


The
Economist

INTELLIGENCE
UNIT



The power of
proximity: Localising
supply chains in the
Middle East

SPONSORED BY:



Acknowledgements

The power of proximity: Localising supply chains in the Middle East is an Economist Intelligence Unit (EIU) report that has been sponsored by the Qatar Free Zones Authority (QFZA). The findings are based on an extensive literature review, an expert interview programme, and data analysis conducted by The EIU between November 2020 and February 2021. The EIU bears sole responsibility for the content of this report. The findings and views expressed do not necessarily reflect the views of QFZA.

The report was produced by a team of researchers, writers, editors and graphic designers, including:

- **Adedayo Bolaji-Adio** – Project Director
- **Dina Alborn** – Project Manager
- **Melanie Noronha** – Project Advisor
- **Adam Green** – Contributing Author and Researcher

Interviewees

Our thanks are due to the following people, in alphabetical order, for their time and insights:

- **Javed Ahmad** – Senior Vice President, Global Supply Chain International region, Schneider Electric
- **Henrik Ambak** – SVP Cargo Operations Worldwide, Emirates SkyCargo
- **Marcos Eloi** – Chief Procurement Officer, The Kraft Heinz Company
- **Guillaume Halleux** – Chief Officer Cargo, Qatar Airways
- **Bernard Hoekman** – Professor and Director of Global Economics, Robert Schuman Centre for Advanced Studies, European University Institute
- **Jan Hoffmann** – Chief of Trade Logistics, United Nations Conference on Trade and Development
- **Jens Kilimann** – Partner, Roland Berger
- **Gavin Maxwell** – MENA Global Business Services and Finance Transformation Leader, Ernst & Young
- **Keith Miears** – SVP Indirect Procurement & Supply Chain Strategy, Dell
- **Frank Vorrath** – Vice President for Supply Chain Service Delivery for EMEA and APAC, Gartner
- **Jonathan Wright** – Global Head of Cognitive Process Reengineering, IBM Global Business Services

Executive summary

Three decades of globalisation brought about by the proliferation of free trade agreements, investment liberalisation, and enhanced logistics have facilitated the geographic diversification of supply chains away from domestic markets. From the 1980s to the financial crisis in 2008, supply chains fanned out across the world as companies sought lower-cost locations for the sourcing of inputs and production. For countries in the Middle East, globalised supply chains have enabled greater linkages with markets around the world as well as an increased dependence on foreign imports for the provision of essential products.

However, since the financial crisis, and especially in the last five years, a more splintered trade environment has emerged, characterised by rising economic nationalism, trade tensions, and the emergence of complex global trade risks, including extreme weather and, most recently, the COVID-19 pandemic. Through a combination of positive trends such as growing consumer markets in emerging economies, the democratisation of manufacturing through innovations like 3D printing, and government policies to increase local participation in global value chains, countries and companies in the Middle East and elsewhere have begun to consider supply chain localisation.

This report explores the drivers and implications of the shift from global to local supply chains in the Middle East's Gulf Cooperation Council (GCC) and Levant regions, analysing the drivers of localisation for both governments and corporations, key localisation sectors, and how the pandemic has impacted localisation trends. It also

identifies potential approaches for addressing challenges to supply chain localisation in the region.

Key findings:

- **The GCC and Levant nations have courted supply chain localisation through local content policies, investment promotion reforms to encourage foreign direct investment (FDI), and improvements to their logistics and technology infrastructure.** Supply chain localisation approaches have varied across countries and in line with their economic growth strategies. Oil-rich and populous Saudi Arabia has underscored the importance of local content as part of an economic transformation plan to diversify from oil and increase employment for nationals, while smaller countries, such as the UAE, Qatar and Bahrain, have emphasised openness to international talent and a "hub and gateway" economic strategy. In Jordan, localisation has been part of specific attempts to build capacity in the solar energy sector through mandatory quotas on competitive tenders. GCC governments have equally been focusing on enhancing their logistics and technology infrastructure to encourage localisation, including through investments in advanced technologies such as 3D printing and cloud computing; the development of "smart" cities employing the Internet of Things; the establishment of special economic zones; and the development of state-of-the-art aviation and port infrastructure. Governments across the Middle East have also sought to improve the overall business

environment to enable a more FDI-friendly landscape, although performance is mixed. High-income GCC countries are among the world's leading performers in this regard, while middle- and lower-income and conflict-affected countries have made more limited gains. Multinational companies have realised a range of benefits from localisation in the region, including greater customer-centricity and improved agility. Improvements in the region's logistics sectors, especially in the GCC, are enablers that can attract further local production in the future.

- **Food and agriculture, next-generation manufacturing, and energy are prominent sectors for localisation.**

Food insecurity has prompted significant localisation, especially by Gulf states, through investment in regionally proximate areas like East Africa and, more recently, innovations in agri-tech and vertical agriculture. In manufacturing, increasing investment in and adoption of the IoT, as well as innovations in 3D printing, have supported productivity and reduced costs, making regional manufacturing more competitive. The energy sector is a third focal area, from enhancing local

participation in oil and gas to building capacity to support decarbonisation. Solar energy and cleantech are attracting significant localisation efforts through initiatives such as academic research in leading Gulf universities, and the use of local content as a procurement instrument to attract investment in green energy.

- **Key challenges for supply chain localisation include ensuring the right local skills and capabilities, a continual focus on creating an open business environment, and achieving stronger regional integration.**

To attract localisation, governments in the Middle East have used incentives, such as low tax and light-regulation zones, and regulatory mandates, such as local content policies. To expand and deepen localisation, it is crucial that countries in the Middle East invest in the broader FDI landscape, support the development of industrial clusters, and enhance the skills of the local labour force as the world economy becomes more knowledge-based. Achieving a stable macroeconomic policy environment and enhancing regional integration are also key factors that could positively inform companies' localisation decisions.

Contents

Introduction	5
Section 1: Supply chain transformation	6
Section 2: Drivers and mechanisms of supply chain localisation in the GCC and Levant	10
Local content policies	10
Agility, resilience and customer-centricity	11
Improvements to the enabling environment: technology and logistics	13
Section 3: Sectoral trends in supply chain localisation	19
Food and agriculture	19
Digital and next-generation manufacturing	20
Traditional and renewable energy	22
Section 4: Challenges of supply chain localisation in the Middle East and potential responses	24
Limited labour availability and skills	24
Limited cluster effects	26
Restrictive business environments and limited regional integration	27
Conclusion	29

Introduction

Supply chains are at a historic inflection point. For more than 30 years, firms sought to reduce costs through increasingly complex and dispersed vendor networks and razor-thin inventories. But in recent years, risks ranging from climate change to protectionist governments have led businesses to consider security of supply, alongside price. The COVID-19 pandemic has accelerated this reorientation, as several industries, particularly manufacturing, have faced the prospect of having to halt production due to an absence of inputs.

One strategy that has emerged in response to these challenges is supply chain localisation – using a smaller network of known and geographically clustered suppliers, and possibly having multiple, independent production networks in different regions. While not a panacea to risks of supply disruption, localisation is likely to form part of firms' attempts to increase their resilience to shocks in future.

The shift in supply chain strategy is important to the Middle East. The pandemic has highlighted the region's dependence on imports for essential products, most importantly food, yet the sources of these imports to the region have become far more complex in just one generation. At the start of the millennium, nearly two-thirds of imports

to the Middle East and North Africa (MENA) came from Europe and North America, according to World Bank data. By 2018 those two regions accounted for less than half of imports, with East and South Asia filling the gap.¹

This report examines how countries and companies are pursuing localisation strategies in the GCC and Levant regions. It analyses the factors driving localisation as well as efforts to improve conditions for the localisation of key supply chains. The report combines extensive secondary research, data analysis and insights from interviews with supply chain executives and thought leaders.

The report is structured as follows. Section 1 examines why and how supply chains have become increasingly global in the Middle East as a whole over the last three decades, and Section 2 explores the internal and external factors that are driving the shift towards supply chain localisation, specifically in the GCC and Levant. Section 3 explores trends in supply chain localisation in the GCC and Levant, including an examination of leading localisation sectors. In Section 4, the discussion turns to exploring the challenges in localising supply chains in the Gulf and Levant, and the report concludes by suggesting approaches to overcoming challenges to localisation in the region.

Section 1: Supply chain transformation

For three decades leading up to the 2008 financial crisis, supply chains deepened and widened across the world. The extension of free trade under the aegis of the World Trade Organisation (WTO) eliminated or reduced tariff and non-tariff barriers to the movement of goods between countries, while the signing of bilateral investment treaties between states protected companies' foreign investments, encouraging investors to engage in emerging economies. Additionally, globalisation, enabled by technological developments, led to a decrease in transport and logistics costs. This period led to the era of the "global value chain", typified by cross-border factories in which production is disaggregated across countries and companies.²

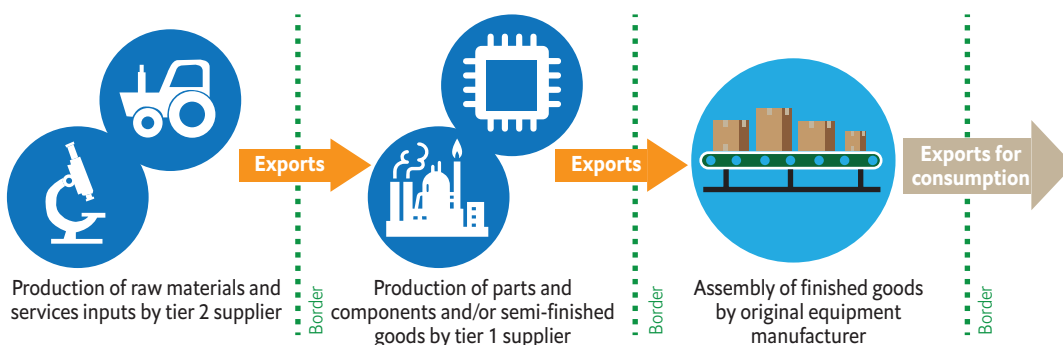
Companies, driven by the pursuit of lower costs, set up production in locations with cheaper labour and operational costs to ship products to a range of markets, from high-income to developing countries. They focused on creating long and lean supply chains, manufacturing goods in multiple nations globally to obtain the greatest efficiencies.

This shift in supply chains abroad contributed to an increase in global trade from 39% of global GDP in 1990 to 60% in 2019.^{3,4}

In the Middle East, although international trade has increased (see chart below), the region's integration into global production and higher-value-added parts of the global supply chain has been limited and uneven. Between 1990 and 2018, the share of exports in the MENA's GDP increased by 11.5%.⁵ Yet, the Middle East's participation in global value chains remains below 10%, and the region has a relatively low share of foreign value-added in exports.⁶ Overwhelmingly, the GCC and Levant's integration into global trade has been as exporters of raw materials and primary commodities and importers of intermediate and finished goods. This encompasses exports of oil and gas, but also of other materials. Syria and Jordan, for instance, are among the world's leading producers of phosphate; Bahrain hosts one of the largest aluminium smelters in the world; and Oman was the largest gypsum exporter globally as of 2017.^{7,8,9}

What is a global supply chain?

A global supply chain splits up the production process across countries and regions. Firms specialise in a specific task and do not produce the entire product themselves.



Source: EIU analysis.

