



UK Science & Innovation Network Country Snapshot

Kingdom of Saudi Arabia

Science and Innovation Landscape in the Kingdom of Saudi Arabia (KSA)

(Global R&D and innovation rankings from GII 2019)

The Kingdom of Saudi Arabia (KSA) is the largest economy in the Arab world accounting for 25% of the Arab world's Gross Domestic Product (GDP). More than 65% of the total KSA population (34.173 m) is under 30 years of age, with a per capita GDP recorded at 55,704 US Dollars which places it sixteenth largest economy in the world.

Saudi Arabia remains the world's largest oil producer and has recently chosen to direct a good share of its revenue to improving education and scientific research. As part of the [Saudi Vision \(SV\) 2030](#) under the patronage of H.E. King Salman bin Abdulaziz Al Saud, efforts are under-way to shift the country towards a knowledge-based economy, reducing the Kingdom's reliance on fossil fuels. These improvements are driven by a comprehensive national science strategy (The National Science, Technology, and Innovation Policy, [NSTIP](#)) to be implemented until 2030. This includes multiple strategic programs in efforts to increase the current GDP spend of 0.8% (2017) on research projects to 2.5% of GDP by 2020 along with vast investment into high-tech universities and cutting-edge laboratories, making Saudi Arabia the Arab region's most prolific nation in scientific research output.

Saudi Arabia is currently undergoing massive restructuring of its **Research, Development and Innovation (RDI) ecosystem**, not just to overcome its structural challenges (specifically the gap between research investment and innovation outputs), but also with an aspiration to become a hub of modern scientific education and with a robust research and innovation eco-system. As part of this, there is a recently reviewed RDI strategy more closely linked with the industrial clusters under the National Industrial Development & Logistics Program ([NIDLP](#), valued at > \$1.3 Trillion) to support the industrial impetus for the fulfillment of Vision 2030 ambitious goals.

The RDI strategy:

The strategy suggests at carrying out basic, development and innovation research in a number of the Kingdom's main strategic sectors. It also includes stimulus to increase the Kingdom's self-reliance in other strategic sectors and increase the economic diversification. Based on a thorough mapping, NIDLP targets four key sectors: energy, logistics, mining and industry. Considering the universality of the industry sector, the RDI strategy has divided the industry sector into the following sub-sectors: **water, agriculture and aquaculture, environment, health, information and communication technology, oil and gas, advanced materials, construction, nuclear science, space, aeronautics, and defense and security.**

Current RDI ecosystem:

The aim of the RDI strategy is not just expansion of the the RDI ecosystem but also to bring various research enablers currently operating in silos under a holistic structure for cohesive outcomes under the SV2030. There are numerous research centres performing basic to applied research and funding bodies

KSA position in Global
Innovation Index 2019:

68th

R&D Ranking:

29th



in above listed key sectors forming part of a broad mix of stakeholders, ranging from:

