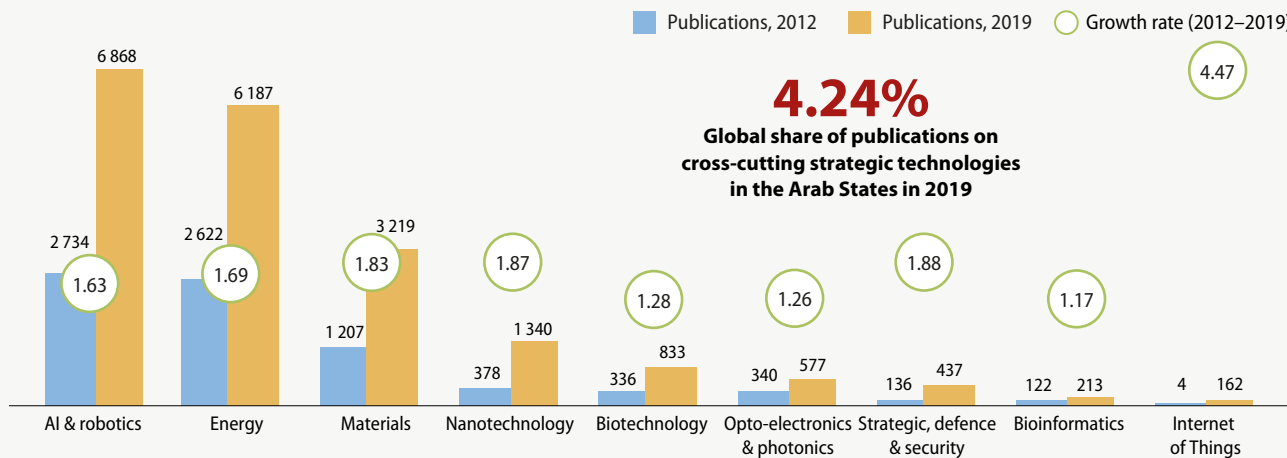# Figure 17.8: **Trends in publishing on cross-cutting strategic technologies in the Arab States**

Volume of scientific publications on cross-cutting technologies in the Arab States, 2012 and 2019

Legend: ■ Publications, 2012 ■ Publications, 2019 ○ Growth rate (2012–2019)

4.24%
Global share of publications on cross-cutting strategic technologies in the Arab States in 2019

Bar chart data:
- AI & robotics: 2 734 (2012), 6 868 (2019), growth rate 1.63
- Energy: 2 622 (2012), 6 187 (2019), growth rate 1.69
- Materials: 1 207 (2012), 3 219 (2019), growth rate 1.83
- Nanotechnology: 378 (2012), 1 340 (2019), growth rate 1.87
- Biotechnology: 336 (2012), 833 (2019), growth rate 1.28
- Opto-electronics & photonics: 340 (2012), 577 (2019), growth rate 1.26
- Strategic, defence & security: 136 (2012), 437 (2019), growth rate 1.88
- Bioinformatics: 122 (2012), 213 (2019), growth rate 1.17
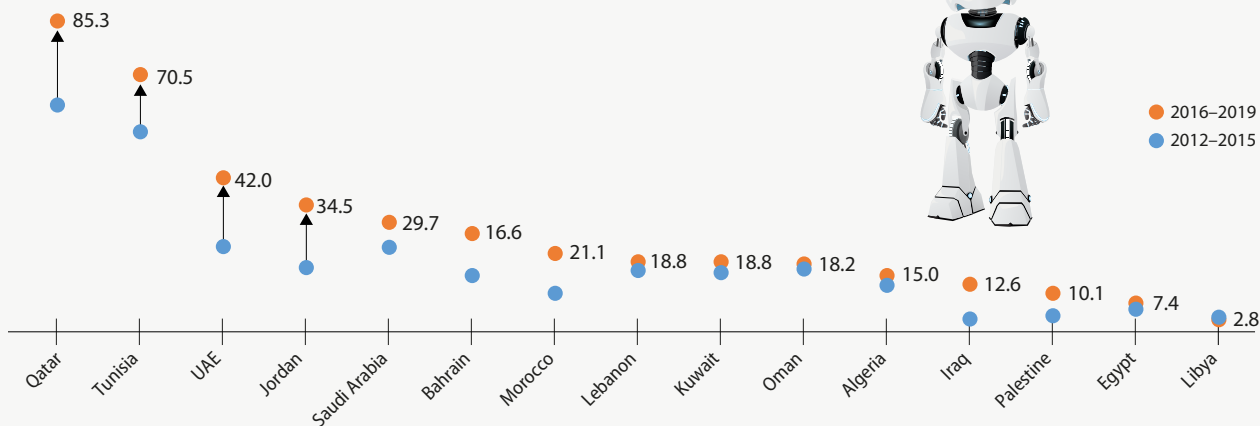- Internet of Things: 4 (2012), 162 (2019), growth rate 4.47

