Research landscape in the MENA region

Aligning activities for better effects on society
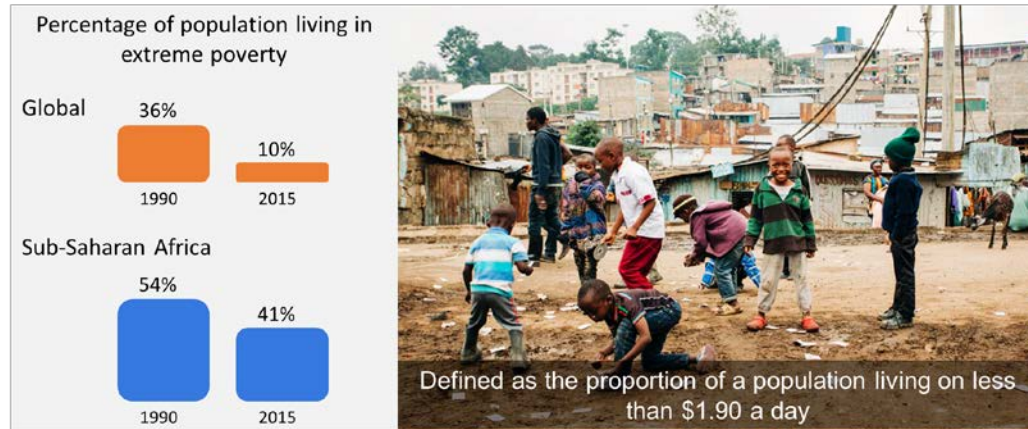
IREG 2021 Jeddah Conference

M'hamed el Aisati, Elsevier
November 15, 2021

Context – the world is facing major challenges

Eradicate extreme poverty for all people everywhere by 2030

Percentage of population living in extreme poverty

Global
36% 1990
10% 2015

Sub-Saharan Africa
54% 1990
41% 2015

Defined as the proportion of a population living on less than $1.90 a day

Ensure healthy lives and promote well-being for all at all ages

Maternal deaths per 100,000 live births in 2015

Sierra Leone 1,360
Global 216
Finland 3

Reduce maternal mortality to fewer than 70 deaths per 100,000 live births in a year by 2030

Achieve gender equality and empower all women and girls

Percentage of national parliament seats held by women

The proportion of women in political positions to ensure women's full and effective participation in leadership

Reduce the mortality cost of climate change

Climate Mortality
Excess heat and cold responsible for 5 million deaths annually

Region	Deaths
Asia	2.6M
Africa	1.2M
China	1.0M
Europe	835.0K
U.S.	173.6K
Australia	165.0K
South America	141.0K
India	74.0K
U.K.	52.0K

R&D investment is critical to address these societal and economic challenges

Source: 2021 Global R&D Funding Forecast
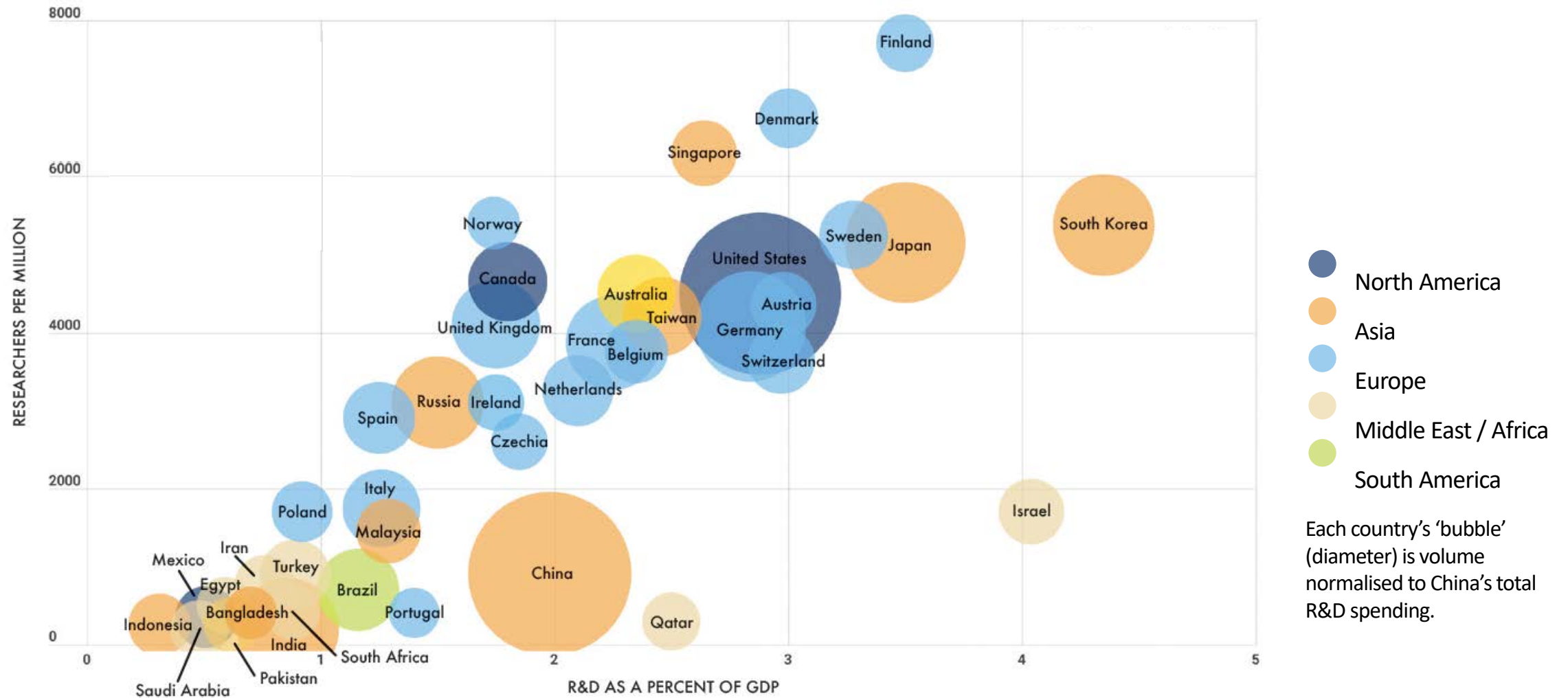
Elsevier is fully committed to support the Research community in addressing these challenges