- **Government:** Government entities funding and catalysing RDI initiatives are ministries including the Ministry of Education ([Deputship for Research & Innovation - DRI](#)), Ministry of Energy, [Ministry of Industry and Mineral Resources](#), [Ministry of Investment](#), and Ministry of Economy and Planning, in addition to executive authorities, the likes of the Saudi Food and Drug Authority ([SFDA](#)).
- **National research centers:** These include King Abdulaziz City for Science & Technology ([KACST](#)), King Abdullah Petroleum Studies and Research Center ([KAPSARC](#)), King Fahd Specialist Hospital and Research Center ([KFSHRC](#)) and King Abdullah International Medical research Centre ([KAIMRC](#)).
- **Research Centers at universities:** There are 68 degree-awarding higher-education institutions in Saudi Arabia, including 29 public and 14 private universities. Whithin these, five research universities are currently at the vanguard of Saudi Arabia's growing research landscape; [King Abdulaziz University](#), [King Saud University](#), [Umm Al Qura University](#), King Fahd University of Petroleum & Minerals ([KFUPM](#)), and King Abdullah University of Science and Technology ([KAUST](#)).
- **Public and private conglomerates:** R&D centers are embedded within the large parastatal corporations that drive the Saudi economy: [Saudi Aramco](#), which has a monopoly on upstream oil development and controls 98% of the country's oil reserves, and Saudi Basic Industries Corporation ([SABIC](#)), the world's 7th-largest petrochemical producer and the largest non-oil company in the Middle East. Other firms conducting R&D include Saudi Telecom Company ([STC](#)), [Ma'aden](#), and Saudi Technology Development and Investment Company – [TAQNIA](#).
- **Technology transfer centers:** There are four active technology transfer offices located at KACST, KFUPM, KAUST and [RPD Innovations](#).
- **Scientific and technology parks alongside universities:** There are six technical parks in three different regions; the Central Region - home to [Riyadh Valley Company](#), the Eastern Province - home to [Dhahran Techno- Valley](#), and the Western Province - home to [Wadi Makkah Company](#), Wadi Jeddah Company, [Wadi Taibah](#) and Taif Techno Valley.
- **Incubators:** There are many incubators in various regions in the Kingdom, like Prince Mohammed bin Salman Incubator for Digital Information, [TAQADAM](#) at KAUST, King Salman Youth Center (KSYC) and [BADIR](#) program for technology incubators, [MiSK](#), and SME Authority or '[Monsha'at](#)'.
- **Joint international technology owners:** Saudi Arabia has collaborative investment and/or mutual ownership of research IP's and patents with leading International universities such as MIT, Stanford University, Harvard University, University of Cambridge and University of Oxford and with major international companies such as Google, Apple, Amazon, Huawei, Babylon, Boeing, and Lockheed Martin.
- **Technology-centric Venture Capital (VC) Investments:** Technology based VC investments are expected to grow ten-fold over the next 5 years, with VC injections to potentially reach \$2 Billion by 2025. Saudi Technology Ventures ([STV](#)) is the Middle East's largest VC fund established to bridge the gap between supply and demand in the region's digital startup space.
- **Exceptionally innovative smart giga-projects:** The giga-projects are backed by the country's sovereign wealth fund; Public Investment Fund ([PIF](#)) and involve significant R&D potential. [NEOM](#) giga-city project (the size of Belgium), which aims to create from scratch the most advanced fully automated Ai enabled human habitat on Earth. The city is designed on a futuristic model and will be serviced by humanoids, passenger drones, and equipped with fully automated onsite agri-tech, bio-tech, manufacturing and healthcare clusters. Other giga-projects presenting scope for marine and archeology baseline research include [The Red Sea Project](#) (luxury islands), [Amaala](#) (exclusive wellness retreat), and [Qiddiya](#) (entertainment city the size of Gibraltar).

UK Science and Innovation in KSA and success

The UK is well positioned in KSA and seen as 3rd preferred partner of choice for knowledge-transfer based collaborations, after the US and China (Source: Nature).



Over the last decade, there have been more than 100,000 Saudis that have studied in UK. There are currently >4000 Saudi students pursuing postgraduate research degrees (Source: HESA 2019). The petrochemical conglomerates like Aramco and SABIC have outsourced a lot of R&D to international research centres including UK (Oxford and Cambridge). There is a significant amount of collaboration taking place in country as well.

In September 2018, McLaren racing and KAUST signed a five-year research and development agreement focusing on extreme performance technology. This partnership aims to advance research in areas of computational fluid dynamics, machine learning, fuel and lubricants, advanced mathematics and sensors and electronics. KAUST and McLaren are working together on Formula 1 cars that are essentially a testing ground for technology so the potential for translating scientific discoveries to real-world solution is significant. [Article](#)

Saudi Arabia has ramped up its technology investments as part of its 2030 strategic plan to "lead the digital economy" and is already a major investor under, Public Investment Fund, making a \$550 M investment in NHS digital health start up [Babylon](#).

