

Scientific Aspects of South-South Cooperation and BRICS Partnerships for Social, Economic and Environmental Development

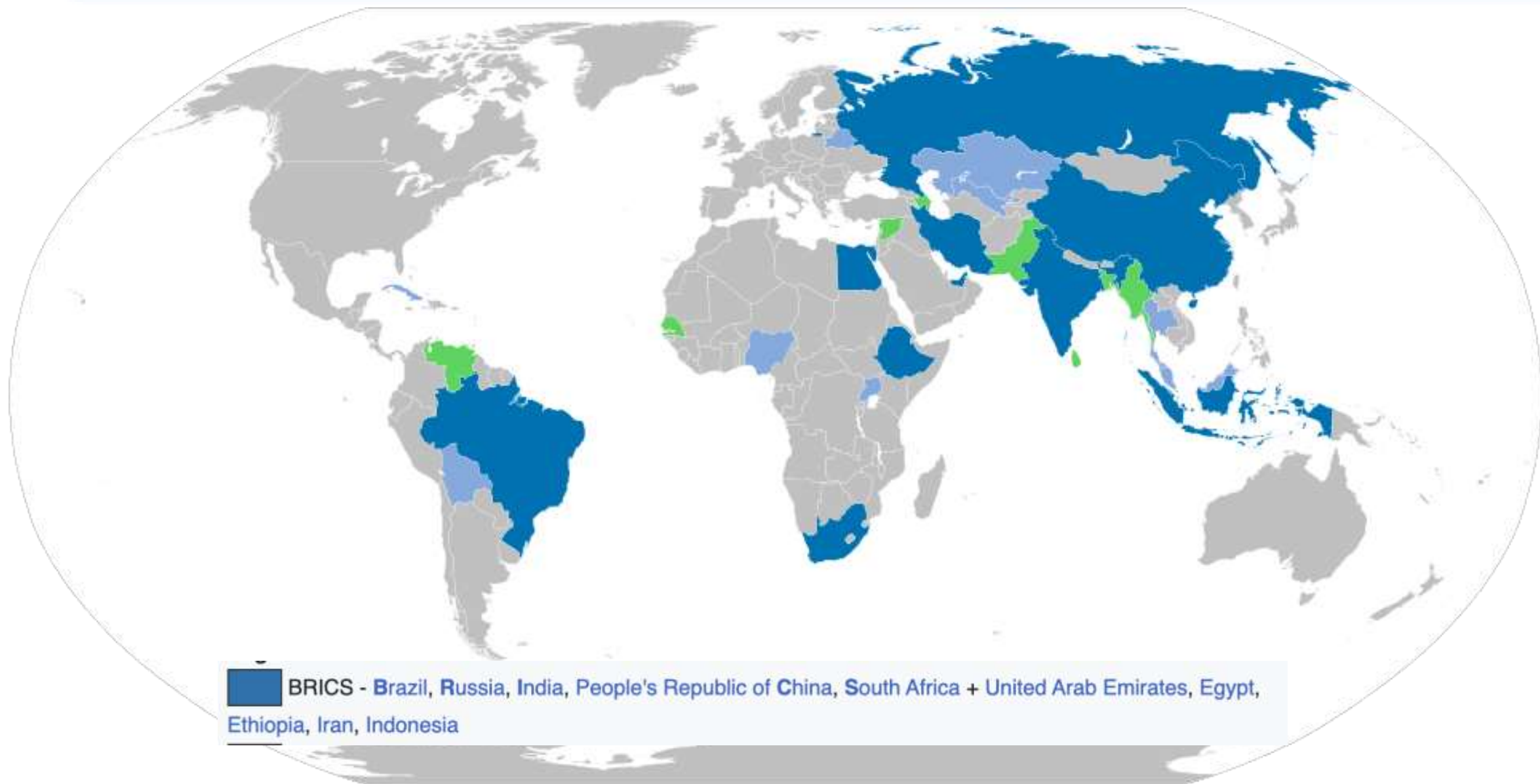
Prof. Odir Dellagostin
Federal University of Pelotas



BRICS member Countries

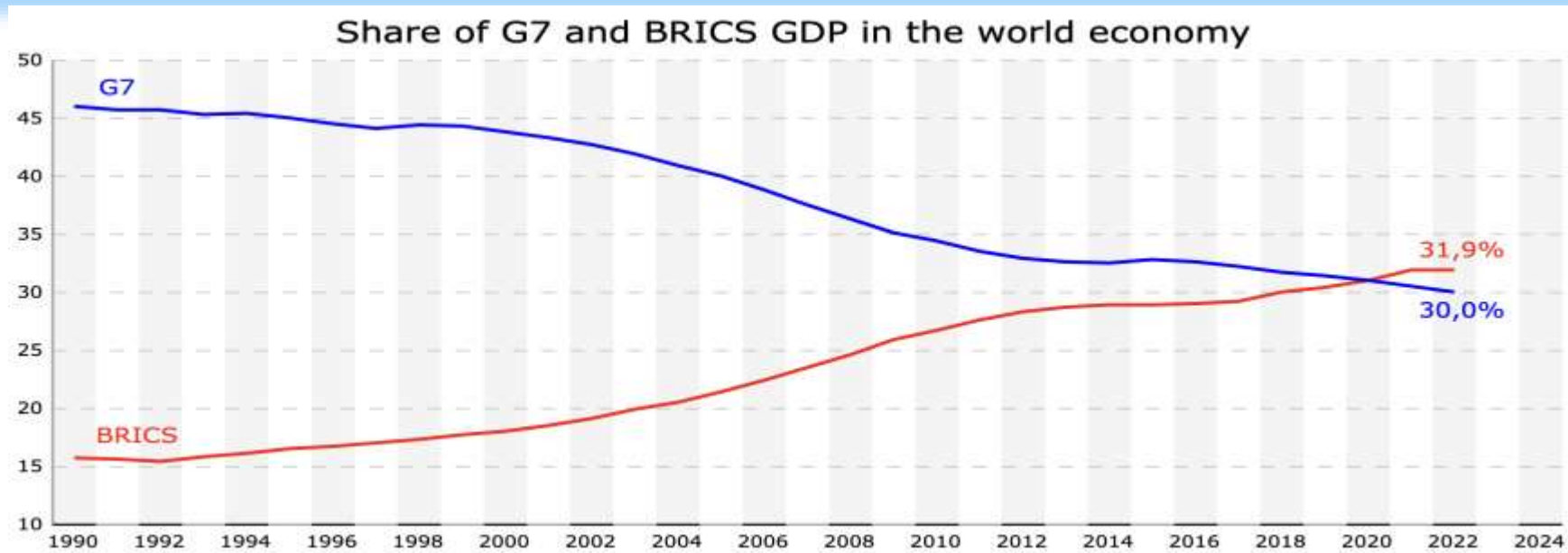
	Brazil
	Russia
	India
	People's Republic of China
	South Africa
	Egypt
	Ethiopia
	Indonesia
	Iran
	United Arab Emirates



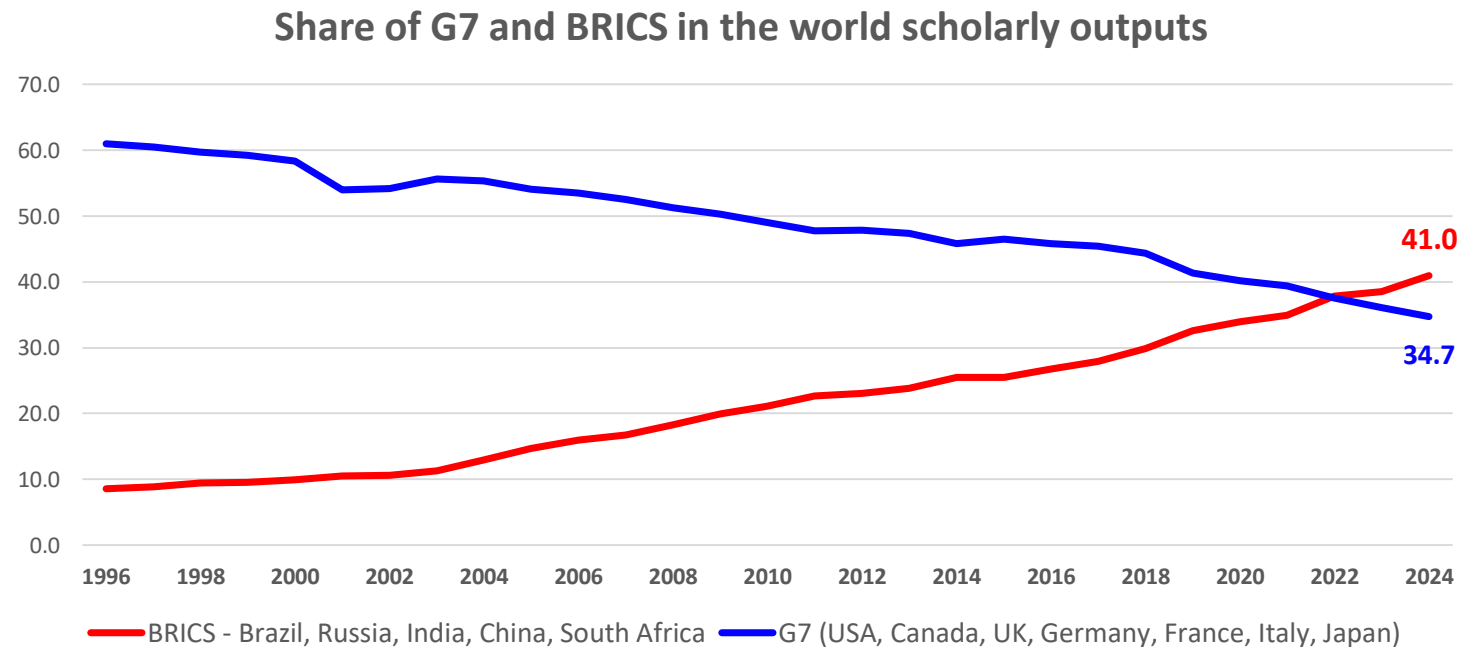


BRICS *partners* - Belarus, Bolivia, Cuba, Kazakhstan, Malaysia, Nigeria, Thailand, Uganda and Uzbekistan.