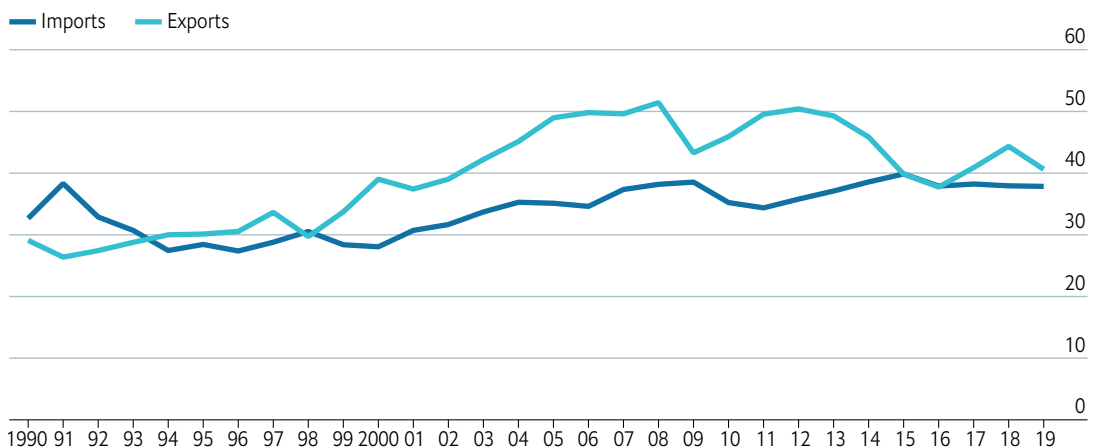
The Middle East region lags behind other emerging economies and comparator regions in export sophistication, and the value-added of non-oil exports remains relatively low.¹⁰ Countries in the Gulf and the Levant depend heavily on imports of manufactured goods due in part to higher wage costs in some of the region's countries and restrictive business regulations in others. Between 2000 and 2018, imports of consumer materials in the MENA grew faster than either raw materials or intermediary goods, indicating a high dependence on imports of finished goods and low production by regional assembly lines. This is further illustrated by the low proportion of manufacturing output to national output in high-income GCC countries, such as Saudi Arabia and the UAE, which stood at 5.8% and 2.6% respectively in 2018, compared with around 27% in China and 19% in Japan.¹¹

To capture more of the global value chain, diversify their economies, and minimise the risk of external shocks, some governments in the GCC and the Levant are implementing policies and programmes to promote

localisation. Supply chain localisation policies “are not looking at investment into a country to export back out, they are looking at how you localise supply chains to meet the needs of the domestic market in order to use the domestic market to build a regional business,” explains Jan Hoffmann, Chief of Trade Logistics, at the United Nations Conference on Trade and Development (UNCTAD).

Over the last decade, companies too have begun to shift their focus away from the globalisation of supply chains as frailties and shortcomings have emerged. First, geopolitical tensions and the breakdown in parts of the international trade system have increased the risks for businesses that source inputs from overseas. The signing of bilateral trade agreements slowed after the Doha Round of WTO trade talks collapsed in 2008.¹² This has ushered in a new trend towards regionalisation which, coupled with geopolitical disputes like the US–China trade war, have increased tariff and non-tariff barriers to sourcing products from low-cost countries.^{13,14} These trends have significantly impacted global trade; while the value of

Trade in the Middle East
Middle East and North Africa, Imports and exports of goods and services (1990-2019, % of GDP)



Source: World Bank.

Firms can expect a supply chain disruption lasting a month or longer to occur every

3.7 years



Source: McKinsey

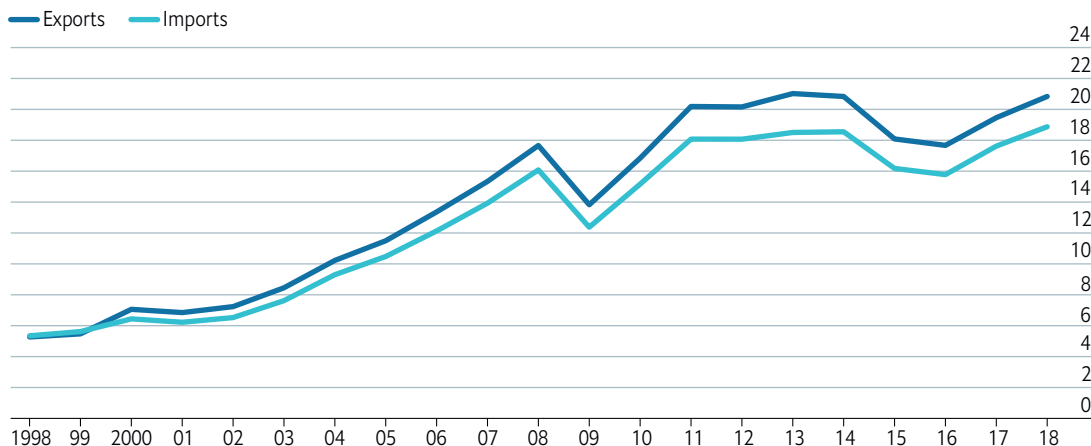
vulnerabilities, firms can now expect a supply chain disruption lasting a month or longer to occur every 3.7 years.¹⁶ For instance, the inadequate disaster response to floods in Jeddah, Saudi Arabia, in 2009 highlighted how commercial supply chains, as well as disaster relief supply chains, required more agile logistics and emergency inventories.¹⁷ With climate change set to increase the frequency of extreme weather events in the years ahead, multinational companies are having to review their traditional approaches and diversify their risk.

global trade tripled between 1998 and 2008, it grew by less than 20% over the following decade, and not at all after 2013.¹⁵

Second, supply chain risks have become more dynamic and complex, as more goods involve more production nodes. Globalised supply chains have exposed companies to a host of new supply chain risks, including extreme weather events, cyber-attacks, and public health disruptions. Due to these

“It was relatively easy in the 80s and 90s. The oil price was low and labour was cheap in the East so a low-cost solution – of manufacturing in the East and shipping to the developed markets – was a relatively clear and easy strategy,” says Jonathan Wright, Global Head of Cognitive Process Reengineering at IBM Global Business Services. But now “oil prices are fluctuating and cross-border trade is volatile, which has led to a view that maybe marginal manufacturing should go closer to the demand point,” explains Mr Wright.

Value levelling off
World imports and exports (1998-2018, US\$ trillion)



Source: EIU analysis of data from the World Bank's World Integrated Trade Solution service.

The COVID-19 pandemic has illustrated how, in an interconnected global economy, a crisis in a key node of the global supply chain (e.g. China) can quickly disrupt international trade. A recent EIU report estimated in 2020 that the volume of world trade in goods would contract by 18% due to the effects of the pandemic on production, logistics, and other areas critical to the global supply chain.¹⁸

“Companies have pushed very hard to grow their revenue over many years prior to the pandemic but this has introduced a lot of complexity into their supply chains. The trend which is now coming out of the pandemic is for companies to be closer to consumers and respond to shifts in their needs in different markets. So we will see a different kind of supply chain, a combination between global and local supply chains,” says Frank Vorrath, Vice President for Supply Chain Service Delivery for EMEA and APAC at Gartner.

Increasing awareness of geopolitical, climate, and public health risks has not only slowed down supply chain globalisation, but has also supported the rise of localisation – defined as shifting, devolving, or decentralising management, operations, production, products, or marketing to local markets.¹⁹ “Organisations are starting to ask: is greatness about low cost, or is it also about responsiveness, agility, being able to bounce back? We have to start to think about strategies that allow for more flexibility, agility and responsiveness,” according to Jonathan Wright of IBM. A 2018 survey of investors from 25 countries in Asia, Europe, North America, and Latin America found that 90% of respondents were either already implementing or actively considering localisation strategies.²⁰

Section 2 explores how these dynamics have played out in the GCC and the Levant.

Section 2: Drivers and mechanisms of supply chain localisation in the GCC and Levant

Governments across the Middle East are embracing supply chain localisation through a number of mechanisms, driven by national growth objectives, including increasing local employment, diversifying the economy, and bolstering private sector competitiveness. For companies, the benefit of localisation lies in its ability to enhance responsiveness to consumers and operational competitiveness in the face of changing market dynamics. Prominent factors driving supply chain localisation in the Gulf and Levant are local content policies; the prioritisation of agility and resilience among businesses; and improvements to the enabling environment, notably logistics and technologies.

As a result, “in terms of localisation the region is going through quite a metamorphosis at the moment, particularly the GCC,” explains Gavin Maxwell, a Dubai-based partner at the consultancy Ernst & Young (EY). In the last decade, the Middle East has seen a rise in

regional manufacturing operations in areas such as shipping, aircraft, and oil and gas. Gulf states in particular are leveraging their technologies and transport infrastructure to attract logistics and e-commerce industries in order to create trade hubs in the region.

Local content policies

Local content policies are one of the primary ways through which Middle Eastern countries are seeking to increase localisation in a scalable way. These policies stipulate a minimum level of local capability in a government-based commercial agreement, which can range from the procurement of public services to the development of public infrastructure. Governments achieve local content through requirements on global companies to hire a minimum number of local staff, or to enter into joint ventures with local companies.



In terms of localisation the region is going through quite a metamorphosis at the moment, particularly the GCC.

Gavin Maxwell, Partner, Ernst & Young



In Saudi Arabia, for example, in order for an organisation to do business with Saudi Aramco, it is required to participate in the company's In-Kingdom Total Value Add (IKTVA) programme, which aims to increase the amount of goods and services procured from within the Kingdom to 70% by 2021.²¹ GE Oil and Gas, a global energy technology company, has started manufacturing compression trains locally as part of the IKTVA programme.²² In 2019, Qatar Petroleum launched TAWTEEN, a programme that aims to increase supply chain localisation in the country's energy sector.²³ Through the programme, WASCO Energy, a leading Malaysian energy company, signed a memorandum of understanding with Qatar Petroleum for the building by WASCO of a line-pipe-coating facility in the country.²⁴ One of the programme's key components is an In-country Value (ICV) policy, which rewards contractors who maximise local content in their operations. In the UAE, Mubadala, the Abu Dhabi sovereign wealth fund, is establishing a joint venture with Lockheed Martin and Airbus to develop a local aerospace sector that will draw on local skills as well as locally sourced goods and services.²⁵ In Jordan, domestic manufacturing of renewable energy components is supported through local content policies that require a mandatory 20% local contribution in competitive bidding for renewable energy projects.²⁶

Governments in the Middle East view localisation through local content policies as a key component of national economic development plans aimed at economic diversification. Oil-rich Gulf governments in particular are seeking to diversify from fossil fuel dependence and grow domestic industries via plans such as Saudi Arabia's Vision 2030, as well as "mega-events" including

the Dubai 2020 Expo and the Qatar 2022 FIFA World Cup, and investment projects such as the Saudi mega-city initiative, Neom. Such mega-events have also been attracting foreign companies to the region.

Gavin Maxwell from EY singles out Saudi Arabia, Oman and the UAE as having "very strong requirements around local content, with quite mature formulas to score suppliers on localisation during the procurement process". There are differences between states, however. The small populations of Oman and the UAE mean there is an emphasis on equity stakes in joint ventures, while Saudi Arabia's large population has led the country to emphasise job creation.

By employing local content policies to further their supply chain localisation objectives, oil-rich Gulf countries are following a well-trodden path pioneered by the likes of Norway, which developed national oil company Statoil through knowledge-sharing agreements with international companies. Norway required international oil companies operating in the country to use 50% local content and conduct research and development (R&D) locally. In this way, Norway increased local content in the oil and gas industry to 80%.²⁷

Agility, resilience and customer-centricity

Multinationals do not pursue supply chain localisation only to meet government requirements – they also derive benefits through the additional levels of agility, resilience, and customer-centricity that localisation brings. As Marcos Eloi, Chief Procurement Officer for The Kraft Heinz Company explains, localisation "brings a competitive advantage by increasing a company's ability to deliver to consumers

locally with agility and to quickly react to changes in terms of demand”.

Coca-Cola offers an instructive case in point.²⁸ It produces the concentrated syrups that are the basis for its drinks but distributes them to hundreds of bottling companies that blend drinks for distribution in their specific market.²⁹ Each bottler sources its own ingredients, such as sweeteners, locally, and decides exactly how to combine them, which can result in subtle differences in flavours in products between countries.³⁰ The system allows for flexibility, and a disruption to bottling in one region does not impact other geographies. It also allows for local expertise to be used, for example in determining recipes. Another example is that of Mondelēz International, an American multinational food company, which opened its second factory in Bahrain in 2018 with the aim of increasing efficiency, simplifying operations, and meeting the demands of its growing Middle Eastern consumer market.

Leveraging local knowledge to inform business strategy has become even more valuable in the pandemic era. “COVID-19 has proven that

running global supply chains in all of their complexity really requires a lot of supply chain capabilities, competencies in running effective end-to-end business processes, people skills and competencies enabled by technology. The organisational structure will increasingly be decentralised and local to set more focus on the different consumer needs and to leverage the local knowledge and talent bases,” says Mr Vorrath from Gartner.

