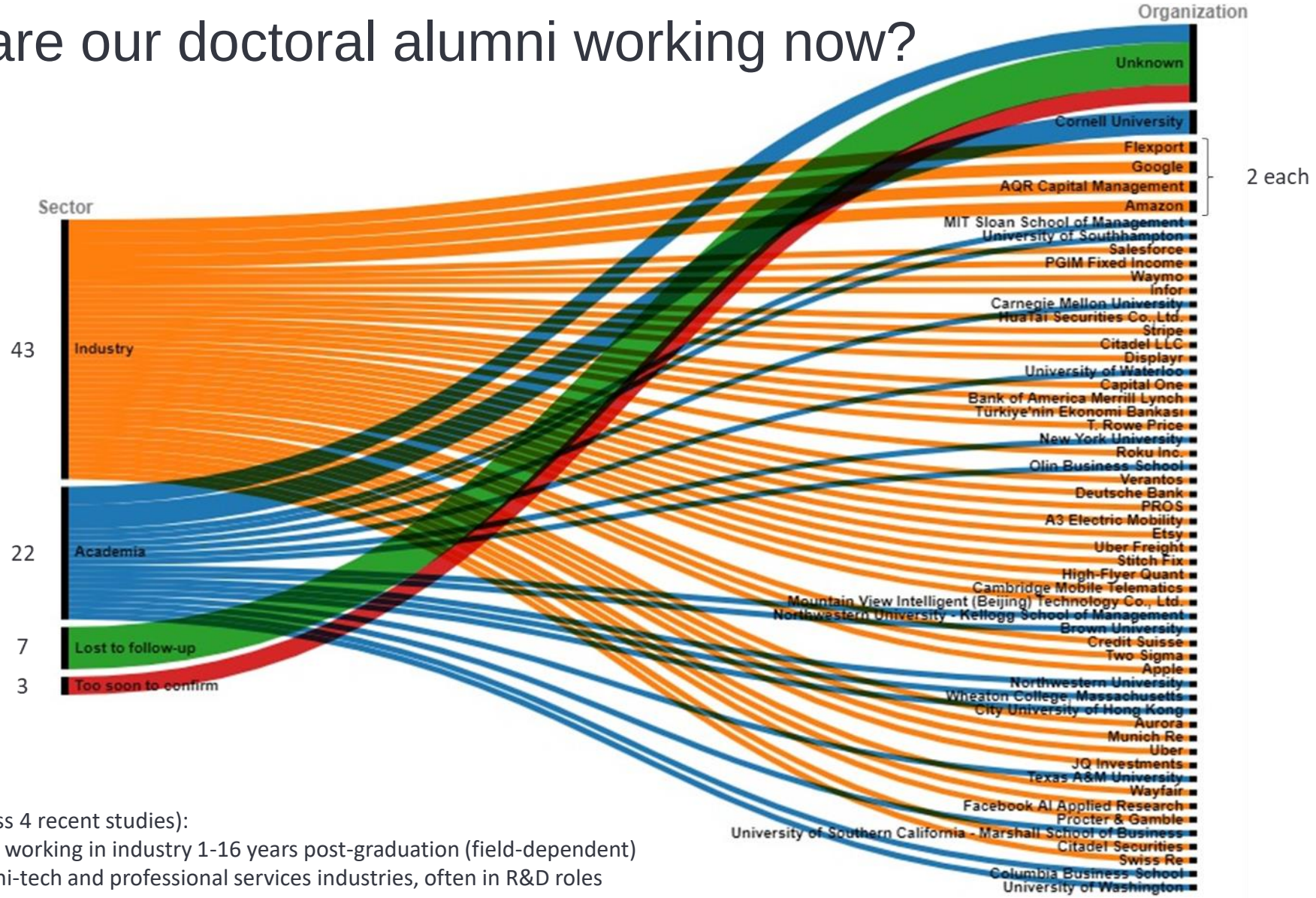
ELSEVIER

1. **Frame** the societal problems to solve
   - List opportunities and addressable units *likely* to be important and that we *could* influence
2. Calibrate **importance** to places & people
   - Assess the *relative* importance of each opportunity/unit
3. Assess ability to **influence**
   - Assess the *relative* ability to influence each opportunity/unit
4. Select strategic **priorities**
   - Prioritise opportunities/units that are important and can be influenced
5. Build initiatives and **measure change**
   - Specify impact pathways and how to measure contribution or plausible association

