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Shifting focus towards technology-intensive manufacturing

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COUNTRY BRIEF EGYPT

SDG-9 Industry Index data indicate an overall decline in Egypt's industrial performance since 2000, alongside moderate progress towards some of the country's SDG-9 commitments. However, Egypt is in the process of executing several ambitious industrial policy initiatives and is committed to prepare the way for Industry 4.0. Traditionally an African industrial powerhouse, the significance of medium- and high-tech industry within the Egyptian manufacturing sector has recently diminished. Preparing firms to absorb new technologies and improving the digital infrastructure are two ways this trend could be adjusted.

Shifting focus towards technology-intensive manufacturing

Located between the Mediterranean and the Sahara and home to the Suez Canal, Egypt represents an important link between Europe and Africa with great economic potential. However, recent political turmoil and large fluctuations in oil prices have exerted significant pressure on the country. Egypt's manufacturing sector, one of the largest on the African continent both in per capita terms and share of GDP, has not been left unscathed.

While in 2000 the country ranked 62nd in the world in the SDG-9 Industry Index, Egypt has since lost nine positions in the ranking, currently occupying 71st place (Figure 1). Meanwhile, other countries in Northen Africa, such as Morocco and Tunisia, have been able to make ground.

Looking at the individual indicators of the SDG-9 Industry Index, we find that Egypt still boasts manufacturing value added and employment shares that are far above the African average. However, when looking at manufacturing value added (MVA) in per capita terms, the country's performance is significantly less impressive. On CO_2 efficiency, the country falls short of other African countries, probably due to the strong presence of the fuel industry. While Egypt's share of medium- and high-tech (MHT) industries is well above the African average, it is substantially lower than that of the regional comparator country Morocco, which has successfully attracted automotive and electronics production over the last decade.