Companies can also use their local presence to more effectively engage with consumers. “Having a one size fits all approach to your supply chain does not enable growth. Customers are looking for a customised service and a personalised product, and they have their own different requirements,” claims Javed Ahmad, Senior Vice President – Global Supply Chain International region at Schneider Electric. “But it’s very hard to run a profitable business and to serve personalisation on economy of scale concepts, and over long lead time and long cycle times,” says Mr Vorrath of Gartner. Consumers are also increasingly embracing locally sourced, sustainable and geographically distinct products, and COVID-19 has accelerated this trend.^{31,32}



According to the August 2020 EY Future Consumer Index, a monthly poll conducted by EY, over half of MENA consumers will support domestic brands produced locally for the long term.³³ Arla Foods, a European dairy cooperative, for example, signed an agreement with Mondelez International in 2018 to acquire its processed cheese business in the Middle East, including its cheese production site in Bahrain. Until then, the majority of Arla’s products sold in the Middle East had been produced in Europe, but the deal granted the company the local production capacity to enable it to “bring new commercial opportunities to [its] customers quicker and better”.³⁴

Improvements to the enabling environment: technology and logistics

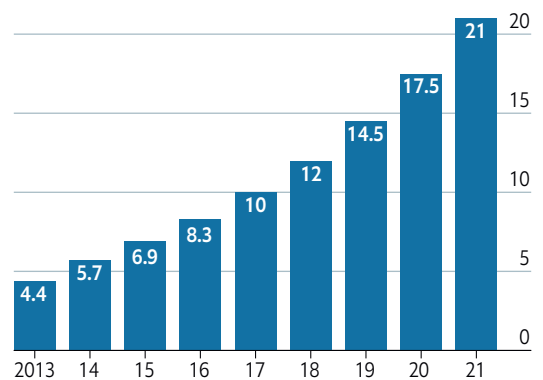
Supply chain localisation is significantly affected by the wider trade facilitation environment that allows companies to operate efficiently in new markets. According to Jonathan Wright of IBM, companies seeking to localise are looking at fundamentals such as technology, logistics, security, and physical infrastructure.³⁵

Creating an attractive environment for supply chain localisation in the Middle East has become easier due in part to advanced manufacturing technologies and software-driven innovations that reduce the capital and assets required to reach minimum levels of efficient production. “Two or three years ago, a company would have taken cost as the main selection criterion when moving manufacturing or supply chain setups into certain geographies or countries,” says Mr Vorrath. “Now costs are not really the primary factor because technology has disrupted that landscape.”

3D printing, which is one such technology, could redistribute between US\$4 trillion and \$6 trillion of value in the global economy in the next five to ten years.³⁶ This technology – which converts software and engineering data into products by layering plastics, ceramics, metals and other inputs – has existed for three decades, but its level of performance and capability has quickly improved in recent years. The global 3D printing market was valued at US\$14.5 billion in 2019 and could reach \$21 billion by 2021, driven by the pandemic which has seen a significant rise in its adoption, including by the medical industry to create vital products like personal protective equipment.³⁷ Additive manufacturing, as 3D printing is also called, could democratise manufacturing through supply chain localisation by enabling mass customisation, supporting the entry of smaller players and start-ups into industrial production, and enabling parts to be quickly produced or remade on spec, thus improving the efficiency of manufacturers.^{38,39}

Adding up

Global 3D printing market size (2013-2021, US\$ billion)
25



Note: Data published in 2017.
Source: Statista.



Two or three years ago, a company would have taken cost as the main selection criterion when moving manufacturing or supply chain setups into certain geographies or countries. Now costs are not really the primary factor because technology has disrupted that landscape.

Frank Vorrath, Vice President for Supply Chain Service Delivery EMEA and APAC, Gartner

In the Middle East, Dubai and Saudi Arabia are becoming 3D printing hubs. Dubai recently launched its 3D Printing Strategic Alliance, a project aiming to develop, test and deploy 3D printing technology, while Saudi Arabia built the first 3D-printed house in the Middle East and is reported to have purchased the world's largest 3D printer.^{40,41} International 3D printing companies are expanding their presence and setting up facilities in the region. Dubai-based 3D printing start-up, Immensa Technology Labs, for example, is establishing new production facilities in Saudi Arabia, while Danish 3D construction printing provider COBOD International is seeking to establish a foothold in Dubai.^{42,43} Jens Kilimann from Roland Berger claims that expertise in 3D printing, combined with investment in intermodal logistics via airports and ports, is enabling the region to build out its capabilities in spare part manufacturing for shipping and aviation.⁴⁴

Another technology that is encouraging localisation in the GCC and attracting multinational firms to the region is cloud computing. This technology grants companies

unprecedented processing power and data storage possibilities at low cost, regardless of their size, and enables them to employ new technologies in their operations, including industrial robots and the Internet of Things (IoT) – interconnected devices equipped with sensors that can report on their environments and generate data on their usage.⁴⁵ The efficiency and cost advantages associated with digitalisation are expected to increase domestic markets' competitiveness and help boost economic development. In Saudi Arabia, for example, Saudi Aramco signed an agreement with Siemens in 2017 to digitise the oil and gas sector, which is set to enable the Saudi industry to compete more effectively through the introduction of cloud technology and advanced analytics in its operations.⁴⁶

The public cloud market in the GCC is expected to more than double in value by 2024, reaching US\$2.35 billion.⁴⁷ Cloud adoption in the region is "seeing strong demand, driven by the diversification to non-oil economies, young and dynamic populations that are digital natives, an active startup community, and a drive to



Governments are investing in it in order to enhance their product and service offerings, and multinational cloud technology companies are setting up offices in the region and partnering with local businesses to cater to rising regional demand. Bahrain, for example, adopted a Cloud First Policy in 2017 under which all government ministries and agencies are to consider cloud-based services when undertaking ICT (information and communications technology) procurements, and Amazon Web Services launched its first cloud region in the Middle East in Bahrain in 2019, paving the way for IoT deployment in the country.^{49,50} In 2020, Alibaba Cloud – a Chinese company providing cloud computing services to online businesses – entered into a partnership with Saudi Telecom Company

digitise across several industries,” according to Santiago Freitas, Head of Technology for the MENA at Amazon Web Services.⁴⁸

Case study: Cloud computing in Qatar



Investments in the digital landscape in Qatar, and particularly in cloud computing, are at an all-time high as part of efforts to implement the country’s digital transformation agenda and build a knowledge-based economy. Both Google and Microsoft are expanding their cloud services offerings to the country.

Google Cloud provides companies with infrastructure, platform capabilities and industry solutions to reinvent their business with data-powered innovation using modern computing infrastructure. It delivers cloud solutions that help companies operate more efficiently, modernise for growth and innovate for the future.⁵² Google Cloud Platform regions are the cornerstone of Google’s cloud infrastructure, “delivering high-performance, low latency, zero emissions, cloud-based services to users throughout the world”.⁵³ In 2020, Google signed a

strategic collaboration agreement to launch its inaugural Google Cloud Region in the Middle East in Doha, Qatar.⁵⁴ The region is set to allow Google’s global customers and partners to run their workloads locally.

Earlier, in 2019, the government of Qatar entered into a strategic partnership with Microsoft to establish a regional cloud datacentre in the country to deliver its cloud services and expand its global cloud infrastructure to new markets.⁵⁵ Three Microsoft Azure cloud datacentres are set to start operating in Qatar in 2022, enabling individuals and organisations to access cloud services, and facilitating their digital transformation. According to Microsoft, the Azure Qatar National Framework is set to create opportunities amounting to over US\$3.1 billion of new revenue for the country over the next five years and establish Qatar’s position as a digital hub.⁵⁶

through which it is to invest up to US\$500 million in Saudi Arabia and set up an office in Riyadh.⁵¹

Globally, governments, particularly in the Gulf, are increasingly investing in their digital infrastructure and in making their cities “smart”. Smart cities use advanced technologies, including artificial intelligence (AI) and the IoT, in order to improve public utilities and services, enhance mobility, and help the environment, among other things.⁵⁷ Saudi Arabia’s capital, Riyadh, was ranked as the fifth smartest city among the G20 capitals in the Institute for Management Development’s 2020 Smart Cities Index,⁵⁸ and the Kingdom is working on a US\$500 billion smart city mega-project, Neom.⁵⁹ Kuwait’s South Saad Al Abdullah smart city project is said to be the Middle East’s first green and smart development,⁶⁰ whereas Abu Dhabi and Dubai lead the GCC region in the 2020 Smart Cities Index⁶¹ and the UAE is set to transform 1,000 government services into smart services through its Smart City Initiative.⁶² The MENA smart cities market is expected to reach US\$2.7 billion in 2022, up

from \$1.3 billion in 2018,⁶³ primarily driven by the pursuit of increased efficiency and lower costs for governments, businesses, and consumers.⁶⁴

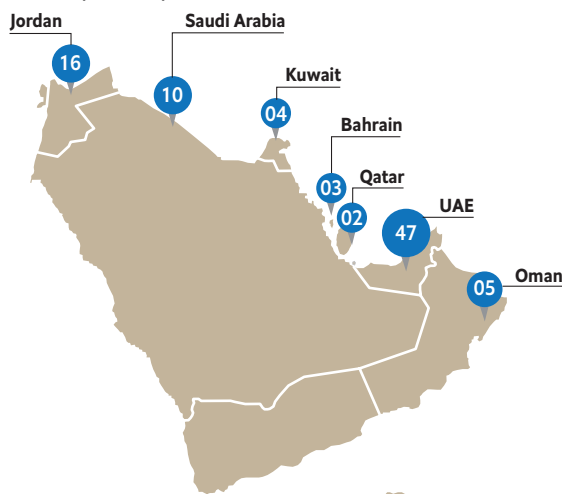
Through increased connectivity, smart cities enable “smarter urban transport networks, upgraded water supply and waste disposal facilities and more efficient ways to light and heat buildings”,⁶⁵ but they can also optimise supply chain management. For instance, with sensors embedded at multiple points, the real-time data generated by them can enhance traffic flows and the movement of goods; enable monitoring of the storage conditions of products in transit to reduce spoilage; and facilitate tracking of cargo vehicles and the goods they are carrying to reduce disruption-related costs.⁶⁶ As a result, the boom in smart cities across the GCC creates large market opportunities for international companies to capitalise on through localisation of their supply chains in the region.

Expanded and modernised logistics are also facilitating supply chain localisation in the Middle East. The GCC has become a central node for international trade in recent years, especially through the establishment of “special economic zones”, and “free zones” in particular, as well as investments in port and air cargo infrastructure. Saudi Arabia’s National Industrial Development and Logistics Program, for example, seeks to transform the Kingdom into a global logistics hub; Abu Dhabi’s Economic Vision 2030 includes developing sufficient and resilient infrastructure as a priority; and Qatar’s Vision 2030 aims to diversify the economy by investing in world-class infrastructure.^{67,68,69} It is hoped that by cementing their roles as key logistics hubs, GCC countries will be able to both attract FDI in the short term and diversify their economies to achieve sustainable growth in the long term.

Free zones, defined by the World Bank as “duty-free areas offering warehousing,

Enclave heaven

Number of free zones and other special economic zones by country



Source: PwC

storage, and distribution facilities for trade, transshipment, and re-export operations,⁷⁰ offer regional and international investors the ability to enter new markets and access state-of-the-art infrastructure and facilities, forming a crucial avenue for FDI inflows.⁷¹ Dubai, for example, which contains 17.5% of the free zones in the Middle East, conducted 41% of its total trade through its free zones in the first nine months of 2018.⁷² The city's Jebel Ali Free Zone alone contributes 24% to Dubai's GDP.⁷³ Through their regulatory frameworks, the enclaves enable governments to improve ease of doing business quickly without reforming regulations across the country as a whole.⁷⁴ As a result, they have been attracting large multinational companies across a range of sectors, from logistics, to energy, to manufacturing. In Bahrain, international logistics companies, including DHL and Kuehne Nagel, operate out of the Bahrain

Logistics Zone,⁷⁵ and Siemens and Kraft Foods have set up production sites in the Bahrain International Investment Park.^{76,77} In the UAE, major manufacturing companies, including GE and Arcelor Mital, have established distribution centres and stockyards in the Jebel Ali Free Zone.^{78,79}

It is important to note, though, that the characteristics and attractive elements of these zones are not homogeneous across the region. Setting up and operating in the Ras Al Khaimeh Economic Zone in the UAE, for example, can be half as expensive as in other zones in the region, whereas the Dubai Multi Commodities Center has advantages through its strategic location in the heart of Dubai.⁸⁰ Similarly, the aims of these zones are not identical. Dubai launched a University Free Zones Strategy to establish certain universities as free zones where students can carry out business and creative activities.^{81,82} Oman has

Case study: Dubai CommerCity—A free zone for e-commerce



The need for strong e-commerce services in the GCC is at an all-time high. The region has been relatively slow in adopting e-commerce, with online sales typically accounting for only 2% of overall retail sales,⁸⁶ but the COVID-19 pandemic has encouraged a shift towards shopping via online channels. As global and GCC e-commerce markets are set to continue to grow, governments in the GCC are seeking to solidify their reputations as trading hubs, in turn harnessing e-commerce as a driver of long-term economic growth.