The [Abdul Latif Jameel Institute for Disease and Emergency Analytics](#) (J-IDEA) at Imperial College London was cofounded by Community Jameel and Imperial College in October 2019. With the mission of combating the threat of disease worldwide, J-IDEA uses its expertise in data analytics, modelling and epidemiology to understand the causes of the diseases and health crises affecting populations around the world, and to find workable solutions to address these, including responding to health emergencies like COVID 19.

There are strategic bilateral agreements between UK and Saudi Arabia following state visits in 2018 ([Joint communique](#)). It is estimated that together these opportunities are expected to amount up to \$100 billion over a 10-year period, from which PIF will aim to target direct investments amounting to \$30 billion. UK SIN network facilitates UK-KSA engagements including exchange of R&D, technical knowledge, advice, skills and expertise underpinning the health, clean energy and industry, and education bilateral agreements.

UK SIN network is working very closely with the recently established Deputyship for Research and Innovation (DRI) under the Ministry of Education (MOE), specifically on technology transfer centers. In recognition of the importance of strengthening the R&D ecosystem in Saudi Arabia by supporting universities and collaborating with different stakeholders, a total budget of SAR 6 billion has been allocated to this initiative in DRI. SIN also collaborated with DRI last year to deliver the first ever [UK-KSA clean energy and AI research forum](#), attended by BEIS Chief Scientific Advisor Prof. John Loughhead. DRI developed the R&D program to directly fund research via public universities. DRI has also awarded 26 UK university its International Collaboration Grant which is worth > £10 M for joint research projects.



UK SIN network supported colleagues in Prosperity and DIT for a Renewable Energy Trade Mission in March 2019. As a result of the exposure during the mission, [UK based Solar Water Plc](#) got awarded by NEOM to build first ever 'solar dome' desalination process in KSA. The solution is 100% carbon neutral and completely sustainable, utilising the concentrated power of the sun. Supported by Cranfield University, it is set to help reverse climate change by replacing traditional fossil fuel water treatment plants and also develop more carbon sinks.



Recently the UK SIN network has delivered and supported a variety of events in collaboration with local partners to promote collaboration in Science and Innovation between UK and KSA. Some of them are the UK-KSA [Patient Safety Summit](#) in December 2019, the [Winter Enrichment Program](#) at KAUST in January 2020, as well as supporting 3 Trade Missions with partners like DIT and Saudi British Joint Business Council on Smart City technologies, leading to > £80M worth of confirmed bilateral projects.



Saudi Arabia is currently hosting the presidency for [G20 2020](#). Most of the engagement of UK SIN network recently is along the technological and innovation centric elements that are part of [Science Twenty \(S20\)](#) and [Think Twenty \(T20\)](#) engagement groups. While the T20 engagement group has very well defined taskforces around energy and economics, the S20 strand is still developing (hosted by KAUST). The theme for S20 will be “Foresight: Science for Navigating Critical Transitions”, including 4 taskforces; 1. Future of Health, 2. Circular Economy, 3. Digital Revolution, 4. Connecting the Dots.

SIN Contacts (KSA)

Email: SIN.Gulf@fco.gov.uk

Science and Innovation Advisor – Saudi Arabia (British Embassy Riyadh)

Mariam Mujtaba: Mariam.Mujtaba@fco.gov.uk

Tel. 966 (0)11 481 9293

Mobile: +966 50 633 4233

Science and Innovation Advisor – Jeddah (British Consulate-General Jeddah)

Nouf Imam - nouf.imam@fco.gov.uk

Tel: +966 (0) 12 622 5550 Ext. 2206

Mobile: 00966 (0) 550276896

Head of UK Science and Innovation Network (Gulf)

Nick Boucher: Nicholas.Boucher@fco.gov.uk

Tel. +974 4496 2057

Mobile: +974 3375 9387

Twitter: @UKSINet

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