



# Mapping Research Publications to the UN SDGs

A study of one approach and what it can teach us

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# Agenda

- Mapping research to the SDGs
- Evaluating SDG research



# Mapping research to the SDGs

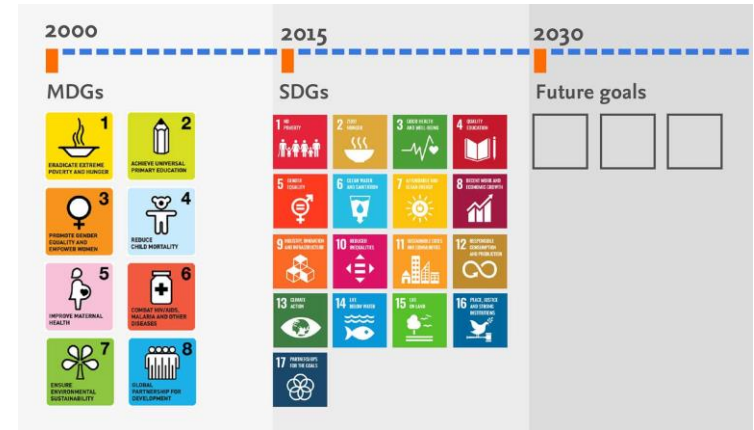
Challenges and an evolving approach

# United Nations SDGs – What are they?

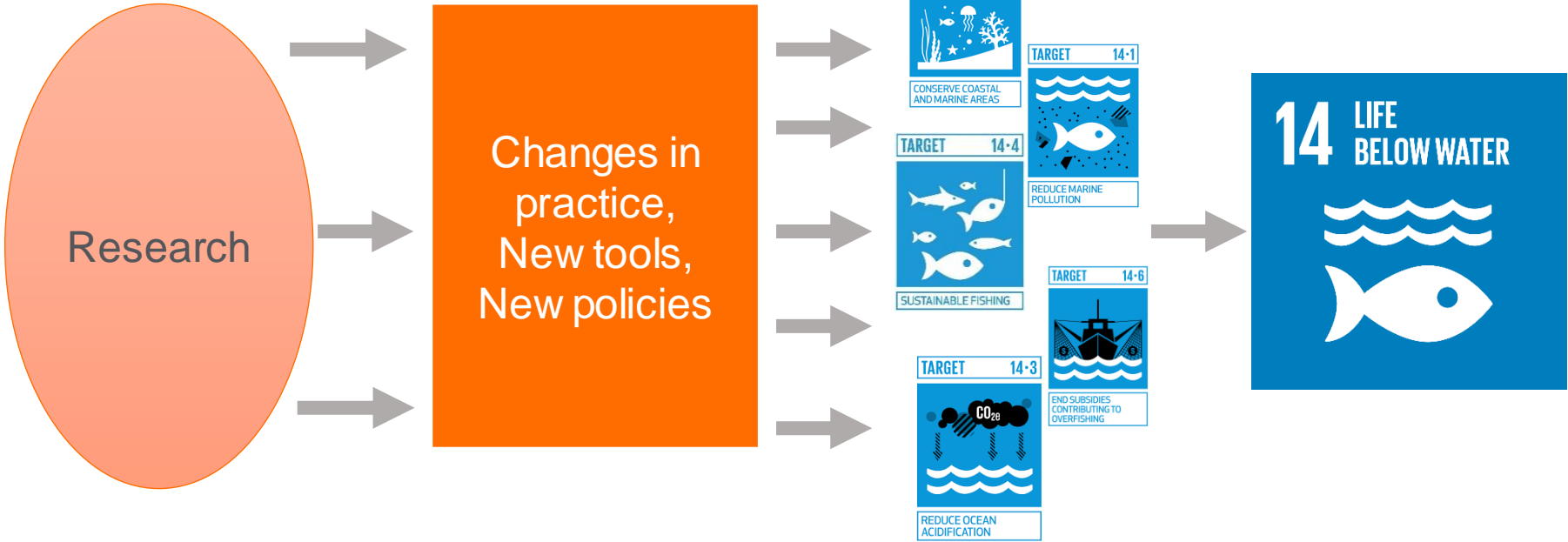
- **The 17 UN SDGs** are a set of goals developed to replace the Millennium Development Goals (MDGs) and were adopted by all UN member states in 2015 as part of the [2030 agenda for Sustainable Development](#)

