

Austria and/in the Changing Geography of Global Science

Dr. Max Voegler, Elsevier
Vienna, June 2025



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Advancing human progress together

Wer bin ich?

Dr. Max Vögler

- 2017- Heute VP Global Strategic Networks – DACH
- 2010-2017 Leiter des Nordamerikabüros der Deutsche Forschungsgemeinschaft (DFG)
- 2005-2010 Referent bei der DFG in den Gruppen LIS (Library and Information Systems) und IZ (Internationale Zusammenarbeit)
- 2001-2005 Projektkoordinator und Wiss. Mitarbeiter an der Humboldt-Universität zu Berlin mit dem Projekt Clio-Online / H-Soz-u-Kult
- Wiss. Ausbildung als Historiker (PhD, Columbia University, New York)



Zu Elsevier...

3,000 Journale, davon 890 fully Open Access

720,000 Artikel, davon 250,000 in OA
(Aus: 3,5 Mil. eingereichte Manuskripte)

20 % Fachgesellschaften

“Flagships”: **The Lancet**, **Cell**

ScienceDirect als Plattform
(20 Mio. Nutzer monatlich)

ScienceDirectAI als “Mikroskop”, um in
die Tiefe eines Corpus zu gucken.

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Daten nutzbar machen

Scopus: Abstract- und Zitationsdatenbank) – 100 Mil. Objekte aus 30,200 Journale, 404K Bücher.

ScopusAI: „Teleskop“, um in die Ferne zu gucken, *natural language queries*

SciVal: Analysetool für Benchmarking, Strategy, 24,500 Institutionen

PURE: Forschungsinformationssystem



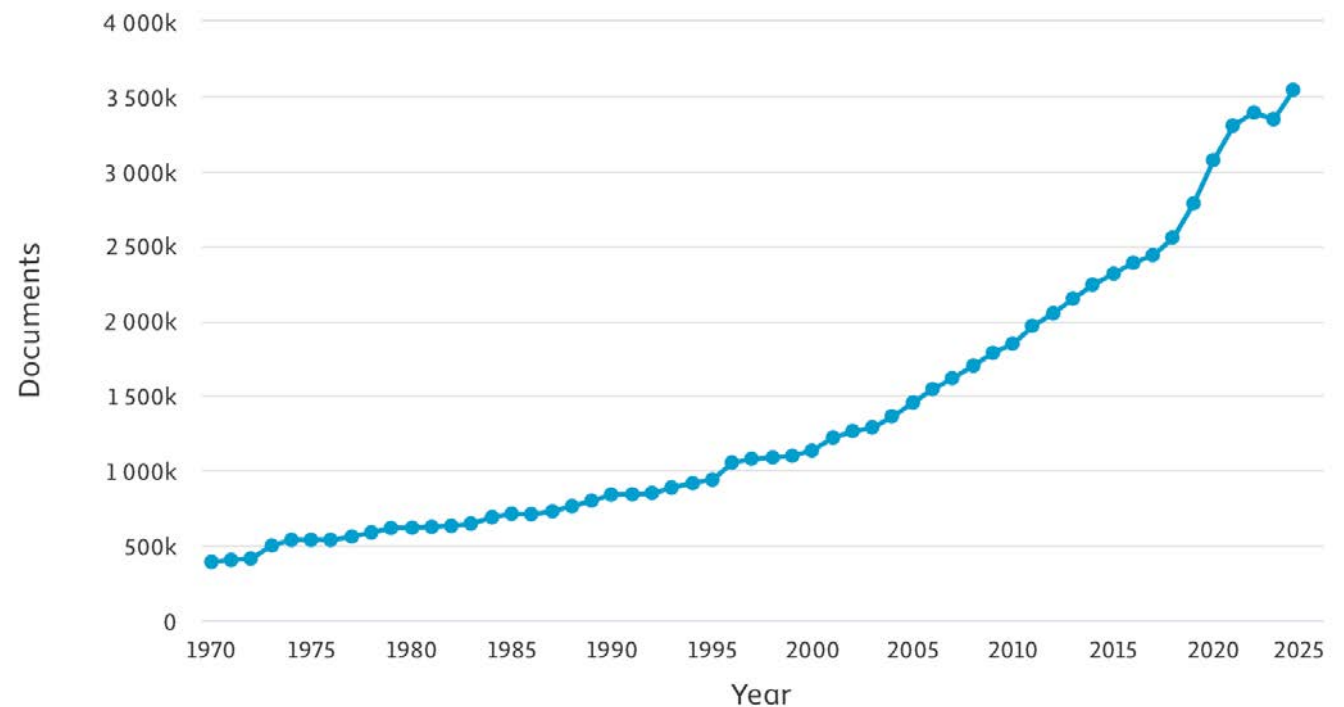
Die Welt, wie sie ist...

Das Wissenschaftssystem
wächst global...

Zwischen 1970 und 2024:

- Anzahl Artikel sind ca. 20 x gewachsen

Documents by year



Scopus

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Die Welt, wie sie ist...

ABER Haupttreiber für das Wachstum sind die Anzahl der Autoren. Papers pro Autor sind in den vergangenen Jahrzehnten zurückgegangen.

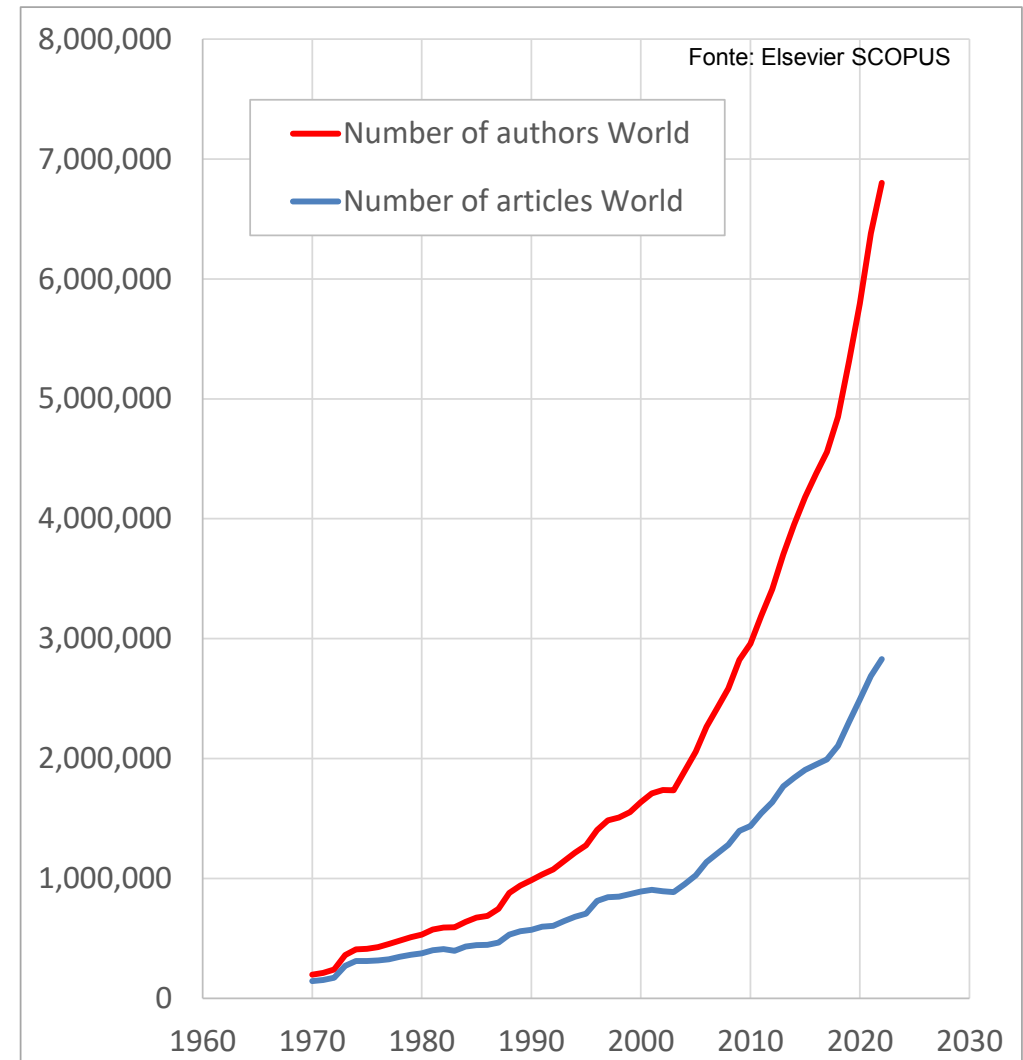
Zwischen 1970 und 2024:

- Anzahl Artikel sind ca. 20 x gewachsen
- Anzahl Autoren sind ca. 34 x gewachsen

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My thanks to my Elsevier colleague Brito Cruz for this analysis. Full presentation is available on his LinkedIn profile.

More authors publish more articles
The number of scientists in the World has been growing



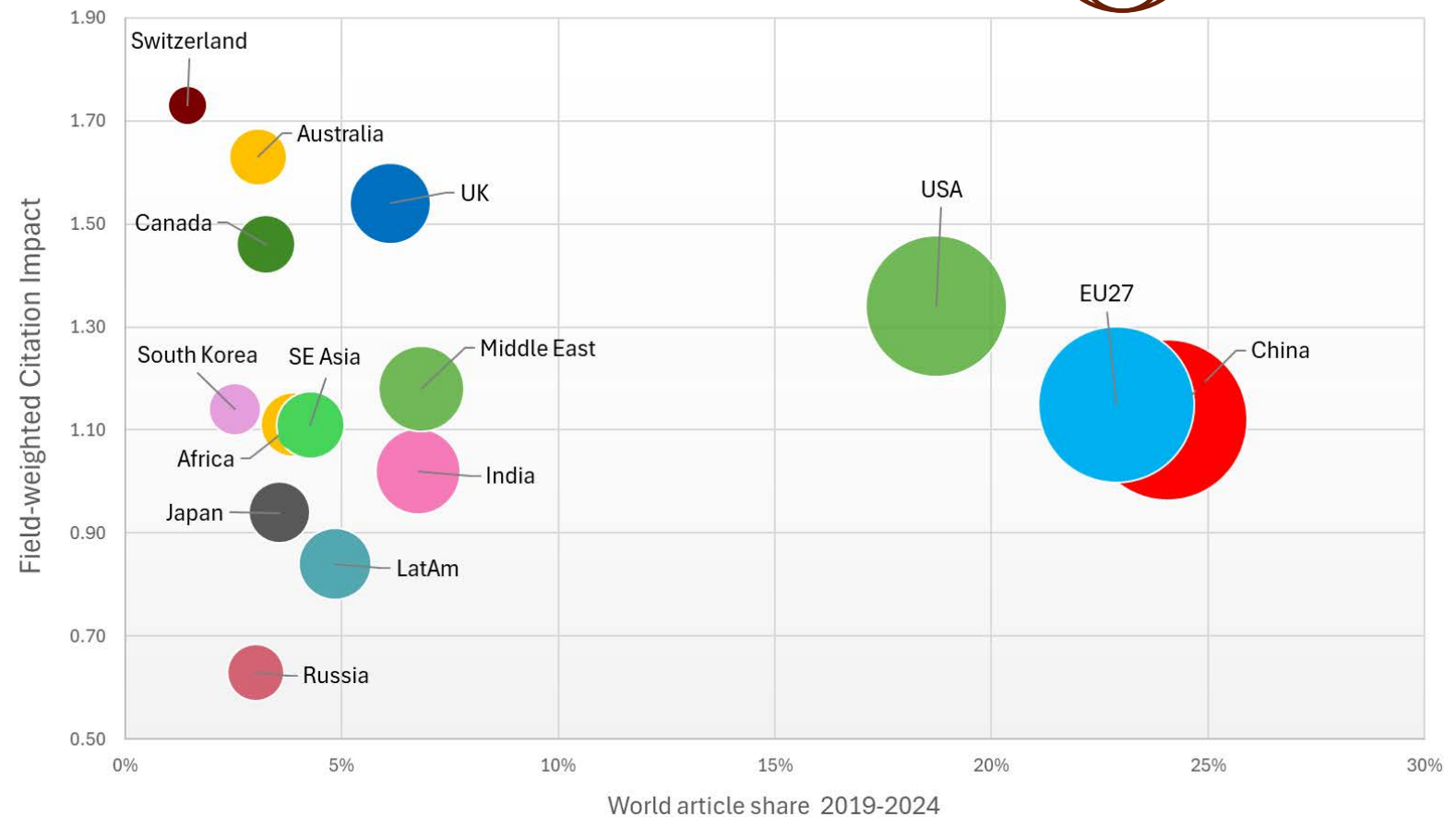
Die Welt, wie sie ist... 2019-2024

Diese Darstellung visualisiert den Beitrag bzw. die Größe der verschiedenen geografischen Akteure. Wir sehen die drei größten Regionen: China, das nun etwas größer ist als die EU, und dann die USA, deren Produktion nun $\frac{3}{4}$ der Größe Chinas erreicht.

