OECD Development Pathways

Production Transformation Policy Review of Egypt

EMBRACING CHANGE, ACHIEVING PROSPERITY

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Foreword

The current global economic and political setting is turbulent, complex and fast-changing. Governments, businesses and societies are engaged in better understanding the ongoing technological, digital and industrial reorganisation processes and their profound potential impacts on the economy and the society. At a time in which it is clear that growth is a necessary, but not exclusive, condition for development and that incentives are needed to guarantee that growth is inclusive and sustainable, planning and implementing strategies for economic transformation become paramount. This is even truer in the middle of the global COVID-19 pandemic that has exposed the vulnerabilities of the global economic system.

The Production Transformation Policy Reviews (PTPRs) are an OECD policy assessment and guidance tool that supports policy makers in the creation and implementation of better strategies for transforming their economies. They benefit from international peer dialogue and discussions under the aegis of the OECD Initiative for Policy Dialogue on Global Value Chains, Production Transformation and Development. The PTPRs are enriching the OECD Development Pathways Series with their perspective on economic transformation and governance for change.

The PTPR of Egypt is the first PTPR carried out in Africa, at the request of the Ministry of Trade and Industry (MTI) and was implemented in co-operation with the Industrial Modernisation Centre (IMC), and with the financial contribution of German International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ). The PTPR benefited from co-operation with the United Nations Conference on Trade and Development (UNCTAD), the United Nations Economic Commission for Africa (ECA) and the United Nations Industrial Development Organization (UNIDO). The African Import Export Bank (Afreximbank) contributed to the process.

The PTPR of Egypt involved an extensive process of consultation with multiple stakeholders and benefited from peer learning from Italy (International Centre for Advanced Mediterranean Agronomic Studies, CIHEAM) and Malaysia (Mara Corporation). The PTPR of Egypt has been a process of dialogue and knowledge sharing and provided an opportunity to identify future reforms to enable the country to flourish in a post-pandemic future. The PTPR benefited from global peer learning through three Peer Learning Group (PLG) meetings conducted online during 2020, which gathered more than 127 international high-level participants from government, academia and the private sector.

Egypt is one of Africa’s industrial heavyweights. Transforming the country's economy to sustain job-rich and sustainable growth are pivotal steps in its march towards prosperity. Today’s search for new development models, accelerated by the unfolding of the COVID-19 pandemic, calls for shifting up a gear in raising Egypt’s industrial capabilities to compete in an Industry 4.0 and Agro 4.0 landscape.

The *PTPR of Egypt* uses a forward-looking framework to assess the country's readiness to embrace change. This includes an analysis of the game-changing potential of the African Continental Free Trade Area (AfCFTA) and perspectives on agro-food and electronics (i.e. what in Egypt is referred to as part of the engineering sector), as well as identifying priorities for future reforms.

Acknowledgements

The Production Transformation Policy Review (PTPR) of Egypt is the result of an in-depth policy review consensus building process.

The PTPR process has been co-ordinated by the OECD Development Centre. It has benefited from co-operation with the United Nations Conference on Trade and Development (UNCTAD), the United Nations Economic Commission for Africa (ECA) and the United Nations Industrial Development Organization (UNIDO). The African Export-Import Bank (Afreximbank) has also contributed to the process. The report and the PTPR process have come together under the strategic guidance of Annalisa Primi, Head of the Economic Transformation and Development Division at the OECD Development Centre. Vasiliki Mavroeidi (OECD Development Centre), acted as project co-ordinator and main analyst. Stephen Karingi (ECA), Lily Sommer (ECA), Piergiuseppe Fortunato (UNCTAD), Anders Isaksson (UNIDO), Frank Hartwich (UNIDO), Ahmed Rezk (UNIDO) and Manuel Toselli (OECD Development Centre) contributed to the drafting. Ahmed Badawy (OECD Development Centre) provided research assistance. The report benefited from valuable comments from Temwa Gondwe (Afreximbank), Alin Horj (OECD), Mariarosa Lunati (OECD), Luis Padilla and Lorenzo Pavone (OECD Development Centre). Antonela Leiva and Eugenia Klimenka (OECD Development Centre) provided valuable administrative support. Delphine Grandrieux and Elizabeth Nash co-ordinated the publication process. Aida Buendia and Irit Perry contributed to the publication process. The report benefited from editing by Chris Marquardt.

The PTPR of Egypt was implemented at the request of the Ministry of Trade and Industry (MTI) and was carried out in co-operation with the Industrial Modernisation Centre (IMC). The authors relied on the knowledge, experience and support of two administrations during the entire process. The authors are immensely grateful to H.E. Nevine Gamea, Minister of Trade and Industry of Egypt for her excellent leadership of the PTPR process in Egypt, and for facilitating the participation of Egyptian authorities in the review, and to Eng. Tarek Kabil, former Minister of Trade and Industry, for his valuable support during the project kick-off. We are also grateful to H.E. Hala El-Said, Minister of Planning and Economic Development, for her profound vision and synergies, H.E. Mohamed Maait, Minister of Finance, for his valuable support, and H.E. Amr S. Talaat, Minister of Communications and Information Technology, for his co-operation during the review. The authors thank Ahmed Kamaly, Deputy Minister of Planning and Economic Development, Ahmed Kouchouk, Deputy Minister of Finance, and Ambassador Omar Abou Eich, Assistant of the Minister of Foreign Affairs, for their support of the PTPR process and participation in the 13th Plenary Meeting of the Policy Initiative for Global Value Chains (GVCs), Production Transformation and Development. We are also grateful to Nermine Abulata, Advisor to the Minister of Trade and Industry, for her excellent support, guidance, and professionalism during the whole process. The authors would like to thank the two Executive Directors of IMC during the implementation period, Mohamed Abdel Karim and Amr Taha, for facilitating the implementation process and enabling access to information and people. We also thank Ahmed Maghawry, Chairman, Egyptian Commercial Services (ECS) at MTI, for his valuable participation in the Peer Learning Group (PLG) of the PTPR of Egypt, as well as Mostafa Shaykhoun, Minister Plenipotentiary for Economic and Commercial Affairs, ECS, for providing invaluable support in getting the project off the ground and continuing to provide strategic guidance throughout. We give our thanks to Hossam Osman, Advisor to the Minister for Technology Innovation, Electronics Industry and

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The Egyptian diplomatic authorities in France were essential in ensuring effective project implementation and communication with local counterparts. We are thankful to the Ambassador of Egypt to France, H.E. Alaa Youssef, and the former Ambassador H.E. Ehab Ahmed Badawy for supporting the project and participating in the PLG of the PTPR of Egypt. We are also grateful to Sayed Fouad, Minister Plenipotentiary and Head of the Egyptian economic and commercial office for his support. Mostafa Safwat, Second Secretary and Shaimaa Hedaya, Third Secretary, helped to ensure smooth co-operation.

Peer learning and knowledge sharing lie at the heart of the PTPR process. This report has been shaped and enriched by the contributions of international peers who actively participated in PTPR activities and contributed ideas to the review. We are grateful to Ambassador Antonio Bernardini, Permanent Representative of Italy to the OECD and to Alessandra Pastorelli for their support of and interest in the PTPR process. We thank Teodoro Miano, Vice President, International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), for participating as a peer. We are also grateful to Rob Cayzer, Executive Director, Yasaar, Malaysia (former Head of Investment, Mara Corporation), who participated as a peer.

- Valuable input emerged at the three Peer Learning Group (PLG) meetings that took place virtually during 2020, as dictated by the ongoing circumstances of the COVID-19 pandemic, and which collectively saw the participation of more than 127 high-level participants from 27 countries, 9 private sector entities from Egypt and abroad, 8 international organisations and 3 OECD Directorates. We are thankful to (in alphabetical order): Paolo Carnazza, Senior Officer, Directorate-General for Industrial policy, Innovation and SMEs (DGPICPMI), Ministry of Economic Development, Italy; Fatoumata Fofana, Executive Secretary, AfCFTA National Committee, Côte d'Ivoire; Karl-Christian Göthner, Senior Expert, German National Metrology Institute (PTB), Germany; Tania Katanga, Consultant, Export Development Department, Afreximbank; Keun Lee, Professor of Economics, Seoul National University, Korea; Andoh Mensah, Manager of the Trade and Investment Climate Division, AfDB; Brian Mureverwi, Trade Advisor, African Union Commission; Alistair Nolan, Senior Policy Analyst, Innovation and Policy Evaluation, Directorate for Science, Technology and Innovation, OECD; Zhaoyuan Xu, Deputy Director-General, Research Department of Industrial Economy, Development Research Center of the State Council, China (People's Republic of); Sri Ramya Y, Associate Vice-President, Infrastructure Specialist, Tamil Nadu Industrial Guidance & Export Promotion Bureau, India; and Zhongxiu Zhao, President, Shandong University, China (People's Republic of).

The PTPR is the result of an extensive and open consultation with diverse stakeholders in Egypt:

- One meeting of the Task Force on Economic Transformation kick-started the PTPR process. The meeting was held back-to-back with the 13th Plenary Meeting of the OECD Initiative for Policy Dialogue on Global Value Chains (GVCs), Production Transformation and Development in Cairo, Egypt. The Task Force Meeting was chaired by the Industrial Modernisation Centre (IMC). It took place with the participation of 35 members, including high level representatives from MTI and IMC, representatives of the business sector, such as the Federation of Egyptian Industries, the

Engineering Export Council, the Food Export Council, and the Federation of Egyptian Chambers of Commerce, and bilateral development agencies, such as the German International Cooperation (GIZ) and the Japan International Cooperation Agency (JICA).

- Two roundtables for production transformation in Egypt, where more than 20 high-level participants from the public and private sectors discussed strategies, policy tools, and partnerships needed for sustaining the Egyptian agro-food and electronics and electrical (E&E) industries. Strategic partners and leading companies have been key in sharing their views about the future and shaping the content of this report. We thank the Engineering Export Council (EECE), and in particular the two Chairpersons, Sherif El-Sayyad and Amr Abu Freikha, the two Executive Directors, May Helmy and Maha Salem, as well as Mohamed Samy; and the Food Export Council (FEC), and in particular the Chairperson, Hani Berzi, and the two Executive Directors, May Khairy and Manar Nasr. In addition, we are thankful to (in alphabetical order of company): Sherif Farouk, Managing Director, Ameco Technology; Mohamed Magdy, Director of Reasearch, Elaraby Group; Alaa Omar, Deputy CEO, LG Egypt; Ahmed El-Shafei, Deputy Chairman, Medical Engineering Group; Seham Atta, Government relations, Samsung Electronics Egypt; Mohamed Salem, CEO, SICO; and Shady Alagaar, CEO, Ultramed.
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Editorial

Governments across the African continent are committed to pursuing economic transformation, creating jobs for an expanding labour force and reaching new levels of prosperity. The COVID-19 pandemic has been a setback. A robust recovery will require dedicated policy effort and effective international support. The *Production Transformation Policy Review (PTPR) of Egypt*, the first to be implemented in Africa, provides a timely contribution on how countries can transform their economies at a time when they need it most and despite the difficulties facing the global economy.

Advanced countries have been investing heavily in economic recovery. Developing countries have also responded accordingly but face much tighter fiscal constraints. Egypt, too, has undertaken a commendable effort, investing 1.7% of GDP in addressing the pandemic. This report delves into Egypt's experience, examines its participation into global value chains and identifies how domestic policy, investments and international co-operation can unlock the potential of existing assets and foster new ones, thereby accelerating sustainable development. It offers perspectives on the agro-food and electronics and electrical (E&E) industries, two global value chains that are important for ensuring access to critical goods but have come increasingly under strain during the pandemic.

In a complex, uncertain and fast-changing global landscape, anticipating different scenarios and adapting quickly to changes is critical to sustain growth and ensure that it benefits all of society. This is even truer now that the COVID-19 pandemic has plunged countries worldwide in an unprecedented health emergency, giving rise to steep economic challenges. Since 2017, the Production Transformation Policy Reviews (PTPRs) have supported governments in transforming their economies through policies, making them more resilient, sustainable, and inclusive. They continue to do so during these extraordinarily challenging times.

This report is also extremely timely as it sheds light on a key question for all countries in Africa and their partners: how to make the most of the newly-implemented African Continental Free Trade Area (AfCFTA) to promote industrialisation? While closer continental ties can open up valuable opportunities for countries to chart their own unique paths to development, the benefits will not be automatic. Targeted national strategies will be needed to reap the benefits of an integrated Africa and turn the AfCFTA into a real game-changer for households, businesses, and governments across the continent.

Mario Pezzini
Director, OECD Development Centre, and Special Advisor to the OECD Secretary-General on Development

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Country profile

The Arab Republic of Egypt is a unitary country. It gained its independence in 1922 and it was declared a Republic in 1953. The chief of state is the President, who is elected by absolute majority popular vote for a term of six years, renewable. Administratively, Egypt's local government is organised in three levels: governorates, regions and districts. The country has 27 governorates and their governors are appointed by the President.

Table 1. Main economic indicators of Egypt 1970-2019

	1970	1980	1990	2000	2010	2019
Population						
Population, total (millions)	34.5	40.6	51.9	64	78.7	98.9
Labour force, total (millions) (national estimate)	...	...	15.5	20	26.2	28.3
Unemployment, total (% of total labour force) (national estimate)	2.4	5.2	8.4	9	9	7.9
Employment-to-population ratio (15+, total%, modelled ILO estimate)	...	...	42.3[a]	42	44.8	40.5
Aggregate economy						
GDP, million USD (constant prices & PPPs, 2017)	...	…	341 673	533 080	855 757	1 180 890
GDP, million USD current	8 042	21 670	42 979	99 839	218 984	303 092
GDP per capita, USD current	233	500.4	765.6	1 450.5	2 646	3 020
GDP per capita USD (constant prices & PPPs, 2017)	…	…	6 086.7	7 744.7	10 340	11 763.3
GDP growth (average previous 10 years)	5.1	6.7	6.3	4.6	4.9	3.7[b]
Gross fixed capital formation (% of GDP)	11	24.6	27.3	19	19.2	17.3
Inflation, consumer prices (annual %)	3.8	20.8	16.8	2.8	11.3	9.2
External sector						
Trade (% of GDP)	30.7	73.4	52.9	39	47.9	43.3
Exports of goods and services (million USD constant 2010 prices)	1 959	5 921.9	10 395	15 751	46 751	87 565
Imports of goods and services (million USD constant 2010 prices)	7 795.2	13 910.3	17 506.5	24 762.6	58 221	106 790.4
High-technology exports (% of total exports, Lall classification)	...	...	...	1.6	1.5	3
(% of manufactured exports, Lall classification)	...	...	...	4.7	3.6	6.8
Economic activities						
Agriculture, forestry, and fishing, value added, million USD constant 2015 prices (% of gross value added)	9 038 (30.4)	11 687.9 (18)	16 056 (13.5)	22 042.4 (12.3)	31 315.2 (11.2)	40 970.3 (10.9)
Industry (including construction) value added, million USD constant 2015 prices (% of gross value added)	11 001.9 (37)	27 342.7 (42.3)	46 769.5 (39.2)	67 650.1 (37.8)	109 416 (39.3)	130 359 (35)

Of which manufacturing (% of gross value added)	5 648.9 (19)	8 156 (12.6)	16 645.5 (14)	30 646.7 (17.1)	48 153.8 (17.3)	58 928.8 (15.8)
Services value added, constant 2015 USD (% of gross value added)	9 512.8 (32)	25 545.1 (39.5)	56 483.7 (47.3)	89 273.8 (49.9)	138 203 (49.6)	201 018.8 (53.8)
Total natural resources rents (% of GDP)	1.9	33.3	18.3	7.7	9	5
Energy						
Renewable electricity output (% of total electricity output)	…	…	23.5	17.7	10	8.3[c]
Of which electricity production from hydroelectric sources (% of total)	63[d]	51.8	23.5	17.5	8.9	7.38[c]
Renewable energy consumption (% of total final energy consumption)	…	…	8.5	8.1	5.7	5.7[c]
GDP per unit of energy use (constant 2017 PPP$ per kg pf oil equivalent			10.26	13.1	11.8	12.5[c]
Science and technology indicators						
GERD, % of GDP	...	...	...	0.19	0.43	0.72[e]
GERD, % financed by business						3.9[e]
Researchers in R&D (per million people)					492.4	687[e]
Fixed broadband subscriptions (per 100 people)	...	...	...	0.07[f]	1.8	7.6
Mobile cellular subscriptions (per 100 people)	...	...	...	2	85	95

Note: [a]1991 [b]from 2011 to 2019, [c]2015, [d]1971, [e]2018, [f]2002. GERD: gross expenditure on research & development. R&D: research and development.

Source: OECD National Accounts, IEA Statistics, International Telecommunication Union, World Telecommunication/ICT Development Report and database, United Nations Comtrade database, ILOSTAT database, International Monetary Fund, International Financial Statistics, United Nations Education, Scientific, and Cultural Organization (UNESCO) Institute for Statistics, World Bank Statistics and Central Agency for Public Mobilization and Statistics (CAPMAS).

Abbreviations and acronyms

AfCFTA	African Continental Free Trade Area
AfDB	African Development Bank
Afreximbank	Africa Import-Export Bank
AI	artificial intelligence
ASEAN	Association of Southeast Asian Nations
AU	African Union
CAPMAS	Central Agency for Public Mobilization and Statistics
CBE	Central Bank of Egypt
COMESA	Common Market for Eastern and Southern Africa
ECA	United Nation Economic Commission for Africa
E&E	electronics and electrical
FDI	foreign direct investment
FEI	Federation of Egyptian Industries
FTA	free trade agreement
FZ	free zone
FVA	foreign value added
GAFI	General Authority for Investment and Free Zones
GDP	gross domestic product
GFCF	gross fixed capital formation
GVCs	global value chains
ICT	information and communication technology
IDA	Industrial Development Authority
IMC	Industrial Modernization Centre
IoT	Internet of Things
ITIDA	Information Technology Industry Development Agency
MCIT	Ministry of Communications and Information Technology
MENA	Middle East and North Africa

MHESR	Ministry of Higher Education and Scientific Research
MPED	Ministry of Planning and Economic Development
MSMEDA	Micro, Small and Medium Enterprise Development Agency
MTI	Ministry of Trade and Industry
MVA	manufacturing value added
NSW	National Single Window
NTB	non-tariff barrier
NTRA	National Telecom Regulatory Authority
OECD	Organisation for Economic Co-operation and Development
PTPR	Production Transformation Policy Review
QIZs	Qualified Industrial Zones
R&D	research and development
RECs	Regional Economic Communities
SADC	Southern African Development Community
SEZs	Special Economic Zones
SMEs	small and medium-sized enterprises
TFP	total factor productivity
TIEC	Technology Innovation and Entrepreneurship Center
TICO	Technology Innovation Commercialization Office
TVE	technical and vocational education
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
USD	United States dollars
VC	venture capital
WTO	World Trade Organization

Executive summary

Egypt is among Africa's heavyweights. The country has a strategic position linking Africa, Europe and the Middle East and is home to the Suez Canal, which handles 10% of world maritime traffic. It is Africa's third-largest economy by GDP and its third-most-populous country. Egypt is also the continent's top manufacturer accounting for 22% of total continental manufacturing value added (MVA) and also has the second largest share (21%) of MVA in the Middle East and North Africa (MENA), behind only Saudi Arabia. In Egypt, manufacturing accounts for 16% of GDP, putting it on par with the OECD average, and above Africa's average of 11% and MENA's of 10%, but lower than in Southeast Asia (22%). The country's fast-growing economy has been increasingly attracting the attention of international investors. Egypt's annual foreign direct investment (FDI) inflows have averaged 3.3% of GDP during 2017-19, nearly double the average for MENA (1.7%) and higher than sub-Saharan Africa (1.9%).

Prior to the onset of the COVID-19 pandemic, Egypt had embarked on a march towards prosperity leveraging its fast-growing economy. During 2015-19, Egypt's GDP outperformed the African average, and was the fastest growing economy in MENA, with GDP rising at an annual rate of 4.4%. During 2020, Egypt's economy continued to grow by 3.6% despite the challenging global circumstances, compared to a contraction of 4% in the Middle East, of 1.9% in Africa, and of 3.3% globally, according to estimates by the IMF. Egypt reacted quickly to mitigate the economic effects of the COVID-19 pandemic on the population and on businesses with a recovery package amounting to 1.9% of Egypt's GDP.

Despite the challenges associated with supporting economic recovery from the pandemic, Egypt can continue advancing towards shared prosperity counting on several important assets.

Africa has a continental agenda prioritising trade integration and industrialisation. The African Continental Free Trade Area (AfCFTA) entered into force in 2019 and when fully implemented will create an integrated market of 1.2 billion people. The AfCFTA is expected to add 32 new FTA partners for Egypt, providing opportunities to add scale to Egypt's exports and to connect Egypt to traditional partners in Europe and the Middle East as well as to the overall global market.

The country has a government committed to implementing reforms. Since 2017, Egypt has been reforming its governance and regulatory framework in the areas of investment attraction, trade promotion and digitalisation for economic development. In addition, Egypt has a long-term vision for development enshrined in the Sustainable Development Strategy: Vision 2030, launched in 2016, and in line with the Africa Union Commission (AUC) *Agenda 2063: The Africa We Want*, while the National Structural Reforms Program (NSRP 2021-24) creates a vision for the post COVID-19 economy.

Egypt's private sector has demonstrated a readiness to exploit new competitiveness drivers. For example, Egypt has a track-record of investing in quality and branding in textiles, while the establishment of the National Food Safety Authority (NFSA) in 2017 under the Prime Minister's Office also represented an important step in ensuring competitiveness in agro-food. A vibrant start-up scene is also taking root in Egypt. It has the third highest number of start-ups in the continent at 14% of total, following Nigeria and South Africa, and the fourth-largest amount of venture capital (VC) investments during 2018-20 accounting for 10.5% of Africa's total (after South Africa, Nigeria, Kenya) and up from around 1% during 2013-15.

To continue advancing on its development path, Egypt needs global uncertainty to return to acceptable levels and to address key structural challenges that hamper the country's capacities to achieve its vision of a prosperous and inclusive economy. Upgrading infrastructure, both transport and digital, is crucial. Digital connectivity has improved, but is still below potential. In April 2021, the speed of fixed broadband, as measured by Ookla, was 39.66 Mbps, while the world average stood at 66.86 Mbps. Egypt's current economic specialisation poses challenges for enabling innovation and for environmental sustainability.The oil and gas sector in particular, plays a large role in the domestic economy, accounting for 9.7% of GDP during 2019/20, while refined petroleum emerges as the top sector in terms of MVA, accounting for 39% of total in 2017. The country's large agro-food sector, which accounts for 24% of the labour force and 15% of GDP, also faces sustainability problems, particularly related to water scarcity that could be exacerbated with climate change. The existing specialisation and persistent duality of the economy where a myriad of micro and subsistence firms co-exist with pockets of modernised excellence, also help explain why the country invests little in innovation. Egypt invests 0.72% of GDP in R&D, a third of the OECD average (2.37%). Finally, the country could be benefiting more from trade. Egypt's trade openness has remained relatively stable since the 1990s, with a trade to GDP ratio of 40%-50%, currently lower compared to Morocco (83%) and the OECD (57.2%).

Despite progress, the reforms agenda for Egypt is vast. Among several areas, three issues appear as game changers for future reforms.

Investing in making AfCFTA a real development driver. A more integrated continent with an agenda for industrial development has the potential to deliver new partnerships and markets, and could entail more competition for Egypt's firms. Benefiting from AfCFTA requires public and private efforts to explore new markets and build trust. Egypt would benefit from setting up a monitoring and evaluation system to track progress of AfCFTA implementation in relation to Egypt's Vision 2030 and the NSRP (2021-24) and continued efforts to facilitate trade and improve infrastructure for continental integration. In a highly competitive global landscape, branding and reputation can help set Egyptian products apart and become an asset for penetrating new markets. This will require commensurate investments in harmonising infrastructure for metrology, standardisation, accreditation and standards compliance to gain consumer trust at the continental level and beyond. Increasing the efficiency of logistics and reducing non-tariff barriers will also help make the most of the AfCFTA.

Engaging the private sector in innovation. Egypt falls short, by international comparison, of the typology of tools and budget allocated to innovation and R&D. Although the introduction of fiscal incentives through Law No. 72/2017 is a step forward, more needs to be done to increase public support for innovation to all firms across all sectors, leveraging existing tools. Egypt could also better use existing fiscal incentives to steer private sector investments towards innovation, Industry 4.0 and Agro 4.0 and sustainability through the smart use of conditionalities. Regarding Industry 4.0, in particular, Egypt would benefit from increasing cross-ministerial and institutional co-ordination, and from updating the policy mix to ensure that firms across all sectors, not only ICT, can benefit from government support targeted to foster digital technology adoption and development. Finally, amplifying the support targeted to MSMEs (including matching funds and services) is also necessary. This could be done by strengthening the programmes implemented by MSMEDA and IMC and expanding their digital components.

Getting the policy-making process ready for the future. Egypt has a strong leadership, a vision for the future, and an established system for co-ordination among institutions at the top level. In future, the country would benefit from updating the policy-making process by increasing co-ordination capacities also beyond the higher echelons and within institutions. Egypt would also benefit from rationalising and strengthening implementation institutions, for example by building their capacities to operate across the whole country. Egypt also needs to modernise its quality infrastructure system to ensure it operates well in an Industry and Agro 4.0 landscape. Finally, enriching the strategy setting process for production transformation with budgeting could help ensure resources are available in a way that matches the goals.

Assessment and recommendations

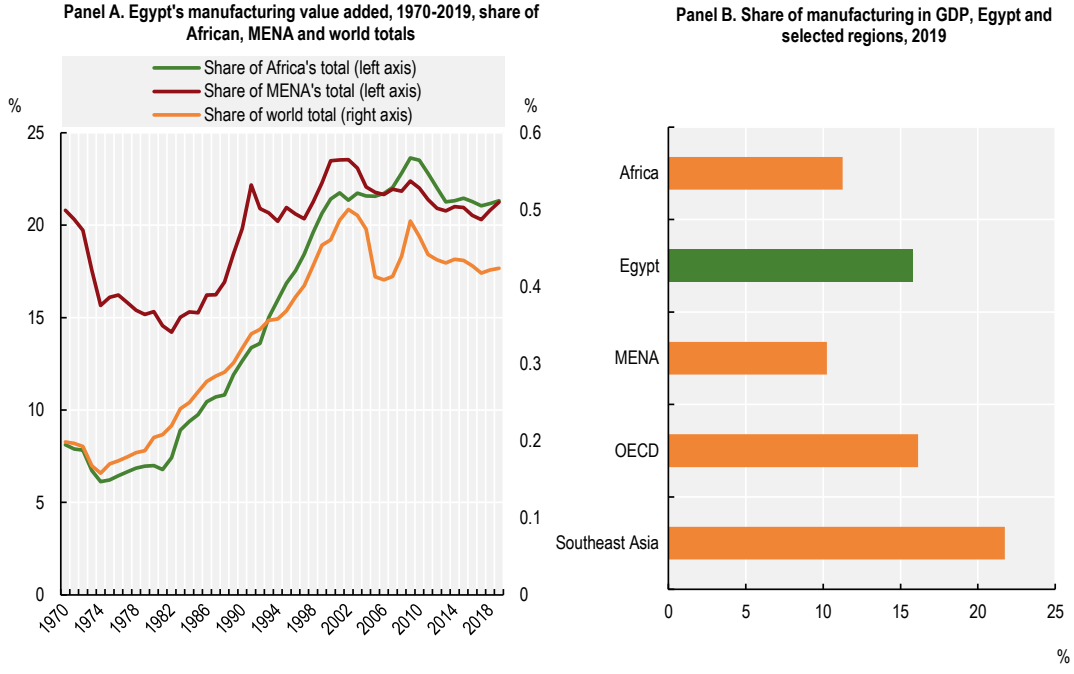
Egypt is among Africa's heavyweights, and a fast-growing economy. While the country reacted quickly to the COVID-19 pandemic, the global outlook remains uncertain. To advance on its path to prosperity, Egypt needs to continue implementing effective reforms, relying on a continental agenda that prioritises trade integration and industrialisation, a government capable of implementing reforms and a private sector ready to leverage new drivers of competitiveness. The country needs to address some persistent structural challenges, which are hampering future progress, notably continuing upgrading infrastructure, transforming its economic specialisation, innovating more and benefiting more from trade. Despite progress, the reforms agenda for Egypt remains vast. Among several areas, three issues appear as game changers for future reforms: i) investing in making the African Continental Free Trade Area (AfCFTA) a real development driver; ii) engaging the private sector in innovation and; iii) getting the policy-making process ready for the future.

Egypt is among Africa's heavyweights

Egypt is among Africa's heavyweights. The country has a strategic position linking Africa, Europe and the Middle East. Egypt is Africa's third-largest economy by GDP after Nigeria and South Africa, accounting for 12.5% of continental GDP. With nearly 100 million inhabitants, Egypt is also the third-most-populous country, after Nigeria and Ethiopia.

Although Africa is a relatively small player in global manufacturing, Egypt is a top hub in the continent. Africa generates approximately 2% of the world's total manufacturing value added (MVA) and Egypt is the continent's top manufacturer, accounting for 22% of continental MVA, a share that has remained somewhat stable in the last two decades (Figure 0.1). Egypt also has the second largest share (21%) of MVA in the Middle East and North Africa (MENA) region, behind only Saudi Arabia. In Egypt, manufacturing accounts for 12% of employment, up from 4% in the 1980s, and for 16% of GDP, up from 14% in the 1980s, putting it on par with the OECD average, and above Africa's average of 11% and MENA's of 10%. The figure remains, however, smaller than in Southeast Asia (22%). Egypt's manufacturing production is diversified with refined petroleum, food and beverages, textiles, chemicals and engineering (a sector grouping used in Egypt that encompasses transport equipment, electronics and electrical (E&E), basic metals, fabricated metal products and machinery), among the main sectors.

Figure 0.1. Egypt is Africa's top manufacturer



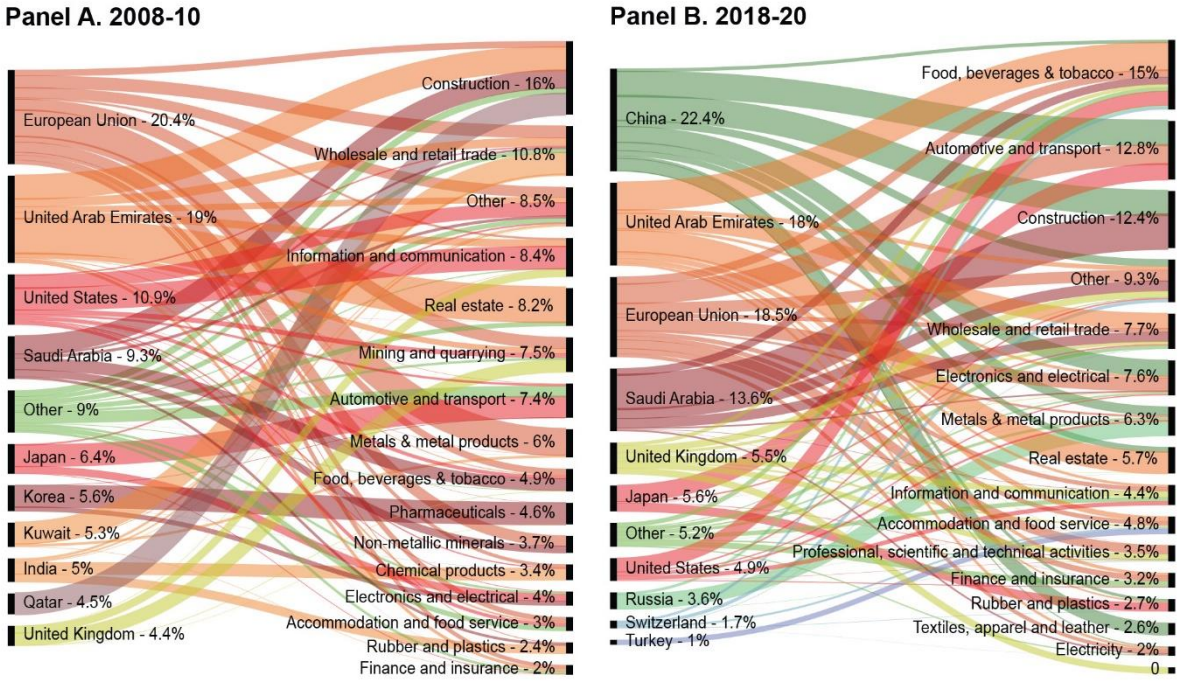
Note: MVA: manufacturing value added.
Source: Authors' elaboration based on UN National Accounts (2021), *Analysis of Main Aggregates* (database), https://unstats.un.org/unsd/snaama/.

