



9 INDUSTRY, INNOVATION  
AND INFRASTRUCTURE



## SDG 9

### Industry, innovation and infrastructure

Build resilient infrastructure, promote  
inclusive and sustainable industrialization  
and foster innovation

The Arab region has yet to make a significant shift towards **sustainable and inclusive industrialization** in a context of rising unemployment, inefficient and unsustainable use of natural resources, increasing debt, and protracted crises. The contribution of manufacturing to national economies in the region remains weak, with manufacturing value added (MVA) as a share of gross domestic product (GDP) registering 10.7 per cent in 2021 compared with the world's average of 16.9 per cent.<sup>1</sup> This has hindered productivity growth and the development of a vibrant private sector, and has led to increased informal labour.<sup>2</sup> In 2021, the main manufacturing producers in the region were Egypt, Morocco, Saudi Arabia and the United Arab Emirates.<sup>3</sup>

Efforts for economic diversification are observed in both oil-rich and non-oil-rich countries, but a solid manufacturing sector that can absorb semi-skilled and low-skilled workers is yet to be developed.<sup>4</sup> **Employment in manufacturing** in the region constituted

a mere 9.8 per cent of total employment in 2020.<sup>5</sup> While the manufacturing sector in the region is far from achieving an equal representation of men and women among its employees, it fares better on that front compared with other economic sectors,<sup>6</sup> especially in labour-intensive manufacturing sectors, such as garments, footwear, leather and furniture.<sup>7</sup>

In 2020, employment in manufacturing was higher in the Mashreq and Maghreb at **11.9 and 11.2 per cent** of total employment, respectively, than in Gulf Cooperation Council (GCC) countries at **8.2 per cent.**



Small and medium enterprises (SMEs) operating in manufacturing and manufacturing-related services continue to face significant challenges owing to ongoing demand and supply chain disruptions resulting from the COVID-19 pandemic and other global crises. Institutional frameworks in most Arab countries do not facilitate access to credit for investment and working capital, mainly affecting SMEs. In turn, limited access to finance challenges the adoption of new technologies and the introduction of innovative processes.

Infrastructure needs remain vast, especially in the Arab least developed countries. The pandemic highlighted the importance of investment in information and communication (ICT) infrastructure and improved Internet connectivity. Both were key to ensuring business continuity during the pandemic, especially in the education and health sectors. Accelerated digitization and technology use offers new career opportunities in the ICT sector and high-tech industries, which

1 ESCWA, *Arab SDG Monitor*, 2022 (accessed on 19 December 2022).

2 ILO, *Productivity growth, diversification and structural change in the Arab States*, 2022.

3 According to MVA in constant United States dollars. Data available at *UNIDO National Accounts Database* (accessed on 16 January 2023).

4 ILO, *World Employment and Social Outlook Trends*, 2022.

5 ESCWA, *Arab SDG Monitor*, 2022 (accessed on 19 December 2022).

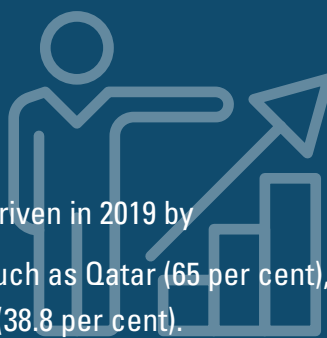
6 According to ESCWA calculations based on the Enterprise Survey, the manufacturing sector occupied third place among a selected number of examined sectors in terms of female share of employment. The first was research and development, computer and other business activities, and the second was transportation, storage and communication. Source: ESCWA and ILO, *Towards a Productive and Inclusive Path Job Creation in the Arab Region*, 2021.

7 ESCWA and ILO, *Towards a Productive and Inclusive Path Job Creation in the Arab Region*, 2021.

women, especially in the Arab region, are increasingly specializing in.<sup>8</sup> The share of medium- and high-tech added value in total MVA in Arab countries increased significantly from 25.4 per cent in 2000 to 31.6 per cent in 2019. However, it remains low compared with the global estimate of 45.1 per cent for 2019.

## Medium- and high-tech added value in total MVA

in the Arab region was mostly driven in 2019 by GCC economies, such as Qatar (65 per cent), Oman (45 per cent) and Kuwait (38.8 per cent).