Employment outcomes of doctoral alumni

People as a vector for societal impact

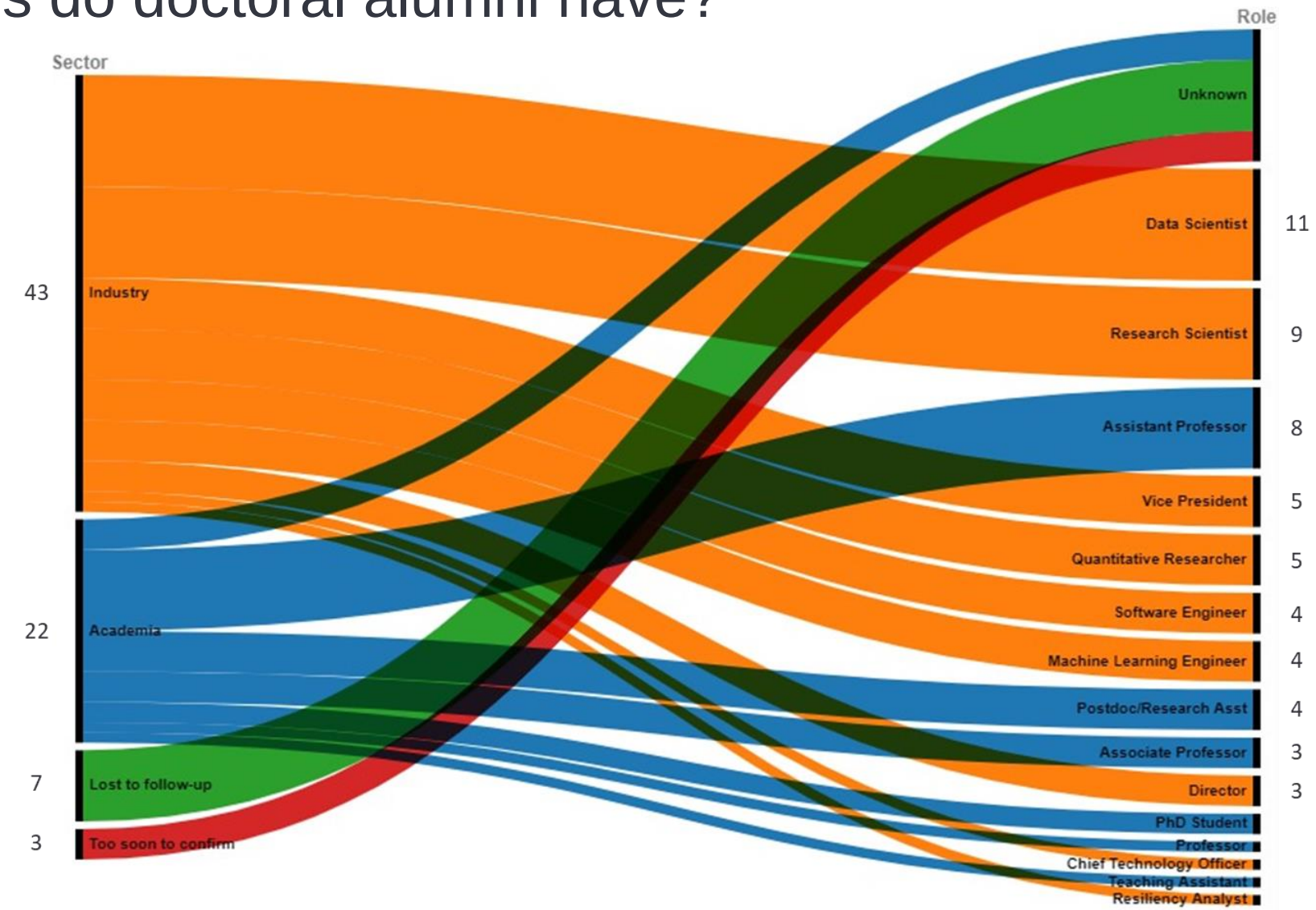
Where are our doctoral alumni working now?