Egypt's fast-growing economy has been increasingly attracting the attention of international investors. The country's annual foreign direct investment (FDI) inflows have averaged 3.3% of GDP during 2017-19, nearly double the average for MENA (1.7%) and higher than sub-Saharan Africa (1.9%). In addition to traditional partners – such as the European Union, the United States and countries in MENA, such as the United Arab Emirates and Saudi Arabia – in the last decade new investors have emerged as key partners

for Egypt. For example, the People's Republic of China (hereafter "China") accounted for 22.4% of total jobs created in 2018-20 (up from less than 1% during 2008-10) and Russia accounted for 3.6% of total during in 2018-20, up from 1.4% a decade ago (Figure 0.2).

Figure 0.2. New partners are investing in Egypt

Share of total jobs created by greenfield FDI in Egypt, top 10 source countries and main economic activities, 2008-10 and 2018-20

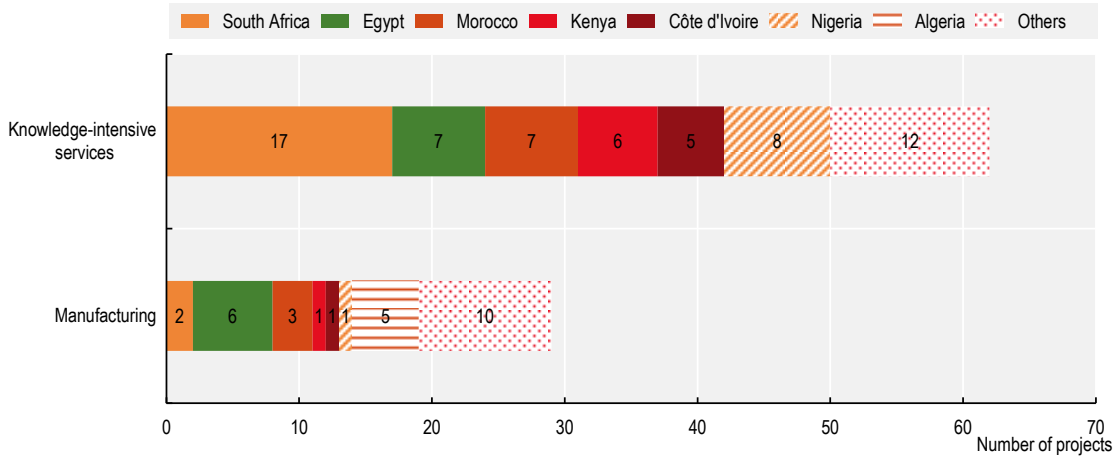


Note: Economic activities are listed according to the International Standard Industrial Classification (ISIC) rev. 4.
Source: Authors' elaboration based on Financial Times (2021), *fDi market database*, https://www.fdimarkets.com.

A growing number of firms are choosing Egypt to produce for the African continent and the Middle East. This is occurring in multiple sectors including in medium- and high-tech sectors, such as electronics (e.g. Samsung and LG). During 2017-20, Egypt attracted the highest percentage of FDI in electronics and electrical (E&E) manufacturing in Africa (21% of the total number of projects), and the second highest of knowledge-intensive ones (14%) (Figure 0.3). The number of FDI projects in E&E going to Africa, and Egypt within it, is small with respect to global trends. Mexico alone attracted 47 manufacturing projects and 39 knowledge-intensive service projects during the same period, compared to 29 and 50 respectively for the whole of Africa. Egypt has also positioned itself on the global investment map as an attractive location for digital services in Africa, building on traditional business-process outsourcing (BPO) services, and has recently increased investments in emerging areas, such as the Ericsson Artificial Intelligence (AI) and Analytics Hub established in Cairo.

Figure 0.3. Egypt is among the top two hubs in Africa for FDI in E&E

Number of greenfield FDI projects in E&E in Africa, by type, 2017-20



Note: Knowledge-intensive services include research and development (R&D), headquarters and business services.
Source: Authors' elaboration based on Financial Times (2021), *fDi market database*, https://www.fdimarkets.com

The country can leverage important assets to achieve prosperity

Prior to the onset of the COVID-19 pandemic, Egypt had embarked on a march towards prosperity leveraging on its fast-growing economy. During 2015-19, Egypt's GDP growth outperformed the African average, and was the fastest growing economy in MENA, with GDP rising at an annual rate of 4.4%. During 2020, Egypt's economy continued to grow by 3.6% despite the challenging global circumstances caused by the pandemic, compared to a contraction of 4% in the Middle East, of 1.9% in Africa, and of 3.3% globally, according to estimates by the IMF.

Egypt reacted quickly to mitigate the economic effects of the COVID-19 pandemic. The country has been swift in mobilising resources and in implementing reforms to mitigate the adverse effects of the pandemic on the population and on businesses. The COVID-19 recovery package mobilised in 2020 accounted for 1.9% of Egypt's GDP, including tax breaks, lower interest rates, loan repayment deferrals and credit support to affected sectors, such as tourism, industry, agriculture and construction. In addition, several government ministries and agencies reacted quickly to offer services on line, increasing the scope for digital services in the economy in the process. For example, the Small and Medium Enterprise (SME) platform, which is run by the Micro, Small and Medium Enterprise Development Agency (MSMEDA), allowed firms to access online entrepreneurship training and marketing services, while the Ministry of Communications and Information Technology (MCIT) co-operated with other government agencies to provide healthcare and educational services on line and with internet service providers to increase the quota of home Internet subscribers by 20% to tackle increased browsing needs.

Despite having to continue supporting economic recovery from the pandemic – a longer process than expected – Egypt can continue advancing towards shared prosperity counting on the following assets.

A continental agenda prioritising trade integration and industrialisation for Africa

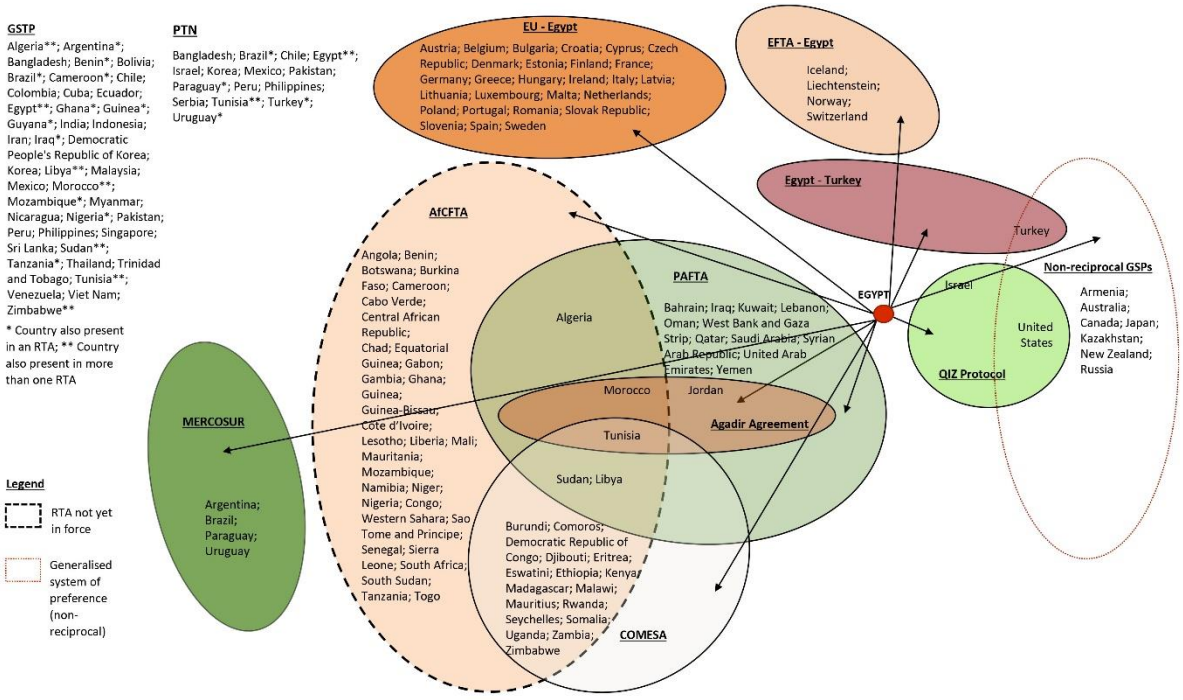
In 2019, the African Continental Free Trade Area (AfCFTA) entered into force. When fully implemented, the AfCFTA will create an integrated African market of 1.2 billion people and the world's biggest single market for goods and services by number of countries. The AfCFTA follows on the heels of the African

Union's *Agenda 2063: The Africa We Want*, adopted in 2015, which is putting industrialisation in the spotlight.

Africa is among the least integrated regions in the world. Intra-regional trade in the continent stands at 15%, compared to 67% in Europe and 52% in Southeast Asia. AfCFTA holds promise to change this. The AfCFTA is expected to add 32 new FTA partners for Egypt (Figure 0.4). This will include some of the continent's largest economies, including Nigeria and South Africa, providing opportunities to add scale to the country's exports. In addition, the AfCFTA could enable the country to better connect to traditional partners in Europe and the Middle East as well as to the overall global market, allowing Egypt to serve as a continental investment hub for manufacturing and services.

Figure 0.4. AfCFTA adds 32 new free trade partners to Egypt

Egypt's trade agreements and arrangements as of June 2020



Note: AfCFTA: African Continental Free Trade Area; COMESA: Common Market for Eastern and Southern Africa; EFTA: European Free Trade Association; EU: European Union; GSP: Generalised System of Preferences; GSTP: Global System of Trade Preferences; MERCOSUR: Southern Common Market; PAFTA: Pan-Arab Free Trade Area; PTN: Protocol on Trade Negotiations; QIZ: Qualified Industrial Zones.
Source: Authors' elaboration based on WTO (2020), *Regional Trade Agreements Database*, http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx, and GAFI (2020), *Trade Agreements*, https://gafi.gov.eg/English/Sectors/Pages/Trade-Agreements.aspx

A government committed to implementing reforms

Since 2017, Egypt has been reforming its governance and regulatory framework in the areas of investment attraction, trade promotion and digitalisation for economic development. Reforms have included institutional strengthening, such as the establishment of MSMEDA and the Export Development Authority (EDA) in 2017, the strengthening of the Industrial Development Authority (IDA) with Law No. 95/2018, the establishment of the National Council for Artificial Intelligence in 2019 and the National Center for Telecommunication Services Quality Monitoring in 2020. Legal frameworks have also been modernised, such as Industrial Licencing Law No. 15/2017, Investment Law No. 72/2017, Bankruptcy Law No. 11/2018,

e-Payments Law No. 18/2019, Personal Data Protection Law No. 151/2020, MSMEs Law No. 152/2020, and Customs Law No. 207/2020. As part of the latter, the National Single Window (NSW), an online platform to speed up customs processes, was completed in 2021.

Egypt relies on traditional tools to foster industrialisation. For example, it offers fiscal incentives targeted to different zones, such as free zones (FZs) (private and public owned), special economic zones (SEZs) and qualified industrial zones (QIZs). The Export Development Fund (set up with Law No. 155/2002 and affiliated with MTI), grants non-repayable financial contributions to manufacturing exporters of up to 10% of the value of their exports, provided they meet local content requirements, with applications eligible up to a year after the product's export date. Beneficiaries have to be members of their respective sector's Export Councils. Egypt also fosters industrial development through local content. Decree No. 571/2019 by MTI has put the local content manufacturing ratio at 45% for licensing domestic automotive assembly operations and Law No. 72/2017 specifies that projects with more than 50% local content may be eligible for additional investment incentives.

Egypt has also been implementing new policies, for example to support start-up development. The Ministry of International Cooperation (MOIC) has partnered with the private sector to create Egypt Venture, which funds start-ups, accelerators and other funds, and also to set up two accelerators, Falak Start-ups and EPG EV Fintech. MCIT together with its agencies the Information Technology Industry Development Agency ITIDA and the Technology Innovation & Entrepreneurship Center (TIEC) also provides a full chain of support for ICT-related firms, including those developing Industry 4.0 technologies, from seed capital to incubation services, business consultancies and networking opportunities. Some of this is directed specifically at boosting Industry 4.0 technologies.

The country has also been active in creating markets for innovators. For example with the "Our Opportunity is Digital" Initiative, MCIT is also setting aside at least 10% of public digital transformation projects for SMEs and start-ups, boosting demand for their services. The country, through the National Telecom Regulatory Authority (NTRA), has also put in place challenges for robotics and autonomous vehicle research to stimulate R&D in this area.

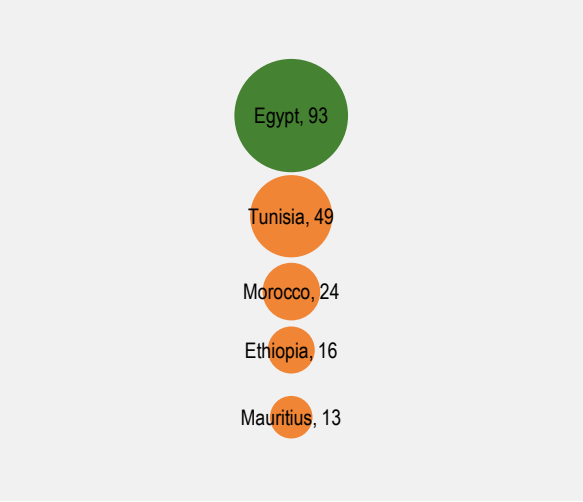
Finally, Egypt has a long-term vision for development enshrined in the *Sustainable Development Strategy: Egypt Vision 2030*, launched in 2016 that is aligned with the Africa Union Commission (AUC) *Agenda 2063: The Africa We Want*. The Ministry of Planning and Economic Development (MPED) of Egypt launched the National Structural Reforms Program (NSRP 2021-24) in April 2021 to support economic recovery during COVID-19 with a long-term vision. Several agencies are in charge of economic transformation, including the Ministry of Trade and Industry (MTI), MCIT, the Ministry of Higher Education and Scientific Research (MHESR) and MSMEDA.

A private sector ready to leverage on new competitiveness drivers

Over the years, Egypt has demonstrated that its entrepreneurs value quality and can explore new markets. Egypt has a track record of investing in quality and branding. For example, Egypt is renowned globally for its long-staple cotton. The textiles sector, despite a drop in contribution to employment and value added since the 1980s, remains important for the country, accounting for 20% of manufacturing employment, 3.6% of total MVA and 10% of total exports. Local firms have continued investing in signalling their quality to capture growing benefits in global markets. Egypt has the highest number of OEKO-TEX® Standard 100 certificates (93) in Africa, nearly double those of the top continental producer in textiles, Tunisia (49) (Figure 0.5). The country also has advanced in terms of certifications in agro-food. The establishment of the National Food Safety Authority (NFSA) in 2017 under the Prime Minister's Office represented an important step in ensuring quality standards in the industry and in supporting competitiveness in agro-food.

Figure 0.5. OEKO-TEX® standard certificates, top five countries in Africa, 2020

Number of companies that have obtained an OEKO-TEX® Standard 100 certificate, top five countries in Africa, 2020



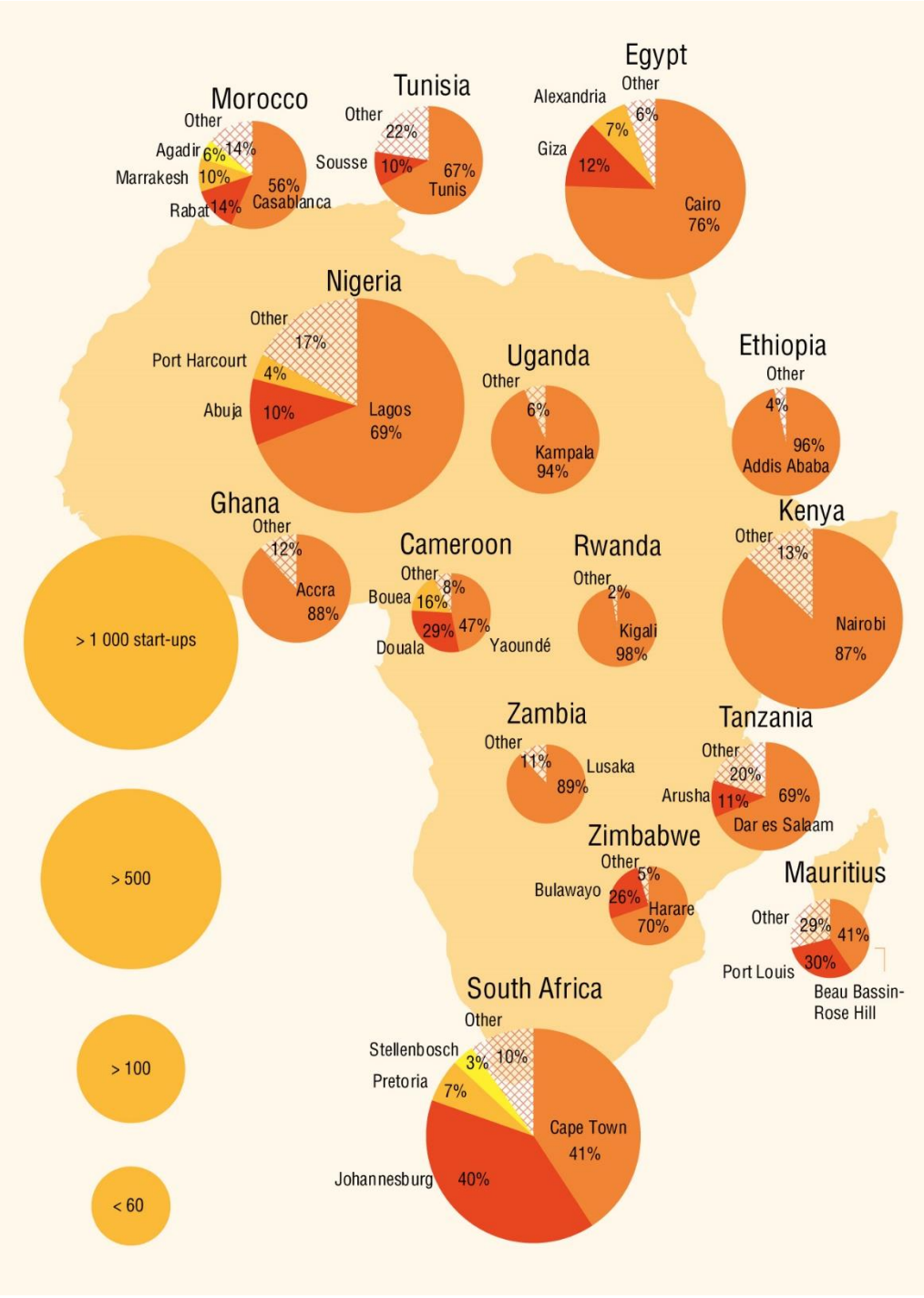
Note: Bubble size reflects number (see label) of companies that have obtained the certificate.
Source: Authors' elaboration on OEKO-TEX (2021), *Buying guide*, https://www.oeko-tex.com/en/buying-guide.

A vibrant start-up scene is also taking root in Egypt in line with Africa's overall dynamism in this area, which now accounts for 2% of global start-ups, about half the level of Latin America and the Caribbean. In 2020 Egypt had the third highest number of start-ups in the continent at 14% of total (Figure 0.6), following Nigeria and South Africa, and it also had the fourth-largest amount of venture capital (VC) investments during 2018-20 accounting for 10.5% of Africa's total (following South Africa, Nigeria and Kenya) and up from around 1% during 2013-15. A growing number of investors, incubators and accelerators are contributing to the start-up scene's increasing dynamism. Start-ups in Egypt specialise in applications (12.9% of the national total), followed by e-commerce (12.5%), and information technology (8%). This is similar to other countries in Africa, such as South Africa, where start-ups are attempting to leverage their large national populations to launch e-commerce, transport and e-payment applications.

Better connecting emerging start-ups to local production ecosystems (be they ports, oil or agro-food hubs) would help boost the country's innovative potential. Unlocking opportunities across the country is a priority. So far, economic concentration has remained excessively high. The Greater Cairo region, which includes the neighbouring governorates of Cairo, Giza and Qalyubia, accounts for about one fourth of Egypt's population and nearly half of the country's GDP (48.7% during fiscal year 2015-16), and 90% of the country's start-ups.

Figure 0.6. Egypt is one of Africa's top start-up hubs

Top 15 countries in Africa by number of start-ups in 2020



Note: Includes start-ups that have been founded between 2011-2020.
Source: Authors' elaboration based on Crunchbase (2021), *Database*, https://www.crunchbase.com.

Tackling structural challenges is paramount for future progress

The COVID-19 pandemic is still affecting the whole world. Despite progress in vaccination, the emergence of new variants and successive waves appearing in different locations of the globe means uncertainty regarding global economic recovery remains high. Egypt has made a commendable effort to think ahead and create a vision for the post COVID-19 economy in the framework of the National Structural Reform Program (NSRP) (2021-24).

To continue advancing on its development path, Egypt needs global uncertainty to return to acceptable levels and to address some key structural challenges that hamper the country's capacities to achieve its vision of a prosperous and inclusive economy.

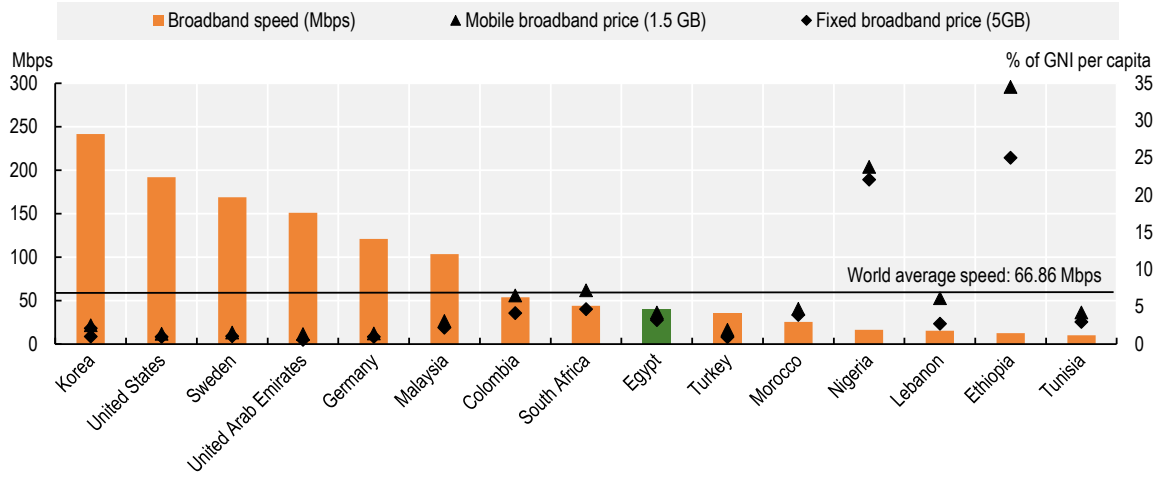
Upgrading infrastructure

Egypt is home to the Suez Canal, which handles 10% of world maritime traffic. The country is also the 2nd-most connected country in Africa according to UNCTAD's maritime index, after Morocco, and the 22nd-most connected in the world. However, infrastructure faces major challenges, including a fragmented port system, lack of co-ordination among modes of transport and a rail network in need of upgrading.

Digital connectivity has improved, but is still below potential. Egypt's Internet penetration reached 57.3% of the population in 2019. This is more than double compared to 2010 and twice the African average. In Germany, similar to other advanced economies, the share reaches 88%, in Malaysia 84% and in Morocco 74.4%. Broadband speed in Egypt has also increased following investments in infrastructure. In April 2021, the speed of fixed broadband, as measured by Ookla, was 39.66 Mbps, six times higher than in December 2018. Meanwhile, the world average is 66.86 Mbps (Figure 0.7). Based on this data, it would take 18 minutes to download a 5-gigabyte movie in Egypt, but only 3 minutes in Korea, the country with the fastest Internet in the OECD.

Limitations in digital infrastructure are influencing business performance. Firms in Egypt lag behind global leaders in using digital technologies for business. Globally there are 1.57 billion of cellular Internet of Things (IoT) connections in the world, most of which (66%) are in China. In Egypt, in 2019, there were 1.5 million machine to machine (M2M) cellular connections in 2019, the second-highest in Africa after Nigeria, and 2.2 times as many as in 2015. However, in per capita terms, uptake is below the country's potential, with about 1 connection per 100 inhabitants, compared to an OECD median of 10.6 (Figure 0.8).

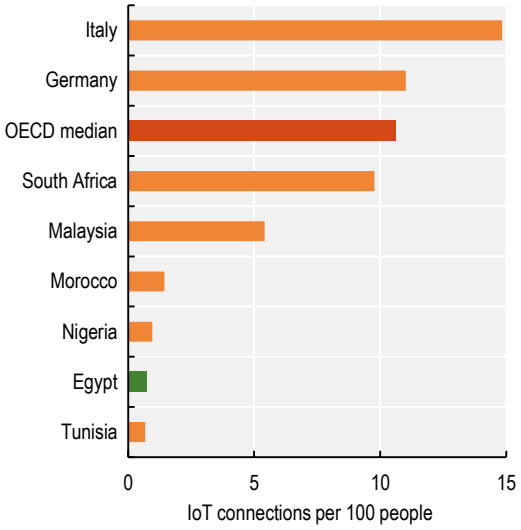
Figure 0.7. Broadband Internet cost and speed, selected countries, 2021



Source: Authors' elaboration based on International Telecommunication Union (2021), *Country ICT data (database)*, https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx and Ookla (2021), *Speedtest global index*, https://www.speedtest.net/global-index.

Figure 0.8. Number of cellular Internet of Things (IoT) connections per 100 people, 2019

Selected countries and OECD median



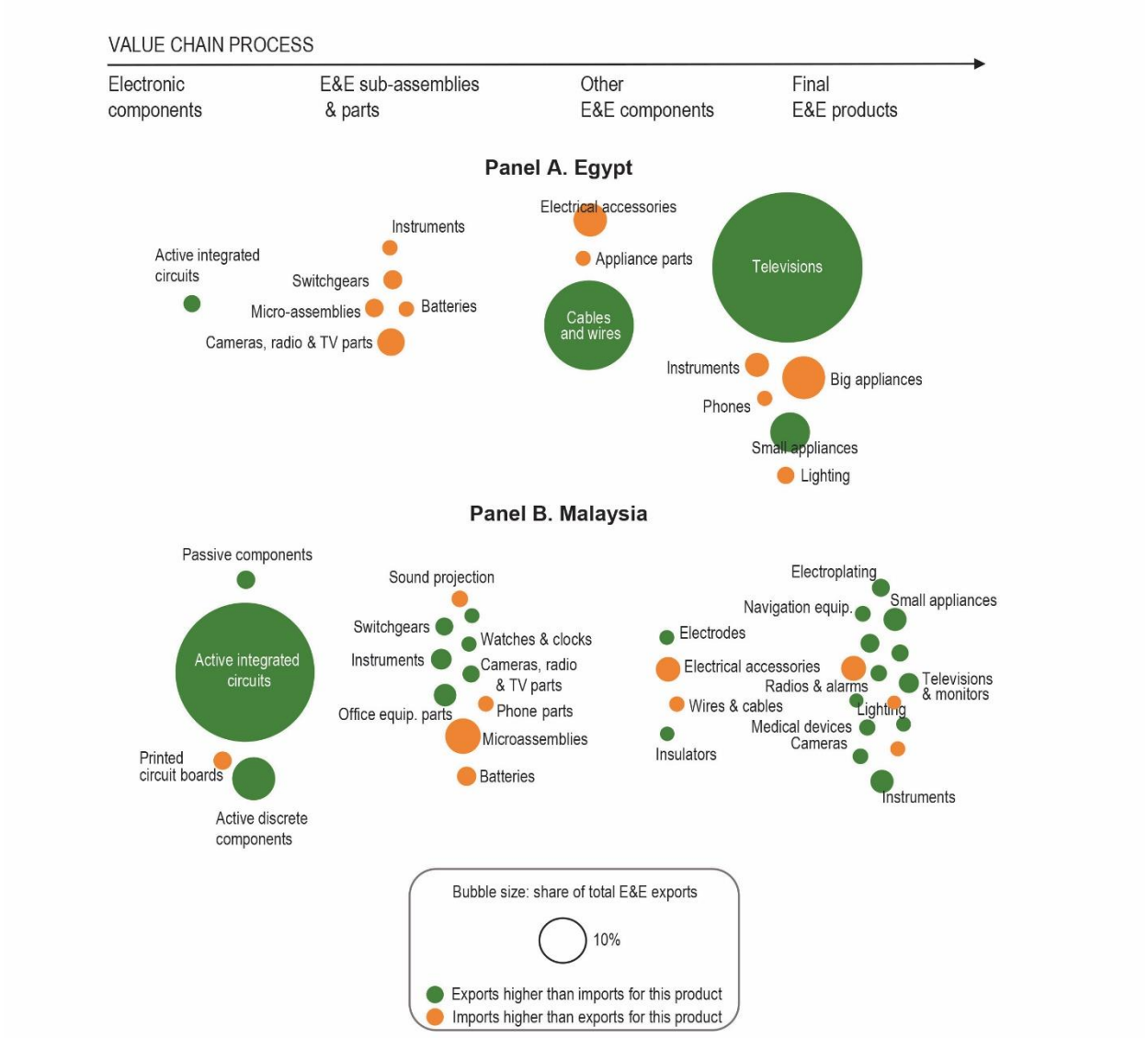
Source: Authors' elaboration based on GSMA (2020), *GSMAintelligence*, https://data.gsmaintelligence.com/

Changing economic specialisation and innovating

Egypt's current economic specialisation poses challenges for enabling innovation across dense production ecosystems and for environmental sustainability. The oil and gas sector in particular plays a large role in the domestic economy, accounting for 9.7% of GDP during 2019/20. Within manufacturing, refined petroleum emerges as the top sector in terms of MVA, accounting for 39% of total MVA in 2017, up from around 5% in the 1980s. In addition, the country has a large agro-food industry that accounts for 24% of the labour force and 15% of GDP and that faces sustainability problems, particularly with regard to water scarcity. The majority of land area in Egypt is arid desert, with only 3.7% of the country's 100 million hectares suitable for agriculture, supported by the Nile and its Delta Valley. Agricultural lands have seen their access to water reduced. Egypt's annual renewable water resources per capita stood at 596.2 m^3/capita in 2017, below the threshold of water scarcity defined by the UN (700 m^3/capita). Climate change could further exacerbate these challenges for agricultural production and the related food industries.

The country's export basket is anchored to primary commodities, which although down from 89% of total exports in 1980, continued to make up over half (52.3%) of exports to the world in 2018-20, reinforcing the sustainability challenges. Top manufacturing exports include textiles and apparel (11%), chemicals (9.9%) and electronics and electrical (E&E) (6%). Within manufacturing exports, there is room to raise value addition and sophistication (Figure 0.9). For example, in E&E, 60% of the country's exports are assembled TVs and wires, with few upstream components, such as chips and panels. In contrast, Malaysia has become a big value chain participant by tapping into more upstream segments.

Figure 0.9. E&E exports by value chain segment, Egypt and Malaysia, 2018-20

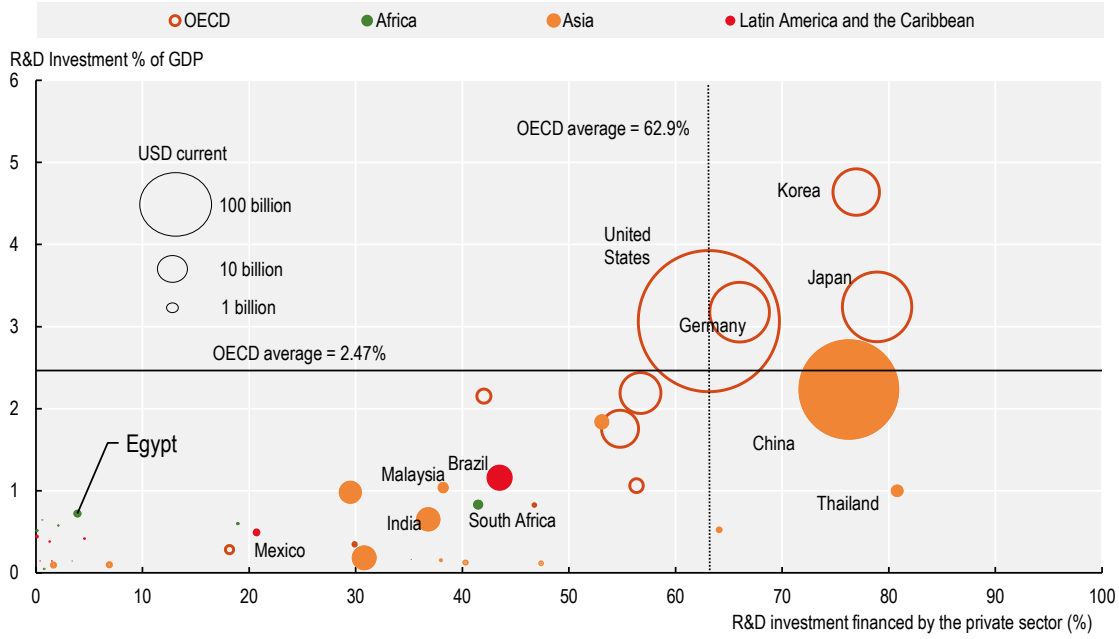


Note: Value segment definition based on a combination and aggregation of categories found in Bamber and Gereffi (2013), *Costa Rica in the Electronics Global Value Chain: Opportunities for Upgrading*, https://gvcc.duke.edu/wp-content/uploads/2013-08-20_Ch2_Medical_Devices.pdf and Frederick and Gereffi (2016), *The Philippines in the Electronics and Electrical Global Value Chain*, https://gvcc.duke.edu/wp-content/uploads/2016_Philippines_Electronics_Electrical_Global_Value_Chain.pdf. Only product categories with more than 0.1% of exports are included for visibility purposes. Data for Malaysia are for 2017-19.
Source: Authors' elaboration based on UN Comtrade (2021), *Database*, https://comtrade.un.org/

The existing specialisation and persistent duality of the economy where a myriad of micro and subsistence firms co-exist with pockets of modernised excellence, also help to explain why the country invests little in innovation. Egypt invests around 0.72% of GDP in R&D, a rate similar to Morocco (0.71%), lower than South Africa (0.82%) and a third of the OECD average (2.37%) (Figure 0.10). The private sector accounts for 3.9% of total R&D, which is low when compared to South Africa (41.5%), Malaysia (38.2%), and the OECD (62.9%).