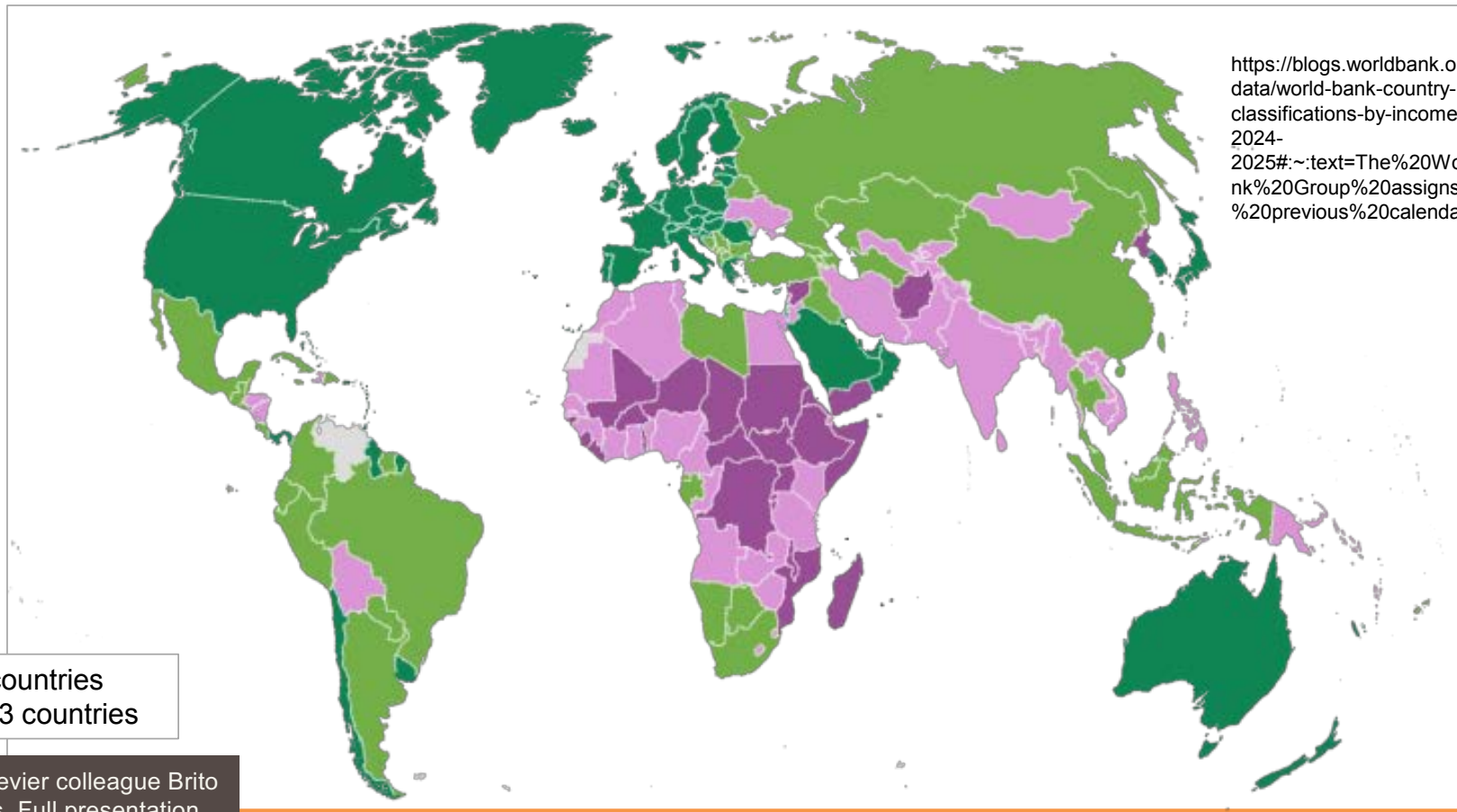
Der Nahe Osten und Indien sind weiterhin schnell gewachsen, und deren Output ist zwischen 2019 und 2024 um etwa 1,6 Millionen gewachsen.

Die am häufigsten zitierte Länder sind Schweiz, Niederlande, Australien und Großbritannien, gefolgt von Kanada und anschließend den USA.

Scholarly Output



- High Income Countries and Low-and-Middle Income Countries
 - World Bank classification: a threshold of \$PPP 13,845 on GNI per capita (2022)

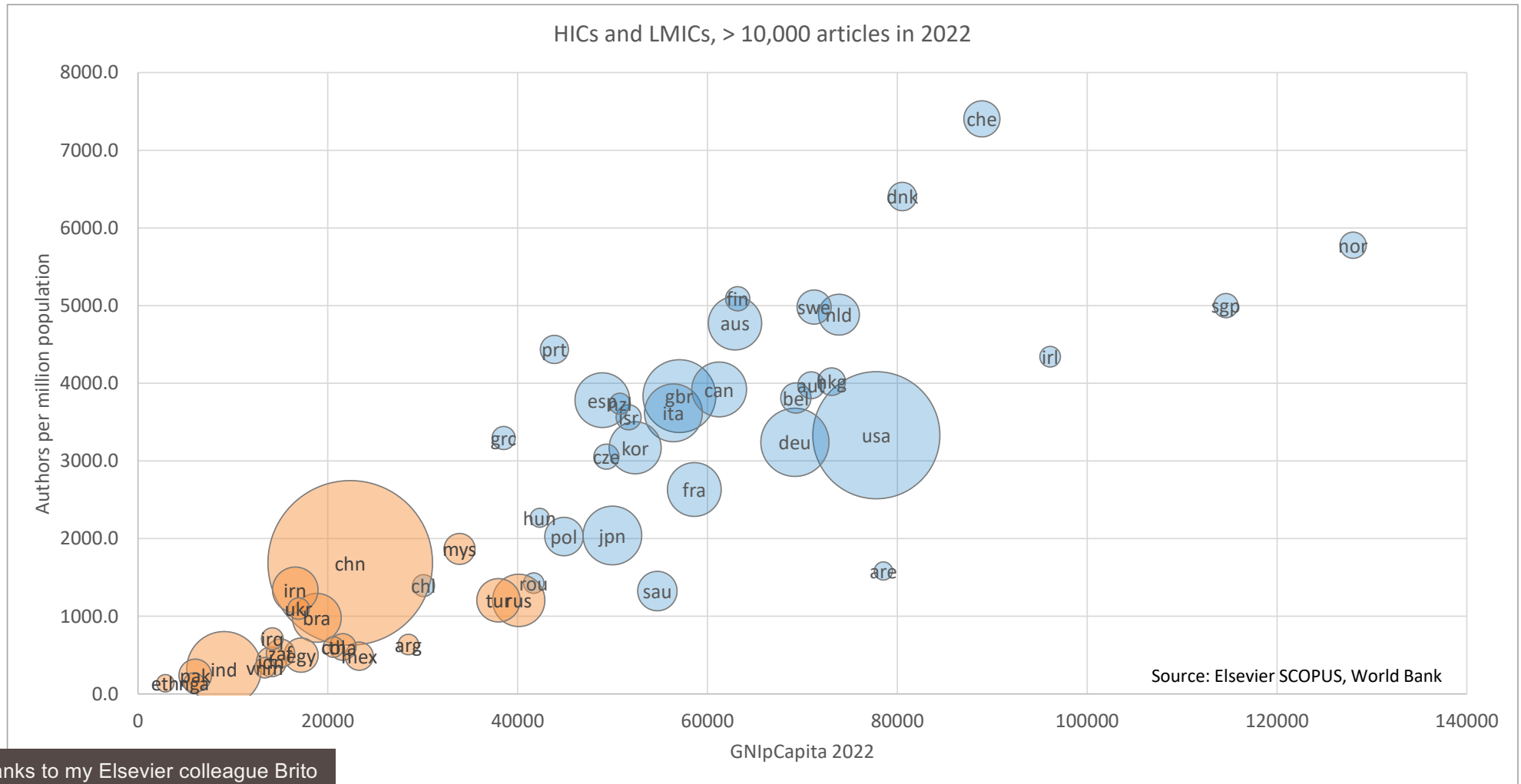


<https://blogs.worldbank.org/en/open-data/world-bank-country-classifications-by-income-level-for-2024-2025#:~:text=The%20World%20Bank%20Group%20assigns,of%20the%20previous%20calendar%20year.>

HICs: 79 countries
LMICs: 133 countries

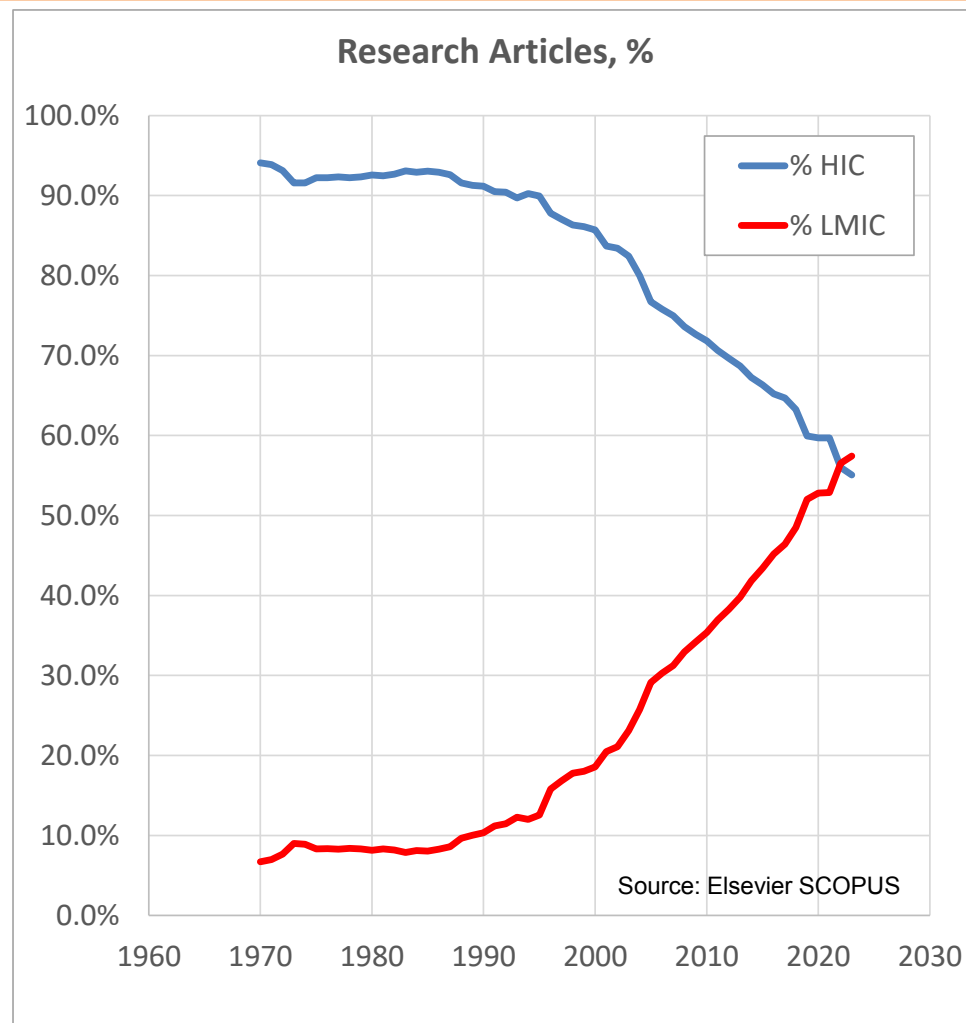
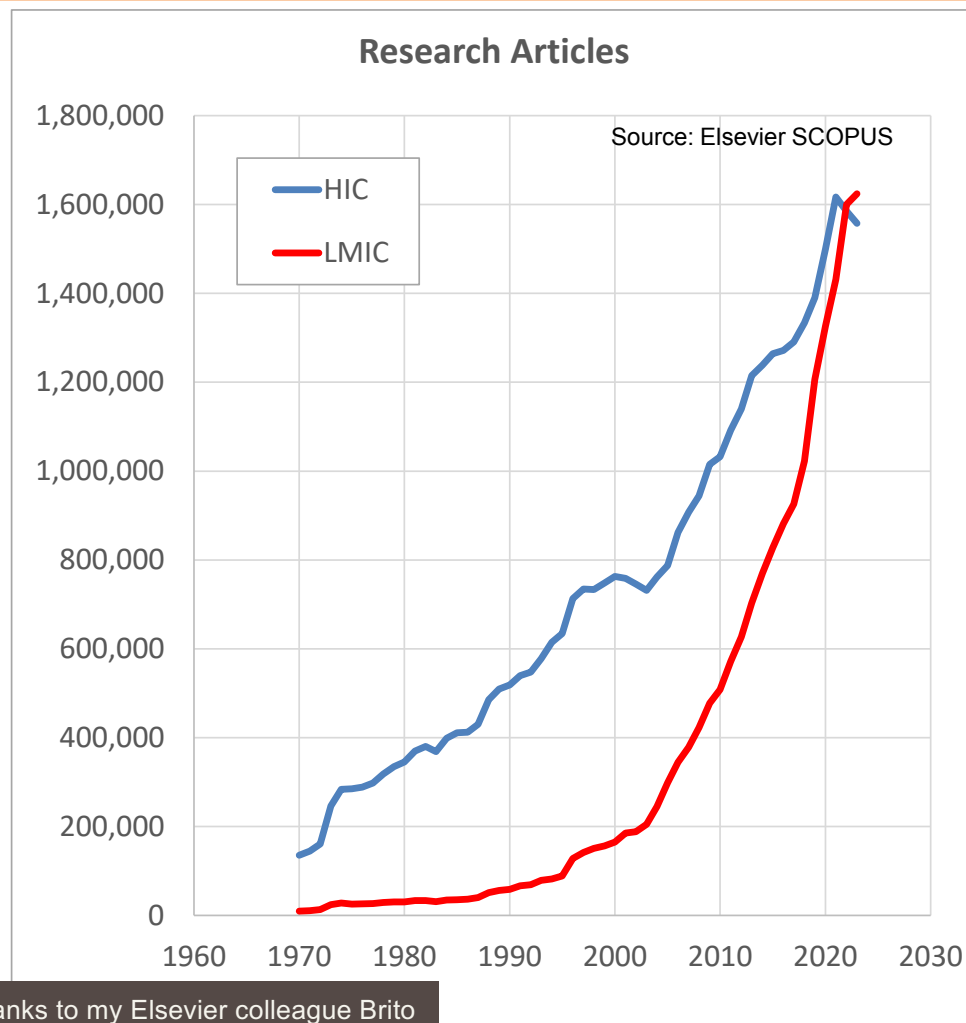
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High Income Countries and Low-and-Middle Income Countries Authors per million population, GNI per Capita, and Number of articles in 2022



