SciVal introduction and use-cases

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- Introductions
- SciVal Overview
- Institutional Challenges addressed:
  - Research Strategy and International Rankings
  - Collaborations & Partnerships
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  - Research Trends Analysis
- Customer stories, references
- Additional info

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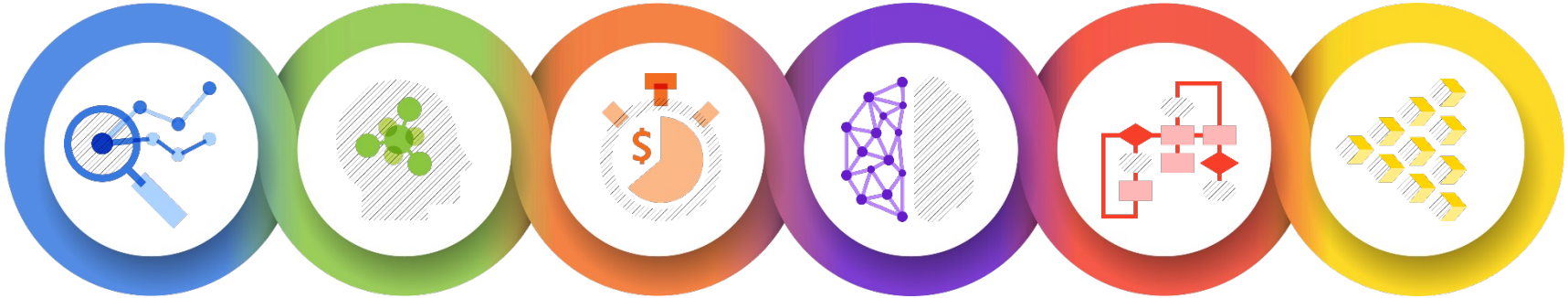
Research challenges we're addressing:



Research Strategy

Inform your research goals by using research intelligence to inform strategic planning

Expertise & Collaboration

Advance your research programs by identifying best-fit researchers and cross-sector partners

Research Funding

Maximize your funding potential with a holistic view of the funding landscape

Conducting Research

Enhance efficiency and productivity by enabling research discovery and boosting workflows

Research Management

Make decisions with confidence by optimizing the monitoring and administration of research

Impact & Engagement

Expand your reputation for excellence and advance open science

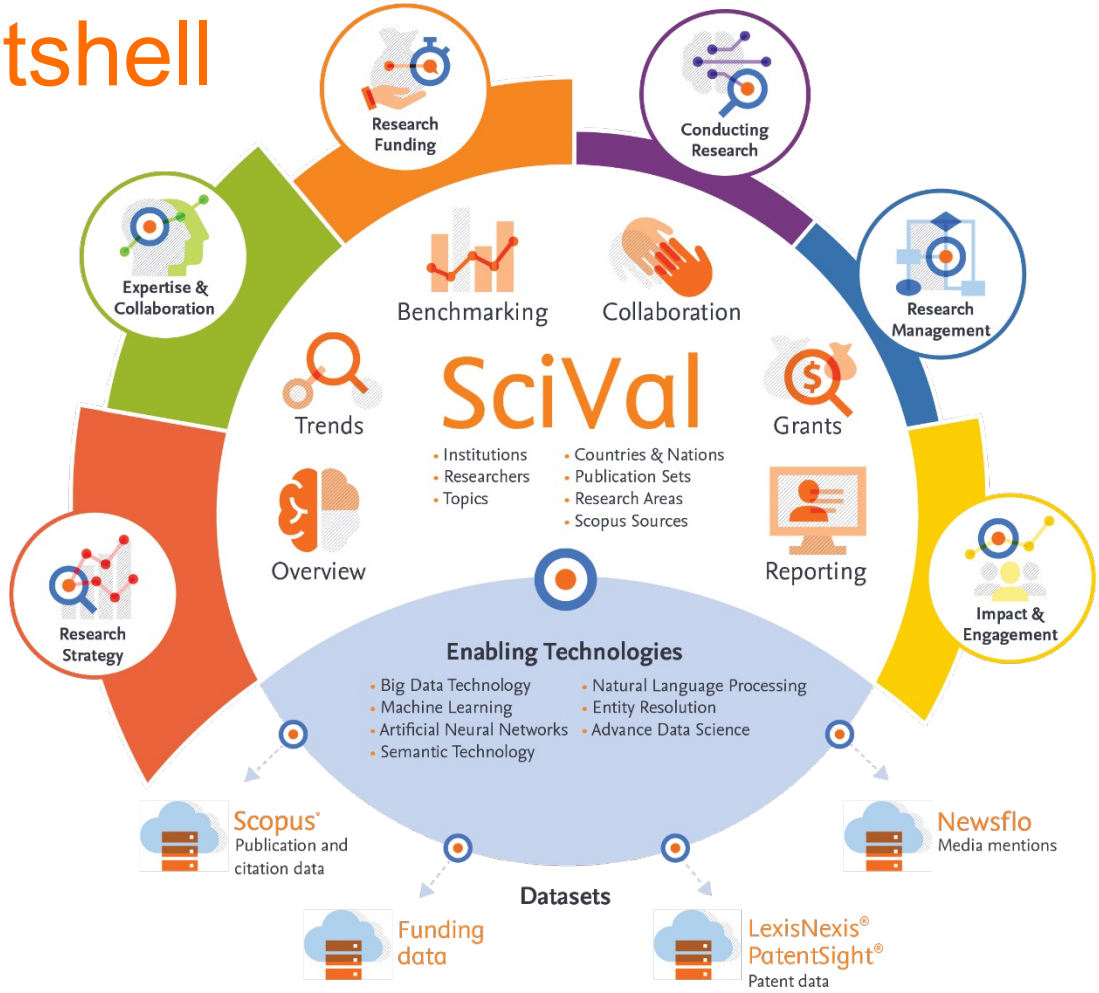
SciVal in a nutshell

Entities available to analyze

- 23,000+ Institutions from over 230 nations
- 16+M Researchers
- ~ 96,000 Topics
- 1,500 Topic Clusters
- Research Areas
- Publication Sets
- Scopus Sources

Over 300 trillion metric values

Data ***updated weekly***



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The array of metrics through SciVal

F. Qualitative input

Metric theme	Metric sub-theme	Metrics in SciVal	
A. Funding	Awards	• Awards Volume	

B. Outputs	Productivity of research outputs	• Scholarly Output
		  • Number, Type and Growth
		  • Subject Area Count	

	Visibility of communication channels	• Publications in Top Journal Percentiles	
C. Research Impact	Research influence	• Citations Count • Field-Weighted Citation Impact • Outputs in Top Citations Percentiles • Citations per publication • Cited publications • *h*-indices	• Number of citing countries • Views Count • Outputs in Top Views Percentiles • Views per Publication • Field-Weighted Views Impact
	Knowledge transfer	• Academic-Corporate Collaboration • Citing-Patents Count • Patent-Cited Count	
D. Engagement	Academic network	• Collaboration • Collaboration Impact	
	Non-academic network	• Academic-Corporate Collaboration • Academic-Corporate Collaboration Impact	
	Expertise transfer	• Academic-Corporate Collaboration • Citing-Patents Count • Patent-Cited Count	
E. Societal Impact	Societal Impact	• Academic-Corporate Collaboration • Citing-Patents Count • Patent-Cited Scholarly Output	• Patent-Citations Count • Mass Media • Media Exposure • Field-Weighted Mass Media

Elsevier has aligned with two ‘Manifestatements’

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Home > International Center for the Study of Research > Responsible research evaluation

Responsible research evaluation

For many years, Elsevier has supported the careful use of metrics and indicators in the evaluation of research. The International Center for the Study of Research (ICSR) was established in June 2019 to work in partnership with the research community to further develop responsible approaches to research evaluation. To support this goal, Elsevier (including ICSR) has:

- Endorsed the Leiden Manifesto for Research Metrics in July 2020. The Leiden Manifesto is a set of 10 practical and action-oriented principles that guide best practice in metrics-based research assessment.
- Signed the Declaration on Research Assessment (DORA ↗) in December 2020. DORA is a set of 18 recommendations targeted to different parts of the research community, recognising the need for systemic change in evaluation practices.

In supporting these statements, Elsevier and ICSR have joined hundreds of organisations and thousands of individuals who are on a journey towards a fair and balanced approach to research assessment.

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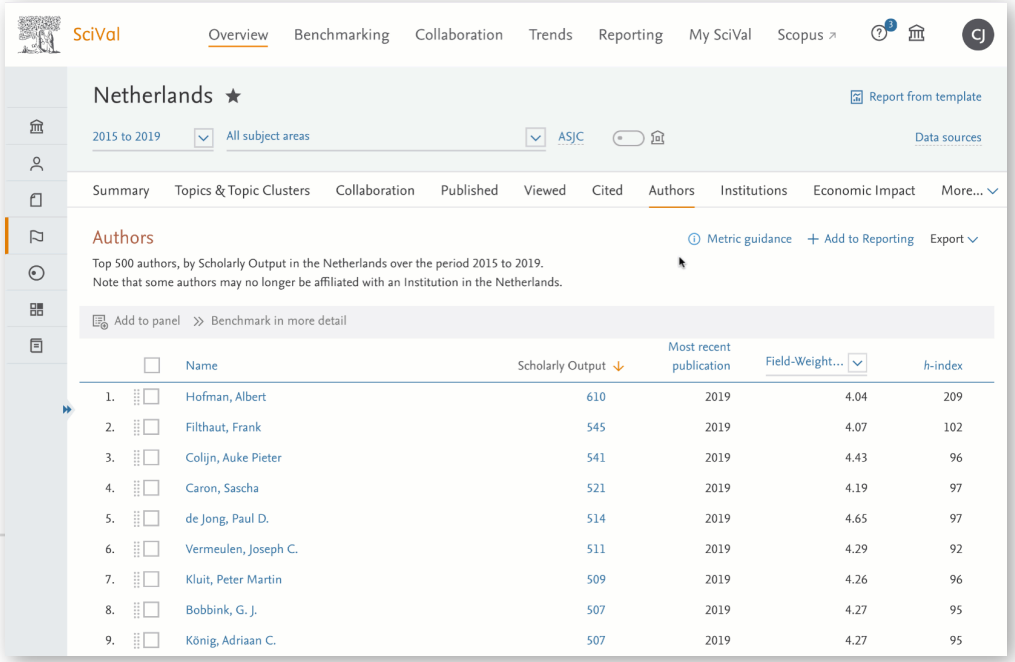
“Not everything that counts can be counted, and not everything that can be counted counts”.

What does this mean for Elsevier's position on research evaluation?

Elsevier has consistently supported and encouraged the responsible use of research metrics in research evaluation for more than a decade, and has implemented all relevant recommendations in both LM and DORA.



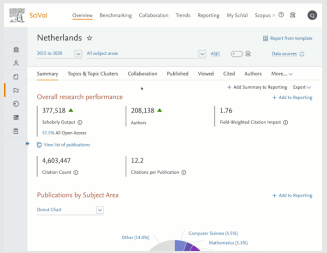
SciVal

Insightful analyses to inform research strategy and enhance research success

SciVal provides access to the research performance of over 20,000 research institutions and their associated researchers from more than 230 nations worldwide

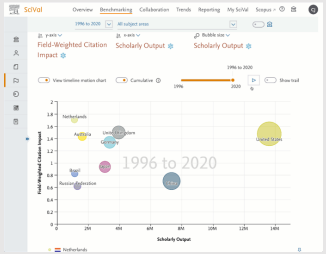
Visualize research performance

Ready-made-at a glance snapshots of any entity of interest



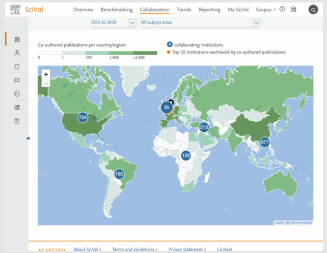
Benchmark your progress

Flexibility to create and compare any research group or entity of interest



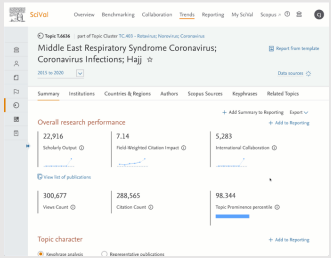
Develop collaborative partnerships

Identify and analyze existing and potential collaboration opportunities



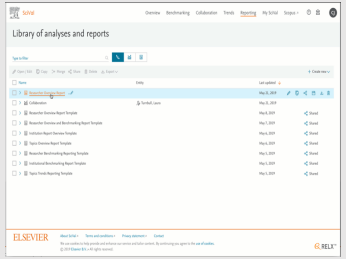
Analyze research trends

Analyze research trends to discover the top performers and rising stars



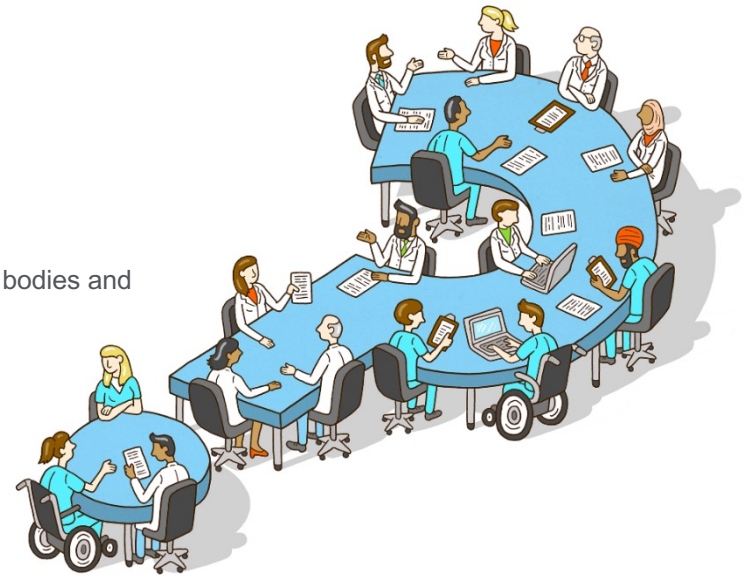
Create insightful reports

Produce and share reusable reports with colleagues



What are users trying to achieve?