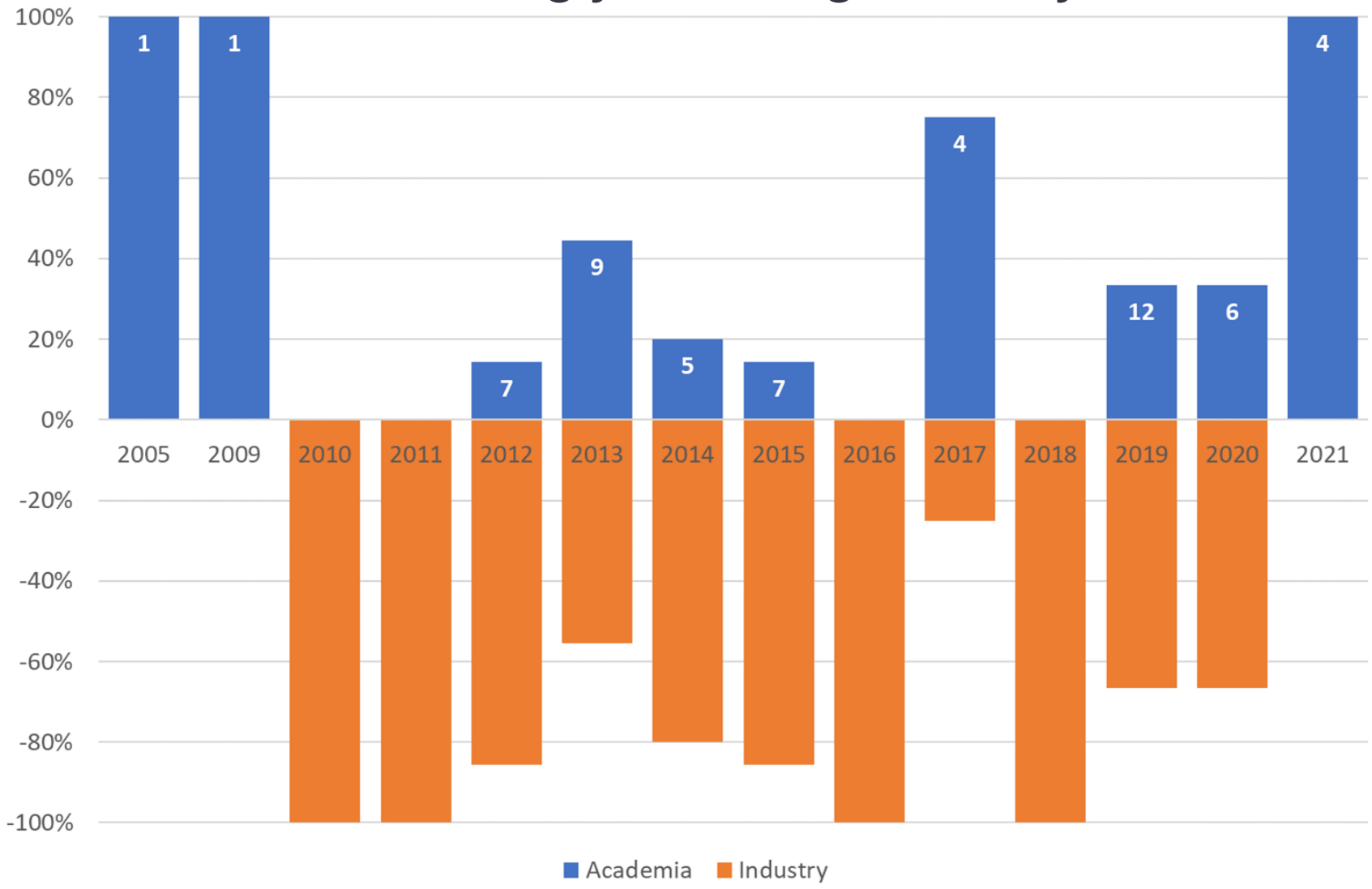
From the literature (across 4 recent studies):

- 18-50% of PhD alumni working in industry 1-16 years post-graduation (field-dependent)
- Disproportionately in hi-tech and professional services industries, often in R&D roles

What roles do doctoral alumni have?



Are doctoral alumni increasingly entering industry?



Do doctoral alumni in industry drive academic-corporate collaboration?

43

7	Scopus-indexed publications after PhD using industry affiliation*
29	Scopus-indexed publications using Cornell or other academic affiliations before or PhD (up to 7 years later; mean 1.3 years)
7	No Scopus-indexed publications, before or after PhD

Publications appear up to 6 years after PhD (mean 5.3 years); all from 2010-16 cohorts, 5 men & 2 women, 5 US & 2 China

Individuals who leave academia within a few years of the PhD; their industry destination may not be detected in short-term post-graduation surveys

From the literature: Publication during the PhD is associated with continuation in academia and *vice versa*

Invariably, Scopus-indexed publications after PhD using industry affiliation were co-authored with former Cornell colleagues (usually former PhD advisor)**

What proportion of Cornell's industry co-authored publications is due to collaborations with alumni?