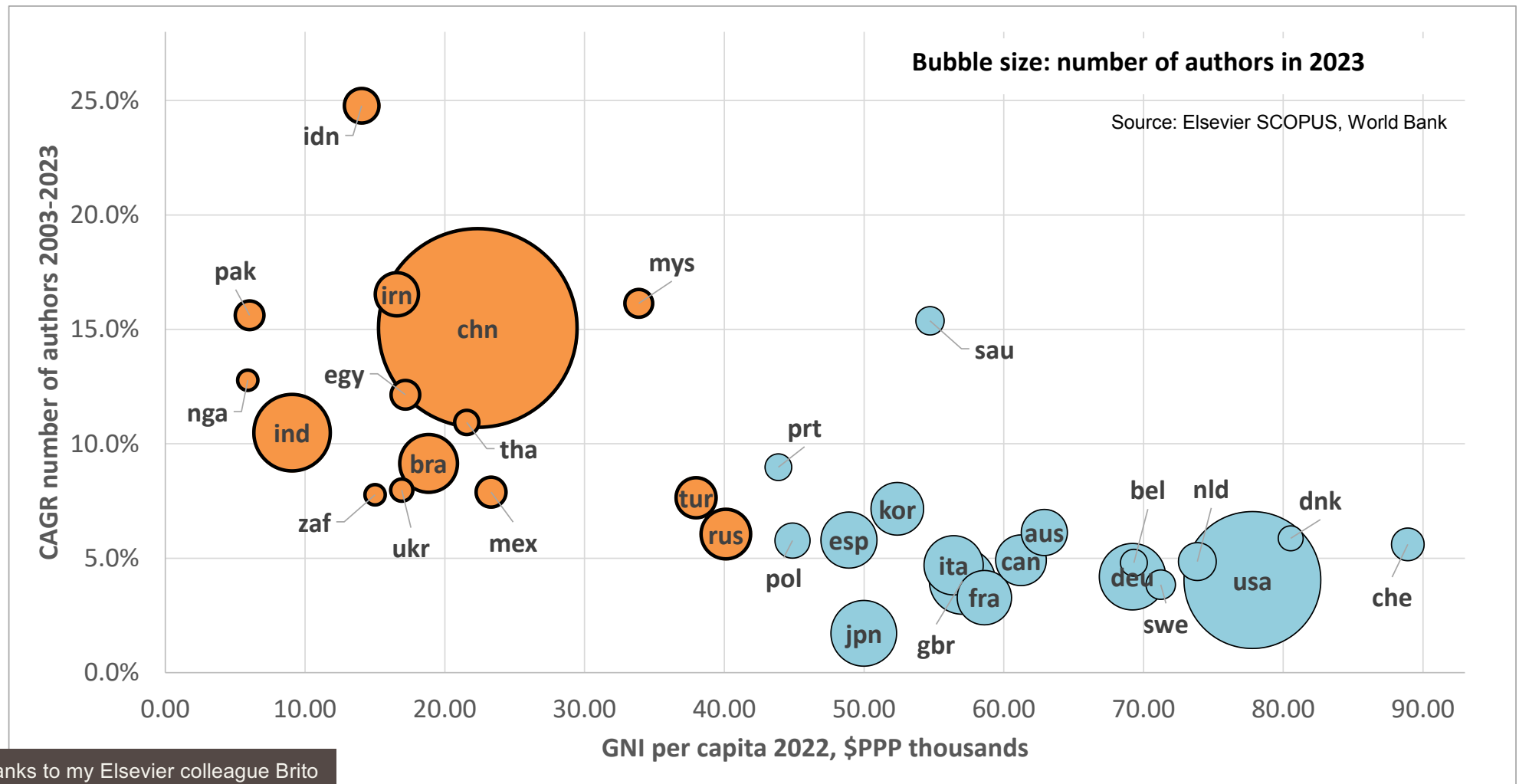
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Capacity is being built in Low-and-Middle Income Countries :
Number and percentage of scientific articles with authors in High Income and Low-and-Middle Income Countries



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Growth rate of number of authors (2003-2023) x GNI per capita (2022), and number of authors (2023)



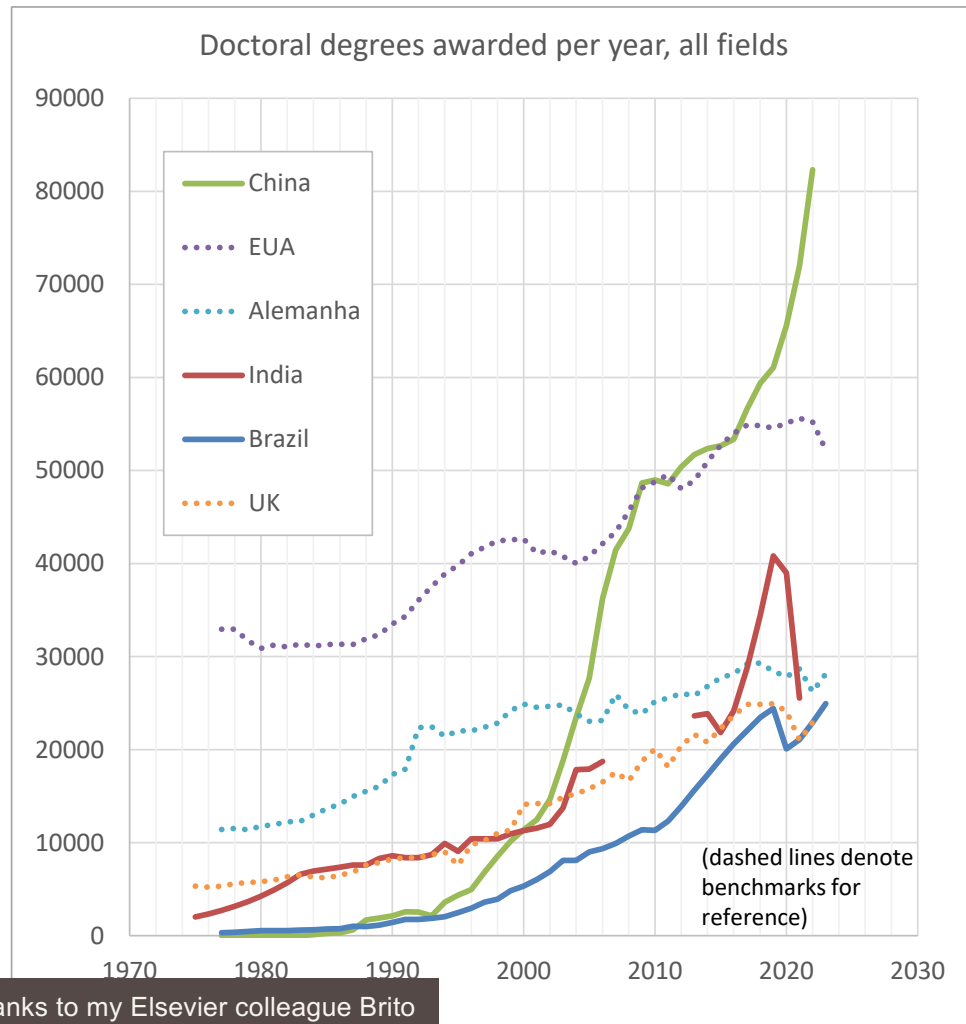
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Capacity building – e.g., training at the doctoral level

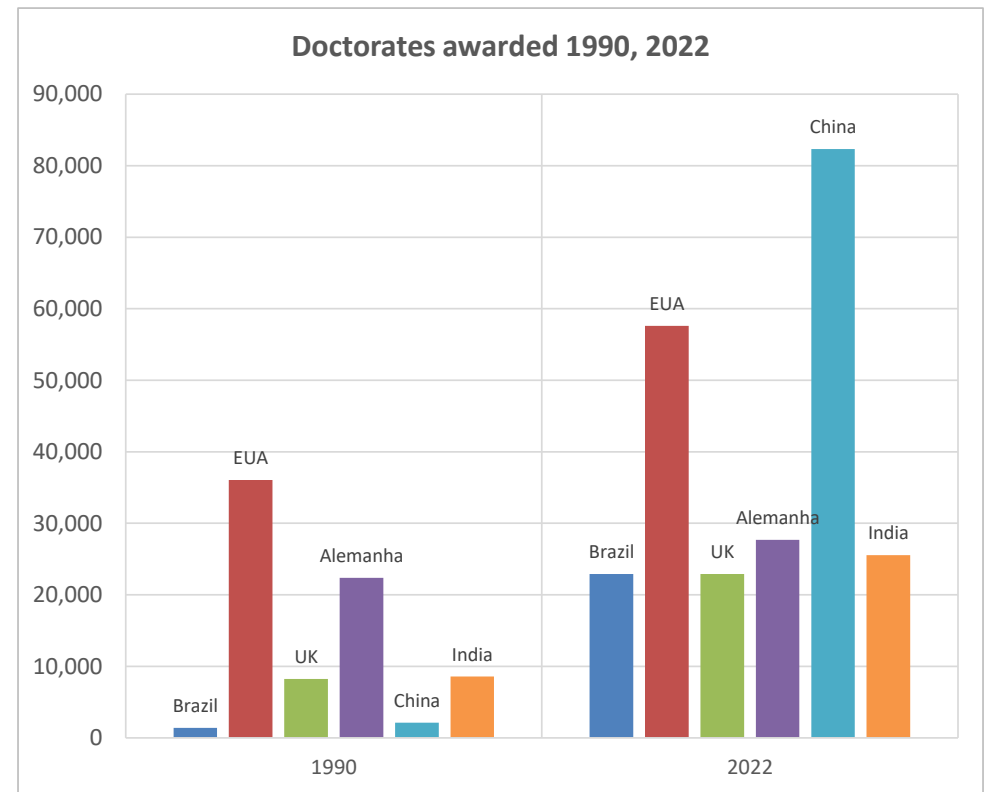
- Capacity building requires developing research training institutions

– Research universities, graduate courses



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Sustainable Development Goals (SDGs)

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.