## Impact of COVID-19 and other crises on SDG 9 in the Arab region

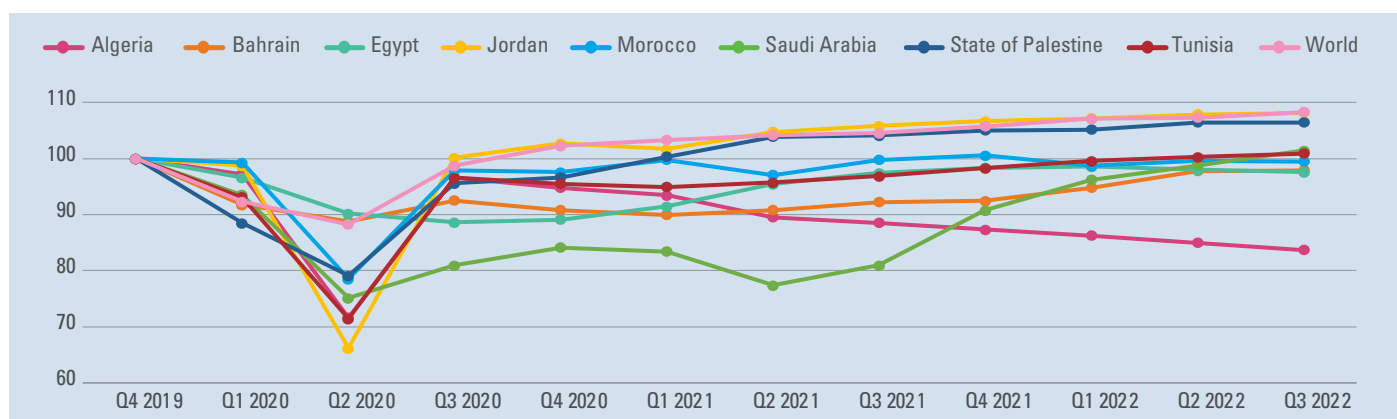
The COVID-19 pandemic had a severe impact on the industrial sector in the Arab region, causing several industries to decrease or shut down their operations. Containment measures during lockdown led to weaker access to resources, goods and supplies; supply chain disruptions; and lower manufacturing output.

**The effects of the pandemic were highly heterogeneous across sectors, firms and workers, both globally and in the Arab region.** The pandemic hit revenues of micro and small enterprises the hardest, notably those operating in sectors highly integrated into global value chains.<sup>9</sup> Among the

most affected were informal workers, women, young people, and low-skilled workers who tend to be overrepresented in the labour force of micro, medium and small enterprises.

**Industrial production in most Arab countries plummeted in early 2020.** The pace of recovery remains uneven and industrial production has not yet returned to its pre-pandemic levels in several Arab countries. According to the Index of Industrial Production (IIP),<sup>10</sup> of Arab countries with available data, only Jordan and the State of Palestine had achieved a recovery close to the world average in 2022 (figure 1).

**Figure 1. IIP in Arab economies**



Source: UNIDO data portal.

Note: Fourth quarter of 2019 = 100.

<sup>8</sup> Ibid.

<sup>9</sup> ILO, *Monitor on the world of work, Tenth edition: Multiple crises threaten the global labour market recovery*, October 2022; and ILO, *COVID-19: labour market impact and policy response in the Arab States*, May 2020.

<sup>10</sup> IIP measures the growth of the volume of industrial production in real terms, free from price fluctuations.

**Manufacturing was affected by disruptions in the global supply chain.** ESCWA estimated an \$89 billion drop in non-oil imports to the Arab region in 2020, including raw materials for manufacturing industries. Mechanical, electrical and other manufacturing products were estimated to constitute 51 per cent of the total decline in imports, implying a strong impact on the manufacturing sector.<sup>11</sup> In contrast, manufacturing exports, including chemical and electrical industries, represented around 13 per cent of the total decline in exports from the region, making it the second most affected sector. Total exports from the Arab region were expected to decrease by \$88 billion and intra-Arab exports by \$14 billion in 2020, as a worst-case scenario.<sup>12</sup> Following the decline in 2020, MVA of Arab countries increased by 3.5 per cent in 2021, returning to its pre-pandemic value.

**The COVID-19 crisis and ensuing restrictions worldwide affected accessibility to transport**

**networks, and caused delays in maintenance and in the procurement of materials.** Transport faced shortages of funds, which were redirected to essential health services, thus freezing new plans for developing transport modes. In terms of air transport, the number of passenger flights in the region saw a 53 per cent drop in the first half of 2020 compared with that of 2019. To compensate for the reduced cargo capacity usually provided by passenger air transport, the total number of cargo flights increased by 5.6 per cent in the same period.<sup>13</sup>

**The war in Ukraine uncovered vulnerabilities in the supply chain** and in the security of raw material supply, leading Arab countries to consider transformations of the supply-chain and reconfigurations of old economic alliances and trading routes, thus highlighting opportunities for enhancing intra-Arab regional trade.<sup>14</sup>



11 ESCWA, *The Impact of COVID-19 on Arab Economies Trade and Foreign Direct Investment*, 2020.

12 ESCWA, *Supply Chain Resilience Strategies for Policymaking during and post COVID-19 A Case Study of the Arab Region*, 2020.