In the UAE, the Dubai Airport Freezone Authority has established a new free zone specifically for e-commerce—Dubai

CommerCity—the first such zone in the region.⁸⁷ The free zone is said to provide a “unique e-commerce ecosystem to global and regional brands to help them set up and operate their e-commerce business in the MENA region”.⁸⁸ It aims to attract FDI by providing businesses with e-commerce solutions and digital services that aid their operations and accelerate their growth.⁸⁹

Notably, the free zone has vast logistics capabilities. Not only is it strategically located just five minutes from Dubai International Airport and 45 minutes from Jebel Ali Port,⁹⁰ but it contains a logistics cluster consisting of 105 heavily automated AI-powered warehouses for companies to access.⁹¹

set up free zones that seek to promote growth in underdeveloped parts of the country,⁸³ and Bahrain has set up zones that allow 100% foreign ownership in various sectors, including real estate, communication, and administrative services.⁸⁴ In Saudi Arabia, the government plans to launch special economic zones in 2021 that are dedicated to certain sectors with the hope of encouraging growth in fields such as cloud computing, renewable energy, tourism, and logistics.⁸⁵

The globalisation of the GCC's airlines, including Qatar Airways and Emirates, and the region's growing integration into international maritime and air trade through its seaport and airport infrastructure, have also played a large role in the GCC's logistics transformation. "When looking to localise supply chains, the strength of a country's infrastructure and transportation capabilities are of the key factors companies look at," says Henrik Ambak, SVP Cargo Operations Worldwide at Emirates SkyCargo, "following fundamentals such as access to market, political stability, and type of tax and legal frameworks." The UAE, for example, ranked fourth internationally in 2020 for its port infrastructure quality,⁹² and its flagship Jebel Ali Port is the tenth busiest globally, with 14.95 million Twenty-foot Equivalent Units passing through it in 2018.⁹³ Both Qatar and the UAE have invested heavily in airline and airport capacity, in part to enhance their status as international transport hubs.⁹⁴ These investments include expanding the fleet of national carriers, upgrading airport terminals, and adding new routes to national carriers' networks. These investments have increased Gulf airlines' engagement in cargo transport. In 2020, for instance, Qatar Airways flew more seats for more kilometres than any other airline on cross-border routes, becoming the largest passenger and cargo airline in the world.^{95,96} Meanwhile, 2020 saw Dubai International Airport become the world's sixth-busiest airport in terms of cargo traffic.⁹⁷

In the face of COVID-19, cargo companies have also invested in new technologies to

improve their offerings. "The pandemic served as a wake-up call to many players in the cargo industry that digitalisation was lacking and that they would have been much more efficient had they digitised earlier. COVID-19 accelerated the digitalisation pattern that already existed in the industry," according to Guillaume Halleux, Chief Officer Cargo at Qatar Airways. Henrik Ambak of Emirates SkyCargo shares a similar perspective. He explains that while the operational aspects of air cargo logistics were digitised years ago, digitisation of the commercial side took off significantly only in recent years, and this has been markedly accelerated by the impacts of COVID-19.⁹⁸

Key global logistics brands are also ramping up their presence in the Middle East as logistics within the region improves. DHL Express, for example, is investing US\$33 million to set up a world-class major logistics facility in Qatar's Ras Bufontas Free Zone,⁹⁹ and is also set to invest nearly \$100 million to expand its operations in the Abu Dhabi Airports Free Zone in the UAE, with a new facility set to open in 2021.¹⁰⁰ In Bahrain, Schmidt-Heilbronn Logistics – a European logistics company – opened a \$20 million joint venture logistics facility in the Bahrain Logistics Zone in 2017, in partnership with the National Oil and Gas Authority of Bahrain.¹⁰¹

The Levant region is also enhancing its logistics to support localisation through innovations in supply chain technology. In Jordan, supply chain platform TradeLens was piloted in the Aqaba Customs Center to transport goods through the Aqaba Container Terminal. A joint initiative involving IBM and Maersk, TradeLens integrates smart devices to monitor the temperature, weight and location of containers.¹⁰² The initiative will improve transparency and raise Jordan's standing as a logistics and transport gateway to the Levant. In Israel, the Israel Ports Company recently initiated a pilot for sending blockchain-based electronic bills of lading, enabling quicker cargo release, reducing costs, and increasing transparency.¹⁰³

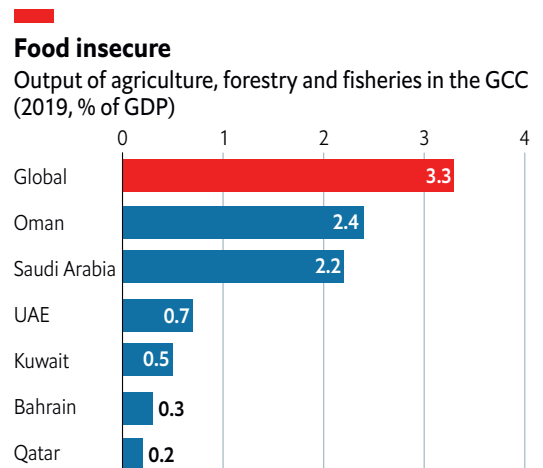
Section 3: Sectoral trends in supply chain localisation

Although the drivers of supply chain localisation are similar across the Gulf and Levant, progress on localisation is evolving according to the nuances of each market and the particularities of sectors. Across the region, three sectors stand out in terms of advances in localisation: food and agriculture; digital and next-generation manufacturing; and energy.

In the arid, oil-rich GCC region, food security is a top priority, and advances in agri-tech are facilitating more home-grown food production. The broader food sector in the Middle East has also seen significant localisation as brands adapt their product portfolios to consumer tastes. In the manufacturing sector, the geographic proximity of Gulf and Levant countries to key consumer markets in Africa and South Asia has incentivised some companies to invest in digital and next-generation manufacturing in the region to more easily access these key markets. The energy sector has also attracted sizeable localisation projects, both in oil and gas and in the fledgling solar industries.

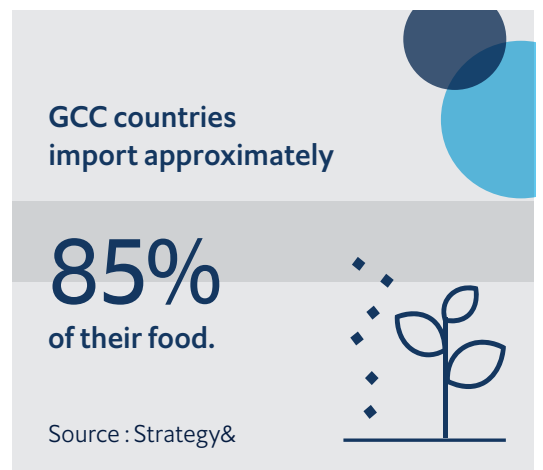
Food and agriculture

The arid Gulf and Levant regions have limited agricultural capacity, leaving them heavily reliant on food imports. The agriculture, forestry and fisheries sectors, for instance, contribute less than 2.5% of GDP in all GCC states, and less than 0.5% in Bahrain, Kuwait, and Qatar, compared with the global average of 3.3%.¹⁰⁴ GCC countries import approximately 85% of their food,¹⁰⁵ with both the UAE and Kuwait importing 100% of their cereal supplies, while Saudi Arabia and Oman each import over 90%.¹⁰⁶



Source: World Bank.

After dramatic food price spikes roiled the global economy in 2007/08 and 2010, Gulf states sought to shorten their food supply chains by buying arable land in areas close to home, increasing their investment in agri-tech, and introducing incentives to encourage local production.¹⁰⁷ A number of Gulf countries have purchased arable land in geographically proximate East Africa. Saudi Arabia, for



example, purchased 50,000 hectares in Tanzania in 2009,¹⁰⁸ while in 2018 Qatar invested US\$500 million in food production in Sudan.^{109,110,111} Qatar also ramped up its domestic food industry following trade conflicts in the region; it went from 90% import dependence on dairy products to self-sufficiency by airlifting 4,000 cows.¹¹²

Gulf countries are now experimenting with agri-tech innovations like indoor vertical farm facilities, high-tech greenhouse complexes, and advanced farm technology research to bolster food security.¹¹³ The UAE government has set a target of 30% domestic food production by 2021, which could also stimulate the local food-processing industry, tripling its output from the 6 million tonnes it already produces annually.¹¹⁴ Kuwait is also looking to build out its food storage, waste, recycling and packaging sectors through investments in agri-tech.¹¹⁵ In Oman, the Sohar University greenhouse project, in partnership with the University of Sheffield in the UK, is a 150 m² renewable-energy-powered greenhouse that facilitates horticulture production in Oman's arid climate.¹¹⁶

In the Levant, food supply chain localisation has also been driven by import dependence. In Palestine, where an estimated 80–90% of raw materials used in the food industry are imported, the Palestinian Authority promoted a network of agricultural clusters in 2019. They are part of a five-year plan to develop the agricultural sector and increase production by 30%, including through measures such as encouraging agricultural entrepreneurship in marginalised populations.¹¹⁷ Israel, a country which imports 89% of its cereal supplies,¹¹⁸ has achieved near self-sufficiency in fruit, vegetables, milk, eggs and poultry meat supplies, largely through its world-leading agri-tech industry¹¹⁹ in which over 440 companies actively operate.¹²⁰ Israeli companies now

supply over 90% of local fruit and vegetable demand, with technologies enabling farmers to grow produce with less manpower and water.¹²¹

Food localisation in the Middle East is also being driven by companies' need to meet the tastes and preferences of local consumers. Global brands have developed products or brands that cater to the halal market, for example, with Cargill, Nestlé and Unilever all establishing halal portfolios in recent years.¹²² Some multinationals have localised production in the region to launch products faster. Cargill entered a joint venture with Saudi food producer Arasco in 2013 to triple production of starch-based products at Arasco's Al Kharj factory. A Cargill executive claimed that the joint venture was needed to provide "local solutions", given "rapidly changing demographics in the region and the growth of consumer choice".¹²³

Digital and next-generation manufacturing

One of the historical challenges to localisation of manufacturing in the GCC region has been the relatively high cost base; however, this

**The Middle East's smart
factory automation
market is set to reach**

US\$17 bn
in 2020.



Source : Modor Intelligence

is becoming less of a constraint thanks to automation and advanced manufacturing. As a result, the Middle East's supply chain advantages over other major Asian manufacturers, such as its closer geographic proximity to key consumer markets, now play a more prominent role in organisations' supply chain considerations.

In the Middle East, the smart factory automation market is set to reach a record high of US\$17 billion in 2020, according to Modor Intelligence.¹²⁴ The use of the IoT in manufacturing has been rising across the

region. As of 2019, IoT connections in the MENA were growing at the second fastest rate globally, trailing only the Asia-Pacific region.¹²⁵ IoT solutions can improve manufacturing processes by reducing costs associated with human labour, increasing productivity by predictively detecting and fixing maintenance issues, and enabling real-time asset tracking remotely, among other factors.¹²⁶

Businesses and governments in the Middle East have been investing heavily in automation technologies, such as robotics. "Until recently, robots were used largely for work that was

Case study: IoT in Saudi Arabian manufacturing



Obeikan Investment Group, a leading Saudi Arabian food and beverage packaging supplier, wanted to "increase productivity and reduce losses in order to ensure competitiveness and sustainability".¹²⁷

In 2017, the Group partnered with GE Digital to transform two of its manufacturing plants into "smart" factories in a bid to improve efficiency and productivity.¹²⁸ The transformation involved the application of advanced digital technologies, including the IoT, known as the Industrial IoT when applied to industrial sectors and applications; an asset performance management solution enabling more intelligent operations by

providing a complete view of assets; and a cloud-based field service management solution that enables better management of resources.¹²⁹ One of the benefits of this transformation was increased machine uptime through the analysis of real-time asset maintenance data and the use of predictive maintenance.¹³⁰

Obeikan also signed an agreement with GE Digital to establish a digitally focused practice within its business—Obeikan Digital Solutions—which is to provide digital transformation services to other food and beverage industry leaders in the Middle East,¹³¹ furthering the adoption of IoT and other advanced technologies in Middle Eastern manufacturing.

too dangerous or difficult for humans, but now the technology is improving and becoming more cost-effective, allowing it to be used for an ever-wider range of applications,” says Klaus Prettnner, Professor of Economics at the University of Hohenheim.¹³² Robots are set to support local production as they lift manufacturing productivity to new highs through faster, more efficient, and more accurate production.

