Saudi Arabia once again tops MEED's ranking, with 29 of the top 100 megaprojects and 46 per cent of the total active value

TOP 100 MEGAPROJECTS

BUDGET CUTS DISRUPT THE MEGAPROJECTS LANDSCAPE

Austerity affects dozens of major projects across the region, but oil price improvement coaxes hope for fresh spending

The projects market in the Middle East and North Africa (Mena) region continued to be characterised by heightened volatility in 2021 in the wake of the pandemic and the downward pressure exerted on project spending among oil exporters and importers alike.

This disruption is reflected in the degree of turnover on MEED's Top 100 Megaprojects ranking over the past 12 months, with dozens of projects placed on hold or cancelled, alongside more routine completions.

Projects that have fallen out of the top 100 list due to the uncertainty include Saudi Arabia's $25bn crude oil-to-chemicals plant in Yanbu and megaprojects whose future planned phases are now in doubt, such as the King Abdulaziz International airport in Jeddah. Several key upstream energy schemes were also paused over the course of the pandemic period, but have since been greenlit with the recent rise in oil prices.

As it now stands, the top 100 most active megaprojects alone represent more than $1.7tn-worth of budgeted value. Within this there is $970bn of active value, defined as work either under execution; in a state of pre-execution; or theoretically budgeted for, but without detailed scoping at this time.

Top-performing countries

Saudi Arabia, as the region's largest economy, remains pre-eminent in terms of its share of the value of the top megaprojects thanks to the $500bn Neom City urban masterplan and schemes such as the $23bn Green Riyadh project, $23bn Jeddah Central project, $16bn Red Sea Tourism Project and $8bn Qiddiya leisure and entertainment project.

In all, the kingdom accounts for 29 out of the 100 projects in the ranking, as well as 46 per cent of the total active value. In 2021, Saudi Arabia's project market also reclaimed

PHOTOGRAPH: TRIPLE BAY, AMAALA

TOP 100 BIGGEST MEGAPROJECTS IN THE MIDDLE EAST AND NORTH AFRICA

Rank	Project	Total budget* ($bn)	Active value** ($bn)	Status	Owner	Country
1	**Neom City development**	500.0	176.5	Execution	PIF	Saudi Arabia
2	**North Field LNG expansion**	42.4	42.3	Execution	Qatargas	Qatar
3	**Noor Capital Gardens, Cairo**	32.0	32.0	Design	TMG/NUCA	Egypt
4	**El-Dabaa nuclear power plant**	28.8	28.8	Execution	Egyptian Electricity Holding Company	Egypt
5	**Green Riyadh**	23.0	23.0	Execution	Royal Commission for Riyadh City (RCRC)	Saudi Arabia
6	**Lusail development, Doha**	37.2	21.4	Execution	Lusail Real Estate Development Company	Qatar
7	**Renewable energy programme**	21.2	20.9	Execution	Repdo	Saudi Arabia
8	**Dahiyat al-Fursan**	20.0	20.0	Design	Housing Ministry	Saudi Arabia
9	**Jeddah Central project**	20.0	20.0	Design	PIF	Saudi Arabia
10	**Strategic crude oil export pipeline**	31.5	18.0	Bid evaluation	Oil Ministry	Iraq
11	**Marjan field development**	17.8	17.6	Execution	Saudi Aramco	Saudi Arabia
12	**King Salman International Park, Riyadh**	17.0	17.0	Execution	RCRC	Saudi Arabia
13	**Sidra District community homes**	17.0	17.0	Execution	Roshn	Saudi Arabia
14	**Mecca public transportation programme**	17.0	17.0	Execution	Makkah Mass Rail Transit Company	Saudi Arabia
15	**Duqm refinery and petrochemicals complex**	16.0	16.0	Execution	Duqm refinery	Oman
16	**High-speed rail network**	15.7	15.7	Execution	National Authority for Tunnels (NAT)	Egypt
17	**The Red Sea tourism project**	15.9	15.4	Execution	The Red Sea Development Company	Saudi Arabia
18	**Meydan City development**	20.6	15.4	Execution	Meydan Group	UAE
19	**Cairo metro network**	20.0	14.9	Execution	NAT	Egypt
20	**Diriyah Gate investment programme, Riyadh**	13.8	13.7	Execution	Diriyah Gate Development Authority	Saudi Arabia
21	**Saudi housing programme**	20.0	13.6	Execution	Housing Ministry	Saudi Arabia
22	**Hail and Ghasha sour gas development**	13.5	13.5	Execution	Adnoc	UAE
23	**Bushehr nuclear plant**	10.0	10.0	Execution	Atomic Energy Organisation of Iran	Iran
24	**Al-Zour petrochemicals complex**	9.6	9.6	Main contract PQ	Kipic	Kuwait