13 ESCWA, *Impact of Covid-19 on Transport in the Arab Region*, 2020.

14 ESCWA, *Impacts of the war in Ukraine on the Arab region*, 2022.



# Measures taken by Arab Governments

- 1. As an immediate response to the pandemic, many Arab Governments provided direct support to affected economic sectors, including industry and transport,** in the form of tax exemptions, reductions or waivers of government fees, rental subsidies, interest rate reductions, loans and interest deferments, and the extension of soft loans and credit support to increase liquidity.<sup>15</sup>
  - 2. In the longer term, the pandemic and subsequent crises are encouraging Arab Governments to prioritize more resilient and sustainable industrial strategies.** The 2022–2026 industrial strategy of Bahrain has adopted a transformative approach through the Fourth Industrial Revolution. It promotes the circular economy, environmental and social governance, net-zero carbon emissions, and investments in technological infrastructure and digitizing manufacturing.<sup>16</sup> Tunisia is in the process of positioning itself as a destination for investors, especially manufacturers of automobile components. There are also plans to revise the current investment law to focus on priority sectors, improve regulatory and institutional structures, and explore better synergies between agencies responsible for investment promotion and facilitation.<sup>17</sup> The United Arab Emirates has launched a plan to enhance the sustainability of the industrial sector through more efficient production cycles and supply chains, which reduce resource consumption and support carbon neutrality efforts.<sup>18</sup>
  - 3. The pandemic has given the Arab region renewed focus on building supply chain resilience** by using advanced technological applications, and shortening and diversifying supply lines, while protecting links to crucial international suppliers and customers. Supply chain resilience is a multistakeholder responsibility shared by the Government and private companies. Logistics companies, for example, have started optimizing their operations by minimizing costs, reducing inventories and driving up asset utilization, resulting in a reassessment of strategic priorities.<sup>19</sup>
  - 4. One of the few positive impacts of the pandemic is an acceleration in digitization efforts.** In response to the pandemic, most Arab countries sought to expand digital access:<sup>20</sup> Internet bandwidth and speed were increased at no additional cost (Bahrain, Iraq, Kuwait and Lebanon); IP telephony applications were unblocked (Oman); high-income Arab countries increased the availability of public Wi-Fi and supported disadvantaged groups (notably migrant workers) through the free provision of personal computers and SIM cards, online access, and ICT training (Qatar and Saudi Arabia); and donor-supported programmes in underserved areas of the region (the State of Palestine and rural Morocco) upgraded digital infrastructure to increase broadband coverage.
- As a result of these measures, the percentage of individuals using the Internet in the region reached 70.3 per cent in 2022, a 15 percentage points increase since 2019 and the largest rise over a three-year period. Further efforts are needed, however, to address disparities, including between females and males (with access rates of 65.4 per cent and 74.9 per cent, respectively)

<sup>15</sup> ESCWA, *Annual SDG Review 2022*.

<sup>16</sup> Bahrain News Agency, *Bahrain's industrial strategy* highlighted, 3 January 2022.

<sup>17</sup> OECD, *COVID-19 crisis response in MENA countries*, 6 November 2020.

<sup>18</sup> Operation 300bn, the UAE's industrial strategy. Available at <https://u.ae/en/about-the-uae/strategies-initiatives-and-awards/strategies-plans-and-visions/industry-science-and-technology/the-uae-industrial-strategy>.

<sup>19</sup> ESCWA, *Supply Chain Resilience Strategies for Policymaking during and post COVID-19 A Case Study of the Arab Region*, 2020.

<sup>20</sup> ESCWA, *Annual SDG Review 2022*, 2022.

and between urban and rural areas (at 75.9 and 42.1 per cent, respectively).<sup>21</sup> The region largely remains on the margins of the advanced digital technologies scene. Only five Arab countries have been identified as engaging with advanced digital production technologies

(applied to manufacturing): Algeria, Egypt, Saudi Arabia and Tunisia import these technologies and are thus users, whereas the United Arab Emirates is the only Arab country identified as a producer and exporter of advanced digital production technologies.<sup>22</sup>

## Industrial development in Morocco

During the COVID-19 crisis, the industrial sector in Morocco was not as hard hit as that of other countries. It was able to maintain some operations such as car manufacturing, and to alter its manufacturing scope by repurposing textile factories to meet domestic demand for textile-based personal protective equipment and export them to other countries. Morocco also saw the pandemic as an opportunity to strengthen its pharmaceutical industry. One of the concrete outcomes was establishing a new factory to manufacture the COVID-19 (and other) vaccines through a public-private partnership.