According to the [United Nations](#):

*“The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.”*



# Research lives upstream of the goals



# Sustainability research: a starting point

- 2015 Report
- Collaboration with [SciDev.Net](https://www.sci-dev.net/)
- Six key themes that encompass the 17 SDGs
  - *Dignity*
  - *People*
  - *Prosperity*
  - *Planet*
  - *Justice*
  - *Partnership*



# United Nations SDGs and Elsevier

“It is our goal to do everything we can to ensure that our unique strengths in content, data, and analytics help researchers and health professionals make the targets set by the United Nations in 2015 a reality.”

*Kumsal Bayazit*  
CEO, Elsevier

**Elsevier Sustainability Hub: Using data to drive action on the UN SDGs**

<https://www.elsevier.com/connect/sustainability-science-hub>



# Lessons learned:

## It's better to start and plan to iterate

*“The SDG agenda is extremely important and **the University of Southern Denmark (SDU) welcomes Elsevier’s efforts to deliver Scival tools extracting research publications relevant for different SDGs. This is one approach to help both researchers and research managers in gearing their work towards the unified goals defined by UN. SDU urges further work to develop more accurate next-generation tools to map research to SDGs.**”*

— Maeva Vignes, Funding Advisor,

[University of Southern Denmark Research & Innovation Organisation \(SDU RIO\)](#)



29.04.2021

ELSEVIER



# Lessons learned: Provide the means to be critiqued

- On Mendeley data we uploaded:
- The full Scopus query for each SDG
- The query development methodology documentation for each SDG
- Download them for free from Mendeley:  
<http://bit.ly/sdgdocs>

The screenshot shows the Mendeley interface for a dataset. At the top, there's a navigation bar with 'Mendeley' logo, 'Sign in', 'Create account', and 'Download' buttons. Below that are links for 'Reference Management', 'Research Network', 'Datasets', 'Careers', and 'Funding'. A secondary bar contains 'Find Research Data', 'My Datasets', 'New Dataset', and 'FAQ'. The main title is 'Identifying research supporting the United Nations Sustainable Development Goals'. Below the title, it says 'Published: 22 Oct 2019 | Version 1 | DOI: 10.17632/87t6kw7khs.1' and 'Contributor(s): Bamini Jayabalasingham, Roy Boverhof, Kevin Agnew, Lisette Klein'. There are two columns: 'Description of this data' and 'Latest version'. The description states that Elsevier generated a set of Scopus queries related to each of the SDGs. The 'Latest version' section shows 'Version 1' published on 2019-10-22 with the same DOI. Below the description is a table of 'Experiment data files' with four entries: SDG10, SDG11, SDG12, and SDG13, each with a PDF icon, a file size, and 'Cite' and download icons. A 'Download all files (17)' button is also present. On the right, there is a 'Cite this dataset' box with the citation text: 'Jayabalasingham, Bamini; Boverhof, Roy; Agnew, Kevin; Klein, Lisette (2019), "Identifying research supporting the United Nations Sustainable Development Goals", Mendeley Data, v1' and the DOI link.

# Lessons learned: SDG Queries generate highly variable results

→ Venn diagrams showing the overlap between four different queries when assessing research from University of Southern Denmark