*=Either stated value or MEED estimate; **=Sum of active and ongoing project components; PIF=Public Investment Fund; LNG=Liquefied natural gas; TMG=Talaat Moustafa Group; NUCA=New Urban Communities Authority; Repdo=Renewable Energy Project Development Office; Adnoc=Abu Dhabi National Oil Company; PQ=Prequalification; Kipic=Kuwait Integrated Petroleum Industries Company. Source: MEED Projects

its position as the most active in value terms, having seen $21bn-worth of major project spending year-to-date by the end of November.

Egypt comes next in terms of its megaprojects, with $121bn-worth of active value. This is driven in large part by the major schemes initiated in Cairo under the present government, including the recently announced $32bn Noor Capital Gardens scheme. The country is also pressing ahead with rail schemes for metro and monorail networks in Cairo and a national high-speed rail network.

Next comes Qatar, which was close behind Saudi Arabia in terms of its value of project awards in 2021 – amounting to more than $21bn, driven by the $13bn North Field liquefied natural gas processing trains contract awarded by Qatar Gas to Chiyoda and Technip FMC. The country has $104bn in active megaproject value, including ongoing construction and infrastructure work ahead of the Fifa World Cup in November 2022.

The UAE meanwhile dropped into fourth place, with $101bn-worth of active value. Principle projects include the ongoing development of the $15bn Meydan City in Dubai and the $13.5bn Hail and Ghasha sour gas field development in Abu Dhabi.

Kuwait, Iraq, Iran and Oman are next in active value terms, although all of these markets have their share of fiscal and economic uncertainty to deal with, which could readily affect major project schemes.

Iraq's $18bn strategic crude oil export pipeline, for instance, is a prime example of a project that has repeatedly cycled through the various stages of pre-execution for years. The petrochemicals component of Oman's $16bn Duqm refinery and petrochemical complex and Kuwait's $9.6bn Al-Zour petrochemical complex have also faced uncertainty.

Leading sector

In industry terms, the construction sector continues to dominate the megaprojects landscape, making up 44 of the 100 schemes and $519bn-worth of the total active value. This is led by the many greenfield urban megaprojects and other real estate schemes.

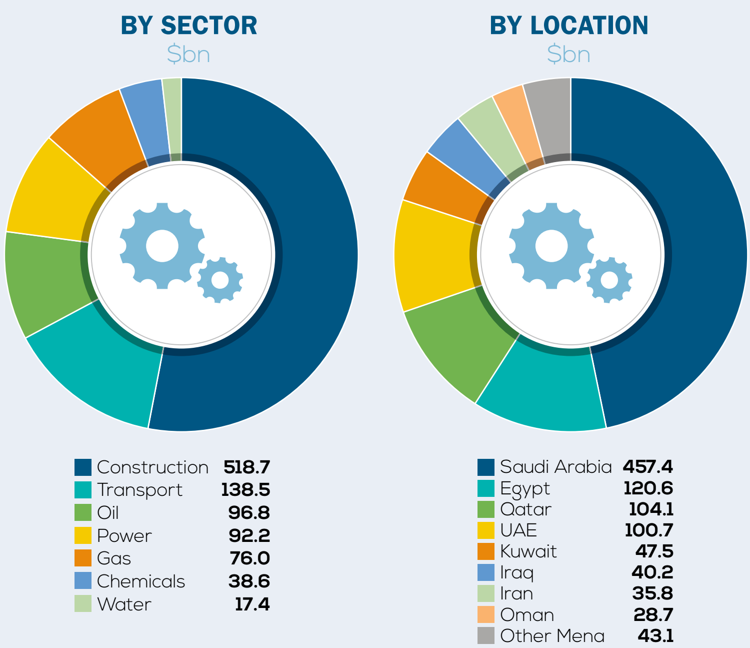
Next is transport, with 21 schemes and $132bn in value, led by ambitious public transport, rail and road schemes.

The region's oil sector, once so dominant, has been pushed into third place, with just 13 projects and $97bn in value – reflecting, no doubt, the pressures of the energy transition and its recent impact, in combination with low oil prices, on hydrocarbons investment.