1. **Evaluate** and **monitor** the **research performance** of the institution, research groups and researchers
2. **Develop**, execute and **evaluate** research strategies with reliable evidence
3. Make **strategic investment decisions** based on a strong evidence base
4. **Visualize** and **benchmark** the quality and impact of their research activities
5. Analyze and **understand University Rankings** to inform planning decisions
6. **Demonstrate** and **showcase** achievements and **research excellence** to funding bodies and governments (e.g. National assessments) in a global context
7. **Recruit, retain and promote** talented researchers and faculty members
8. Identify **top performers and rising stars** across all research fields
9. Evaluate **existing and identify potential collaboration partners** across sectors
10. **Identify** emerging, growing and niche areas of research
11. **Identify** and analyse new research Topics & trends



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Research Strategy

Develop and execute your research strategy with insightful analyses

"How can we **demonstrate excellence** in a way that **shows our unique strengths** to secure funding and attract the necessary research expertise?"

"I am setting up a center of excellence. How can SciVal help me **profile and explore our research activities and compare them globally?"**

"How can the analyses **help us understand and benchmark our position in University Rankings** to inform our plans and manage our reputation?"

"**Who is excelling in specific Topics** or fields such as SDG-related research and represents potential collaboration or partnership opportunities?"

"How can the analyses **inform our strategic research planning** and setting of our institution's objectives?"

"What are our **emerging, growing** and **niche areas** of **research expertise?"**

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Research Strategy

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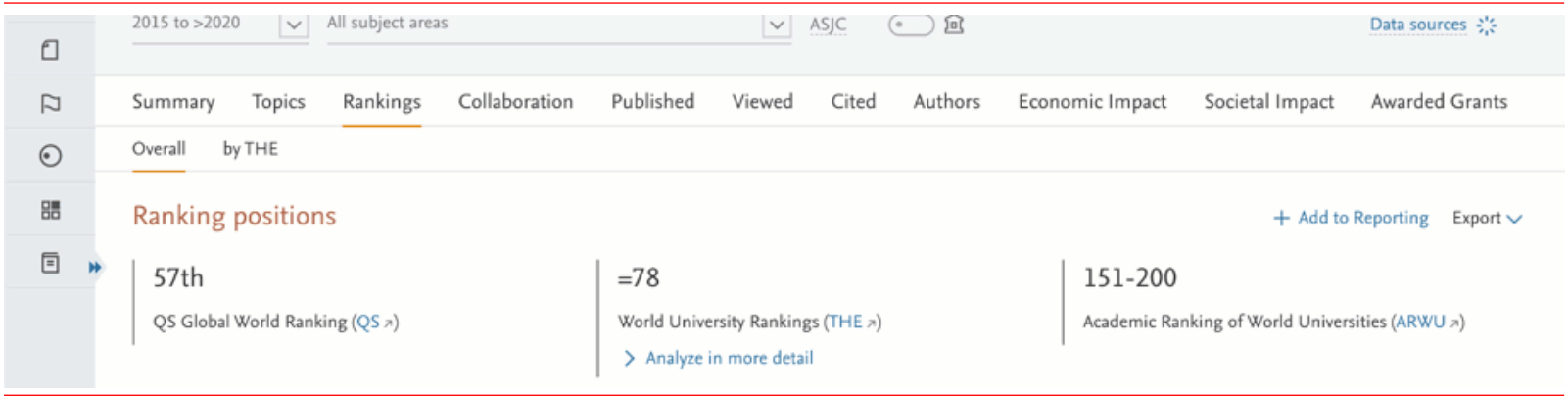
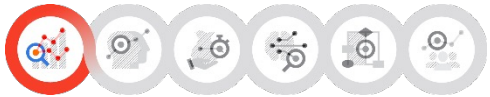


- Understand and benchmark research performance, your portfolio of research strengths and the global research landscape
- Analyze global, national and institutional research trends
- Benchmark within your institution and externally with peers

Focus on Strategic Research Planning

Example tasks to be performed

Evaluate	1. Situation analysis	• Evaluate current research strategy, vision, goals and performance to assess whether changes are required
	2. Assess the external environment	• Government research agenda (national assessment, priority areas etc), national and regional higher education profile (size, competitors, funding mechanisms etc), human capital (competitiveness of profession, mobility, academic promotion)
	3. Assess internal environment	• Analyze universities research resources, capabilities, researchers, infrastructure, funding, research support mechanisms and policies, university management
Plan	4. Formulate strategies	• Corporate (university-wide identification of scholarship types and areas of research focus and strength), competitive (university, faculty, department and research group level to ensure competitiveness in prioritized areas), and functional (operational across organization to support implementation of competitive strategies).
Implement & monitor	5. Implement strategies	• Organizational structure changes, HR policies, research management structure, establish critical mass of researchers in priority areas.
	6. Monitor and evaluate	• How effective have the strategies been? Is the University achieving its goals? Do we need to change or adapt strategies?



Adapted from: http://dx.doi.org/10.1080/03075079.2017.1313218

Focus on Strategic Research Planning

How can SciVal help?

Evaluate	1. Situation analysis	• Enrich analysis of **current goals** and **performance** with **robust indicators, metrics and analyses** produced with rich, curated and **authoritative research information**.
Evaluate	2. Assess the external environment	• **Evaluate performance and strength** and national priority areas, **benchmark to competitors** • Assess **performance** relevant to **national assessments**
Evaluate	3. Assess internal environment	• **Evaluate and benchmark** the performance of your **university, faculties, departments, research groups** and individual **researchers** with trusted indicators, metrics and analyses • **Evaluate research strengths**, areas of niche expertise and **key researchers** as well as potential gaps
Plan	4. Formulate strategies	• **Enhance identification** of areas of **research strength** and **where critical mass** exists in **priority areas** with **targeted analysis** and benchmarking based on trusted metrics and indicators. • Identify **niche expertise** in **priority fields** to support expansion of capabilities through analysis of research performance within **specific research fields** globally
Implement & monitor	5. Implement strategies	• Analyze **global research in priority areas** to help, for example, with **targeted recruitment** to establish a critical mass of researchers with the **required expertise**.
Implement & monitor	6. Monitor and evaluate	• Enhance the **monitoring, evaluation and benchmarking** of research **performance and progress** with metrics, indicators and analyses produced with rich, curated and **authoritative research information**.

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Adapted from: http://dx.doi.org/10.1080/03075079.2017.1313218

Research strategy support for a broad range of users

SciVal supports the research strategy of a broad range of institutional users by providing flexible, institution-specific insights and analyses

Vice President for Research

- **Evaluate research activities** to inform **strategic research planning**
- Consume and interpret signals to help take **strategic partnership decisions**
- Analyze **research performance summaries** of any research entities **unique research strengths** and multidisciplinary research areas
- Identify areas of strength and **niche expertise** to focus support
- **Understand University Rankings** to inform **planning decisions**

Research Services

- **Create management-level reports** to inform **research strategy and planning**
- Identify signals to **support strategic partnership decisions**
- Create **research performance summaries** of any research entities unique research strengths and multidisciplinary research areas
- Analyze and **understand University Rankings** to inform planning decisions

Deans / Heads of Department

- Evaluate research activities and performance to **inform strategic research planning** for my faculty or department
- Consume and interpret signals and **performance summaries** to help take strategic **partnership decisions** for the faculty or department
- Identify our **areas of strength** and **niche expertise** to focus support

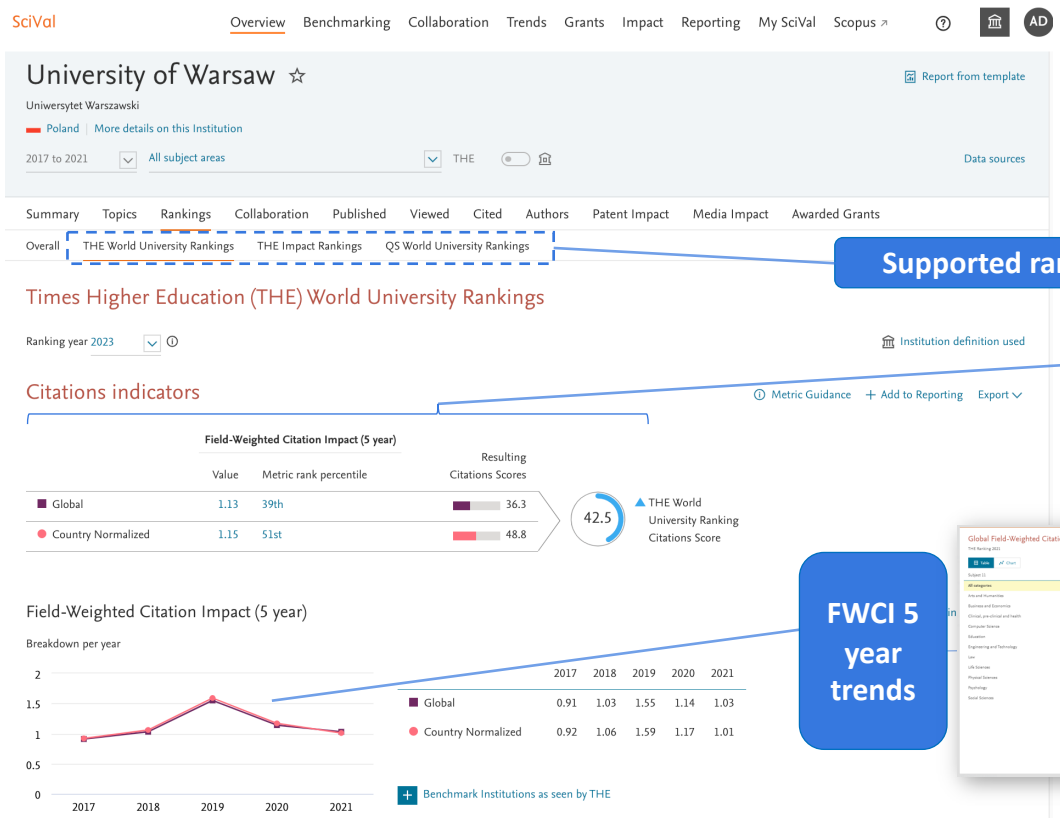
Faculty and Researchers

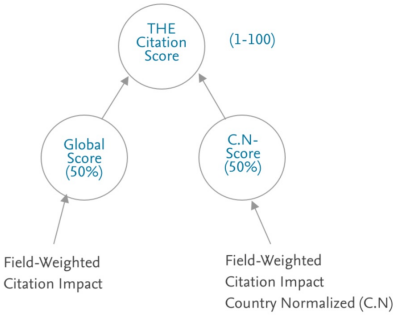
- **Understand global research** aligned directly and indirectly with **my research expertise** to inform my **research strategy** and **advance my career**
- Consume and interpret signals to help me take **strategic partnership and collaboration decisions**

Analyze the drivers behind the THE (or QS) Citation Scores:

30% of the Overall THE ranking score

(will be updated according to their new methodology)