Insight through large studies and reports

Supporting national assessments

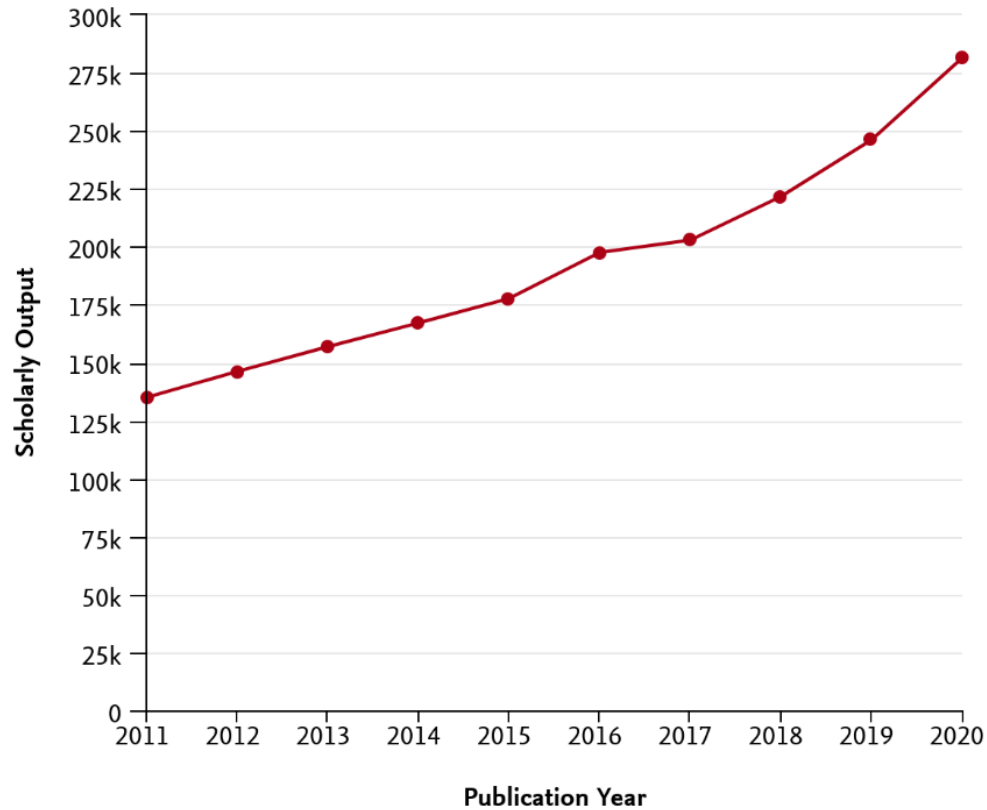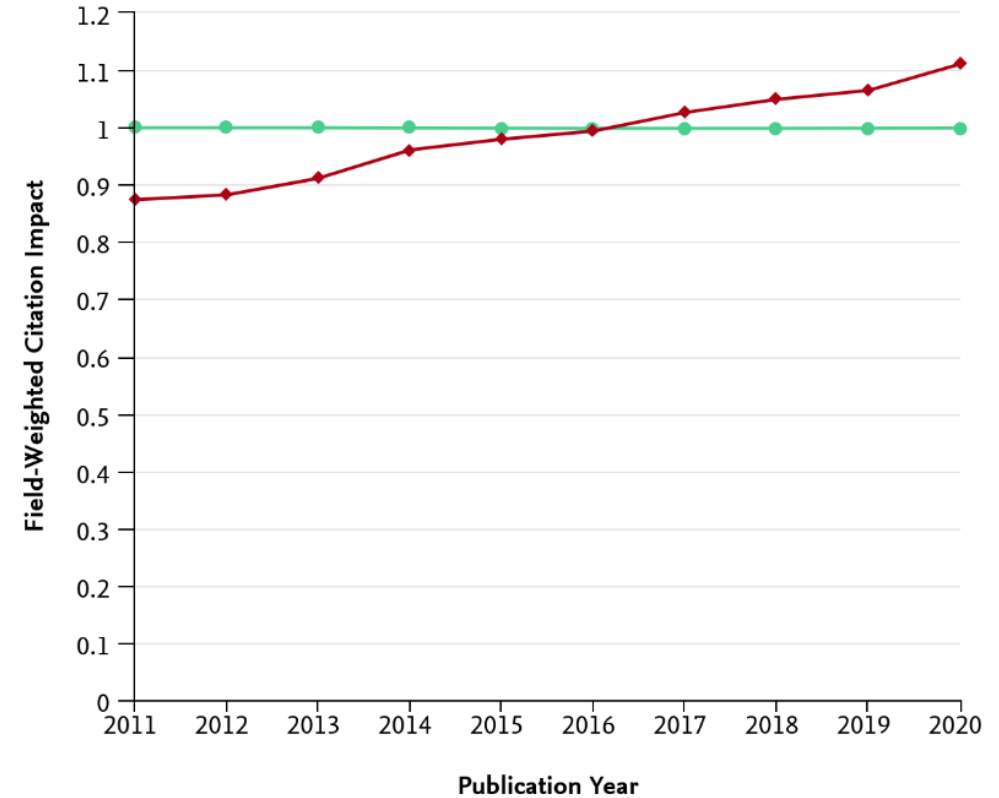Fuelling Rankings