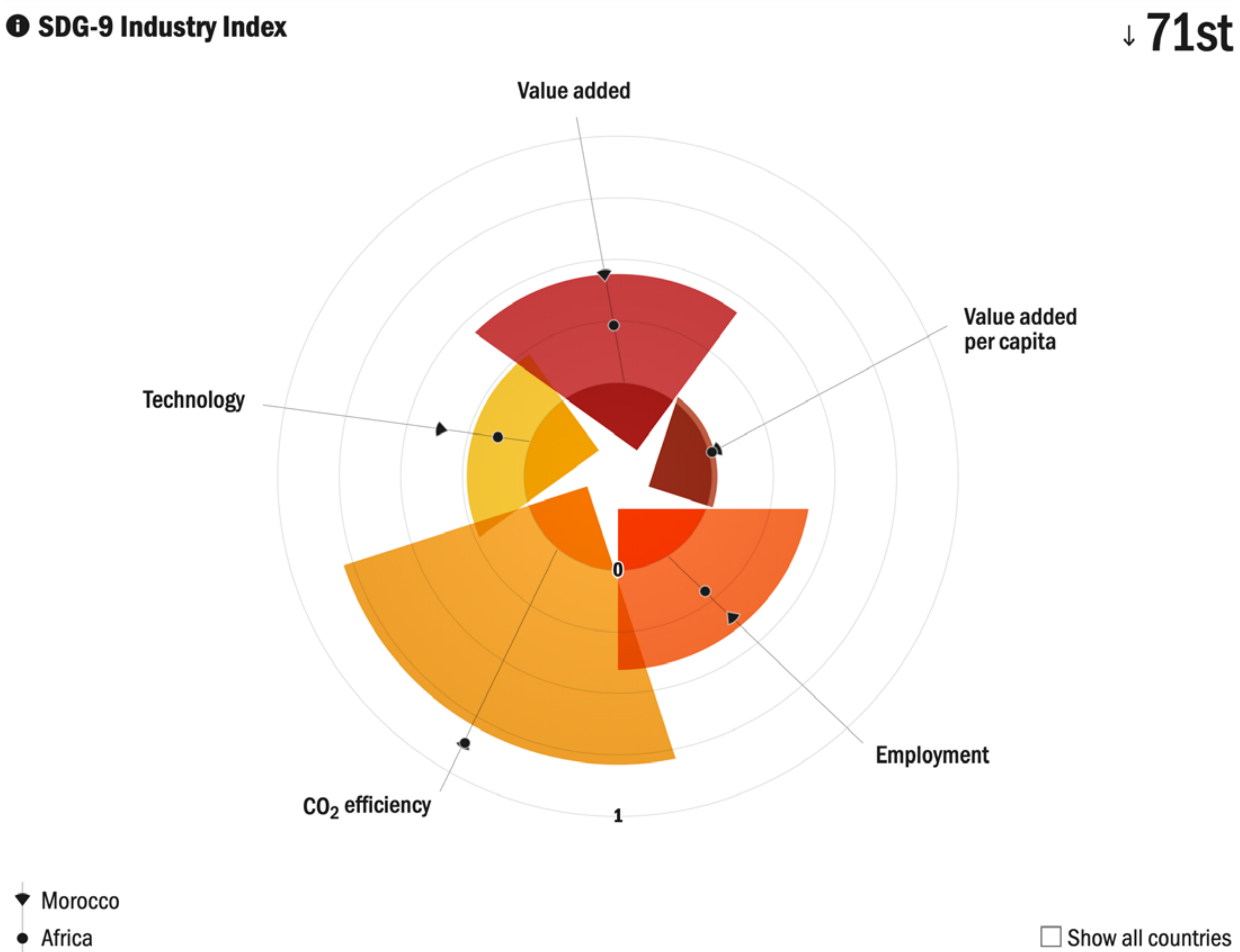

Figure 1: SDG-9 Industry Index for Egypt in comparison to Morocco and Africa (UNIDO IAP)

Decline in technology-intensive manufacturing

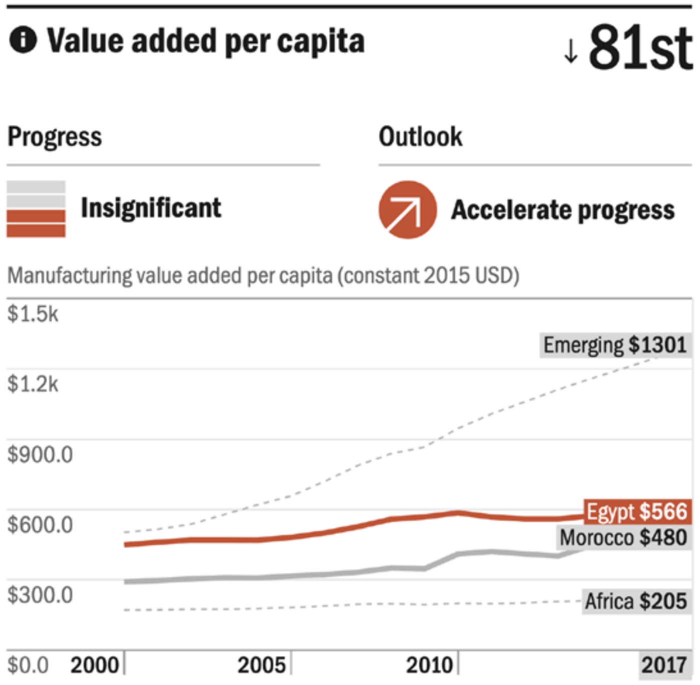

Figure 2: Manufacturing value added per capita, 2000-2017 (UNIDO IAP)

As countries industrialize, they transition from producing low value added products in industries with low technological intensity to the production of more complex products in the same and/or in more technologically advanced industries. Over time, this should lead to rising value added per capita and a rising share of medium- and high-tech industries in total manufacturing value added, which, through R&D intensity, stimulate innovation and productivity across the whole manufacturing sector.

The data for Egypt show an opposite trend since 2000. Manufacturing value added per capita in Egypt has exhibited only limited growth, which has led to the country losing positions in the indicator ranking (Figure 2). Although Egypt was able to increase its manufacturing value added per capita by 27 per cent over the period 2000-2017, growth was sluggish compared to other Emerging Industrial Economies. This suggests that the country was not sufficiently successful in switching to higher value-adding activities, thereby increasing the impact of manufacturing on economic growth.

Also of note in this regard has been Egypt's performance in shifting production to industries with higher technology intensity. Egypt's share of manufacturing value added generated in medium- and high-tech industries dropped sharply from 36 per cent in 2000 to 18 per cent in 2017 (Figure 3). As the graph shows, this negative trend is very different compared to those for Africa as a whole, other Emerging Industrial Economies, and the regional comparator Morocco. Looking closer at the SDG-9 Index data, this is noticeably connected to the increasing share of MVA generated in the fuel industry and a fall in MVA within the chemicals industry.