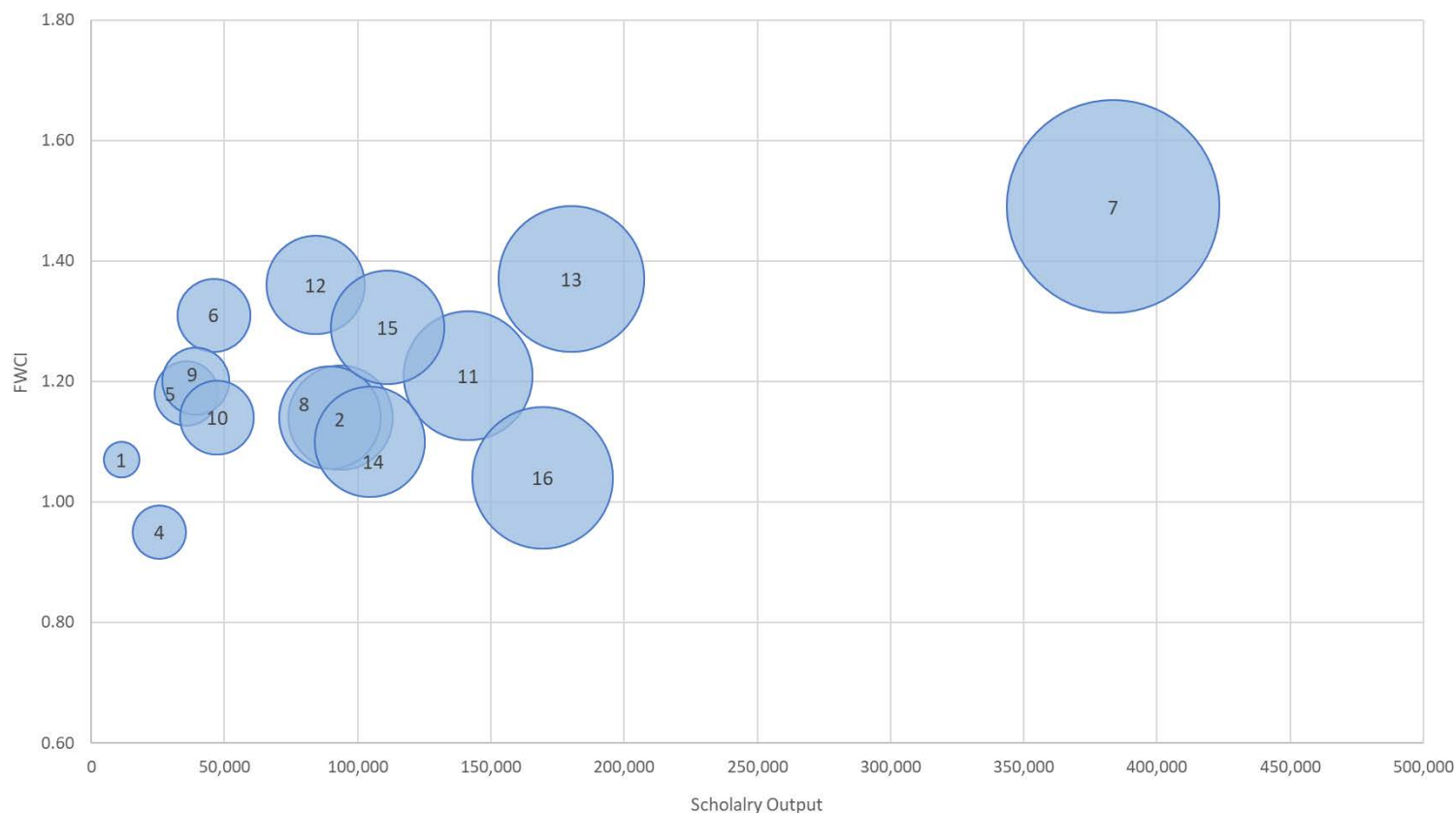
At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.



Global Research Overview on SDGs



SDGs papers 2015-2019 Globally



GOAL 1: No Poverty
GOAL 2: Zero Hunger
GOAL 4: Quality Education
GOAL 5: Gender Equality
GOAL 6: Clean Water and Sanitation
GOAL 7: Affordable and Clean Energy
GOAL 8: Decent Work and Economic Growth
GOAL 9: Industry, Innovation and Infrastructure
GOAL 10: Reduced Inequality
GOAL 11: Sustainable Cities and Communities
GOAL 12: Responsible Consumption & Production
GOAL 13: Climate Action
GOAL 14: Life Below Water
GOAL 15: Life on Land
GOAL 16: Peace, Justice and Strong Institutions

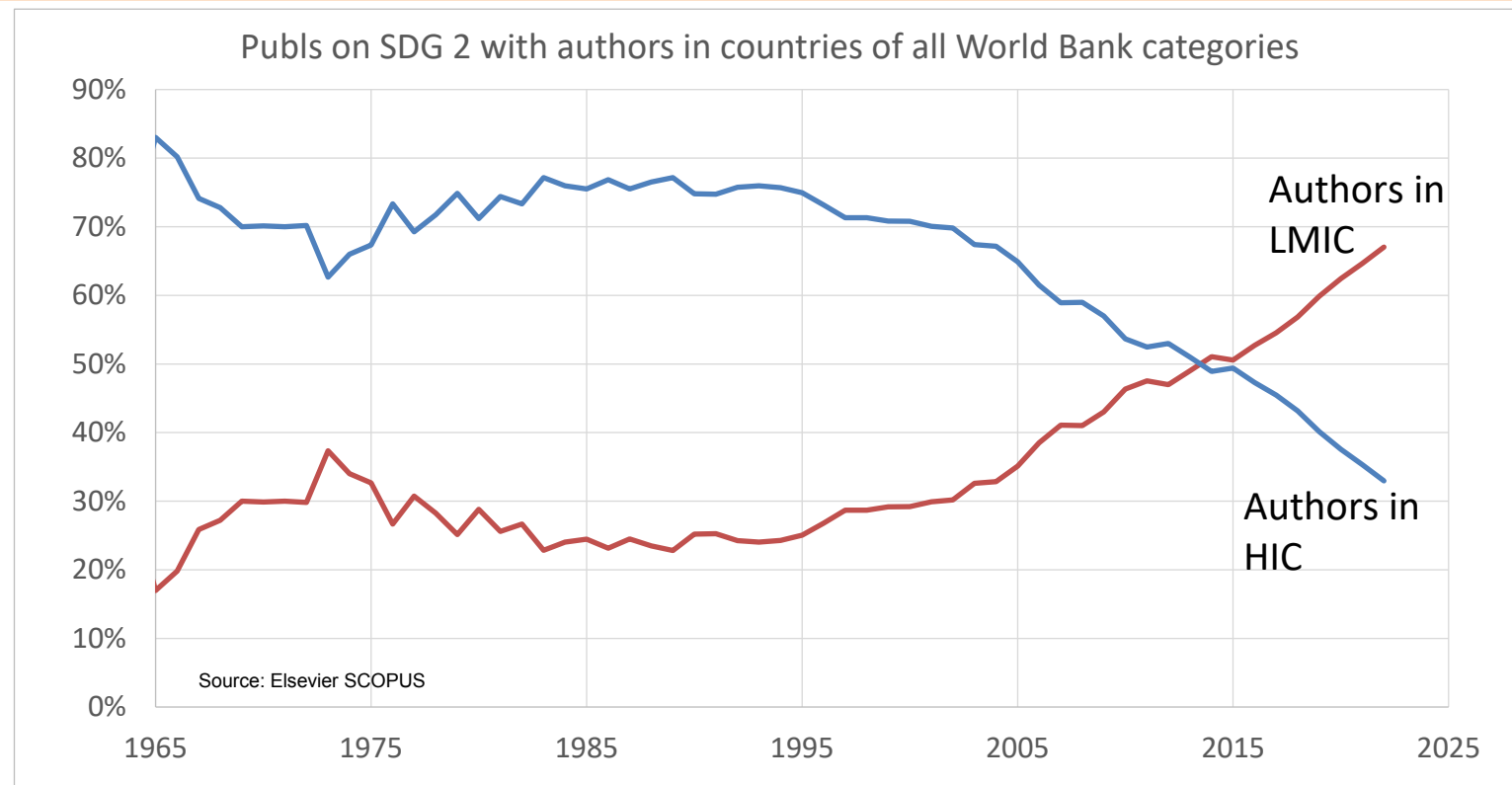
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Not showing SDG3 in the bubble chart as it wouldn't fit well being so much larger than the rest (SDG 3 has 3,400,000 papers and FWCI of 1.16 globally)

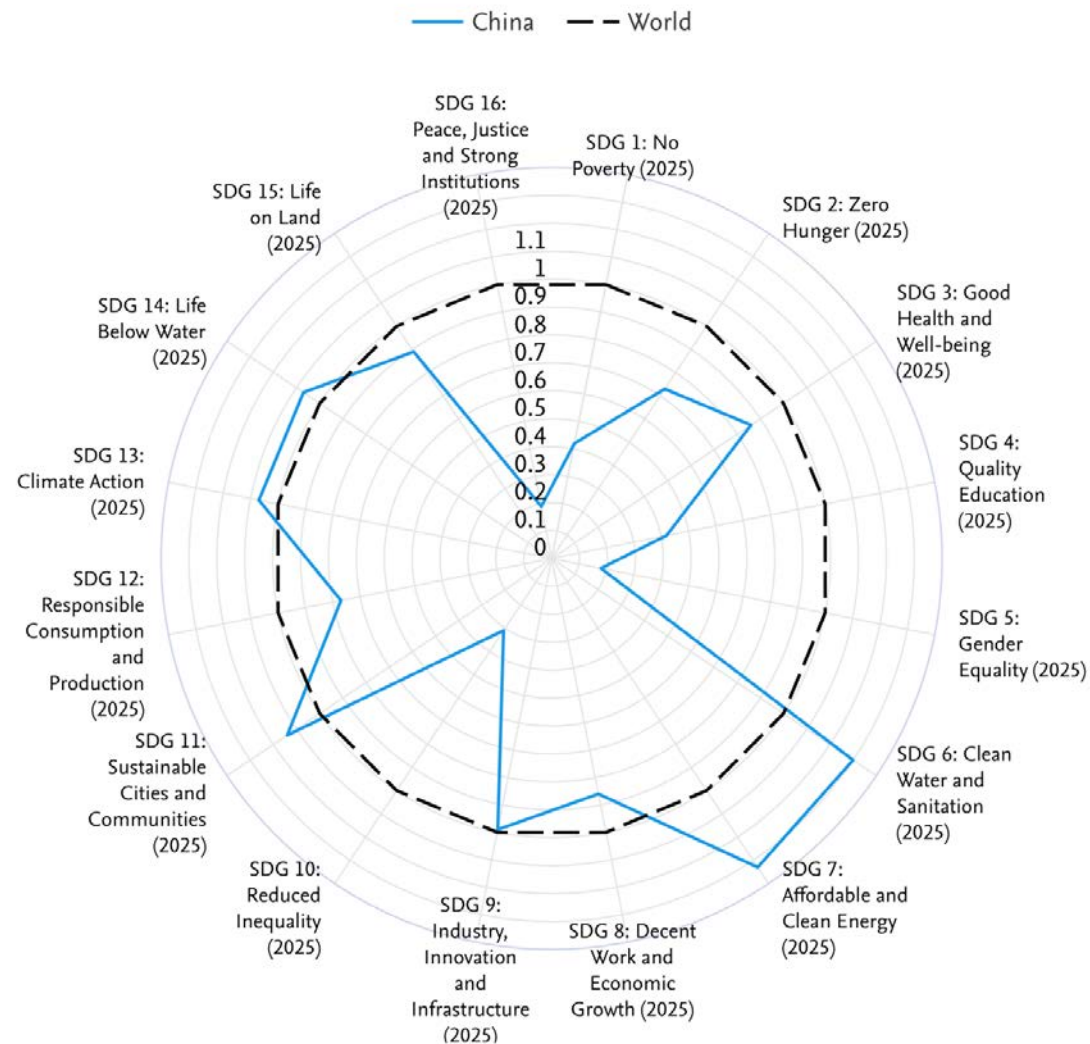
Der globale Süden priorisiert in seiner Forschung die SDGs