Research Landscape in MENA
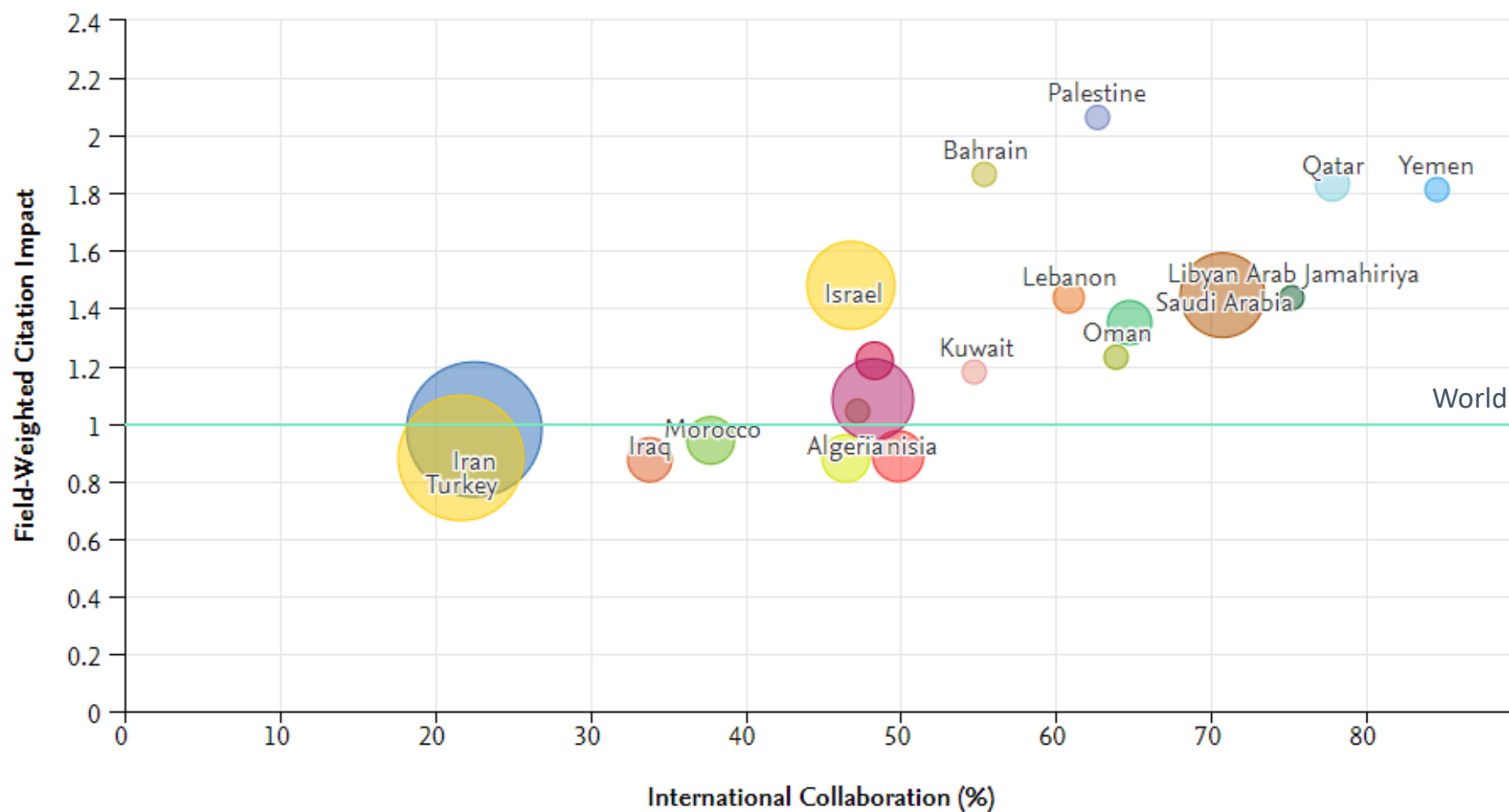
Scholarly output from MENA

- Between 2011-2020, MENA countries published over 1.9m publications, with a CAGR of 8.5% (compared with the global average of 3.4%).

- Average scholarly impact also increased, going from below the global average (0.87) to above (1.11)

Increasing share of international collaboration corresponds to an increased in citation impact

Research Focus areas

Top 10 topics by prominence

MENA

Topic phrases

Radiological Findings, Clinical Features, COVID-19

Perovskite Solar Cells, Lead Bromide, Formamidine

Object Detection, CNN, IOU

Nasopharyngeal Swabs, Serologic Tests, COVID-19

Nivolumab, Pembrolizumab, Programmed Death 1 Ligand 1

Psychological Support, Mindfulness, COVID-19

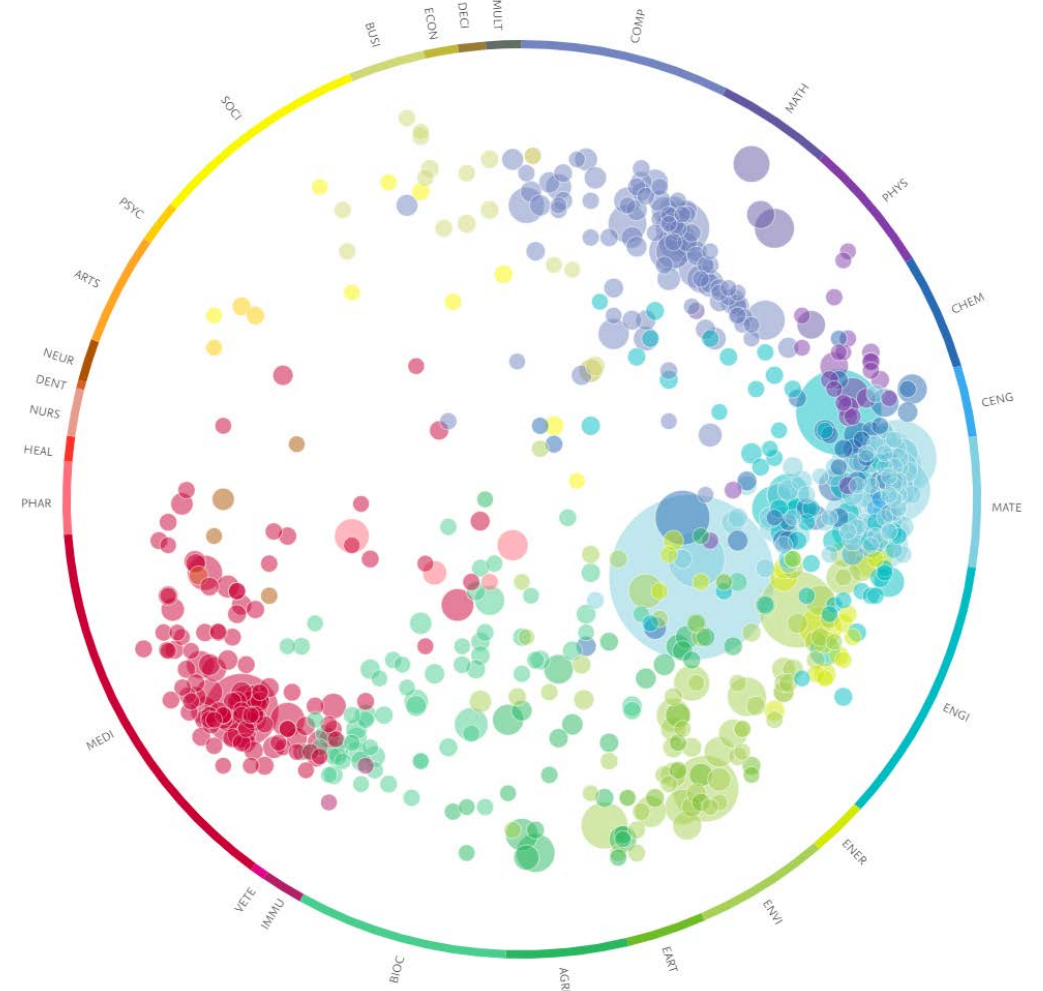Long Noncoding RNA, Growth Arrest Specific Transcript 5, Small Nucleolar RNA