* Not necessarily their current employer
** See Appendix for details

SciVal

Fresh data, fresh insights

Forthcoming SciVal Impact module

Indicators of societal impact relevance and pathways

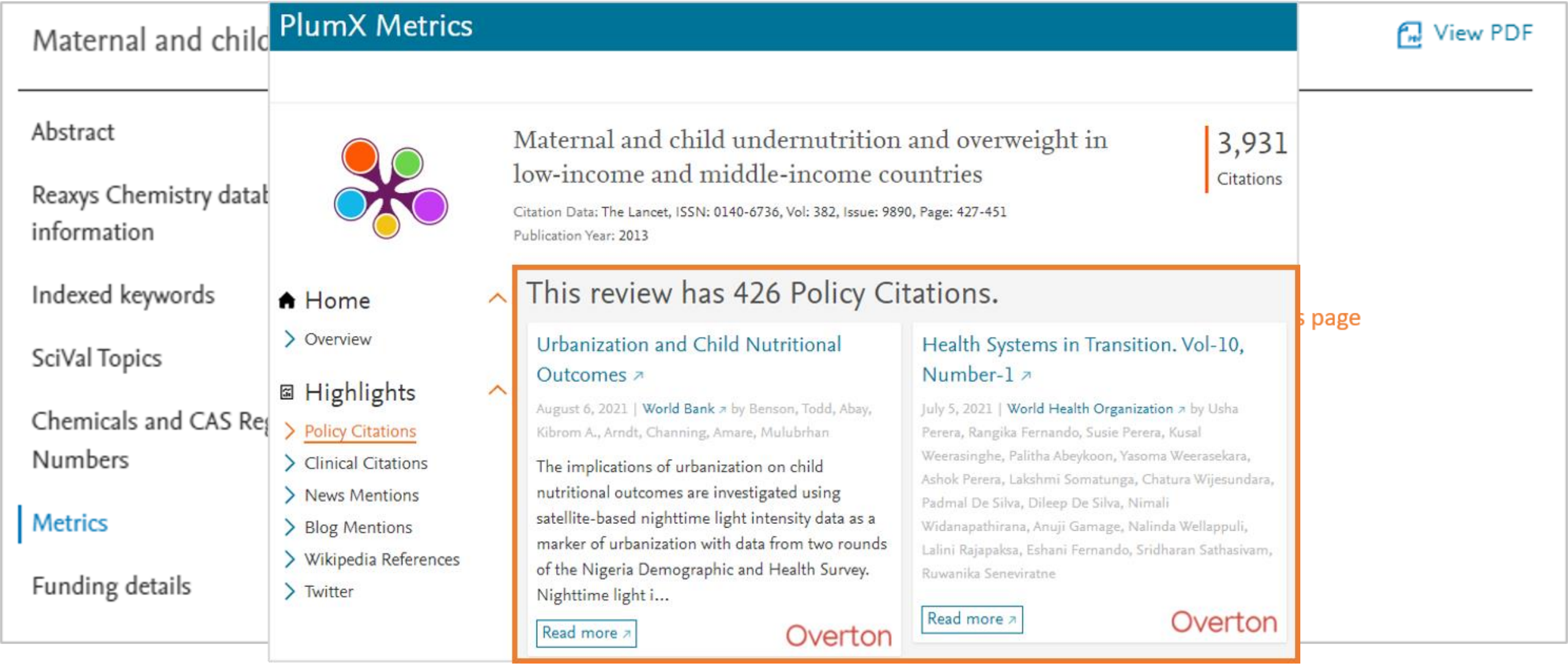
- Research publications mapped to **UN SDGs**
- Mentions of researchers and/or institutions in **mass media**

- Citations to research publications from **mass media**
- Citations to research publications from **patents**
- Citations to research publications from **policy documents** Overton

Policy citations to over 126k publications demonstrated that cross-disciplinarity (indicated by co-authorship) is positively associated with policy relevance