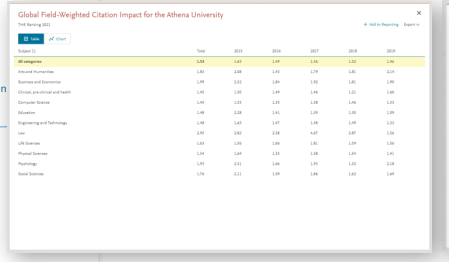


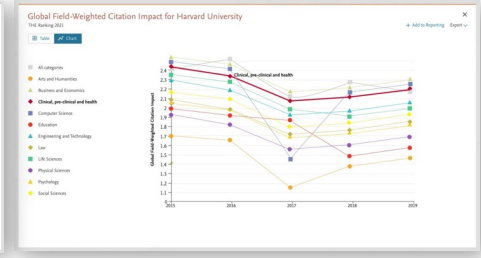
Supported rankings

Citation Score with the underlying:

- **Global FWCI** scores &
- **Country-normalised FWCI** scores

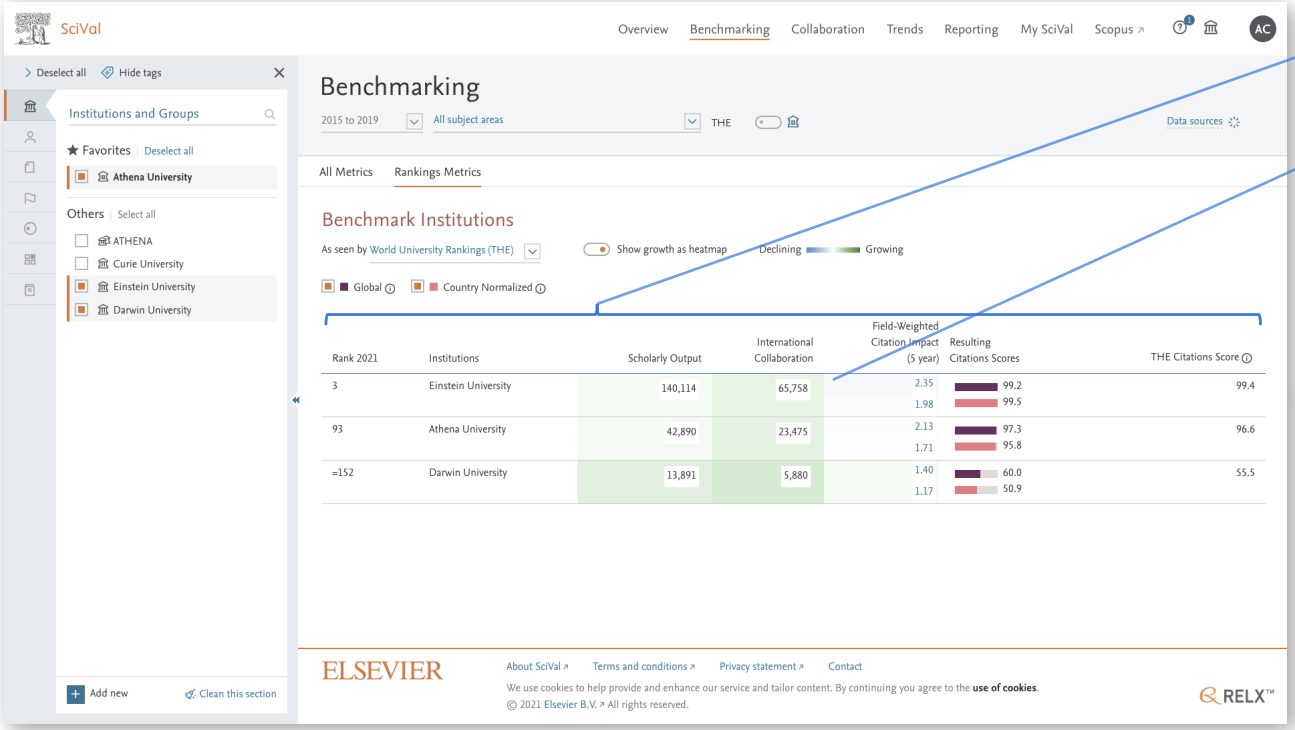
FWCI 5 year trends





Benchmark with peers and analyze ranking trends:

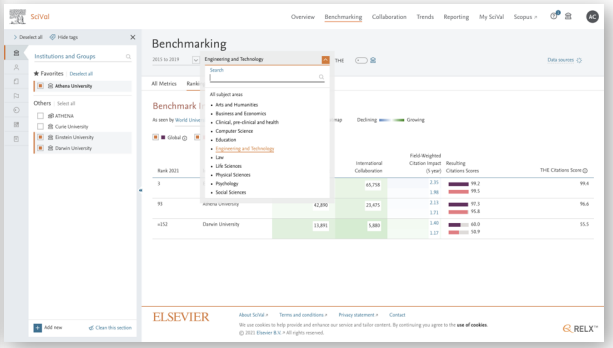
Analyses and information to understand performance and inform plans



Benchmark with peers across all bibliometric drivers

Heatmap visualizing trends

Compare on THE subject level



Expertise & Collaboration

Advance your research programs with authoritative data and analyses on global research expertise

"How can I **identify expertise** on and beyond campus to help with **Team building efforts**?"

"What **corporations** have been investing in **research areas** where we are particularly strong?"

"How can I identify existing and **potential collaboration partners**, globally and **across sectors**?"

"Where can I **find an expert** in an **emerging interdisciplinary** Topic or field?"

"How can I use the **metrics and analyses** to **compare** our existing **expertise** to that of a potential new faculty member?"

"How can I **identify key researchers** in a specific Topic or field to develop and **strengthen targeted funding bids**?"

Expertise & Collaboration

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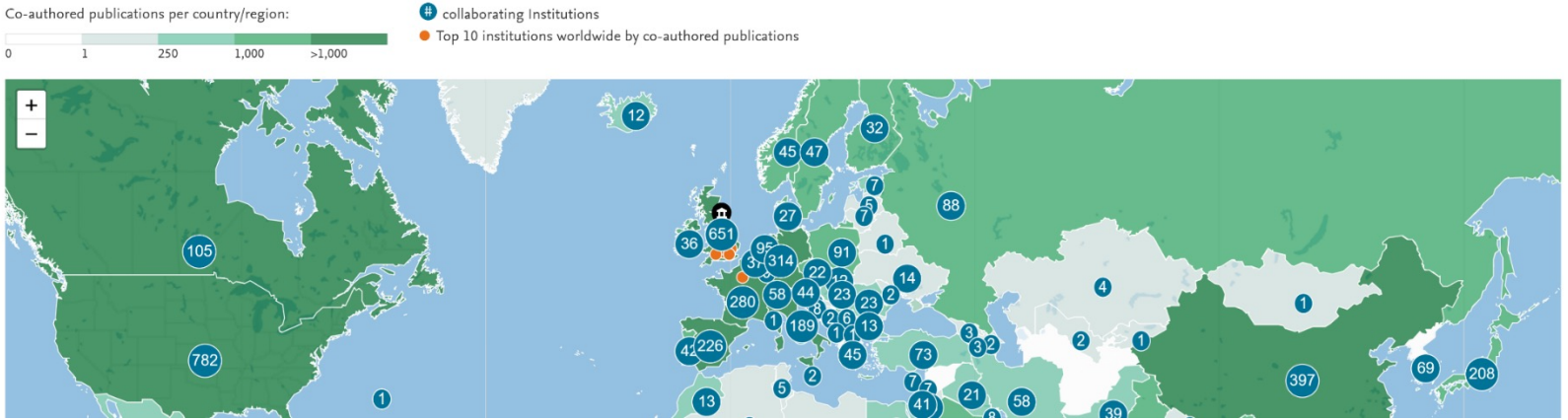

- Assess current partners and zero in on suitable experts who could represent partnership opportunities in the future
- Help team building efforts through comprehensive profiles to identify research expertise on and beyond campus

Identify and profile global research expertise

SciVal provides comprehensive profiles to help a broad range of institutional users identify and profile expertise across sectors and research fields

Vice President for Research

- **Assess partnerships** and zero in on areas, **institutions and corporates** who could represent **strategic partnership** opportunities
- **Identify experts in key fields** of interest and relevant to the university strategic direction for **targeted recruitment**

Research Services

- Produce **analyses and reports** to help assess current partners and zero in on suitable **partnership opportunities** in the future
- Help **team building** efforts through **comprehensive profiles** to identify **research expertise** on and beyond campus

Deans / Heads of Department

- **Assess partnerships**, research areas and researchers, **across sectors**, who could represent **strategic opportunities** for the faculty or department
- **Identify experts** relevant to the faculty or department strategic direction for **targeted recruitment** or **funding bids**

Faculty and Researchers

- **Identify experts** who could represent **strategic partnership** or recruitment opportunities for my **research team**
- Identify **key researchers** in a specific Topic or field to develop and **strengthen targeted funding bids**

Research Funding

Maximize your funding success with insights to help team building and targeted funding bids

"What metrics can I use to **demonstrate my expertise** and excellence in my **grant applications**?"

"How can I **profile a specific field** or Topic to support the **building** of **interdisciplinary research teams** for targeted **funding bids**?"

"How can we **identify the key researchers** in a specific Topic or field to **strengthen our funding bids**?"

"What **corporations** have been **investing in research areas** where we are particularly strong and could represent a **funding opportunity**?"

Research Funding

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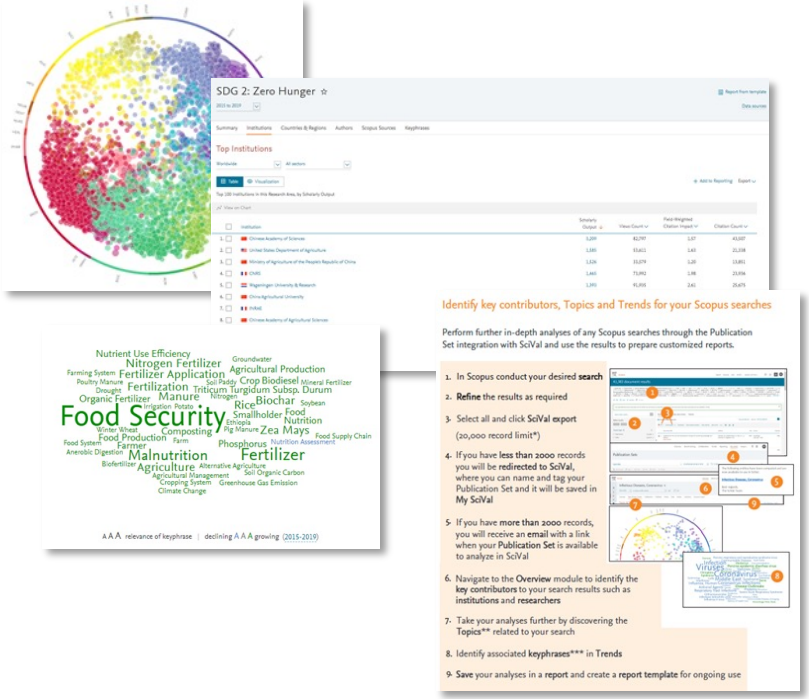


Identify and build the ideal team

- Define expertise required – Topics, Research Areas, Publication Sets from search strings
- Identify key contributors in the specific area defined
- Use metrics to analyze past outputs, impacts and collaborators/partners
- Decide if any would make good team members (internal and external) to strengthen funding bid with metrics as one part of evidence base for the decision

Focus on Strategic Research Planning

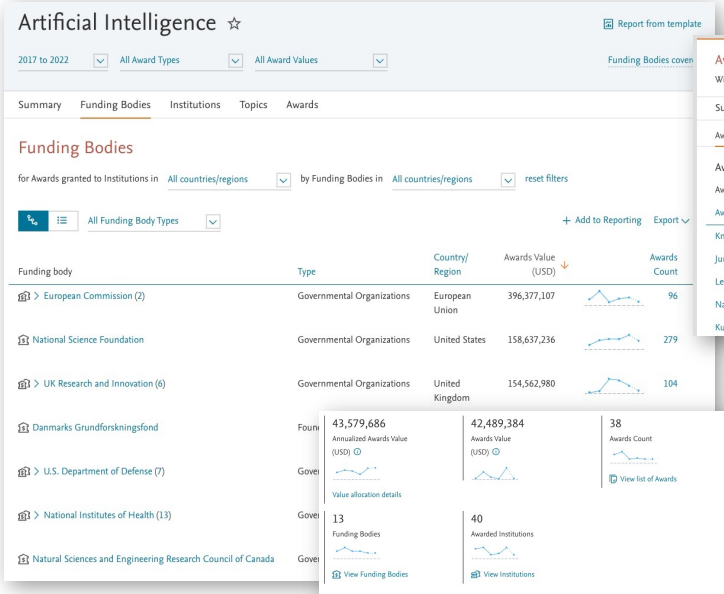
How can SciVal Grants help at the university, faculty, department and research group level?