Cyanogen, Heptazine, Photocatalysts

Intestine Flora, Ruminococcaceae, Dysbiosis
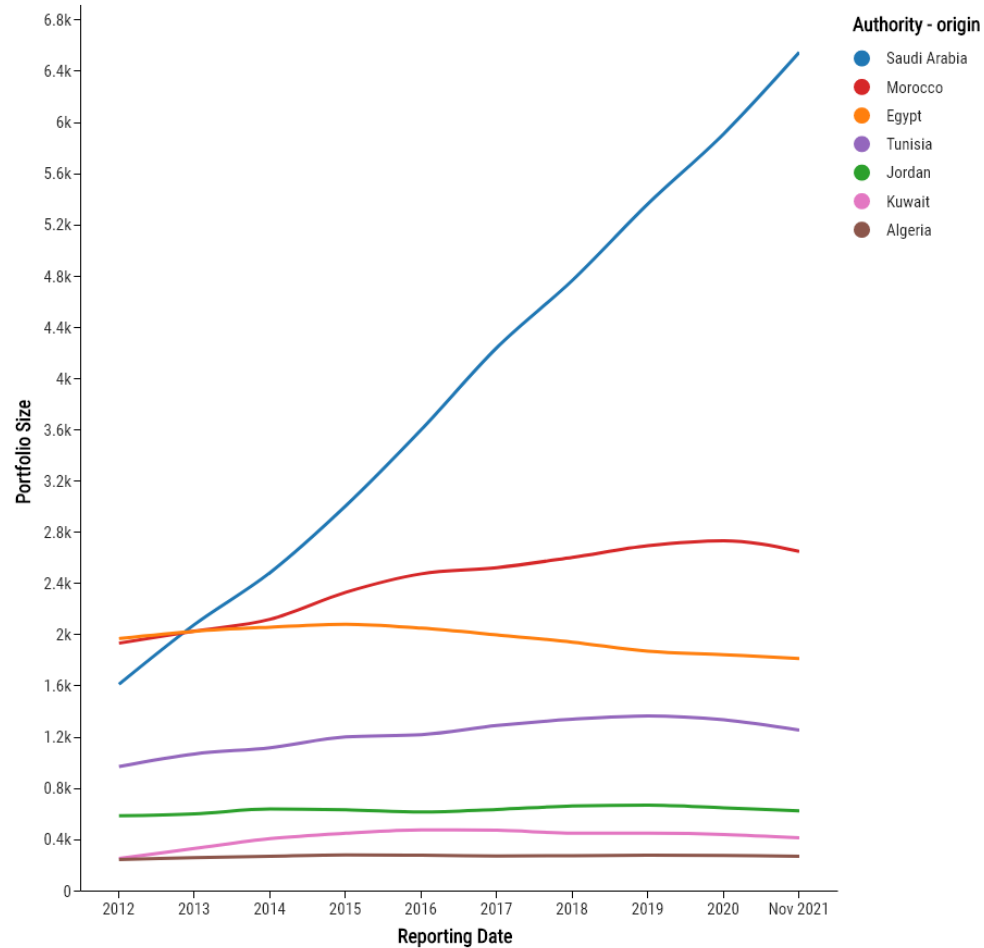
Microplastics, Marine Debris, Litter