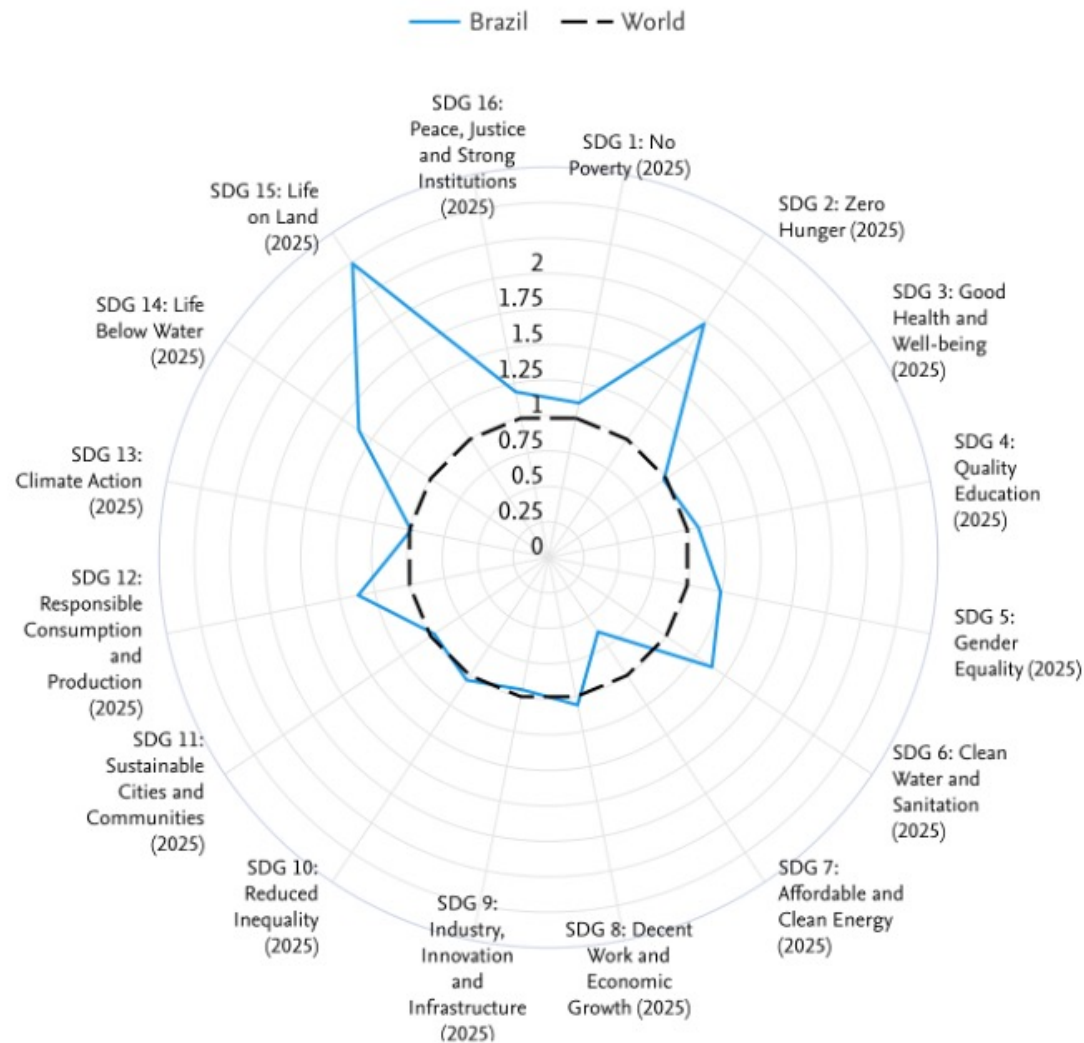
SDG 2 – Zero Hunger: publications with authors in High-Income Countries and Low-and-Middle Income Countries