Looking ahead, it is anticipated that the strengthening of global oil prices will have an invigorating effect on regional project activity, particularly on state-led capital-intensive projects such as in the oil and gas and construction sectors. It will nevertheless likely be up to region's sovereigns to reduce their austerity and back greater spending in regional budgets in order for such aspirations to be realised.

John Bambridge

TOP 100 MEGAPROJECTS BY ACTIVE VALUE



Mena=Middle East and North Africa. Source: MEED Projects

Rank	Project	Total budget* ($bn)	Active value** ($bn)	Status	Owner	Country
25	**Dubai Metro**	20.6	9.3	Execution	Dubai Roads & Transport Authority	UAE
26	**Special Economic Zone at Duqm (Sezad)**	15.5	9.2	Execution	Sezad	Oman
27	**Zuluf oil field development**	9.1	9.1	Bid evaluation	Saudi Aramco	Saudi Arabia
28	**Local roads and drainage programme**	13.2	8.2	Execution	Ashghal	Qatar
29	**Dubailand**	31.4	7.6	Execution	Dubai Holding	UAE
30	**Strategic sewerage tunnel, Dubai**	8.5	7.4	Feed	Dubai Municipality	UAE
31	**Amiral complex**	9.0	7.3	Feed	Satorp	Saudi Arabia
32	**The Capital, Cairo**	11.3	7.2	Execution	Accud	Egypt
33	**Qiddiya**	8.0	6.9	Execution	Qiddiya/Misk	Saudi Arabia
34	**Emsaad-Ras Ejdyer motorway**	6.9	6.9	Execution	Emsaad–Ras Ejdyer Motorway Authority	Libya
35	**Maan petroleum refinery complex**	6.8	6.8	Main contract PQ	Private developer	Jordan
36	**KA-Care nuclear power reactor**	40.0	6.5	Feed	KA-Care	Saudi Arabia
37	**Al-Zour North IWPP**	8.1	6.4	Execution	Kuwait Authority for Partnership Projects	Kuwait
38	**South Al-Mutlaa City**	8.3	6.4	Execution	PAHW	Kuwait
39	**Kuwait International airport expansion**	7.2	6.4	Execution	Directorate General of Civil Aviation	Kuwait
40	**Future City, Cairo**	6.8	6.4	Execution	El-Mostakbal Company for Urban Development	Egypt
41	**Saadiyat Island**	15.3	6.2	Execution	Tourism Development & Investment Company	UAE
42	**Moroccan solar plan**	9.0	6.1	Execution	Masen	Morocco
43	**King Abdullah Economic City**	13.9	6.0	Execution	Emaar	Saudi Arabia
44	**Barzan gas development**	8.5	6.0	Execution	Qatargas/ExxonMobil	Qatar
45	**Karbala new refinery**	6.0	6.0	Execution	State Company for Oil Projects	Iraq
46	**Kish gas field development**	6.0	6.0	Feed	National Iranian Oil Company	Iran
47	**Tehran Metro**	15.7	5.8	Design	Tusroc	Iran
48	**Hamad International airport expansion**	19.6	5.8	Execution	Hamad International Airport Steering Committee	Qatar
49	**Azadegan oil field development**	6.0	5.8	Execution	Petroleum Engineering & Development Company	Iran

*=Either stated value or MEED estimate; **=Sum of active and ongoing project components; Feed=Front-end engineering and design; Satorp=Saudi Aramco Total Refining & Petrochemical Company; PQ=Prequalification; KA-Care=King Abdullah City for Atomic & Renewable Energy; IWPP=Independent water and power plant; PAHW=Public Authority for Housing Welfare; Masen=Moroccan Agency for Solar Energy; Tusroc=Tehran Urban & Suburban Railway Operation Company. Source: MEED Projects