G7 vs BRICS: Economy and Knowledge Production

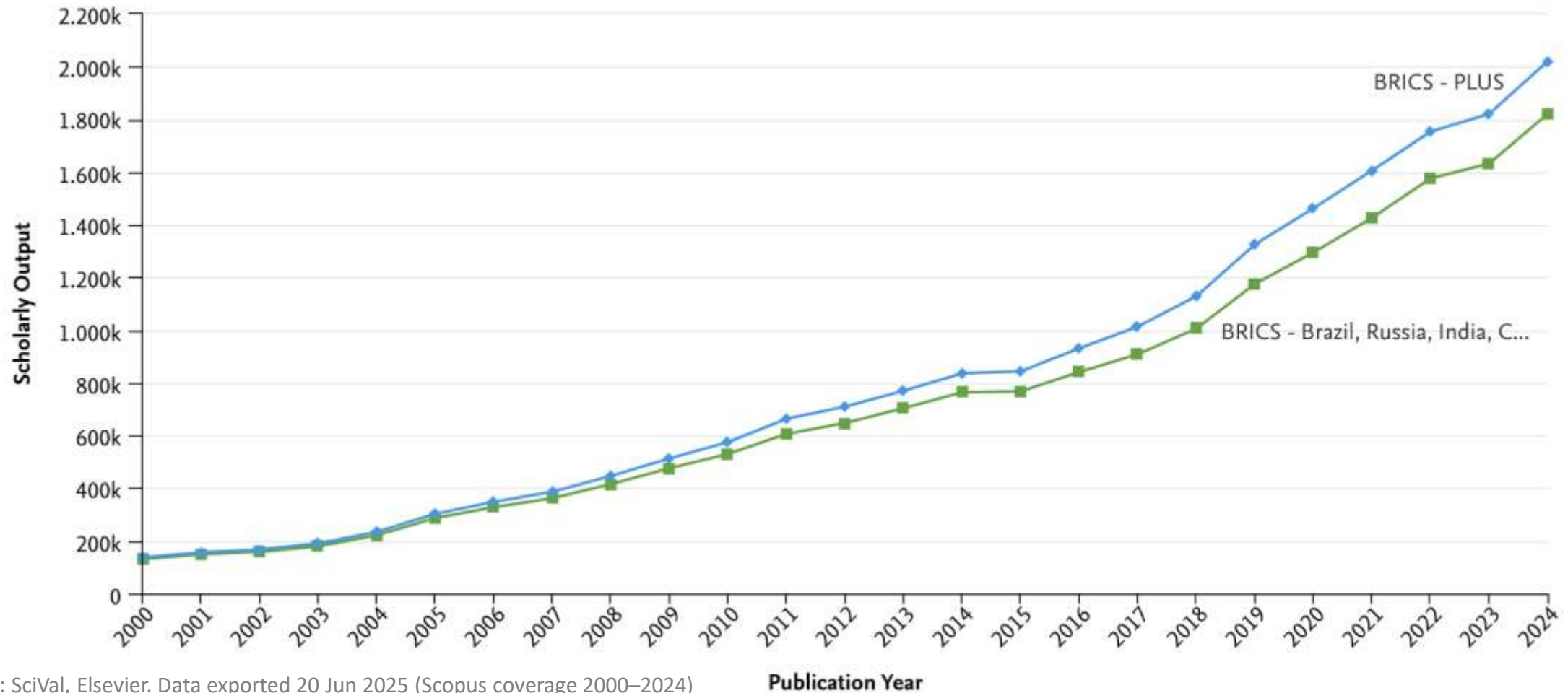


Source:
https://en.wikipedia.org/wiki/BRICS#/media/File:GDP_BRICS_G7.svg



Source: SciVal, data exported 20 Jun 2025

Scholarly Output Trajectory of BRICS and BRICS-Plus Nations (2000 – 2024)



Source: SciVal, Elsevier. Data exported 20 Jun 2025 (Scopus coverage 2000–2024)



Select entities

Search all entities in SciVal

+ Define entity

Benchmark all metrics

1996 - 2024 ▾

All subject areas

ASJC ▾

Load Metric set ▾

Save metric set

y-axis ▾

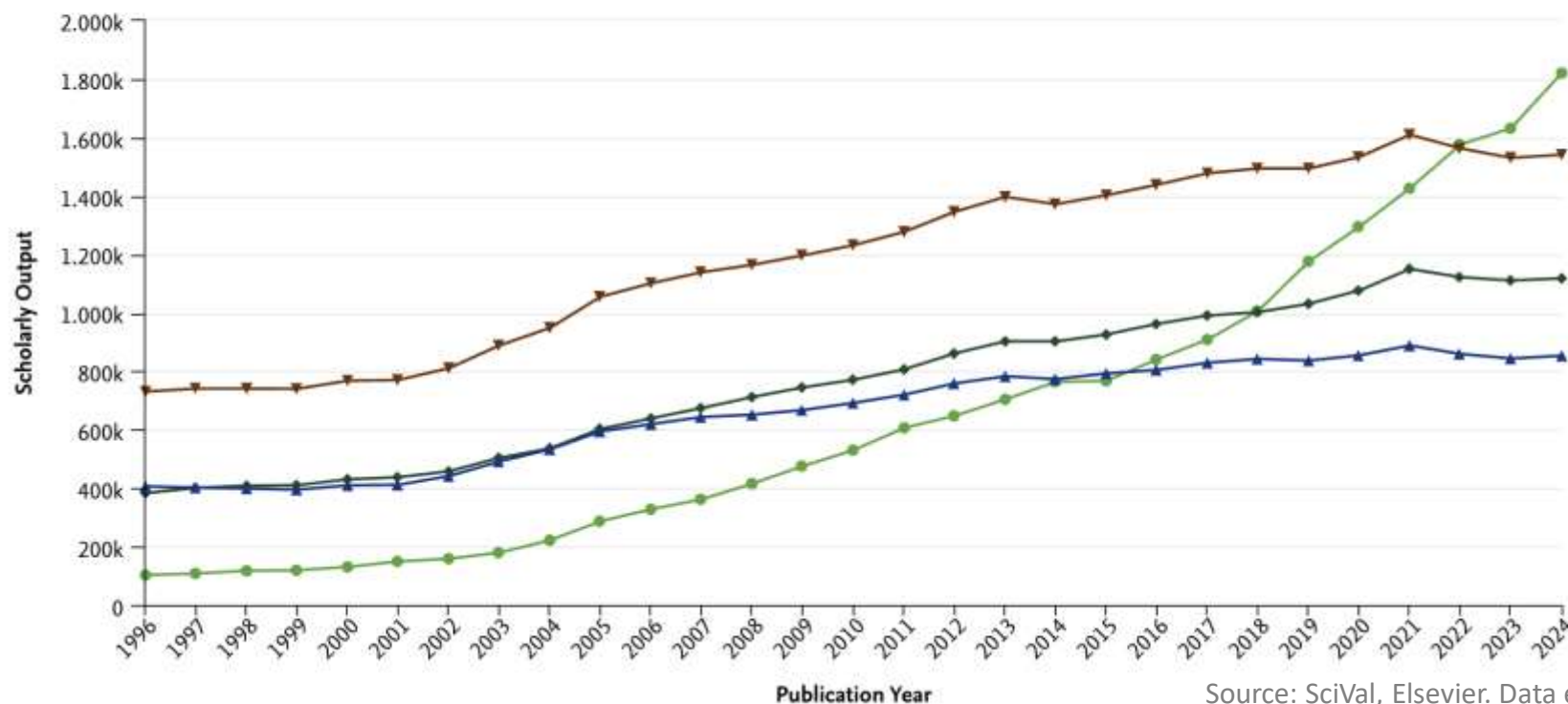
Scholarly Output ⚙

x-axis ▾

Publication Year

Bubble size ▾

Not available



Entities

- ▼ G7
- ◆ EU28 - European Union and UK
- ▲ United States and Canada
- BRICS - Brazil, Russia, India, China, South Africa

Hide all chart labels

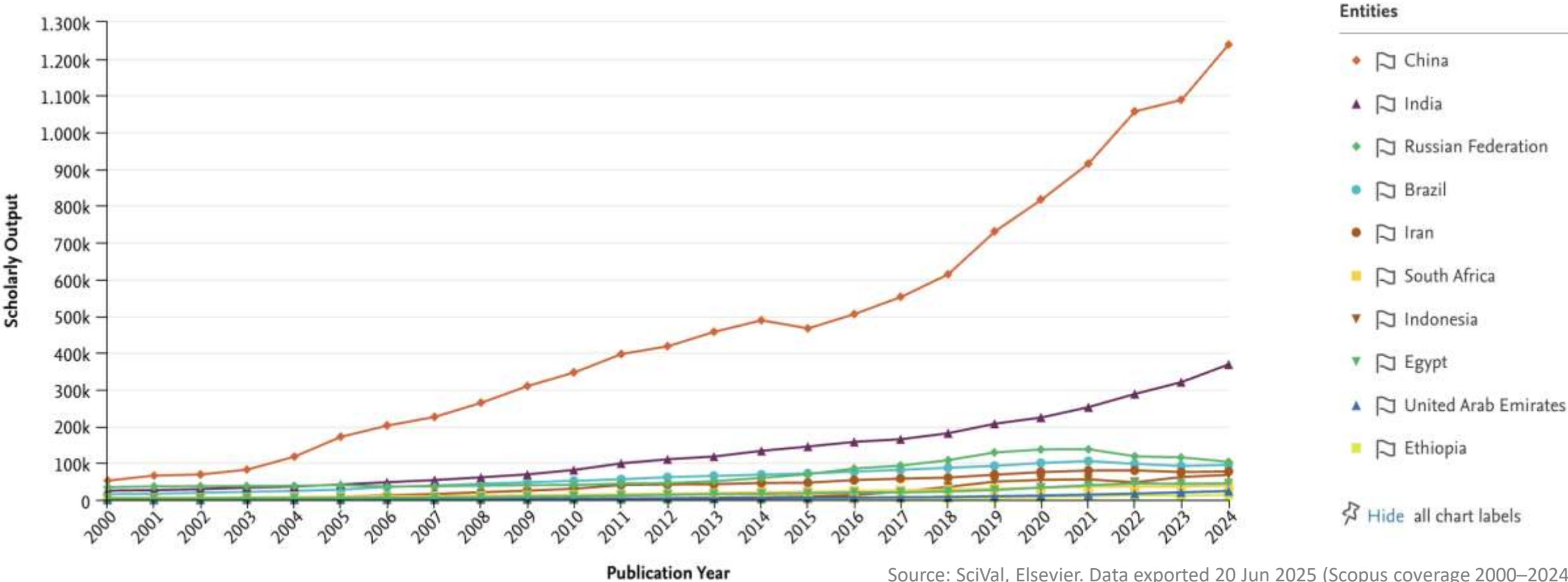
View list of Scopus Sources for the selected Researcher

Benchmark all metrics

2000 - 2024 ☐ All subject areas ☐ ASJC

☐ Load Metric set ☐ Save metric set

☐ y-axis ☐ x-axis ☐ Bubble size ☐ Scholarly Output Publication Year Not available



Source: SciVal, Elsevier. Data exported 20 Jun 2025 (Scopus coverage 2000–2024)