The UAE has emerged as a global technology hotspot, with Dubai attracting US\$21.6 billion in FDI for AI and robotics between 2015 and 2018 – the highest value globally.¹³³ In fact, Unilever’s personal care products manufacturing facility in Dubai has been recognised as an “Advanced 4th Industrial Revolution Lighthouse” by the World Economic Forum.¹³⁴ The Forum’s Global Lighthouse Network, of which the facility is now a part, consists of manufacturers making great advances in the development and application of digital manufacturing technologies in their operations.¹³⁵ The 54 “Lighthouses” in the Network are said to be the world’s most advanced factories,¹³⁶ and the Unilever facility is the first non-energy manufacturing factory in the Middle East to join the Network.¹³⁷ At the Unilever site, through the application of advanced technologies, costs were reduced by over 25%.¹³⁸ In the Levant, Israel, which spends the most on R&D as a share of GDP globally, has established an Institute for Advanced Manufacturing that aims to improve productivity in the manufacturing industry by implementing advanced technologies, including robotics and the IoT.^{139,140}

Traditional and renewable energy

To capture more of the global value chain for oil and gas, Gulf states have introduced programmes to enhance localisation in their

oil and gas sectors, and these have been attracting international companies. Through Qatar Petroleum’s In-country Value initiative, for example, Schlumberger, an American oilfield services company, collaborated with Qatari suppliers in oilfield-grade cement and equipment manufacturing and signed an agreement with Milaha, a Qatar-based maritime and logistics organisation, to establish a joint stimulation vessel operation in the country.¹⁴¹ In Saudi Arabia, Saudi Aramco and Baker Hughes, an American energy technology company, have formed a joint venture and are building an oilfield services facility in Saudi Arabia’s King Salman Energy Park. This is one of the country’s largest localisation ventures, and aims to make the Kingdom a global energy and technology hub.¹⁴² In Damman, Saudi Arabia, Baker Hughes’ 30,000m² facility has over 90% “Saudization”, with more than 20 local suppliers supporting its operations.¹⁴³

The GCC and Levant regions are also well-placed to harness solar energy, and governments have sought to ramp up domestic solar capacity through market reforms and incentives. Saudi Arabia, for example, is advancing its renewable energy capacity through local content policies such as import tariffs and fiscal incentives for local production of photovoltaics. The national Vision 2030 plan has set out an installed solar energy target of 40 GW by 2030, and encourages “Saudization” by supporting the localisation of components.¹⁴⁴ Saudi Arabia has set up two solar parks in a project spearheaded by Saudi energy company ACWA. One of these, the Sakaka project, achieved a 100% local employment rate within the first year of operation, and registered over 30% of contractual local content of independent power producers during construction and development.¹⁴⁵

Levantine countries have also progressed in building a local renewables industry. Jordan is ramping up its local content capabilities to transition its energy system as part of a 2015–25 economic agenda.^{146,147} The country has adjusted its policy environment to support local renewables production and attract investment through public–private partnerships for energy infrastructure and fiscal incentives for independent power producers. Policies include a feed-in tariff scheme, the first of its kind in the region; tax exemptions for renewable energy systems; and the introduction of net metering.¹⁴⁸

“The world is becoming more and more electric,” says Javed Ahmad of Schneider Electric. The Middle East is no exception – electricity consumption as a share of total final energy consumption increased from 10.3% in 1990 to 15.6% in 2018.¹⁴⁹ GCC states in particular are advancing the use of electrical energies in the transport sector. For instance, in Qatar, the government has committed to ensuring that 25% of public buses are powered by electricity by the time of the 2022 FIFA World Cup, with the entire fleet of buses following suit by 2030.^{150,151} One firm capitalising on this is Chinese bus manufacturer, Yutong. Yutong

signed an agreement with the QFZA to set up an e-bus assembly facility in the free zone in partnership with Mowasalat—a Qatari transport services provider— and to manufacture e-buses in Qatar for the World Cup.¹⁵² Similarly, German vehicle manufacturer Volkswagen has announced plans to deploy a fleet of electric autonomous buses in Doha for the sporting event.¹⁵³ In a bid to meet growing demand for electricity in Qatar, the Qatar General Water & Electricity Corporation signed a €790 million deal with Siemens in 2017 for the expansion of the country’s power transmission network.¹⁵⁴

Gulf and Levantine countries are increasingly seeking to generate electricity through renewable energies, rather than oil, and are partnering with international companies to help achieve this. In Saudi Arabia, US gas company, Air Products, and the Neom smart city initiative have partnered to build a US\$5 billion green hydrogen production facility, powered by renewable energy.¹⁵⁵ It is hoped that green hydrogen could provide electricity to power energy-intensive industries, such as heavy manufacturing, as well as elements of the transport sector that are hard to electrify, such as aviation, shipping, and long-distance trucking.¹⁵⁶

Section 4: Challenges of supply chain localisation in the Middle East and potential responses

As discussed in the two previous sections, supply chain localisation in the Middle East is expanding due to investments in enabling technologies and logistics, consumer demand for locally adapted products, and government efforts to bolster economic diversification and resource security. However, localisation remains limited in several sectors in the region as many challenges remain. Key issues facing the Middle East’s efforts to expand supply chain localisation include limited labour force availability and capabilities; weak resource and infrastructure clusters in some sectors; and restrictive business environments and regional tensions.

Limited labour availability and skills

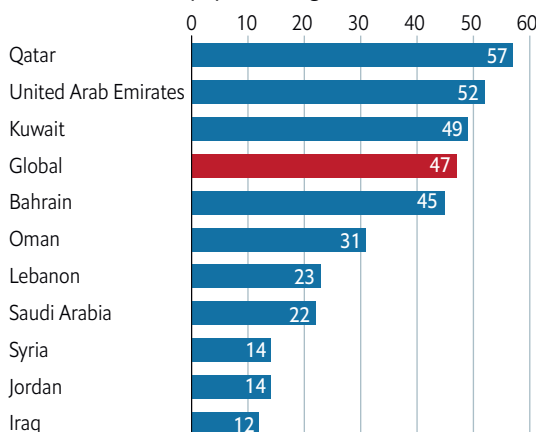
Incentives for companies to localise supply chains in the Middle East are weakened when they are unable to access sufficient labour and/or when the cost of labour is high. Skills mismatches are frequently highlighted as a challenge by businesses in the region, and the lack of full labour force participation of certain groups, particularly women, has been detrimental for productivity.¹⁵⁷

Manufacturers, for example, have raised concerns regarding impediments to accessing skilled labour, including norms impacting female participation in the labour force and cultural factors that disincentive citizens from taking jobs in the private sector. The Levant, for instance, has the lowest regional female labour participation rate globally at only 15.8%.¹⁵⁸ The average is far higher in GCC countries at 42.6%, but this remains below the global average of 47%. This is despite women

outnumbering men in universities in the MENA region by 108%, and in Qatar by a staggering 676%, as well as the potential productivity of females in the region being higher than that of males.^{159, 160, 161, 162}

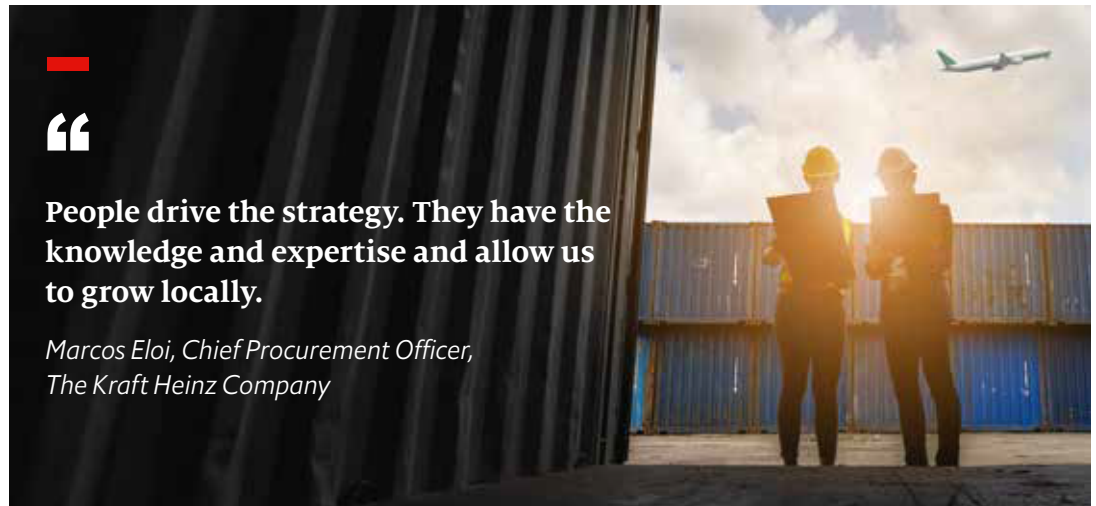
Lost talent

Labour force participation rate, female (2020, % of female population ages 15+)



Note: Figures correspond to 'modelled ILO estimates'.
Source: World Bank.

Having the right local workforce in terms of size, skill and cost is critical to encouraging multinational companies to build more domestic supply chain capability. According to Mr Eloi from Kraft Heinz, the availability of the right skills is important not only for managing the operations of multinational firms, but also for enabling productive engagements between global and local firms: “People drive the strategy. They have the knowledge and expertise and allow us to grow locally.” Skills gaps, or misalignment between sectoral development strategies and the local workforce, are one reason why localisation strategies may fail. The mismatch



People drive the strategy. They have the knowledge and expertise and allow us to grow locally.

*Marcos Eloi, Chief Procurement Officer,
The Kraft Heinz Company*

places more onus on companies to invest in skills and capabilities development, which may deter investment for more competitive environments.¹⁶³

Positively, countries in the GCC have open migration policies allowing global talent to help build out existing and new industries. The UAE is expatriate-dominated, with non-Emiratis accounting for 88.5% of the population, enabling the country to attract a range of skill sets, from finance to technology.¹⁶⁴ In Bahrain, where expatriates make up 52.6% of the population, the country has positioned itself as a gateway to Saudi Arabia, with a more cosmopolitan cultural environment.¹⁶⁵

Nonetheless, the GCC states differ in their attitudes towards encouraging the participation of international professionals in the workforce and imposing hiring quotas for citizens. Such quotas may impact foreign companies' localisation decisions. Nitaqat, Saudi Arabia's Nationalisation Scheme, for example, requires private sector companies to meet employment quotas for Saudi nationals. These quotas differ by sector and company size, but reach up to 77% in some cases,¹⁶⁶

while quotas in Bahrain reach an even higher 90%.¹⁶⁷ In Oman, private sector hiring quotas for nationals are set for five sectors, at 60% for banking and finance; 35% for the industrial sector; 30% for hotels and restaurants; 20% for wholesale and retail; and 15% for contracting.¹⁶⁸ On the other hand, in 2020 Qatar approved a draft law stipulating that state-owned private sector companies should consist of at least 60% Qatari nationals,^{169, 170} but it has no such requirement for privately owned companies.