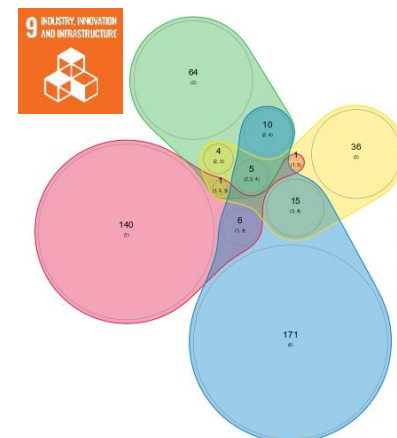
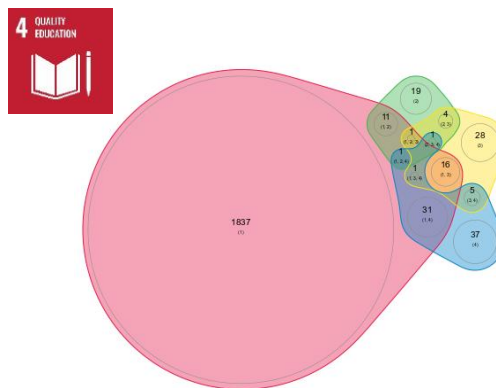
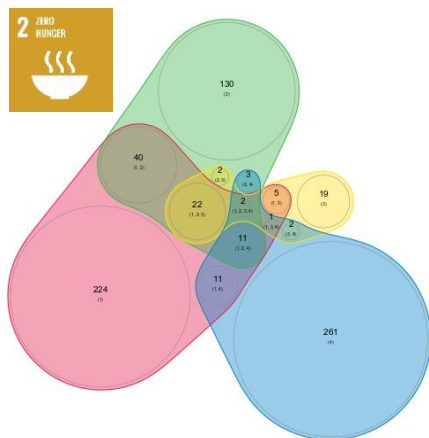
→ No more than 20% of common publications for the different queries related to a given SDG

“SDU” queries

SciVal queries

AURORA queries

Austrian queries



# Solutions:

1. Count as many opinions as possible: crowd-source the creation of a database of research mapped to SDGs.
2. Invest more time in the creation of more detailed queries.
3. Partner with others in the field to improve the SDG publication sets.

# Matching research to SDGs

<https://sdgresources.relx.com/match-research-to-sdgs>



## Identifying research that supports the SDGs

Research institutions and funders of research are uniquely positioned to support advancement of the sustainable development goals (SDGs). Help us determine how research publications move the needle on achieving the sustainable development goals.

Match Research to SDGs



1 NO POVERTY



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION



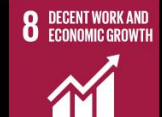
5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION



7 AFFORDABLE AND CLEAN ENERGY



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

# Matching research to SDGs

<https://sdgresources.relx.com/match-research-to-sdgs>



View global news



View useful links



Match research to SDG indicators



Join the discussion

Here's how to help:

1. Click *Match to indicators* for any publication in the list below or upload your own publications.
2. Review the information about the publication and the list of targets and indicators relevant to the SDG.
3. Select the indicators that you believe apply to this publication or click *Not applicable* at the bottom of the page.
4. Click *Submit feedback*.
5. Select another publication to review.

Selected publications

Upload publications

Fianu S., Davis L.B. (2018). <b>A Markov decision process model for equitable distribution of supplies under uncertainty.</b> <i>European Journal of Operational Research</i>	14 citations	<a href="#">Match to indicators</a>
Conti R.M., Bach P.B. (2014). <b>The 340B drug discount program: Hospitals generate profits by expanding to reach more affluent communities.</b> <i>Health Affairs</i>	28 citations	<a href="#">Match to indicators</a>
Clark B.L., Hou J., Chou C.-H., Huang E.S., Conti R. (2014). <b>The 340B discount program: Outpatient prescription dispensing patterns through contract pharmacies in 2012.</b> <i>Health Affairs</i>	5 citations	<a href="#">Match to indicators</a>
Brooks J. (2014). <b>Nursing typhus victims in the Second World War, 1942-1944: A discussion paper.</b> <i>Journal of Advanced Nursing</i>	2 citations	<a href="#">Match to indicators</a>