Benchmark all metrics

2000 - 2024



All subject areas



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y-axis

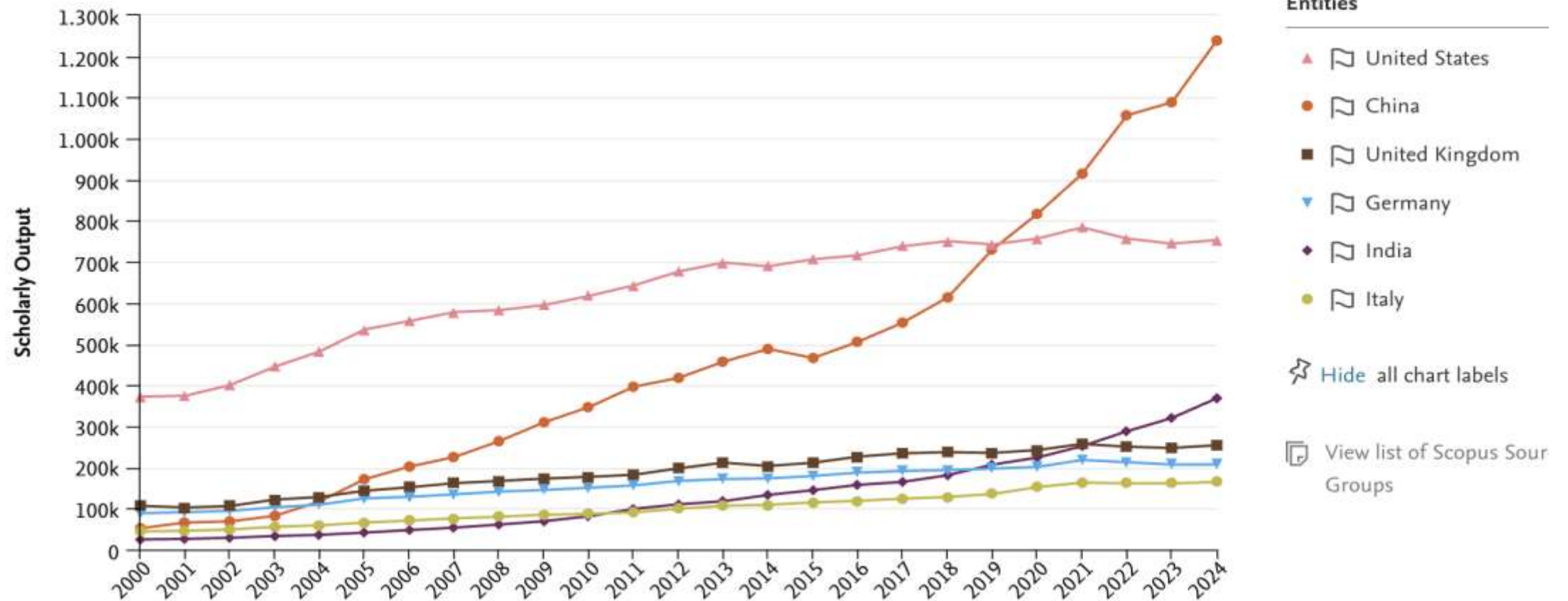
Scholarly Output

x-axis

Publication Year

Bubble size

Not available



Entities

- United States
- China
- United Kingdom
- Germany
- India
- Italy

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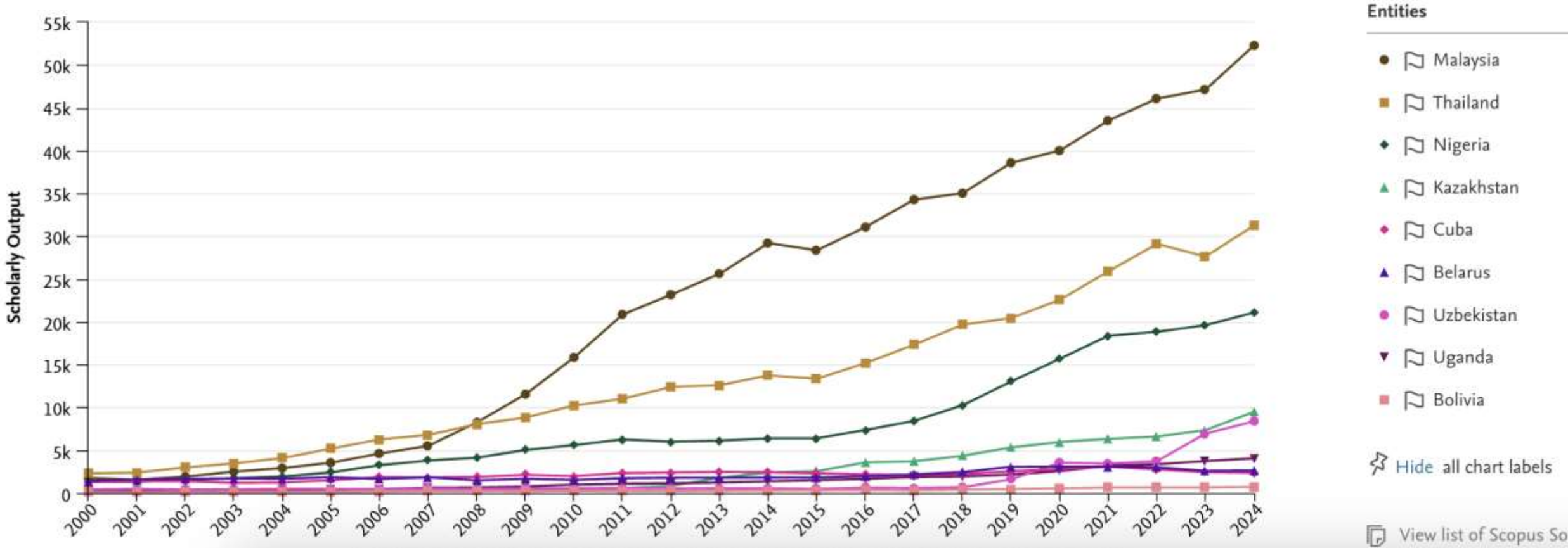
View list of Scopus Sour Groups

Benchmark all metrics

2000 - 2024 All subject areas

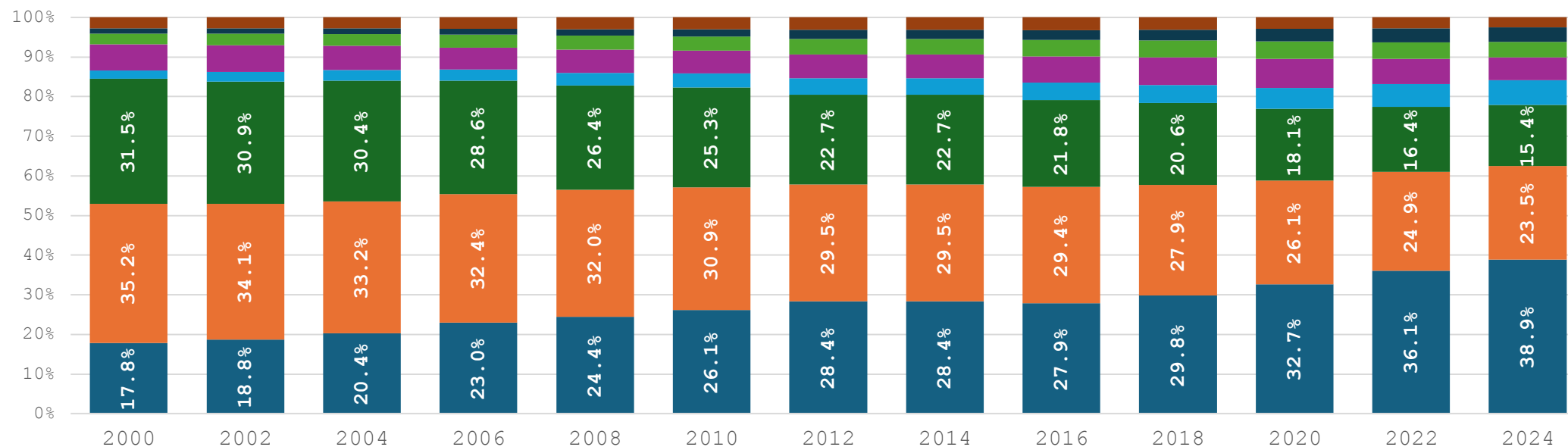
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y-axis x-axis Bubble size
Scholarly Output Publication Year Not available



Global Shift in Scholarly Output – Regional Shares, 2000 - 2024

Region	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020	2022	2024
Asiatic Region	17,8%	18,8%	20,4%	23,0%	24,4%	26,1%	28,4%	28,4%	27,9%	29,8%	32,7%	36,1%	38,9%
Western Europe	35,2%	34,1%	33,2%	32,4%	32,0%	30,9%	29,5%	29,5%	29,4%	27,9%	26,1%	24,9%	23,5%
Northern America	31,5%	30,9%	30,4%	28,6%	26,4%	25,3%	22,7%	22,7%	21,8%	20,6%	18,1%	16,4%	15,4%
Middle East	2,1%	2,4%	2,7%	2,8%	3,2%	3,6%	4,1%	4,1%	4,5%	4,6%	5,3%	5,8%	6,3%
Eastern Europe	6,6%	6,7%	6,2%	5,6%	5,8%	5,6%	6,0%	6,0%	6,6%	7,0%	7,3%	6,4%	5,8%
Latin America	2,7%	3,0%	3,0%	3,3%	3,6%	3,6%	3,9%	3,9%	4,1%	4,3%	4,5%	4,1%	3,9%
Africa	1,3%	1,3%	1,4%	1,5%	1,6%	1,8%	2,3%	2,3%	2,5%	2,7%	3,1%	3,5%	3,6%
Pacific Region	2,8%	2,8%	2,8%	2,9%	3,0%	3,0%	3,2%	3,2%	3,3%	3,1%	2,9%	2,8%	2,6%



■ Asiatic Region
■ Western Europe
■ Northern America
■ Middle East⁺
■ Eastern Europe
■ Latin America
■ Africa
■ Pacific Region

Source: SciVal, Elsevier. Data exported 20 Jun 2025 (Scopus coverage 2000–2024)