Figure 0.10. Egypt invests little in R&D

R&D as a share of GDP (%), share of R&D investments financed by the private sector (%), and total R&D investments (USD current), selected countries and OECD average, 2019 or latest year available

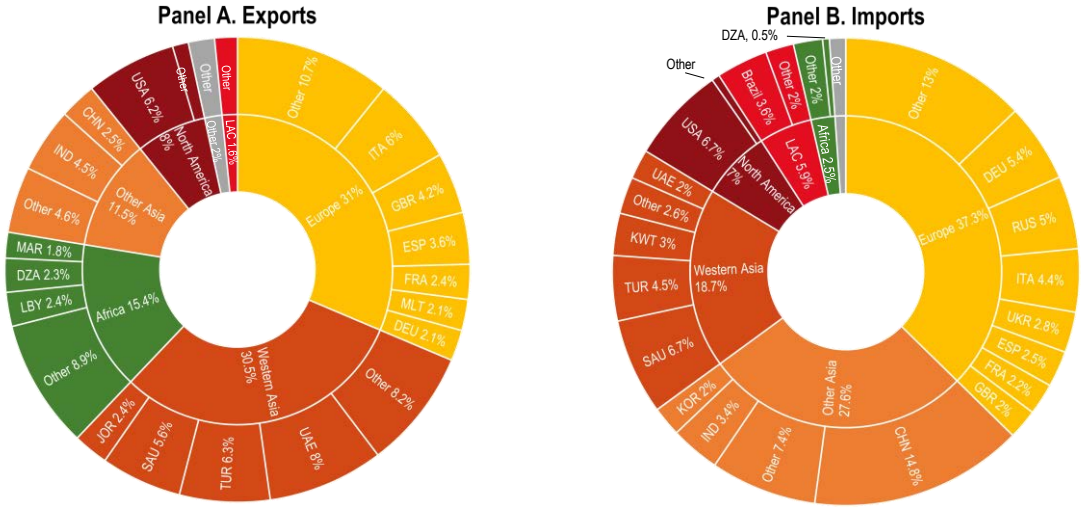


Note: R&D: Research and development.
Source: Authors' analysis based on OECD (2021), "Main Science and Technology Indicators", *OECD Science, Technology and R&D Statistics (database)*, https://doi.org/10.1787/data-00182-en; UNESCO (2021), *Institute for Statistics Database*, http://data.uis.unesco.org/.

Benefiting more from trade

Egypt's trade openness has remained relatively stable since the 1990s, with a trade to GDP ratio of 40%-50%, currently lower than Morocco (83%) and the OECD (57.2%). There is scope for the country to engage more with existing markets and explore new ones. Egypt has a dense network of traditional trade partners, exporting mostly nearby countries in the Middle East (30.5%) and Europe (31%), and other big markets, such as the United States (6.2%) (Figure 0.11). New partners are also emerging, such as China, which is now Egypt's top import source (14.8% of total) and India (4%-5% of both imports and exports).

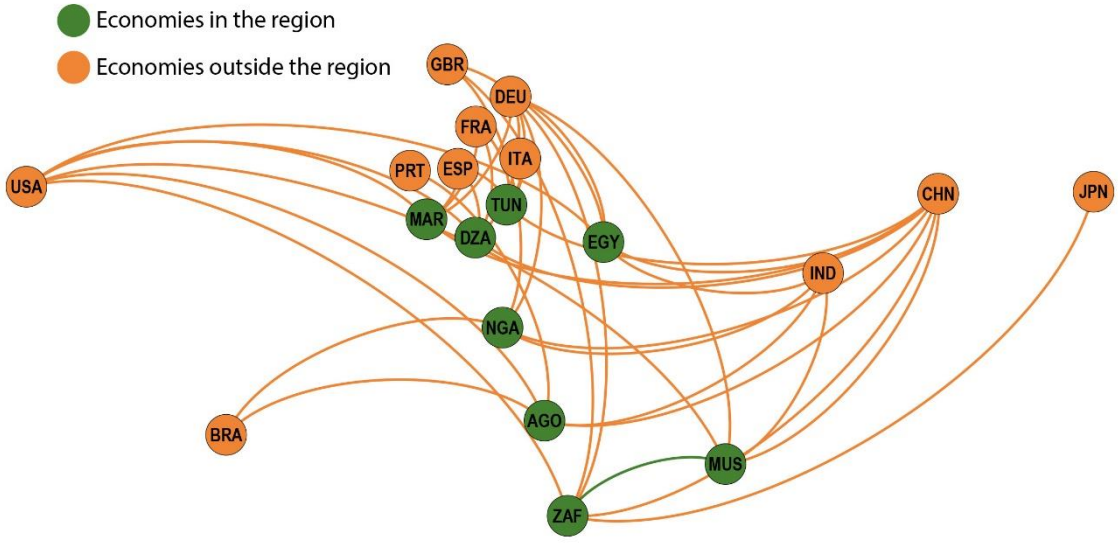
Figure 0.11. Egypt's exports and imports by region and partner, by share of total (%), 2018-20



Source: Authors' elaboration based on UN Comtrade (2021), *Database*, https://comtrade.un.org/.

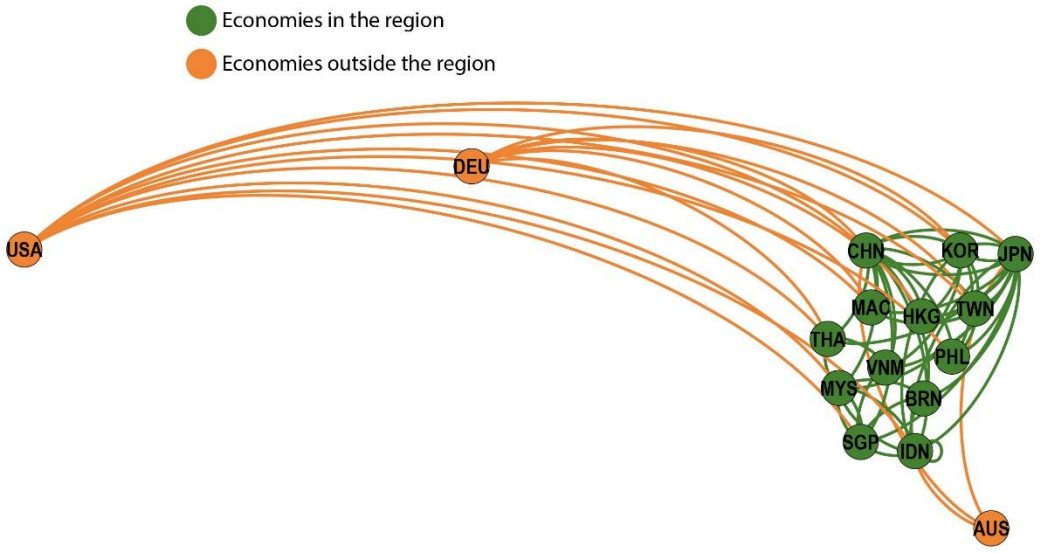
Egypt's economic transformation is linked to continental integration. Egypt still trades little with Africa. The share of Africa in Egypt's exports has tripled since the mid-2000s, but represents only 15.4% of total, similar to Nigeria (15.5%), but lower than South Africa (26%). Overall, production integration in Africa is limited. Approximately 94.8% of the foreign value added (FVA) embedded in African exports comes from outside the continent (Figure 0.12). Top sources include China (12.3% of total), the United States (11%), Germany (10%) and France (6%). For Egypt, the top sources of FVA, are China (16.3%) India (13.6%), the United States (9.4%), Germany (8%) and the United Kingdom (5.6%). East and Southeast Asia, which is among the regions that benefited the most from trade, features a denser regional network, with about 55.4% of value added of exports coming from the region (Figure 0.13).

Figure 0.12. Top economies in Africa, by total foreign value added embedded in exports and their top 5 sources, 2019



Note: The figure includes countries whose total foreign value added embedded in exports is higher than the world median.
Source: Authors' elaboration using data from UNCTAD-Eora (2021), *Global Value Chain Database*, https://worldmrio.com/unctadgvc.

Figure 0.13. Top economies in East and Southeast Asia, by total foreign value added embedded in exports and their top 5 sources, 2019



Note: The figure includes countries whose total foreign value added embedded in exports is higher than the world median.
Source: Authors' elaboration using data from UNCTAD-Eora (2021), *Global Value Chain Database*, https://worldmrio.com/unctadgvc.

Egypt needs to continue advancing its reforms agenda to realise its vision for a resilient, sustainable and inclusive future

Egypt's development is at a crossroads. The COVID-19 pandemic is accelerating the ongoing transformation of the global economic landscape; while reconfiguring the geopolitical landscape, thus changing the matrix of opportunities and challenges for the country's future development. Egypt needs to identify how to make the most of the shifting international environment, while continuing on its path to prosperity. And it needs to do so while at the same time offering more and better opportunities across the whole country and for all citizens.

To go forward, Egypt needs to continue implementing effective reforms, leveraging on its assets and addressing its main structural challenges. The reforms agenda in Egypt is vast. Among several priorities, three game changers are particularly relevant in the current context.

Investing in making AfCFTA a real development driver

A more integrated continent with an agenda for industrial development has the potential to deliver new partnerships and markets, and also more competition for Egypt's firms. Benefiting from AfCFTA requires public and private efforts to upgrade infrastructure, harmonise certifications and standards and support efforts by local businesses to explore new markets and build trust. In particular, Egypt would benefit from:

- Setting up a monitoring and evaluation system to track the progress of AfCFTA implementation in relation to Egypt's Vision 2030 and the NSRP (2021-24). The system could also enable improving the dialogue with the private sector.
- Continuing to facilitate trade and improve infrastructure for continental integration. In the context of the Egyptian Exports to African Markets Strategy 2020, the Egyptian Ministry of Public Business Sector has advanced in the implementation of Gosour ("bridges"), a project to build shipping lines

and promote foreign trade between Egypt and Central and East Africa. Efforts like the shipping line from Ain Sokhna (Egypt) to Mombasa (Kenya) launched in 2019 and continental storage and logistics centres (with one operating since 2017 in Kenya) should be expanded.

- Advancing in harmonising infrastructure for metrology, standardisation and accreditation at the continental level and investing in enabling the adoption of standards and raising quality in Egyptian firms. In a highly competitive global landscape, branding and reputation can help set Egyptian products apart and become an asset for penetrating new markets, but this will require commensurate investments in increasing quality to gain consumer trust at the continental level and beyond.
- Increasing the efficiency of logistics. For some industries that are particularly trade intensive, such as E&E and medical devices, even small changes in logistical costs can make a big difference in product competitiveness. Access to both port and airport infrastructure close to production and export sites is crucial, as high-value components often travel via sea and air cargo. Increasing the density of connections is also important for reducing time to production. Finally, the need for multiple component imports for exported products means that simplifying import procedures is necessary, beyond the SEZs.
- Reducing non-tariff barriers that hamper continental integration and participation of domestic firms in continental value chains. In Egypt, the average lead time to export is 6.7 days, the same as Morocco and similar to Malaysia (6.5), but time to import is substantially higher than Egypt's peers, standing at 5 days compared to 3 in Morocco and 2 in Malaysia. Import licensing and registration requirements are also a burden for importers, particularly those that are based outside of SEZs or FZs that apply different customs regulations.

Engaging the private sector in innovation

- Egypt falls short, by international comparison, of the typology of tools and budget allocated to innovation and R&D. Although the introduction of fiscal incentives through Law no. 72/2017 is a step forward in this regard, more needs to be done to enlarge public support for innovation to all firms across all sectors, leveraging on existing tools, such as the ones managed jointly by the Industrial Modernization Center (IMC) and the Science and Technology Development Fund. Establishing a unique interface (e.g. single window) for potential beneficiaries to access innovation support would also increase efficiency and transparency.
- Egypt could better use existing fiscal incentives to steer private sector investments in a way that supports innovation and the transition towards Industry and Agro 4.0 and, at the same time, promotes social and environmental sustainability through a smart use of conditionalities.
- Egypt has a digitalisation strategy led by MCIT aimed at increasing the adoption of digital technologies by local firms, fostering technological development, upgrading digital infrastructure and boosting digital skills. To make the most of Industry and Agro 4.0 as competitiveness drivers, Egypt would benefit from increasing cross-ministerial and institutional co-ordination, and from updating the policy mix to ensure that firms across all sectors, not only ICT, can benefit from government support in this area. Based on international experience, policies to promote Industry 4.0 and Agro 4.0 work better when they are implemented in partnership with the private sector, which can take an active role in talent training and in skills upgrading (for example the planned Industry 4.0 Innovation Centre will raise awareness on the potential of Industry 4.0 for local firms, while also offering capacity-building services). In addition to co-operation with the private sector, collaborations with universities and research centres could increase the impact of such partnerships.
- Amplifying the support targeted to MSMEs (including matching funds and services) is also necessary. This could be done by strengthening the programmes implemented by MSMEDA and

IMC and expanding their digital components. Updating the testing and certification processes is also a necessary step. This is particularly crucial for small firms. For example, to ensure the continued and increased competitiveness of the agro-food sector, the NFSA needs to ensure that services are accessible and affordable, particularly for MSMEs. Digital technologies can be key in providing fast and low-cost access to the full range of testing and certification needs for the local and the export markets.

Getting policy making ready for the future

Egypt has a strong leadership, a vision for the future, and an established system for co-ordination among institutions at the top level. In future, the country would benefit from updating the policy-making process by increasing co-ordination capacities beyond the top level (including among implementing institutions) and within institutions. Egypt would also benefit from rationalising and strengthening implementation institutions, for example by building their capacities to operate across the whole country.

Ensuring quality control and compliance with national, continental and global standards will be increasingly important for competitiveness. Egypt needs to modernise its quality infrastructure system to ensure it operates well in an Industry and Agro 4.0 landscape. In that respect, existing institutions could increase their co-ordination capacities to deliver better services to firms, and efforts could be made to explore country branding by building on the textile experience.

Egypt has a long-term vision for development and several strategies aimed at engendering production transformation. Egypt would benefit from enriching the strategy-setting process with budgeting, to ensure resources are available in a way that matches the goals.

1 Egypt's path to prosperity

Egypt is among Africa's industrial heavyweights. The first chapter of the PTPR of Egypt discusses the country's economic performance, focusing on structural determinants such as industry, trade and innovation. The country is upgrading its domestic industrial capabilities and has identified strengthened international partnerships and enhanced ties with Africa as major opportunities for advancing on its march towards prosperity. This chapter clarifies that scaling-up productive investments and innovation are needed to unlock opportunities for all.

Introduction

The Production Transformation Policy Review (PTPR) of Egypt has been developed through a process of dialogue and consensus-building, matched with peer review, designed to identify the country's strengths and areas of potential as well as barriers that need to be addressed to unlock Egypt's potential. Understanding the country's advancements and remaining challenges on its path to prosperity is not only important for Egypt – so that it can update its strategy and policies – but also offers valuable insights into other developing economies in Africa and beyond, at a time when the world economy is rethinking its developing models and looking for ways to foster development in all countries and for all citizens.

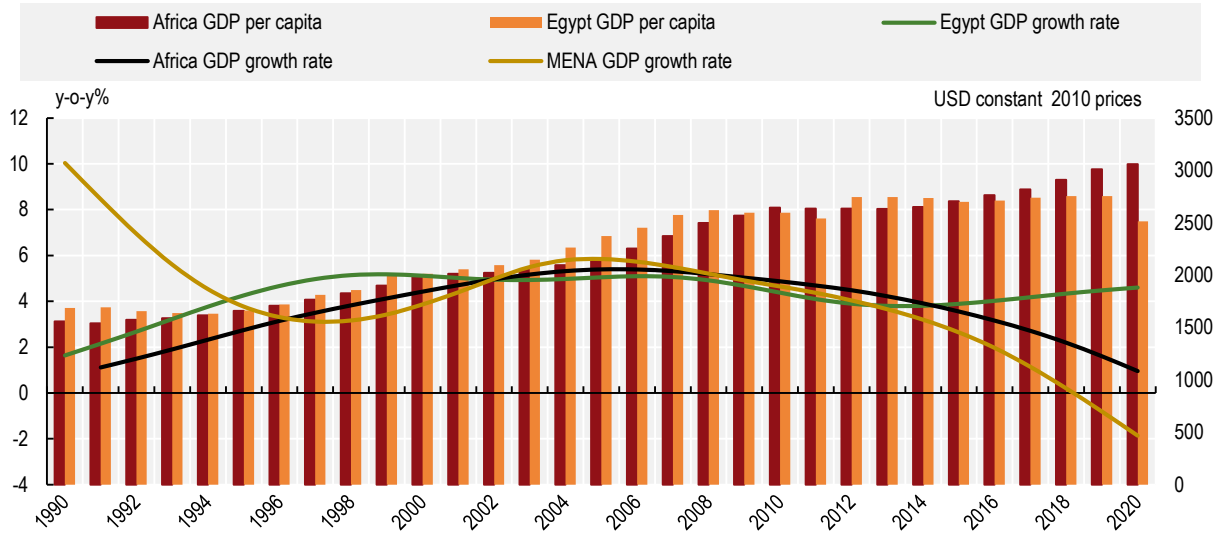
This first chapter of the PTPR of Egypt provides an overview of the country's economic transformation, with a focus on production, trade, investment and innovation. It has three sections. The first shows that Egypt has grown into one of Africa's major industrial hubs; the second discusses international ties and participation in global value chains (GVCs); and the third clarifies areas where Egypt needs to focus on innovation. Chapter 2 of this PTPR discusses strategies, policies and tools for economic transformation in Egypt, while Chapter 3 provides a snapshot on agro-food and engineering related activities. Chapter 4 focuses on the AfCFTA as an accelerator of industrial upgrading in Egypt and its partner countries.

A growing industrial hub

Egypt is one of Africa's heavyweights. The country is Africa's third-largest economy by GDP after Nigeria and South Africa, accounting for 12.5% of continental GDP [authors' elaboration based on (World Bank, 2021[1])]. With nearly 100 million inhabitants, Egypt is also the third-most-populous country, after Nigeria and Ethiopia. Egypt had a fast-growing economy prior to the onset of the COVID-19 pandemic, and it has maintained positive growth since then. Since the 1990s, Egypt's real GDP has grown on average by 4.3% annually, higher than the African average (3.8%) and in line with that of the Middle East and North African (MENA)[1] (4.3%) (Figure 1.1). During 2015-19, just before the pandemic hit the global economy, Egypt outperformed the African average, and was the fastest growing economy on average in MENA. During 2020, Egypt's economy continued to grow by 3.6% despite the challenging global circumstances caused by the pandemic. This performance stands out even more compared to a contraction of 4% in the Middle East and 1.9% in Africa, and of 3.3% globally (IMF, 2021[2]). Under the framework of the National Structural Reform Program (NSRP), now in its second phase (see Chapter 2), the country reacted quickly to mobilise resources to address the pandemic. GDP per capita has also grown in the past three decades. However, due to the country's rapid growth in population (which has doubled since 1985), it has grown at only half the pace of total GDP – 2.3% annually since the 1990s.

Figure 1.1. Egypt is among the fastest growing economies in North Africa and the Middle East

Annual GDP growth rate and GDP per capita, 1990-2019



Note: GDP: gross domestic product. HP: Hodrick-Prescott Filter. MENA: Middle East and North Africa. The Lambda in the HP filter has been chosen according to OECD (2016[3]), *OECD Compendium of Productivity Indicators 2016*, http://dx.doi.org/10.1787/pdtvy-2016-en. Figures for Africa and MENA exclude Libya.

Source: Author's elaboration based on World Bank (2021[1]), *National accounts data*, https://data.worldbank.org and IMF (2021[2]), *World Economic Outlook Database*, https://www.imf.org/en/Publications/WEO/weo-database/2021/April

Over the past several decades the country has undergone a process of gradual structural transformation. A targeted push towards industrialisation began in the 1950s. Since then, industrialisation has been perceived as both a means of generating higher incomes and a way to deal with land scarcity. The majority of land area in Egypt is arid desert, with only 3.7% of the country's 100 million hectares suitable for agriculture, supported by the Nile and its Delta Valley.

The country has had at its disposal three key assets to foster industrialisation in the past few decades. Its population grew from being the 21st largest in the world in 1960 to the 13th largest today, fuelling domestic demand. It enjoyed a strategic location between Africa, the Middle East, Asia and Europe, and is home to the Suez Canal, through which about 10% of global trade passes (Hafez and Madney, 2020[4]). And Egypt possessed an important textile industry – a staple of Egyptian production still today. Cotton production reached significant scale in the beginning of the 19th century and became the main raw material to feed several Egyptian industries that developed from the 1900s onwards, such as cotton spinning and weaving (Hawash, 2007[5]). In the 1950s and 1960s, Egypt implemented an import substitution industrialisation strategy, in line with many developing economies around the world at the time. The government played a key role in sustaining industrialisation through several means, including strongly relying on state-owned firms (FEMISE, 2015[6]). Many of the industries that exist today in Egypt originated during this period (Box 1.1).

Box 1.1. Public and private investments have supported industrialisation in Egypt since the 1950s

Steel

Egypt is the largest steel producer in Africa and 21st largest in the world, with 7.8 million metric tonnes produced in 2019. The country's steel industry took off with the establishment of the Egyptian Iron and

Steel Company in Egypt in 1954, which was set up to exploit the country's mineral wealth, such as iron ore deposits in Aswan and Bahriya Oasis, and limestone from Suez and Minya. Since then, private companies have entered and captured the majority of the market, such as Ezz Steel, established in 1994. In 2020, El Ezz Al Dekhela Steel, a subsidiary, was the 24th largest company in Egypt by market capitalisation (with USD 381 million) and the 17th largest in Africa in metals and mining. Other eminent steel companies in Egypt include Egyptian Steel and Garhy Steel.

Automobile

Although Egypt is a small automobile producer by global standards – it was 49th in the world in 2017, producing 16 times fewer cars than South Africa – it has several firms that engage in local assembly. The first firm to operate in the automotive sector was the state-owned NASCO (El Nasr Automotive Manufacturing Company), founded in the 1960s, which soon focused on assembling foreign cars for sale in the domestic market and ended passenger vehicle production in 2009. In the 1970s, private sector players emerged and started to gain market share, notably El Mansour Group and GB Auto. These firms mainly assemble imported complete knock-down (CKD) kits for foreign brands – such as Hyundai, Mazda and Geely – for the local market. In the 1990s, through joint ventures and wholly foreign-owned operations, foreign players started operating in auto assembly. In 2021, within the framework of Egypt's efforts to foster the localisation of electric vehicles and keep pace with the current global trends of green transition, the state-run El Nasr Automotive and the People's Republic of China's Dongfeng Motor signed a memorandum for the production of electric vehicles (EVs) in Egypt at an annual capacity of 25 000 units.

Source: El-Haddad (2017[7]), OICA (2020[8]), World Steel Association (2019[9]) and African Business Magazine (2020[10]).

By the end of the 1960s, budgetary and foreign-exchange pressures and the low competitiveness of local firms led to a rethink of development strategy in Egypt. The country started relaxing foreign trade and investment rules in the 1970s (a process known as "opening up" or *infitah* in Arabic), with the hope of attracting export-oriented investments in labour-intensive commodities, such as textiles, footwear and electronics. It set up Free Trade Zones (FTZs) that granted tax and other incentives to investors, similar to those in other developing countries, particularly in Asia, such as Malaysia and Thailand. However, protections remained for accessing the domestic market. Private firms began taking advantage of the growing local demand and a trade policy aimed at supporting nascent industries (Ikram, 2019[11]). The low oil prices of the 1980s, combined with weak investment levels, depleted revenues and led the government to seek out a structural adjustment programme supported by the IMF and the World Bank.

Since the 1980s, agriculture's share of GDP has halved, and the sector now accounts for 11% of GDP and 22% of Egypt's employment – 30% and 40% lower than the African average, respectively (Figure 1.2). Nevertheless, these figures are higher than the average for the MENA region, where, despite large variations in the importance of agriculture due to geographic conditions and economic specialisation, agriculture accounts on average for 8% of GDP and 12% of employment. The relatively high importance of agriculture in labour absorption compared to its capacity to generate value added is explained by the prevailing dualism, with productive large farms existing side-by-side with subsistence agriculture, particularly in the Nile delta (see Chapter 3 of this PTPR for more information on agro-food in Egypt). In tandem, manufacturing and services have increased their relevance in GDP and employment. Employment in manufacturing tripled from 4% in 1980 to 12% in 2018, reaching a level that is currently about 30% higher than the African average and 10% higher than the MENA one. Egypt's performance is at odds with the continental one, as the country has not experienced a process of premature deindustrialisation as has been the case in several other countries in Africa (Tregenna, 2014[12]). Manufacturing accounts for 16% of GDP, higher than the average for Africa (11%) and MENA (10%), although still low with respect to fast-industrialising economies such as Malaysia (22%) and Thailand (27%). Services, trade, restaurants and

hotels accounted for 16% of GDP, and transport, communication and storage for 9%, both two percentage points higher than with respect to 1980 and in line with Africa, MENA and OECD averages. Tourism has emerged as one of the most important services in Egypt, accounting for 15% of the country's GDP (directly and indirectly) and employing 9.5% of the workforce (OECD, 2020[13]).

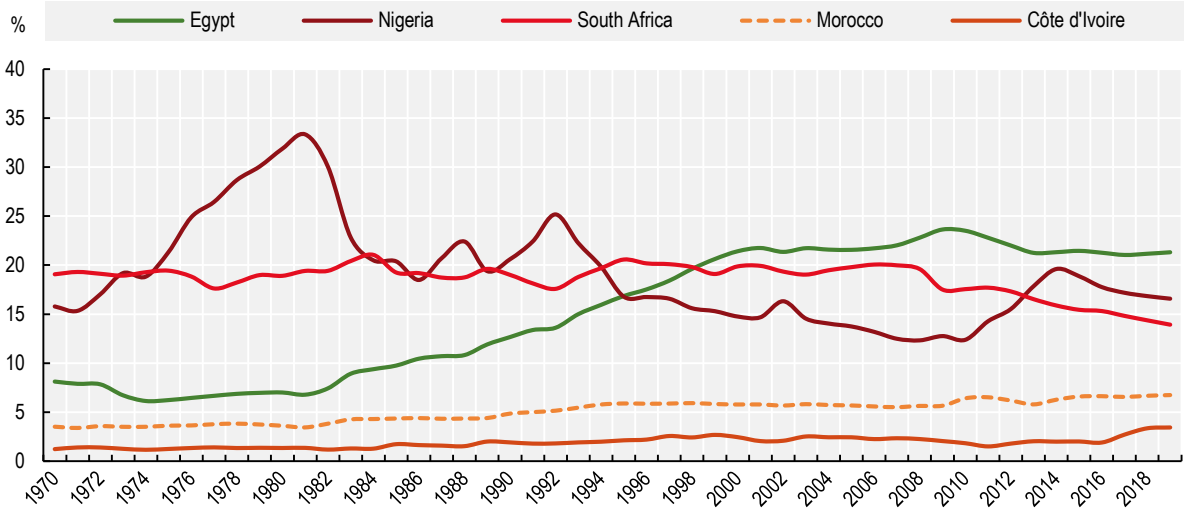
Figure 1.2. Composition of GDP and employment in Egypt and selected areas, by economic activity, 1980-2019

Note: Composition follows ISIC Rev.3 classification. GDP figures are calculated on constant USD 2015 prices. Employment figures are based on data from labour force surveys. For the African average of the employment structure the following countries were included (by date): 2019: Botswana, Cape Verde, Mauritius, Rwanda, Seychelles, South Africa, Zimbabwe; 2018: Burkina Faso, Chad, Egypt, Gambia, Mali, Namibia, Zambia; 2017: Algeria, Burundi, Cote d'Ivoire, Ghana, Mauritania, Niger, Togo, Tunisia, Uganda; 2016: Eswatini; 2015: Madagascar, Mozambique, Senegal; 2014: Angola, Cameroon, Comoros, Liberia, Morocco, Sierra Leone, Tanzania; 2013: Ethiopia; 2010: Benin. For MENA average: 2019: Jordan, Lebanon, Palestinian Authority, Qatar, UAE; 2018: Egypt, Oman, Saudi Arabia; 2017: Kuwait, Mauritania, Tunisia; 2015: Bahrain; 2014: Morocco, Yemen; 2011: Syria.
Source: Authors' elaboration based on UN National Accounts (2021[14]), *Analysis of Main Aggregates* (database), https://unstats.un.org/unsd/snaama and ILO (2021[15]), *Employment by activities and status* (ALFS) (database), https://ilostat.ilo.org/topics/employment/ and OECD (2019[16]), *Employment and Labour Market Statistics* (database), https://doi.org/10.1787/d3186ba7-en.

Nowadays Egypt is Africa's top manufacturer by value added. The country has tripled its share in Africa's manufacturing value added (MVA), from 7% on average during the 1970s to 22% during 2010-19 (measured in USD constant 2015 prices) (Figure 1.3). Together the top five countries in Africa – Egypt, Nigeria, South Africa, Morocco, and Côte d'Ivoire – accounted for 62% of the continental manufacturing value added in 2017-19.

Figure 1.3. Egypt is Africa's top manufacturer

Top five countries by total manufacturing value added in Africa, 1970-2019, share of total African manufacturing value added (%)



Source: Authors' elaboration based on UN National Accounts (2021[14]), *Analysis of Main Aggregates* (database), https://unstats.un.org/unsd/snaama/.