The relatively low importance of MHT industries in Egypt's manufacturing sector is confirmed when observing the top manufacturing industries by value added and comparing these with benchmark economies from the group of Emerging Industrial Economies that have successfully achieved technological upgrading over the last decades, such as Malaysia and Indonesia (Figure 4).

Apart from the chemicals industry, which is traditionally strong in Egypt, no medium- or high-tech industry[1] features in the country's top five industries by value added in manufacturing. By contrast, Malaysia and Indonesia each have three MHT industries, including chemicals, electronics, automotive and machinery, among their top five.

Other indicators further support the reading that Egypt has been losing ground in terms of technological upgrading. According to ILO statistics, the share of knowledge workers[2] in the total workforce has decreased from 34 per cent in 2012 to 31.8 per cent in 2018. The share among employees in the manufacturing sector is even lower, falling from 24.3 per cent in 2012 to 19.2 per cent in 2018. In Malaysia, which was previously used as a benchmark, the share of knowledge workers in manufacturing stands at 23 per cent.[3] According to EBRD calculations, Egypt had a robot density of less than 2 per 10,000 workers in 2016, which is around one fifth of the density seen in Tunisia and one tenth of the density in Turkey.[4]

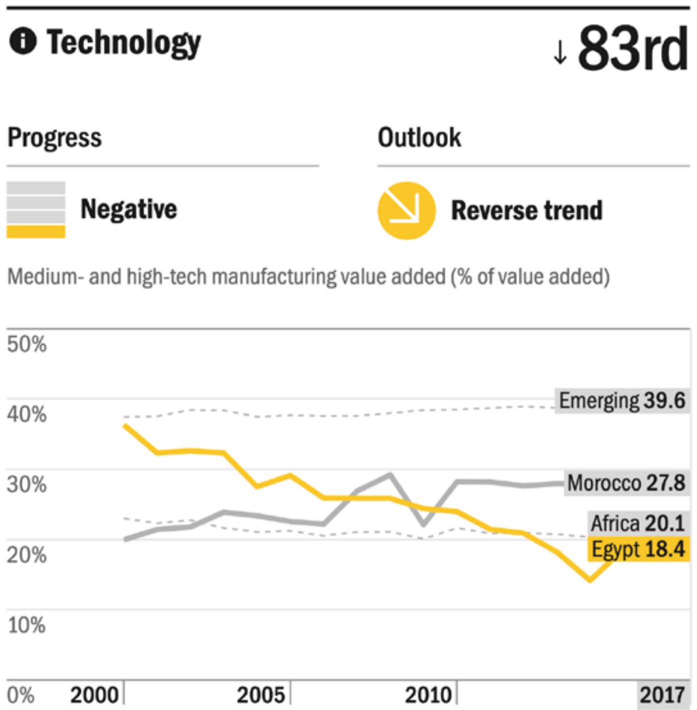

Figure 3: Medium- and high-tech manufacturing value added, 2000-2017 (UNIDO IAP)