https://www.elsevier.com/icsr/perspectives/cross-discipline-policy-video

Policy documents are now available analytically at scale



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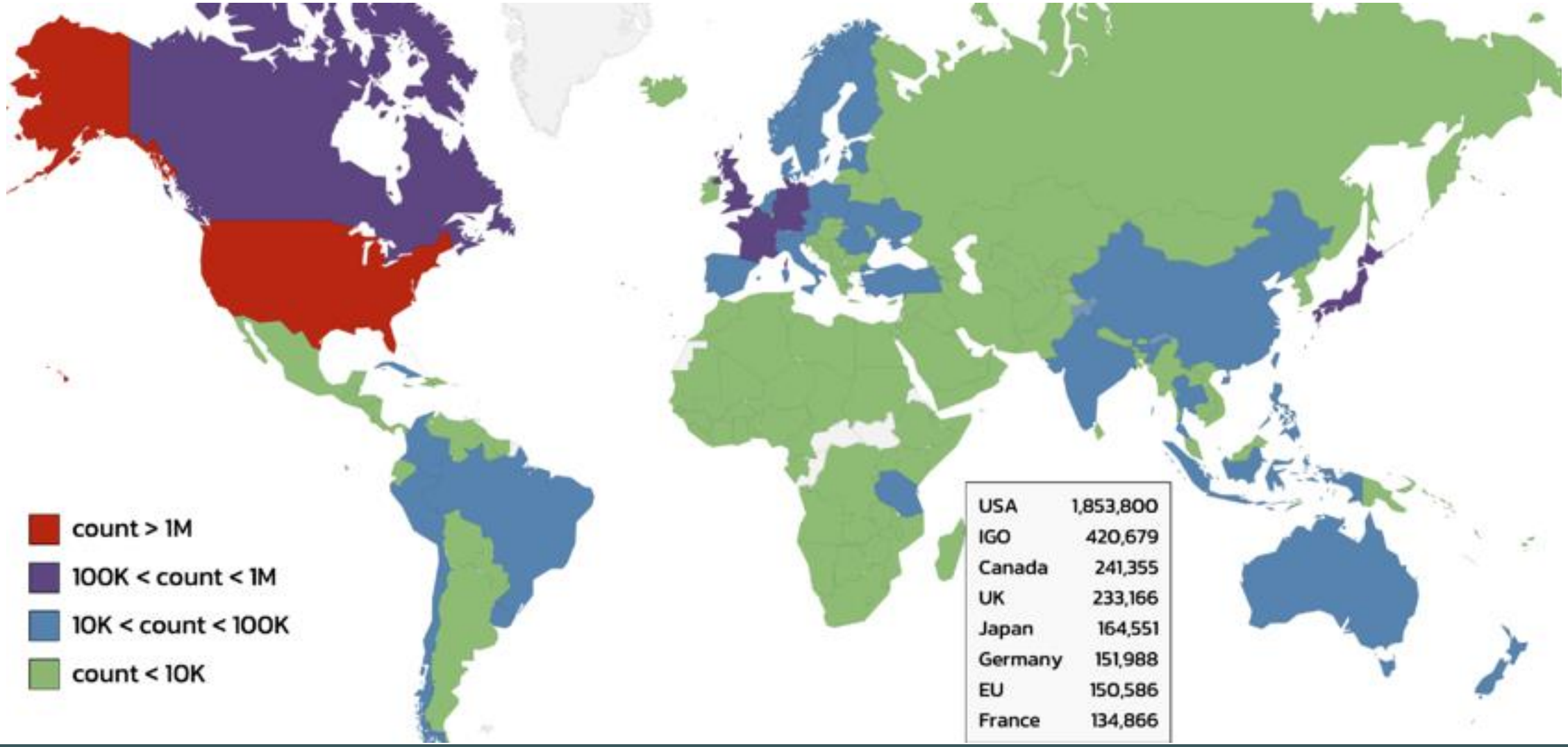
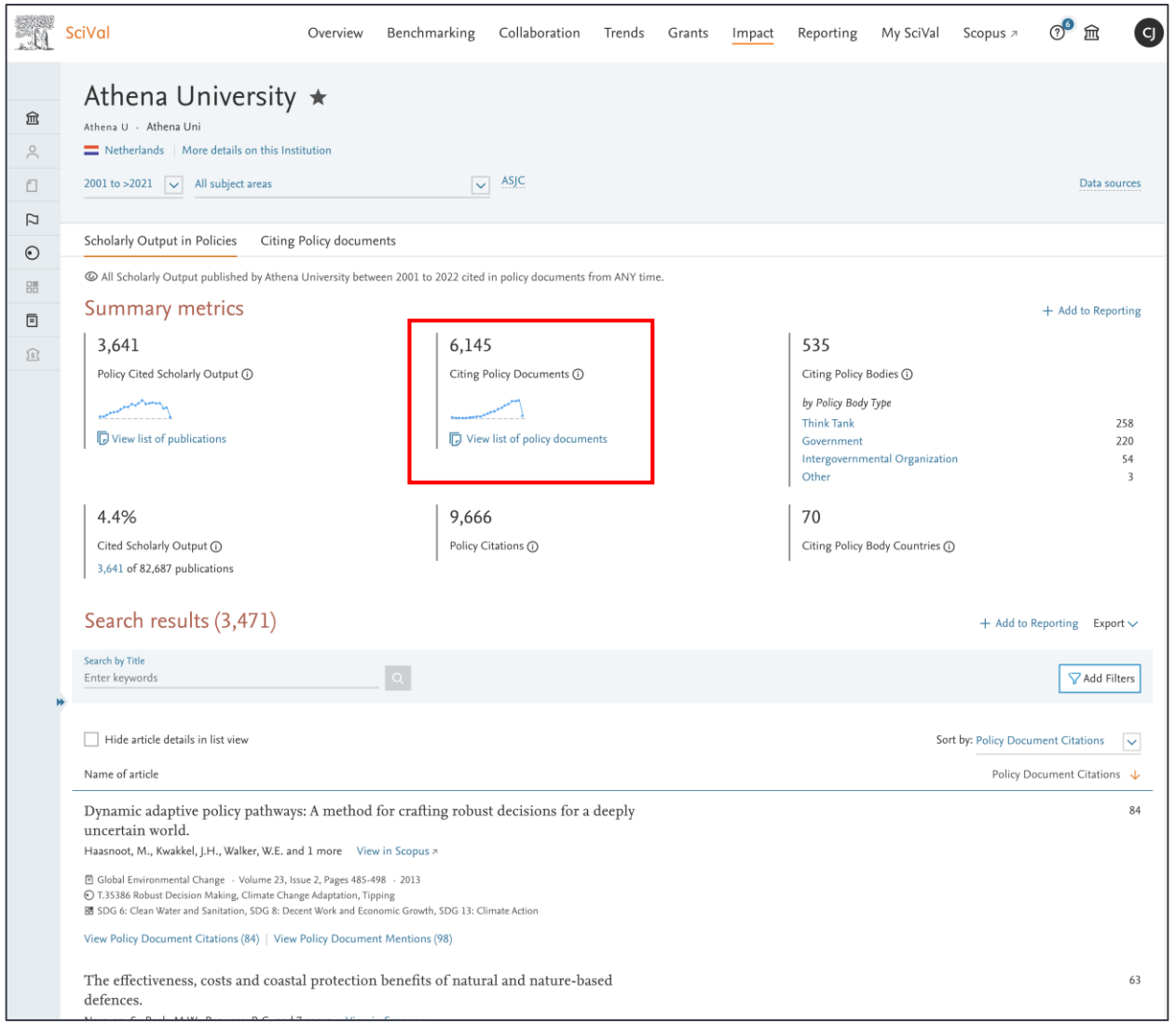


Which policy documents have cited my university's publications?