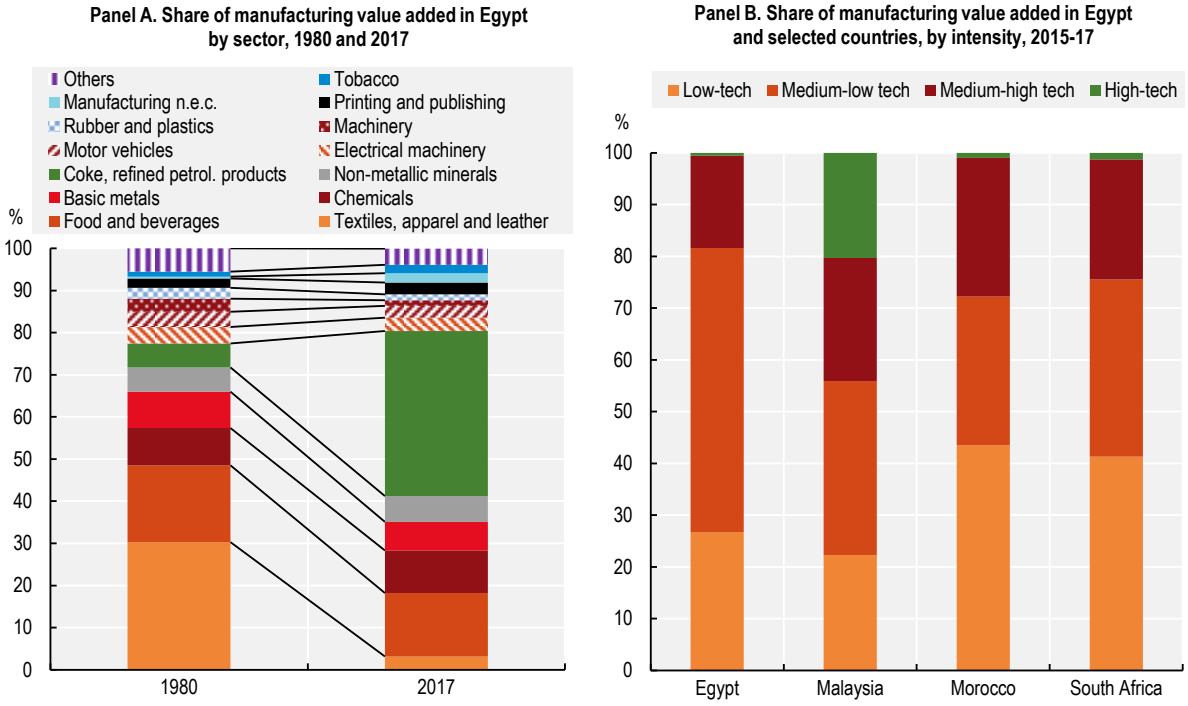
Within manufacturing – which nowadays accounts for 16% of Egypt's GDP – Egypt specialises in low-to-medium-technology industries, which account for around 50% of domestic manufacturing value added. This contrasts with Morocco, where low-technology industries account for more than 40% of domestic manufacturing value added; and with Malaysia, where high-tech manufacturing accounts for more than 20% of the domestic manufacturing value added (Figure 1.4). The government is a key player in national industrialisation. State-owned firms account on average for 9% of total manufacturing value added (excluding petroleum refining), concentrating in such industries as basic metals and transport equipment [according to data from CAPMAS (2019[17])]. Among industrial activities, the following are noteworthy:

- **Refined petroleum**: Egypt's reliance on coke and refined petroleum products has increased over time, with the sector accounting for 39% of total MVA in 2017, up from around 5% in the 1980s. Egypt is the fifth largest producer of crude oil in Africa and has the highest refinery capacity on the continent (BP, 2020[18]). The total oil & gas sector, including extraction, accounted for 9.7% of GDP during 2019/20 (CAPMAS, 2021[19]). On the one hand, even though crude oil production has been in decline since its peak in the early 1990s, natural gas production tripled from 0.73 exajoules in 2000 to 2.34 exajoules in 2019. On the other hand, energy prices can cause the relative value of this sector to fluctuate greatly. Oil prices have experienced high volatility since the end of the commodity boom, and this was exacerbated by COVID-19. Average crude spot prices in 2000 for a selection of markets were around USD 28 per barrel, but by 2012 they had risen fourfold to USD 107. Since then they have been on a mostly downward trajectory – and with the pandemic reducing demand for transport sharply in the midst of global overproduction, prices reached a low of USD 21 by April 2020, although prices have recovered since to pre-pandemic levels (BP, 2020[20]).
- **Food and beverages**: This is Egypt's top sector by manufacturing employment, accounting for 25% of total in 2017 and the second-to-top sector by MVA, accounting for 14% of the total. While Egypt faces a large trade deficit in agro-food (exports account for between 30% and 40% of

imports), the country has seen fast development of some fresh and processed fruits and vegetables, and has been expanding its local poultry, dairy and aquaculture segments.

- **Textiles**: The textiles sector continues to account for 20% of employment in Egypt, giving it the second-highest share of manufacturing employment in the country. The sector faces productivity challenges, however, as it generates only 3.7% of domestic manufacturing value added. The sector has declined over time in both absolute and relative terms: in 1980, textiles constituted the largest generator of value added (30%) and employment (37%). Nevertheless, the country is still an important continental hub. Egypt was Africa's second-largest apparel manufacturer by total MVA in 2016-18, behind Morocco [authors' elaboration based on (UNIDO, 2021[21])]. One of Egypt's assets in this sector is high-quality cotton. Egypt supplies around 17% of global long-staple cotton (a variety that produces higher quality and offers higher strength); this is about half the output of the world's top exporter, the United States, and is also behind that of the People's Republic of China (hereafter "China"). But the area planted is falling, along with yield (Cotton Outlook, 2020[22]). Local consumption of long-staple cotton in Egypt is about 18% of production, whereas in India and China local consumption outstrips local suppliers (ibid.). Additionally, the country has faced increasing competitive pressures from other suppliers globally and in the region (e.g. Turkey), which have captured an increasing share of the world market since the end of the Multi-Fibre Arrangement. While textiles and apparel have been hit by the COVID-19 pandemic, the conversion of production lines from textiles to healthcare goods (e.g. personal protective equipment, such as masks) in response to high demand during the pandemic has provided an alternative source of demand for some producers.
- **Chemicals**: The chemicals industry in Egypt accounts for 10% of MVA and manufacturing employment. It is also an important export sector, accounting for approximately 15.5% of total exports during 2018-20, including plastics [authors' elaboration based on (UN Comtrade, 2021[23])]. Drawing on the country's large petroleum and gas resources, plastics, fertilisers and other petrochemicals are the main commodities produced. The plastic sector in particular uses natural gas as feedstock and produces several materials such as polyvinyl chloride (PVC), ethylene and polypropylene, with half of local production going into the packaging sector. The country relies relatively more on imports for so-called "engineering plastic" materials, such as PET, EVA, LDPE and PU (USAID SEED, 2017[24]).
- **Engineering:** Engineering is a sector grouping used in Egypt that encompasses transport equipment, electronics and electrical (E&E), basic metals, fabricated metal products and machinery. Engineering as a whole accounts for 21% of total manufacturing jobs and 16.5% of total MVA. Within engineering, the E&E industry stands out as one of the most dynamic in Egypt's export basket, accounting for around 6% of total exports and increasing by 10.6% annually during 2010-19, 6.3 times the merchandise export average (1.7%). This performance has been bolstered by new foreign investments that look to leverage Egypt as a regional assembly hub and local brands in household equipment (see Chapter 3).

Figure 1.4. Refined petroleum makes up around 40% of Egypt's manufacturing value added



Note: Classification in Panel B based on OECD (2011[25]) , *Classification of manufacturing industries into categories based on R&D intensities*, https://www.oecd.org/sti/ind/48350231.pdf
Source: Authors' elaboration based on UNIDO (2021[21]), *INDSTAT 2 2019 Revision 3* (database), http://stat.unido.org/database/INDSTAT%202%202019,%20ISIC%20Revision%203.

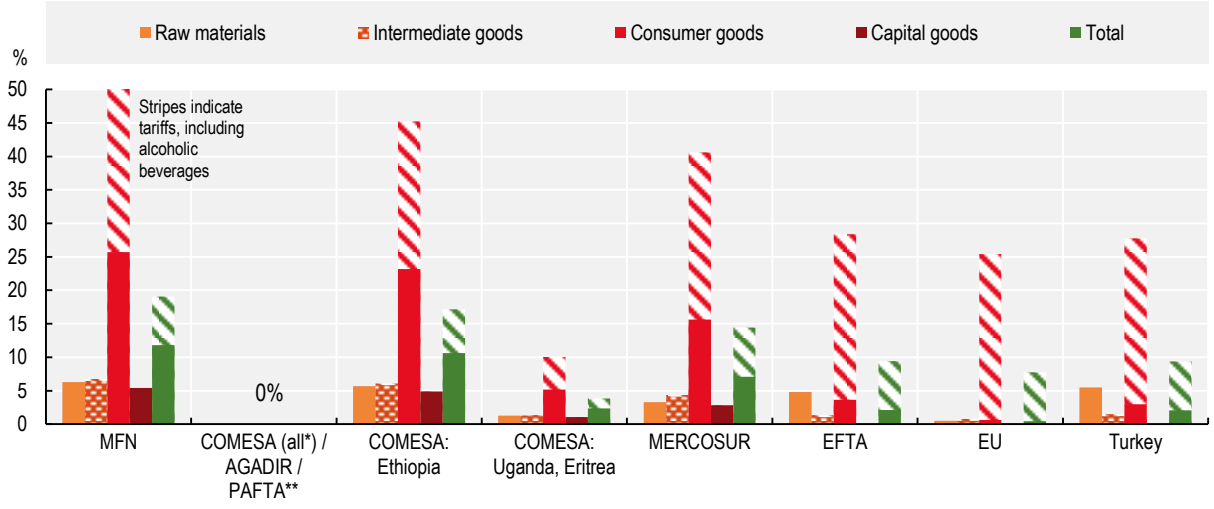
Looking for new markets, developing new partnerships

Beginning in the 1980s, Egypt embarked on a modernisation programme involving various structural reforms; however, these have not yet translated into increased local innovation capabilities or changed Egypt's pattern of integration into the world economy. Egypt's trade openness has remained relatively stable since the 1990s, with a trade-to-GDP ratio of between 40% and 50%. During 2015-19 this figure stood at 40.5% on average, lower compared to Morocco (83%) and the average for MENA (79.5%) and the OECD (57.2%). During fiscal year 2019/20, following the disruptive impact of the pandemic, the trade-to-GDP ratio fell to 34% (CBE, 2021[26]). Exports have grown by 8.9% on average since 1990, often outperforming the MENA average, while imports have grown by 7%. However, trade has faced high volatility, rising fastest during the 2000s and then facing on average negative growth during 2009-16, when the country's overall macroeconomic performance was under pressure. Moreover, the export market is concentrated among large firms, which account for around 75.6% of total exports, whereas small firms represent only 4.8%, according to data from Egypt's General Organization for Import and Export Control. By comparison the OECD average, although not directly comparable due to difference in definitions, is around 64% for large firms and 20% for small ones (OECD, 2021[27]). Egypt's average applied tariffs declined from 25% in 2000 to 9.6% in 2018, but they remain on average nearly double the rate prevailing in MENA (5%) and higher than in sub-Saharan Africa (7.76%). However, Egypt has put in place several FTAs that feature zero rates for tariffs on goods (e.g. COMESA and the Pan- Arab Free Trade Area), while rates with the EU and European Free Trade Area (EFTA) are close to zero, excluding alcoholic beverages (Figure 1.5), deepening integration with regional partners. This process is set to continue with the African Free Trade Continental Area (AfCFTA) (see Chapter 4). Egypt's pattern of tariffs favours local production and assembly of goods. The country's tariffs show significant escalation: tariffs are lowest for capital goods,

followed by raw materials and intermediate goods, and highest for consumer goods. The average consumer goods tariffs under Most Favored Nation (MFN) terms (excluding alcohol) is nearly 26%, while that for capital goods is 5.4%.

Figure 1.5. Simple average tariffs in Egypt, by stage of processing and trade agreement, 2017-19

Simple average of ad valorem duties, (%)



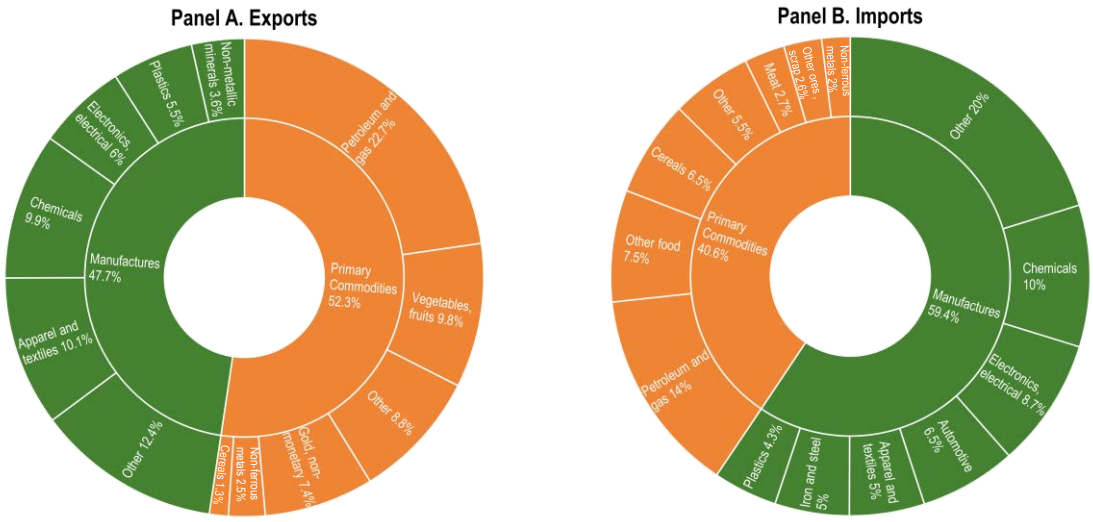
Note: * All countries except for Ethiopia, Uganda and Eritrea. **Data for 2017 only. Calculated based on average tariff rates by Harmonized System (HS) six-digit codes. Stage of processing based on UNCTAD nomenclature available at WITS (2020), reference data, https://wits.worldbank.org/referencedata.html. ADADIR: Arab Mediterranean Free Trade Agreement. COMESA: Common Market for Eastern and Southern Africa; EFTA: European Free Trade Association; EU: European Union; MERCOSUR: Southern Common Market; PAFTA: Pan-Arab Free Trade Area.
Source: Authors' elaboration based on WTO (2020[28]), *Tariff Download Facility* (database), http://tariffdata.wto.org/default.aspx.

Although the liberalisation process has gone hand-in-hand with a slow diversification of Egypt's exports, these remain anchored to primary commodities. The share of primary exports has decreased from 89% of total exports in 1980, but primary commodities continued to make up over half (52.3%) of Egypt's exports to the world in 2018-20 (Figure 1.6). Petroleum and gas is the top exporting sector, accounting for 23% of total domestic gross exports. Other important primary exports include gold (7%) and fruits and vegetables (10%), which when fresh can often fetch higher prices in international markets than processed ones. Textiles, apparel and footwear account for a combined 10% of exports and chemicals for 9.9%, while other big export items include electronics and electrical (including telecommunication equipment) (6%), and plastics (5.5%). The majority of Egypt's world imports are manufactures (59.4%), including chemicals (10%), electronics and electrical (8.7%), automotive (6.5%), and apparel and textiles (5%).

Egypt possesses a relatively diverse trade network, exporting mostly to nearby countries in the Middle East, Europe and North Africa. Asia as a whole accounted for 42% of exports during 2018-20, followed by Europe (31%) and Africa (15.4%) (Figure 1.7). Within Asia, Western Asia, which includes the majority of countries in the Middle East, accounted for 30.5% of total, and other Asia for around 12%. The country's top three export destinations included the United Arab Emirates (8%) (to which the country mostly exports metals), Turkey (6.3%) (with fertilisers and other chemicals as the main export) and the United States (6.2%) (petroleum and gas). On the import side, China is Egypt's top source, with 14.8% of total imports (mainly telecommunications equipment and textiles/apparel), followed by the US (6.7%) (various products) and Saudi Arabia (6.7%) (petroleum).

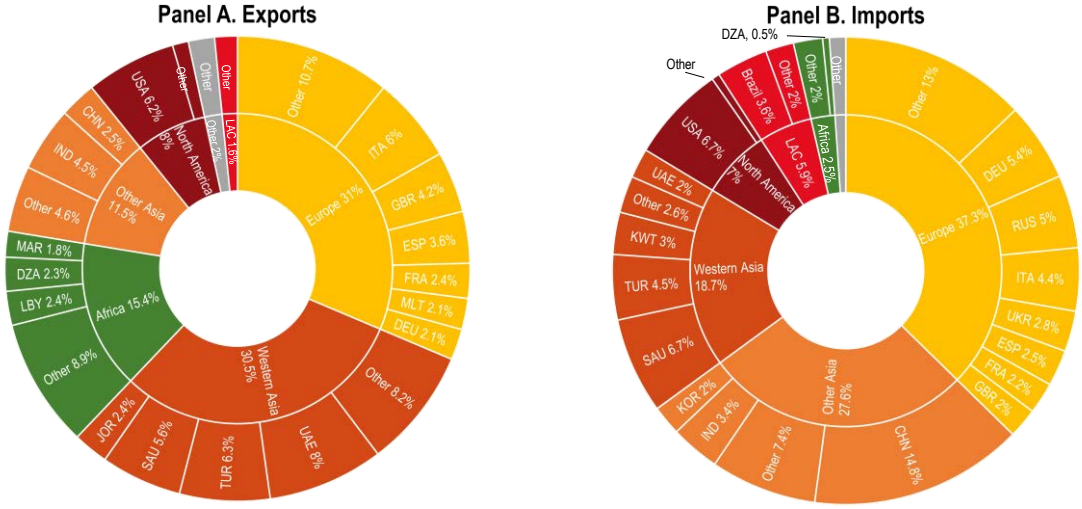
Figure 1.6. 52% of Egypt's exports are commodities, 2018-20

Share of total exports and imports, by category and product



Note: Based on classification of product groups and composition by UNCTAD Standard International Trade Classification (SITC) Revision 3 2-digit codes, https://unctadstat.unctad.org/en/Classifications/DimSitcRev3Products_DsibSpecialGroupings_Hierarchy.pdf . Some product codes have been aggregated.
Source: Authors' elaboration based on UN Comtrade (2021[23]), *Database*, https://comtrade.un.org/data.

Figure 1.7. Egypt's exports and imports by region and partner, by share of total (%), 2018-20



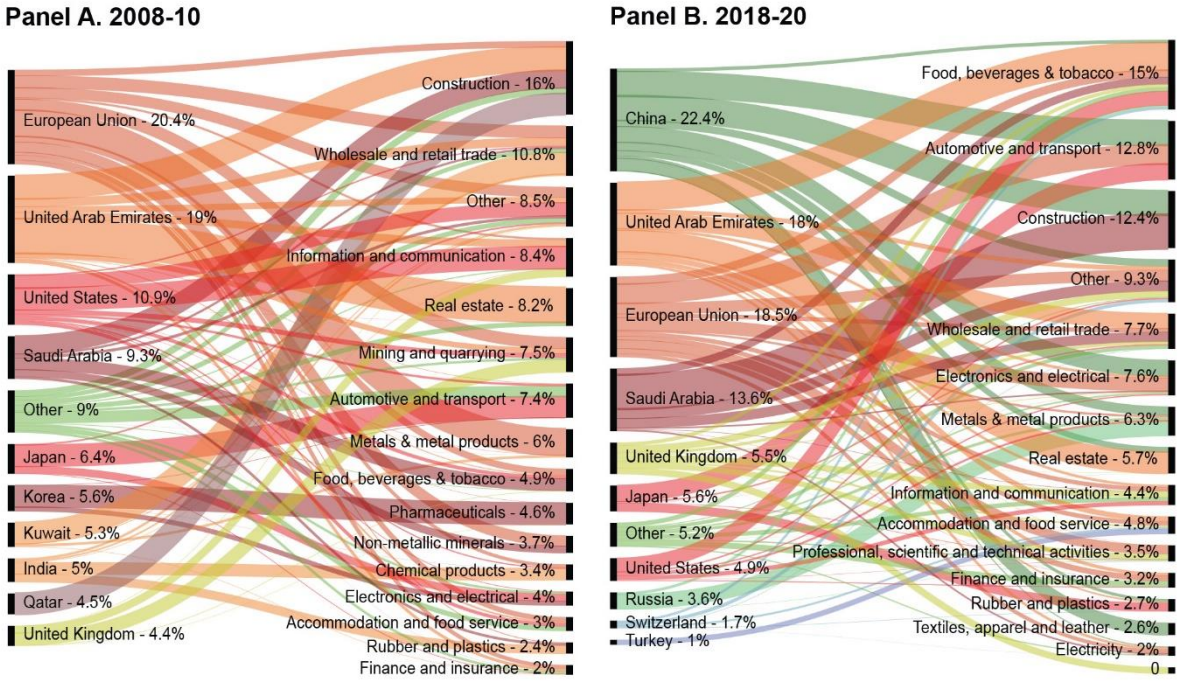
Source: Authors' elaboration based on UN Comtrade (2021[23]), *Database*, https://comtrade.un.org/.

Over the past decade, Egypt has been increasingly attracting FDI. The country's annual FDI inflows averaged 3.3% of GDP during 2017-19, nearly double the average for North Africa and Western Asia (1.7%) and higher than that of sub-Saharan Africa (1.9%) [authors' elaboration based on (UNCTAD, 2011[29])]. At the end of 2018, Egypt's FDI stock was equal to 47% of GDP, higher than in the MENA region (43%) and the OECD (40%), and lower than in the Association of Southeast Asian Nations (ASEAN) (89%) (OECD, 2020[30]). The majority of FDI transactions concerned mergers and acquisitions and re-investments related to the oil industry, while greenfield projects have been few (ibid.). The top sector for greenfield FDI

was construction, which absorbed 13.2% of the total during 2017-19, indicating the attraction of the growing domestic market for investments in commercial properties. Nevertheless, manufacturing is increasingly attracting investors' interest, with food and beverages accounting for 12.8% of total investments. Moreover, recent trends reveal that firms are choosing Egypt to produce for the African continent and the Middle East, such as in electronics (e.g. Samsung and LG, discussed in Chapter 3), and for regional technology service provision [e.g. Ericsson, which has recently set up an Artificial Intelligence and Analytics Hub (Ericsson, 2020[31])].

New partners are also emerging for Egypt. China has surfaced in recent years as Egypt's largest greenfield FDI investor, accounting for 22.4% of total jobs created in 2018-20 (up from less than 1% during 2008-10), investing in a wide range of activities, from construction to manufacturing and real estate (Figure 1.8). Russia, too, has been investing in the country, accounting for 3.6% of total in 2018-20, up from 1.4% a decade ago. Other top investors include countries from the Middle East – such as the United Arab Emirates (18%), with investments in food and beverages, real estate and trade; and Saudi Arabia (13.2%), which is particularly active in construction. The European Union as a whole has also remained an important source for investments, accounting for 18.5% of total jobs in 2018-20, with Spain, Italy, Germany, France and Poland among the top investing countries.

Figure 1.8. New partners are investing in Egypt

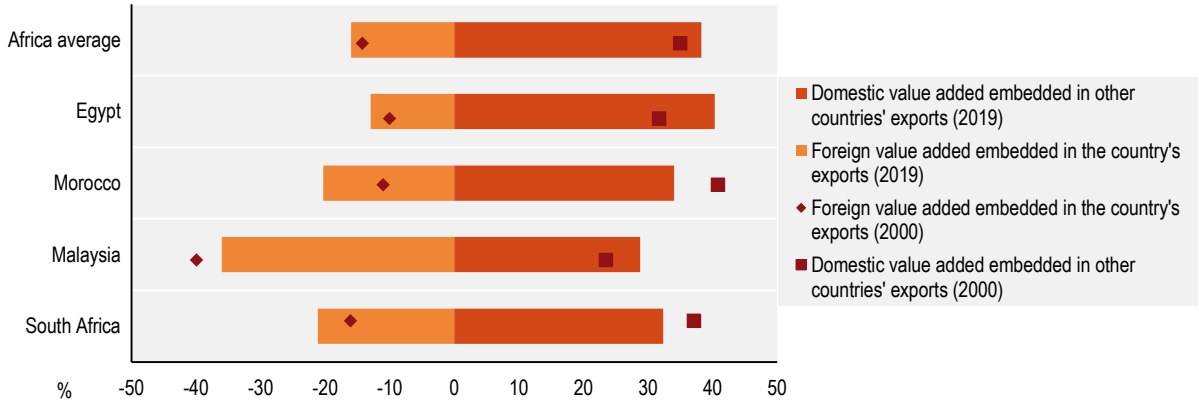


Note: Economic activities are listed according to the International Standard Industrial Classification (ISIC) rev. 4.
Source: Authors' elaboration based on Financial Times (2021[32]), *fDi market database*, https://www.fdimarkets.com.

Egypt's participation in global value chains (GVCs) remains anchored in the export of primary commodities that are processed elsewhere. About 40% of Egypt's exported domestic value added was used in other countries' exports in 2019, in line with the African average (38%), based on the most recent estimates by the UNCTAD-Eora Global Value Chain Database (UNCTAD/EORA, 2021[33]) (Figure 1.9).

Figure 1.9. Egypt participates in value chains mainly as an exporter of primary commodities

Share of foreign value added (FVA) in exports and share of domestic value added (DVA) embedded in other countries' exports, Egypt, African average and selected countries, % of exported value added, 2000 and 2019

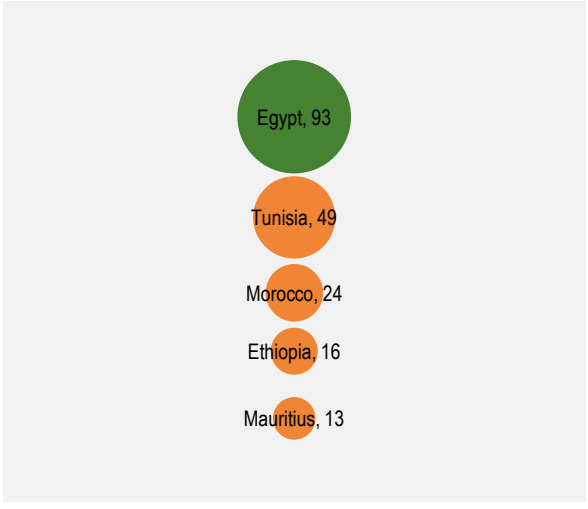


Source: Authors' elaboration based on UNCTAD/Eora (2021[33]), *Global Value Chain Database*, https://worldmrio.com/unctadgvc.

The textile industry is highly integrated into GVCs, and local firms have invested in signalling their quality to capture growing market share. Egypt has the highest number of OEKO-TEX® Standard 100 certificates (93) in Africa, a label that certifies that textiles have been tested against harmful substances, nearly double those of the top continental producer in textiles, Tunisia (49) (Figure 1.10).

Figure 1.10. OEKO-TEX® standard certificates, top five countries in Africa, 2020

Number of companies that have obtained an OEKO-TEX® Standard 100 certificate, top five countries in Africa, 2020

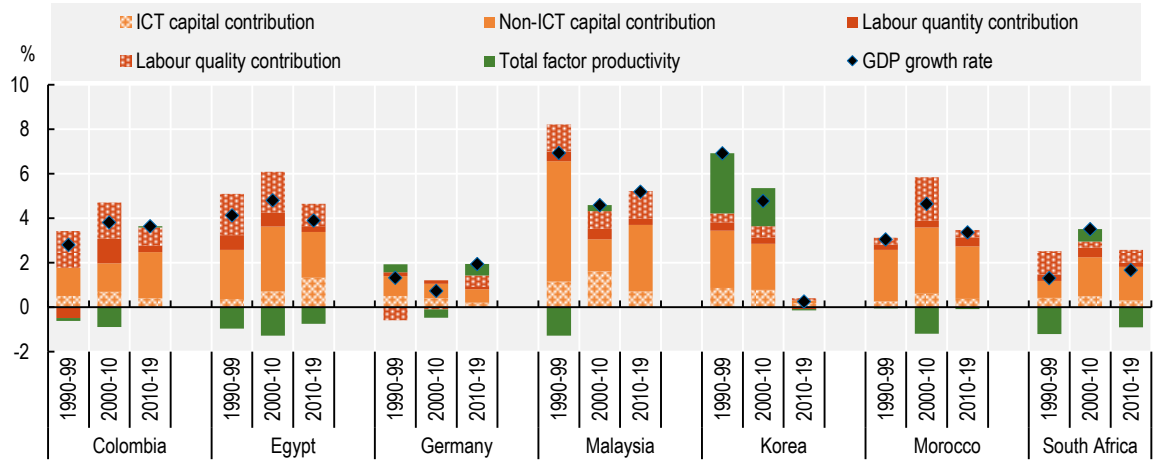


Note: Bubble size reflects number (see label) of companies that have obtained the certificate.
Source: Authors' elaboration on OEKO-TEX (2021[34]), *Buying guide*, https://www.oeko-tex.com/en/buying-guide.

Egypt's performance in terms of productivity could be better. Since the 1990s, total factor productivity (TFP) has made on average a negative contribution to GDP growth, with relatively higher rates observed in the end of the 1990s, mid-2000s and since 2016. This is in contrast to countries that rely on innovation to sustain growth – such as Germany, where TFP accounted for 30% of total growth in the 2010s; and Korea,

where it reached 35-39% in the 1990s-2000s. In Egypt, growth has been driven by capital accumulation, which accounts for 87%, similar to South Africa. The addition of workers into the economy and their upskilling has also been a big driver, accounting for as much as 60% of growth in the 1990s; but this has declined over time to reach 33% since 2010 (Figure 1.11).

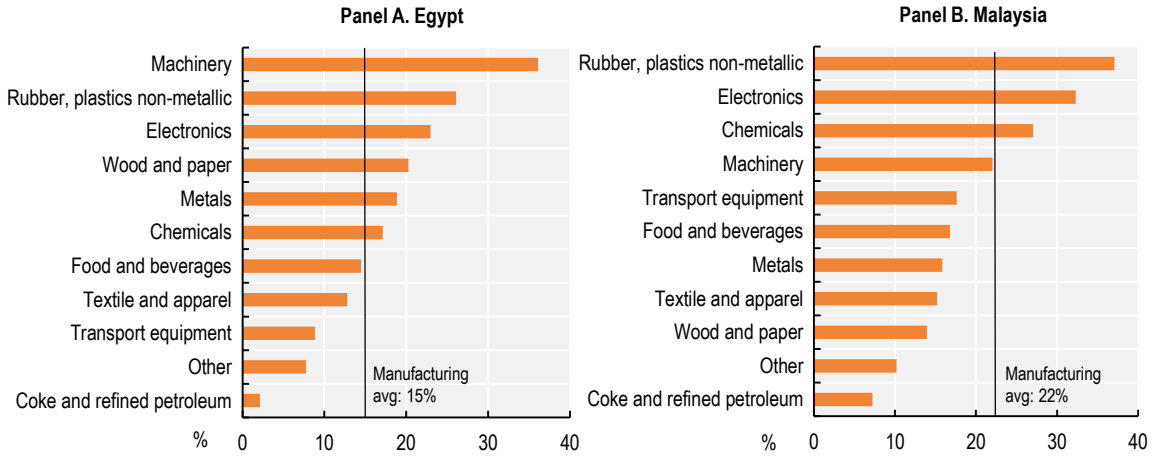
Figure 1.11. Average percentage point contributions of factors to GDP growth, selected countries, 1990-2019



Source: Authors' elaboration based on Conference Board (2021[35]), *Total Economy Database™ (Adjusted version)*, https://www.conference-board.org/data/economydatabase/.

Among the several factors hindering productivity growth in Egypt, two deserve particular attention. The first is linked to investments in industrial equipment modernisation. In Egypt the gross fixed capital formation (GFCF) as a share of manufacturing value added is 15%, compared to 22% in Malaysia and an OECD average of 18%. This investment lag is mostly explained by the specialisation of Egyptian manufacturing in activities that have less scope for increasing returns and knowledge spillovers. Machinery, plastics and non-metallic minerals and electronics were the top three activities in Egypt by their share of GFCF, similar to Malaysia (Figure 1.12). In electronics, the rate was 22%, which is about 50% higher than the national average and approximately 50% lower than the rate in Malaysia (33%).

Figure 1.12. Gross fixed capital formation in manufacturing in Egypt and Malaysia as a share of value added, by sector, 2017

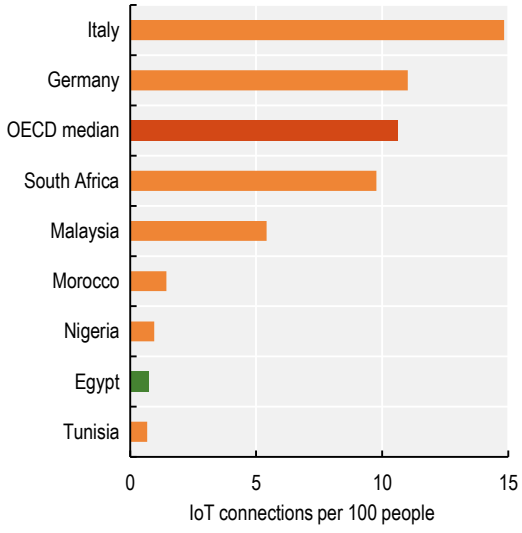


Note: The GFCF measures the investment in plant and machinery, transport equipment, software, and major improvements to existing buildings and structures, which is a proxy for modernisation of the industrial structure.
Source: Authors' elaboration based on Central Agency for Public Mobilization and Statistics (CAPMAS) (2018[36]), *Egypt's Fifth Economic census 2017/2018*, https://www.capmas.gov.eg and UNIDO (2021[21]), *INDSTAT 2 2019 Revision 3 (database)*, https://stat.unido.org/database.

The second factor is linked to the quality and coverage of digital infrastructure and its use by firms. Firms in Egypt lag behind global leaders in using digital technologies for business (Box 1.2). Globally there are 1.57 billion cellular Internet of Things (IoT) connections in the world, most of which (66%) are in China (GSMA, 2020[37]). Africa is a marginal user of IoT technologies but has seen fast growth, adding 14 million such connections since 2015. In Egypt, in 2019 there were 1.5 million machine-to-machine (M2M) cellular connections in 2019, the 2nd highest in Africa after Nigeria, and 2.2 times as many as in 2015. However, in per capita terms, uptake is below the country's potential, with about 1 connection per 100 inhabitants, compared to an OECD median of 10.6 (Figure 1.13).