Brazil

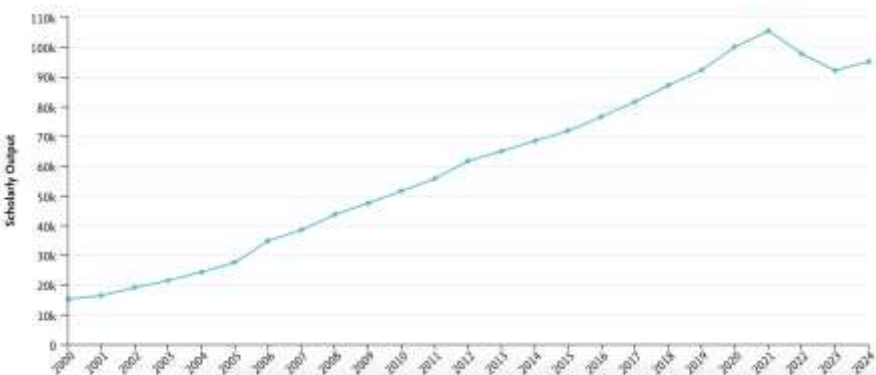
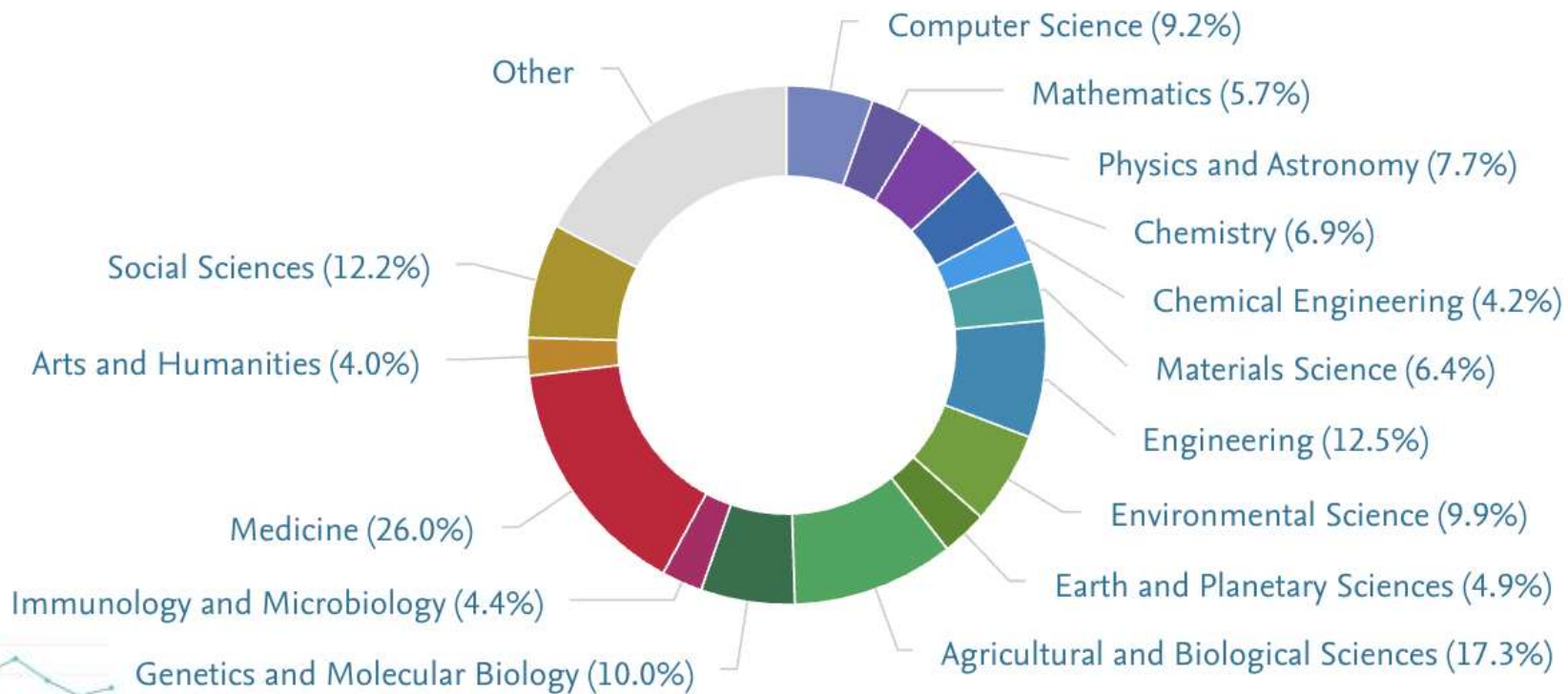
2020 to 2024



All subject areas



ASJC



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📄 Russian Federation

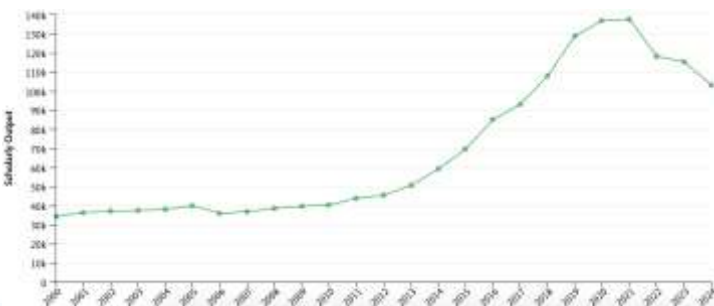
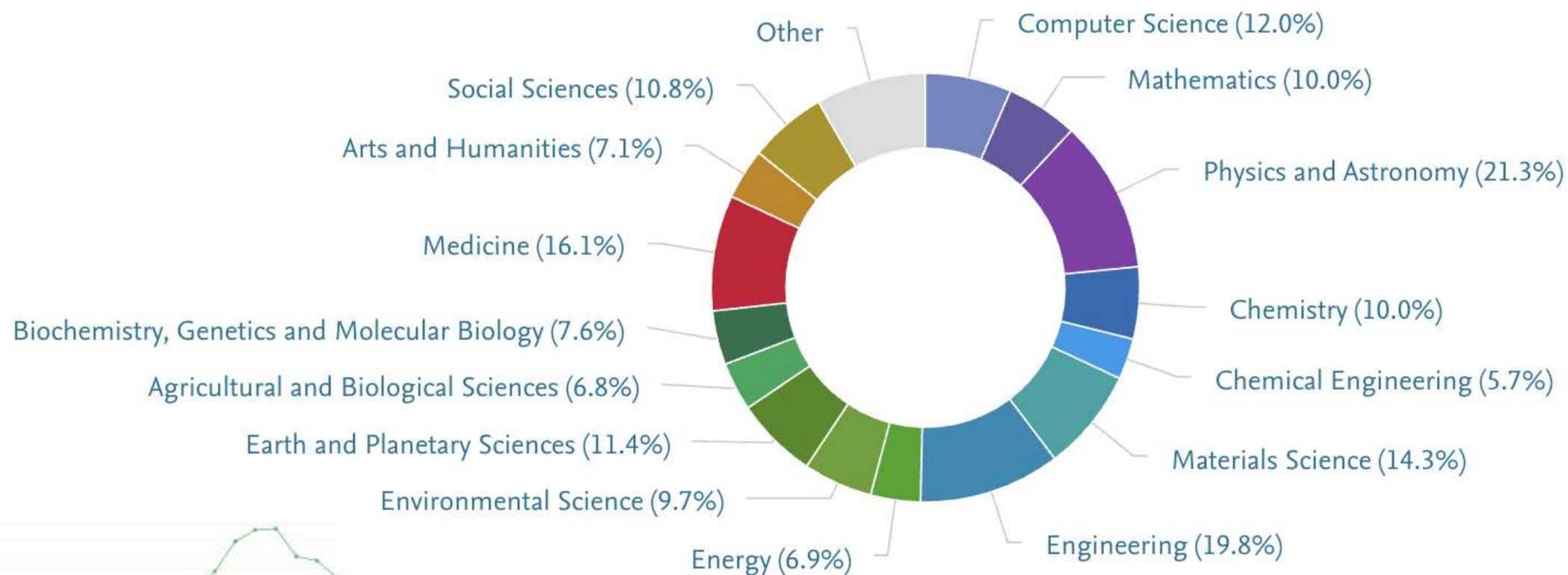
2020 to 2024



All subject areas



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Source: SciVal, Elsevier. Data exported 20 Jun 2025 (Scopus coverage 2020–2024)

India

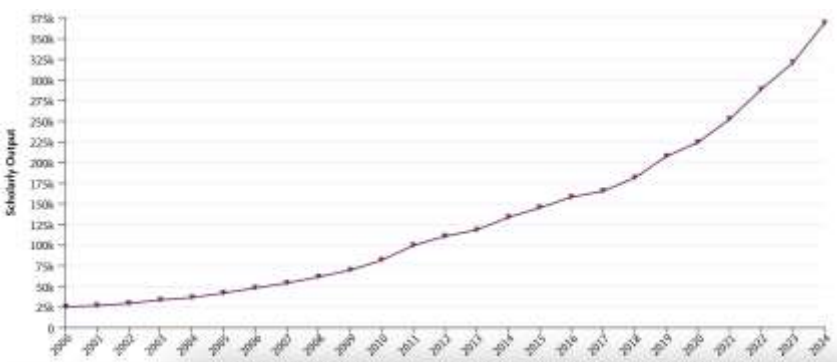
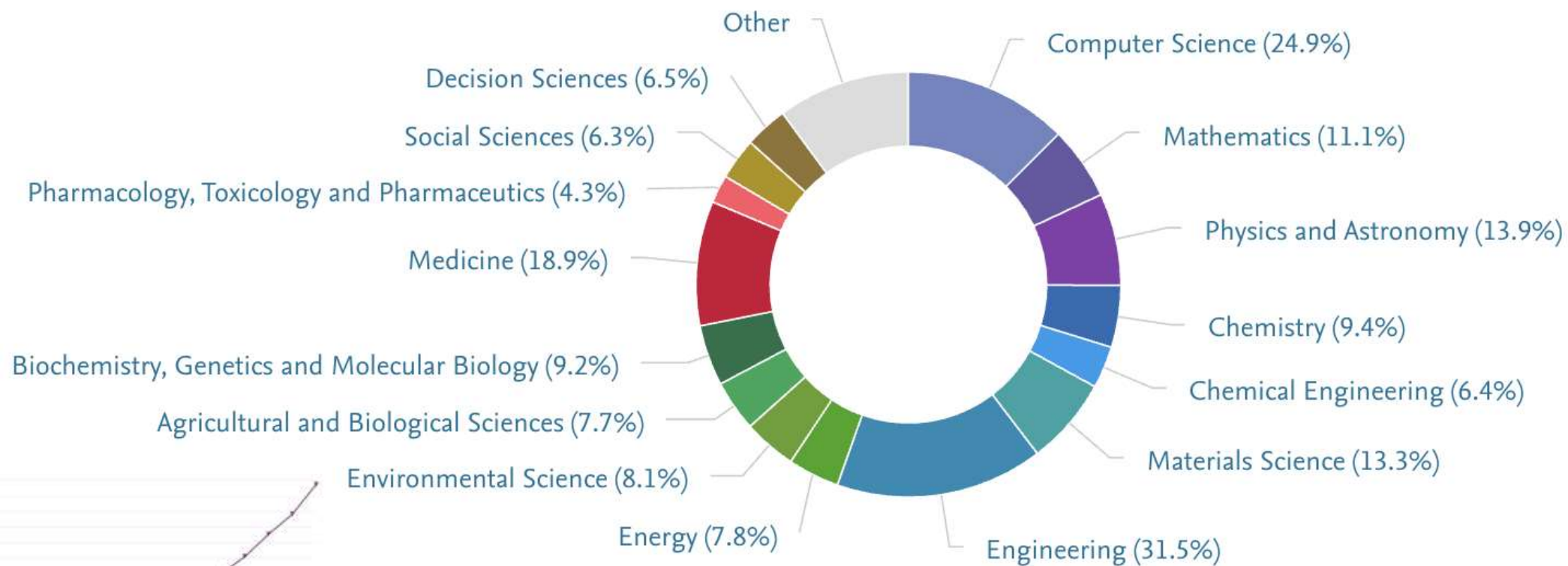
2020 to 2024