The industrial sector is led by a strong government vision, namely the New Development Model 2021, which acknowledges the importance of investing in high-potential industrial sectors. It recognizes the need to promote research and innovation, build skills, and enhance the use of green energy. The medical industry, the agro-food industry, the automotive industry, and the crafts and artisanal industries have been identified as promising growth sectors for Morocco. The Industrial Recovery Plan 2021–2023 aims to support domestic production, improve Moroccan trade competitiveness with Europe, and reduce the country's carbon footprint.

Results are already visible. In July 2022, the Industrial Recovery Plan approved 995 investment projects expected to offer more than 220,000 new jobs and raise more than 64 million Moroccan dirhams in exports. The Government has already taken measures to strengthen the “Made in Morocco” label by amending custom charges, imposing limitations on imports of foreign products, and reviewing trade agreements. The Government has also signed an agreement with the National Office for Electricity and Potable Water to provide industries with renewable energy sources to reduce the country's carbon footprint and improve its competitiveness in green production.

Source: Compiled by ESCWA based on information from [Sky News Arabia](#), [Agence Marocain de Presse](#), the [Office of the Prime Minister of Morocco](#), [Aldar](#), [Aljazeera](#), the Moroccan [Ministry of Industry and Commerce](#), and the Moroccan [Special Commission on the New Development Model](#).



imagima / Stock / Getty Images Plus via Getty Images

21 ITU, Key ICT Indicators (2005–2021), 2022.

22 UNIDO, Industrial Development Report, 2020.



## Most at risk of being left behind



Without infrastructure and connectivity improvements, **rural areas and informal settlements** will face difficulties in accessing essential services such as health care, education, and water and sanitation.



Despite the rise in the number of female graduates in the science and technology fields, **women** remain underrepresented in employment in these sectors. In the manufacturing sector, the share of female employment is relatively higher in selected labour-intensive and export-oriented sectors such as textiles and garments, but these were severely impacted by lockdown measures which led enterprises and factories to halt production, cut salaries or close owing to supply-chain and trade disruptions.<sup>23</sup>



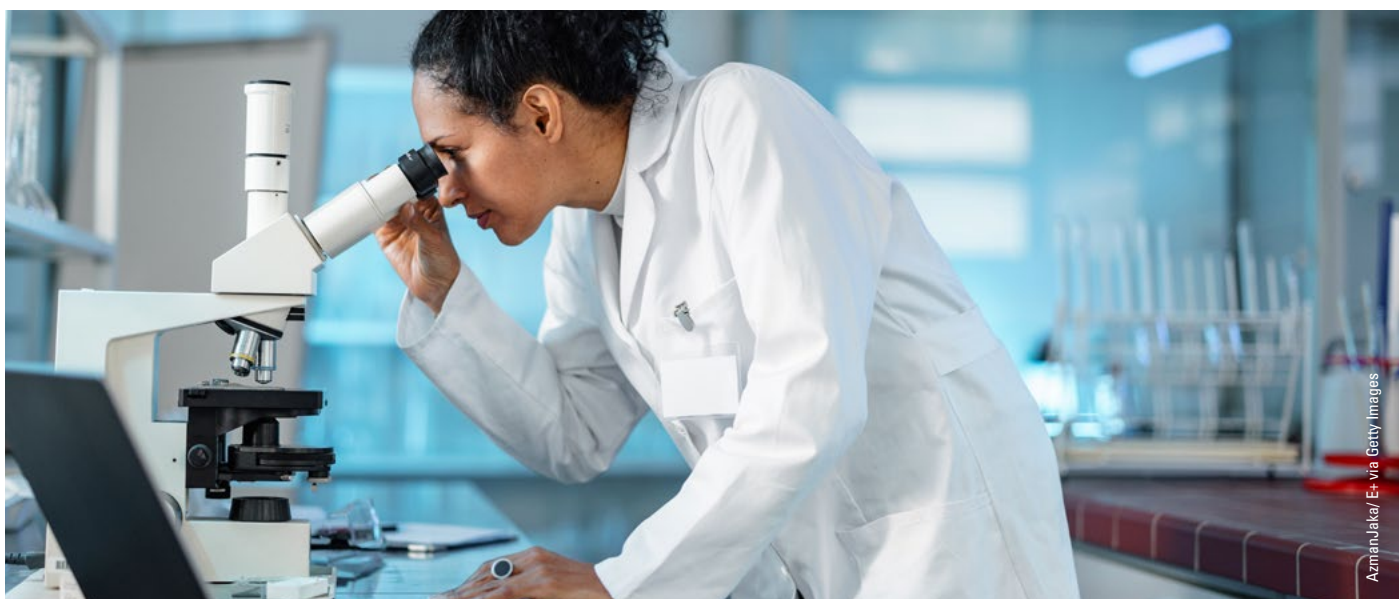
**Some groups are affected by digital divides** that exist between urban and rural areas, men and women, different age groups, and the rich and poor. People who are digitally left behind will not have access to e-services, information, and other benefits of technology.