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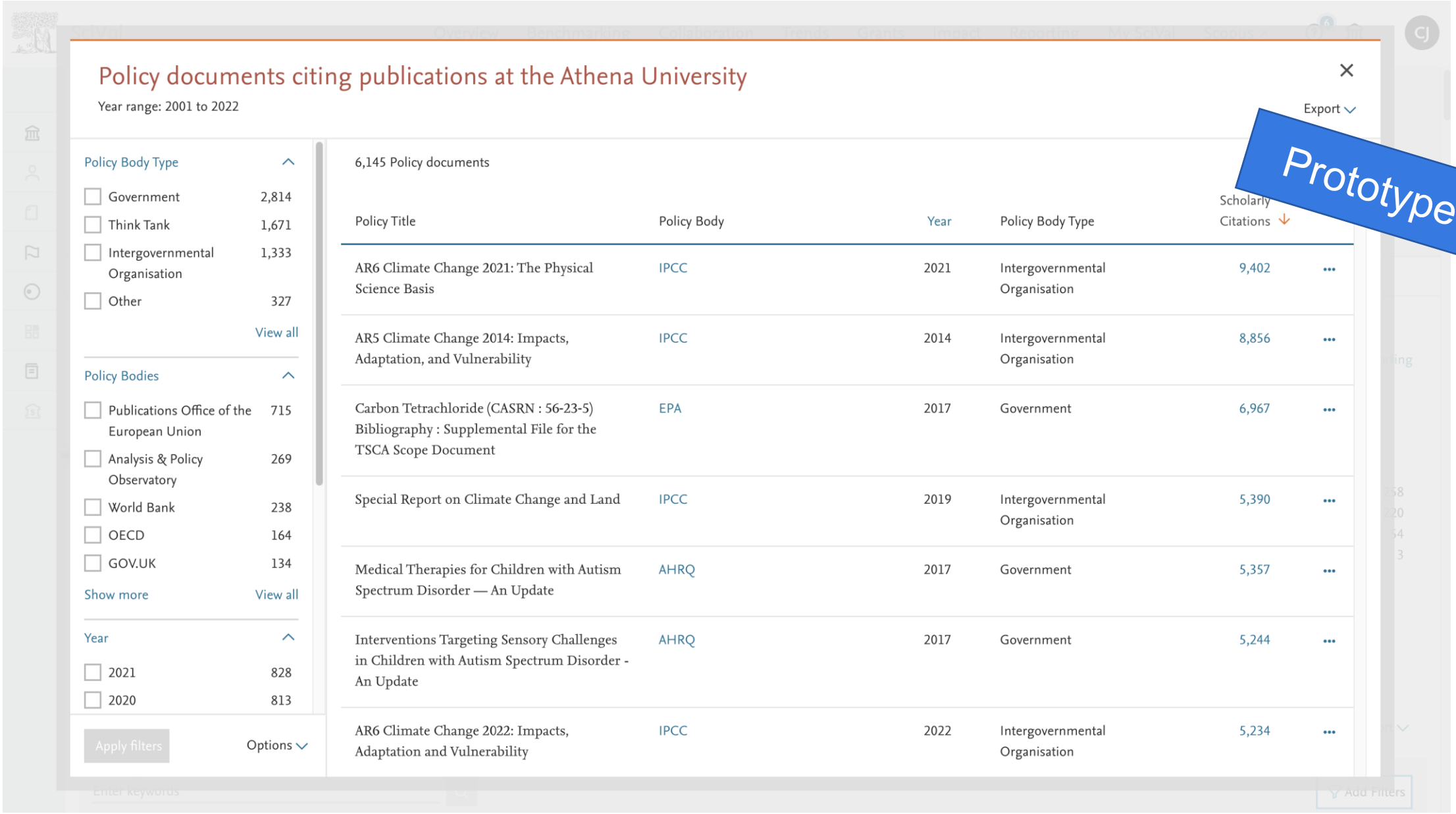
Policy documents citing publications at the Athena University
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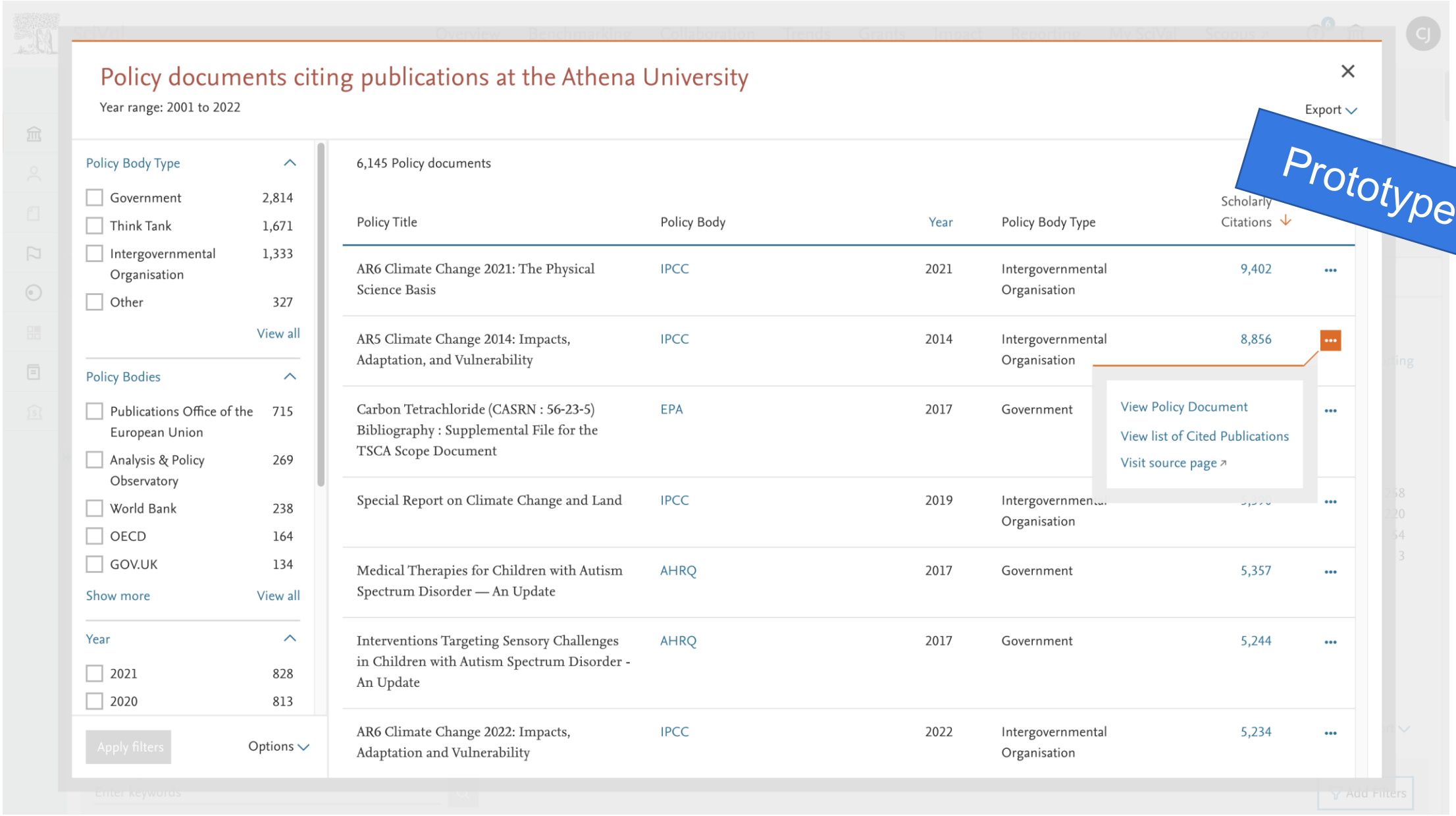
IPCC
2021
Intergovernmental Organisation
9,402
AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability
IPCC
2014
Intergovernmental Organisation
8,856
Carbon Tetrachloride (CASRN : 56-23-5) Bibliography : Supplemental File for the TSCA Scope Document
EPA
2017
Government
6,967
Special Report on Climate Change and Land
IPCC
2019
Intergovernmental Organisation
5,390
Medical Therapies for Children with Autism Spectrum Disorder — An Update
AHRQ
2017
Government
5,357
Interventions Targeting Sensory Challenges in Children with Autism Spectrum Disorder - An Update
AHRQ
2017
Government
5,244
AR6 Climate Change 2022: Impacts, Adaptation and Vulnerability
IPCC
2022
Intergovernmental Organisation
5,234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5,234