Top 1% prominence topics

King Saud University

○○○ Bubble size: Scholarly Output of this Institution   ⊙ Bubble position is based on dominant ASJC categories.   *Source: SciVal.com*
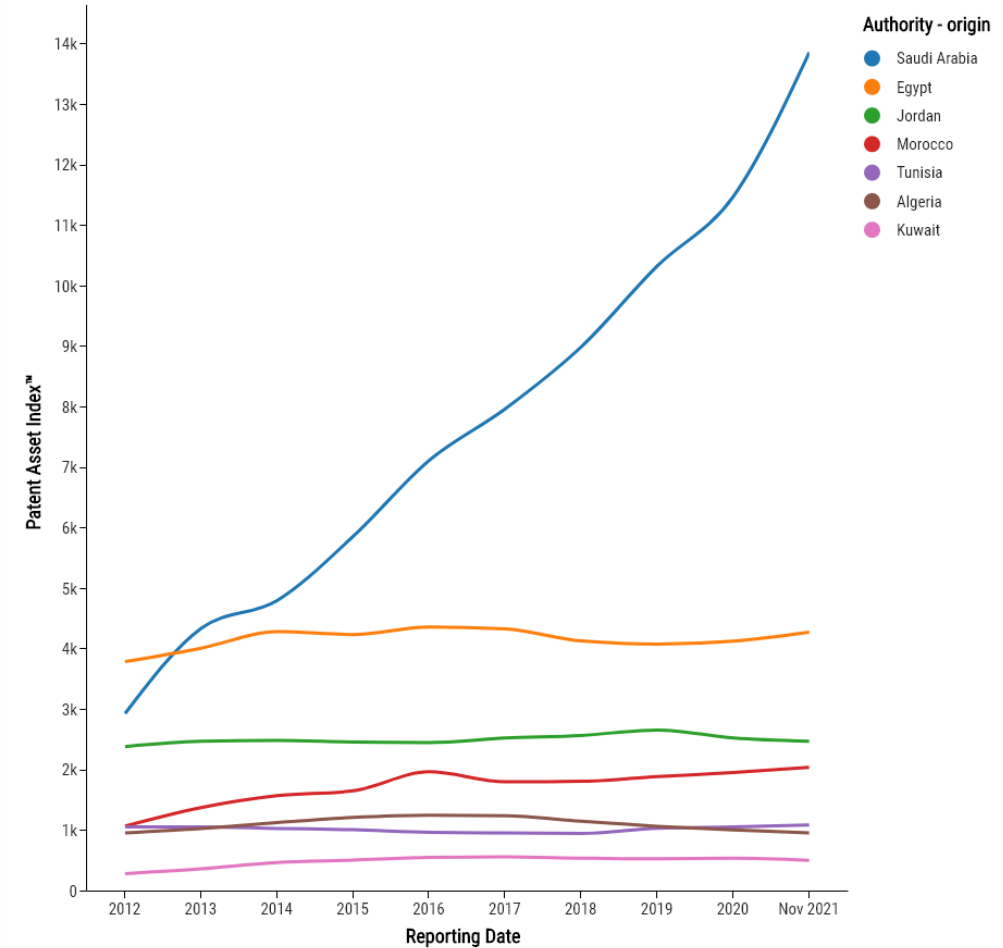
A growing portfolio in size and quality

Authority - origin (lines) shows items 1-7 of 7, sorted by Portfolio Size desc as at 11/4/2021.

Analysis based on 13,382 patent families active at 11/4/2021.
Data saved with the workbook on 11/10/2021.
All "Authority - origin" items not explicitly named in search are hidden.

Filter legend: InventedIn=(DZ, EG, JO, KW, MA, SA, TN)

Authority - origin (lines) shows items 1-7 of 7, sorted by Patent Asset Index™ desc as at 11/4/2021.
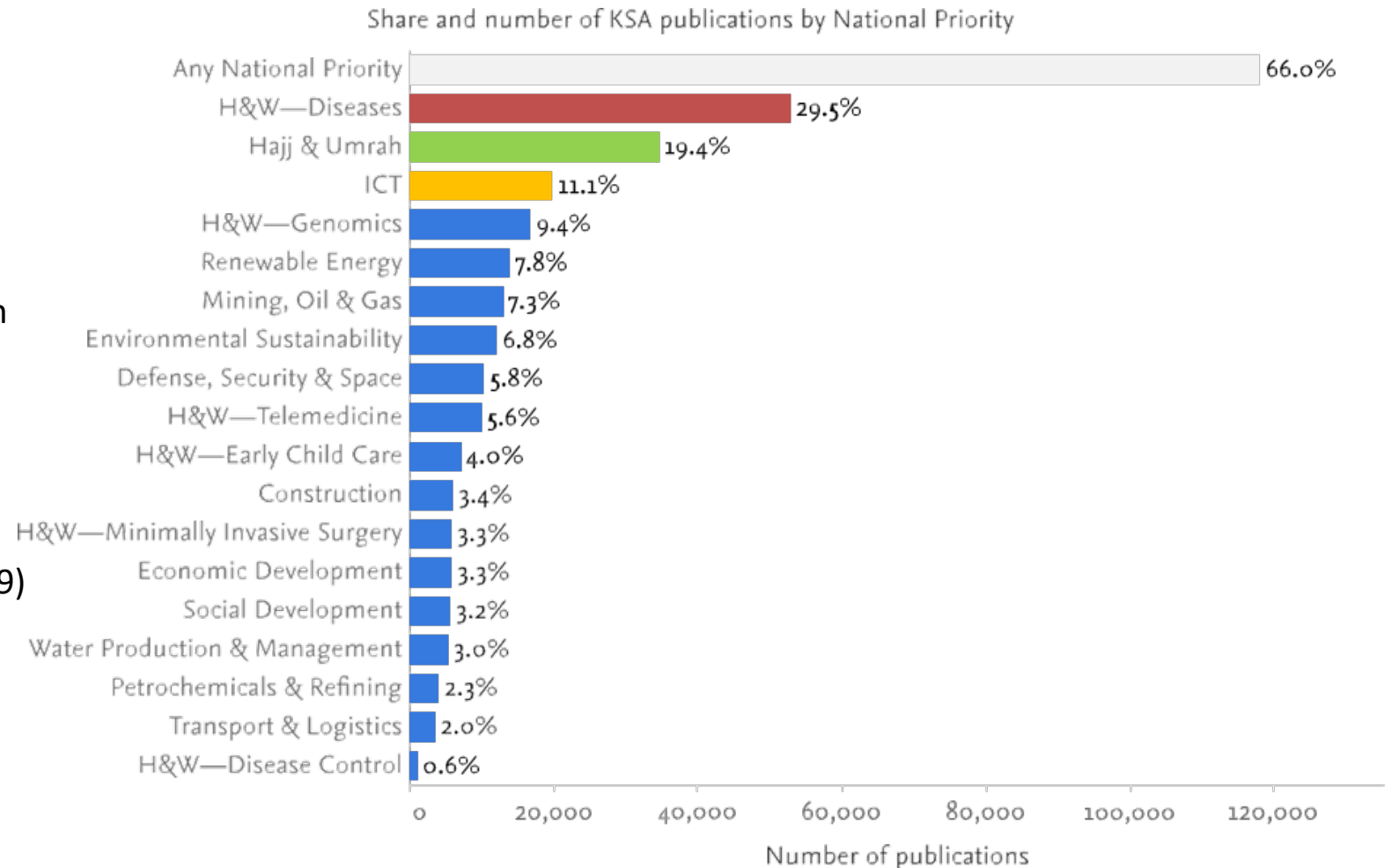
Aligning research activities for better effects on society