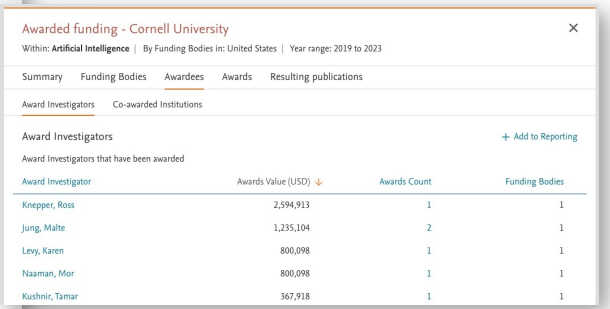
Evaluate	1. Situation analysis	• Enrich evaluation of **current research strategy, vision, goals** and **performance** with **external funding landscape** data and analyses across priority research fields.
Evaluate	2. Assess the external environment	• **Evaluate external funding profiles** in fields of strength, related fields and national priority areas • Where are our **competitors are active and have funding?**
Evaluate	3. Assess internal environment	• **Enhance evaluation and benchmarking** of your **university, faculties, departments, research groups** and individual **researchers. Are they active in well-funded fields?** • **What are the funding levels in areas of strengths**, related fields and areas of niche expertise? • Who are the **key researchers** in our institution?
Plan	4. Formulate strategies	• Utilize **external funding data and insights** around **areas of strength and where critical mass exists** to ensure you are spending research time in **growing and well-funded areas** • Identify possible **pivots in research focus** to **related areas** that are **growing and well-funded** to maximize funding potential
Implement & monitor	5. Implement strategies	• Support **research groups** with funding data and insights across fields to ensure they continue to focus **research time** in **growing and well-funded fields** and **adapt** focus where necessary
Implement & monitor	6. Monitor and evaluate	• Enhance the **monitoring, evaluation and benchmarking** of research strategies with funding landscape data and insights to maximize funding potential and help your research programs thrive

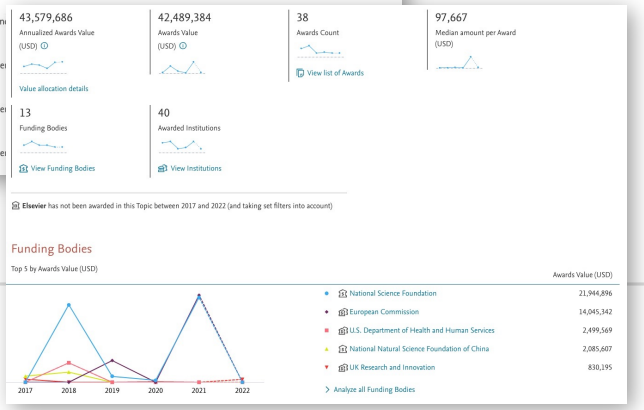
Adapted from: http://dx.doi.org/10.1080/03075079.2017.1313218

What is the external funding landscape in our priority research fields?

- Which funding bodies and how much are they investing?
- Who are the experts with funding in our priority fields?
- Which Institutions and Researchers represent collaboration/partnerships opportunities to enhance a strategic area and attract more funding?







Explore experts with funding in key research fields who could represent potential collaborators

Explore potential Funders in key research fields

Explore funding landscape per key research field

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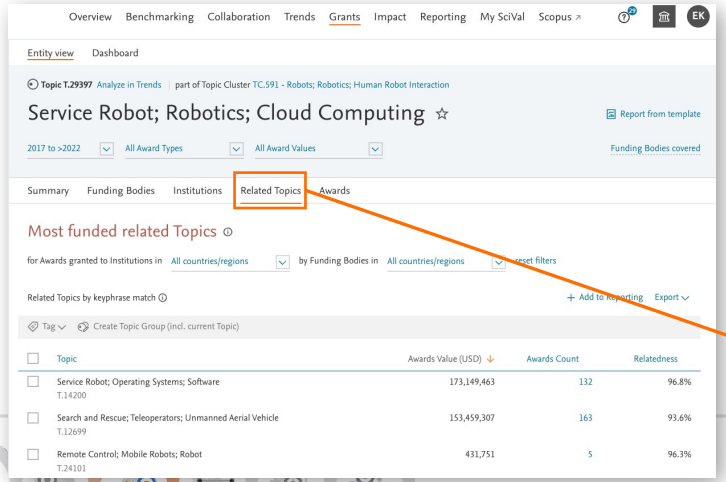
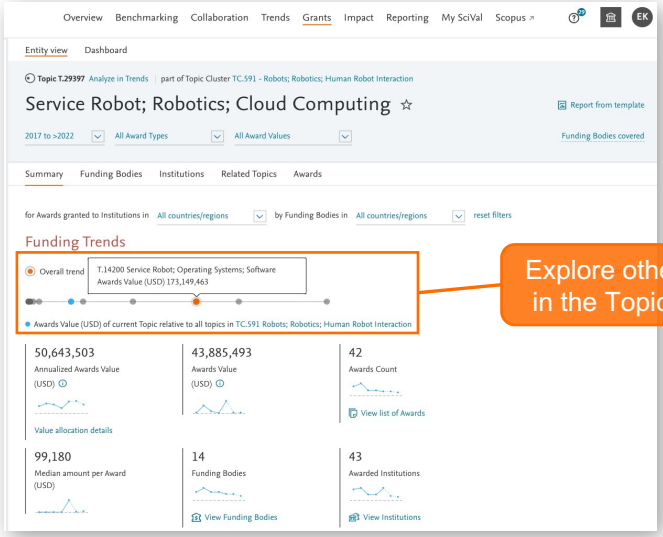
Are there related or adjacent fields attracting funding that we should explore?

- Which funding bodies are investing?
- Which Institutions and Researchers represent opportunities to help us expand into new strategic fields?



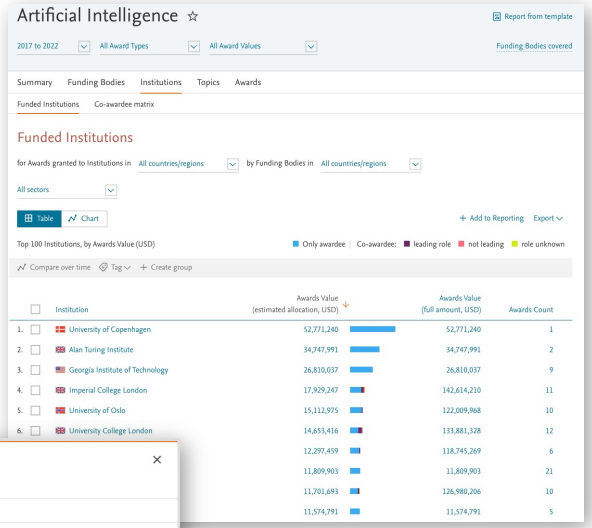


Explore other Topics in the Topic Cluster

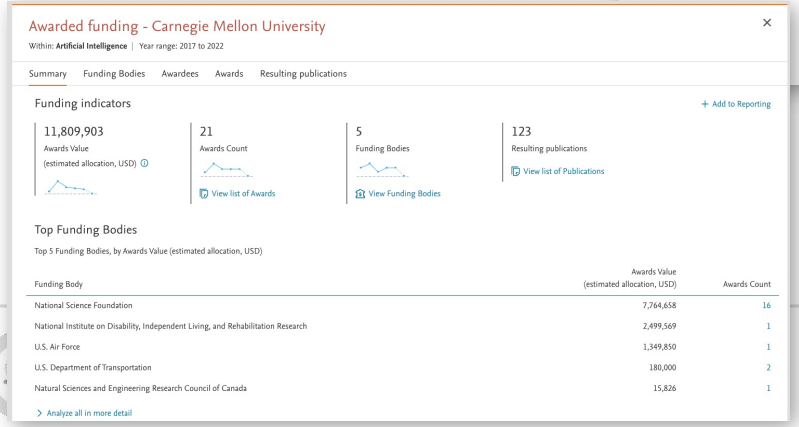
Discover Related Topics that are attracting large amounts of funding

Investigate the funding profiles of peer Institutions within research fields of interest

- What fields are our peer institutions attracting funding in?
- Who are the experts who could represent partnership/collaboration/recruitment opportunities?
- Which funding bodies are our peer institutions winning funding from?



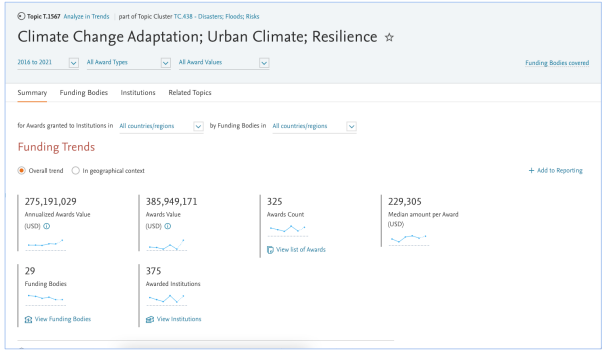
Identify other Institutions being funded in priority fields

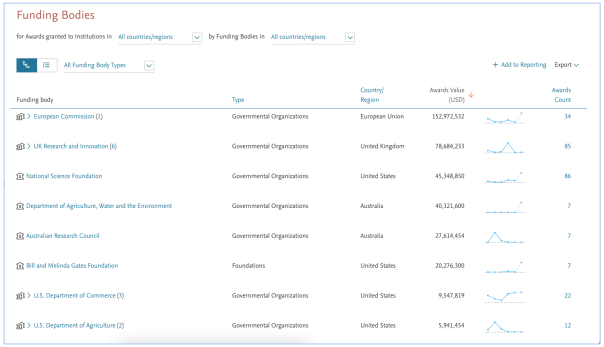


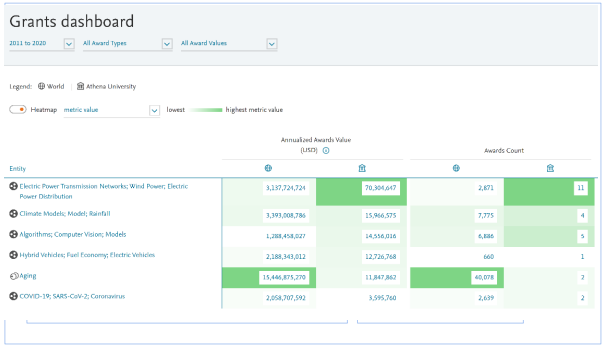
Explore the funding profile of peer Institutions

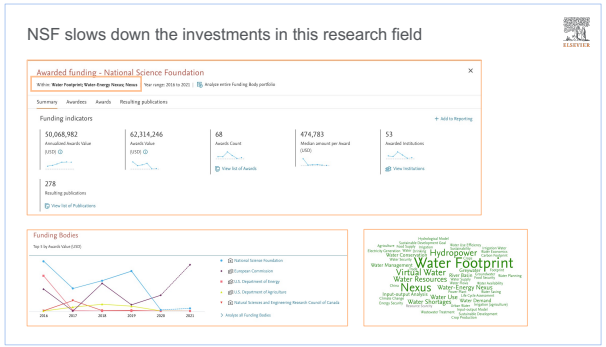
SciVal Grants

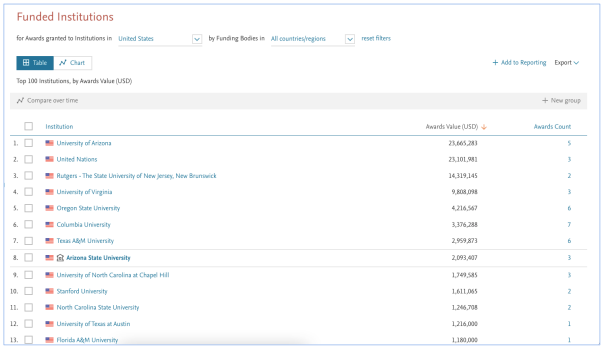
Funding landscape intelligence to support strategic planning and execution of research strategies

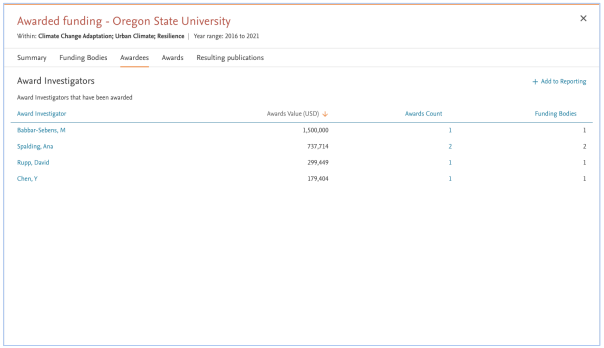












Impact & Engagement

Demonstrate and showcase your impact and engagement

"What is the **impact** of our **corporate collaborations**?