Gulf states have invested in vocational and tertiary education sectors through collaborations with institutions including New York University and the Sorbonne. Governments are also creating vocational training schemes to prepare local populations for private sector roles. Saudi Arabia aimed to increase the proportion of students enrolled in vocational education and training courses from 7% in 2016 to 12.5% in 2020, while in Oman the government has worked with the Scottish Qualifications Authority to develop curricula that will give graduates of vocational courses equal standing with graduates from academic disciplines.^{171, 172} At

the corporate level, Saudi Aramco is among the most notable organisations in terms of skills-development initiatives, including in digital competencies.¹⁷³ In Qatar, universities and research institutions have been attracting global companies. Inventus Power, a leading global battery manufacturer, has established a manufacturing presence in the country partly in order to partner with Qatar’s “local research and development centers” and enhance its “engineering capabilities”.¹⁷⁴

Regional universities are also encouraging more domestic innovation and talent development. King Abdullah University of Science and Technology in Saudi Arabia is building a broad portfolio of R&D areas and hiring to take advantage of international academic expertise.¹⁷⁵ It is emerging as an entrepreneurship hub to boost the domestic business community through training, mentoring and funding for prospective businesses, helping to enable more advanced innovation deployments.¹⁷⁶

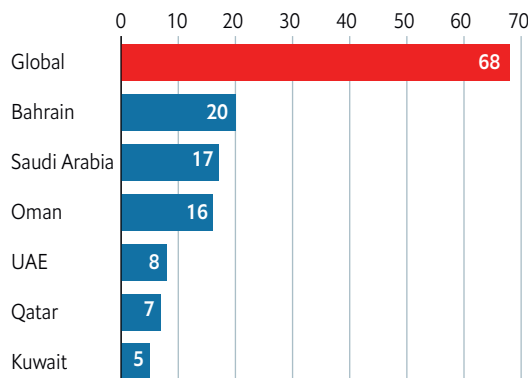
Just as critical is the presence of enough competent local partners to avoid localisation becoming a form of rent-seeking. Bernard Hoekman, Professor and Director of Global Economics at the Robert Schuman Centre for Advanced Studies, argues that local content efforts need specific goals to measure efficacy: “Joint venture requirements only make sense conditional on clear specification. What’s the objective and how do we measure if that’s actually working? Any programme needs explicit measurable criteria which are correlated with development.” Otherwise, localisation may encourage rent-seeking behaviour as nationals set up companies to participate in joint ventures that allow foreign companies to meet localisation mandates, without any knowledge transfer or employment.

Limited cluster effects

The GCC countries’ long-standing reliance on oil exports for growth has resulted in weak investments in manufacturing infrastructure. In Saudi Arabia, for example, exports of manufactured goods accounted for less than 5% of total exports in 2019.¹⁷⁷ Also in 2019, as a share of total merchandise exports, manufacturers’ exports accounted for only 5% in Kuwait, 7% in Qatar, and 8% in the UAE, compared with 68% globally.¹⁷⁸ The region has a low concentration of manufacturing plants and component suppliers, and industrial clustering is minimal. In turn, manufacturing of complex goods is relatively expensive and slow, discouraging international manufacturers from localising their operations in the region.¹⁷⁹

Manufacturing missing out

Manufacturers’ exports (2019, % of total exports)



Note: Data for Bahrain and Oman are from 2018.
Source: World Bank.

GCC countries are increasing investments in industrial clusters and their establishment, however. For instance, Saudi Arabia has introduced an Economic Cities programme – a cluster policy combining the construction of specific infrastructure with a focus on several economic sectors for diversification, including

logistics, agriculture, and labour-intensive industries.¹⁸⁰ Nonetheless, such clusters remain limited across the region as a whole.

Supply chains are embedded in wider production ecosystems that include labour costs, transport infrastructure efficiency, and access to materials, energy, and intermediate suppliers and knowledge.¹⁸¹ Manufacturing relies on networks of expertise and supplier relationships built up over long periods in specific regions, and, as such, countries with clusters of manufacturing facilities are best positioned to capitalise on localisation drives.¹⁸² “If you think about all the components that make up a PC, it takes an ecosystem of manufacturing capability to produce all the parts you need to manufacture it,” says Keith Miers, SVP Indirect Procurement & Supply Chain Strategy at Dell. Going forward, Gulf and Levantine countries will need to build out their capabilities in sectors where they have strong comparative advantages. Saudi Arabia, for instance, is developing a solar power cluster,¹⁸³ while the UAE’s network of free zones has enabled a steady build-out of light and medium-light industries including printing, plastics and furniture.¹⁸⁴ But beyond the higher-income economies of the region or those with existing capabilities, finding the right comparative advantages on which to build cluster effects will prove more of a challenge.

Restrictive business environments and limited regional integration

In the Middle East, the business environment varies widely, which hinders localisation for lower-performing countries. “Investors looking to invest in countries far away from home want to ensure that they are both compliant and easy to do business with,” says Guillaume Halleux of Qatar Airways. In The EIU’s business environment rankings, the GCC and

Levant’s most business-friendly environment is that of the UAE, which ranks 22nd out of 82 countries measured. It is followed by Qatar (37th), Bahrain (41st), Kuwait (46th), Saudi Arabia (48th), and Jordan (58th).

Regional markets in the Middle East are fragmented owing to the prevalence of conflict and a lack of functioning regional trade agreements. Regional tensions reduce companies’ incentives to build a regional trade hub as they restrict access to larger markets. According to Mr Halleux, international companies looking to localise their supply chains are after connectivity, both to the domestic market and, more importantly, to the rest of the world.¹⁸⁵ Market fragmentation may affect businesses through its impacts on financial stability, for example, particularly in cases where liquidity and capital are unable to move freely across the region. “From a multinational company supply chain perspective, the regional instability puts it out of reach for the foreseeable future,” IBM’s Jonathan Wright explains. “If they can drive intra-regional stability and trade that would set the platform for building more infrastructure. Every MNC [multinational corporation] would value stability in the Levant region.”

Despite the existence of several regional, sub-regional and bilateral agreements aimed at boosting integration, such as the Agadir Agreement, their implementation has been lacking and they have had mixed results. However, the normalisation of Israel’s relations with a growing number of countries in the region, and the recent resumption of trade between Qatar and the GCC, bode well for improved trading relations in the future.

Consistent regulations and regional commercial integration are critical, especially in countries which, in and of themselves, are

not large markets. While the likes of Saudi Arabia are large enough to entice investment to meet domestic needs—or respond to government rules—the majority of countries in the GCC and the Levant will attract supply chain localisation in part as a result of their positioning as gateways to the wider region which, in turn, requires an open and efficient business environment.

Jan Hoffmann of UNCTAD believes that trade facilitation is a critical factor in boosting the development of local production given the need to move inputs and finished goods in and out.¹⁸⁶ UNCTAD has been promoting “single windows”—electronic portals, on which any party can enter information about a shipment—as one means to achieve this. All participants, from customs inspectors to buyers, sellers, and carriers, would access the same information, preventing the need to duplicate paperwork. More advanced

economies have their own single window systems; for example, in August 2020, Dubai Trade, the UAE’s single window, began offering services for food shipments.¹⁸⁷ However, these portals need to be gradually expanded to cover more goods and services.

Multinationals see the vibrancy of the local economy as a significant stimulus for localisation. “The strength of our local business is what drives us to invest more,” claims Marcos Eloi of Kraft Heinz. In 2018–19, the MENA region implemented 57 business-facilitating reforms, of which 35 were implemented by Gulf countries.¹⁸⁸ For instance, Jordan put into practice a new secured transactions law to strengthen access to credit; Bahrain made it faster and cheaper to access electricity; and Kuwait strengthened protection for minority investors.¹⁸⁹ With a long-term view in mind, Saudi Arabia invested US\$70 billion in the building of six cities with regulatory environments that would both attract and support international manufacturing companies.¹⁹⁰

To attract more productive investment, experts caution against economic nationalism under the guise of localisation, arguing instead that governments should focus on building an open business environment for both trade and FDI. According to Bernard Hoekman, “This notion of bringing back production of critical supplies ... there isn’t a whole lot of evidence that it is really needed if we keep markets open, if we keep them predictable, and if the government helps firms to do what they’re best at doing, which is responding to demand.”

In 2018–19, the MENA region implemented

57 business-facilitating reforms.



Source : World Bank

Conclusion

Over the last decade, the focus of supply chain strategies has shifted from efficiency to resilience and closeness to the consumer. This has been driven by both negative and positive trends, from the slowdown in global trade agreements and the emergence of complex risks such as extreme weather events, to benefits companies can realise through localisation, including meeting consumer needs more effectively and securing access to state-driven investment initiatives.

Both the GCC and Levant regions have sought to increase localisation, albeit unevenly, based on the specific policy and economic environments of each region and country. In the GCC, diversification from fossil fuels, through the development of national economic transformation plans, has been a critical localisation driver. Companies and governments have also been able to increase localisation by leveraging the latest technologies, especially automation and additive manufacturing, which reduce the importance of labour costs when making supply chain management decisions.

Yet there are a number of obstacles to overcome in order to realise the full potential of localisation. Local capability in terms of both firms and labour needs to be sufficiently high to enable multinationals to find the best partners. The broader business environment, including macroeconomic policy and regional stability, is crucial, and trade facilitation infrastructure must be sufficiently strong to allow firms to access the intermediate goods and distribute locally in an efficient and cost-effective manner.

References

- ¹ Throughout this report, import data accredited to the World Bank comes from custom analysis of datasets downloaded from the World Bank's World Integrated Trade Solution service. <https://wits.worldbank.org/>
- ² https://voxeu.org/sites/default/files/file/WTO_Roadmap.pdf
- ³ <https://www.economist.com/briefing/2019/01/24/globalisation-has-faltered>
- ⁴ <https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS?end=2019&start=1990>
- ⁵ <https://data.worldbank.org/indicator/NE.EXP.GNFS.ZS?locations=ZQ>
- ⁶ <http://www.oecd.org/mena/competitiveness/WGTI2018-Trends-Trade-Investment-Policies-MENA-Nasser-Saidi.pdf>
- ⁷ <https://english.enabbaladi.net/archives/2017/06/syrian-phosphate-war-tehrans-large-acquisition-versus-little-interference-opposition/>
- ⁸ <https://www.usgs.gov/centers/nmic/phosphate-rock-statistics-and-information>
- ⁹ <https://www.imf.org/en/Publications/Policy-Papers/Issues/2018/12/04/pp120618gcc-trade-and-foreign-investment>
- ¹⁰ Ibid.
- ¹¹ <https://www.strategyand.pwc.com/m1/en/articles/2020/what-gcc-countries-can-learn-from-the-impact-of-the-pandemic-on-supply-chains.html>
- ¹² Analysis of database of bilateral trade agreements, maintained by the International Centre for Settlement of Trade Disputes, part of the World Bank.
- ¹³ <https://carnegieendowment.org/2020/06/24/in-u.s.-china-trade-war-new-supply-chains-rattle-markets-pub-82145>
- ¹⁴ <https://unctad.org/webflyer/key-statistics-and-trends-international-trade-2019>
- ¹⁵ Custom analysis of data from World Integrated Trade Solution, World Bank.
- ¹⁶ <https://www.mckinsey.com/business-functions/operations/our-insights/risk-resilience-and-rebalancing-in-global-value-chains>
- ¹⁷ https://www.researchgate.net/publication/265123540_Disaster_Response_in_Jeddah_Saudi_Arabia_Systems_Analysis
- ¹⁸ <https://www.eiu.com/n/middle-east-post-covid-19-supply-chains/>
- ¹⁹ https://www.kearney.com/web/global-business-policy-council/business-policy/article?/a/competing-in-an-age-of-multi-localism&utm_medium=pdf&utm_source=fullreportpdf&utm_campaign=2018GlobalLocalization
- ²⁰ <https://www.kearney.com/web/global-business-policy-council/article?/a/competing-in-an-age-of-multi-localism>
- ²¹ <https://www.iktva.sa/introduction/>
- ²² <https://iktva.sa/manufacturing-a-first-for-iktva-program/#:~:text=The%20local%20manufacturing%20of%20the,a%20rapidly%20changing%20Saudi%20economy>
- ²³ <https://www.offshore-energy.biz/qatar-petroleums-new-localization-program-in-energy-sector-to-create-5000-new-jobs/>
- ²⁴ <https://www.wascoenergy.com/wp-content/uploads/pdf/news/27-feb-2019.pdf>
- ²⁵ <https://www.constructionweekonline.com/business/180832-gcc-local-manufacturing-2019-research-uae-saudi-arabia-details>
- ²⁶ <https://www.irena.org/publications/2018/Oct/Evaluating-renewable-energy-manufacturing-potential-in-the-Arab-region>
- ²⁷ https://www.oliverwyman.com/content/dam/oliver-wyman/v2/publications/2017/may/OP-ED-Wyman-on-Localization_ET.pdf
- ²⁸ <https://www.coca-colacompany.com/content/dam/journey/us/en/our-company/history/coca-cola-a-short-hisotry-125-years-booklet.pdf>
- ²⁹ <https://investors.coca-colacompany.com/about/coca-cola-system>
- ³⁰ <https://www.coca-cola.com.my/faq/does-coca-cola-produce-the-same-drinks-in-every-country>
- ³¹ <https://www.nielsen.com/us/en/insights/report/2015/the-sustainability-imperative-2/>
- ³² <https://www.ipsos.com/sites/default/files/2017-07/2017%20Reuters%20Tracking%20-%20Buy%20America%20Poll%207%2019%202017.pdf>
- ³³ https://www.ey.com/en_ly/news/2020/08/ey-69-of-mena-consumers-believe-that-the-way-they-live-has-changed-for-the-long-term-due-to-covid-19
- ³⁴ <https://www.arla.com/company/news-and-press/2018/pressrelease/arla-acquires-middle-east-and-africa-kraft-branded-cheese-business-from-mondelez-international-2813899/>
- ³⁵ Interview with Jonathan Wright (15th January 2021).
- ³⁶ https://www8.hp.com/us/en/images/3D_Printing___Ensuring_Manufacturing_Leadership_in_the_21st_Century_tcm245_2547663_tcm245_2442804_tcm245-2547663.pdf
- ³⁷ <https://www.wamda.com/2020/04/3d-printing-startups-saving-lives>
- ³⁸ <https://www.sciencedirect.com/science/article/pii/S2212827118312320>
- ³⁹ <https://www.ge.com/news/reports/seeing-logistics-3d-democratization-manufacturing>