Rank	Project	Total budget* ($bn)	Active value** ($bn)	Status	Owner	Country
50	**National schools programme**	5.7	5.7	Execution	Tatweer Buildings Company	Saudi Arabia
51	**Doha water security mega-reservoirs**	7.5	5.4	Execution	Kahramaa	Qatar
52	**Shagaya renewable energy complex**	5.8	5.2	Feed	MEW / KISR	Kuwait
53	**Hawiyah and Haradh gas plant expansion**	6.4	5.0	Execution	Saudi Aramco	Saudi Arabia
54	**Etihad railway network**	6.2	5.0	Execution	Etihad Rail	UAE
55	**Ras Laffan petrochemicals complex**	5.0	5.0	Main contract bid	Qatar Energy	Qatar
56	**Suez oil refining and petrochemicals complex**	4.9	4.9	Execution	Petroleum Ministry	Egypt
57	**Basra refinery upgrade**	4.8	4.8	Execution	South Refineries Company	Iraq
58	**Riyadh Metro**	22.0	4.8	Execution	Arriyadh Development Authority	Saudi Arabia
59	**Borouge 4 petrochemicals complex**	4.8	4.8	Execution	Borouge	UAE
60	**King Abdullah Financial District, Riyadh**	9.8	4.7	Execution	PIF	Saudi Arabia
61	**Al-Wakrah Expressway project**	23.9	4.7	Execution	Ashghal	Qatar
62	**Project Wave**	5.0	4.6	Main contract bid	Adnoc	UAE
63	**Al-Ula tourism development**	4.8	4.6	Execution	Royal Commission for Al-Ula	Saudi Arabia
64	**Helios Green Fuels project**	5.0	4.5	Execution	Acwa Power / Neom / Air Products	Saudi Arabia
65	**The Avenues, Riyadh**	4.5	4.5	Execution	Shomoul Holding	Saudi Arabia
66	**Saudi Landbridge**	4.5	4.5	Design	PTA	Saudi Arabia
67	**King Salman International Maritime Complex**	4.5	4.5	Execution	International Maritime Industries	Saudi Arabia
68	**Mohammed bin Rashid al-Maktoum Solar Park**	5.8	4.4	Execution	Dewa	UAE
69	**Bapco modernisation programme**	4.3	4.3	Execution	Bapco	Bahrain
70	**Sabah al-Salem University development**	7.1	4.1	Execution	Kuwait University	Kuwait
71	**Taiba independent power plant**	4.0	4.0	Main contract PQ	Saudi Power Procurement Company	Saudi Arabia
72	**King Hamad Causeway**	4.0	4.0	Design	Transport Ministry	Saudi Arabia
73	**South Saad Abdullah Residential City**	4.0	4.0	Design	PAHW / LH joint venture	Kuwait
74	**Khalifa Industrial Zone (Kizad)**	20.4	4.0	Execution	Abu Dhabi Ports Company	UAE
75	**Business Bay**	19.5	3.8	Execution	Dubai Properties	UAE

*=Either stated value or MEED estimate; **=Sum of active and ongoing project components; Tusroc=Tehran Urban & Suburban Railway Operation Company; Feed=Front-end engineering and design; MEW=Ministry of Electricity & Water; KISR=Kuwait Institute for Scientific Research; PIF=Public Investment Fund; Adnoc=Abu Dhabi National Oil Company; Dewa=Dubai Electricity & Water Authority; Bapco=Bahrain Petroleum Company; PQ=Prequalification; PAHW=Public Authority for Housing Welfare; LH=Korea Land & Housing Corporation. Source: MEED Projects

Rank	Project	Total budget* ($bn)	Active value** ($bn)	Status	Owner	Country
76	**Halfaya project surface facility**	7.3	3.6	Execution	PetroChina / SOC / Petronas / Total	Iraq
77	**Madinat al-Irfan urban development**	4.8	3.6	Execution	Omran	Oman
78	**Diyar al-Muharraq**	7.4	3.5	Execution	Diyar al-Muharraq	Bahrain
79	**Mubarak al-Kabeer port development**	9.1	3.3	Execution	MPW	Kuwait
80	**Bismayah housing complex**	4.1	3.3	Execution	National Investment Commission	Iraq
81	**Mellitah complex expansion**	4.0	3.2	Main contract PQ	Mellitah Oil & Gas	Libya
82	**Shamkha South**	5.5	3.0	Execution	Musanada	UAE
83	**Qatar Economic Zone**	5.5	3.0	Execution	Qatar Free Zones Authority	Qatar
84	**New Al-Alamein City**	3.0	2.9	Execution	MHUUD	Egypt
85	**Grand Faw Port, Basra**	34.7	2.8	Execution	Ministry of Transport	Iraq
86	**One million homes**	3.0	2.8	Execution	Housing Ministry	Egypt
87	**Zarqa refinery, phase four**	2.7	2.7	Bid evaluation	Jordan Petroleum Refinery Company	Jordan
88	**Pearl Qatar**	8.4	2.6	Execution	United Development Company	Qatar
89	**Ain Sokhna refining and petrochemicals complex**	7.5	2.6	Feed	RSNRP	Egypt
90	**Greater Cairo monorail**	2.5	2.5	Execution	National Authority for Tunnels	Egypt
91	**Downtown Dubai**	13.3	2.5	Execution	Emaar Properties	UAE
92	**Chabahar port development**	4.4	2.4	Execution	Imidro	Iran
93	**Al-Reem Island, Abu Dhabi**	18.0	2.3	Execution	Tamouh Investments	UAE
94	**West Qurna oil field development**	7.4	2.3	Execution	Lukoil / SOC	Iraq
95	**Sabah Al-Ahmed Township**	4.6	2.3	Execution	Public Authority for Housing Welfare	Kuwait
96	**Iraq housing programme**	35.7	2.2	Execution	Construction & Housing Ministry	Iraq
97	**Saudi security compound programme**	27.5	2.1	Execution	Interior Ministry	Saudi Arabia
98	**Bahrain integrated public transport network**	7.9	2.0	Main contract PQ	Transportation Ministry	Bahrain
99	**Plan Azur**	5.3	1.9	Execution	Tourism Ministry	Morocco
100	**Knowledge Economic City, Medina**	4.1	1.9	Execution	MKEC	Saudi Arabia