"What is the **geographic reach** of our research activities?"

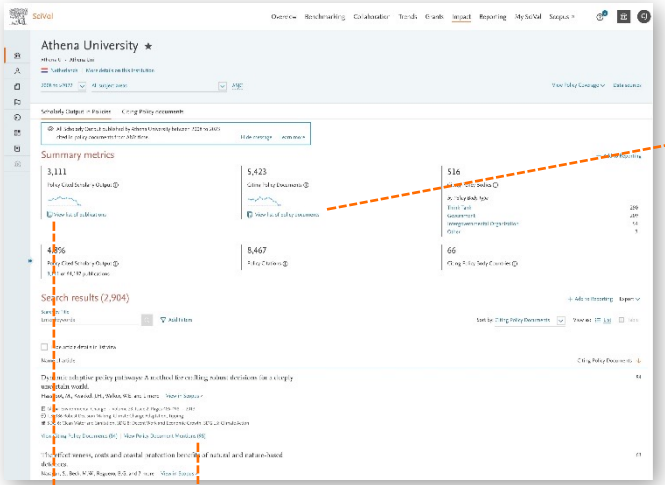
"How can I **showcase and benchmark** my institutions **expertise**, outputs, **impact**, influence and overall contribution to **specific fields** such as the **UN SDGs**?"

"What **metrics** can we use to help us **evaluate and benchmark** researcher, department, faculty and institutional **performance**?

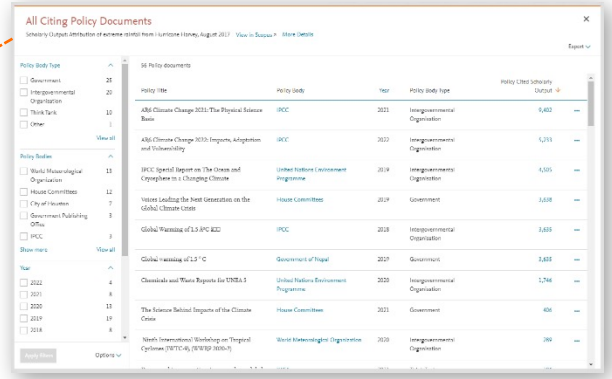
"Are we considering the full breadth of the **research impact** of faculty candidates for **appointments** and **promotions**?"

"How can we **demonstrate and benchmark** the **impact or influence** of our research teams in **funding bids**?"

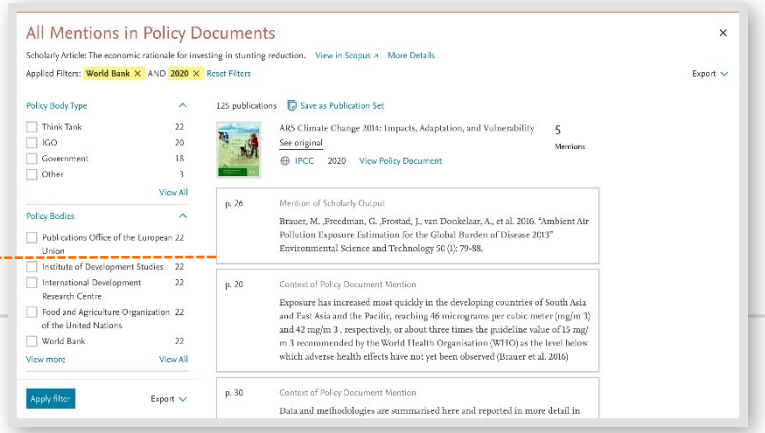
Use impact metrics to identify policy mentions and build narratives to demonstrate your research impact



3 Identify the citing policy documents



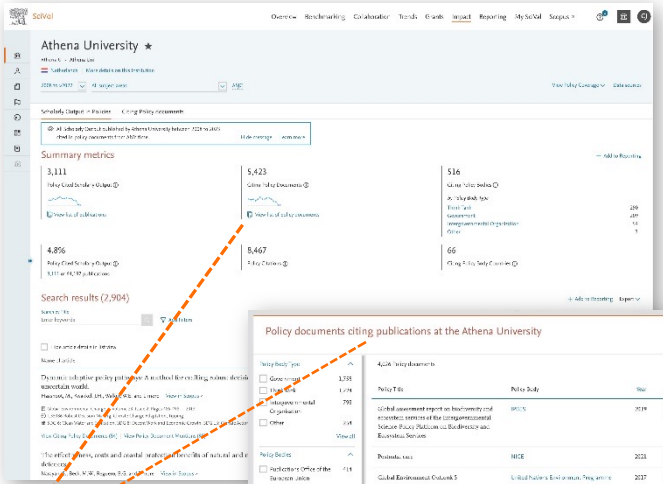
2 Uncover publication mentions within policy documents

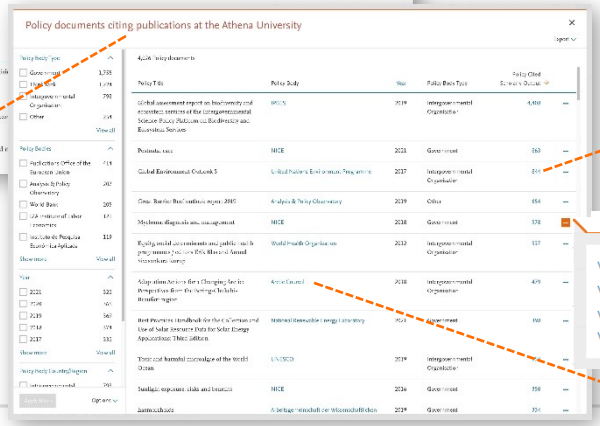


1 View list of publications cited in policy documents

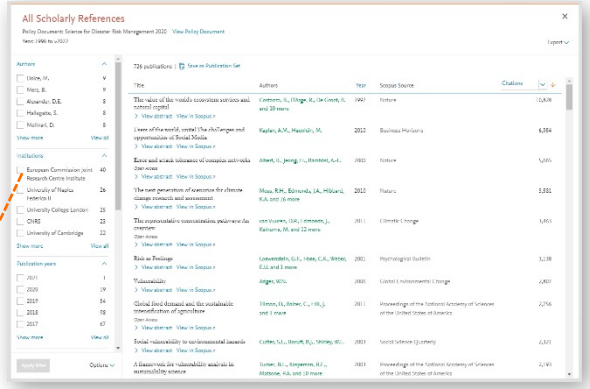
ELSEVIER

Understand the full scope of a policy document and read the policy document

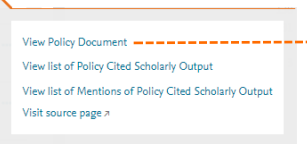


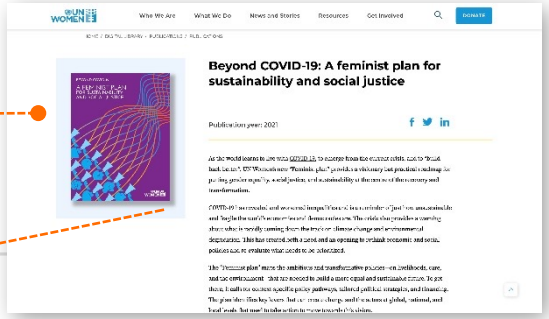


1 Identify the citing policy documents



2 Understand the full scope of a policy document





3 Link directly to read the policy document

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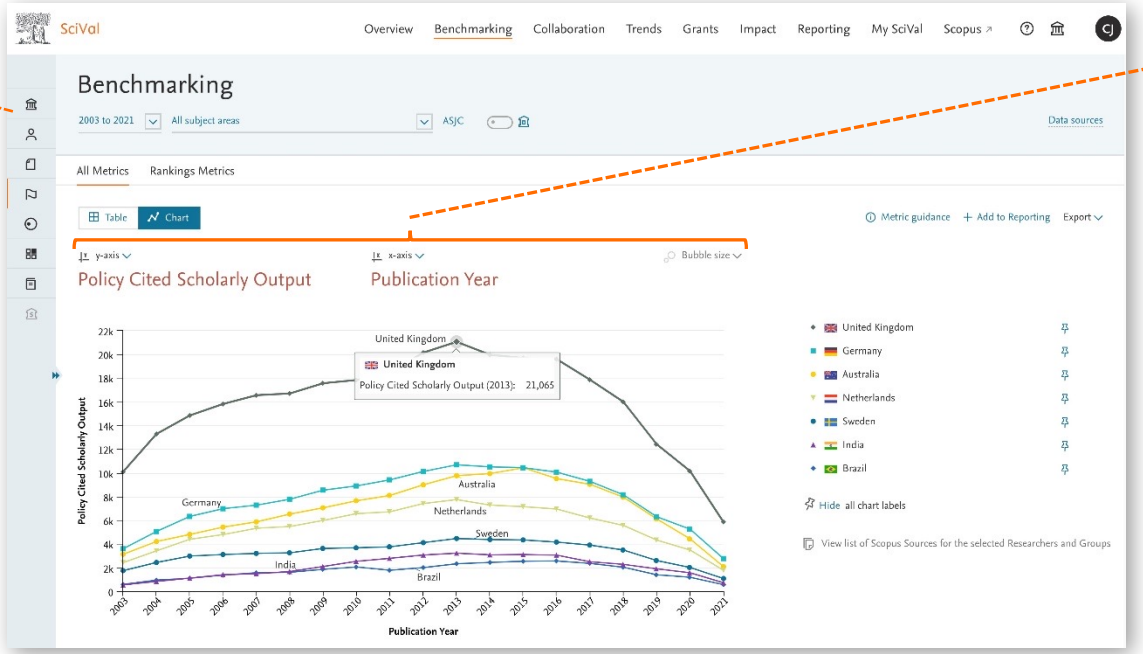
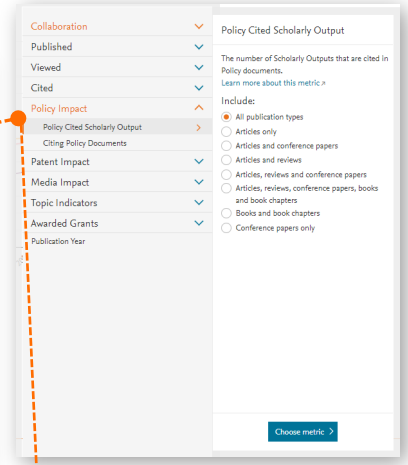
Benchmark your impact and policy influence against peers

1 Choose entities of interest





2 Choose impact metrics to Benchmark entities

ELSEVIER

Impact & Engagement

Understand and analyze your contribution to research fields through Topics or Research Areas such as the UN SDGs

- **16 of the 17 SDGs** are available to analyze on SciVal as predefined Research Areas using newly updated queries.
- The queries were **created by our data science teams** working with experts to create representations of each SDG and enable detailed analysis of the research contributing to achieving the SDGs.
- **We are open and transparent about our methodologies**.
  - The queries and documentation supporting the **2021** search query methodology are freely available in Mendeley
  - The queries and documentation supporting the **2020** search query methodology remain freely available in Mendeley
- THE are **using the queries** as part of the **THE Impact Rankings methodology**

ELSEVIER

Demonstrate your research excellence

An array of simple and sophisticated metrics enable you to demonstrate and showcase your expertise, outputs, impact and influence

Vice President for Research

- Present the **impact or influence** of the university to **governments**, **funders**, philanthropic donors and potential **strategic partners**
- **Showcase** my institutions **expertise**, outputs, **impact** and influence to **key media outlets** through media team to ensure **reputational maintenance** and **gains**
- Evaluate researcher and institutional performance and impact

Research Services

- **Help faculty and researchers** present their **impact or influence** of project teams in **grant applications**
- **Help the institution showcase** expertise, outputs, **impact and influence** by providing key **analyses and reports**
- Produce reports to assist with **evaluating** research **performance** and **impact**

Deans / Heads of Department

- **Present the impact** of the **faculty/department** to the **university**, governments, **funders**, philanthropic donors and potential **strategic partners**
- **Showcase** my faculty or department **expertise**, outputs, **impact and influence** to key **media outlets** through media team to ensure **reputational maintenance** and **gains**
- **Evaluate** researcher, faculty and department **performance** and **impact**