Analytical Services

Example 1 – Clear national priorities drive research focus to address local needs
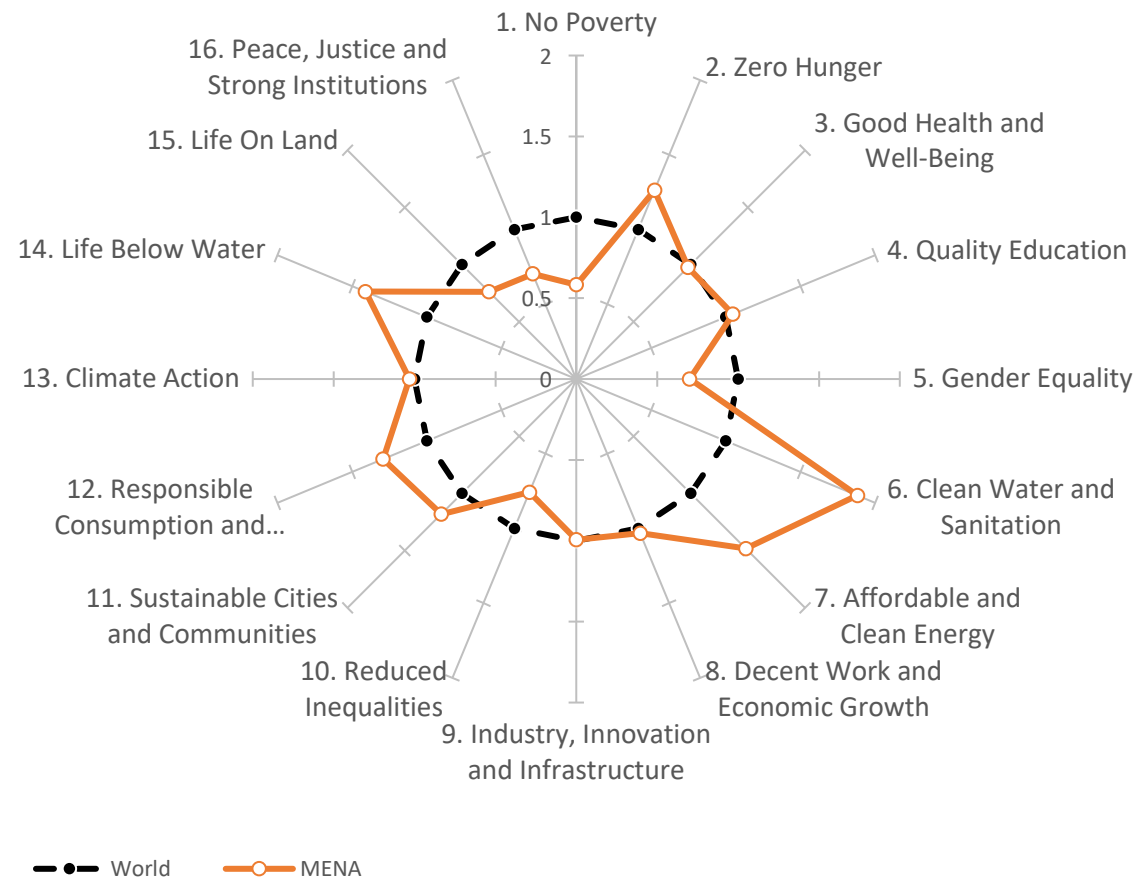
Observations:

- Almost 2/3 of KSA scholarly output in the period 2010-2019 were related to one or more National Priorities
- Health & Wellness – Diseases, Hajj & Umrah and Information & Communication Technology (ICT) form the top 3 national priorities with the highest focus research areas
- Trend lines show that scholarly output in these 3 areas increased respectively by 16.2%, 20.7% and 18.1% (CAGR 2010-2019)

Share and number of KSA publications by National Priority

National Priority	Share
Any National Priority	66.0%
H&W—Diseases	29.5%
Hajj & Umrah	19.4%
ICT	11.1%
H&W—Genomics	9.4%
Renewable Energy	7.8%
Mining, Oil & Gas	7.3%
Environmental Sustainability	6.8%
Defense, Security & Space	5.8%
H&W—Telemedicine	5.6%
H&W—Early Child Care	4.0%
Construction	3.4%
H&W—Minimally Invasive Surgery	3.3%
Economic Development	3.3%
Social Development	3.2%
Water Production & Management	3.0%
Petrochemicals & Refining	2.3%
Transport & Logistics	2.0%
H&W—Disease Control	0.6%