All subject areas



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China

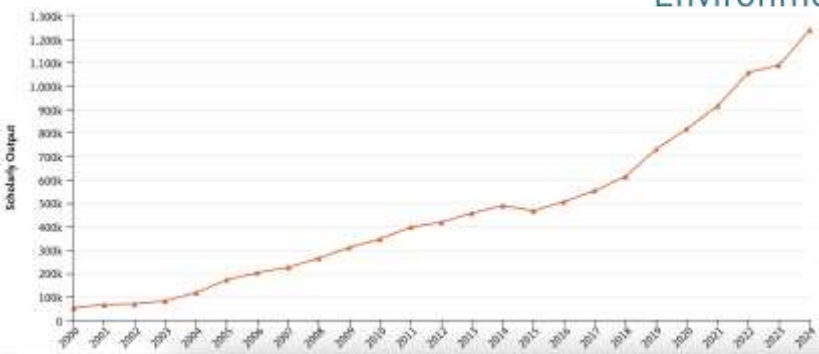
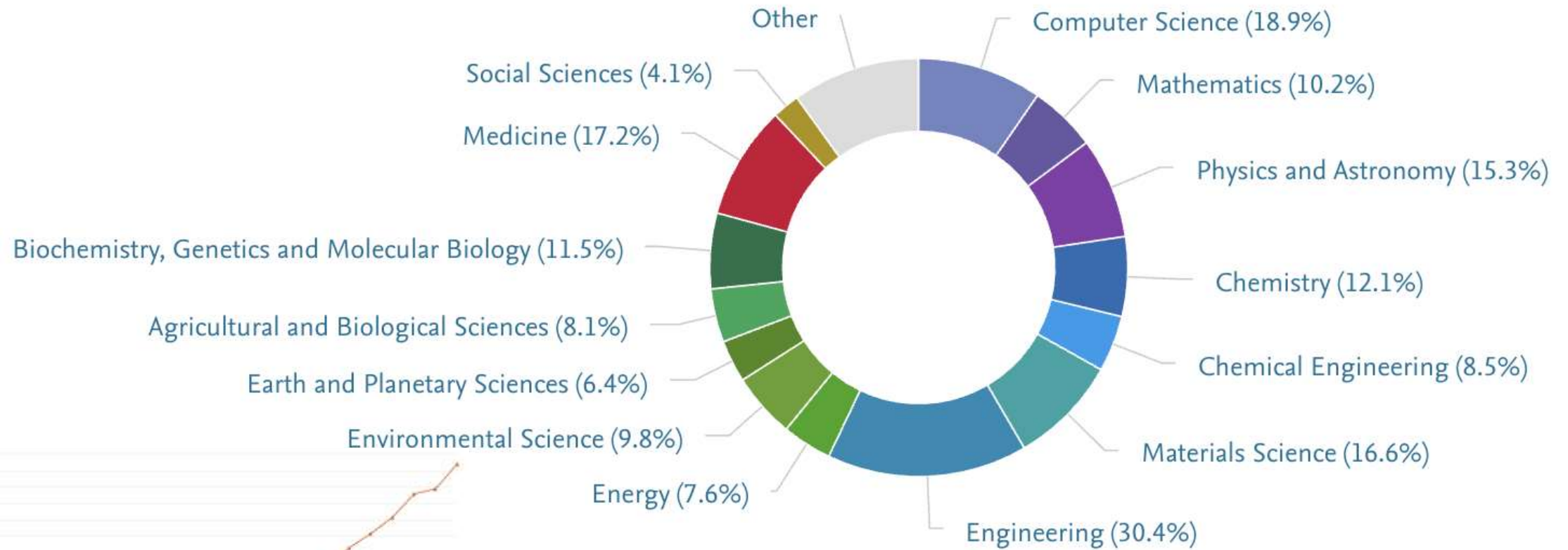
2020 to 2024



All subject areas



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South Africa

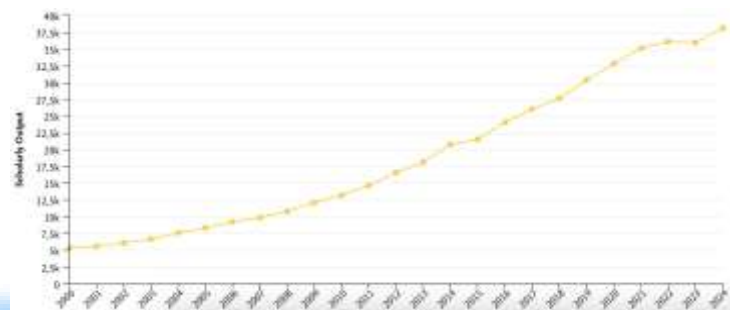
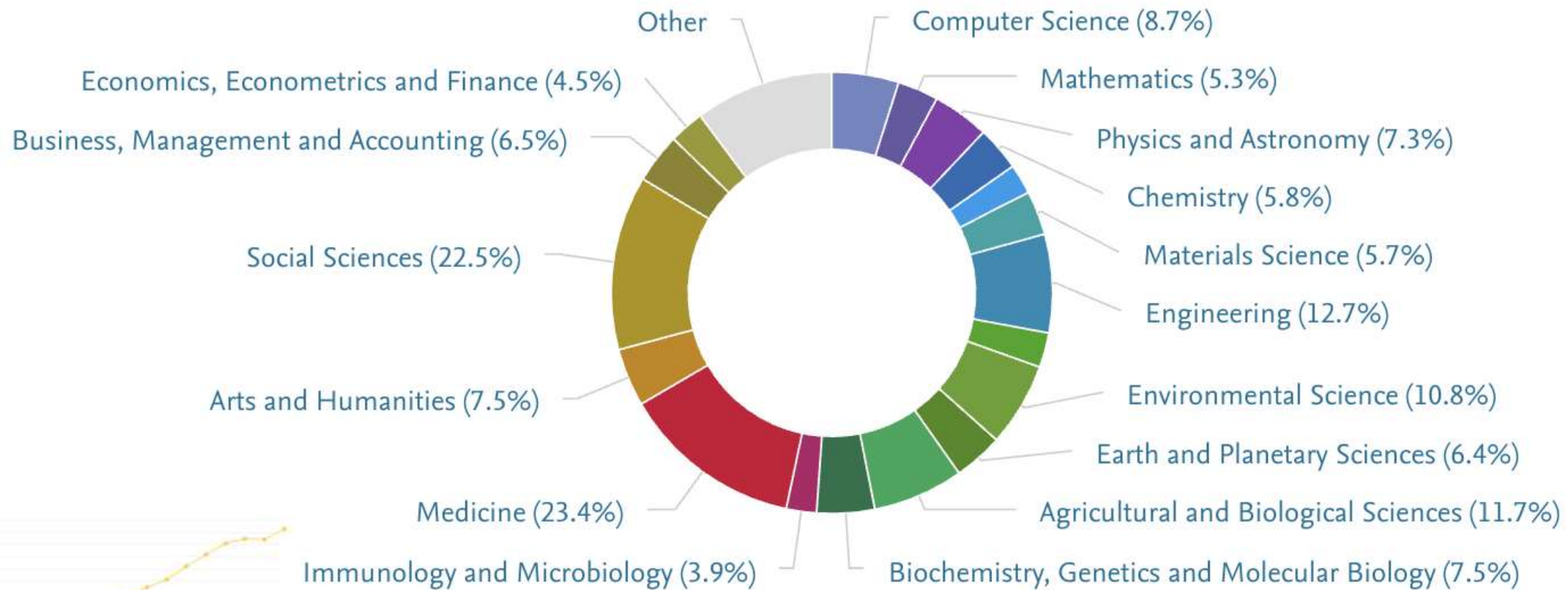
2020 to 2024



All subject areas



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Iran

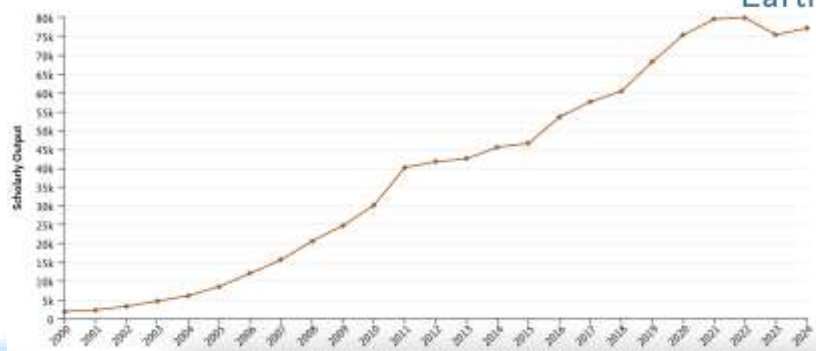
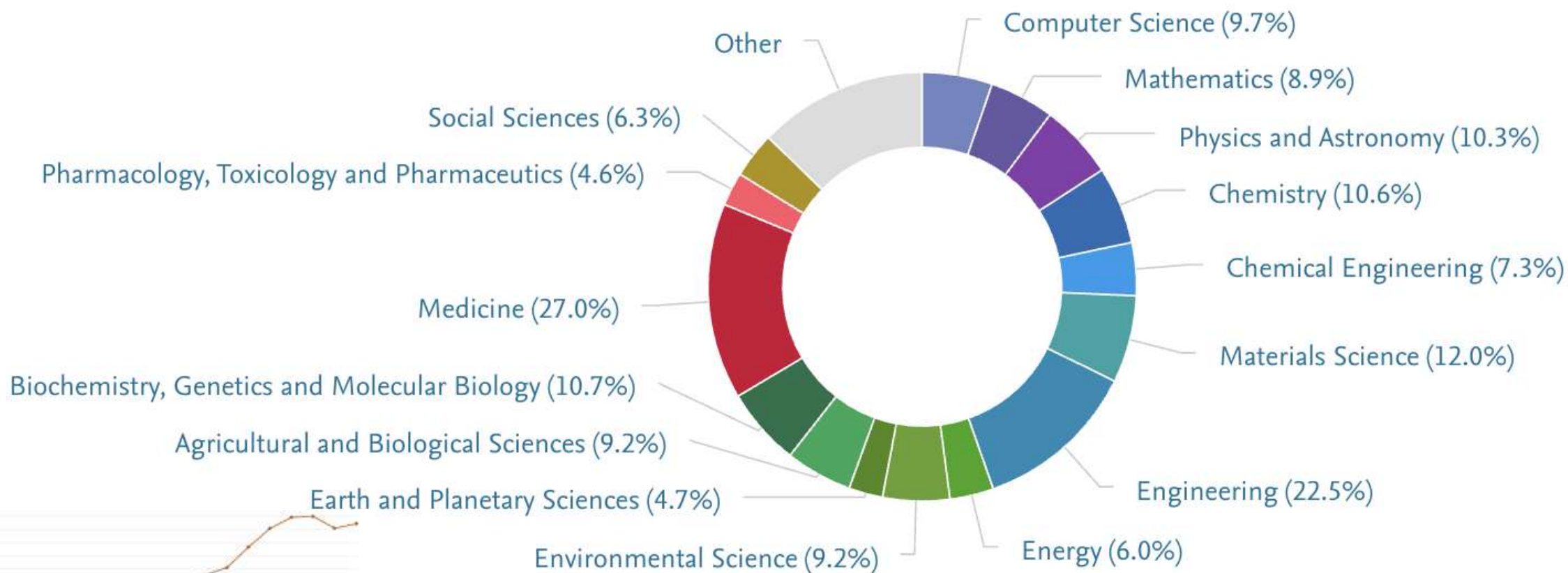
2020 to 2024