Faculty and Researchers

- Present the **impact or influence** of researchers in a **grant application team**
- **Showcase** the **impact** or **influence** of you and your **research team**
- **Showcase** my research teams **expertise**, outputs, **impact and influence** to key **media outlets** through media team to ensure **reputational maintenance** and **gains**

UN SDGs in SciVal

- **16 of the 17 SDGs** are available to analyze on SciVal as predefined Research Areas using newly updated queries.
- The queries were **created by our data science teams** working with experts to create representations of each SDG and enable detailed analysis of the research contributing to achieving the SDGs.
- **We are open and transparent about our methodologies**.
  - The queries and documentation supporting the **2021** search query methodology are freely available in Mendeley
  - The queries and documentation supporting the **2020** search query methodology remain freely available in Mendeley
- **We continue to collaborate and gather feedback with customers and the community** to help improve the queries in the future
- THE are **using the new queries** as part of the **THE Impact Rankings methodology**
- **We have both the 2020 and 2021 SDGs in SciVal** so customers can compare the differences between the 2 sets of mappings

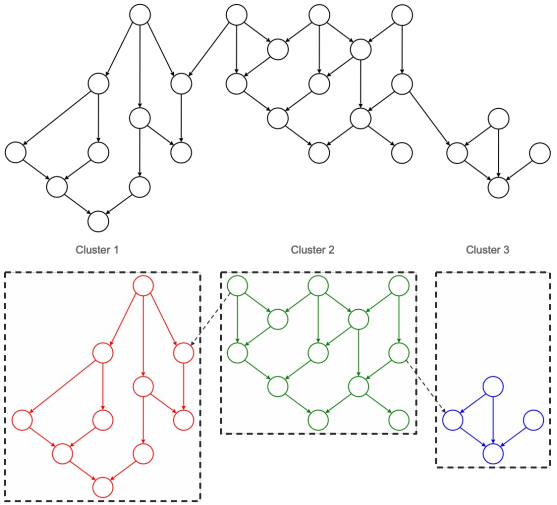
ELSEVIER

Topic Prominence And Trends Analysis in Science

Mapping and evaluating global research through citation links

Topic Prominence in Science

- A Topic is a collection of documents with a common focused intellectual interest.
- Topic can be regarded as a research problem.
- They can grow or decline, be large or small, new or old, mono or multidisciplinary. They evolve. Old topics may be dormant, but still exist.
- We have identified **~96,000 research Topics** and later combined them into **1500 Topic Clusters** and ranked them by Prominence.
- **Prominence = momentum (not the same as importance!)**
- **Prominence** looks at **very recent citations**, **views** and **CiteScore** values.
- **High Prominence Topics are often well funded*.**
- A research paper relates only to one topic.



We clustered 50 mil Scopus publications (1996 – 2022) using direct citation linking

* https://www.sciencedirect.com/science/article/pii/S1751157717302110 - 'Funding per author increases significantly with topic prominence, thus prominence is an indicator of science demand'.

Maps of global science:

R. Klavans, K.W. Boyack / Journal of Informetrics 11 (2017) 1158–1174

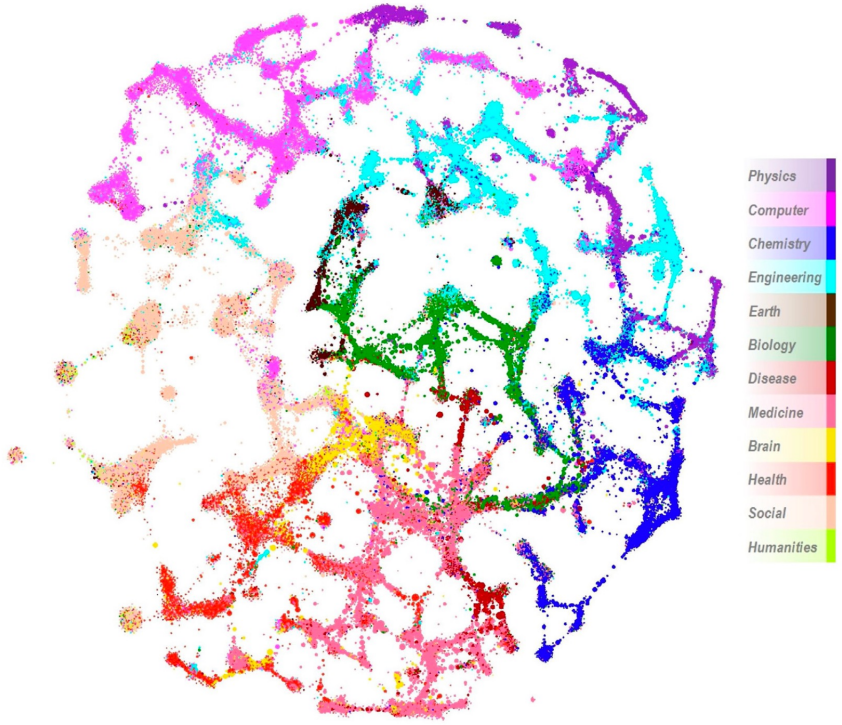
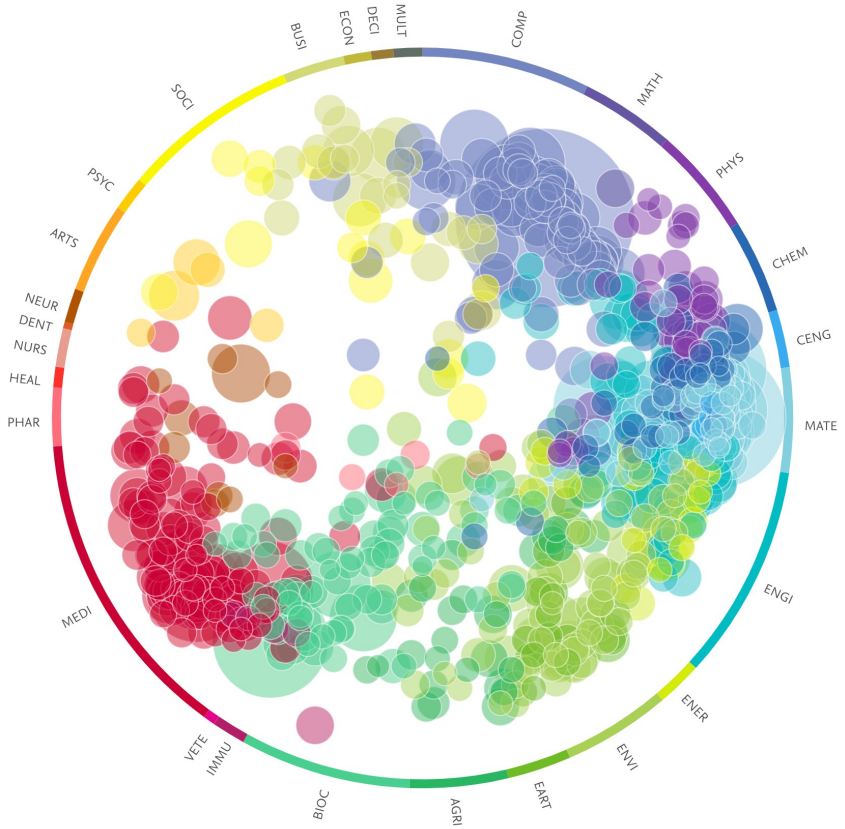
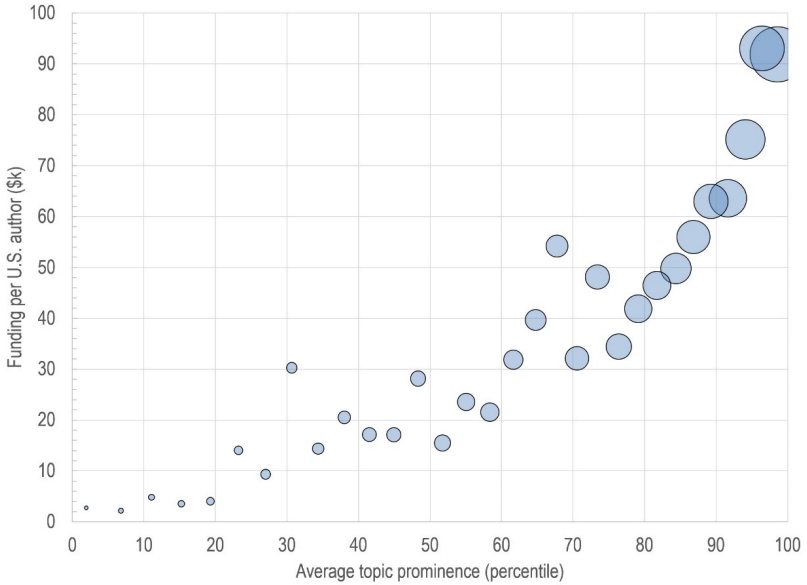


Fig. 1. Visual map of the STS model of science. Each dot represents a topic.



Prominence and funding:



Klavans, R. and K.W. Boyack, Research portfolio analysis and topic prominence. Journal of Informetrics, 2017.

- Prominence correlates with size, so is size the driver here?
- To test this, we looked at funding per author as a function of prominence:
  - If size is the driver, then funding per author will be independent of prominence
- Funding per author increases with prominence; thus prominence is a good predictor of funding

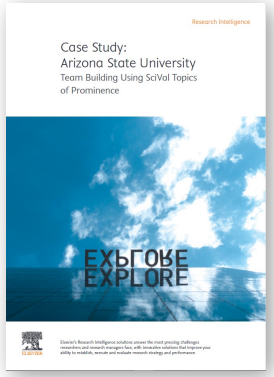
Using and interpreting Topics

Some examples

Use case 1 – Identifying experts to facilitate team building for targeted funding bids in key fields

Psychological Support; Mindfulness; COVID-19

T.1101540

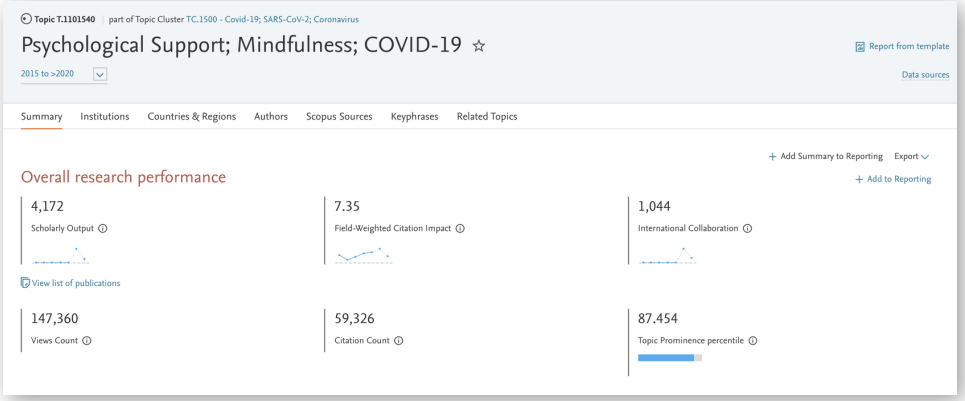


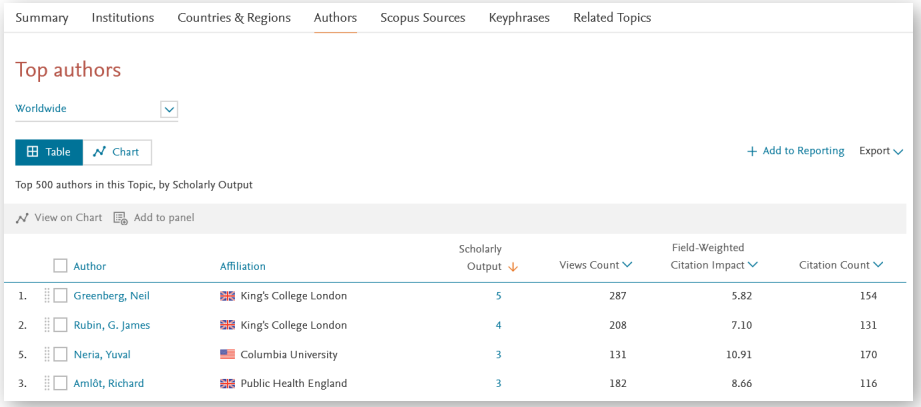
Customer case study similar example

ELSEVIER

Analyze new Topic in SciVal

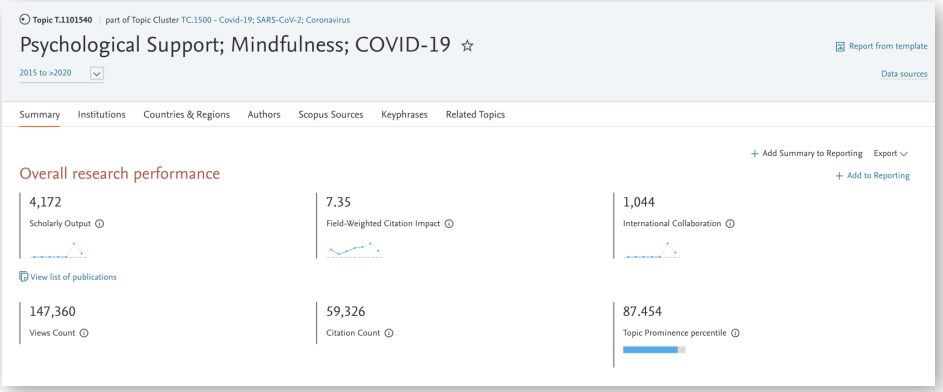
- Overview module:
  - Look at table view of all new Topics
  - Search for new Topic of interest
- Analyze worldwide which takes you to Trends
- View list of authors to help identify experts of potential interest