From 2011 to 2019, Saudi Arabia (26%) and Egypt (20%) accounted for the largest shares of publications on cross-cutting strategic technologies in the Arab States.

Iraq's contribution to regional output on cross-cutting strategic technologies tripled from 3% over 2012–2015 to 9% over 2016–2019.

5 977
Publications on AI & robotics by Tunisian researchers over 2011–2019, the leader by volume among Arab countries
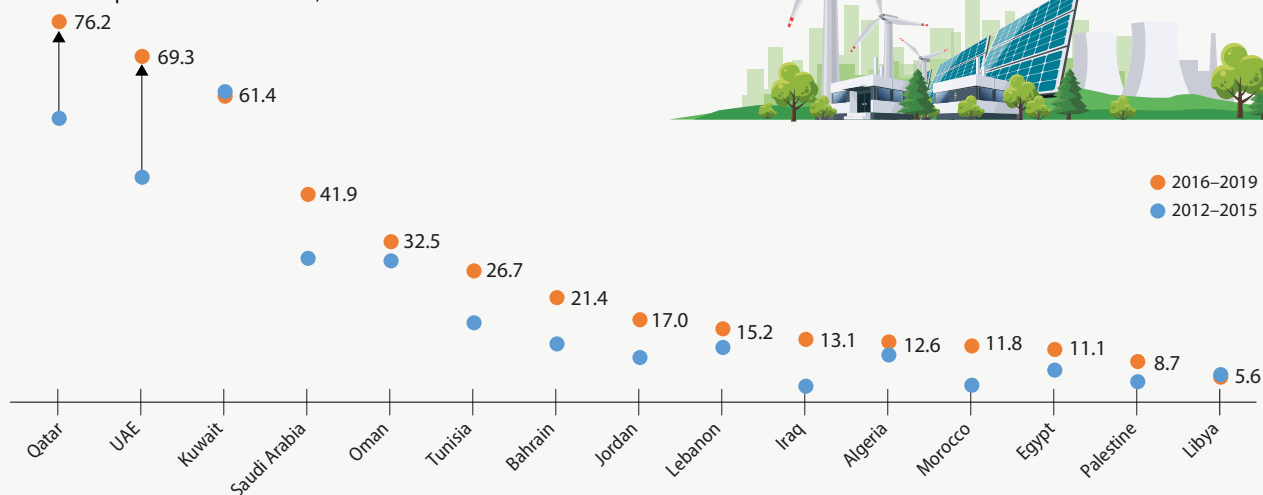
Top 15 Arab countries by publication intensity on AI & robotics, 2012–2015 and 2016–2019
Publications per million inhabitants, data labels are for 2016–2019