All subject areas



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Source: SciVal, Elsevier. Data exported 20 Jun 2025 (Scopus coverage 2020–2024)

Indonesia

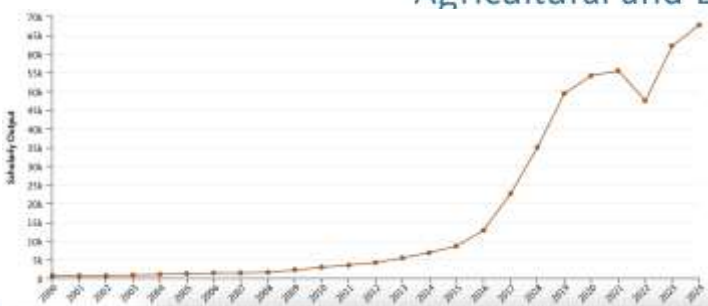
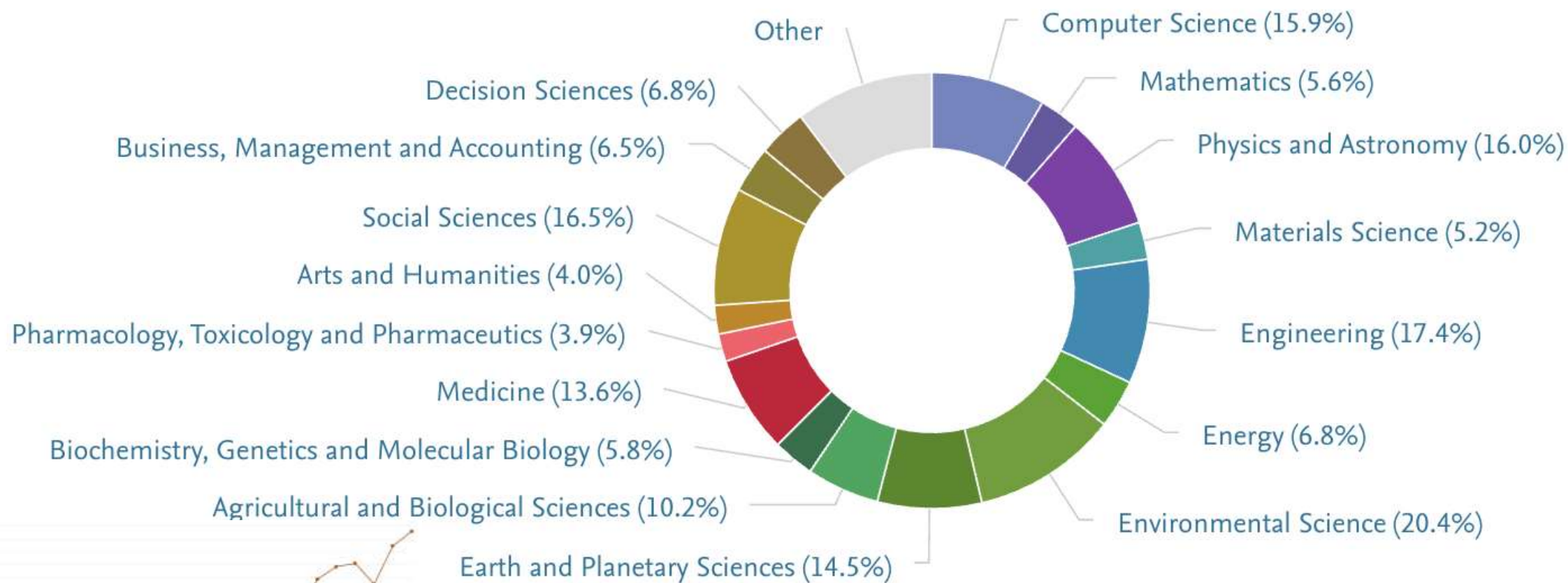
2020 to 2024



All subject areas



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Source: SciVal, Elsevier. Data exported 20 Jun 2025 (Scopus coverage 2020–2024)

Egypt

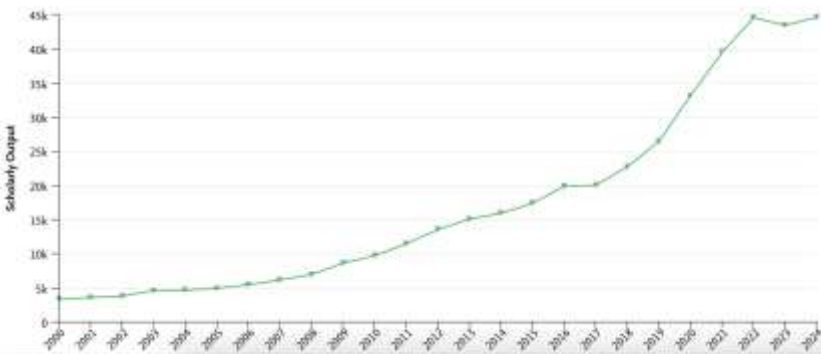
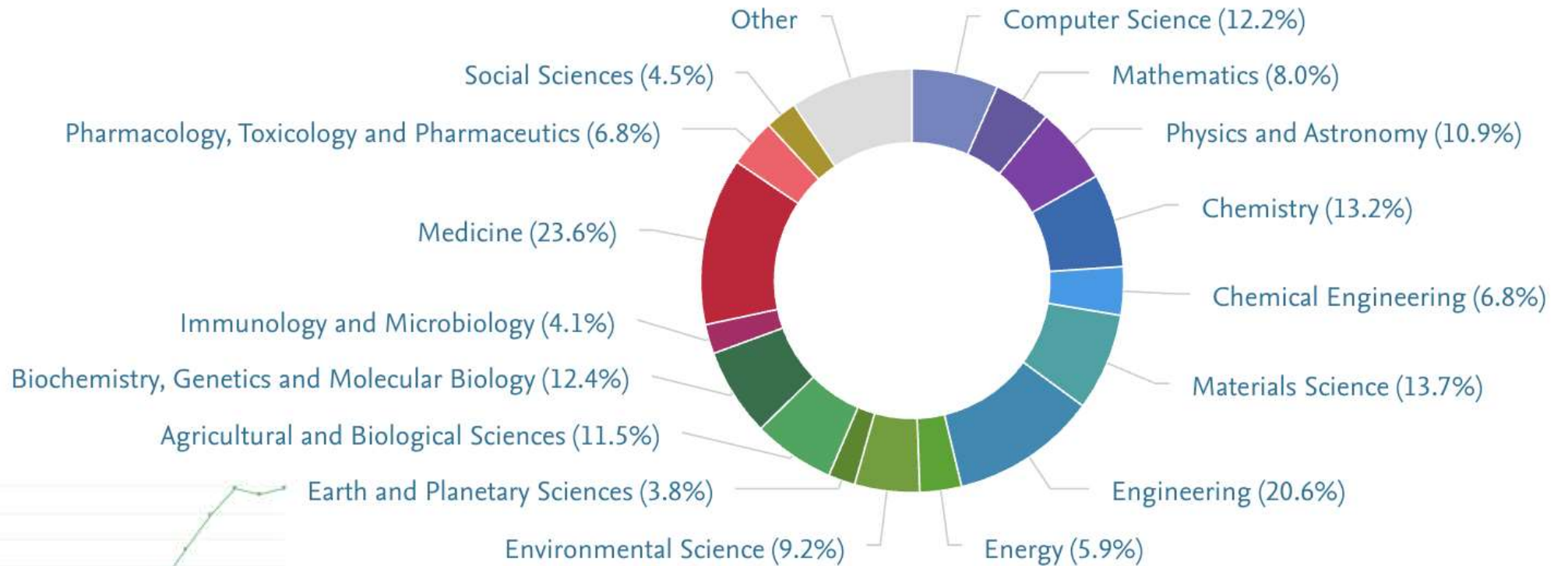
2020 to 2024



All subject areas



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Source: SciVal, Elsevier. Data exported 20 Jun 2025 (Scopus coverage 2020–2024)

United Arab Emirates

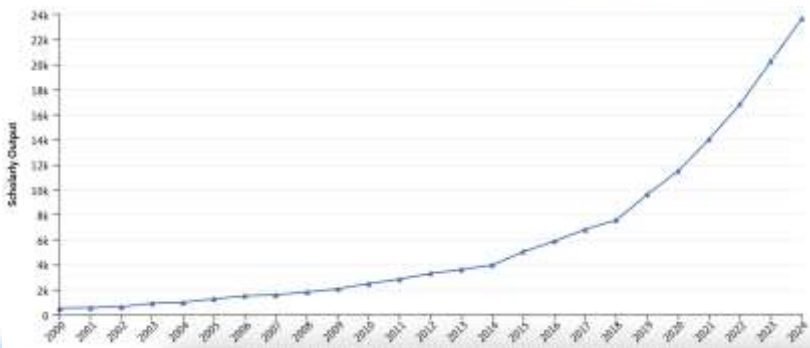
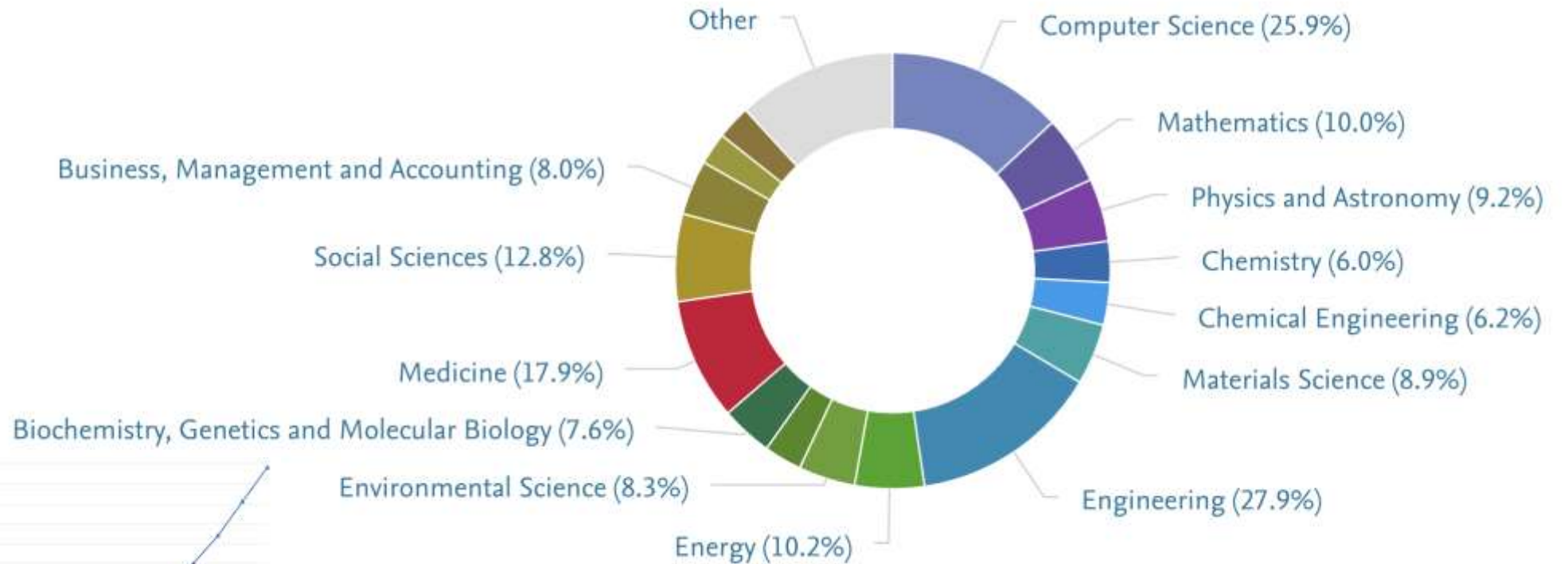
2020 to 2024