- ⁴⁰ <https://themedialine.org/life-lines/dubai-saudi-arabia-drive-3d-printing-revolution-in-arab-world/>
- ⁴¹ <https://english.alarabiya.net/en/business/technology/2018/11/05/Saudi-Arabia-builds-first-house-using-3D-printing-technology-in-the-Middle-East>
- ⁴² <https://www.prnewswire.com/news-releases/immensa-technology-labs-makes-the-largest-additive-manufacturing-3d-printing-investment-in-saudi-arabia-301174406.html>
- ⁴³ <https://themedialine.org/life-lines/dubai-saudi-arabia-drive-3d-printing-revolution-in-arab-world/>
- ⁴⁴ Interview with Jens Kilimann (4th December 2020).
- ⁴⁵ <https://itif.org/publications/2017/06/22/how-cloud-computing-enables-modern-manufacturing#:~:text=Critically%2C%20cloud%20computing%20allows%20manufacturers,these%20technologies%20by%20small%20manufacturers.>
- ⁴⁶ https://www.oliverwyman.com/content/dam/oliver-wyman/v2/publications/2017/may/OP-ED-Wyman-on-Localization_ET.pdf
- ⁴⁷ <https://www.constructionweekonline.com/business/268040-gcc-cloud-market-expected-to-hit-23bn-by-2024>
- ⁴⁸ https://www.zawya.com/mena/en/business/story/GCC_cloud_market_to_hit_23bln_by_2024_report-SNG_186984590/
- ⁴⁹ https://www.bahrain.bh/wps/portal/!ut/p/a0/hY5BDolwEAC_0gvnrQQJVxIMhsRwMEHshTR1U1dKF2whPI98gcfJzGFAQQ_K642sjsReux-rfDi3Mj-kRdq0p2Mpy6K7VHWVSDllcEUPzb-ohzu9lkWVoAz7jI8IPVreZn5H7Qb0iXzyhIlcVjKjCOTHkEiDLCYMQdvdGMfrQxie5jWSt4l8RdovNwwwj_XtC28KRlw!/#:~:text=Cloud%2DFirst%20Policy,as%20develop%20excellent%20citizen%20services.&text=Increasing%20productivity%20and%20agility%2C%20thus%20improving%20citizen%20services
- ⁵⁰ <https://www.cnbc.com/2020/12/23/google-aramco-eye-10-billion-cloud-market-in-saudi-arabia.html>
- ⁵¹ <https://www.arabnews.com/node/1784071/business-economy>
- ⁵² <https://cloud.google.com/>
- ⁵³ <https://cloud.google.com/blog/topics/infrastructure/new-google-cloud-regions-for-2020>
- ⁵⁴ Ibid.
- ⁵⁵ <https://news.microsoft.com/en-xm/2019/12/11/microsoft-plans-to-establish-new-cloud-datacenter-region-in-qatar/>
- ⁵⁶ <https://www.dohanews.co/microsoft-to-install-three-azure-cloud-data-centres-in-digital-hub-qatar/>
- ⁵⁷ <https://www.businessinsider.com/iot-smart-city-technology?r=US&IR=T>
- ⁵⁸ <https://gulfbusiness.com/why-partnerships-are-key-to-achieving-the-gccs-smart-city-ambitions/>
- ⁵⁹ <https://www.businessinsider.com/neom-what-we-know-saudi-arabia-500bn-mega-city-2019-9?r=US&IR=T>
- ⁶⁰ Ibid.
- ⁶¹ <https://www.imd.org/smart-city-observatory/smart-city-index/>
- ⁶² Ibid.
- ⁶³ <https://assets.kpmg/content/dam/kpmg/ae/pdf/wgs-kpmg-2019-.pdf>
- ⁶⁴ <https://gulfbusiness.com/why-partnerships-are-key-to-achieving-the-gccs-smart-city-ambitions/>
- ⁶⁵ https://ec.europa.eu/info/eu-regional-and-urban-development/topics/cities-and-urban-development/city-initiatives/smart-cities_en
- ⁶⁶ <https://www.sigfox.com/en/new-iot-powered-supply-chain-how-smart-logistics-tracking-creating-leaner-more-agile-global-economy>
- ⁶⁷ <https://www.vision2030.gov.sa/en/programs/NIDLp#:~:text=The%20National%20Industrial%20Development%20and,that%20will%20generate%20ample%20employment>
- ⁶⁸ <https://u.ae/en/more/uae-future/2021-2030#:~:text=to%20be%20sustainable.,Abu%20Dhabi%20Economic%20Vision%202030,based%20industries%20in%20the%20future.>
- ⁶⁹ <https://www.businesssetup.com/blog/qatar-national-vision-2030-part-1>
- ⁷⁰ <http://documents1.worldbank.org/curated/en/343901468330977533/pdf/458690WP0Box331s0April200801PUBLIC1.pdf>
- ⁷¹ <https://www.pwc.com/m1/en/publications/documents/re-birth-of-special-economic-zones-gcc.pdf>
- ⁷² <https://www.arabianbusiness.com/politics-economics/415530-dubai-home-to-30-of-middle-east-free-zones>
- ⁷³ <https://www.fdiintelligence.com/article/75879>
- ⁷⁴ Ibid.
- ⁷⁵ <https://www.commitbiz.com/bh/bahrain-logistic-zone-blz>
- ⁷⁶ The Bahrain International Investment Park enjoys all of the benefits of a free zone, but it is an investment park and not specifically a free zone.
- ⁷⁷ <https://www.process-worldwide.com/what-bahrain-has-in-store-for-the-process-industry-a-408863/?p=2>
- ⁷⁸ https://projects.arcelormittal.com/middleeast/about_us/worldwide_presence/language/EN
- ⁷⁹ <https://www.amanabuildings.com/industries/automotive/general-motors-logistics-facility-for-danzas-at-jebel-ali-free-zone/>
- ⁸⁰ <https://www.fdiintelligence.com/article/75879>
- ⁸¹ <https://gulfbusiness.com/virtual-commercial-zone-silk-road-dubai-among-new-projects-outlined-ruler/>

- ⁸² <https://www.entrepreneur.com/article/332949#:~:text=UAE's%20national%20news%20agency%20WAM,carry%20out%20business%20and%20creative>
- ⁸³ <https://foreignpolicy.com/2020/10/01/free-zones-middle-east-economic-diplomacy-israel-uae-qatar/>
- ⁸⁴ <https://www.brookings.edu/research/economic-diversification-in-the-gulf-time-to-redouble-efforts/>
- ⁸⁵ <https://economictimes.indiatimes.com/news/international/saudi-arabia/saudi-arabia-plans-to-launch-special-economic-zones-in-2021-minister/articleshow/79339514.cms?from=mdr>
- ⁸⁶ <https://www.trade.gov/knowledge-product/united-arab-emirates-ecommerce>
- ⁸⁷ <https://edition.cnn.com/2020/05/22/middleeast/dubai-commercity-online-shopping-spc-intl/index.html>
- ⁸⁸ <https://www.dubaicommercity.ae/>
- ⁸⁹ <https://www.transportandlogisticsme.com/smart-technology-innovation/dubai-commercity-announces-magento-and-redbox-partnerships>
- ⁹⁰ <https://www.dubaicommercity.ae/>
- ⁹¹ Ibid.
- ⁹² https://www.zawya.com/mena/en/economy/story/UAE_ranks_fourth_globally_in_port_infrastructure_quality_index-SNG_185102975/
- ⁹³ <https://www.worldshipping.org/about-the-industry/global-trade/top-50-world-container-ports>
- ⁹⁴ <https://www.flightglobal.com/gulf-special-hub-development-key-to-airlines-future/69574.article>
- ⁹⁵ <https://www.wsj.com/articles/how-qatar-airways-with-its-pandemic-playbook-dethroned-emirates-as-biggest-long-haul-airline-11619348400>
- ⁹⁶ Ibid.
- ⁹⁷ <https://internationalfinance.com/the-uae-a-supply-chain-nerve-centre/>
- ⁹⁸ Interview with Henrik Ambak (14th February 2021)
- ⁹⁹ <https://m.gulf-times.com/story/654546/DHL-Express-to-establish-major-logistics-facility-in-Qatar-Free-Zones>
- ¹⁰⁰ <https://www.aircargonews.net/cargo-airport/dhl-express-to-expand-in-abu-dhabi/>
- ¹⁰¹ <https://www.refiningandpetrochemicalsme.com/article-18064-schmidt-heilbronn-noga-jv-opens-20mn-chemical-logistics-facility-in-bahrain>
- ¹⁰² <https://www.ledgerinsights.com/jordan-customs-ibm-maersk-logistics-blockchain-tradelens/>
- ¹⁰³ <https://businessblockchainhq.com/business-blockchain-news/the-practicality-of-blockchain-in-israeli-seaport/>
- ¹⁰⁴ <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS>
- ¹⁰⁵ <https://www.strategyand.pwc.com/m1/en/articles/2020/how-gcc-countries-can-ensure-their-food-security.html#:~:text=GCC%20countries%20import%20about%2085,meat%20and%2056%25%20of%20vegetables>
- ¹⁰⁶ <http://www.fao.org/faostat/en/#search/cereal%20import%20dependency%20ratio>
- ¹⁰⁷ <https://www.chathamhouse.org/sites/default/files/public/Research/Energy%2C%20Environment%20and%20Development/bp1113edibleoil.pdf>
- ¹⁰⁸ <https://foreignpolicy.com/2009/07/15/why-is-saudi-arabia-buying-up-african-farmland/>
- ¹⁰⁹ <https://english.alaraby.co.uk/english/news/2018/6/30/qatar-invests-half-billion-dollars-in-sudan-agriculture-#:~:text=%2C%20investment%2C%20agriculture, Qatar%20has%20announced%20plans%20to%20invest%20%24500%20million%20into%20Sudan's,Sudanese%20capital%20Khartoum%20on%20Thursday>
- ¹¹⁰ <https://core.ac.uk/download/pdf/6218588.pdf>
- ¹¹¹ <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/6103.pdf>
- ¹¹² <https://www.middleeasteye.net/opinion/coronavirus-how-saudi-led-blockade-prepared-qatar-pandemic>
- ¹¹³ <https://www.eiu.com/n/middle-east-post-covid-19-supply-chains/>
- ¹¹⁴ <https://www.arabianbusiness.com/technology/451717-how-the-gulf-is-turning-to-agritech-to-boost-food-security-ambitions>
- ¹¹⁵ Ibid.
- ¹¹⁶ <https://gulfbusiness.com/why-the-gcc-and-britain-are-collaborating-for-food-security/>
- ¹¹⁷ <https://journals.sagepub.com/doi/pdf/10.1177/1542316620918555>
- ¹¹⁸ <http://www.fao.org/faostat/en/#search/cereal%20import%20dependency%20ratio>
- ¹¹⁹ <https://www.timesofisrael.com/by-eating-local-israel-will-avoid-feared-food-shortages-authorities-say/>
- ¹²⁰ https://investinisrael.gov.il/HowWeHelp/downloads/Invest_in_Israel_-_The_Israeli_Ag-Tech_Industry_Brochure_-_22012020.pdf
- ¹²¹ Ibid.
- ¹²² <https://eiuperspectives.economist.com/financial-services/trust-and-transparency-twin-goals-halal-food-certification>
- ¹²³ <https://www.foodnavigator.com/Article/2013/01/23/Cargill-and-Arasco-agree-Middle-East-joint-venture>
- ¹²⁴ <https://www.arabnews.com/node/1707126/corporate-news>
- ¹²⁵ <https://data.gsmaintelligence.com/api-web/v2/research-file-download?id=47743169&file=2865-221119-MENA-IoT.pdf>