Figure 1.13. Number of cellular Internet of Things (IoT) connections per 100 people, 2019

Selected countries and OECD median



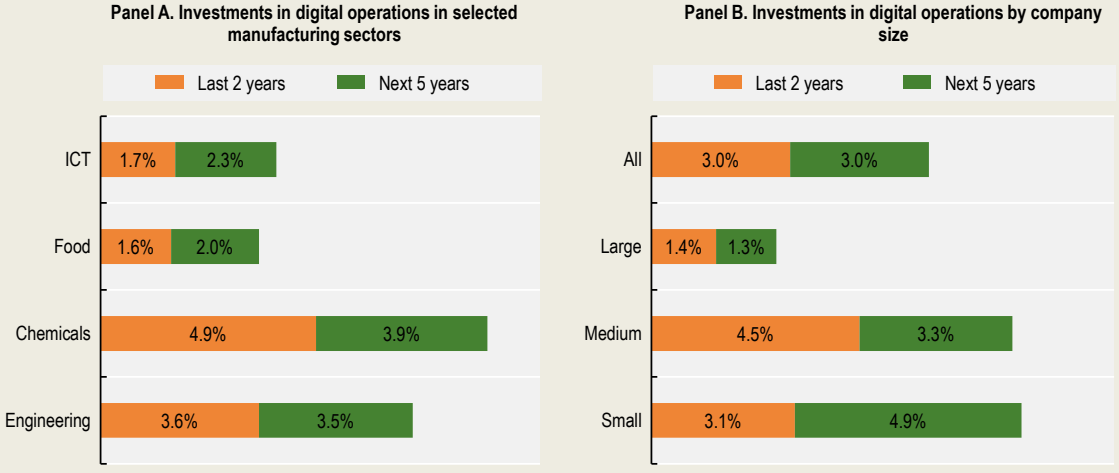
Source: Authors' elaboration based on GSMA (2020[37]), *GSMAintelligence*, https://data.gsmaintelligence.com.

Box 1.2. Egyptian firms' investments in Industry 4.0 could be higher

A GIZ and MTI survey carried out by PwC showed that Egyptian firms invested an average of 3% of their revenue in digital operations during the previous two years (Figure 1.14). Chemical firms invested the highest percentage (4.9%), while food and ICT firms lagged behind (1.6% and 1.7%, respectively). Large firms invested a lower share of their revenues (1.4%) compared to medium-size (4.5%) and small firms (4.9%), which may reflect the difference in size of base revenues, as in absolute terms, large firms invest the highest sums. Firms also reported that they anticipate similar levels of investments over the next five years (3%). By contrast, in a similar survey conducted in 2016 at the global level, companies surveyed anticipated investments of an average of 5% of their revenues.

Figure 1.14. Companies' investments in digital operations in Industry 4.0

Investments as a percentage of revenues over the past two years, and anticipated investments as a percentage of revenues over the next five years, by industry and company size



Source: GIZ/MTI (2021[38]), *Empowering Egypt's Industry: Assessing Egypt's Readiness to Implement Industry 4.0*. The study included a quantitative survey of 49 small, medium-sized and large companies in four manufacturing sectors: chemicals, engineering, food and ICT.

Scaling-up productive investments and innovation is needed to unlock opportunities for all

Egypt has major untapped innovation potential. To unlock this potential, it needs to mobilise investment and generate adequate incentives – in addition to modernising industrial equipment and improving physical and digital infrastructure.

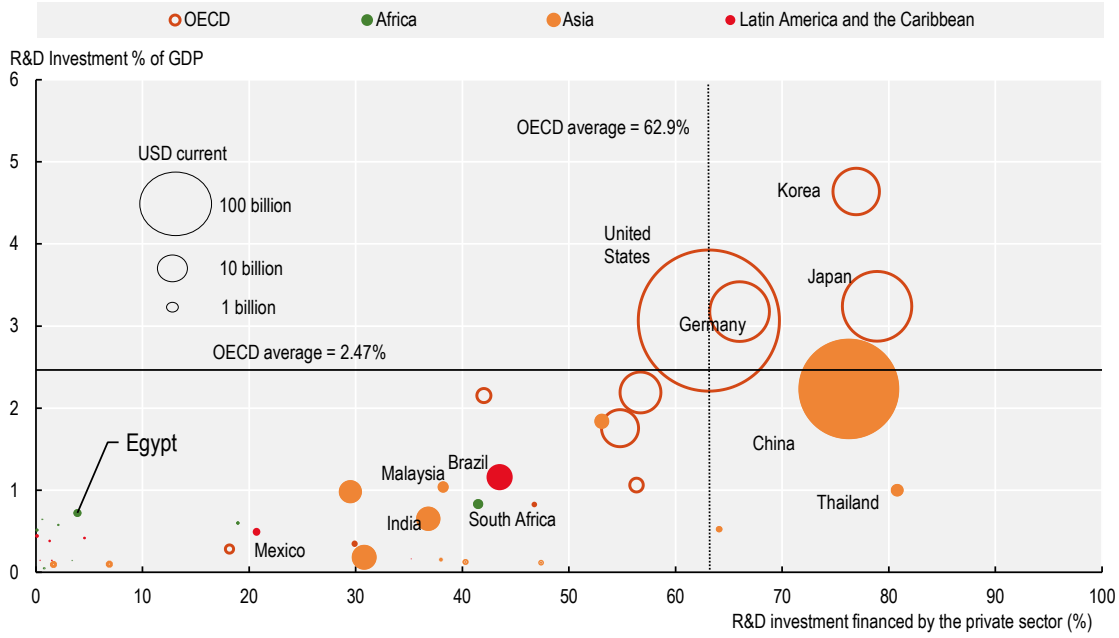
While research and development (R&D) is only one of several indicators of innovative effort, at an aggregate level (and considering the composition of the Egyptian economy), it is an appropriate indicator to assess Egypt's comparative performance. In 2014, Egypt's constitution introduced an R&D investment target of 1% of GDP. The country now invests around 0.7% of GDP in R&D, up from 0.6% in 2014, when the target was set. The current R&D intensity (R&D to GDP ratio) of Egypt is similar to Morocco (0.71%), higher than Tunisia (0.59%), lower than South Africa (0.82%), and three times less than the OECD average (2.37%) (Figure 1.15). In absolute terms, investments stood at USD 1.8 billion in 2018 (approximately

EGP 32.1 billion), a sum that is higher than Morocco (USD 0.7 billion), but small compared to emerging economies, such as Brazil (USD 22.7 billion) and Thailand (USD 3.3 billion).

Egypt's private sector is not investing in innovation on a par with their peers from other emerging economies. Firms account for only 3.9% of total R&D (ammounting to approximately EGP 25 billion) – a limited share when compared to other economies in Africa, such as Morocco (29.9%), Tunisia (18.9%) and South Africa (41.5%) and far below emerging economies in Asia, such as Malaysia (38.2%) and Viet Nam (80.8%), and the OECD, where the average private sector contribution to overall R&D investment is 62.9% (Figure 1.15). In Egypt the R&D intensity of firms (i.e. total R&D expenditure over gross value added) was 0.3% in 2017, compared to 4.7% on average for the OECD [authors' elaboration on OECD (2020[39]) and CAPMAS (2018[36])]. Recent initiatives by Egypt to increase innovation in the private sector, including fostering start-ups, are reviewed in Chapter 2 of this report.

Figure 1.15. Egypt invests little in R&D

R&D as a share of GDP (%), share of R&D investments financed by the private sector (%), and total R&D investments (USD current), selected countries and OECD average, 2019 or latest year available

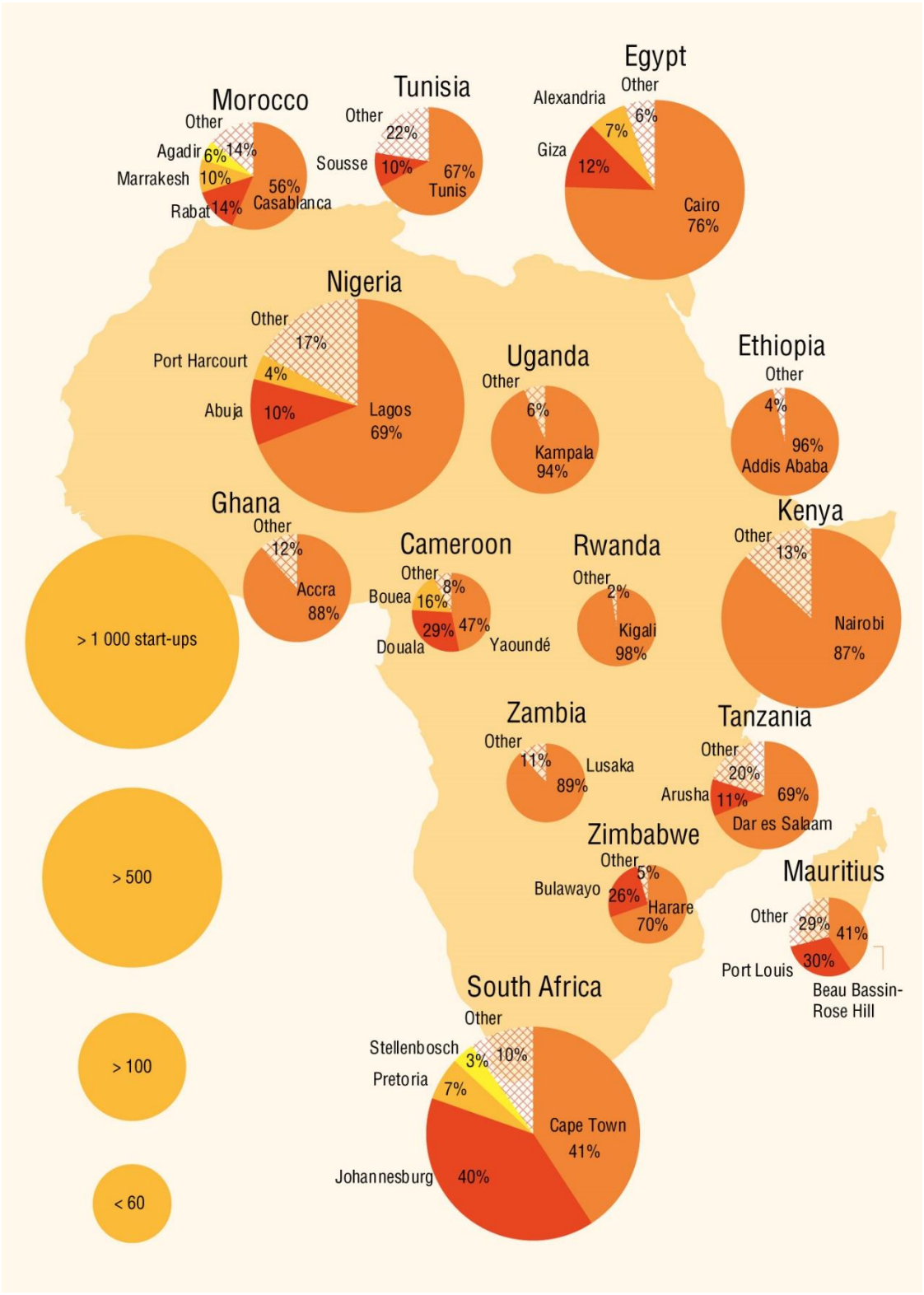


Note: R&D: Research and development.
Source: Authors' elaboration based on (OECD, 2021[40]), "Main Science and Technology Indicators", *OECD Science, Technology and R&D Statistics (database)*, https://doi.org/10.1787/data-00182-en; and UNESCO (2021[41]), *Institute for Statistics Database*, http://data.uis.unesco.org.

Digitalisation has fostered the creation of innovative businesses in Egypt. Although Africa remains a small global player by global standards, start-ups are gaining ground on the continent. The annual venture capital (VC) investments on the continent increased from approximately USD 54 million in 2010 to over USD 862 million in 2019, an increase of about 16 times within ten years, and about 1.3% of global total increase over the same period[2]. Now Africa accounts for 2% of global start-ups, about half the level of Latin America and the Caribbean. Egypt is one of Africa's largest start-up hubs. The country accounts for 14% of the continent's start-ups, following Nigeria (25%) and South Africa (20.5%) (Figure 1.16).

Figure 1.16. Egypt is one of Africa's largest start-up hubs

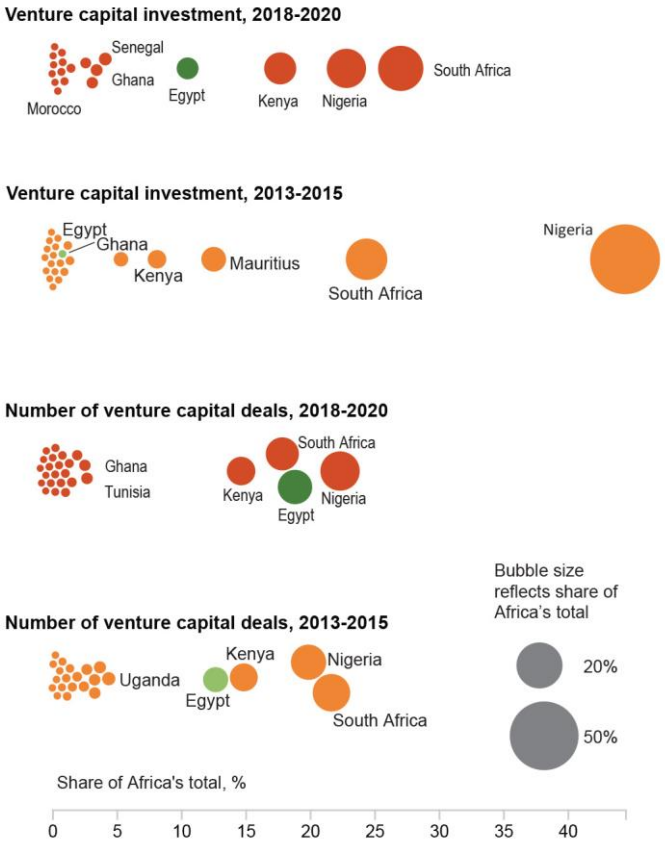
Top 15 countries in Africa by number of start-ups, 2020



Note: Active start-ups that were founded during 2011-20.
Source: Authors' elaboration based on Crunchbase (2021[42]), *Database*, https://www.crunchbase.com.

Egypt's role in the growing start-up scene in Africa has been increasing. Venture capital in Egypt grew from around 1% of Africa's total VC investments in 2013-15 to 10.5%% in 2018-20 (Figure 1.17). The country also had the second highest number of VC deals taking place in Africa during 2018-20.[3] The start-up that has attracted the largest amount of funding in Egypt so far is Swvl, an application that allows customers to book fixed rate rides on buses and vans. A growing number of investors, incubators and accelerators are contributing to the start-up scene's growing dynamism (Startup Guide, 2019[43]). Some of the most active investors include local firms such as Flat6labs, the AUC venture lab – the first university-based incubator in Egypt – and Innoventures. Foreign VCs are also active, such as 500 Startups. International financial institutions also play a role. For example, EBRD has partnered with EU and Falak, EFG-EV Fintech, and Misr El Kheir's GESR incubator to back early-stage start-ups through its Star Venture Programme (Daily News Egypt, 2018[44]). Government agencies, such as the Micro, Small and Medium Enterprise Development Agency (MSMEDA) and the Information Technology Development Agency (ITIDA) have also been fostering the development of the local start-up ecosystem with dedicated financing, services and infrastructure programmes (see Chapter 2).

Figure 1.17. The start-up ecosystem is developing in Egypt



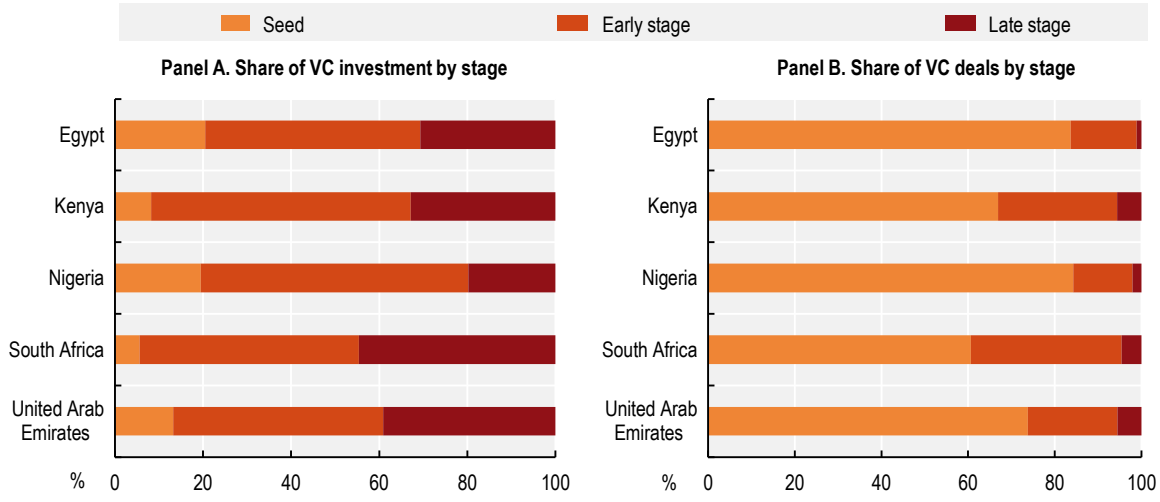
Note: Countries in Africa with at least ten start-ups and one venture capital deal during 2018-20.
Source: Authors' elaboration based on Crunchbase (2021[42]), *Database*, https://www.crunchbase.com/.

In Egypt, almost 83% of VC deals concern seed projects, a level similar to that of Nigeria but higher than other African start-up hubs (Figure 1.18). Approximately 15.2% of deals concern early-stage, and around 1% late-stage financing, similar to Nigeria. By contrast, in South Africa, Kenya and the United Arab Emirates, early-stage financing deals accounted for 20-35% of the total, and late-stage financing for 5-6%.

On the one hand, this indicates that Egyptian start-ups have access to the necessary capital to get their projects off the ground. On the other hand, it could also indicate that Egyptian start-ups are encountering barriers to accessing scale-up capital. In a recent survey of 200 start-ups in Egypt, 22% emphasised that access to capital is one of their key challenges (Zaki and Zeini, 2019[45]).

Start-ups in Egypt specialise in applications (12.9% of national total), followed by e-commerce (12.5%), and information technology (8%) [authors' elaboration using (Crunchbase, 2021[42])]. This pattern is similar to that of other countries in Africa, such as South Africa, where start-ups are attempting to leverage their large national populations to launch e-commerce, transport and e-payment applications. Other, more advanced start-up hubs, however, are tapping into the AI and digital technology potential of start-ups. For example, in Silicon Valley, most start-ups concentrate in AI (13%), apps (9%), and data and analytics (6%).

Figure 1.18. Egypt's VC investment flow into seed and early-stage financing, 2018-20

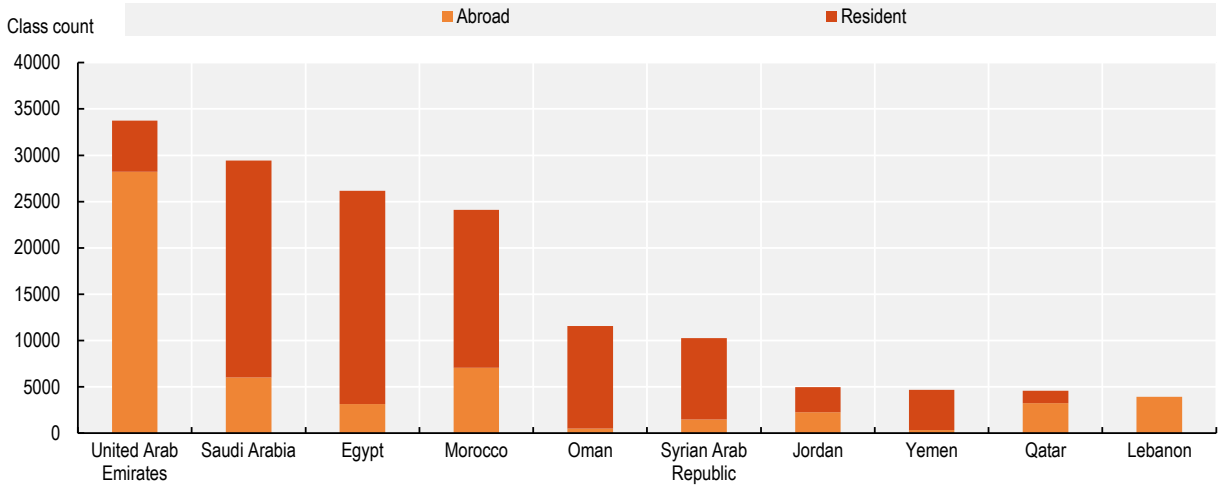


Source: Authors' elaboration based on Crunchbase (2021[42]), *Database*, https://www.crunchbase.com.

Egypt's capacity to generate value through innovation and intangibles could be higher. Trademarks, for example, are a way to capture value from marketing new innovations by enabling consumers to identify products with a specific brand. With 26 157 trademark class count applications (equivalent count), Egypt was the third-highest applicant in the MENA region and the second-highest in Africa in 2019 (Figure 1.19). The top category for trademarks was agricultural products, similar to all other MENA countries, while it had the highest number of trademark applications for transportation and logistics, and household equipment, in the region. Nevertheless, when compared to emerging countries, it seems that Egypt has room to grow. The class count applications stood at 32 809 in Malaysia and at 84 547 in Viet Nam during the same year. Additionally, most of these applications were filed by residents in Egypt, with only a small fraction filed abroad – indicating that for Egyptian business the international market is still a low priority. For example, while Egypt has the second-most applicants in Africa for trademarks via the Madrid system (30 registrations in 2019), these were a third of those of the top applicant, Morocco (100). Fostering industrial design could also help Egyptian producers to differentiate themselves from competitors and signal quality. Egypt, with 1 750 applications (design counts), ranks 5th in terms of industrial design applicants in Africa, with about 40% the level applied for by Morocco, the continent's top applicant [authors' elaboration based on (WIPO, 2021[46])].

Figure 1.19. Egypt is the third-ranked trademark applicant in MENA, 2019

Class count in total trademark applications, by applicant's origin (equivalent count), 2019



Note: The class count enables a harmonised comparison between filing offices as different offices have different rules on whether a filing in more than one class is possible.
Source: Authors' elaboration on WIPO (2021[46]), *WIPO IP Statistics Data Center*, https://www3.wipo.int/ipstats/IpsStatsResultvalue.

Bringing firms into the formal sector will also be important for Egypt's integration into global markets and raising investments in innovation and quality. While most informal firms concentrate in services (particularly trade), about 53.7% of manufacturing firms are also informal, with the highest shares found among furniture makers (65.4%) and apparel (64.6%) and wood manufacturers (60.1%). Informal firms face obstacles in accessing financing, business support services and funds, and have fewer incentives to invest in modernising technologies (El-Fattah, 2012[47]). They also rarely invest in R&D, accounting for 0.1% of the total in the economy, and make up only 1.8% of all investments in fixed capital formation [authors' elaborations using data from (CAPMAS, 2018[36])]. The new Micro, Small and Medium Enteprise (MSME) Law No. 152/2020 takes a step in increasing the formalisation of firms, particularly MSMEs, by offering incentives to firms to do so (see Chapter 2).

Unleashing Egypt's innovation potential will be key to opening up opportunities across all the country. So far, economic concentration has remained excessively high. The Greater Cairo region, which includes the neighbouring governorates of Cairo, Giza and Qalyubia, accounts for about one-fourth of Egypt's population of approximately 100 million people, and nearly half of the country's GDP (48.7% in fiscal year 2015-16), followed by Greater Alexandria (Alexandria, Beheira and Matrouh) (14%) (Table 1.1). The economic concentration around Cairo is also reflected in the distribution of start-ups within Egypt: the Cairo greater metropolitan area accounts for 90% of all the country's start-ups. Better connecting start-ups to local production ecosystems (such as ports, oil or agro-food hubs) would help boost the country's innovative potential.

Table 1.1. Greater Cairo accounts for 49% of Egypt's GDP, 2018

Governorates	Share of GDP*	Share of population	No. of businesses	Businesses per 100 people
Greater Cairo				
Cairo	37%	10%	483 610	4.9
Giza	8%	9%	347 984	3.9
Qalyubia	3%	6%	237 566	4.1
Greater Alexandria				
Alexandria	8%	5%	287 480	5.4
Beheira	3%	7%	214 412	3.3
Matrouh	3%	1%	18 876	4.0
Delta				
Dakahliya	4%	7%	320 197	4.8
Gharbia	3%	5%	215 371	4.2
Kafr El Shiekh	2%	4%	117 373	3.3
Menoufia	2%	5%	152 005	3.4
Damietta	2%	2%	130 744	8.4
Suez Canal				
Sharqia	4%	8%	284 664	3.8
Port-Said	1%	1%	34 172	4.5
South Sinai	1%	0.1%	6 545	6.1
Suez	1%	1%	32 037	4.2
Ismailia	1%	1%	55 754	4.1
North Sinai	1%	1%	6 627	1.4
North Upper Egypt				
Minya	2%	6%	146 714	2.5
Fayoum	2%	4%	156 192	4.1
Beni Suef	1%	3%	88 829	2.7
Central Upper Egypt				
Asyut	2%	5%	95 837	2.1
New Valley	0.1%	0.3%	8 945	3.6
South Upper Egypt				
Red Sea	2%	0.4%	18 058	4.8
Sohag	2%	5%	115 958	2.2
Qena	1%	3%	81 295	2.4
Aswan	1%	2%	44 035	2.8
Luxor	0.3%	1%	41 282	3.2
Total	100%	100%	3 742 562	100%

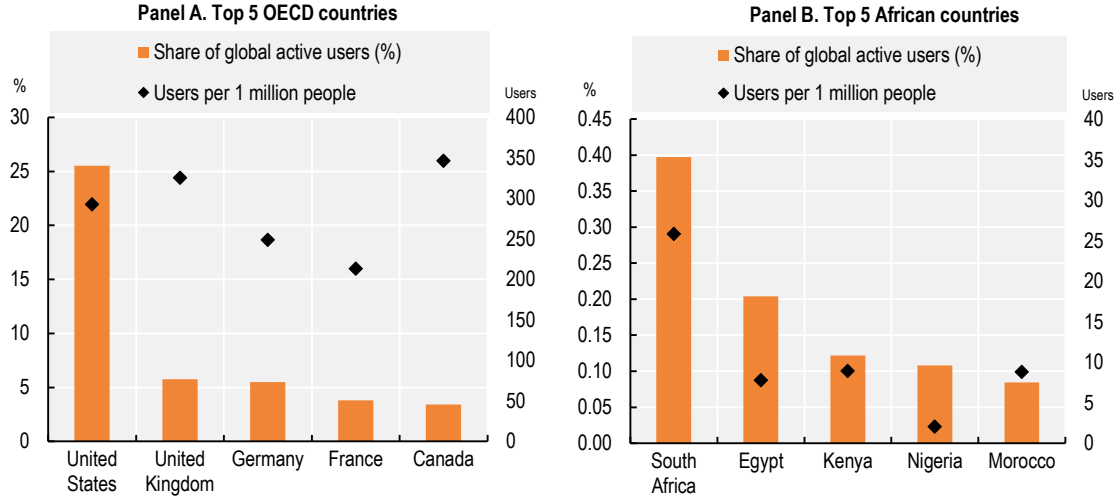
Note: *Data for fiscal year 2015/16. Values in current USD million.
Source: Authors' elaboration based on CAPMAS (2018[36]), *The results of the fifth economic census 2017/2018*, https://www.capmas.gov.eg/Pages/Publications.aspx?page_id=7195&Year=22986 and Ministry of Planning and Economic Development (2021[48]), *National accounts data,* https://mped.gov.eg/Analytics?id=61&lang=en.

Egypt faces the pressing challenge of making its growth path a job-rich one – especially for youth and women, who continue to represent a large share of Egypt's untapped talent. The labour participation rate among women in Egypt is 18.4%, the second-lowest rate in Africa, just above Nigeria (15.1%) and below Morocco (24.7%). In addition, the unemployment rate for women (21.3%) is three times higher than for

men (6.8%), according to ILO data. Youth unemployment reached almost 25% in 2019, according to World Bank data, 2.5 times the average for all ages.

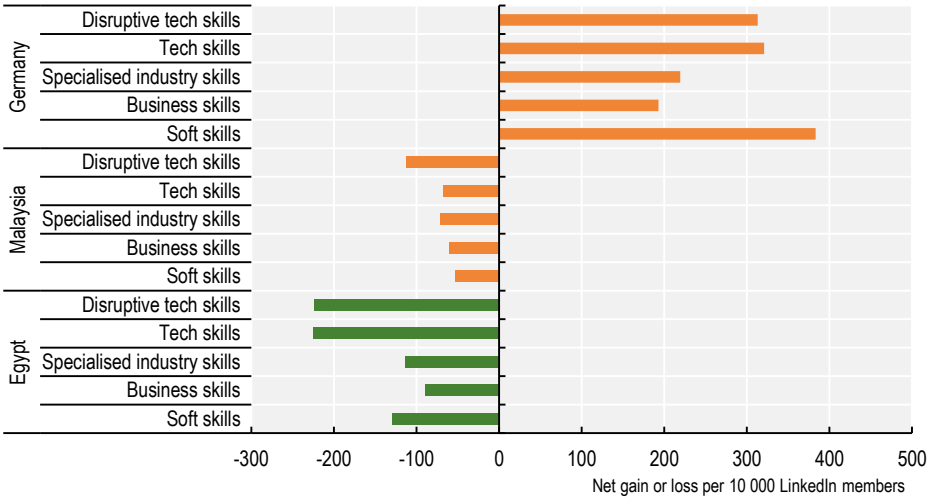
Innovation and diversification are key gateways to generating new, well-paid jobs. But to unlock these gateways, Egypt needs also to address a two-fold capabilities challenge: (a) offering high-quality training in advanced, technologically-related areas (such as AI, digital technologies and other areas increasingly demanded by global markets); and (b) at the same time ensuring employment opportunities for these skilled workers to limit "brain diaspora". User statistics from Github, a widely-used website for open-source software development, offer an estimate of the talent pool in software engineering, one among the key skills for future competitiveness across all industries. Africa lags behind in this area, accounting only for 1.32% of global Github users, versus 37% for Europe and 23% for Asia (Figure 1.20). Egypt has the second-largest software talent pool on the continent, accounting for 0.2% of global talent and 15% of talent in Africa (following South Africa, which accounts respectively for 0.4% of global talent and 30% of African talent). However, Egypt's talent pool is substantially below its potential, with 8 users per 1 million people, compared to 26 in South Africa. Developing and implementing an industrial and innovation strategy that generates jobs in high-skill professions is imperative. According to data gathered by LinkedIn in partnership with the World Bank, much of the talent that leaves Egypt is specialised in "disruptive" skills that are key for Industry 4.0, such as artificial intelligence, and other tech skills, such as mobile design and hardware engineering. The net loss is estimated at 221 people per 10 000 in disruptive tech skills during 2017-19, compared to 93 for Malaysia and a net gain of 296 people per 10 000 for Germany (Figure 1.21).

Figure 1.20. Github users in the OECD and Africa, by share of total, 2019



Note: Data were generated through a BigQuery based on code by Hoffa (2017[49]), "The digital divide: Software developers in Africa through GitHub and Stack Overflow stats", https://medium.com/@hoffa/the-map-i-got-for-africa-8c8a958c686d.
Source: Authors' elaboration based on data from Github Archive and GHTorrent.

Figure 1.21. Net skills gains or losses for Egypt, Malaysia and Germany, by skills group, 2017-19



Note: Skills categories are based on LinkedIn-World Bank classifications. Data represent the net gain or loss of members from another country with a given skill divided by the number of LinkedIn members with that skill in the target (or selected) country, multiplied by 10 000.
Source: Authors' elaboration based on World Bank and LinkedIn (2020[50]), *World Bank LinkedIn Digital Data for Development*, https://linkedindata.worldbank.org/data.

Box 1.3. Responding to the COVID-19 crisis is opening up opportunities for innovation

The unfolding of the COVID-19 pandemic has shown that although Egypt possesses some capabilities in innovation, these would need to be scaled up to diffuse benefits to the overall economy. For example, Egypt was among three countries in Africa that developed a diagnostic test for COVID-19 locally together with Nigeria and South Africa (OECD/ECA, 2020[51]). The reaction to the crisis has also channelled new investments in medical devices and equipment, as well as new tele-health apps that can sustain healthcare systems during periods of lockdown and reduce the need for patient contact. In Africa, venture capital investments in healthcare and biotech more than quadrupled from USD 7.9 million to USD 36 million (Crunchbase). In Egypt, of ten start-ups that moved from seed to early-stage financing in 2020, two involved healthcare apps. These were Shezlong, an online mental health platform that connects patients to therapists via video visits; and Chefaa, a patient-facing medicine delivery platform.

Conclusions

Egypt is an important economic hub in Africa. Despite growing openness, Egypt's pattern of integration into global trade has remained largely unchanged since the 1990s. The progress made by Africa with the entry into force of AfCFTA is opening up new opportunities for Egypt to continue advancing on its march towards prosperity. Achieving job-rich growth and transforming its economy to be more innovative and to benefit more from advanced technologies – not only as an end-use market, but also as a knowledge and technology creator – are among Egypt's top strategic priorities for the future, and AfCFTA could help facilitate Egypt's efforts in this regard. The PTPR of Egypt, benefiting from peer review from Italy and Malaysia, identifies potential opportunities by analysing the current strategy for economic transformation (in Chapter 2 of this report), discussing opportunities in two specific industries (agro-food and electrical engineering and electronics, Chapter 3) and by examining the opportunities arising from AfCFTA (Chapter 4).