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Policy Document Details

AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability

IPCC March 01, 2014

Available in French, German, Russian and 2 more

8,856	5,864
Scholarly References	Mentions of Scholarly Articles

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Cited Institutions

The Policy Document cites 2,545 unique Institutions.

Top 10 Cited Institutions

	Institution	Policy Document Citations
1	CNRS	414
2	NOAA	262
3	CSIRO	246
4	University of East Anglia	244
5	Wageningen University & Research	195
6	University of Oxford	173

All Mentions in Policy Documents

Scholarly Article: Dynamic adaptive policy pathways: A method for crafting robust decisions for a deeply uncertain world View in Scopus More Details

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- Think Tank 28
- Government 23
- Other 2

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86 Policy documents

AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability

IPCC 2014 View Policy Document

2 mentions of scholarly article

p.418 Haasnoot, M., J.H. Kwakkel, W.E. Walker, and J. ter Maat, 2013: Dynamic adaptive policy pathways: a method for crafting robust decisions for a deeply uncertain world. Global Environmental Change, 23(2), 485-498. Hadley, D., 2009: Land use and the coastal zone. Land Use Policy, 265, S198-S203. Hadwen, W.L., S.J. Capon, E. Poloczanska, W. Rochester, T. Martin, L. Bay, M. Pratchett, J. Green, B. Cook, A. Berry, A. Lolonde, and S. Fahey, 2011: Climate Change Responses and Adaptation Pathways in Australian Coastal Ecosystems: Synthesis Report. Report for the National Climate Change Adaptation Research Facility, Gold Coast, Australia, 359 pp.

p.951 Haasnoot, M., J.H. Kwakkel, W.E.Walker, and J. ter Maat, 2013: Dynamic adaptive policy pathways: a method for crafting robust decisions for a deeply uncertain world. Global Environmental Change, 23(2), 485-498.