Number of publications

Example 2 – Working on Glocal societal challenges (1/2)
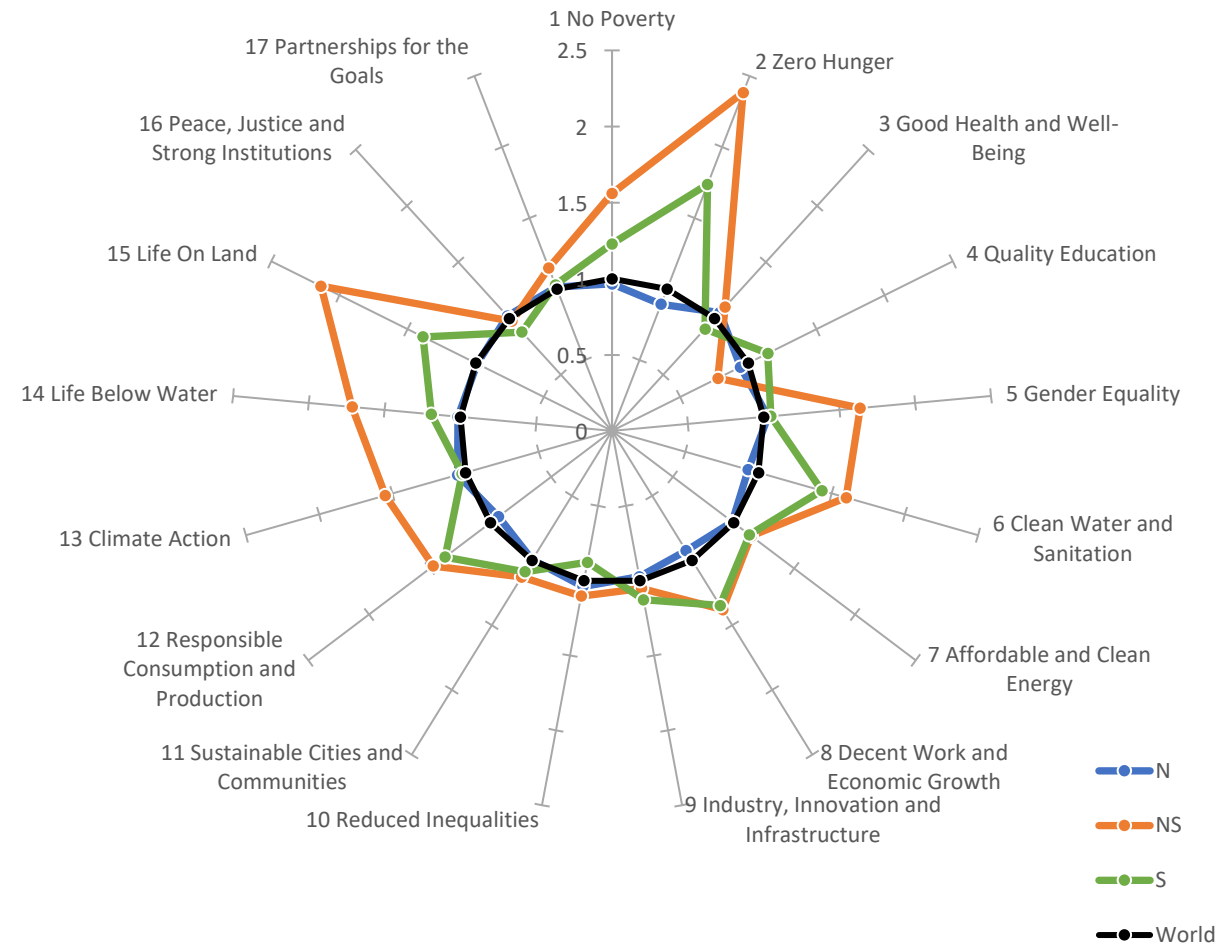
MENA

Research intensive nations

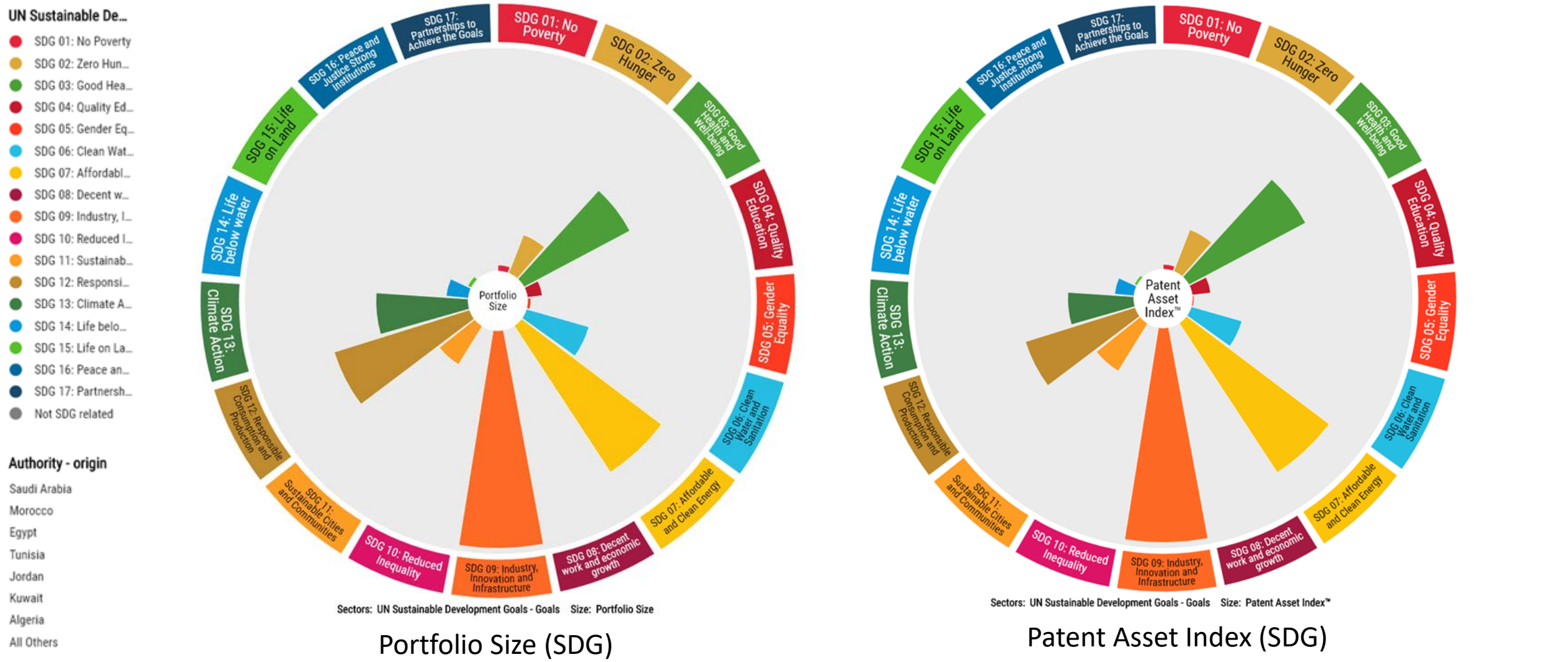# Example 2 – Working on Glocal societal challenges (2/2)