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Notes

[1] For the purposes of this chapter, the Middle East and North Africa include the following countries: Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestinian Authority, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates and Yemen.

[2] Measuring start-up development is not without difficulties. Despite increased interest in start-ups by policy makers, experts and the media, there is no single definition of what a start-up is. Official internationally comparable databases, notably the OECD SDBS database, exist for enterprise births and young enterprises (e.g. less than 2 years old), but not for start-ups. Investors' platforms, such as Crunchbase and Angel Invest combine self-reporting with smart algorithms that collect public information from the web. These databases, even if coverage is not uniform across countries, provide realistic estimates of start-ups dynamics. This chapter uses data from Crunchbase, a commercial database on technology-related companies and financing that is widely used by investors, entrepreneurs and researchers.

[3] Estimates highly depend on methodology used. Partech (2021[52]), which uses a different methodology to this report, estimates that Egypt attracted the highest number of deals in 2020.

2 Policies and partnerships to achieve Egypt's potential

Egypt is looking to unleash its potential amid a fast-changing global landscape. Its development agenda emphasises innovation and sustainability and places high priority on continental integration and digitalisation. This second chapter of the PTPR of Egypt provides a comparative assessment of Egypt's strategy, policies and tools for transforming the economy. It draws on peer learning to identify key areas for future reforms.

Introduction

As seen in Chapter 1 of this Production Transformation Policy Review (PTPR), Egypt is among Africa's industrial heavyweights. Scaling up productive investments and innovation are needed to unlock opportunities for all and achieve sustained and sustainable, job-rich growth. In its reform programme and development strategy, the country has placed a strong emphasis on digitalisation and greening and accelerating industrialisation through enhanced ties with the continent. This second chapter of the PTPR draws on policy dialogue and peer learning carried out during the implementation of the review process to provide a comparative assessment of Egypt's strategy, policies and tools for transforming the economy. It provides an overview of the key elements of Egypt's current vision and a snapshot of the country's achievements in embracing institutional modernisation and red-tape simplification. The chapter identifies key recommendations for better capturing the gains of Industry 4.0, better harnessing the potential of industrial parks, and modernising the policy mix for economic transformation – responding to the challenge of fostering a knowledge- and innovation-based economy through enhanced partnerships and targeted investments.

The first chapter of the PTPR of Egypt provided an overview of the country's economic transformation focusing on production, trade, investment and innovation. Following this chapter, Chapter 3 will provide a snapshot of agro-food and engineering-related activities, while Chapter 4 will focus on the AfCFTA as an accelerator of industrial upgrading in Egypt and its partner countries.

Egypt counts with a vision to transform its economy

Egypt launched the National Structural Reforms Program (NSRP) in April 2021 under the auspices of the Ministry of Planning and Economic Development (MPED) (Box 2.1). The NSRP is the second stage of the National Economic and Social Reform Programme, launched in 2016. It is aligned with *Sustainable Development Strategy: Egypt Vision 2030*, a national agenda launched in 2016, and the African Union Commission's (AUC) *Agenda 2063: the Africa We Want*.

Box 2.1. Egypt's National Structural Reforms Program (NSRP)

The NSRP (2021-24) aims at achieving balanced and sustainable growth in light of national and international developments, such as the COVID-19 pandemic and the global transformation towards digital and green technologies. It announces both structural and legislative reforms to increase resilience, promote employment and employability and increase productivity and competitiveness. The NSRP is aligned with and builds on Vision 2030, a long-term strategy launched by Egypt's president in 2016, encompassing areas such as promoting Industry 4.0 and the green economy, maintaining water and food security and controlling population growth. Some of the key targets identified are raising the real GDP growth rate from 3.6% in 2019/20 to 6%-7% in 2023/24, and to increase the share of investment in GDP from 13.7% of GDP in 2019/20 to at least 20% in 2023/24.

The scope of the NSRP covers five identified key systems: demographic, financial, logistical, government performance, and legislative; and six pillars. Economic diversification is the main pillar of the program, aiming to scale up the contribution of manufacturing, agriculture and information and communication technologies in GDP. This pillar also aims at encouraging upgrading, local value addition, productivity and competitiveness as well as increasing exports and investments in the three sectors, among other objectives. The other five pillars are as follows:

- Improving the efficiency of the labour market and technical and vocational education and training (TVET), by developing the TVET system, activating the role of private sector, matching supply to market demand, and empowering women, youth and people with special skills;
- Improving the business environment and enhancing the role of the private sector, through a supportive and enabling environment for competition, removing trade barriers, upgrading logistics, easing investment procedures, and supporting the sustainable use of natural resources;
- Upgrading the governance and the efficiency of public institutions, through administrative and institutional reforms, empowering local administration units, and improving the governance of state-owned enterprises (SOEs);
- Promoting financial inclusion and facilitating access to finance, through accelerating financial inclusion, increasing and diversifying options available to private sector, and stimulating the money market;
- Bolstering human capital development, through raising the scope and efficiency of healthcare services, activating the Egyptian family development strategy, upgrading the competence of educational system, and widening the coverage of the social protection network.

The NSRP's pillars are supported by dedicated targets and quantifiable key performance indicators, and defines the responsibility of each ministry or entity to implement each reform under a set time frame (short-term of 18 months or medium-term of 36 months). Additionally, a Supreme Committee for Structural Reforms, headed by the prime minister, has been put in place, with a technical secretariat and specialised working groups to follow up on the implementation of the program. The Committee has members from several relevant ministries, the Egyptian Regulatory Reform and Development Activity (ERRADA) initiative and the private sector.

Source: Authors' elaboration based on official information from the Ministry of Planning and Economic Development.

The country has embraced a process of institutional modernisation and red-tape simplification

Egypt has developed an articulated institutional setting to foster economic transformation. The president and the prime minister (PM) chair several ministerial councils to ensure co-ordination at the strategic level. While leadership is key for success, the multiplicity of spaces for co-ordination creates some bottlenecks in fast-tracking the decision-making process.

Since the end of the 1990s, Egypt has undergone a process of institutional strengthening for economic transformation. Several new institutions at the implementation and regulatory level have been created, reflecting the evolving priorities of the national strategies along with new legal frameworks (Box 2.2).

- **Attracting investment**

  Reforms started in 1997 with the creation of the General Authority for Investment and Free Zones (GAFI) in 1997 to regulate investments, and transformed into an investment promotion body under the Ministry of Investment in 2004. In 2019, GAFI became an autonomous agency under the PM's office.

  The Supreme Council for Investment, chaired by the president, was created in 2016. The Council was tasked with supervising investment policies in the country. Based on the Council's recommendations, the Law of Investment Guarantees and Incentives (Law No. 72/2017) was enacted. The law gave the Council authority to approve policies and plans for investments (Box 2.2).

Box 2.2. New legal frameworks in Egypt: A summary of selected laws

Law of Investment Guarantees and Incentives No. 72/2017

Egypt passed a long-promised new investment law in 2017 to boost investment. Under the new law, foreign investors are able to get domestic and even preferential treatment (with approval from the Council of Ministers), guarantees against nationalisation, a unified approval mechanism for companies undertaking strategic projects, and multi-tiered mechanisms for the settlement of investment disputes. In addition, GAFI will provide one-stop-shop investor services through the Investor Service Centre. The Law also announces tax incentives such as:

- A 2% customs tax exemption (down from 5%) on imported equipment and machinery, and exemptions from stamp tax and registration fees.
- A 50% investment tax allowance for priority areas (Sector A: e.g. lagging regions, the Suez Canal Economic Zone, Golden Triangle Economic Zone) and 30% for other specified areas (Sector B: e.g. SMEs, labour-intensive projects, electricity and renewables, tourism, national and strategic projects, projects that export more than 10%, automotive, wood/furniture/printing/packaging/chemicals, pharmaceuticals, agro-food, engineering/metallurgical, textile and leathers).
- Special incentives agreed by the Council of Ministers may include subsidised utilities, free land, cost reimbursement for staff technical training, and the establishment of special customs offices that meet certain criteria, such as projects that are exporting at least 20% of their products abroad or have 50% local content, or are applying the results of R&D carried out in Egypt.

Micro, Small and Medium Enterprise (MSME) Law No. 152/2020

The new Law on MSMEs defines the size of MSMEs according to turnover and capital for manufacturing and non-manufacturing firms, with thresholds amendable by prime ministerial decree. The Law grants a series of incentives, such as:

- Non-tax financial incentives for MSMEs, such as partial or full reimbursements (and in some cases postponement of payment) for certain expenses [e.g. costs for land, participation in exhibitions, infrastructure (utilities installation), facilitations for financing against allocated property, social security, commercial registration], cost-sharing of workers' technical training and exemption of patent registration fees. It also allows for financial incentives from the State Budget (up to 0.3% of GDP, with a minimum of EGP 1.5 billion annually), and announces conditional financial incentives for non-bank financial institutions investing in entrepreneurial enterprises.
- Tax-related financial incentives, such as a tax exemption for capital gains resulting from the sale of assets and machinery if the proceeds are used to purchase new ones, a unified custom duty rate of 2% on imported machinery required for setting up a business, simplified income tax and bookkeeping rules, exemption from income tax for dividend distributions of one-person companies, and a possible partial or full exemption for property tax on buildings for micro and small enterprises for a defined period of time.
- Non-financial incentives, such as the establishment of MSME Service Provision Units in MSMEDA and GAFI offices to streamline licensing; allocation of 30% of unutilised land in industrial zones to MSMEs, along with facilitation for payments of land costs and discounted prices and information provision; a goal to devote at least 20% of public entities' contracts to MSMEs; and various incentives to formalise firms, such as facilitated allocation of property, facilitated procedures for registration and social security, putting on hold lawsuits and penalties,

no retroactive application of taxes, and the application of MSME tax rates to formalised enterprises.

MCIT Decree no. 361/2020: Amendments to the executive regulations of the E-Signature Law

MCIT Decree 361/2020 amended the executive regulations of the e-signature Law No. 15/2004 to provide additional services, such as electronic seals for organisations and government entities (not only for individuals) and timestamp services that link date and time with the electronic document/file. The amendments aim to promote the adoption of e-signature among individuals, businesses, and government entities, as well to keep up with the technological developments in the public-key infrastructure and encryption technology domains. Egypt is in the process of issuing additional licenses for local companies to provide e-signature services in the country.

Source: Official documents and stakeholders interviews; (OECD, 2020[11]) for Investment Law No. 72/2017.

- **Strengthening local industrial capabilities**

In 2000, Egypt set up the Industrial Modernization Centre (IMC) to foster the expansion and upgrading of the Egyptian industrial sector. IMC provides advisory services to firms and fosters business linkages.

In 2006, the Ministry for Trade and Industry (MTI) reunited the former ministries of trade and industry to strengthen industrial development and streamline production policies.

In 2017, the Medium, Small and Micro Enterprises Development Agency (MSMEDA) was established, replacing the Social Fund for Development that had been set up in 1991 to develop MSMEs and entrepreneurship in Egypt through enhancing the business environment, facilitating access to finance and raising awareness among others. A Law on MSMEs was enacted in 2020 (Law No. 152/2020), which replaced the previous Small Enterprises Law of 2004 and provided financial and non-financial incentives (Box 2.2). The Export Development Authority was established in 2017 to promote exports through the management of export grants, information dissemination, business matchmaking and capacity building.

In 2016, Law No. 83/2016 amended Law No. 7/1991 on the privately State-Owned Properties and granted the Industrial Development Authority (IDA) the authority to manage, exploit and dispose of lands allocated for Industrial development. In 2018, the role of IDA was strengthened with Law No. 95/2018, which transformed it into an economic entity and granted it more authority to allocate and manage lands for industrial use. The executive regulations of Law No. 95/2018 were issued in May 2021.

- **Fast-tracking digitalisation**

In 2019, the National Council for Artificial Intelligence was created, under the responsibility of the MCIT and with the inclusion of other relevant ministries, to steer national policies in this field.

While the creation of the new agencies and legal frameworks went hand-in-hand with the recognition that the country requires a modernised institutional setting to deal with emerging global, continental and national issues, it has also led to institutional proliferation. For example, GAFI, MSMEDA and IDA all have responsibilities in attracting manufacturing investments. There are also overlaps when it comes to sectoral support. The Information Technology Industry Development Agency (ITIDA) under the Ministry of Communication and Information Technology (MCIT) disburses funding for research projects and start-ups, including some electronics firms, whereas the Engineering Export Council and IMC also offer support across the value chain (see Chapter 3). Some common funding instruments, such as a joint fund between IMC and the Science and Technology Development Fund (STDF) for industry-academia linkages, and the

position of representatives from different ministries in specialised agencies, aim to facilitate co-operation among relevant authorities.

In recent years, Egypt has also reduced administrative burdens, mostly through reforms to simplify the following:

- **Trade and customs**. Egypt has introduced the National Single Window (NSW) (completed in 2021), which operates as an online platform to speed up customs processes. The transition to the NSW is part of Customs Law No. 207/2020, which aims to simplify customs procedures within the framework of Egypt's national strategy to take advantage of the African Continental Free Trade Area (AfCFTA) (see Chapter 4 of this PTPR for more information on Egypt and AfCFTA). As part of the law, the Ministry of Finance issued Decree No. 38/2020 on Advance Cargo Information (ACI) to speed up and simplify cargo clearance.
- **Business registration**. Egypt reduced the red tape associated with setting up new business through Law No. 15/2017 on the Simplification of the Procedures for Licensing Industrial Installations (Industrial Licensing Law), which reduced the paperwork and time required to open up an industrial facility. The time required to receive a license was reduced to 7 days, compared to up to 600 previously. The investment Law No. 72/2017 and MSME Law No. 152/2020 also simplified registration procedures for MSMEs and increased incentives for investments, while MSMEDA operates one-stop-shops to enable quick registration for MSMEs.
- **Closing down businesses.** A new bankruptcy law (Law No. 11/2018) introduced a shorter timeline for procedures, added flexibilities for seeking business reorganisation and decriminalised bankruptcy, bringing the country closer in line with global standards.

Box 2.3 summarises the current institutional governance structure regarding policies for production, development and innovation.

Box 2.3. A brief overview of Egypt's institutional setting to foster economic transformation

In Egypt, the president, the prime minister, and multi-agency councils chaired by the president or prime minister, play a central role in charting strategies for economic development. Councils aim to facilitate cross-ministerial co-operation and ensure that policies designed at the ministerial level meet national strategic objectives.

Several ministries and agencies are in charge of portfolios linked to production transformation, notably:

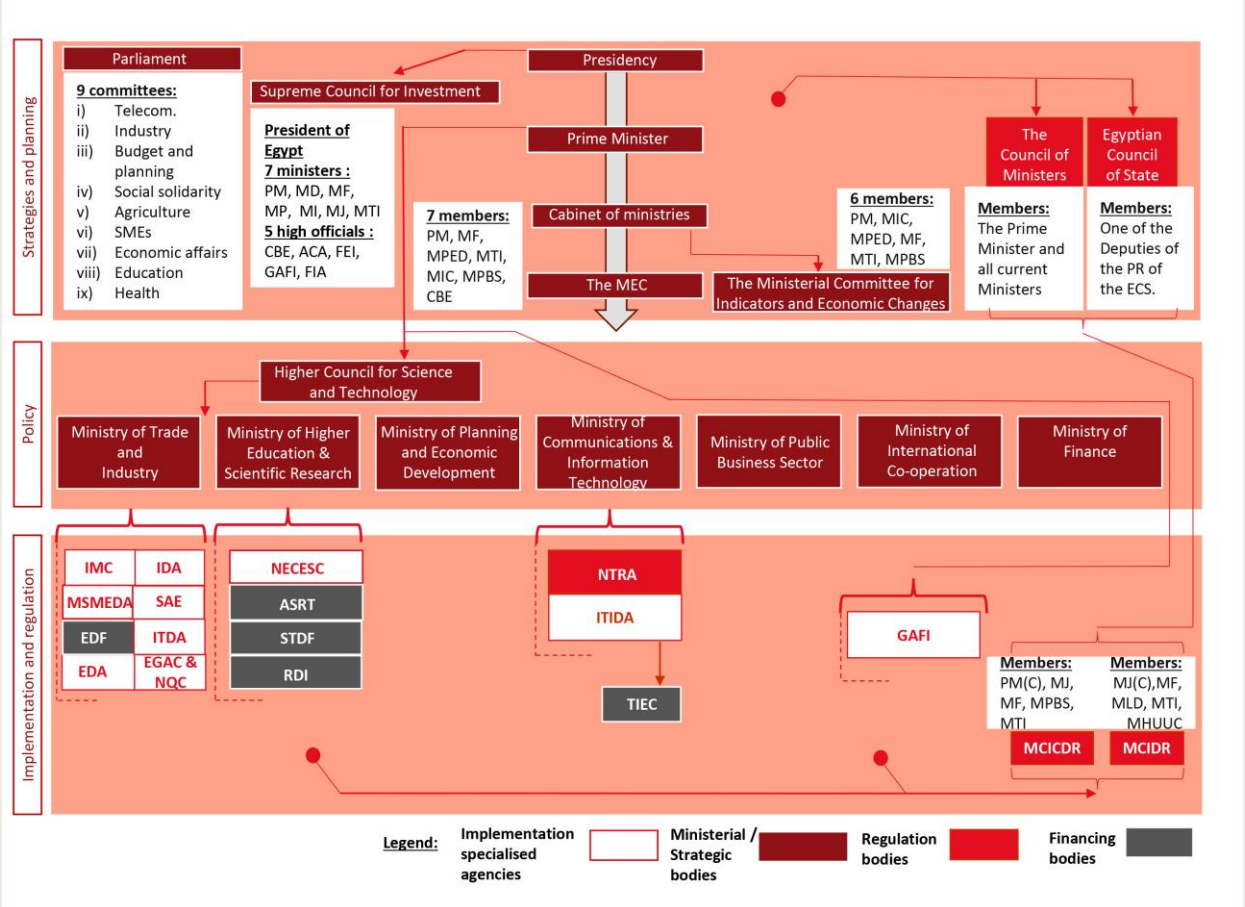
- The Ministry of Planning and Economic Development, which elaborated Egypt Vision 2030 and the National Structural Reforms Program 2021-24.
- The Ministry of Trade and Industry (MTI), which launched the Industry and Trade Development Strategy (ITDS) (2016-20) and is currently elaborating the Inclusive and Sustainable Industrial Development Strategy (ISIDS) (2020-24) – with a view to fostering trade and integration in global value chains, digitalisation and Industry 4.0, increasing local value addition and sophistication, clean and sustainable production, and SMEs.
- The Ministry of Communications and Information Technology (MCIT), which in 2016 launched the Egypt ICT Strategy 2030 to boost digital infrastructure, skills, ICT innovation and technology development.
- The Ministry of Higher Education and Scientific Research (MHESR), which has launched the National Strategy for Science Technology and Innovation (STI) (2015-30) to boost innovation in the private and public sectors.

- The Micro, Small and Enterprise Development Agency (MSMEDA) is developing the 5-year MSME and Entrepreneurship National Strategy and its operational plan to address barriers that MSMEs face in Egypt in line with Vision 2030.

Other ministries also hold relevant roles, such as the Ministry of Finance, the Ministry of Public Business Sector and the Ministry for International Co-operation. Specialised agencies attached to ministries are tasked with regulatory functions, strategy implementation, monitoring and evaluation, and funding.

Multiple business associations, chambers of commerce, and consultation bodies exist in Egypt. Among the more prominent ones are the Federation of Egyptian Industries (FEI), which dates back to 1922, and the 13 sector-specific export councils set up in 2005 by MTI (engineering, food, medical devices, agriculture, readymade garments, building materials, home textiles, printing and packaging, leather, construction, textiles, furniture and chemicals). These bodies are engaged in the policy-making process through formal consultation and through membership in multi-stakeholder bodies and participation in the boards of specialised agencies. For example, FEI participates in the Supreme Council for Investment and sits on the board of Egypt's Internal Trade Development Authority (ITDA), while MTI regularly consults with the Export Councils, FEI and other bodies for designing and adapting policies. The Export Councils are also important for disbursing firm-level services to promote exports, often in co-operation with the Export Development Authority (EDA). The FEI president and the chairpersons of the Export Councils are appointed by the Minister of Trade and Industry.

Figure 2.1. Institutional governance for economic transformation in Egypt, 2021



Note: The figure does not include all institutions in Egypt; it includes only the principal ones linked to policies for production, development and innovation. ACA: Administrative Control Authority; ASRT: The Academy of Scientific Research & Technology; CBE: Central Bank of Egypt; ECS: Egyptian Council of State; EDA: Export Development Authority; EGAC: Egyptian Accreditation Council; FEI: Federation of Egyptian Industries; FIA: Federation of investors associations; GAFI: The General Authority for Investment and Free Zones; IDA: Industrial Development Authority; IMC: Industrial Modernization Centre; ITDA: Egyptian Internal Trade Development Authority; ITIDA: Information Technology Industry Development Agency; MCICDR: Ministerial Committee on Investment Contracts Dispute Resolution; MCIDR: Ministerial Committee on Investment Dispute Resolution; MD: Ministry of Defence; MEC: The Ministerial Economic Commission; MF: Ministry of finance; MHUUC: Ministry of Housing, Utilities and Urban Communities; MI: Ministry of Interior; MIC: Ministry of International Cooperation; MJ: Ministry of Justice; MLD: Ministry of Local Development; MP: Ministry of Military Production; MPBS: Ministry of Public Business Sector; MPED: Ministry of Planning and Economic Development; MSMEDA: Micro, Small and Medium Enterprise Development Agency; MTI: Ministry of Trade and Industry; NECESC: The Egyptian National Commission for Education, Science and Culture; NTRA: The National Telecom Regulatory Authority; NQC: National Quality Council; PM: Prime minister; RDI: Research, Development and Innovation Programme; SAE: Export Council & development bank; STDF: Science and Technology Development Fund; TIEC: The Technology Innovation and Entrepreneurship Center.
Source: Authors' elaboration based on official information.

Egypt identifies Industry 4.0 as a game changer for the future

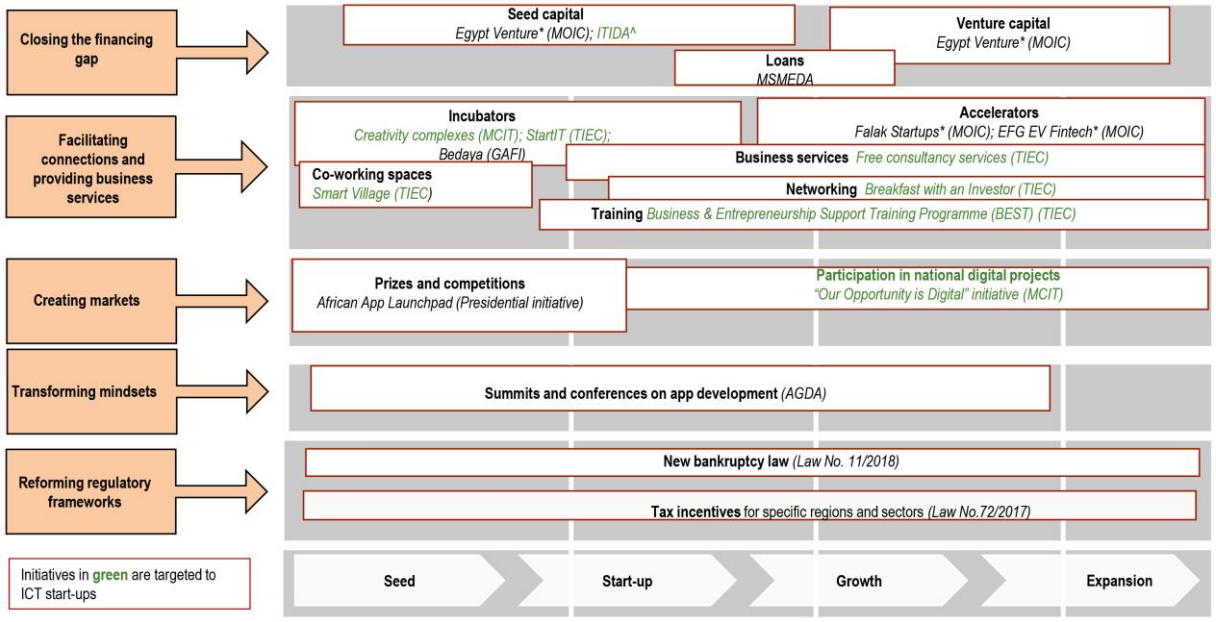
Egypt is fostering the adoption and development of Industry 4.0 around five main areas under the umbrella of the Digital Egypt ICT 2030 strategy and the national AI strategy:

- **Upgrading digital connectivity**. This area includes achieving fast and affordable Internet, expanded Internet coverage and improved electricity reliability. Among the actions in this area, it is worth noting the investments in 4G/5G networks and fibre optic networks by public and private operators, and the launch of the Tiba-1 satellite for increased call and Internet coverage. Egypt has increased investment in digital infrastructure, dedicating USD 1.6 billion since the mid-2018s to modernise it, including efforts to replace copper cables with fibre optic ones and investing in 5G infrastructure.
- **Modernising regulations.** In this area, Egypt has issued new regulations for the digital economy, enabling digital payment options through the E-Payments Law No. 18/2019 and the Personal Data Protection Law (No. 151/2020). The MCIT Decree No. 361/2020 amended the executive regulations of the E-Signature Law to further facilitate the use of e-signature in Egypt and foster digital government, and was followed by the issuing of more additional licenses for local companies to provide e-signature services in Egypt. In 2019 it also set up pilot projects for digital delivery of 155 government services in Port Said (an activity led by MCIT in partnership with relevant ministries). The government has also upgraded its quality infrastructure by setting up the National Center for Telecommunication Services Quality Monitoring in 2020, led by the National Telecom Regulatory Authority (NTRA) under MCIT. In addition, NTRA has auctioned additional spectrum for mobile telephony and mobile broadband, through a process that concluded in December 2020.
- **Fostering digitalisation in firms.** The country has been introducing new incentives to fast-track digitalisation in firms and to support R&D, prototyping and testing in this area. Among them, it is worth noting the focus on providing start-ups and other businesses with guidance and resources to develop technologies relevant to Industry 4.0. For example, the Information Technology Industry Development Agency (ITIDA) and MCIT are establishing innovation hubs (three Electronics Innovation Complexes and seven innovation hubs at Universities) across Egypt to foster start-ups through the provision of development tools, testing facilities, co-working spaces and prototyping/digital fabrication facilities. MCIT with MTI and the private sector are also setting up a dedicated Industry 4.0 Innovation Centre (IIC) in Knowledge City, a part of the New Administrative Capital, with the aim of conducting assessments, engaging in capacity building and demonstrating best-use cases, based on the example of Germany's Industry 4.0. The country has also issued,

through the NTRA, challenges for robotics and autonomous vehicle research and has a Fintech Innovation Fund of about USD 64 million managed by the CBE to invest in fintech firms and investment funds. Egypt has also introduced fiscal incentives of up to 10-20% of exported value-added for digital services, up to approximately USD 150 000 (managed by ITIDA). A digital platform was established by MSMEDA in 2018 to facilitate information-sharing on the various services (e.g. financing and training) provided to MSMEs to support firms to start their business and develop them, along with a marketplace to help SMEs find new markets.

- **Fostering start-up creation**. Egypt has strengthened the promotion of start-ups since 2016 (GEM and AUC, 2019[2]). Following the establishment of MSMEDA in 2017, a number of initiatives have strengthened Egypt's policy mix for start-ups. Ministries and agencies have increased programmes and outreach to start-ups, particularly those in ICT (Figure 2.2). Efforts have been made to fill in the funding gap. The Ministry of International Cooperation (MOIC) has partnered with the private sector to create Egypt Venture, which funds start-ups, accelerators and other funds, and also to set up two accelerators, Falak start-ups and EPG EV Fintech. MSMEDA has also created a venture capital unit to support start-ups through direct investments in venture capital companies, incubators and accelerators, as well as loans to venture capital firms and early stage start-ups that partner with a strategic investor. The Ministry of Communication and Information Technologies (MCIT), together with its agencies ITIDA and the Technology Innovation & Entrepreneurship Center (TIEC), also provide a full chain of support for ICT-related firms, from seed capital to incubation services, business consultancies and networking opportunities. Some of this is directed specifically at boosting Industry 4.0 technologies. ITIDA has partnered with Innoventure and AUC Venture Labs to provide incubation, acceleration services and venture capital for start-ups engaged in electronics design, Industry 4.0 manufacturing and Internet of Things (IoT) systems. ITIDA's funding ranges between EGP 0.5 and 2 million (approx. USD 31-125 thousand) in return for 2-4% equity for between half a year and two years. Through the "Our Opportunity is Digital" Initiative, MCIT is also setting aside at least 10% of public digital transformation projects for SMEs and start-ups, boosting demand.
- **Upgrading skills.** Since 2016, MCIT has introduced several initiatives to increase the availability of, and financing for, training for basic digital skills among youth, and also of more advanced courses on information technologies. Dedicated centres are also being set up to build capabilities in innovating in emerging technologies, and international partnerships play a key role in this area. Egypt now has a variety of platforms/initiatives for training in digital skills, such as Future Work is Digital (training for web, data, and digital marketing for young people), Next Tech Leaders (45 advanced digital technologies for students, university staff, and professionals), Mahara-Tech [an initiative of MCIT, ITIDA and the Information Technology Institute (ITI) offering training in IT fields for young people and occasional private sector partners], and the Internet of Things Academy for training in IoT through the Mahara-Tech platform (ITI/ASRT). Advanced training is also offered through the Applied Innovation Center, which fosters R&D and skills development through international partnerships in artificial intelligence, an initiative to train trainers for digital technology (managed by the National Telecommunication Institute and Huawei) and the Advanced Training Centre for automation, IoT and other Industry 4.0 technologies, which offers vocational training (Siemens and MTI).

Figure 2.2. Egypt's policy mix to support start-ups, 2021



* Joint venture with private sector.
^ Implementation through private sector firms, such as AUC and Innoventures.
Note: TIEC: Technology Innovation and Entrepreneurship Center.
Source: Authors' elaboration.

Egypt's increasing efforts to mobilise public and private investments and international partnerships to enable its firms and talents to operate in an Industry 4.0 landscape are in line with global trends. Several countries are defining public policies to benefit from Industry 4.0. Germany, Italy and Malaysia are among countries that have elaborated plans to expand the adoption of Industry 4.0 in their industrial ecosystems (Table 2.1).

Table 2.1. Several countries are taking steps to reap the benefits of Industry 4.0

		Germany	Italy	Malaysia	Egypt
Strategy		Economy and Work 4.0 (part of High-Tech Strategy 2025)	Piano Transizione 4.0 2020-22	Industry 4WRD (National Policy on Industry 4.0)	Digital Egypt, Egypt Makes Electronics Initiative and National AI Strategy
Time horizon		2020-25	2020-22	2018-28	2015-30
Public budget		n/a	EUR 9 billion	USD 1.3 billion (2019)	n/a
Governance		Cross-ministerial, multi-level and participatory	Cross-ministerial and participatory	Cross-ministerial, multi-level and participatory	Strategies led by one ministry
Prioritisation	Technologies	Artificial intelligence, microelectronics, quantum technologies, biotech, materials,	IoT, robotics, big data analytics additive manufacturing, augmented realty	n/a	IoT, big data analytics, AI, microelectronics, digital fabrication, additive manufacturing, robotics, cybersecurity

	Industries/ areas	Aviation, logistics, retail, agriculture	Machinery equipment, mechanical engineering, agro-food, design	Electronics and electrical, machinery and equipment, chemical, medical devices, aerospace	Engineering industries sector, agro-food, smart cities related industries

Note: n/a: not available.
Source: Authors' elaboration.