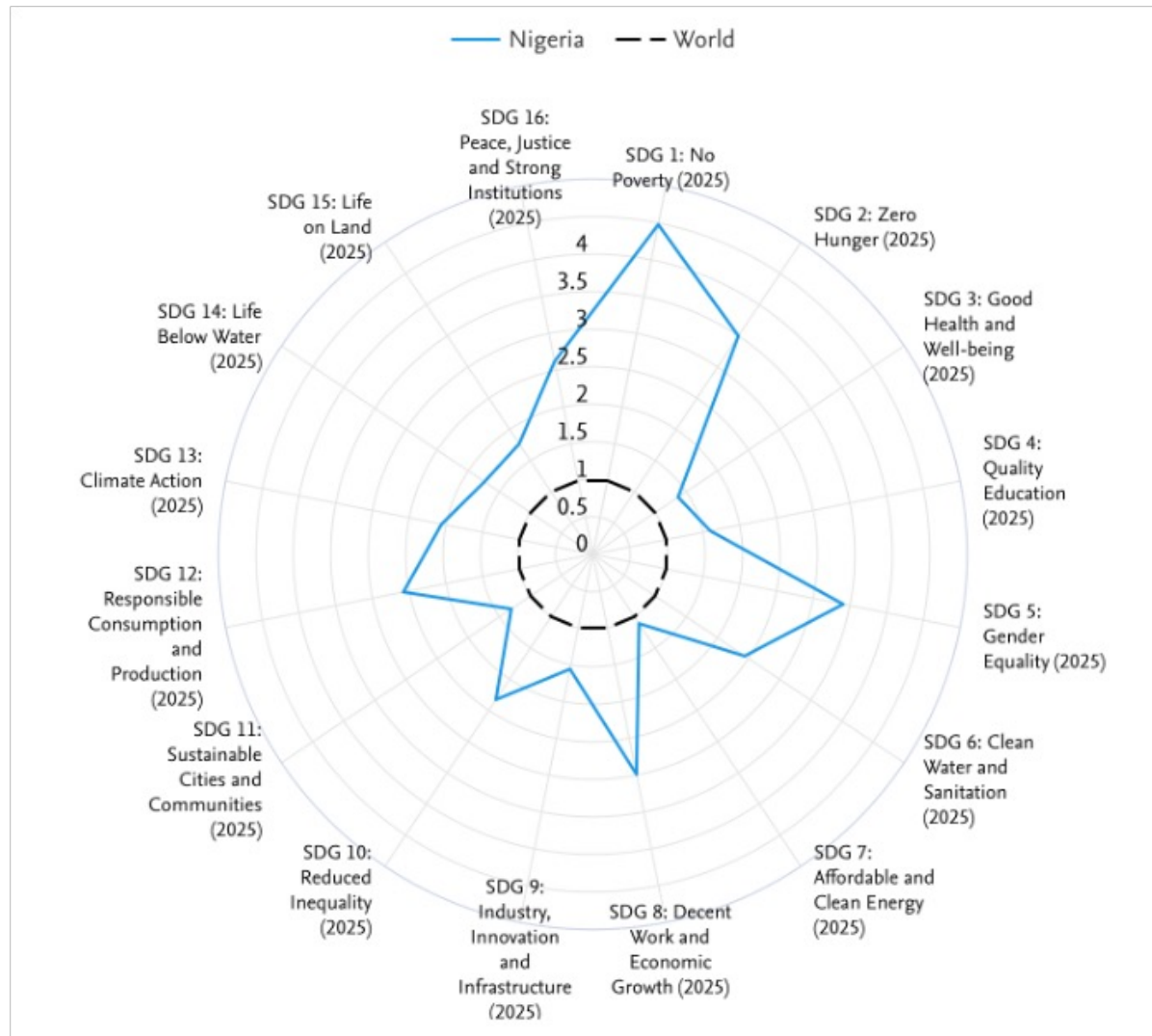
SDGs auf nationaler Ebene: China



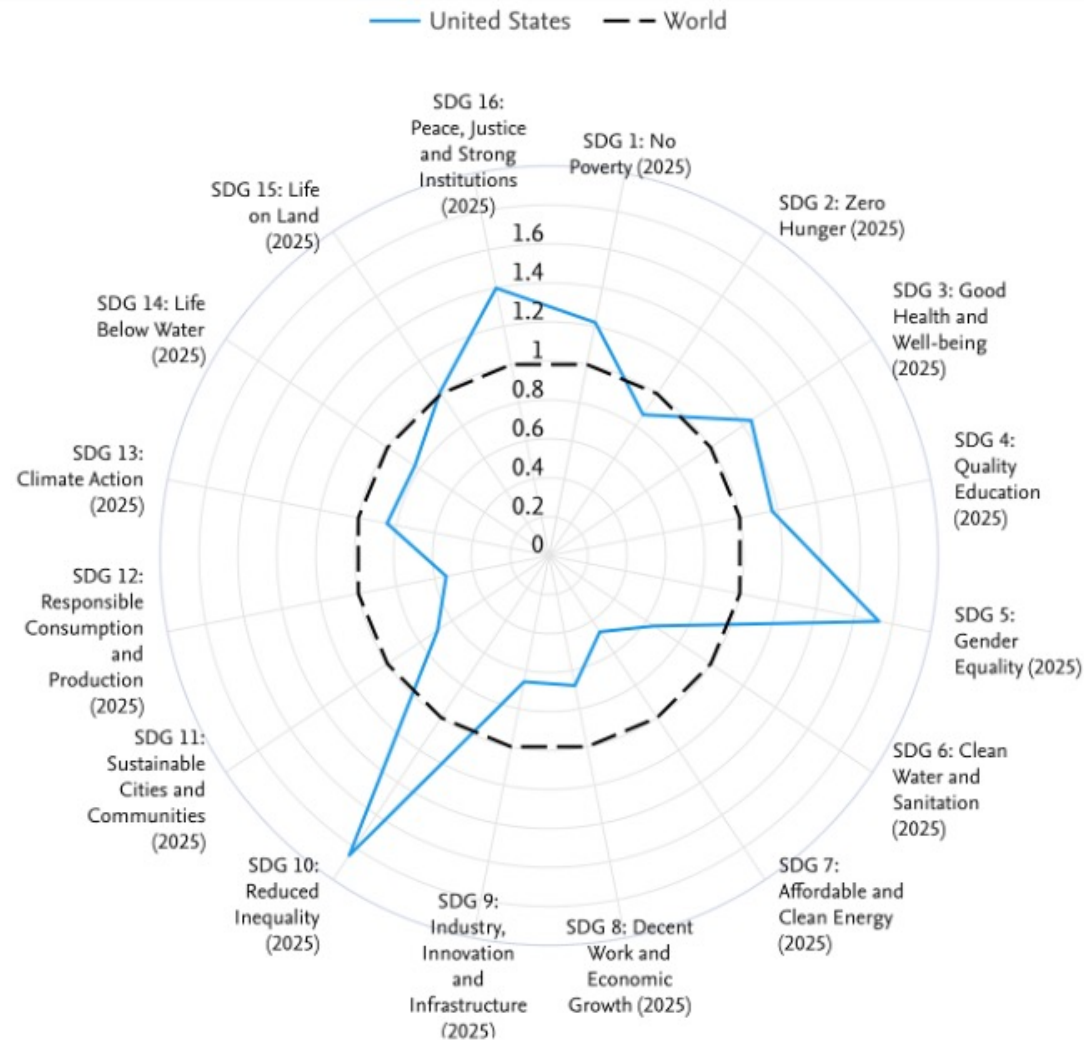
SDGs auf nationaler Ebene: Brasilien



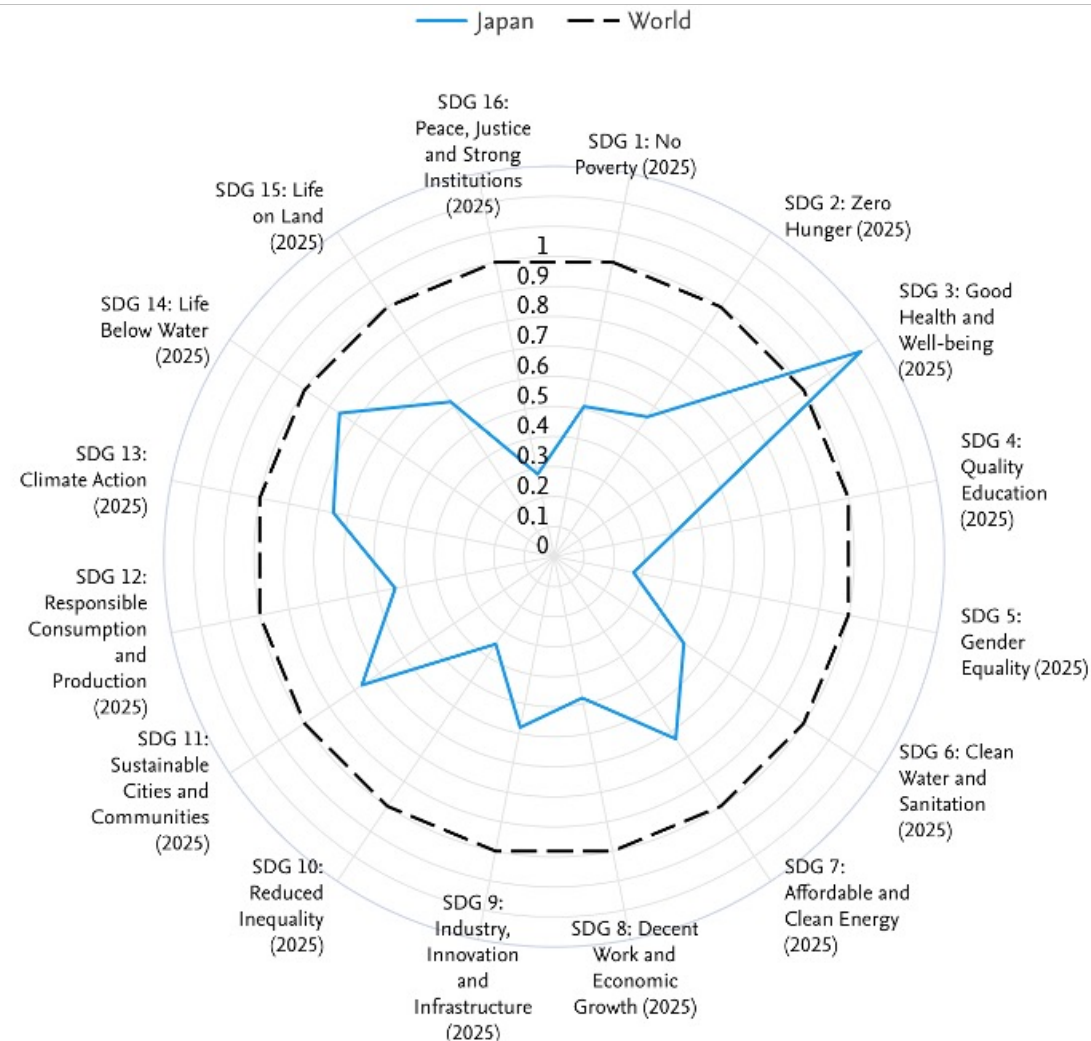
SDGs auf nationaler Ebene: Nigeria



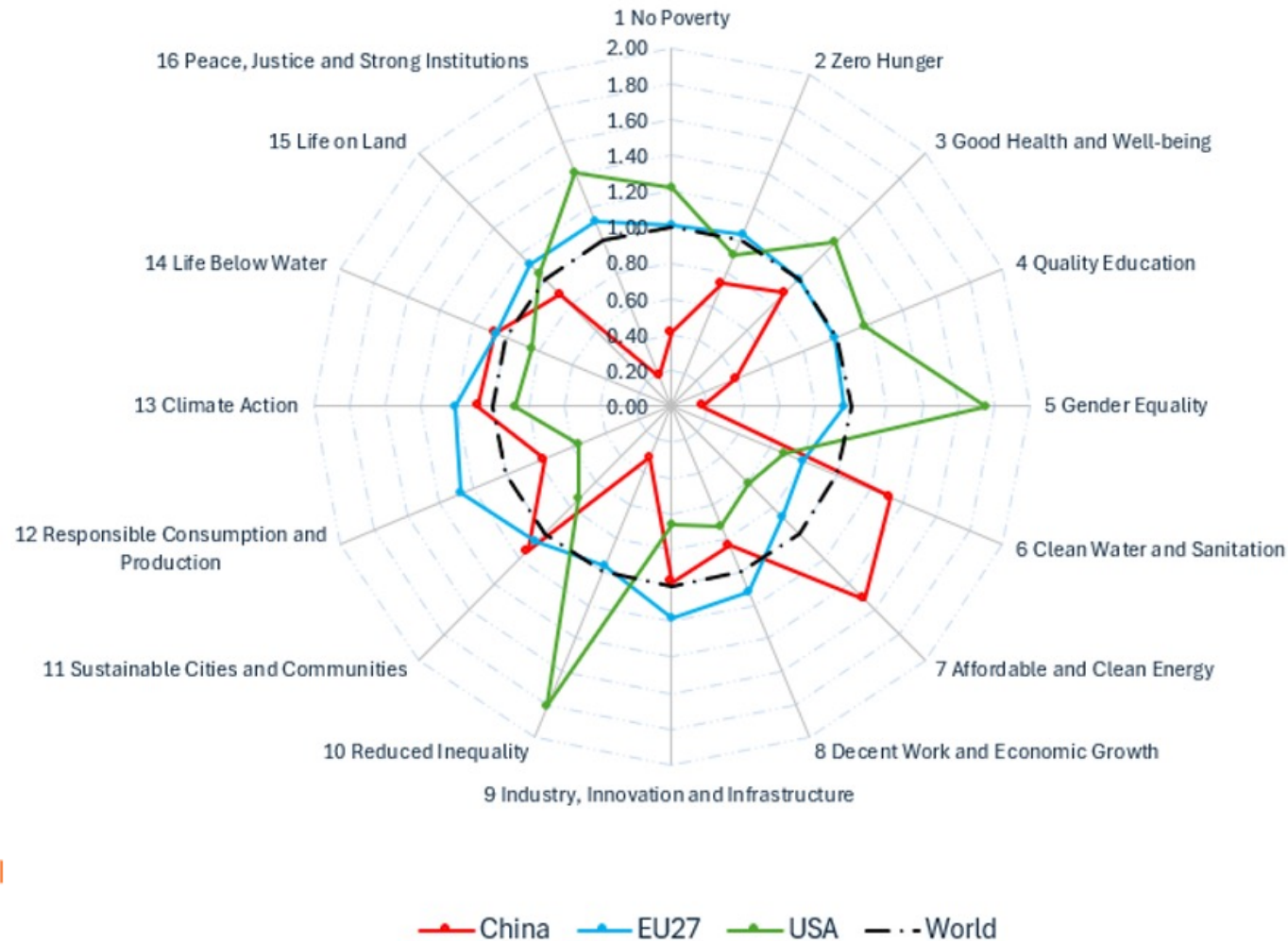
SDGs auf nationaler Ebene: USA



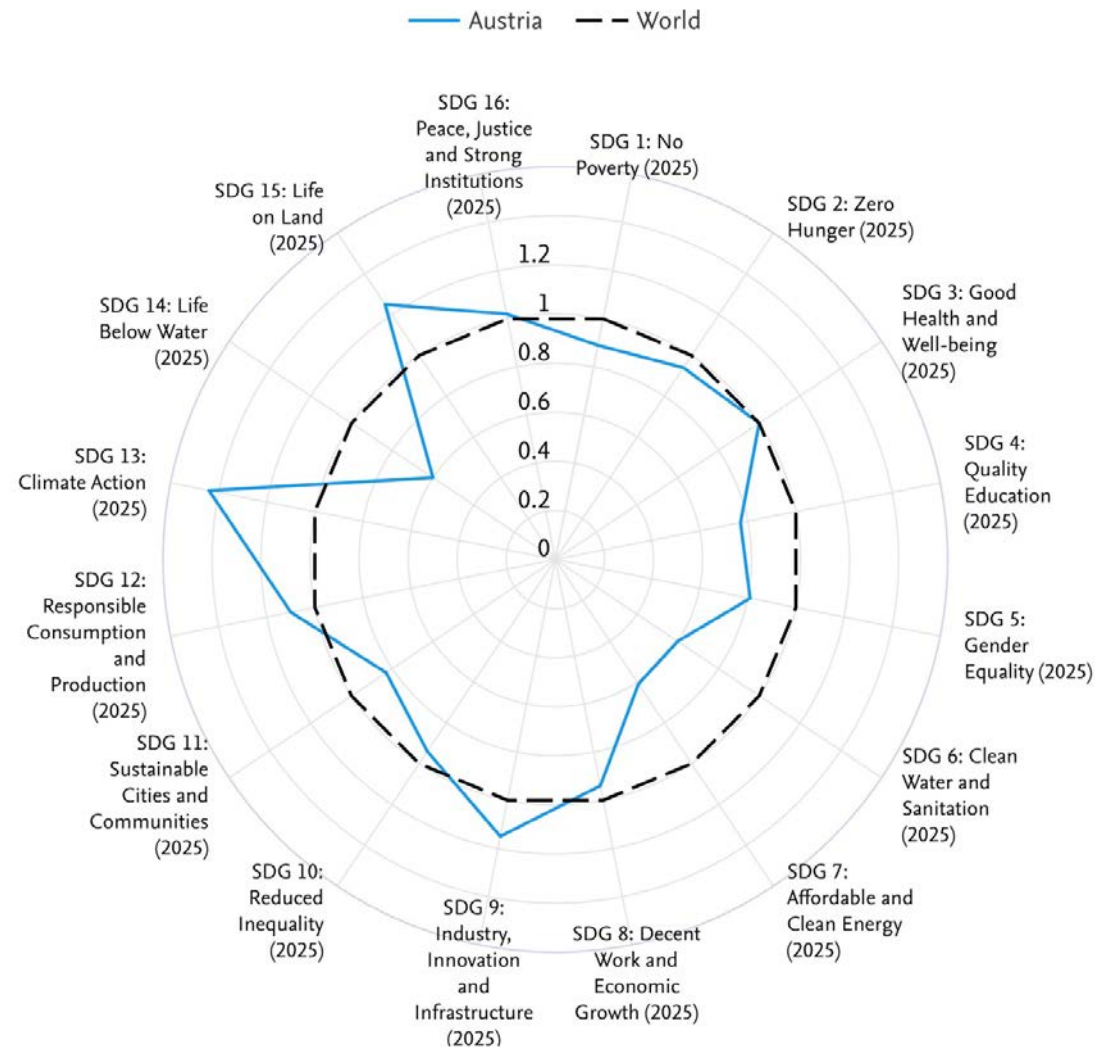
SDGs auf nationaler Ebene: Japan



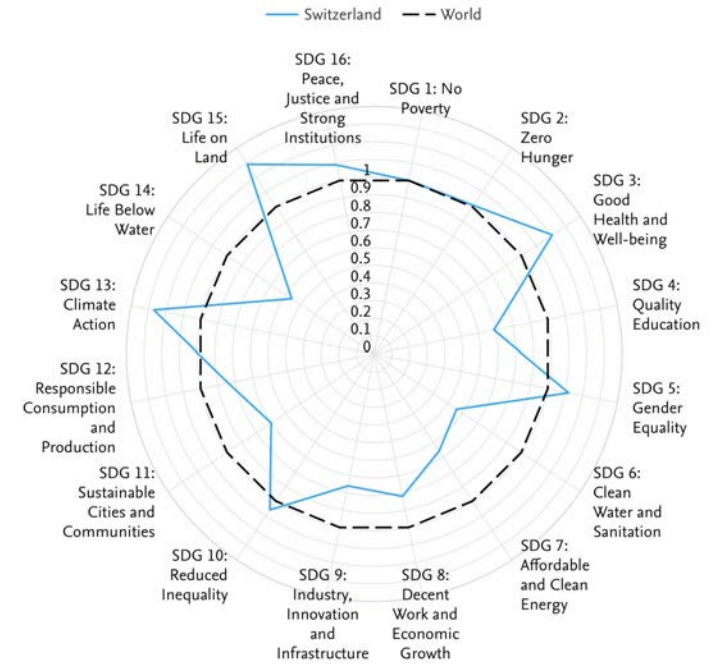
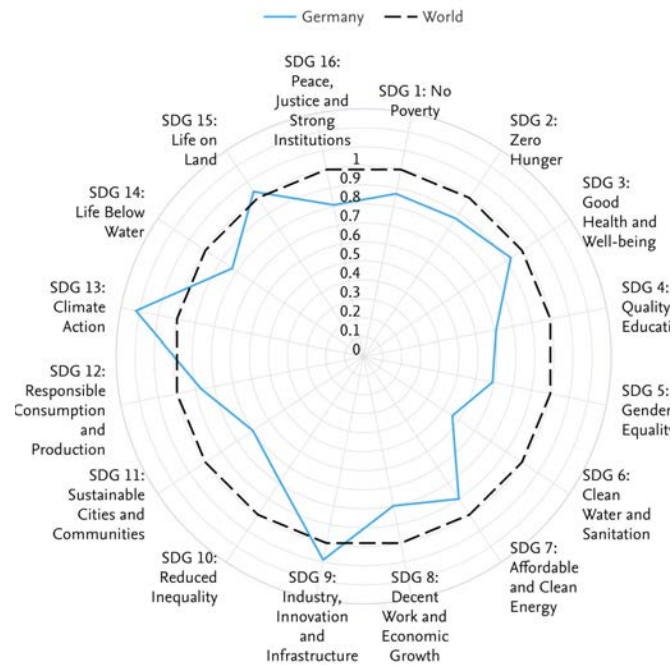
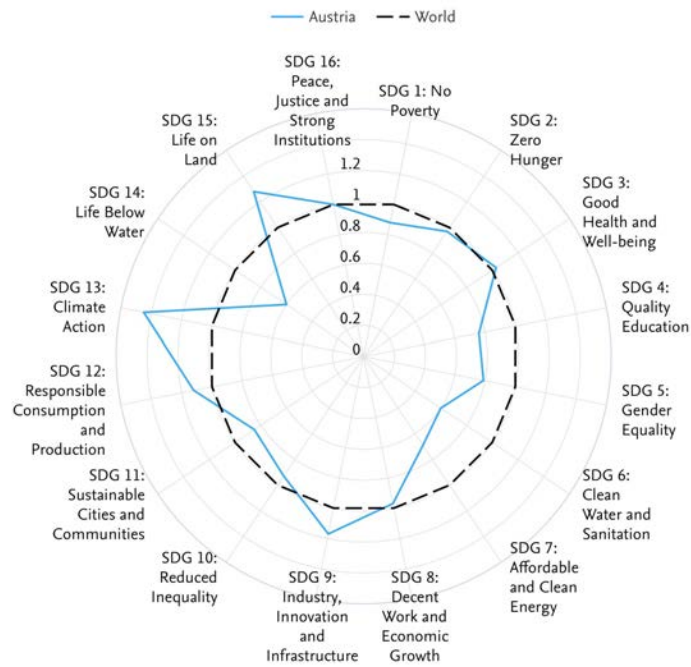
SDGs im internationalen Vergleich: EU27, USA und China