Special Report on Climate Change and Land

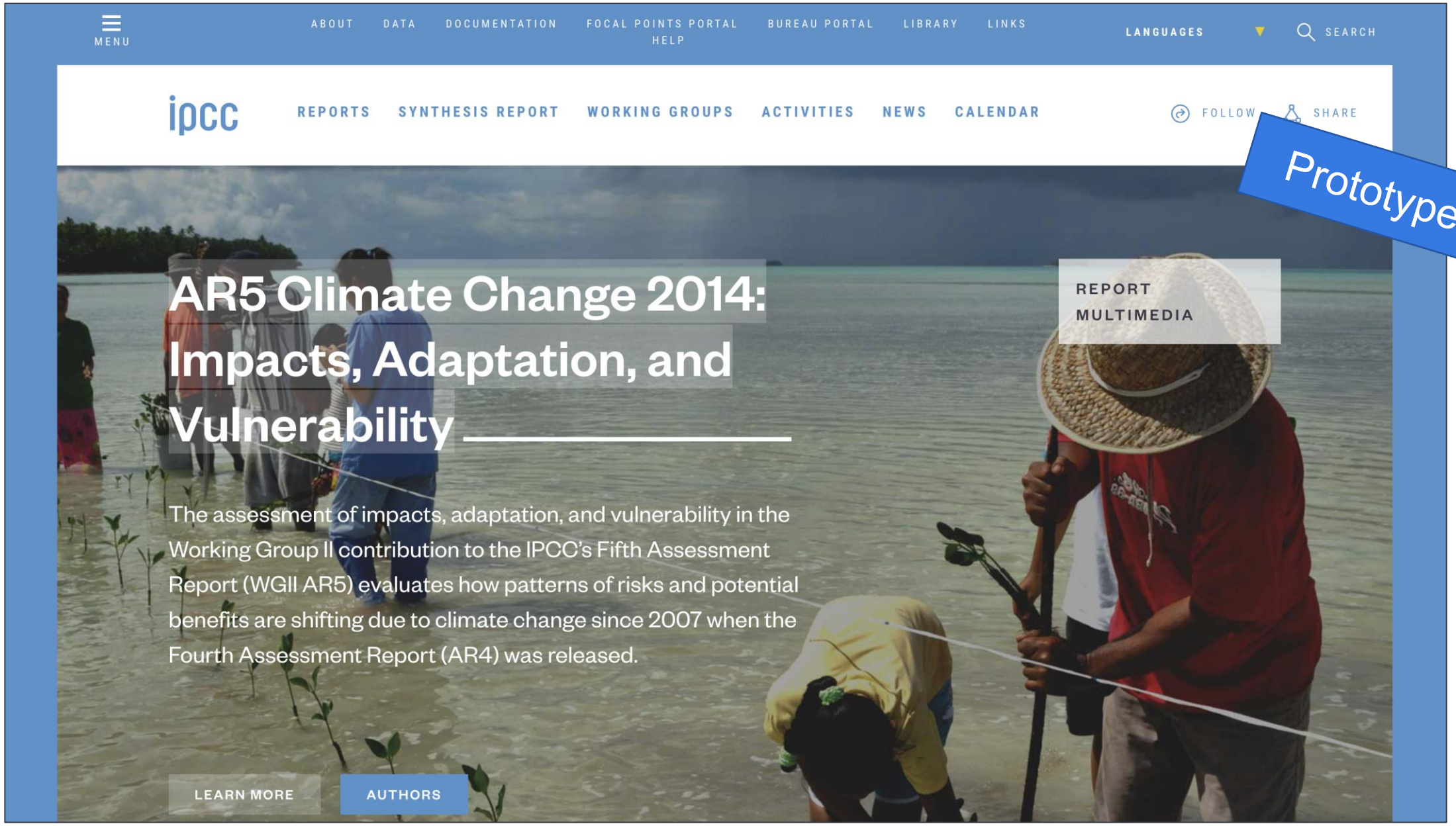
IPCC 2019 View Policy Document

1 mention of scholarly article

Scholarly Article Details

Haasnoot, M., Kwakkel, J.H., Walker, W.E. and 1 more

Global Environmental Change
Volume 23, Issue 2, Pages 485-498
2013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AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability
REPORT
MULTIMEDIA
The assessment of impacts, adaptation, and vulnerability in the Working Group II contribution to the IPCC's Fifth Assessment Report (WGII AR5) evaluates how patterns of risks and potential benefits are shifting due to climate change since 2007 when the Fourth Assessment Report (AR4) was released.
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Thank you!


@AndrewPlume


a.plume@elsevier.com

Recommendation

Responsible & Alternative Metrics

“In the quest for better indicators & metrics of impact, we shouldn’t allow the perfect to become the enemy of the good. There’s lots we can do with existing measures and methods—quantitative and qualitative—to better understand and support societal impacts.”