For Egypt to advance in enabling a transition towards Industry 4.0, five issues are of particular importance, based on international experience:

- **Bringing partners together for a common vision**. Egypt has a complex governance structure which calls for co-ordination at the top level for strategy definition. While strategies for Industry 4.0 differ from country to country in terms of vision, ambition and focus, they tend to share one characteristic regarding their governance: they are cross-ministerial and multi-stakeholder, bringing the private sector in as a key partner in policy development and implementation. Public sector co-operation often brings together ministries and agencies that work on industrial development and innovation with those that are responsible for ICT. This is also complemented by spaces where the private sector, academia and government can define a vision for the future, priorities, respective responsibilities and financing (Box 2.4). Egypt would benefit from creating institutional spaces or mechanisms that can bring together all the relevant partners to develop a common vision for Industry 4.0 and co-ordinate its implementation.
- **Mobilising resources that match ambition**. Enabling the shift from traditional manufacturing to Industry 4.0 will be no easy feat and will require investment commitments by both private and public sectors. Countries are investing large resources to shape the future, create the hard and soft infrastructure necessary for Industry 4.0, build skills and reduce risks for firms experimenting with new technologies.
- **Modernising institutions for metrology and standards**. Standardisation is of central importance to the implementation of Industry 4.0. The transition to Industry 4.0 relies on an unprecedented integration of technologies and systems across different domains. As a result, quality infrastructure also needs to respond to a large number of technologies, scientific areas and stakeholders. Not only is close co-operation between research, industry, national metrology institutes and standardisation bodies necessary for realising quality infrastructure for Industry 4.0 at the national level, but it is also needed to have a strong global presence and voice. Egypt has a long-established and relatively dense quality infrastructure. The Egyptian Organisation for Standardization and Quality (EOS) (under the purview of MTI) was established in 1957, followed in 1963 by the National Institute of Standards (NIS), the National Metrology Institute (NMI) of Egypt (under MHESR), and the Egyptian Council for Accreditation (EGAC) (also under MTI). The Ministry of Electricity and Renewable Energy and MCIT also play a big role in technological standards. Egypt is also an active member of several important international quality infrastructure (QI) institutions, such as ISO, IEC, ITU and ARSO. In the context of Industry 4.0, collaborations have been emerging among institutions. For example, NTRA has been working with EOS to prepare joint positions on technology standards. NTRA has also established a roadmap for investing in R&D programmes for techno-regulatory and standardisation work in Industry 4.0 that aims to finance joint R&D initiatives and partnerships (NTRA, 2021[3]). However, there is still untapped potential in developing synergies and joint work between the different institutions and building mechanisms for working together with the private sector and academia to advance the Industry 4.0 agenda. There are different approaches to making this co-operation happen. In Germany, for example, quality infrastructure is preparing for digitalisation by building on multi-stakeholder co-operation among several different platforms (Box 2.5).

- **Putting in place targeted tools to enable all firms to benefit from Industry 4.0.** Egypt's approach to Industry 4.0 is similar with those of other countries, notably in setting up targeted incentives for firms to create and adopt Industry 4.0 technologies. Even though each country has a different policy mix, they all have in place specific incentives addressed to existing firms. Italy and Malaysia employ a more varied policy mix than Egypt, however, with Italy making extensive use of tax credits for R&D, training and application of Industry 4.0 and Malaysia committing up to USD 55 million for matching grants to firms to cover expenditures such as R&D, training, modernisation, licensing of new technologies and obtaining standards. In contrast, Egypt's policy mix is more focused on start-up development, particularly in ICT areas. Extending support to other types of firms would contribute to a wider adoption of Industry 4.0 among Egypt's industrial players.

  In addition, beyond start-ups, countries are implementing dedicated actions to support SMEs' efforts to adopt or develop Industry 4.0 technologies**.** The approach differs across countries, with some opting for crafting incentives and services specifically targeted to SMEs and others putting emphasis on setting up institutions for technology diffusion. Egypt, too, promotes Industry 4.0 in SMEs by stimulating demand through the "Our Digital Opportunity" initiative that engages SMEs in national digital transformation projects and supports start-ups through dedicated infrastructure and venture capital investments. The country is also in the process of setting up a dedicated Industry 4.0 Innovation Centre that will raise awareness and capacities. The function of such a centre could be boosted by enabling partnerships with other sources of knowledge and expertise in the local ecosystem (e.g. universities, federations of industry). In Italy, for example, competence centres are part of a wide net of partnerships that involves academia and the private sector to ensure MSMEs have access to multi-level support, from simple awareness raising to testing and technology development (Box 2.6).

- **Boosting partnerships between private sector and universities.** The country's universities could also provide an invaluable partner in implementing Industry 4.0. Already universities in Egypt are hosting incubators for start-ups, and could do more to work with the private sector to develop targeted solutions, infusing the local ecosystem with talent and expertise where possible. However, this would require pursuing outreach across the aisles to stimulate and map interest and opportunities to collaborate with different stakeholders. In addition, building partnerships would also require scaling up resources for joint research, and setting up mechanisms for long-term collaboration matched with appropriate conditionalities.

Box 2.4. Breaking silos for Industry 4.0: The example of Malaysia

In Malaysia, Industry4WRD, the country's strategy to promote Industry 4.0, was launched by the Ministry of International Trade and Industry (MITI) in 2018. The country dedicated at least USD 107 million in 2019 across several support actions, and has made available up to USD 1.2 billion in low-interest loans and guarantees to operationalise the strategy through a combination of different tools, such as a matching grants for investment in automation equipment, the conduct of R&D and other innovation activities, together with soft loans and tax allowances. In line with Industry4WRD's key pillar on inclusive involvement of SMEs, Malaysia has also adopted policy tools specific to SMEs, such as the Readiness Assessment (RA) programme. Using a combination of online questionnaires and on-site visits, an RA is carried out for SMEs that identifies potential gaps; based on its outcomes, SMEs can also apply to reimburse up to 70% of eligible expenditures (up to approximately USD 120 000).

Industry4WRD was developed in co-operation with several different ministries and in extensive consultation with the private sector. The strategy also features multi-ministerial and multi-stakeholder mechanisms in its implementation. MITI oversees and chairs an Industry4WRD council that has stakeholders across government and industry and meets twice a year. High-level task forces under the Council have also been

set up, as well as specialised technical working groups led by different ministries and co-chaired by the private sector. These span Funding (Ministry of Finance), Infrastructure (Ministry of Communication and Multimedia), Regulations (MITI), Skills and Talent (Ministry of Human Resources, Ministry of Education) and Technology (Ministry of Science, Technology and Innovation). The high-level task force and working groups meet quarterly.

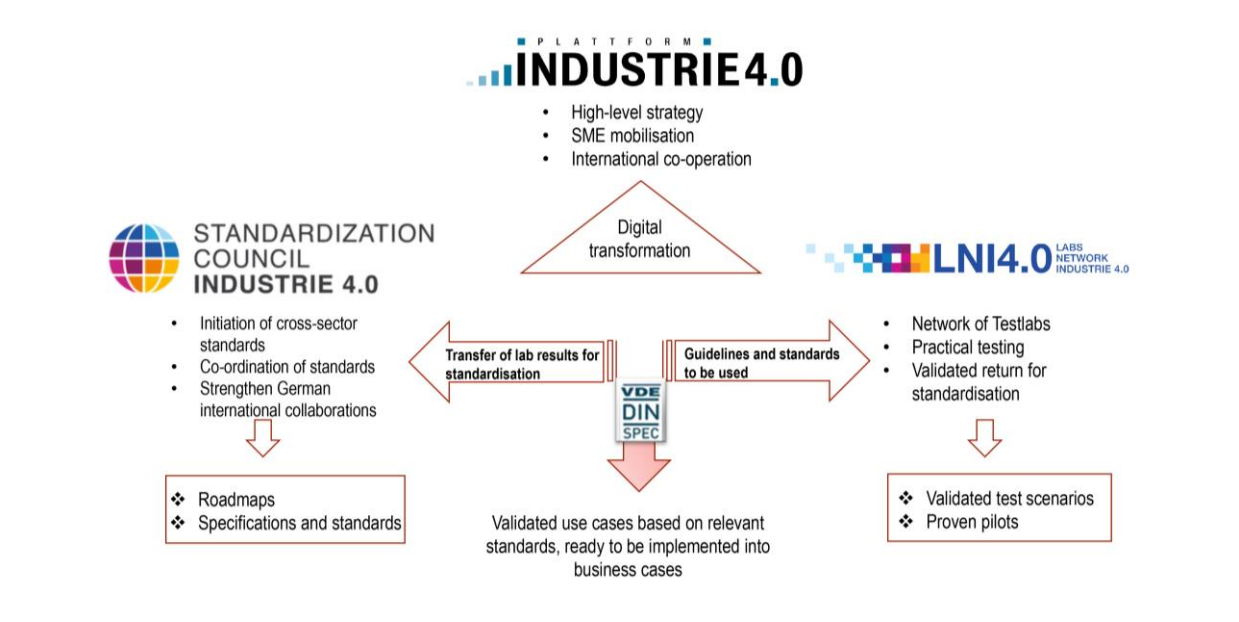
Source: Rob Cayzer (2020), "Industry 4.0: The experience of Malaysia", MARA Corporation, Malaysia, presentation at the PTPR Peer Learning Group (PLG) of Egypt *"Accelerating the transition to industry 4.0 in a post-Covid-19 landscape",* 10 September 2020.

Box 2.5. Updating metrology and quality infrastructure for Industry 4.0: The experience of Germany

In Germany, standards for Industry 4.0 are created through co-operation among three linked institutions set up to facilitate interactions between the private sector, government, research and civil society (Figure 2.3):

- Platform Industrie 4.0: A multi-stakeholder group responsible for elaborating and implementing the country's strategies regarding Industry 4.0.
- Labs Network Industrie 4.0 (LNI4.0). This institution fosters knowledge transfer and develops certifications and benchmarks measurements related to new, disruptive technologies. Validated results from test projects enter the standardisation process through the LNI4.0. The guidelines and standards to be used by the LNI4.0 derive from the Standardization Council Industrie 4.0.
- Standardization Council Industrie 4.0 (SCI 4.0). The SCI 4.0 was founded by the German private sector with the aim of proposing standards for digital production and co-ordinating them nationally and internationally. It is an initiative originating from Bitkom (an association for digital economy companies), DIN (the German Institute for Standardization), DKE/VDE (the German Commission for Electrical, Electronic & Information Technologies), VDMA (the Mechanical Engineering Industry Association) and ZVEI (the German Electrical and Electronic Manufacturers' Association). The SCI 4.0 has also taken over the co-ordination between industry players and various European and global standardisation bodies, such as the ITU.

Figure 2.3. Industry 4.0 and quality infrastructure in Germany



Note: The links to the three platforms are as follows: https://www.plattform-i40.de/PI40/Navigation/EN/Home/home.html; https://www.sci40.com/english/; https://lni40.de/

Accurate measurements for Industry 4.0 are an important part of quality infrastructure. In Germany, the PTB (the National Metrology Institute of Germany) launched a Digitalisation Strategy in 2017 aiming both to digitalise metrological services and to advance the metrology of new technologies. The PTB aims to implement a digital calibration certificate (DCC) that can accelerate the automatisation of the calibration process. The PTB is also working through EURAMET (the European Association of National Metrology Institutes) on a "Metrology Cloud" (i.e. a digital quality infrastructure).

Source: Karl-Christian Göthner, German National Metrology Institute (PTB), background information provided for the PTPR Peer Learning Group (PLG) of Egypt, held virtually, 10 September 2020.

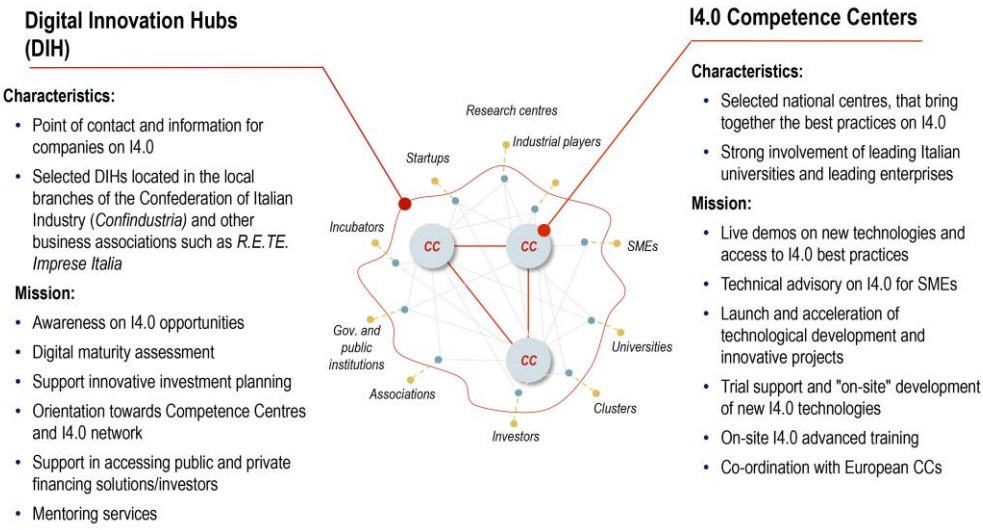
Box 2.6. Partnerships for technology diffusion in Industry 4.0: The example of Italy

Italy is committed to fostering the transition towards Industry 4.0. With its *Piano Transizione 4.0 2020-22* (*Transition Plan 4.0),* Italy is building on the country's previous experience to further strengthen the adoption of Industry 4.0 technologies, particularly among smaller firms. The *Piano Transizione 4.0* allocated a further EUR 9 billion for 2020-22, combining innovative investments with broad fiscal measures to stimulate Industry 4.0 across Italian firms. It updated, via the National Budget Law 2020 (Law No. 160 of 2019), several existing measures and introduced new ones. The reforms expanded the number of firms eligible for R&D tax credits, brought in new beneficiaries (e.g. higher institutions for training incentives), and broadened the scope of activities for Industry 4.0 to include the circular economy, environmental sustainability and the support of the Made in Italy brand.

In addition, Italy seeks to strengthen the role of SMEs in Industry 4.0 through the Digital Innovation Hubs (DIHs) and Industry 4.0 ("I4.0") Competence Centres (Figure 2.4). Overall, the aim of these institutions is

to guide companies, particularly SMEs, towards a transition to Industry 4.0 technologies by increasing awareness, providing training and measurement services to entrepreneurs for innovation and research projects, and facilitating access to best-use cases. The core of both hubs and centres is the strong partnerships that build on the long-standing experiences of industrial and business associations and leading national universities.

Figure 2.4. Digital Innovation Hubs and I4.0 Competence Centres, Italy



The DIHs are established within and run by the regional branches of the Italian Confederation of Industry *(Confidustria)* and other business associations such as R.E TE. (Italian Enterprise Network). They represent the boundaries of the ecosystem through which firms and entrepreneurs are guided and receive mentoring support. The Competence Centres are the nodes of the network and carry out training activities for companies as well as support the implementation of innovation projects, industrial research and experimental development in the area of I4.0. They also provide training, live demonstrations, presentation of best practices, and technical advisory services for SMEs. A public tender process run by the Ministry of Economic Development in 2020 led to the selection of 8 centres hosted by universities and research institutes including the Polytechnics of Turin and Milan; the Universities of Bologna, Padua, Naples (Federico II) and Rome (La Sapienza); the Sant'Anna School of Advanced Studies (Pisa); and the Italian Research Council (CNR). The selected centres receive direct financial support as follows:

- Establishing the centre: 50% contribution of expenses incurred, up to EUR 7.5 million.
- Launching innovation, industrial research and experimental development projects in co-operation with companies: up to 50% of expenses incurred, up to EUR 200 000 per project.

Source: Paolo Carnazza (2020), "Industry 4.0: The experience of Italy", Directorate-General for Industrial policy, Innovation and SMEs (DGPICPMI), Ministry of Economic Development, Italy, presentation at the PTPR Peer Learning Group (PLG) of Egypt *"Accelerating the transition to industry 4.0 in a post-covid-19 landscape",* 10 September 2020.

Harnessing the potential of industrial parks in Egypt

Egypt has heavily relied on industrial parks to foster its industrialisation and upgrading. The first industrial parks in Egypt were established following the opening-up reforms started in 1973. Since then, the country has continued to rely on industrial parks within the country's various zones as tools for fostering local industrial development and attracting foreign direct investment (FDI). More recently, the country has been working to develop the investment attraction and export-oriented growth potential of the Suez Canal through the Suez Canal Economic Zone (SCZone) (Box 2.7). Industrial parks in Egypt follow traditional models. They consist of dedicated land and infrastructure spaces in which firms can access a wide range of services while setting up operations that benefit from the special conditions and incentive packages.

Prior to the pandemic outbreak, Egypt prioritised, as outlined in Egypt's *Vision 2030* national agenda, the building of new industrial parks and increasing investments in old ones as a tool to foster industrial upgrading, boost local development, decrease informality, increase employment, and stimulate trade with Africa and Europe. As part of the national vision, the Industry and Trade Development Strategy 2016-20, launched by the Ministry of Trade and Industry (MTI) in 2016, announced the creation of 22 industrial parks, 13 of which have already been constructed in 12 governorates in industrial zones. A total of EGP 5.4 billion (approx. USD 340 million) has been allocated from the state budget for the creation of the 13 parks. In line with the government priority of fostering local development, most of these have been built in Upper Egypt (9) and the rest are located in the governorates of Alexandria, Al Buhayarah, El Gharbeya and Red Sea governorates. The government estimates that the completed parks will be able to house up to 4 500 companies. The public parks aim to complement efforts by the private sector, which since the mid-2000s has started to build and manage parks within industrial zones in the Cairo region.

Ownership and management of the newly constructed public industrial parks sits with the Industrial Development Authority (IDA), an agency affiliated with MTI. IDA is responsible for selling and renting units in constructed parks; issuing all relevant licenses, approvals and permits; and releasing land, providing infrastructure, and granting licenses to private park developers for the establishment and management of private industrial zones. The parks benefit from the incentives stipulated in Egypt's Investment Law No. 72/2017 as well as additional incentives by IDA, such as facilitating land payments in instalments and partial exemptions from licensing fees for micro and small projects. Following a Memorandum of Understanding (MoU) between IDA and MSMEDA to co-operate on industrial parks in 12 governorates, MSMEDA is responsible to provide financing for the implementation of small industrial projects and a package of non-financial services, such as market and training services.

Compared to previous efforts, Egypt's current policy for industrial parks is more targeted and specialised, and now prioritises continental value chain development. Whereas previously industrial parks mostly attracted firms with no specific industrial or sectoral focus, the current policy seeks to attract firms operating in the same value chain with a view to leveraging the co-location in the park to develop specialised industrial clusters and foster co-ordination between firms. These efforts complement other initiatives as the Leather special zone in the Robeky area located in the Eastern side of Greater Cairo and one for furniture in New Damietta.

Industrial parks are costly projects that require multi-year financing. Development banks are thus key partners in implementing effective industrial park project development. The Africa Import-Export Bank (Afreximbank), a pan-African multilateral trade finance institution created in 1993 under the auspices of the African Development Bank, actively supports industrial parks on the continent. Afreximbank's vision is to stimulate Africa's trade diversification and increase the continent's share of global trade. The bank holds approximately USD 15 billion in assets and has 51 participating member states. Supporting the development of industrial parks and special economic zones forms a core part of Afreximbank's strategy to foster structural transformation in Africa. In fact, the Bank aims to create 3 000 hectares of industrial parks and SEZs across sub-regions by 2021 (Box 2.8).

Box 2.7. Reaping the fruits of a strategic location with the Suez Canal Economic Zone (SCZone)

Egypt has been actively promoting investments in mega projects as part of Egypt's Vision 2030 to create jobs and achieve sustainable growth, but also to better integrate itself in the global economy. One of the projects that stands out as a priority is the development of the Suez Canal Economic Zone (SCZone). Established on 461 km² of land, which encompasses six maritime ports, it is strategically located along the international waterway of the Suez Canal. It aims at reinforcing the position of the Suez Canal as a global maritime trade route, and exploiting its potential for investment attraction and export-oriented growth. With annual traffic of over 17 000 vessels of around 10% of global trade, the Suez Canal represents a major trade route between Europe and Asia as well as Europe and all of Africa.

The SCZone has recently developed a Strategy for 2020-25 to become an international investment hub and an export platform with a distinctive access to African markets. To support the implementation of the Strategy, the SCZone relies on several value propositions, namely the set-up and ecosystem readiness, regulatory framework, financial incentives, provision of services, and the cost advantage. The SCZone has four industrial zones (Sokhna, East Ismailia, Port Said, and Qantara West industrial zones), targeting various types of manufacturing investments within a wide range of industrial clusters. While it has a focus on maritime-related services, it is also striving to provide an attractive investment environment for medium, light and heavy manufacturing industries as well as higher value-added services such as renewable energies and information and communication technology. Other sectors that are targeted include pharmaceuticals, agribusiness, textiles and consumer electronics.

The Covid-19 health and economic crisis may have important implications for the SCZone's future investments. While the future remains uncertain, it may affect multinational enterprises (MNEs) decisions to reorganise the geographical and sectoral spread of their production activities, providing possible opportunities for the SCZone. MNEs could shorten their supply chains and reduce the distance between suppliers and clients, or choose to move manufacturing activities back to their home country. Some companies may diversify their supply networks in order to increase resilience to shocks, which will involve divestments from some locations but expansion in others, providing opportunities for Egypt in sectors such as electronics and electrical equipment (see Chapter 3). For the SCZone, such changes will also require a rethinking of investment strategies and business climate reforms to manage investor expectations, new sectoral prioritisation and better targeting, as well as improved investment facilitation through digitalisation.

Source: OECD (2020[4]; 2020[5]), N Gage Consulting (2016[6]) and SCzone (2021[7]).

Box 2.8. Investing in industrial parks: The role of Afreximbank

To foster the creation of industrial parks in Africa, Afreximbank offers five instruments:

- *Project finance for Industrial Parks and Special Economic Zones (SEZs):* These programmes seek to provide debt financing for developing industrial parks and SEZs, covering infrastructure development both within and outside of "the fence". One example is the USD 1 billion China Africa industrialization Programme (CAIP) jointly developed by Afreximbank and China

Eximbank in 2016 to provide debt financing for the design and construction of parks and SEZs, the establishment of manufacturing facilities within them, and the development of logistics and trade-facilitating infrastructure.

- *Afreximbank's Project Preparation Facility (APPF):* APPF supports public and private sector entities in preparing projects that will attract equity and debt finance. Structured as a self-sustainable revolving fund operated on commercial terms, APPF finances activities such as advisory services, technical studies and assistance.
- *Trade finance facilities*: These facilities can support export trading companies (ETCs) within industrial parks with letters of credit, pre-export finance, payment guarantees, factoring solutions, stocking and inventory financing, export credit insurance and packing credit.
- *Fund for Export Development in Africa (FEDA):* Through FEDA, Afreximbank intervenes in the form of equity or quasi-equity to support, among others, companies in industrial parks and ETCs.
- *Advisory services:* This instrument provides advice to promoters of projects related to capital market and debt solutions, as well as to trade information, investment promotion and market access.

While the Bank's initiative to promote industrial parks in the continent is recent, some projects are already bearing fruit. In Gabon, Afreximbank has provided financing for the Gabon Special Economic Zone (GSEZ). The GSEZ, a joint venture between Olam International, the Republic of Gabon, and Africa Finance Corporation, was established in 2010 and is focused on timber processing and furniture, with approximately 1.2 million cubic meters exported annually. In 2018 Afreximbank provided a USD 35 million revolving trade financing facility to CDC Gabon, which manages GSEZ, to provide tenants with the capital needed to process timber for exports. Additionally, Afreximbank provided a bond-backed medium-term loan for the extension of a railway line from the GSEZ to the Owendo International Port and the GSEZ mineral port in Gabon. The increased transport connectivity for GSEZ is expected to reduce the cost of production and exports. Afreximbank is in advanced talks to finance the development of more parks in Côte d'Ivoire, Nigeria, Burkina Faso and Benin, and is exploring opportunities in Togo, Ghana, Rwanda and Kenya.

Source: Tania Katanga (2020), "Relevance of Industrial Parks and Special Economic Zones in a Post COVID 19 World", Afreximbank, presentation at presentation at the Peer Learning Group Meeting of the PTPR of Egypt, held virtually on 21 April 2020.

Putting industrial parks to the task of combatting COVID-19 has been a key dimension of the response to the pandemic of big manufacturing hubs, such as the People's Republic of China (hereafter "China") and India. Both countries have faced the twin challenge of meeting steep domestic demand in PPE and ventilators, while ensuring that production takes place in a safe way, and industrial parks have contributed on both counts. Egypt has also been facing the challenge of making the parks work during the pandemic.

While there is no blueprint for effectively mobilising industrial parks during a pandemic outbreak, some lessons can be learned, from Egypt and other countries:

- **Safeguard workers' health**. While prioritising the reopening of industrial facilities in many countries exiting the lockdown, ensuring workers are not at risk and contagion is minimised is essential. The availability of protective equipment, disinfectants and spaces for quarantining workers (if needed) is critical, as is the observance of social distancing rules. Industrial parks should also closely monitor the state of the epidemic within their premises so that they can adapt quickly.
- **Make use of available policy space to ensure speedy response.** In these exceptional circumstances, governments are stepping in to quickly deploy adequate resources and fight the pandemic. Countries have put in place a wide range of fiscal and financial measures to promote

the manufacture of COVID-19 related products, such as guaranteeing procurement, tax discounts, fast-track customs clearance and mobilisation of public sector firms (Box 2.9). Egypt, too, has put in place various measures to support firms and workers during the pandemic, including facilitating licensing for factories that provide medical supplies (MPED, 2021[8]).

- **Bring stakeholders together to foster collective action.** Responding to COVID-19 requires not only speed, but also the co-ordinated efforts of many different stakeholders. Industrial parks could exploit their institutional and physical structure to foster dialogue and co-operation between scientists, government and manufacturers. Multi-stakeholder special task forces, and crisis committees within industrial parks or between industrial parks and other actors, could help in this respect.
- **Have realistic expectations**. Scale-ups and industrial reconversions are not easy. It takes time to learn to manufacture a new product, even in good times, let alone in the middle of a pandemic that has caused disruptions in supply chains and the movement of personnel. Facilitating learning among firms, particularly those from countries that have already successfully engaged in reconversions, could help make this process faster and more effective. It is also important to continue minimising the risk to human life from newly produced equipment by maintaining vigilant regulatory oversight.

Box 2.9. Industrial parks during the COVID-19 outbreak: The experience of China and India

In China, the public sector has undertaken a three-pronged response encompassing (a) worker safety, through the use of digital applications and availability of disinfectants and PPE; (b) co-ordination along the value chain, by undertaking frequent on-site visits and making standards freely available online; and (c) targeted policy support to encourage producers to scale up production of key equipment and supplies (Table 2.2). In Tamil Nadu, India's top state by number of factories, in addition to incentives for producers, the state's response has also focused on managing the phased resumption of manufacturing activities, through a dedicated task force headed by the chief secretary and with the participation of several government departments. The task force is responsible for providing clearances for industrial establishment, facilitating investments and co-ordinating procurement of supplies.

Table 2.2. Policies to encourage production of protective and medical equipment during COVID-19 in China and Tamil Nadu, India

	China*	Tamil Nadu, India
Government procurement	• Government procurement of excess capacity (including equipment)	• Minimum 50% of equipment and drugs under the incentive package to combat COVID-19 will be purchased by state government.
Administrative flexibility	• Fast-tracking of production licenses	• Investors may commence manufacturing without prior approvals mandated by state laws • Land/sheds on short- and long-term leases are available on a priority basis
Fiscal incentives	• Exemption of import duties, VAT and consumption tax for COVID-19 imports • Purchased equipment to expand capacity 100% expensed in calculating CIT • Full refund of carried forward excess input VAT • Super-deduction of R&D investment (175% of amount spent).	• Capital subsidy on the investment made in the management of COVID-19 • Stamp duty exemption
Financial support	• Expedited loans at discounted interest rates	• Interest subvention on working capital loans

* Chinese local governments may apply additional policies.

Note: This table is not meant to be exhaustive. CIT: Corporate Income Tax; R&D: research and development.
Source: Authors' elaboration based on Y. Sri Ramya (2020), *Creating Resilient Industrial Ecosystems*, Guidance Tamil Nadu, Government of Tamil Nadu; and Zhaoyuan Xu (2020), "How to Increase the Supply of Medical Devices Quickly in the Short Term, Especially in Industrial Parks?", Department of Industry, DRC, China, presentations at the Peer Learning Group Meeting of the PTPR of Egypt, held virtually on 21 April 2020; (KPMG, 2020[9]).

Industrial parks play an important role in Egypt's industrial and innovation ecosystem. Based on the comparison with the experience of other countries, the following are some areas for policy reforms that Egypt should consider going forward:

- **Building and managing industrial parks is a tool, not an objective per se.** Using industrial parks for local development works when these are managed as part of the overall production transformation strategy. Industrial parks can be a useful tool for harnessing the space-based nature of industrial and technological activities to foster knowledge creation and diffusion and help firms capture economies of scale. However, to succeed, the aims of industrial parks need to be aligned with other important agendas, such as those of trade, innovation, sustainability and regional development. Viewed in isolation, industrial parks risk becoming expensive projects that fail to attract investments or reach their expected objectives. Alignment helps to target scarce resources towards achieving a common vision for industrial parks, from the provision of hard and soft infrastructure to the right policy package that could enable diversification and upgrading. In Korea and Malaysia, industrial parks have been used to meet the countries' changing needs, from deepening integration with GVCs to upgrading and boosting innovation (Box 2.10). Egypt, too, could look to combine existing measures (such as allocating industrial land and reimbursing infrastructural work) with policies and tools to encourage firms to invest in modernising their technologies; in innovation, including digital technologies; and in adopting environmentally-friendly technologies – all part of the country's vision of production transformation for the future.
- **Fostering learning in local firms.** Industrial parks often focus overwhelmingly on only attracting investments. While this can yield successful results in the short term, sustaining competitiveness in the long term requires complementary efforts to spur learning and innovation. Policies to foster linkages between firms inside and outside the parks, expand investments along the value chain, encourage technological upgrading and build a skilled workforce are crucial for ensuring that parks can survive beyond initial advantages that can quickly become eroded, such as low-cost labour. In Egypt, park management can be critical in this respect, by focusing not only on infrastructure but also on facilitating firms' access to much-needed resources to innovate, such as specialised services, financing and networking. Moreover, dynamism can be encouraged by designing parks in a way that avoids turning them into monocultures. Parks in Egypt could aim instead to foster diversified environments that can bring together more than just one type of firm, including SMEs and large firms, both foreign and local. Setting up dedicated incubators for start-ups could also help foster innovation and linkages among firms. Long-term sustainability also requires withstanding crises, such as the current pandemic. Parks can contribute to dealing with future crises by designing supply-chain risk-management measures together with park tenants.
- **Building specialised industrial parks can help the economy find its brand.** Specialisation can also help build a country's image and reputation, important drivers of investments in a country's industrial parks. Generating a positive image of parks by firms operating there and other stakeholders involved in management and promotion (e.g. park managers and administrators, ministries, local governments, promotion agencies and others) is essential for continuing to attract high-quality investments and becoming a desirable destination for skilled labour. However, as parks have proliferated across industrialising countries in an effort to attract investments, it is

becoming harder to market them – that is, to project a value proposition that will win over investors. Park-specific branding in Egypt can enable signalling the key attractiveness factors of each park. For example, in Tamil Nadu, in India, the government is relying on the expertise of the private sector, combined with government support, to create a park that will be India's first high-tech one-stop shop for medical equipment manufacturing (Box 2.11). In addition, India's Department for Promotion of Industries and Internal Trade (DPIIT) has piloted an Industrial Park Rating System (IRPS) that can signal to investors which parks follow best practices and promote competition among the many developers (Mitra et al., 2020[10]). Country branding can serve as an umbrella to position Egypt's parks as destinations for industrial investments in Middle East and Africa.

Box 2.10. Integrating industrial parks into a comprehensive transformation strategy: Lessons from Korea and Malaysia

Korea and Malaysia share similarities when it comes to the role of industrial parks in development. Malaysia followed a development model inspired by that of Korea and other successful Asian economies, aiming to harness foreign direct investment (FDI) and exports to fuel a process of local industrial capability building. In both cases, the ambition of industrial parks increased over time to reflect the countries' changing priorities as incomes increased and new development frontiers matured. Moreover, new public institutions were pioneered to enable the alignment of parks to the goals of national transformation policies.

Korea: Fom light to heavy industries and innovation

Korea has experienced one of the world's most successful and rapid economic development transitions, going from a largely agriculture-based economy in the 1960s to a leading industrial power today. The country's GDP per capita rose from USD 944 in 1960 to USD 26 762 in 2018 (2010 constant prices). Korea's transformation was sustained by industrialisation, the shift from light to heavy industries, integration into world markets, and investments in developing innovative capabilities.

Industrial parks have been a component of Korea's development. The first parks were built in Ulsan in the early 1960s for chemicals and fertilisers. These were followed by parks in the Capital Region and the south and southwestern regions in the mid-1960s, aimed at facilitating investments in export-oriented industries, particularly textiles and later also electronics, machinery and metals. As the policy focus shifted to heavy industries in the 1970s, the development of iron and steel and petrochemical industrial parks became established. At the same time, electronics also developed at a rapid pace, particularly of upstream components such as semiconductors. In the 1980s and 1990s, industrial parks continued to be built in western coastal areas to promote balanced regional development. Since the mid-1990s integrated "techno parks" have been being promoted to stimulate regional innovation systems. In each phase, legal provisions and targeted incentives were employed to ensure investments matched the goals of the parks.

This phased approach enabled Korea to make its big conglomerates globally competitive. This is mirrored by the trajectory of Korea's share of foreign value added (FVA) in exports. In the 1970s it was high, reaching some 35%, reflecting that most inputs were imported and the country lacked the necessary skills to produce domestically core components. As the country was able to increasingly localise production of intermediates, the share of FVA in exports fell to a low of 28% in 1993. Since the mid-1990s this process has reversed, with FVA increasing again to reflect the internationalisation process of Korea's leading firms as they shifted production of simple parts and assembly overseas.