SDGs auf nationaler Ebene: Austria



Sustainable Development Goals Research | relative comparison AT, DE, CH



Austria: Research 2020-2024



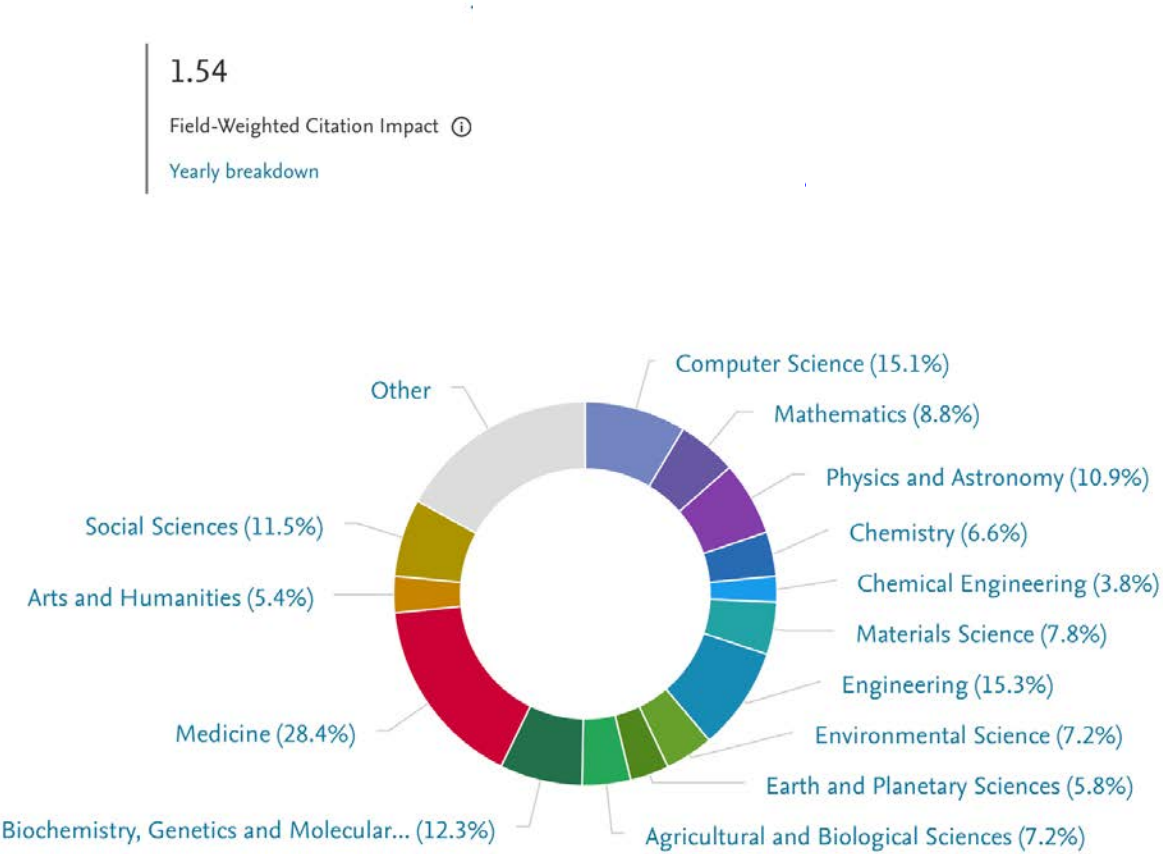
Summary

+ Add Summary to Re

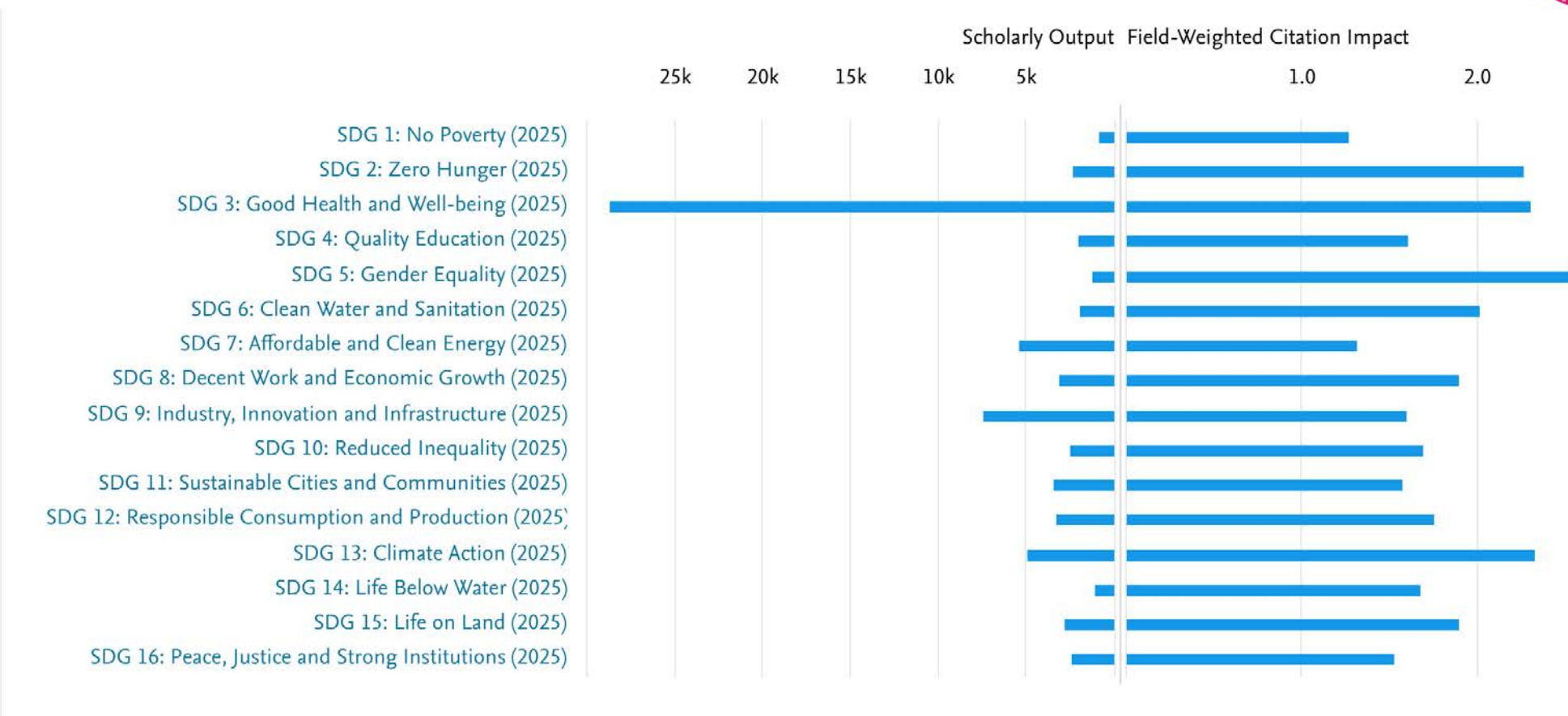
Summary metrics

170,149 ▲	92,574 ▲
Scholarly Output ⓘ	Authors
59.9% All Open Access	
View list of publications	
2,348,421	13.8
Citation Count ⓘ	Citations per Publication ⓘ

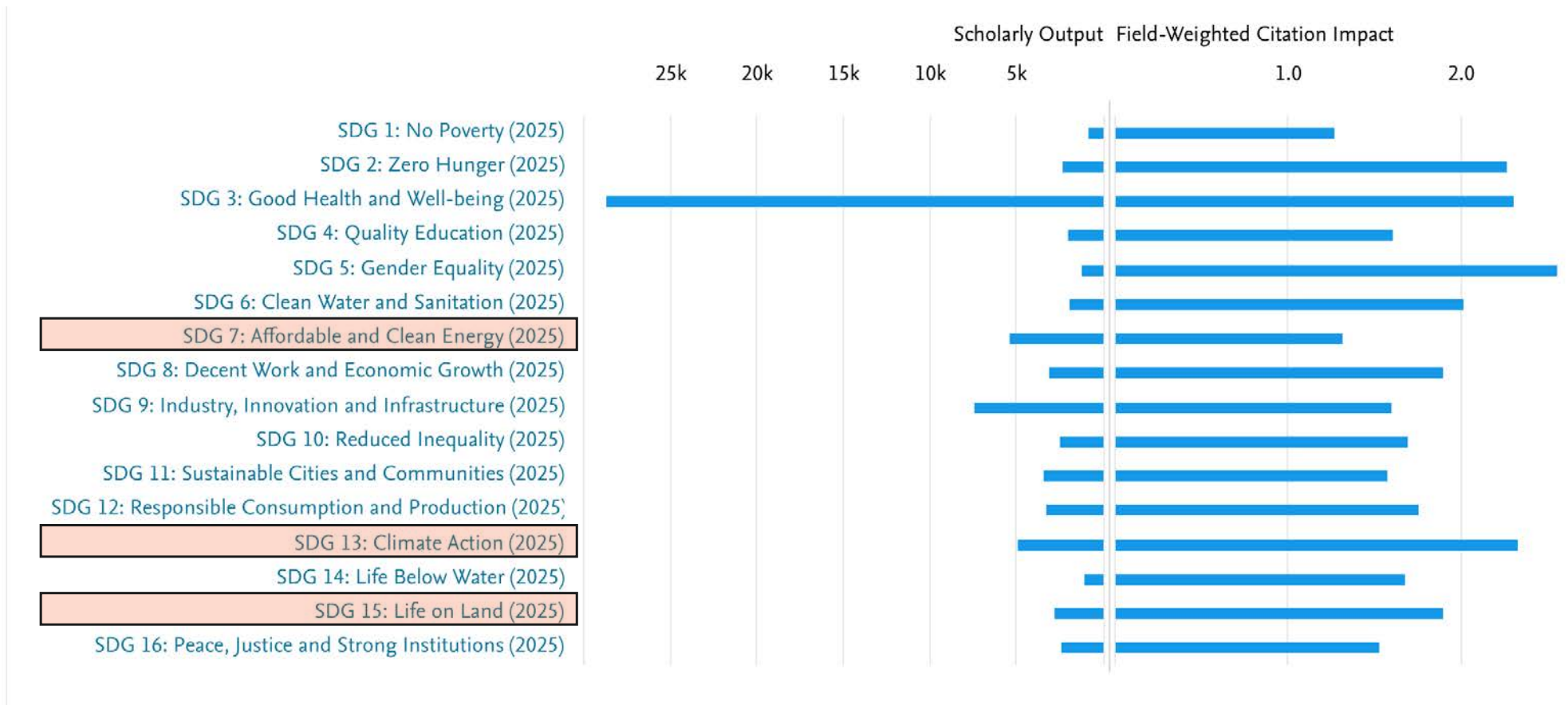
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SDGs: volume of Research and FWCI in Austria



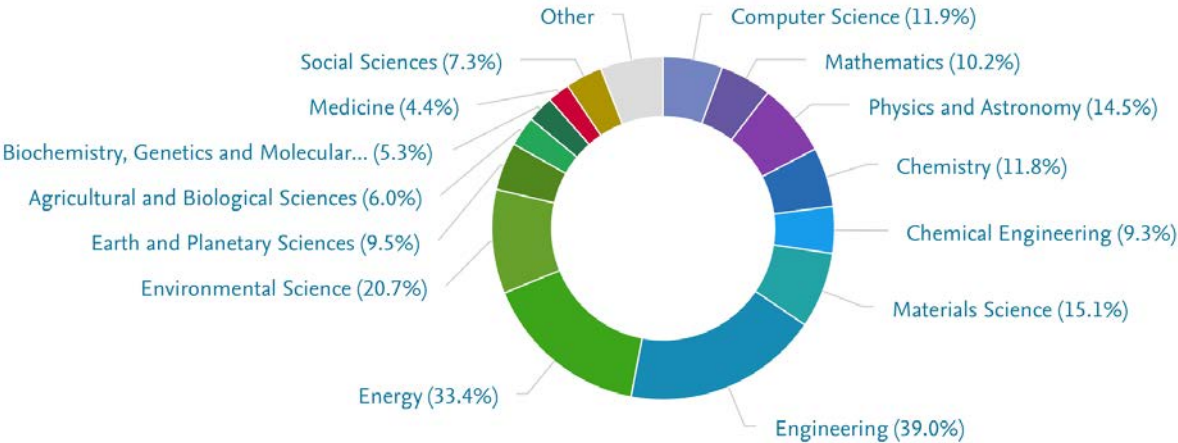
SDGs: volume of Research and FWCI in Austria