Many people in the **Arab least developed countries** are being left behind on SDG 9. Structural and financial limitations make it difficult for these countries to invest in infrastructure or to catch up on technology.



**Countries in conflict** are being left behind in all SDG 9 targets owing to the destruction of infrastructure, limited or no access to technology, and challenges facing industrial or manufacturing enterprises in accessing supply chains for raw materials and resources.



23 ESCWA and ILO, *Towards a Productive and Inclusive Path Job Creation in the Arab Region*, 2021.



# Policy recommendations for ensuring an inclusive recovery and achieving SDG 9 by 2030

The Arab Sustainable Development Report 2020 identified a series of recommendations to accelerate the achievement of SDG 9 in the region, many of which remain valid as Arab countries strive to recover from the pandemic and enhance resilience to future shocks and crises.<sup>24</sup> Key recommendations include the following:

1

Revitalize commitment to regional integration, align national development plans and efforts to harmonize cross-border regulations, streamline logistics and tariff systems, facilitate the mobility of people and goods, and promote an enabling environment for the integration of companies in supply chains.

2

Improve supply chain resilience by formulating policies that retain resilient supply chain sources, rethinking purchasing strategies, facilitating the digitization of supply networks, finding alternative suppliers who focus on local sourcing especially during crises, and maintaining a buffer stock to avoid any potential stock out.

3

Engage with various stakeholders, including the public sector, local governments and investors, to jointly prepare comprehensive transport master plans that modernize traffic flows and improve resilience, safety, security and comfort.

4

Intensify efforts towards economic diversification, including through sustainable and environmentally safe industrial production, the greening of manufacturing, investing in the circular economy, and implementing net-zero carbon emission strategies.

5

Invest in building skills needed for new industries, avoid premature deindustrialization, and remedy possible job losses due to automation.

6

Improve the ecosystem for sustainable enterprises and support private sector contributions across industry, infrastructure and innovation, including through regulatory and legislative frameworks to facilitate investment and partnerships.

7

Bridge the digital divide at all levels and support regional multistakeholder knowledge sharing platforms to promote the Fourth Industrial Revolution (interconnectivity, automation, machine learning, and real-time data), and design related training programmes. This requires upgrading the region's infrastructure and adopting new technologies that benefit the region. At the level of enterprises, SMEs require support in awareness raising and skills upgrading to reduce the digital divide within countries.

8

Create an enabling environment for entrepreneurs and startups, and improve innovation ecosystems, compliance mechanisms and social dialogue.










9

Expand access to credit and financial services, especially for SMEs, women and young people.

<sup>24</sup> For a comprehensive analysis of SDG 9 in the region, see ESCWA, [Arab Sustainable Development Report, 2020](#).



## Key facts on SDG 9

	Arab region	World
<b>9.2.1</b>  Manufacturing in GDP	10.7% <b>+0.5% since 2000</b>	16.9% <b>+0.67% since 2000</b>
<b>9.2.1</b>  Manufacturing per capita	\$630.8 <b>+2% since 2000</b>	\$1,853.4 <b>+2% since 2000</b>
<b>9.2.2</b>  Manufacturing employment	9.8% <b>-0.38 since 2000</b>	13.1% <b>-0.64% since 2000</b>
<b>9.3.2</b>  Small-scale industries with a loan	15.4%	29.8%
<b>9.4.1</b>  Manufacturing CO2 emissions	1.0 kg/\$ <b>-0.1% since 2000</b>	0.43 kg/\$ <b>-0.99% since 2000</b>
<b>9.5.1</b>  R&D expenditure	0.64% <b>+2% since 2000</b>	1.9% <b>+1% since 2000</b>
<b>9.5.2</b>  Researchers	614.1 <b>+2% since 2000</b>	1,341.8 <b>+2% since 2000</b>
<b>9.b.1</b>  Tech-industry	31.6% <b>+1% since 2000</b>	45.1% <b>-0.18% since 2000</b>
<b>9.c.1</b>  Mobile network	92.5% <b>+4% since 2015</b>	93% <b>+3% since 2015</b>



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