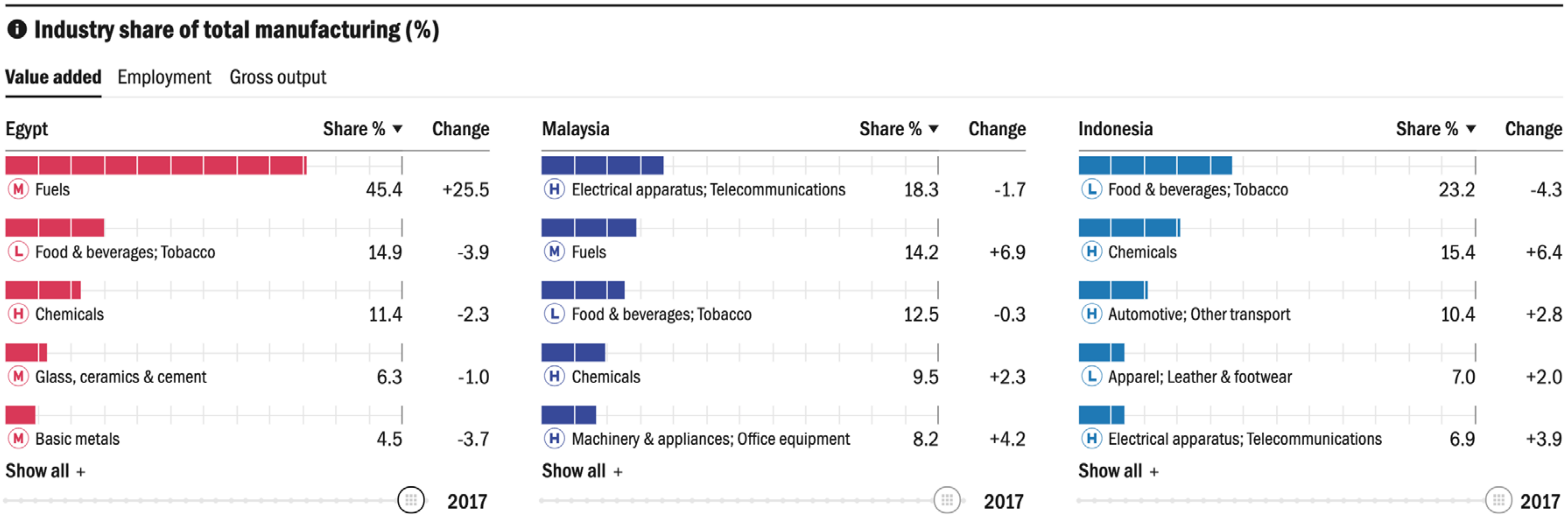

Figure 4: Industry share of total manufacturing value added (%), 2017 (UNIDO IAP)

THE FUTURE OF MANUFACTURING IN EGYPT

These numbers likely indicate that there is room for Egypt to intensify its preparations for the Fourth Industrial Revolution. Indeed, many companies in Egypt are still not digitized and remain locked in older paradigms, which prevents them from moving closer to the technological frontier. Nevertheless, the ambitions of the Egyptian government are high. In its Sustainable Development Strategy: Egypt Vision 2030, the government proclaimed that, by 2030, the country aims to become a knowledge-based market economy. It also explicitly mentions the goal of increasing the share of high-technology exports in total manufacturing exports.[5]

However, to make progress on these ambitious targets and programmes, existing bottlenecks that hold back Egypt's transition to mastering high-technology manufacturing need to be tackled. Below, we briefly discuss three of the key bottlenecks:

Institutional capacity and legislation

Switching from low value-adding activities to more complex industrial production is a difficult process for many firms, particularly for micro, small and medium-sized enterprises (MSMEs). These companies often only have limited access to knowledge and capital, and rely on targeted assistance in technology transfer to manage the transition successfully. Egypt's public sector currently still lacks the institutions and technical expertise to sufficiently support companies during this process.

Egypt's burdensome business legislation also appears to be curbing economic dynamism somewhat. While laudable efforts have been made to simplify procedures in areas such as starting a business, industrial licencing and land allocation, other areas such as trade policy still act as major obstacles to forming a virtuous circle of increasing both innovation and productivity.

Industrial skill development

Embracing modern technologies is not possible without the presence of an adequately skilled workforce. Judging by common data indicators, Egypt still appears to be underperforming in the area of high-end skill development. According to UNESCO data, tertiary school enrolment was 35 per cent in 2017, slightly below the value for Indonesia (36 per cent) and well below that of Malaysia (44 per cent) and the MENA region as a whole (41 per cent).[6] Similarly, the number of researchers among the Egyptian population is low compared to other Northern Africa countries such as Tunisia and Morocco, as well as benchmark countries like Malaysia and Turkey.[7]

Targeted investment mobilization

For developing countries, attracting foreign direct investment is a key mechanism for gaining access to advanced technologies and knowledge on more efficient industrial processes. While, overall, Egypt has been relatively successful in attracting foreign capital, UNCTAD data shows that net inflows are highly volatile, reaching their peak in 2006 before dropping into negative territory during the Arab Spring protests of 2011. While investment has since recovered, coming in line with benchmark countries in terms of GDP share, absolute inward FDI flows are lower than in Indonesia, Malaysia or Turkey.[8]

Getting back on track

UNIDO Programme for Country Partnership (PCP) Egypt[17]

The Programme for Country Partnership (PCP) is a comprehensive partnership between a host country and UNIDO that is aligned with the national development agenda and focused on sectors with particularly high potential for growth. The PCP between UNIDO and Egypt, which started in 2019, addresses key issues for Egypt's high-tech industries. "Mainstreaming Industry 4.0" is a priority area, helping Egypt increase the integration of Industry 4.0 technologies in key industrial sectors to enhance the contribution of manufacturing to national economic, environmental, and social development. To this end, UNIDO aims to support the Government of Egypt in developing technical programmes in the areas of institutional capacity strengthening, knowledge transfer and technological upgrading. One of the first pilot initiatives will focus on the electronics industry, with targeted interventions implemented to address industry-specific barriers to applying advanced production technologies.