All subject areas



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Ethiopia

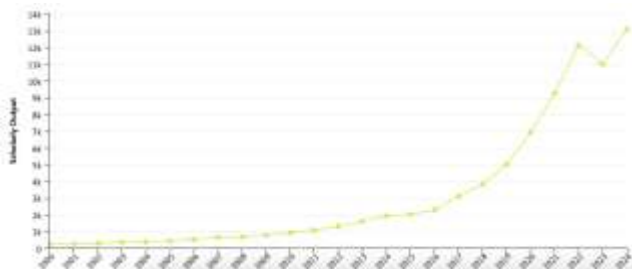
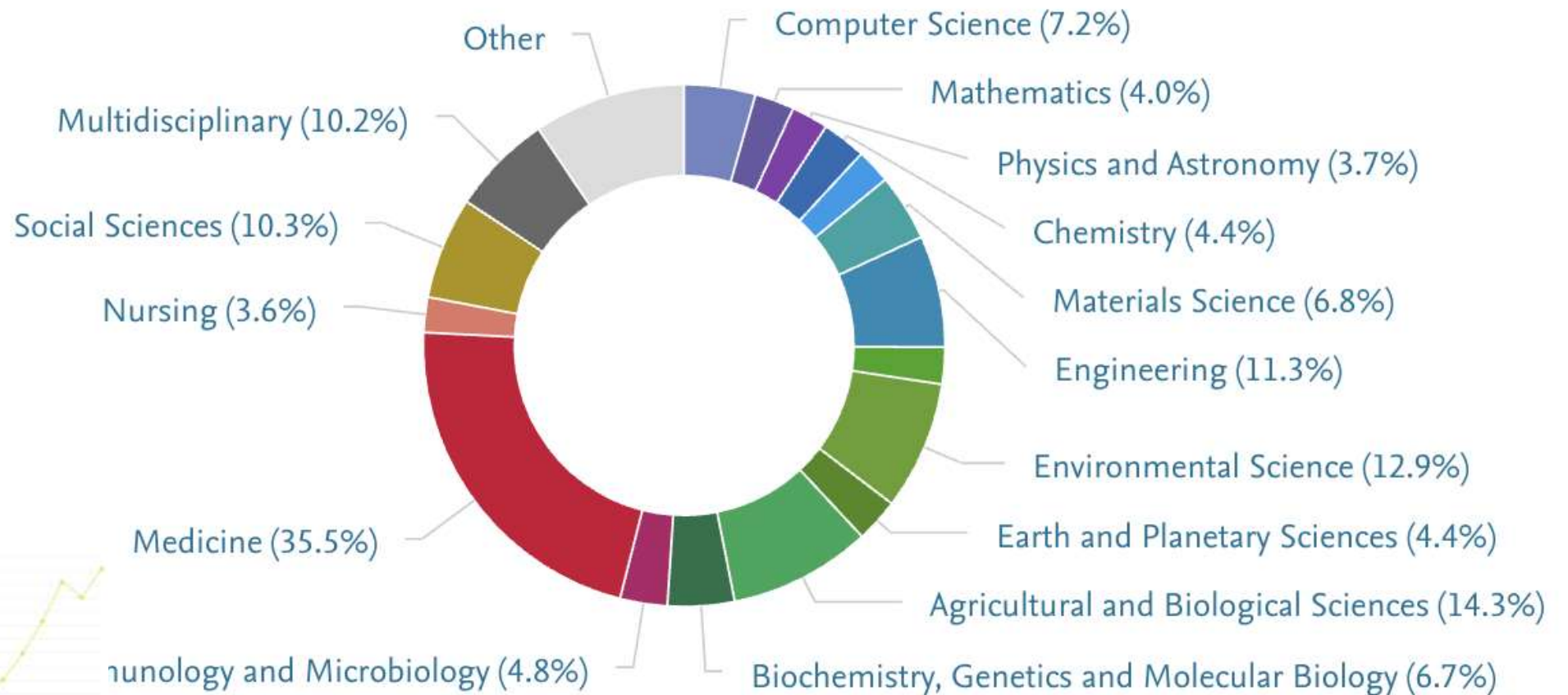
2020 to 2024



All subject areas



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Nigeria

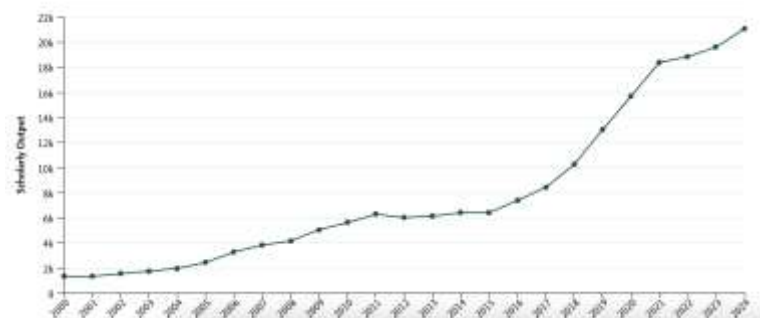
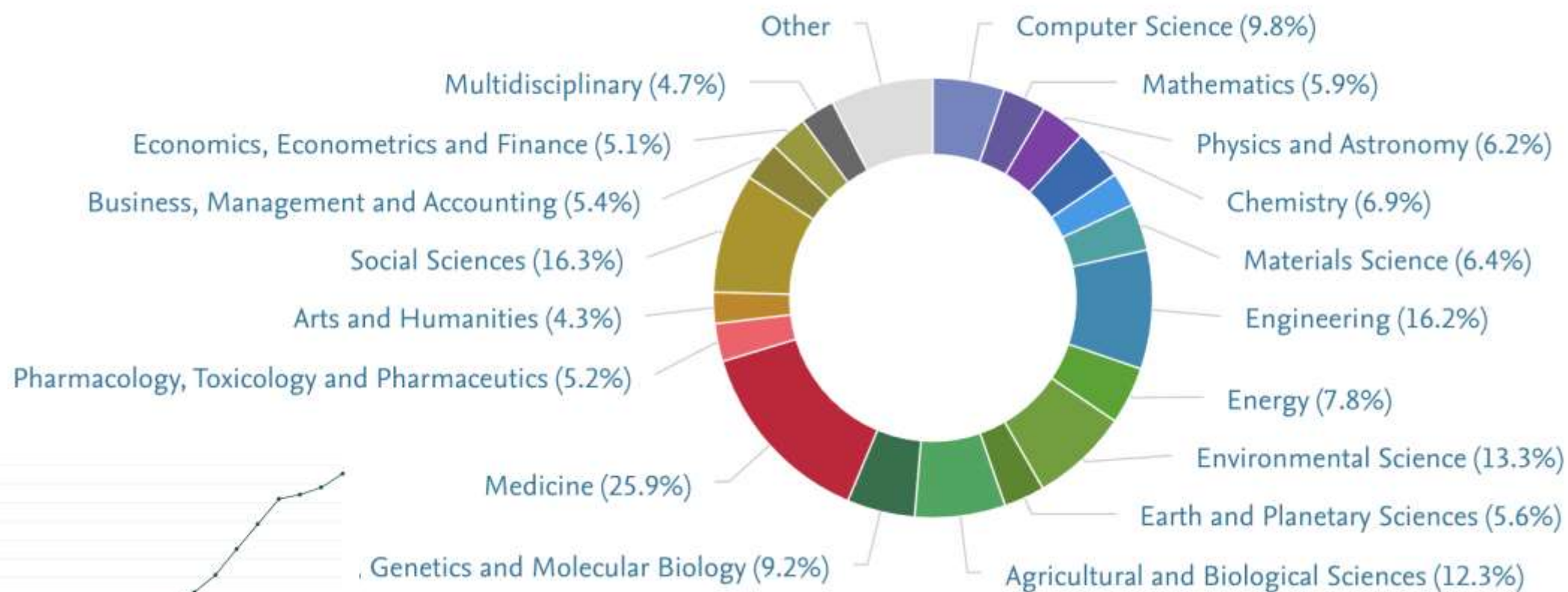
2020 to 2024



All subject areas



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Source: SciVal, Elsevier. Data exported 20 Jun 2025 (Scopus coverage 2020–2024)