Analyze identified experts in more detail or invite to workshop

- Group experts to scenario model how they could compliment existing research team(s)
- Invite experts on and off campus to for example a workshop to generate project ideas in key field



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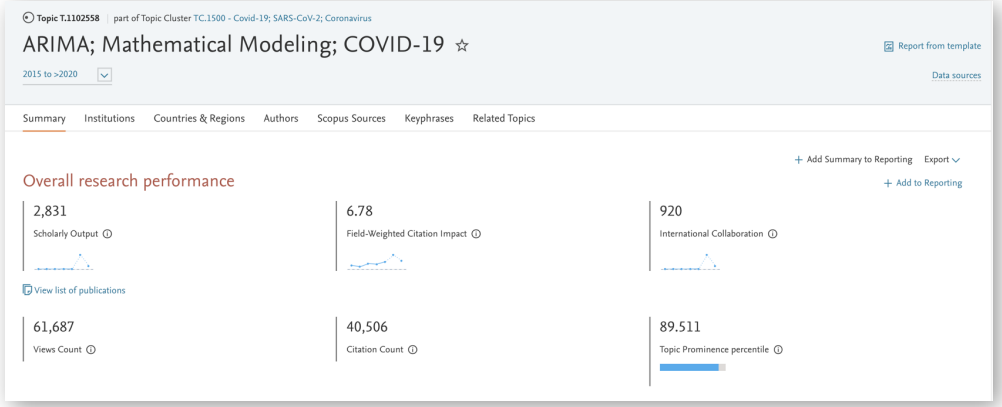
Use case 2 – Identifying experts as potential collaborators / partners / mentors in a new Topic of interest

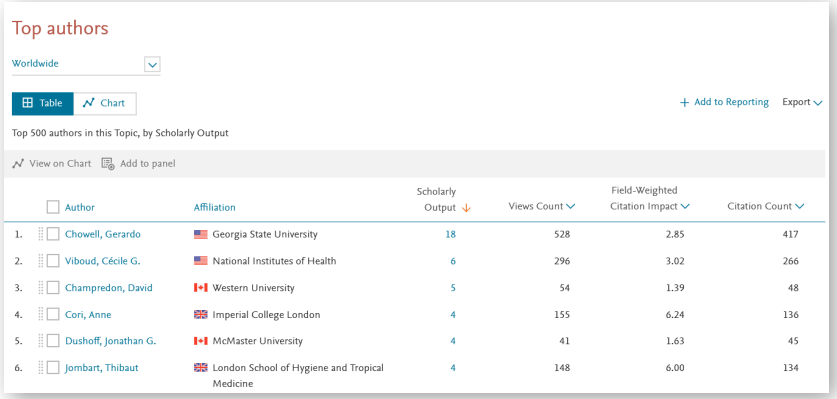
ARIMA; Mathematical Modeling; COVID-19

T.1102558

Analyze new Topic in SciVal

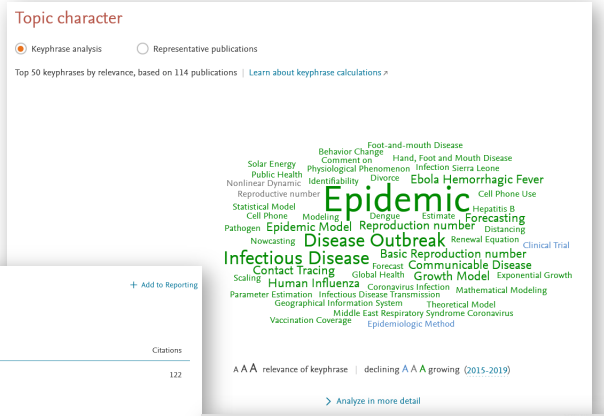
- Overview module:
  - Look at table view of all new Topics
  - Search for new Topic of interest
- Analyze worldwide which takes you to Trends
- View list of authors to help identify experts of potential interest

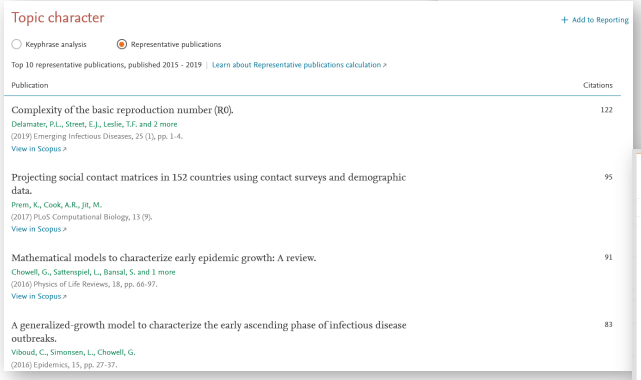


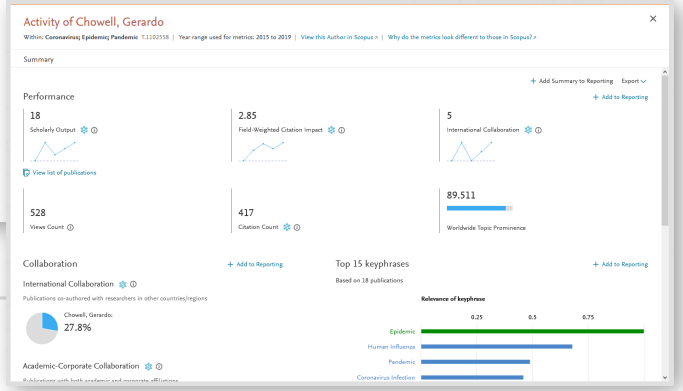


Import researchers of interest to analyze in more detail

- Analyze Topic in more detail
- Explore authors of interest further to confirm alignment with your area of interest and any other criteria







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Customer stories

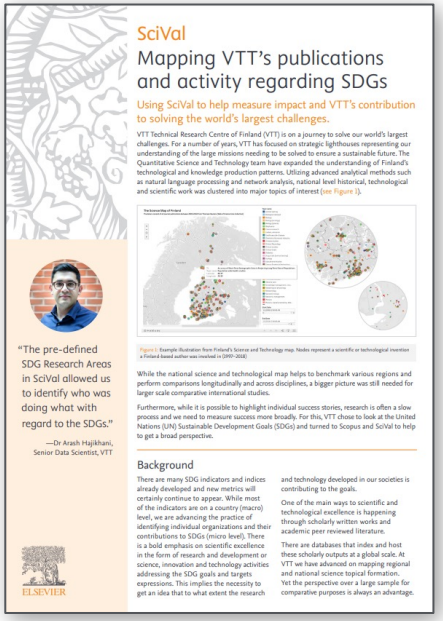
VTT Technical Research Centre of Finland – Mapping VTT's publications and activity regarding SDGs

Publications are a practical proxy, particularly in the case of Research and Technology Organizations (RTOs) such as VTT, as publications serve as reports of intermediary steps towards the application and later commercialization of research.

VTT plays a key role in national and international innovation partnerships and has for years been the most active Finnish participant in EU-funded research projects. **But how has the research by VTT contributed to progress around the SDGs?**

> *"The pre-defined SDG Research Areas in SciVal allowed us to identify who was doing what with regard to the SDGs."*

> *"SciVal is supporting us with the comprehensive use of our Science, Technology and Innovation metrics and validates our contribution on a wider scale."*



SciVal

Mapping VTT's publications and activity regarding SDGs

Using SciVal to help measure impact and VTT's contribution to solving the world's largest challenges.

VTT Technical Research Centre of Finland (VTT) is on a journey to solve our world's largest challenges. For a number of years, VTT has focused on strategic lighthouses representing our understanding of the large missions needing to be solved to ensure a sustainable future. The Quantitative Science and Technology team have expanded the understanding of Finland's technological and knowledge production patterns. Utilizing advanced analytical methods such as natural language processing and network analysis, national level historical, technological and scientific work was clustered into major topics of interest (see Figure 1).

"The pre-defined SDG Research Areas in SciVal allowed us to identify who was doing what with regard to the SDGs."

—Dr Arash Hajikhani, Senior Data Scientist, VTT

While the national science and technological map helps to benchmark various regions and perform comparisons longitudinally and across disciplines, a bigger picture was still needed for larger scale comparative international studies.

Furthermore, while it is possible to highlight individual success stories, research is often a slow process and we need to measure success more broadly. For this, VTT chose to look at the United Nations (UN) Sustainable Development Goals (SDGs) and turned to Scopus and SciVal to help to get a broad perspective.

Background

There are many SDG indicators and indices already developed and new metrics will certainly continue to appear. While most of the indicators are on a country (macro) level, we are advancing the practice of identifying individual organizations and their contributions to SDGs (micro level). There is a bold emphasis on scientific excellence in the form of research and development or science, innovation and technology activities addressing the SDG goals and targets expressions. This implies the necessity to get an idea that to what extent the research and technology developed in our societies is contributing to the goals.

One of the main ways to scientific and technological excellence is happening through scholarly written works and academic peer reviewed literature.

There are databases that index and host these scholarly outputs at a global scale. At VTT we have advanced on mapping regional and national science topical formation. Yet the perspective over a large sample for comparative purposes is always an advantage.

ELSEVIER

Full customer story: [PDF (direct link)]

VTT Technical Research Centre of Finland – Mapping VTT's publications and activity regarding SDGs

Using SDGs as a tool to concretize actions and capabilities enables STI actors to mobilize the resources needed to tackle the challenges.

Linking SDGs to scientific publications offer a practical vantage point to measure **how science impacts SDGs**.

Further, through **quantifying Academic Corporate collaboration** we gain a valuable **view into knowledge transfer** and **interplay** between **STI system actors**.

> *"The organization of the harmonized data in SciVal makes it possible to do all sorts of creative and insightful analysis."*

> *"While knowing in detail the dynamics of science, technology and innovation of our base country, SciVal and Scopus enable controlled benchmarking with other countries."*

SciVal

Academic Corporate Collaboration in the Context of Sustainable Development Goals: Benchmarking Finland

Science, Technology and Innovation (STI) plays a crucial role in increasing productivity and growth. Looking beyond the economic impacts, the Daejeon Declaration (2015) after the OECD ministerial meeting highlighted the broader role of STI in enabling "sustainable economic growth, job creation and enhanced wellbeing." The interplay between research organizations and industry plays a vital role in fostering innovation (Cohen 2002) and enabling STI to positively impact the economy and society.

The United Nations Sustainable Development Goals (SDGs) define a practical tool to prioritize actions towards a sustainable future. The SDG framework offers a challenge-driven approach that breaks industrial and disciplinary silos. Using SDGs as a tool to concretize actions and capabilities enables STI actors to mobilize the resources needed to tackle the challenges. Linking SDGs to scientific publications offer a practical vantage point to measure how science impacts SDGs. Further, through quantifying Academic Corporate collaboration we gain a valuable view into knowledge transfer and interplay between STI system actors.