Observations:

- As expected, Global North (N blue line in the chart) is driving the overall World SDG related research activity, which is well rounded. This is due to the volume of research produced by Global North covering the vast majority of World research.
- Global South at the other hand (S green line in the chart) shows that there is more focus SDG 2, SDG 6, SDG 8, SDG 12 and SDG 15. None of these SDGs seem to be focussing on I&D (in gold highlighted SDGs)
- The Global North-South collaboration is mostly driven by the Global South agenda. Next to the SDGs listed in 2), there is also focus on SDG 5, SDG 13 and SDG 14. Two of these are I&D related.
- Overall, the I&D related SDG research doesn't seem to be an agenda item for either Global North or Global South, but it is when they collaborate.

Relative Activity Index of Global North – Global South collaboration on SDG research

Source: Kingdom of Saudi Arabia's National Priority Research Areas, Elsevier Analytical Services

Example 3 - IP activity related to society – the SDG lens

Portfolio Size (SDG)

Patent Asset Index (SDG)

Source: PatentSight

Example 4 – Transdisciplinary research for solving tough societal challenges

Findings on <u>Belmont</u>'s transdisciplinary research

- An interdisciplinary index of 1.24 for Forum-funded publications, higher than other funders compared, shows the success in selecting highly interdisciplinary researchers, and fostering an increased level of interdisciplinarity.

- The multidisciplinary index is 1.92, highest among the comparators, showing the Forum has funded highly multidisciplinary researchers and research collectives, and supported progression of its awardees on this dimension.
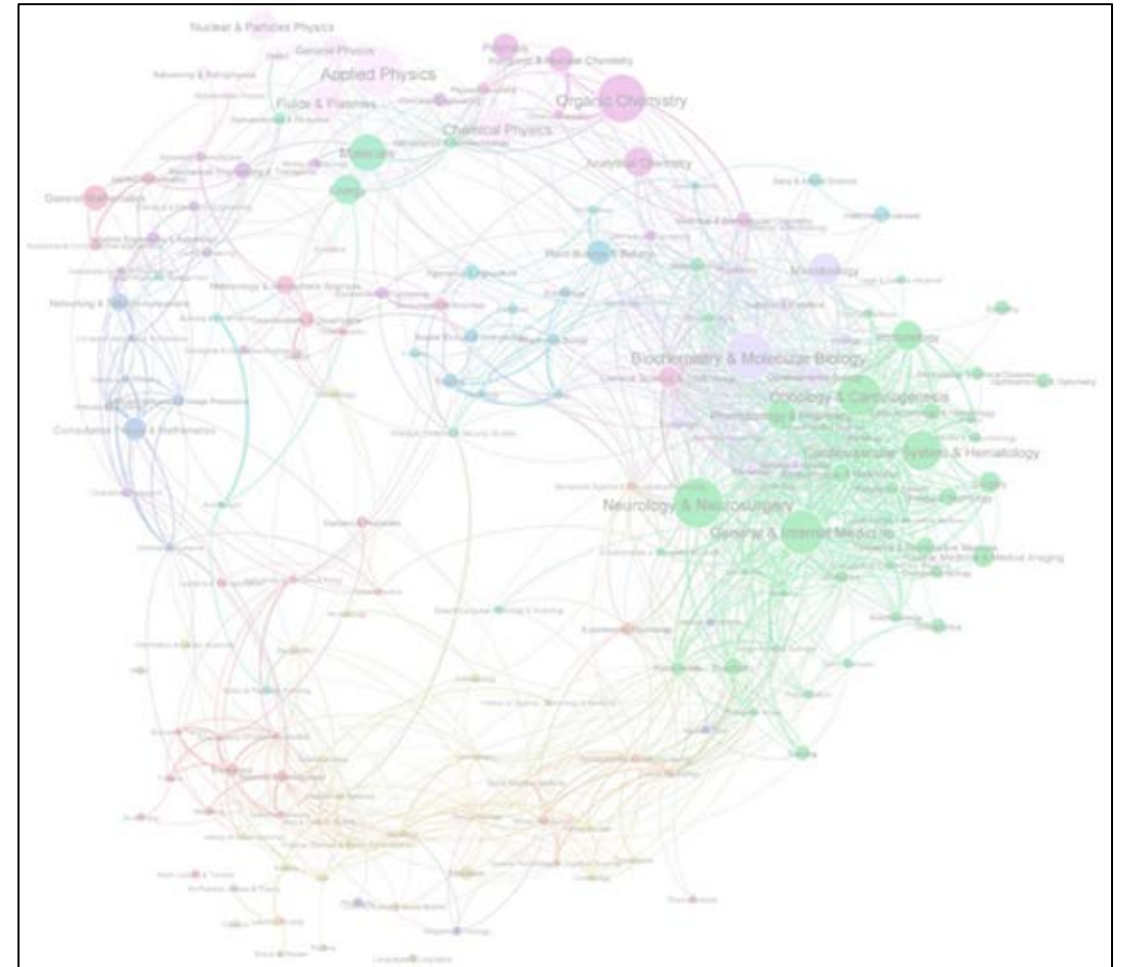
- Interdisciplinarity is the practice of combining knowledge stemming from multiple scientific disciplines
- Interdisciplinarity is different from multidisciplinarity (author diversity)

Source: Belmont's transdisciplinary research report, Elsevier Analytical Services

Summary

1. The challenges we are facing are huge in scale and complexity

2. Research and thereby universities are needed more than ever to help address these challenges

3. Research in the MENA region has been making big steps in the last decade. Strategies seem to focus more and more on aligning the research activities to align better with these challenges, but there is still a long way to go.

4. Our commitment at Elsevier is to continue to collaborate with the global research community to evolve approaches through data and analytics

Thank you

Questions?
m.aisati@elsevier.com