Malaysia

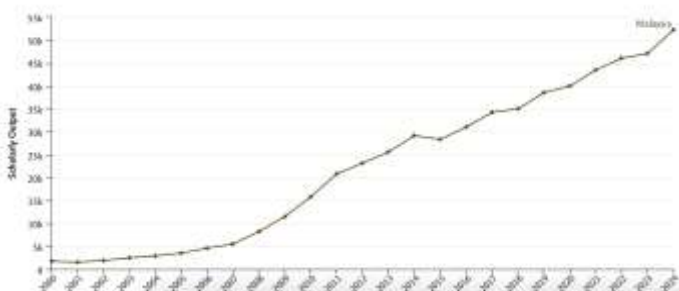
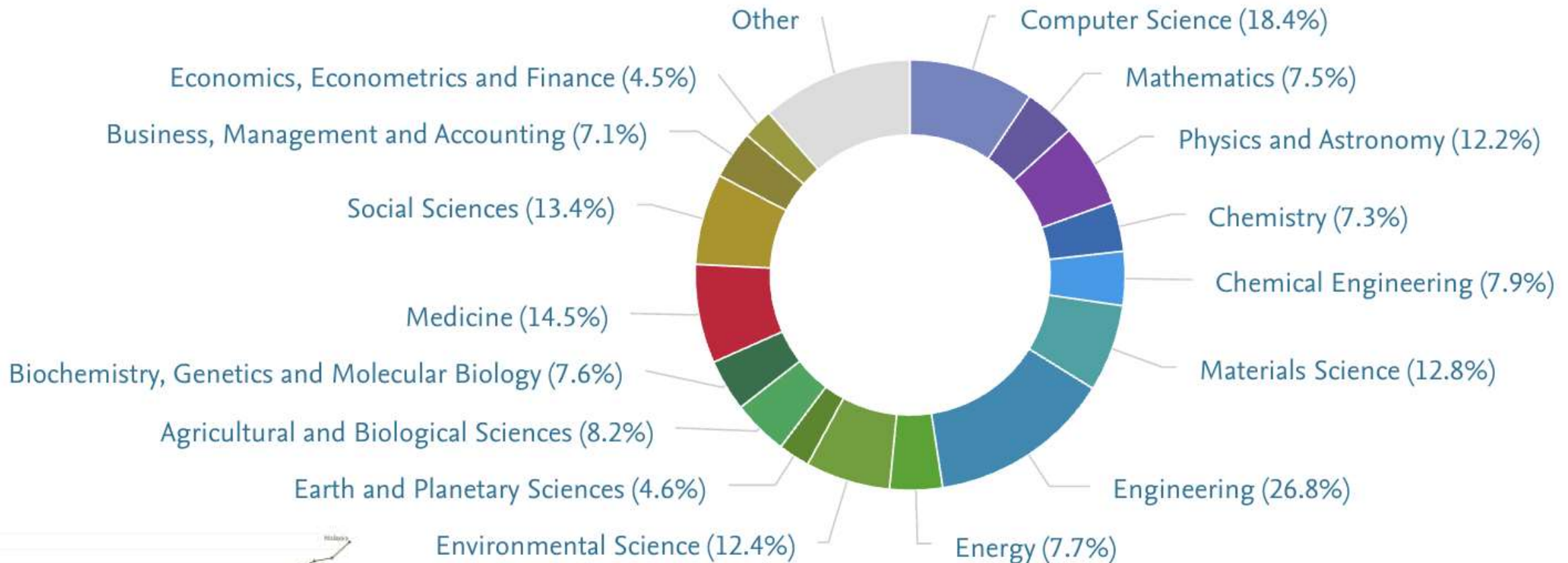
2020 to 2024



All subject areas



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Source: SciVal, Elsevier. Data exported 20 Jun 2025 (Scopus coverage 2020–2024)

Belarus

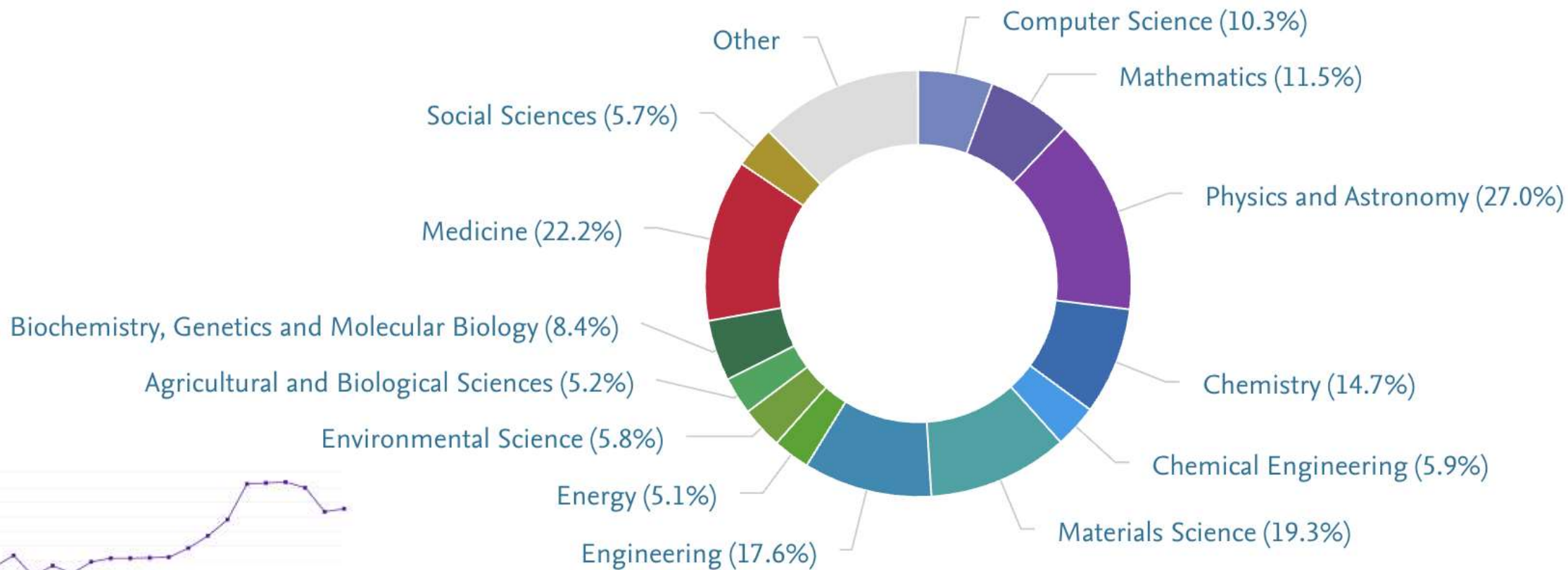
2020 to 2024



All subject areas



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Intra-BRICS-Plus Co-Authorship Matrix – Share of Each Country’s Scholarly Output (2019 – 2024)

Country	China	India	Russian Federation	Brazil	Iran	South Africa	Indonesia	Egypt	United Arab Emirates	Ethiopia	Average
China	0,0%	0,6%	0,4%	0,2%	0,3%	0,2%	0,1%	0,3%	0,1%	0,0%	0,2%
India	2,0%	0,0%	0,7%	0,6%	1,0%	0,7%	0,3%	0,7%	0,7%	0,5%	0,8%
Russian Federation	3,2%	1,5%	0,0%	0,7%	0,6%	0,4%	0,2%	0,6%	0,3%	0,1%	0,8%
Brazil	2,1%	1,7%	0,9%	0,0%	0,7%	1,0%	0,2%	0,4%	0,3%	0,1%	0,8%
Iran	3,5%	2,1%	1,0%	0,9%	0,0%	0,6%	0,3%	0,7%	0,4%	0,1%	1,1%
South Africa	5,8%	5,6%	1,5%	2,7%	1,3%	0,0%	0,6%	1,1%	1,1%	1,1%	1,0%
Indonesia	1,3%	1,5%	0,4%	0,4%	0,4%	0,4%	0,0%	0,4%	0,3%	0,1%	0,6%
Egypt	7,1%	5,0%	1,9%	1,1%	1,4%	0,9%	0,5%	0,0%	2,9%	0,3%	2,4%
United Arab Emirates	8,0%	11,4%	2,0%	2,0%	2,1%	2,3%	1,0%	7,1%	0,0%	0,4%	4,0%
Ethiopia	4,2%	13,7%	0,7%	1,0%	1,1%	4,1%	0,8%	1,2%	0,7%	0,0%	2,0%

Source: SciVal, Elsevier. Data exported 15 Mar 2025 (Scopus coverage 2019–2024)

Rank Order of Key Collaboration Partners for BRICS-Plus Countries (2019 – 2024)

	China	India	Russian Federation	Brazil	Iran	South Africa	Indonesia	Egypt	United Arab Emirates	Ethiopia
China		4	3	10	3	7	9	3	5	5
India	13		7	14	9	6	7	4	2	1
Russian Federation	19	18		26	16	27	24	17	23	43
Brazil	31	21	24		23	15	22	23	25	29
Iran	26	23	28	34		30	31	21	22	28
South Africa	35	15	41	24	33		25	29	18	6
Indonesia	50	41	64	58	55	60		54	53	38
Egypt	24	16	29	45	27	43	32		6	26
United Arab Emirates	40	19	52	53	39	42	39	8		40
Ethiopia	61	29	88	86	74	38	57	76	72	
Number 1	United States	United States	United States	United States	United States	United States	Malaysia	Saudi Arabia	United States	India
Number 2	United Kingdom	Saudi Arabia	Germany	United Kingdom	Canada	United Kingdom	Japan	United States	India	United States
Number 3	Australia	United Kingdom	China	Spain	China				United States	United States

Source: SciVal, Elsevier. Data exported 15 Mar 2025 (Scopus coverage 2019–2024)

Beyond Co-Authorship: Where the Collaboration Happens

- **Shared authorship is our starting signal**

It shows that researchers across BRICS-Plus nations are publishing together and trust each other's labs.

- **But *what* are they working on?**

The next slides reveal four priority arenas where those co-authorship ties translate into concrete joint projects and policy agendas:

- Clean Energy & Climate Solutions
- Health, Vaccines & Food Systems
- Digital & Artificial Intelligence

Energy & Climate Collaboration

- **Energy transition R&D:** green hydrogen, large-scale solar & wind, grid storage.
- **Key partners:** China ↔ India ↔ Russia ↔ Brazil, plus hydrocarbon-rich newcomers (Iran, UAE).
- **Joint objective:** secure, low-carbon energy mix for all BRICS-Plus economies.
- **Climate resilience:** shared modelling of extreme events and carbon-capture pilots.

Health, Vaccines & Food Systems

- **Public-health networks:** cross-country disease surveillance and data sharing.
- **Vaccine co-development:** technology transfer deals linking China, India, Brazil & South Africa.
- **Food-system research:** climate-smart agriculture, healthy-diet supply chains (Brazil, India, Indonesia, Egypt).
- **Goal:** boost regional self-sufficiency in health security and nutrition.

Digital & AI Frontiers

- **“AI Alliance” initiatives:** joint large-language models and regulatory sandboxes (China & Russia leading).
- **Digital-infrastructure build-out:** 5G/6G corridors and satellite-based internet for remote areas.
- **Skills pipelines:** co-funded graduate programs and researcher exchanges in data science.
- **Aim:** establish the BRICS-Plus as a competitive tech bloc while narrowing the digital divide.

Strategic Takeaways

- **South-South knowledge flow is accelerating**, yet still complements strong North-South ties.
- **Energy, health, AI and food resilience** form the core pillars of present collaboration.
- **Policy levers:** expand joint funds, mobility schemes and shared research infrastructure to deepen intra-bloc partnerships and lift newer members faster.

Recommended actions

- Expand joint **research funds** with matching finance.
- Simplify visas and fellowships to **move people and ideas** more easily.
- **Share expensive facilities** – such as synchrotrons, biobanks, and high-performance computers – under open access rules.

Thank you



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Federal University of Pelotas

President of FAPERGS