*=Either stated value or MEED estimate; **=Sum of active and ongoing project components; SOC=South Oil Company; MPW=Ministry of Public Works; PQ=Prequalification; MHUUD=Housing, Utilities & Urban Communities Ministry; Feed=Front-end engineering and design; RSNRP=Red Sea National Refining & Petrochemical Company; MKEC= Madinah Knowledge Economic City. Source: MEED Projects

A push within Saudi Arabia to develop new AI technologies has facilitated Aramco's expansion in the field

ARAMCO STRIVES FOR AI INNOVATION

In the first seven months of 2021, Saudi Aramco published 60 patents relating to artificial intelligence technology

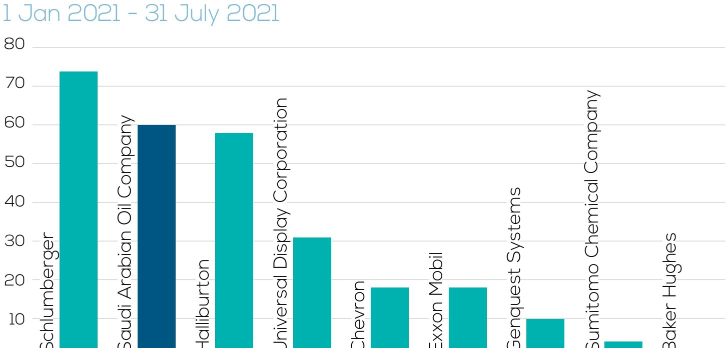
Saudi Aramco's significant investment in artificial intelligence (AI) technology in recent years is showing tangible results, and the company is positioning itself as a major innovator within the AI field in the oil and gas sector.

In the first seven months of 2021, Aramco published a total of 60 AI patents, according to data analytics and consulting company GlobalData. This was more than any other oil and gas company apart from US-based Schlumberger, which published 74 patents.

US-based Halliburton was the third most prolific publisher of AI technology patents in the sector, publishing a total of 58 patents.

TOTAL NUMBER OF OIL AND GAS AI PATENTS

1 Jan 2021 - 31 July 2021



Source: GlobalData

The number of AI technology patents published by Aramco has increased significantly in recent years. In 2020, the company published 51 patents, up by 82 per cent from 28 patents in 2019.

Growing market

The use of advanced digital data techniques, connectivity technologies and AI could prove to be essential to the future profitability of energy businesses in the Middle East in the coming decades.

The global oil and gas AI platform market was worth $2.2bn in 2020, and GlobalData predicts that it will reach $5.3bn by 2024.

Almost half of all oil and gas executives that took part in GlobalData's Emerging Technology Trends 2020 survey said that AI would play a significant role in helping their company survive the impact of the Covid-19 pandemic.

Currently, the Middle East makes up 12 per cent of the global market for AI platforms within the oil and gas sector, according to GlobalData. This is second only to the market share of the US.

China is the third-biggest market for AI platforms in the sector, with 11 per cent of the global market share.

Russia was the world's third-biggest oil-producing country in 2020, behind