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5 GENDER

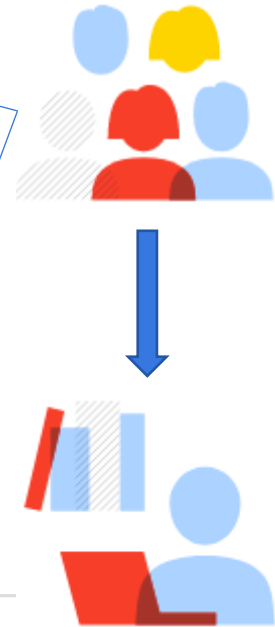
# Refining the SDG queries

- Subdividing the SDGs into research areas based on the targets and indicators



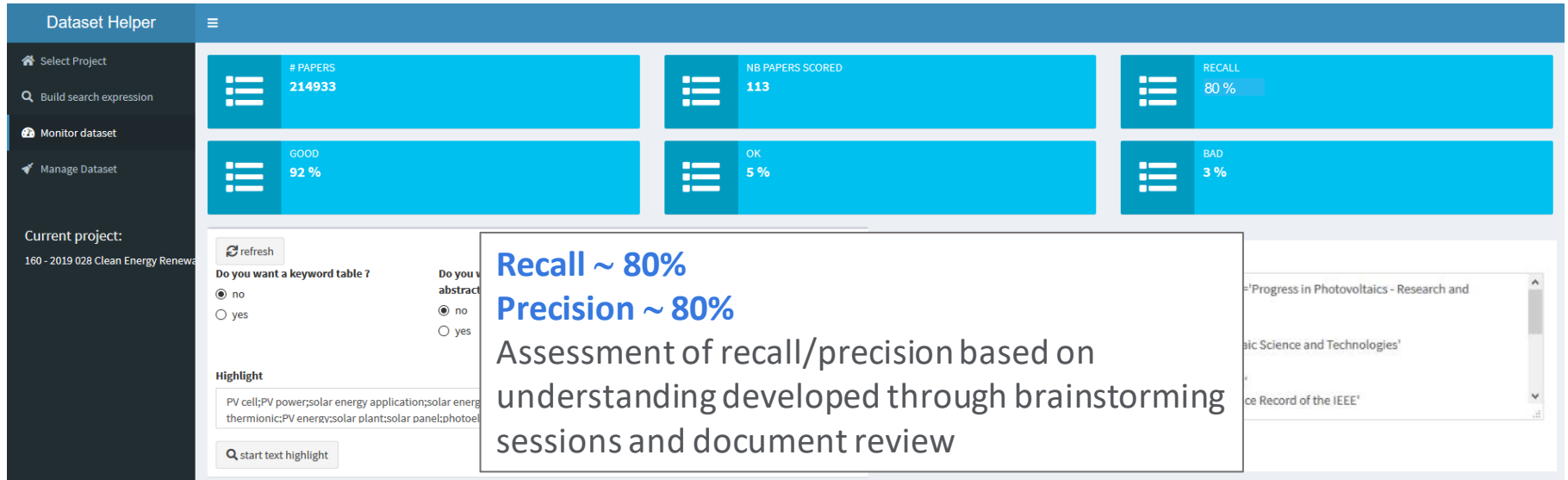
## TARGETS AND INDICATORS

	<b>Target 1.1</b> By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day
	Indicators ▾
	<b>Target 1.2</b> By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
	Indicators ▾
	<b>Target 1.3</b> Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable
	Indicators ▾



# Refining the SDG publication sets

- **Step 1: Query Helper** created to **standardize** and ease top-down approaches to the creation of custom thematic datasets using keyword-based queries (starting from a definition to uncover relevant terminology)
- **Step 2:** Expansion through **machine learning**



The screenshot displays the 'Dataset Helper' interface. On the left is a dark sidebar with navigation options: 'Select Project', 'Build search expression', 'Monitor dataset', and 'Manage Dataset'. Below this, it shows the 'Current project: 160 - 2019 028 Clean Energy Renew...'. The main area features six blue summary cards: '# PAPERS 214933', 'NB PAPERS SCORED 113', 'RECALL 80 %', 'GOOD 92 %', 'OK 5 %', and 'BAD 3 %'. Below these cards is a search configuration section with a 'refresh' button and two questions: 'Do you want a keyword table?' (with 'no' selected) and 'Do you want abstracts?' (with 'no' selected). A 'Highlight' section contains a text input field with the query: 'PV cell;PV power;solar energy application;solar energy storage;thermionic;PV energy;solar plant;solar panel;photoelectric'. A 'start text highlight' button is below the input. A white callout box with a black border is overlaid on the interface, containing the text: 'Recall ~ 80%', 'Precision ~ 80%', and 'Assessment of recall/precision based on understanding developed through brainstorming sessions and document review'. On the right side, a scrollable list of search results is partially visible, including titles like 'Progress in Photovoltaics - Research and...' and 'Basic Science and Technologies'.