Authors

Dr Arash Hajikhani—Senior Data Scientist, VTT Technical Research Centre of Finland

Dr Arho Suominen—Principal Scientist and Research Team Leader at the VTT Technical Research Centre of Finland and Industrial Professor at Tampere University

This work is conducted as part of a Business Finland funded project named "Mapping Sustainable Development Activity: Its Evolution and Impact in Science, Technology, Innovation and Businesses" (INNOSDG). **For more information on the report's policy implications, refer to:** cris.vtt.fi/en/projects/mapping-sustainable-development-activity-its-evolution-and-impact

A significant body of literature is trying to build an understanding of the relationship between academia and industry (Mansfield & Lee, 1996; Soizo, 2018). The relationship between companies and research organizations is embedded in the notion of knowledge transfer, particularly from research organizations to industry. Research has shown that the collaboration between academic researchers and companies bears benefits for both parties (Agrawal & Henderson, 2002; Zucker et al., 2002). However, the relationship requires investments from both the research organizations (Suominen et al., 2021) and companies (García-Aracil & De Lucio, 2008), but also from other actors in the innovation system such as public and state fundings. The innovation system needs to facilitate frequent and iterative interactions among all the participating innovative actors, in which academic research organizations and private companies are central. University-Industry collaboration or Academic-Corporate collaboration (ACC) refers to the interaction between any part of the higher educational system and industry aiming mainly to encourage knowledge and technology exchange (Rudi Bekkers & Isabel Maria Bodas Freitas, 2008; Siegel et al., 2003).

Academic corporate collaborations, as determined through co-authorship of publications, have been increasing significantly (https://www.naturetrides.com/news-blog/the-shifting-corporate-academic-relationship-in-pictures). According to Scopus, an expertly curated abstract and citation database with content from over 7,000 publishers, the global number of publications co-authored by a research institution and an industry partner is on a steady rise (https://www.elsevier.com/research-intelligence/university-industry-collaboration)'.

In analyzing academic corporate collaborations, we consider the co-authored publications as a proxy and therefore investigate the level of such activity on various levels (Global, national, regions and clusters). The analysis is based on publications indexed in the Scopus® database that have been analyzed using Scopus (Elsevier-compliant tools). Publications data in Scopus are available from ngab. In Scopus, all affiliations are identified as belonging to one of the following sectors: academic, government, medical, or other. International co-publications include at least two authors and affiliations in two countries. Academic corporate co-publications are defined analogously.

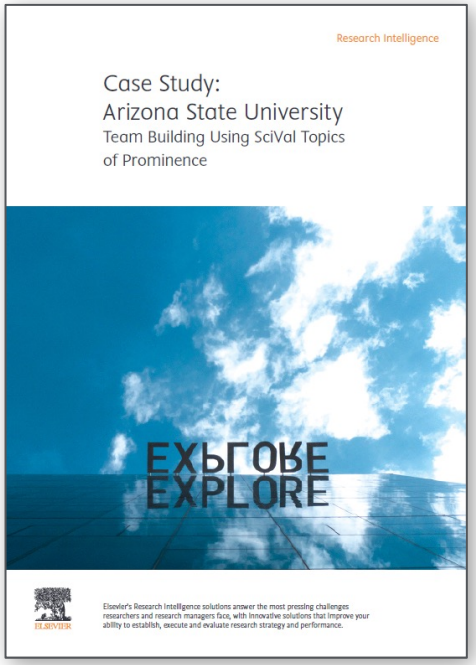
Full customer story: [PDF (direct link)]

Arizona State University – Team building using Topics

When ASU wanted to hold a workshop focused on how to make progress in the fight to overcome America's substance abuse and addiction crisis, they needed a comprehensive strategy for finding experts to participate, generate ideas and form research teams.

In this case study, you will learn how the data in SciVal and SciVal's Topic Prominence in Science provided a **key starting point** to **identify strengths**, the **focus area** for the **workshop** and the **faculty** to include.

> *"The data from SciVal was a very important factor in helping us to identify our strengths. We used the information to identify a focus area for our design workshop as well as faculty to include."*



Full customer story: PDF (direct link) | PDF (landing page)

University of Surrey – Understand strengths to increase collaborations and target funding bids

Seeking a greater understanding of their research strengths and profile, the university combined the data and analytics capabilities of SciVal and Scopus with faculty interviews and existing university research information to gain a more holistic view of the university's research profile. This included a website aimed at **improving communications** around **research activities** and expertise, **fostering collaborations** and **targeting funding opportunities** more effectively.

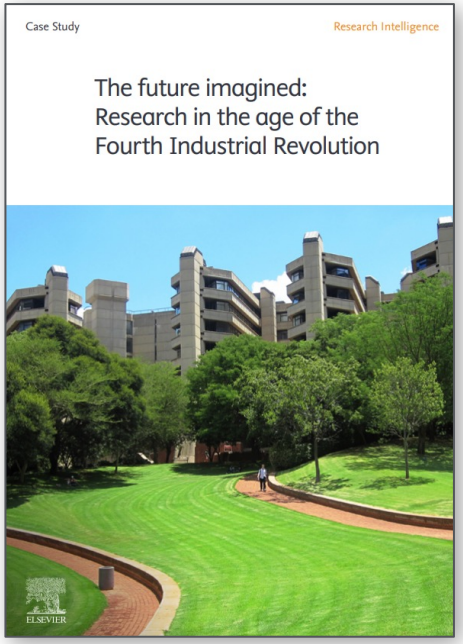
> *"Use of Elsevier products provided insight into our research assets including financial, equipment, external and internal collaborations, and most importantly our strengths."*

Full customer story: PDF (direct link)

University of Johannesburg – Grow innovative research

UJ is focused on becoming an innovative research enterprise. To achieve that goal, it leverages the Elsevier Research Intelligence suite of solutions **Scopus**, **ScienceDirect** and **SciVal**. These solutions work in unity to **help UJ attract collaborators**, **graduate students** and **colleagues** with **complementary skills**, who will work together to **enhance the university's reputation**.

> *"…SciVal is unbelievably useful for us, because it helps us to benchmark…it also helps us to see where on rankings we are, what funding is available, and what are our competitors doing."*



Full customer story: PDF (direct link) | PDF (landing page)

National Research Foundation of Korea – Driving the country as innovation powerhouse

To align its multibillion-dollar budget to the demands of Industry 4.0, it **needed to stay on top of emerging insights and best practices**, as well as optimize its ongoing world-class research with deeper explorations of specific domains in, namely 3D printing, artificial intelligence (AI), big data, cloud computing and the Internet of Things (IoT). **This depth of analysis required the NRF to look for a solution that could support its researchers**.

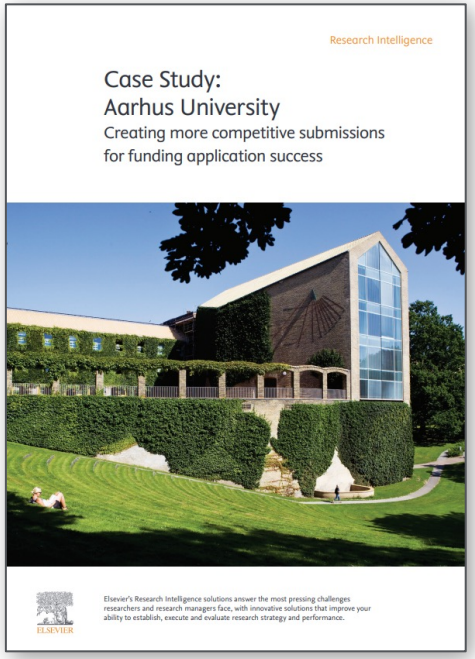
> *“If we are to push the envelope with our research strategy and support increasing the rate of technology transfer from research to industrial use in Korea, SciVal would be a necessary part of that process.”*

Full customer story: PDF (direct link)

Aarhus University – Creating more competitive submissions for funding application success

To meet its research targets, the university's Research Support Office is tasked with successfully identifying and winning research funds. The team faces two main challenges with regards to securing funding. The first is that the research landscape in Europe has evolved to become more multi-disciplinary, which makes submitting suitable researchers for a funding call more complex. Secondly, the competition for the funding calls has also intensified, **so the team needs to ensure that their researchers are supported with evidence to help differentiate them from external candidates**.

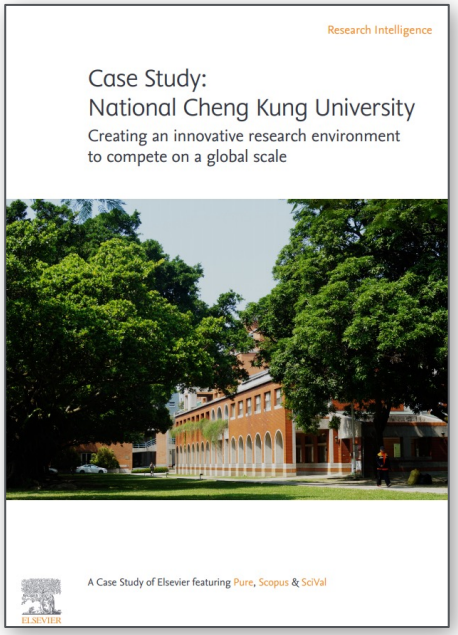
> *"SciVal has empowered us to take an evidence-based approach to obtaining more research funds."*



Full customer story: PDF (direct link) | PDF (landing page)

National Cheng Kung University – Compete on a global scale

To enhance its role internationally, NCKU uses Elsevier's Research Intelligence solutions **Pure**, **SciVal** and **Scopus** – combined with customized consulting options. Together, they give NCKU the tools to quantify its research achievements, assess the potential impact of new faculty, and manage multi-institutional projects. **These outcomes directly affect NCKU's ability to gain the funding and faculty needed to maintain the university's research reputation and continue contributing to the country's economic growth.**



> *"Through comparisons with our benchmark universities," ….., "SciVal makes our strategic planning more effective. We can analyze future research trends and university world rankings to create a research agenda and make strategic decisions about how we collaborate with other universities."*

> *"SciVal provides solid, quantifiable evidence of the university's research reputation — exactly what NCKU needs to gain funding and attract the best researchers."*

Full customer story: Case study (direct link) | Video (direct link) | Case study / video (landing page)

Find out more:

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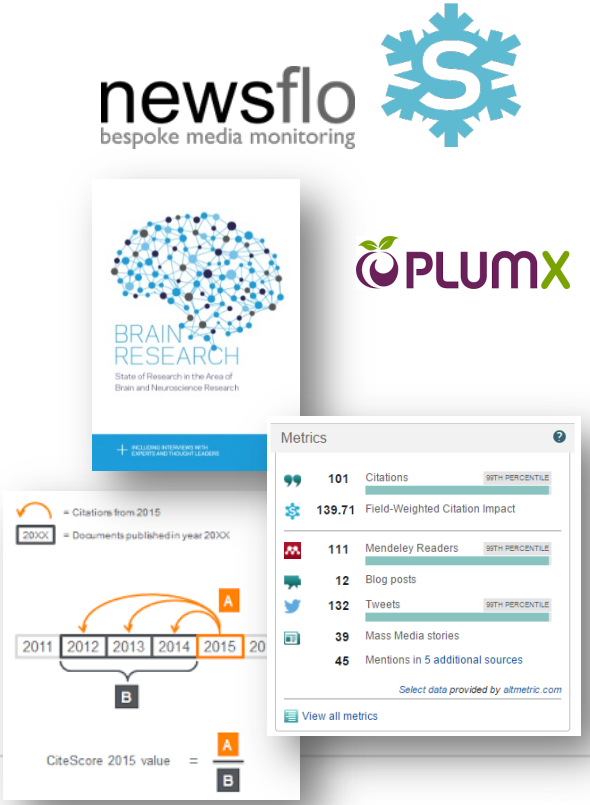
Elsevier and research metrics

Our Metrics approach:

- ❑ Need to use different metrics, common sense and expert judgement
  - Decisions should be based on both quantitative and qualitative input
  - Should always use at least two metrics (more than one way to ‘excellence’)
- ❑ The methodologies should be open, transparent, valid and replicable
- ❑ Definitions should be owned by the community
  - Need trust between the parties using metrics to evaluate



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Help and resources

- Support center links:
  - Learn more about the Rankings in SciVal - https://service.elsevier.com/app/answers/detail/a_id/33660/supporthub/scival/
  - THE World University Ranking Citations Score - https://service.elsevier.com/app/answers/detail/a_id/33663/supporthub/scival/
  - THE Scholarly Output - https://service.elsevier.com/app/answers/detail/a_id/33661/supporthub/scival/
  - THE International Collaboration - https://service.elsevier.com/app/answers/detail/a_id/33662/supporthub/scival/
- University Rankings – A closer look for research leaders: https://www.elsevier.com/research-intelligence/university-rankings-guide
- THE World University Rankings: https://www.timeshighereducation.com/world-university-rankings
- Quick guide to 7 major university rankings and their methodologies: https://elsevier-sfm.highspot.com/items/5fc9a3f0a4dfa011b2035861?lfrm=srp.2