Austria: SDG 7- Affordable and Clean Energy



	Institution	Scholarly Output
1.	☐ AUT TU Wien	1,093
2.	☐ AUT Graz University of Technology	873
3.	☐ AUT University of Natural Resources and Life Sciences, Vienna	454
4.	☐ AUT University of Leoben	431
5.	☐ AUT Austrian Institute of Technology	375



Keyphrase analysis

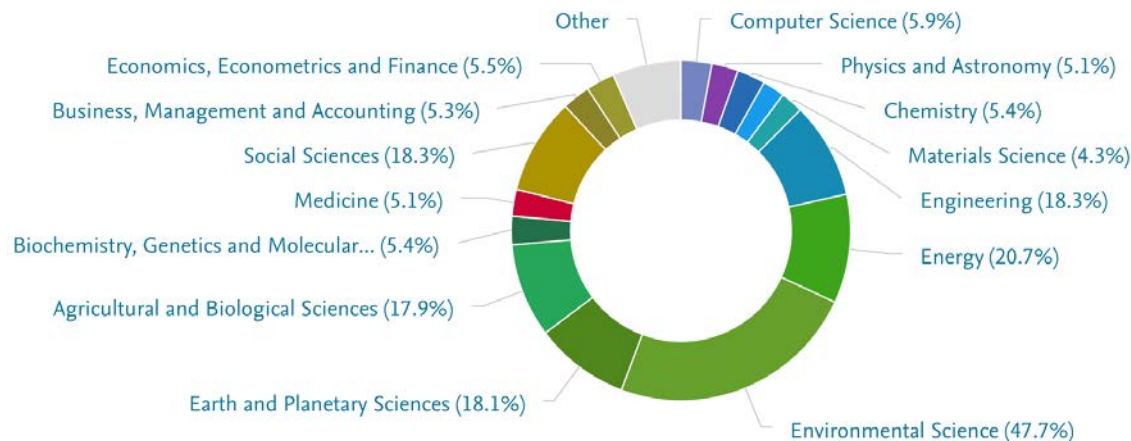


AAA relevance of keyphrase | declining AAA growing (2020-2024)

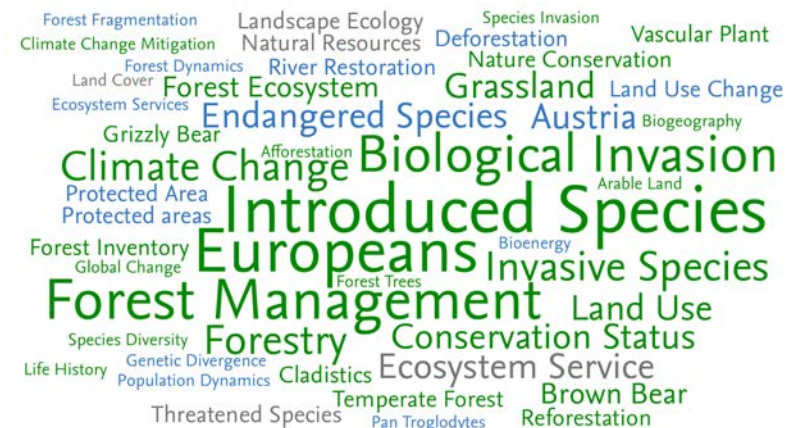
Austria: SDG 13- Climate Action



	☐	Institution	Scholarly Output ↓
1.	☐	AUT International Institute for Applied Systems Analysis, Laxenburg	1,698
2.	☐	AUT University of Natural Resources and Life Sciences, Vienna	1,231
3.	☐	AUT University of Vienna	803
4.	☐	AUT TU Wien	650
5.	☐	AUT University of Innsbruck	647

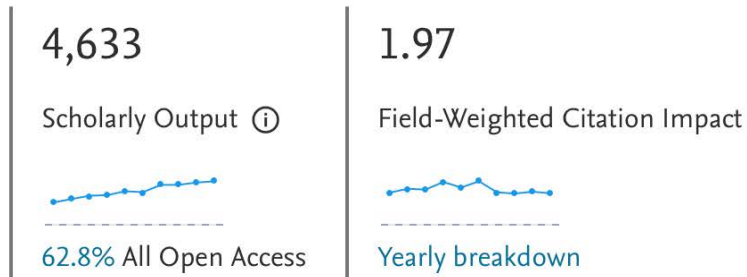


Keyphrase analysis

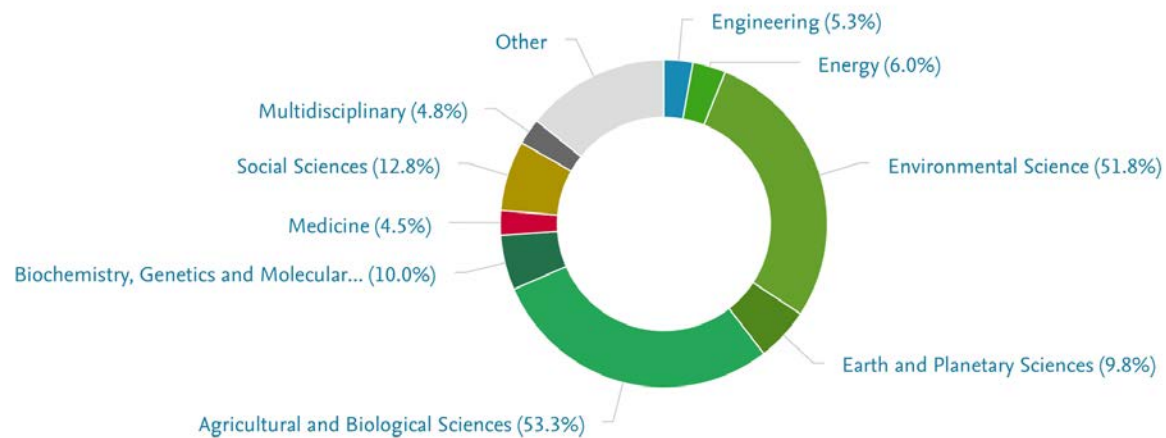


AAA relevance of keyphrase | declining A A A growing (2015-2024)

Austria: SDG 15 - Life on Land



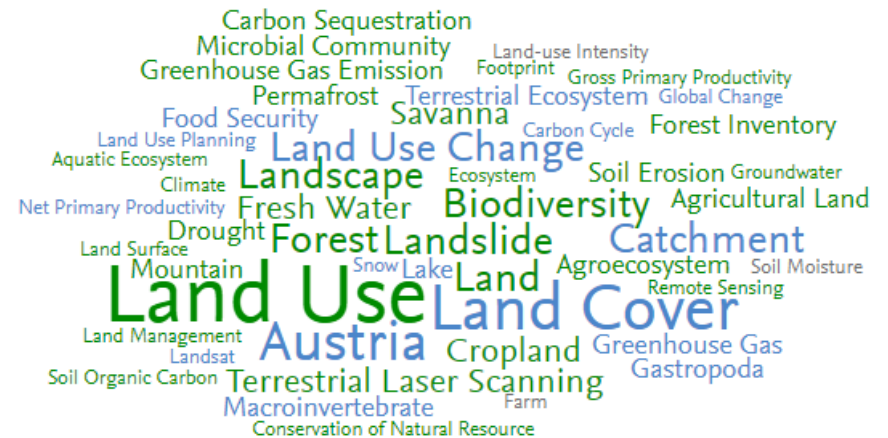
Publications in Austria within SDG 15: Life on Land range across 224 topic clusters



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	☐	Institution	Scholarly Output 
1.	☐	AUT University of Natural Resources and Life Sciences, Vienna	1,265
2.	☐	AUT University of Vienna	1,067
3.	☐	AUT International Institute for Applied Systems Analysis, Laxenburg	449
4.	☐	AUT University of Innsbruck	321

Keyphrase analysis

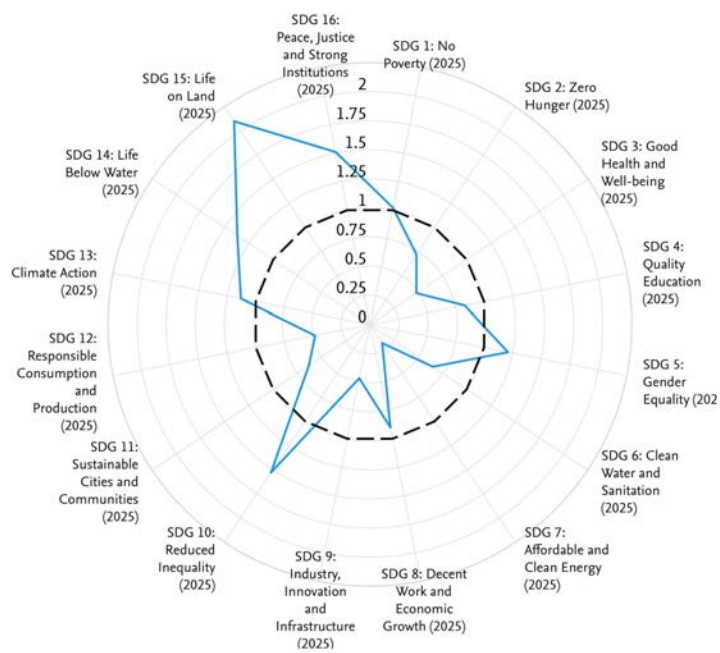


A A A relevance of keyphrase | declining A A A growing (2015-2019)

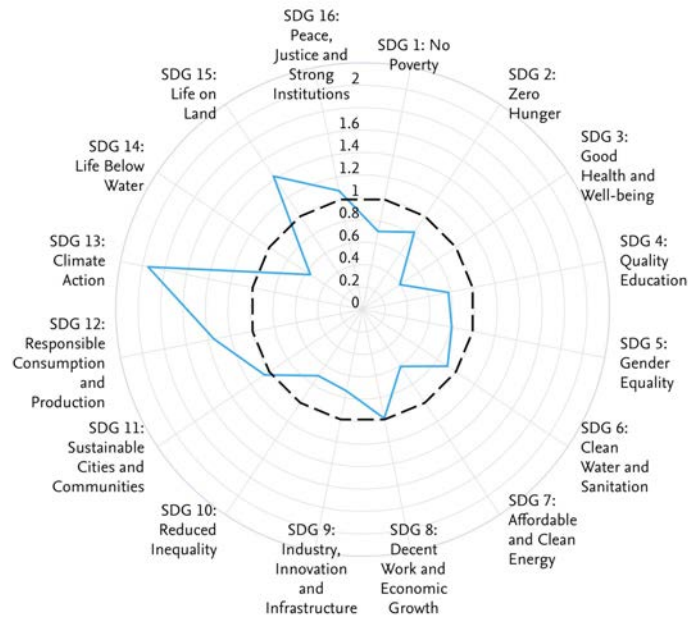
Sustainable Development Goals Research | select Austrian universities



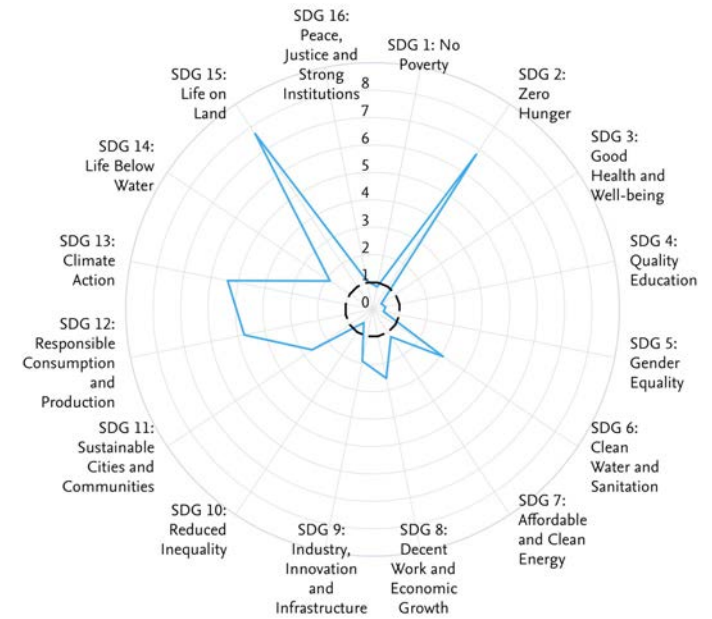
— University of Vienna — World



— University of Innsbruck — World



— University of Natural Resources and Life Sciences, Vienna — World



Danke... Fragen?



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