The Egyptian government has demonstrated strong commitment to tackling existing bottlenecks on industrial development. Recent reforms aimed at improving the business climate are already showing results, with the country improving its position in the Doing Business ranking by six places and mentioned as one of the top 25 countries in the world in terms of number of reforms.[9]

Egypt has also made considerable progress in the area of infrastructure via investment in mega projects and wide-ranging reform of transport and utility infrastructures, particularly electricity. The construction of new facilities for energy generation and distribution, such as power plants and gas pipelines, has contributed to higher energy security for the country's industry. In addition, significant investment in Egypt's roads, ports and railroads has been undertaken.[10] Egypt now offers a higher quality of trade and transport-related infrastructure, as measured in the World Bank's Logistics Performance Index, than the MENA average–surpasses benchmark countries such as Morocco, Tunisia and Indonesia.[11]

While an optimized regulatory environment and infrastructure are key to stimulating investment in high-technology industry and industrial growth, additional targeted policies will be needed to build capacity in the area of Industry 4.0 and achieve higher levels of value addition across different industries.

A range of policies can be deployed to tackle the identified bottlenecks in skill development. Reforming the existing technical and vocational education and training (TVET) infrastructure in line with the needs of new technologies can secure qualified labour for industry. Second, the promotion of STEM fields across all levels of education can lay the ground for future innovation. This can be done with a specific focus on young girls and women, simultaneously addressing the issue of low female labour force participation and high unemployment among young women.[12] Third, as long as the availability of highly skilled workers on the domestic labour market is limited, softer regulation on recruitment of foreign skilled labour is an effective way of ensuring investor access to essential staff.

Attracting FDI to break into global value chains: Evidence from the electronics industry

Investment lies at the core of any ambitious upgrading strategy. As mentioned, foreign direct investment is of particular importance in this context. Strategic mobilization of high-tech FDI in industries with strong growth potential can ensure that investment is most effective.

The electronics industry has been called both a priority sector and a pilot sector for the integration of Industry 4.0. It is also being targeted by the national presidential initiative Egypt Makes Electronics (EME), which aims to make the sector one of the key drivers of growth in the coming years. Egypt has already successfully attracted investment from major multinational enterprises such as LG and Samsung to the Suez Canal Economic Zone (SCZone).[13] Moreover, so as to ensure adequate skill development for local industry in the context of Industry 4.0, Siemens and GIZ have opened the Egyptian-German Technical Academy, a vocational training centre located in Ain Sokhna focusing on industrial mechanics, electrical, electronics and control and automation.[14]

In light of growing tensions in the global trade system and the ongoing COVID-19 pandemic, Egypt has been cited as a potential beneficiary of nearshoring, the projected medium- to long-term trend towards regionalization of existing value chains.[15] With European companies reducing their exposure to China and other Asian economies, Egypt could exploit untapped export potential estimated at US$ 14.5 billion, much of it in MHT industries such as electronics, pharmaceuticals, machinery and plastics and rubber.[16] However, whether Egypt will realize its potential critically depends on the country's commitment to formulate ambitious industrial strategies and put their implementation at the core of the national development agenda.

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1 In this table, medium(-high) and high-technology (MHT) industries are labelled "H", with "M" denoting medium-low technology industries.

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UNIDO's Industrial Analytics Platform

The UNIDO Industrial Analytics Platform (IAP) is a data-driven knowledge hub which provides novel insights into industrial development around the world. The online platform combines state-of-the-art data visualisation tools with policy relevant expert analysis.

The SDG-9 Industry Tracker helps monitor and benchmark countries' performance and progress towards SDG-9 industry-related targets. The Tracker is build upon UNIDO's SDG9 Industry Index, a novel composite index describing different dimensions of inclusive and sustainable industrial development.

To learn more about the tool visit iap.unido.org/data.

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