Legend: ● 2016–2019 ● 2012–2015

Data labels (2016–2019):
- Qatar: 85.3
- Tunisia: 70.5
- UAE: 42.0
- Jordan: 34.5
- Saudi Arabia: 29.7
- Bahrain: 16.6
- Morocco: 21.1
- Lebanon: 18.8
- Kuwait: 18.8
- Oman: 18.2
- Algeria: 15.0
- Iraq: 12.6
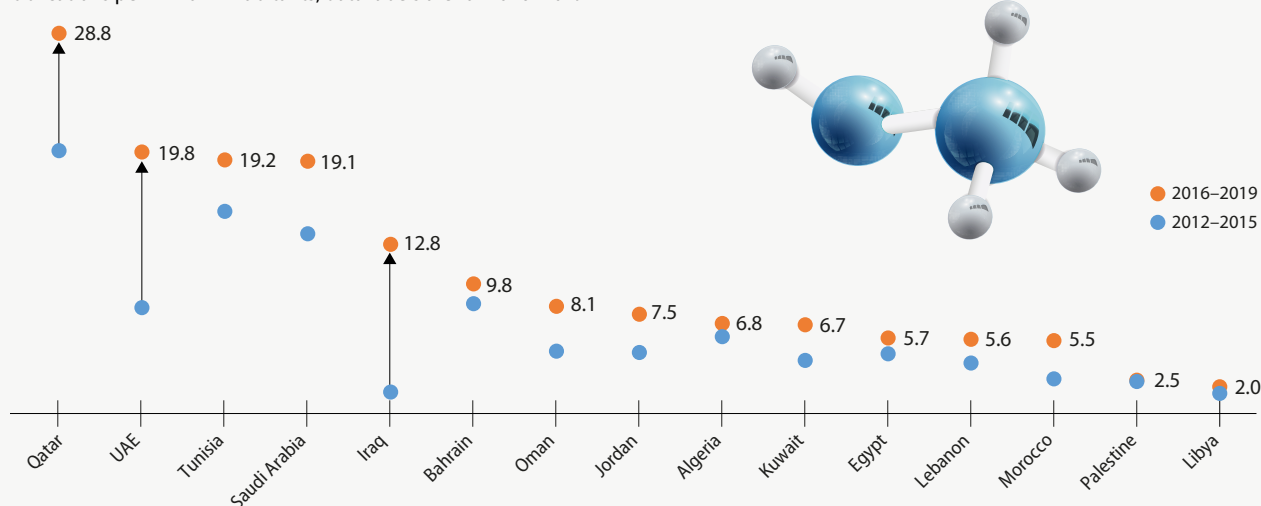- Palestine: 10.1
- Egypt: 7.4
- Libya: 2.8

Top 15 Arab countries by publication intensity on energy, 2012–2015 and 2016–2019
Publications per million inhabitants, data labels are for 2016–2019

- 2016–2019
- 2012–2015

76.2 Qatar
69.3 UAE
61.4 Kuwait
41.9 Saudi Arabia
32.5 Oman
26.7 Tunisia
21.4 Bahrain
17.0 Jordan
15.2 Lebanon
13.1 Iraq
12.6 Algeria
11.8 Morocco
11.1 Egypt
8.7 Palestine
5.6 Libya

Top 15 Arab countries by publication intensity on materials science, 2012–2015 and 2016–2019
Publications per million inhabitants, data labels are for 2016–2019

- 2016–2019
- 2012–2015

28.8 Qatar
19.8 UAE
19.2 Tunisia
19.1 Saudi Arabia
12.8 Iraq
9.8 Bahrain
8.1 Oman
7.5 Jordan
6.8 Algeria
6.7 Kuwait
5.7 Egypt
5.6 Lebanon
5.5 Morocco
2.5 Palestine
2.0 Libya

Note: Countries produced the greatest output on these three cross-cutting strategic technologies: AI and robotics, energy and materials science. The growth rate was calculated as the number of publications during 2016–2019 divided by the number of publications during 2012–2015 to buffer the variability among individual years. See the statistical annex for complete data for all countries, freely available from the *UNESCO Science Report* web portal.

Source: Scopus (excluding Arts, Humanities and Social Sciences); data treatment by Science-Metrix

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