1. Credits to Maxime Rivest for Dataset Helper
2. Credits to the whole Science-Metrix team for developing the keyword-based queries at the root of the SDG datasets

# SDG Research Matching Initiative



## Challenge:

To improve the document to SDG mapping using machine learning and query improvement techniques and get buy-in from the larger research community

- Partnership with:
- Aurora Universities Alliance (represented by Vrije Universiteit Amsterdam)
- Auckland University
- Southern Denmark University

**SDU** 

**VU**



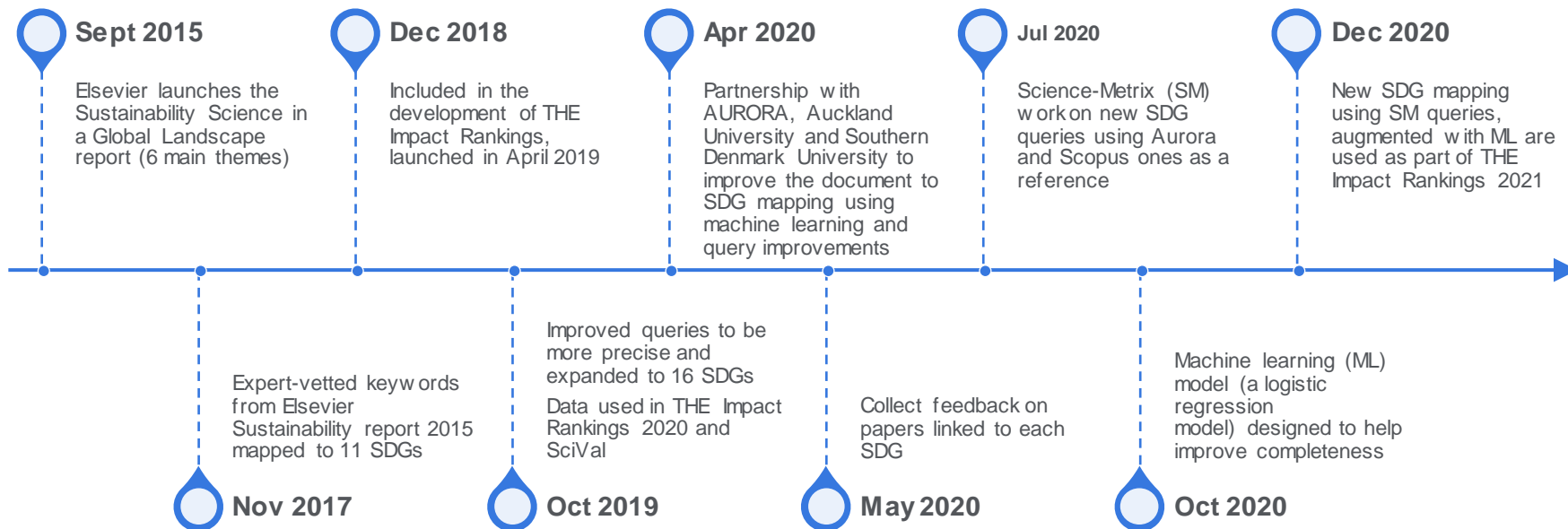
**THE UNIVERSITY OF  
AUCKLAND**  
Te Whare Wānanga o Tāmaki Makaurau  
NEW ZEALAND

Full details are available online:

<https://www.elsevier.com/about/partnerships/sdg-research-mapping-initiative>



# Development of the SDG queries



# SDGs in SciVal

Understand and analyze your contribution to the UN SDGs



29.04.2021



**Use case 1** – Identifying key institutions and experts to facilitate team building for targeted funding bids in fields related to the UN SDGs



**Use case 2** – Identifying Topics  
contributing to the UN SDGs for further  
analysis

**Use case 3** – Identifying Topics that institutions are contributing to the UN SDGs for further analysis



# Thank you

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