- ¹²⁶ <https://www.byteant.com/blog/5-best-use-cases-of-iot-in-manufacturing/>
- ¹²⁷ <https://www.pwc.com/gx/en/industries/industrial-manufacturing/publications/assets/pwc-defining-new-dna.pdf>
- ¹²⁸ <https://saudigazette.com.sa/article/178621>
- ¹²⁹ Ibid.
- ¹³⁰ <https://www.pwc.com/gx/en/industries/industrial-manufacturing/publications/assets/pwc-defining-new-dna.pdf>
- ¹³¹ <https://www.menaherald.com/en/money/finance-investment/obeikan-investment-group-and-ge-digital%E2%80%99s-establishment-obeikan-digital>
- ¹³² <https://oxfordbusinessgroup.com/overview/high-gear-economies-around-world-are-preparing-opportunities-and-challenges-brought-22>
- ¹³³ <https://gulfnews.com/business/dubai-is-worlds-top-city-for-foreign-investments-in-artificial-intelligence-robotics-1.1552541949637>
- ¹³⁴ <https://www.unilever.com/news/press-releases/2020/unilevers-state-of-the-art-manufacturing-site-in-dubai-joins-wef-distinguished-global-lighthouse-network.html>
- ¹³⁵ Ibid.
- ¹³⁶ <https://www.weforum.org/agenda/2020/09/manufacturing-lighthouse-factories-innovation-4ir/>
- ¹³⁷ <https://www.unilever.com/news/press-releases/2020/unilevers-state-of-the-art-manufacturing-site-in-dubai-joins-wef-distinguished-global-lighthouse-network.html>
- ¹³⁸ <https://www.weforum.org/our-impact/advanced-manufacturing-factories-light-the-way-as-learning-beacons>
- ¹³⁹ <https://advn.org.il/en/home-page/>
- ¹⁴⁰ <https://www.jpost.com/jpost-tech/start-up-nation-israel-spends-most-money-in-the-world-on-r-and-d-wef-648192>
- ¹⁴¹ <https://www.slb.com/resource-library/article/2020/schlumberger-local-content-collaboration-to-establish-stimulation-vessel-operation-in-qatar>
- ¹⁴² <https://www.reuters.com/article/saudi-aramco-baker-hughes-jointventure/saudi-aramco-and-baker-hughes-jv-to-develop-non-metallic-products-idUSKBN2811X>
- ¹⁴³ <https://www.euro-petrole.com/bhge-recognized-for-localization-efforts-in-saudi-arabia-n-i-17833>
- ¹⁴⁴ <https://www.apricum-group.com/the-business-of-localization-insights-for-success-in-the-saudi-renewables-market/>
- ¹⁴⁵ <https://www.pv-magazine.com/2019/11/27/saudi-arabias-300-mw-sakaka-solar-plant-comes-online/>
- ¹⁴⁶ <https://www.jordantimes.com/news/local/93-cent-jordan%E2%80%99s-electricity-generated-natural-gas>
- ¹⁴⁷ <http://inform.gov.jo/Portals/0/Report%20PDFs/0.%20General/jo2025part1.pdf>
- ¹⁴⁸ <https://oxfordbusinessgroup.com/overview/energising-new-tactics-sector-increasingly-turning-private-development-and-renewable-sources-power>
- ¹⁴⁹ EIU analysis based on data from the International Energy Agency.
- ¹⁵⁰ <https://www.reuters.com/article/qatar-electric-china-int/qatar-signs-agreement-with-chinas-yutong-to-manufacture-electric-buses-idUSKBN28A229>
- ¹⁵¹ <https://www.thepeninsulaqatar.com/article/01/12/2020/Qatar-to-make-e-buses-at-Umm-Al-Houl-Free-Zone>
- ¹⁵² <https://www.thepeninsulaqatar.com/article/01/12/2020/Qatar-to-make-e-buses-at-Umm-Al-Houl-Free-Zone>
- ¹⁵³ <https://www.electrive.com/2019/12/16/vw-to-launch-self-driving-fleet-in-qatar-with-e-bullis-id-buzz/>
- ¹⁵⁴ <https://press.siemens.com/global/en/pressrelease/siemens-wins-eur790-million-substation-contract-qatar>
- ¹⁵⁵ <https://www.bbc.com/future/article/20201112-the-green-hydrogen-revolution-in-renewable-energy#:~:text=On%20the%20edge%20of%20the,is%20due%20to%20be%20built.&text=The%20plant%20is%20powered%20by,that%20sprawl%20across%20the%20desert.>
- ¹⁵⁶ Ibid.
- ¹⁵⁷ <https://www.worldbank.org/en/news/press-release/2020/09/16/mena-countries-urged-to-do-more-in-investing-in-their-human-capital>
- ¹⁵⁸ <https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS>
- ¹⁵⁹ <https://scholarship.rice.edu/bitstream/handle/1911/99713/bi-brief-011818-wrme-femalelabor.pdf?sequence=1&isAllowed=y>
- ¹⁶⁰ <https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS>
- ¹⁶¹ <https://www.brookings.edu/blog/education-plus-development/2015/03/12/unlocking-the-potential-of-educated-arab-women/>
- ¹⁶² <https://datacatalog.worldbank.org/dataset/human-capital-index>
- ¹⁶³ <https://assets.publishing.service.gov.uk/media/5c7d425aed915d4063af98df/BERF-Zimbabwe-What-Works-in-Local-Content-Policy-30Oct18.pdf>
- ¹⁶⁴ <https://www.globalmediainsight.com/blog/uae-population-statistics/#:~:text=As%20stated%20previously%20in%20this,compose%2059.48%25%20of%20the%20population.>
- ¹⁶⁵ <https://www.gulf-insider.com/bahrain-population-crosses-1-5-million-of-which-52-6-are-expats/#:~:text=Bahrain%3A%20Population%20crosses%201.5%20million%2C%20of%20which%2052.6%25%20are%20expats,-vinita%20Send%20an&text=As%20of%2017%20March%202020,reached%20789%2C273%20people%20or%2052.6%25.>
- ¹⁶⁶ <https://www.alawwalinvest.com/content/laborandthenitaqatprogram.pdf>

- ¹⁶⁷ https://lmra.bh/portal/files/cms/downloads/english_attachment/Bahrainisation_Table_English.pdf
- ¹⁶⁸ <https://www.propartnergroup.com/blog/2019/12/what-is-omanisation/>
- ¹⁶⁹ <https://medium.com/dohanews/qatarisation-qataris-to-fill-60-percent-of-workforce-in-state-owned-private-sector-companies-ea8e149bed81>
- ¹⁷⁰ <https://www.reuters.com/article/us-qatar-economy/qatar-to-raise-proportion-of-qatari-staff-in-state-affiliated-companies-to-60-qna-idUSKBN2492WO>
- ¹⁷¹ <https://oxfordbusinessgroup.com/analysis/higher-focus-financial-incentives-students-and-collaboration-foreign-universities-will-0>
- ¹⁷² https://www.ilo.org/beirut/country/WCMS_656565/lang--en/index.htm
- ¹⁷³ <https://www.willistowerswatson.com/en-GB/Insights/2020/06/saudi-aramco-plans-to-foster-a-skilled-and-diverse-workforce>
- ¹⁷⁴ <https://www.businesswire.com/news/home/20191219005803/en/Inventus-Power-Establishes-Manufacturing-Operations-and-Research-Hub-in-Qatar-Free-Zones-to-Accelerate-International-Expansion>
- ¹⁷⁵ <https://www.kaust.edu.sa/en/about/working-at-kaust>
- ¹⁷⁶ <https://innovation.kaust.edu.sa/entrepreneurs/>
- ¹⁷⁷ <https://www.fitchsolutions.com/country-risk-sovereigns/menas-textiles-and-mid-range-manufactured-exports-will-benefit-global-supply-chain-diversification-13-07-2020>
- ¹⁷⁸ <https://data.worldbank.org/indicator/TX.VAL.MANF.ZS.UN>
- ¹⁷⁹ Ibid.
- ¹⁸⁰ https://www.leuphana.de/fileadmin/user_upload/Forschungseinrichtungen/ifvwl/WorkingPapers/wp_255_Upload.pdf
- ¹⁸¹ <https://www.ibrc.indiana.edu/ibr/2015/spring/article2.html>
- ¹⁸² https://www.fitchsolutions.com/country-risk-sovereigns/regionalisation-supply-chains-boost-mexico-cee-morocco-and-vietnam-08-10-2020?fSWebArticleValidation=true&mkt_tok=eyJpIjoiT1RsaE5tVTBaakpqWm1abSIsInQiOiJzbDVBRGlxYnNzNW9cL3hXVUF2RUVcL0JKYTUYWnJhaE43d0ZwQ05ObGVYMFkwZFBMNldocXgyaFwvM3lPMdZuWnFiNFFSOVhjUGpsNzJhQlVWSUIGZEtKN0pqXC8wc3FBRFdrakFZXC9DTndyYkpwahU4cERtd1BZWXRKZW81WTg3dkxln0%3D
- ¹⁸³ https://www.mei.edu/sites/default/files/publications/PF15_Yamada_Saudisolar_web.pdf
- ¹⁸⁴ <https://oxfordbusinessgroup.com/analysis/concentrated-development-industrial-areas-and-free-zones-serve-economic-backbone>
- ¹⁸⁵ Interview with Guillaume Halleux (8th February 2021)
- ¹⁸⁶ Interview with Jan Hoffmann (16th December 2020).
- ¹⁸⁷ <https://www.kwglobaltrade.com/post/dubai-trade-launches-single-window-trade-platform>
- ¹⁸⁸ <https://www.worldbank.org/en/news/feature/2019/10/24/doing-business-2020-sustaining-the-pace-of-reforms#:~:text=Doing%20Business%202020%20found%20that,China%2C%20India%2C%20and%20Nigeria.>
- ¹⁸⁹ Ibid.
- ¹⁹⁰ <https://www.themanufacturer.com/articles/can-middle-east-become-manufacturing-hub/>

While every effort has been taken to verify the accuracy of this information, The Economist Intelligence Unit Ltd. cannot accept any responsibility or liability for reliance by any person on this report or any of the information, opinions or conclusions set out in this report. The findings and views expressed in the report do not necessarily reflect the views of the sponsor.

LONDON

20 Cabot Square
London, E14 4QW
United Kingdom
Tel: (44.20) 7576 8000
Fax: (44.20) 7576 8500
Email: london@eiu.com

GENEVA

Rue de l'Athénée 32
1206 Geneva
Switzerland
Tel: (41) 22 566 2470
Fax: (41) 22 346 93 47
Email: geneva@eiu.com

NEW YORK

750 Third Avenue
5th Floor
New York, NY 10017
United States
Tel: (1.212) 554 0600
Fax: (1.212) 586 1181/2
Email: americas@eiu.com

DUBAI

Office 1301a
Aurora Tower
Dubai Media City
Dubai
Tel: (971) 4 433 4202
Fax: (971) 4 438 0224
Email: dubai@eiu.com

HONG KONG

1301
12 Taikoo Wan Road
Taikoo Shing
Hong Kong
Tel: (852) 2585 3888
Fax: (852) 2802 7638
Email: asia@eiu.com

SINGAPORE

8 Cross Street
#23-01 Manulife Tower
Singapore
048424
Tel: (65) 6534 5177
Fax: (65) 6534 5077
Email: asia@eiu.com