Malaysia: From concentration in Penang to country-wide development

Malaysia has sustained a successful process of structural transformation since independence in 1957. The country's GDP per capita doubled from USD 5 200 in 1970 to USD 10 858 in 2018 (constant 2010 prices). Within 30 years, Malaysia not only developed extensive palm oil and petrochemical industries, but also progressed from labour-intensive assembly to developing a nucleus of local firms that are globally oriented. Industrial parks have been instrumental in achieving Malaysia's production transformation, serving as hubs for developing leading capabilities in manufacturing electronic components as well as developing services, such as Islamic banking. The country now has 500 industrial estates or parks and 18 free industrial zones.

The role of industrial parks has changed over time, reflecting Malaysia's changing development priorities. In the 1970s, parks in Malaysia, mainly in Penang, focused on attracting FDI in the export-oriented assembly of electronic components. Over time, activities promoting information technologies (IT) and innovation were encouraged. The regional focus also shifted, from concentrating infrastructure in Penang to expanding to other states and then to larger "corridors" that span different states. Thus, the development of parks followed the "economic veins" of the country, expanding gradually as economic poles expanded into less developed regions. The different development phases are highlighted in the following table:

Period	Regional focus	Objective
1970s	Mostly in the island of Penang	Low-cost manufacturing and integration into global value chains (GVCs)
1980s	Expansion to Kuala Lumpur and Selangor	Multi-sector industrialisation
1990s	Creation of Multimedia Super Corridor	Transformation through digital technologies
2000s	Regional corridors	Regional development
2010s	Proliferation of parks	States-oriented development

Institutional development has been crucial in providing a link between strategy and parks in Malaysia. The country's federal government works closely with implementation agencies and state-level governments and bodies to ensure that parks are aligned with the country's development agenda and meet evolving investors' needs, notably though the following institutions:

- The *Ministry of Trade and Industry (MITI)* is responsible for developing the country's industrial, trade and investment policies, in line with the country's national development plans.
- The *Malaysian Investment Development Authority (MIDA)* was established in 1967 to promote foreign and later also domestic investments in manufacturing and services. MIDA acts as a one-stop shop for investors in all of Malaysia's parks and zones and provides investment incentives in line with MITI's policies.
- *State Economic Development Councils (SEDCs)* were established by state governments in the 1960s to promote regional development. SEDCs are public enterprises and follow different models, with some focusing on acquiring corporate equity and others on developing industrial parks and other infrastructure to promote private business.

Source: Rob Cayzer (2020), "Industrial Parks: The experience of Malaysia", MARA Corporation, and Kuen Lee (2020) "Industrial Parks and COVID-19: Commentaries", Seoul National University, Korea, presentations at the Peer Learning Group Meeting of the PTPR of Egypt, held virtually on 21 April 2020; and OECD (2012[11]), *Industrial Policy and Territorial Development: Lessons from Korea*, Development Centre Studies, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264173897-en.

Box 2.11. Building specialised parks: The experience of Tamil Nadu, India

Tamil Nadu, a state in southern India that is one of India's industrial powerhouses, has the largest number of factories in the country. The State Industries Promotion Corporation of Tamil Nadu (SIPCOT), a government-owned institution established in 1971 to promote industrial development in the state, has been instrumental in this respect by developing industrial land and acting as a nodal unit for disbursing state-level assistance to large industrial units. To date, SIPCOT has developed 21 industrial parks and 7 special economic zones (SEZs), spanning 130 square kilometres. Apart from SIPCOT-developed infrastructure, Tamil Nadu also features:

- Industrial estates targeted at micro, small and medium enterprises (MSMEs), developed by the Small Industries Development Corporation Limited (SIDCO);
- Industrial parks developed by the Tamil Nadu Industrial Development Corporation (TIDCO);
- Private parks catering to medium and large firms; and
- Unorganised industrial infrastructure where landlords lease lands for industrial use.

To increase industrial development in lagging areas of the state, SIPCOT is now partnering with the private sector in developing industrial parks through the creation of joint ventures. The private sector offers land (at least 100 acres) and develops all internal infrastructure (such as internal roads) and the government provides utilities and trunk infrastructure, in addition to policy incentives (50% exemption on stamp duty and permission to use open-space reservation areas and roads for non-industrial purposes).

It is intended that Tamil Nadu's industrial parks deepen the state's industrial specialisation in specific value chains and help realise the aims of the nationwide "Make in India" campaign. One of the parks is HHL Medipark (HML), currently under construction, which will be one of the country's first parks dedicated specifically to medical equipment. Support for the creation of the park comes from the Department of Pharmaceuticals under the Ministry of Chemicals and Fertilisers through a scheme for the development of the pharmaceutical industry. Under the scheme, the central government will cover up to 70% of the project cost (up to USD 335 000). Medipark will be developed by a joint venture created by HLL Lifecare Limited and TIDCO, with HLL developing the internal infrastructure and undertaking the leasing of plots. Tamil Nadu plans to make Medipark into a one-stop-shop high-tech manufacturing cluster that integrates industrial, commercial and business facilities.

Source: Sri Ramya Y, (2020), "Creating Resilient Industrial Ecosystems", Guidance Tamil Nadu, Government of Tamil Nadu, presentation at the Peer Learning Group Meeting of the PTPR of Egypt, held virtually on 21 April 2020.

Updating the policy mix to better promote economic transformation

Egypt's production system faces multiple challenges today that have been compounded by the disruptive effects of COVID-19 on manufacturing, commercial services and trade. On the one hand, Egypt needs to create more and better jobs (see Chapter 1). On the other hand, the prevalence of informality leave a sizeable share of Egypt's population vulnerable to the impact of the pandemic as they have lower access to welfare and health services. Currently, the rate of informality is estimated at 63.4% of the employment. Although that is the fourth-lowest in Africa, it is still high compared to advanced economies, where the incidence is more than three times lower (around 18%) (ILO, 2021[12]). In addition, the pandemic is placing stress on Egypt's production system through two main channels of transmission:

- *Lower tourist receipts*: Tourism has been one of the worst-affected activities globally during the current pandemic, falling by 72% during January-October 2020 (World Tourism Organization, 2020[13]). During the pandemic, the Egyptian tourism industry, like in other countries, suffered large losses. Egypt welcomed 13 million tourists in 2019, but arrivals declined by 69% during the first half of the year. Tourism has recovered somewhat since the country opened up for international travellers on 1 July 2020, but revenues remain lower than pre-pandemic levels (CBE, 2021[14]). However, the future of the tourism industry remains highly uncertain and will depend on the success of vaccination campaigns globally, the severity of successive waves of the pandemic as well as on changing consumer preferences.
- *Disruptions in production and trade*: Production and trade were severely disrupted globally owing to a combination of government measures to restrict social contacts (to stem the epidemic) and low consumer demand as economies came to a halt. The fall in world trade volumes also affected Egypt through lower receipts from Suez Canal, which declined by 2.88% in 2020. Canal revenues accounted for as much as 1.6% of GDP during fiscal year 2019/20 (CBE, 2021[14]; Ministry of Planning and Economic Development, 2021[15]).

To achieve Vision 2030 and the National Structural Reforms Program (NSRP) and maintain its path towards prosperity, Egypt will need to mobilise investments that address these challenges. Egypt reacted quickly to mitigate the economic effects of the pandemic and showed resilience. The country has mobilised large resources – the COVID-19 stimulus and recovery package in Egypt accounts for 1.9% of the country's GDP (IMF, 2021[16]) – and has put in place a wide range of policy measures to protect the population from the virus, especially vulnerable groups, and stem its spread; maintain macroeconomic stability and preserve growth; and increase the capacity of the economy to react to future shocks (MPED, 2021[8]). In total, 541 policies have been implemented by more than 80 institutions. Supporting the Egyptian economy and the affected sectors represents 36% of actions taken, while 31.6% have been targeted to individual support, 26.8% to containing the virus, and 5.7% to international co-operation (ibid.).

Beyond the fiscal stimulus, the country also employed a range of tax breaks and deterred tax collection measures, as well as monetary ones, such as lower interest rates, loan repayment deferrals and credit support to several sectors that were heavily affected, such as tourism, industry, agriculture and construction (see Table 2.3 for selected measures to support businesses). In addition, the government expanded the conditional cash transfer programmes (e.g. Takaful and Karama) and introduced programmes to support irregular workers. Several government ministries and agencies also reacted quickly to offer services on line and facilitate social distancing, increasing the scope for digital services in the economy in the process. For example, MSMEDA's SME platform allows firms to access online entrepreneurship training and marketing services, while MCIT co-operated with other government agencies to provide healthcare and educational services on line and with internet service providers to increase the quota of home Internet subscribers by 20% to tackle increased browsing needs. The country maintained positive growth during 2020 compared to a contraction globally, in Africa and MENA (see Chapter 1). Unemployment, too, which climbed to 9.6% in the second quarter of 2020, compared to an annual rate of 7.9% 2019, fell back down to 7.3%-7.2% during the rest of the year (CAPMAS, 2021[17]).

Table 2.3. Selected measures taken in Egypt to support businesses during the COVID-19 pandemic, 2020

Measure	Details	Conditions/requirements
Non-repayable financial contributions	Natural gas price reduced from USD 6 per million BTU in October 2019 to USD 4.5 per million BTU in March 2020	All industrial activities
	Electricity price reduced from USD 0.0699 to USD 0.006 per kWh and leaving electricity prices for other industries stable for three to five years	Heavy usage industries (for other industries electricity prices will remain stable for 3-5 years)

	Payment of arrears of the Export Development Fund (EGP 1 billion or USD 6.3 million)	
Tax payment reductions, postponements and moratoriums	Postponement of real estate tax payment for three months	Factories
	Moratorium on tax on agricultural land for two years (14% of cropland lease value per feddan (a *feddan* is equivalent to 4 200 m^2)	
	Reduction of stamp tax for non-residents to EGP 1.25 per 1 000 and for residents to EGP 0.5 per 1 000 (down from EGP 1.5 for both), and withholding tax reduced from 10% to 5% for listed companies	
Export bans	For surgical masks, disinfectants and medical alcohol for three months	
Increasing liquidity to firms	Short-term loans for up to a year to secure liquidity for operational expenses	Small projects in industrial and labour intensive sectors
	Loans equal to EGP 100 billion (USD 6.3 billion) for factories at a declining interest rate by CBE	Industrial sector
	Financing of EGP 50 billion (USD 3.2 billion) at a rate of 8% including the provision of credit facilities for a period of 2 years by CBE	Businesses and tourist facilities
	CBE reduced policy rate by 300bps, overnight deposit rate to 9.25% from 12.25% and lending rate to 10.25% from 13.25%.	
	Discount rate reduced to 8% down from 10% for the following CBE Initiatives for industrial private sector; mortgage finance programme for middle-income homebuyers; renovation of residential and floating hotels and transportation services of tourism sector; agricultural sector	Selected initiatives
	Loans with grace period of two years	Aviation sector firms
	EGP 20 billion (USD 1.3 billion) stock-purchase programme by CBE	
	Credit dues for companies, including MSMEs, and individual clients delayed for six months	
	Easing lending and administrative procedures for new SMEs especially in the food industry and health sector and introducing a new bridge financing tool for working capital	SMEs
Measures to prevent defaults	Lifting administrative seizure on all taxpayers who have payables in exchange for paying 10% of their tax, and re-settle their files through dispute resolution committees	
	Waiving of marginal interest on debt under EGP 1 million (USD 63 000) for at-risk borrowers. Waiver of court for indebted clients once the latter agree with creditor bank on terms of payment. These clients will be removed from blacklists and collateral will be released if they make a cash or in-kind payment of 50% of the net debt balance	
Measures to promote digital technologies	Launch of "Our digital opportunity" initiative to provide information on national digital transformation projects to SMEs	SMEs
	Online application for service classification certificate by MSMEDA	
	Access to training and financial and non-financial services online through SME platform	
	Supporting SMEs to find new markets by establishing a marketplace on the SME platform	
Administrative facilitations	Granting exceptional validity to licenses and other documents during the pandemic	Industrial projects
	Facilitating licensing procedures for industrial plants that provide preventive medical goods	

Note: This table is not meant to be exhaustive but illustrates selected measures related to supporting businesses. A full list of measures undertaken by Egypt is available on the COVID-19 policy tracker of the Ministry of Economic Planning and Development: http://policytracker.mped.gov.eg/.
Source: Authors' elaboration based on official information.

This large mobilisation of resources could be used to ensure not only that firms stay in business, but also that long-standing challenges are addressed and new opportunities from the shifting global landscape captured. Other countries have answered this call by putting in place novel instruments since the crisis. For example, Malaysia is looking to capture the benefits of increasing relocations in investments worldwide by attracting a growing share of investments, through a special incentive for relocations. It offers a 0% tax rate for 10-15 years for investments over RM 300 million (approx. USD 74 million), providing a manufacturing operation is relocated from another country to Malaysia. Egypt could similarly combine

measures for supporting businesses with conditions and incentives for further fostering production transformation.

In addition to mobilising resources to cushion the impact of the pandemic, Egypt, like all countries, needs to use this support as a means of shifting the economy towards more sustainable and inclusive production and consumption modes. A major global reorganisation of production and trade is taking place, and Egypt needs to take every opportunity to benefit from it and emerge stronger.

Egypt fosters the development of domestic industrial capabilities mainly through the following incentives, among others:

- **Fiscal incentives**. Egypt's Investment Law No. 72/2017 offers fiscal incentives in the form of various customs tax and duty exemptions and reductions for all new investment projects, and added investment tax allowances (ITA) (between 30% to 50%) for investing in specific regions and sectors, including in export-oriented projects. The sectoral prioritisation under the law is broad, including almost all manufacturing sectors. Prior to the law's adoption in 2017, Egypt offered almost no fiscal incentives for manufacturing projects that were not export-oriented (such as those based in special zones, discussed later in this section). Additionally, the law has clarified regional priorities to promote the development of lagging areas. Finally, according to MSME Law No. 152/2020, MSMEs are eligible for (a) tax exemptions for capital gains resulting from the sale of assets and machinery (if the proceeds are used to purchase new assets) and (b) free, discounted or reimbursed expenses such as for land and infrastructure costs (utilities installation). MSMEDA also provides discounted financing for industrial projects.
- **Local content requirements**. Local-content rules have been used in Egypt to foster domestic capabilities in various industries. Currently, Decree No. 571/2019 by MTI has put the local content manufacturing ratio at 45% for licensing domestic automotive assembly operations. Additionally, Law No. 72/2017 specifies that projects with more than 50% local content may be eligible for additional investment incentives.
- **Provision of specialised infrastructure**. Industrial parks and zones have been developed in Egypt with the purpose of promoting local industry, particularly SMEs. They are managed by the Industrial Development Authority (IDA) and are subject to Law No. 72/2017. Companies may also benefit from incentives granted by the MSME Law and business facilitation by IDA.

Egypt fosters exports mainly through the following incentives:

- **Non-repayable financial contributions for exports**. The Export Development Fund was set up with Law No. 155 of 2002 and is affiliated with MTI. It grants manufacturing exporters up to 10% of the value of their exports, provided they meet local content requirements, with applications eligible up to a year after the product's export date. Companies must be members of their respective sector's Export Councils.
- **Fiscal incentives packages targeted to different zones**. Egypt currently has free zones (FZs) (private and public owned), special economic zones (SEZs) and qualified industrial zones (QIZs) (Table 2.4). These are managed by different agencies that offer special incentives in addition to infrastructure (OECD, 2020[1]). Free zones were the first zones to be set up in Egypt in the 1970s in an effort to encourage export-oriented and labour-intensive manufacturing; they fall under the purview of GAFI. SEZs are larger in area than FZs (including, for example, entire ports) and are more independent, reporting directly to the prime minister. Finally, the QIZs are managed by MTI and aim at encouraging exports to the US that contain inputs from Israel.

Table 2.4. Egypt fosters exports mostly through incentives attached to specific zones, 2021

Zone type	Public and private free zone	Special economic zone (SEZ)	QIZ (qualified industrial zone)
Year of creation	1971	2002	2004
Size (km²)	>22 790	460.6	n.a
No. of active zones	9 public/205 private	2	24
No. of companies	883 public/205 private		1048
Targeted sectors	Textiles, food, leather, E&E, chemicals	Bunkering, casting, building material, data centres, logistics, agribusiness, solar cells, rolling stock, textiles, pharmaceutical, active substance, tires, petrochemicals, electric batteries	Most manufacturing industries
Tax and other incentives	Tax and customs fees exemption for capital assets for carrying out project activities, as well as for exports and imports. Local components exempted from customs duties during resale to domestic market	Exemption from value added tax (VAT), stamp duty tax, state resources development tax Capital machinery and components free of customs taxes and duties (taxed when entering Egyptian market) One-stop shop system Imports and exports undertaken without permit or prior approval and without being in exporters register Further additional non-tax incentives for labour-intensive projects and investments in remote areas and in sectors such as energy, agriculture, logistics, and transportation Subsidisation of power utilities Refunding expenses for infrastructure facilities Technical training and social insurance subsidies Allocating government-owned land or postponing payment (in whole or part) 50% corporate tax refund from investment cost (up to 80% of paid capital) 0 VAT rate for imports from local market that cover business needs	n.a
Requirements /conditions	Private free zones: Issued capital > USD 10m and investment > USD 20m > 500 workers; area > 20 000 sqm > 30% local components; > 80% exports	All firms established under Law on Special Economic Zones No. 83/2002.	35% local content, of which a minimum of 10.5% must be Israeli inputs
Responsible agency	GAFI	SEZ Authority (reports directly to prime minister)	Ministry of Trade and Industry (MTI)
Applicable law	Law on Investment No. 72/2017	Law on Economic Zones of Special Nature No. 83/2002, amended by 2015 Law No. 27/2015	Protocol between Egypt, Israel and the United States

Note: n.a: not available.
Source: Authors' elaboration based on (OECD, 2020[1]) and information provided by GAFI.

The current policy mix that Egypt has to foster economic transformation needs to be updated to face the new challenges (Table 2.5). Based on peer review mostly from Malaysia and other international experiences, Egypt would benefit in updating its policy mix along the following lines.

Egypt's public financial support (direct and indirect) to firms contains conditionalities which are mostly attached to specific sectors, the geographical location of beneficiaries and/or generic local-content requirements. However, conditionalities tend to be more effective in fostering upgrading and learning when they explicitly target specific technologies and learning processes. For example, Egypt's Law No. 72/2017

lists sectors that are encouraged, with provisions for so-called “strategic projects”. However, these provisions are judged on a case-by-case basis and the scope of their benefits are not defined. By contrast, in Malaysia, tax exemptions and capital allowances are used (with varying ceilings depending on the type of sector, technology, location and size of firms) to incentivise higher-value-added activities and the use of advanced technologies. For example, the baseline “Pioneer” incentive of a 70% tax exemption for five years for most manufacturing activities is extended to 10 years and 100% for high-technology firms.

Egypt’s policy mix for fostering the development of domestic industrial capabilities relies mostly on indirect financial support (mainly in the form of fiscal incentives). By contrast, successful economies often implement a more varied and articulated policy mix featuring both direct and non-direct financial support as well as services and infrastructure provision. An interesting exception is the Industrial Modernisation Centre’s services to industrial firms to boost their upgrading and modernisation efforts and connect them to GVCs, notably through the National Industrial Localisation Programme (NILP). The NILP identifies value chains that are of strategic importance, then identifies opportunities and gaps local firms can exploit to deepen their value addition. The programme then works with both (a) lead firms, to improve their marketing strategies and connect them to SME suppliers; and (b) the suppliers, to design business plans to grow and modernise their businesses. In Malaysia, the Malaysian Investment Development Authority (MIDA) has increasingly used non-repayable loans and matching grants to complement fiscal incentives. For example, the Domestic Investment Strategic Fund (DISF) was launched in 2012 with a size of MYR 1 billion (approx. USD 324 million) to provide 1:1 matching grants to firms engaging in R&D, training, modernisation or upgrading of facilities; licencing or purchasing of new/high technologies; and obtaining international standards and certifications.

Egypt falls short, by international comparison, in terms of the type of tools used, the amount of budget allocated to innovation and R&D, and the relevant legal framework. Firms that carry out R&D in Egypt are eligible for additional incentives through Law No. 72/2017, but these are not well-defined by the law and are subject to review by the Council of Ministers. Some funds foster R&D and science-business linkages, such as the joint fund between MTI and MHESR (through IMC and the Science and Technology Development Fund) supporting R&D collaboration for up to EGP 5 million (approx. USD 317 000); ITIDA, too, provides grants of up to EGP 5 million for collaboration between academia and ICT and to electronics firms for R&D and product development, in addition to funding for patent registration (up to USD 10 000 per patent). However, more can be done to expand the range of effective policy tools. Malaysia, for example, uses a much more sophisticated combination of tax incentives and direct financing to promote R&D. First, an Investment Tax Allowance of up to 50% and double deductions are granted to firms that conduct R&D, thereby incentivising not only the application, but also the undertaking of R&D in the country. Second, the DISF includes a broad range of technological activities for which firms in Malaysia can receive co-financing beyond R&D. Additional financing through a combination of non-repayable contributions and loans at privileged interest rates is also offered to firms in the country through the Malaysian Technology Development Corporation (MTDC), for promoting activities according to the priorities of the Ministry of Sciences, Technology and Innovation. Finally, Egypt should continue updating its regulatory framework. A key dimension to unleashing innovation through start-ups would be bringing the regulatory framework for private equity and venture capital funds in line with global standards. Currently, such funds under Egyptian law need to be joint stock companies, which is not the typical structure in global financial markets, where they are usually structured as limited liability companies or partnerships. As a result, many funds in Egypt are actually based offshore (PwC, EPEA and EBRD, 2017[18]).

Table 2.5. Egypt's policy mix for production transformation, comparison with Malaysia, 2020

		EGYPT			MALAYSIA	
		Examples	**Conditions**		**Examples**	**Conditions**
	Fostering industrial development					
Fiscal incentives	√	Investment tax allowance of 30%-50%, duty exemptions for specific sectors and locations for up to 7 years		√	"Pioneer" tax exemption of 70%-100% for 5-10 years depending on sector, size, technology and location (*MIDA*)	
		Fiscal incentives for MSMEs			Capital allowance for automation of 200%, ceiling depends on sector (*MIDA*)	
		Additional case-by-case incentives for projects with above 50% local content			Incentive for re-location of activities to Malaysia after COVID-19 (*MIDA*)	
Non-repayable financial contrib.	√	Land and utility subsidies for Upper Egypt		√	Co-financing 1:1 for modernisation of facilities and Industry 4.0 through DISF/SHIF (*MIDA*)	
		Energy subsidies for firms and consumers				
Non-financial instruments	√	National Industrial Localisation Programme (*IMC*)		√	Industrial linkages programme (SMECorp)	
		Simplification of industrial license and other business procedures (*IDA, MSMEDA*)			e-Manufacturing license (*MIDA*)	
		Industrial infrastructure (parks and zones)				
	Fostering innovation					
Fiscal incentives	?	Case-by-case incentives for firms that apply R&D results conducted in Egypt or engage in technology transfer (*GAFI*)		√	50% ITA for 10 years (*MIDA*)	
Non-repayable financial contrib.	√	Grant of up to EGP 5m for industry-academia linkages (*MHSER and MTI through STDF and IMC*)		√	Co-financing 1:1 for investments in R&D, licencing of new/high tech. and obtaining international standards and certifications through DISF/SHIF (MIDA)	
		Grants of up to EGP 5m for R&D projects related to ICT/Electronics sector by (ITIDA)			Commercialisation of R and D Fund (MTDC)	
		Financing IP patent cost related ICT/electronics areas (ITIDA)				
		Seed funds up to EGP 180K for start-ups in ICT field, and up to EGP 2m over 2 years in electronics field (ITIDA)				
Non-financial instruments	√	Technology parks, incubators & co-working spaces (*MCIT & affiliated agencies*)		√	Technology parks, incubators & co-working spaces (*MOSTI, MDEC*)	
		Electronics Innovation Complexes for fostering eco-system of electronics and ICT sector (*ITIDA*)				
	Improving skills					
Fiscal incentives	?	Case-by-case incentives for firms that conduct training (*GAFI*)		√	Double or single deductions for training programmes for interns and unemployed graduates	
Non-repayable financial contrib.	√	Financing for training of new hires (varying amounts – up to USD 6 000 per person for KPO businesses), ICT firms *(ITIDA*)		√	Co-financing 1:1 of investments in training through DISF/SHIF (*MIDA*)	

	Boosting exports					
Fiscal incentives	√	Package of incentives for SEZs/FZs/QIZs		√	Import duty exemptions for direct and indirect exports	
		50% ITA for firms that export more than 10% of output			Deduction against statutory income (up to 70%) of between 10-100% of increased exports	
Non-repayable financial contrib.	√	Export subsidies, 1-10% of value, at least 10% local manufacturing content. For manufacturing exports and also ICT product/service exports (*EDF; ITIDA*)		√	Market development grant that covers participation in international exhibitions (*MATRADE*)	
		Financing of up to 80% of costs to participate in exhibitions for young exporters (*MTI*)				
Services and regulations	√	Digital Single Window (MTI)			Capacity-building programmes for exporters (*MATRADE*)	
		Organising trade missions, buyers missions and business matchmaking (EDA)		√		

√: A tool exists in this category.?: A tool exists but conditions to benefit from it are not pre-determined.
Conditionalities:
Sector:
Territorial:
Firm size:
Innovation/tech. level:
Local content:
Note: This table is not exhaustive and contains a summary of selected instruments. For simplification, only tools that have firms as beneficiaries have been considered. EDA: Export Development Authority; EDF: Export Development Fund; DSIF: Domestic investment strategic fund; FZ: Free zone; GAFI: General Authority for Investment and Free Zones; ICT: Information and communication technologies; IMC: Industrial Modernization Center; ITA: Investment tax allowance; ITIDA: Information Technology Industry Development Agency; KPO: Knowledge Process Outsourcing; MHESR: Ministry of Higher Education & Scientific Research; MSME: Micro, small and medium enterprise; MSMEDA: Medium, Small and Micro Enterprises Development Agency; MTI: Ministry of Trade and Industry; MDEC: Malaysia Digital Economy Corporation; MIDA: Malaysian investment development authority; MTDC: Malaysian Technology Development Corporation; MATRADE: Malaysia External Trade Development Corporation; QIZ: Qualified industrial zone; SEZ: Special Economic Zone; SHIF: Strategic high impact fund; SMECorp:SME Corporation Malaysia; STDF: Science & Technology Development Fund
Source: Authors' elaboration.

Conclusions

Egypt will need to shift policy gears to adapt to the post-COVID-19 landscape while anticipating new opportunities and challenges that will be critical to building an economy that is stronger, more resilient, and more sustainable. While no unique pathway to development exists, there are elements that successful countries have in common. A strong vision and commitment to transforming the economy is one of them. Egypt has this. The country places a high priority on increasing prosperity for its citizens through a path that is sustainable and promotes knowledge. The importance Egypt attaches to the digital agenda, the African market and industrial development is already a big asset in preparing the country for a changing future. However, there are areas where further reforms are needed to ensure that the country's priorities are truly reflected in policy implementation and are able to make a palpable change in the country's development path. Foremost are the following: continuing to reduce administrative red tape, ensuring that resources match ambitions, and modernising the policy mix by rethinking the scope of incentives and conditionalities designed to encourage investments in technological capabilities. The final two chapters of this PTPR examine specific opportunities and challenges in the areas of agro-food and electrical engineering and electronics (Chapter 3) and the potential for Egypt to benefit from AfCFTA (Chapter 4).

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3 Transforming industries: Perspectives from agro-food and electronics and electrical in Egypt

Egypt places high priority on the development of agro-food and electronics and electrical equipment (E&E). The COVID-19 pandemic, changing technologies and consumer preferences, and the potential of the African market are creating new challenges while at the same time opening up a new range of possibilities for Egyptian firms and entrepreneurs. This chapter of the PTPR of Egypt examines the opportunities and challenges for agro-food and E&E in Egypt in light of global trends. Based on peer review from Italy and Malaysia respectively, it provides a snapshot of each industry's structural features, reviews key elements of Egypt's current policy approach and identifies key elements for policy reforms.

Introduction

The Production Transformation Policy Review (PTPR) process for Egypt involved an in-depth look into two industries whose development is a priority for Egypt: agro-food and electronics and electrical equipment (E&E). These two industries offer complementary perspectives. Agro-food, with its large size in terms of both GDP and employment, is a pillar of Egypt's economy and intimately linked to the country's food security and natural resource base. E&E, even though Egypt has built some local capabilities, is a smaller sector that nonetheless has substantial room to grow and is expected to develop rapidly in the future. The COVID-19 pandemic, changing technologies and consumer preferences, and the potential of the African market are creating a new matrix of possibilities for Egypt to unleash the potential of these two industries.

This third chapter of the PTPR of Egypt draws on peer learning, from Italy on agro-food and Malaysia on E&E, to identify emerging opportunities and key challenges for these two industries. It is divided into two sections, one focused on agro-food and the other on E&E. The agro-food section presents a snapshot of the industry's recent export and foreign direct investment (FDI) performance and identifies key structural challenges the industry is facing; it then reviews the main elements of Egypt's policy approach in agro-food and identifies a roadmap for future reforms based on peer learning from Italy. The E&E section examines the sector's structure, reviews the main elements that have fostered the emergence of E&E in Egypt, and concludes by identifying key policy reforms, based on peer learning from Malaysia, for enabling E&E to continue growing.

Chapter 1 of the PTPR of Egypt provided an overview of the country's economic development, focusing on production, trade, investment and innovation. Chapter 2 discussed effective strategies, policies and tools to foster ongoing economic transformation in Egypt. Chapter 4 focuses on the AfCFTA as an accelerator of industrial upgrading in Egypt and its partner countries.

Focus on agro-food in Egypt

Agro-food exports and FDI to Egypt have been on the rise

Agro-food in Egypt is under the spotlight for several reasons. It is among the priorities for upgrading and growing the country's export capabilities in Egypt's Vision 2030 and the National Structural Reforms Program (2021-24), while globally the industry is undergoing major changes marked by a growing attention to quality and sustainability of production chains. The unfolding of the COVID-19 pandemic has increased the need for self-sufficiency to prevent the negative impacts of supply chains disruptions and dependency on foreign markets. Food manufacturers' production capacity reportedly dropped by 30-40% during the first month of the pandemic, together with contractions in sales and revenues (UNIDO, 2020[1]). The loss of markets from tourism, restaurants and hotels also negatively affected the sector, while the export market experienced a contraction, although to a lesser extent than overall exports. The average monthly decline for agro-food exports during February-August 2020 compared to 2019 was -7%, 2.5 times less than the total average (-18.7%) [authors' elaboration based on UN Comtrade (2021[2])]. The need for shifting up a gear in the agro-food sector – by updating it to make it more efficient and competitive in the future – is more pressing than ever.

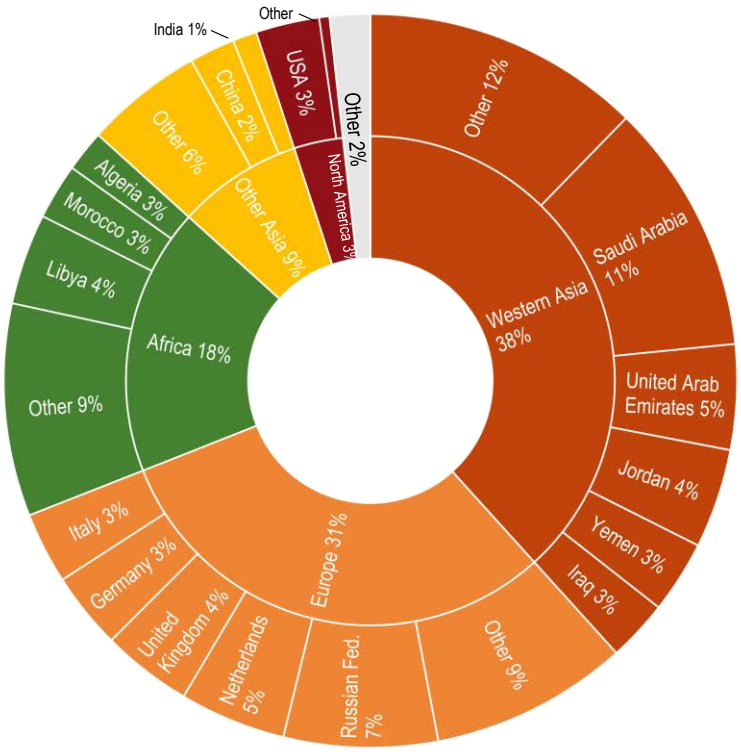
Supported by rich natural conditions along the river and its delta with two crops per year, agriculture has long been a critical sector for Egypt's economy. The Nile provides 96% of Egypt's water and three-quarters of this water is used for agriculture. Over 90% of the country's nearly 100 million people inhabit lands directly adjacent to the Nile Valley and the delta, an area comprising less than 5% of the total land area of Egypt, while the rest of the country is marked by desert land with no forest or permanent vegetation. Agro-food employs 24% of the total labour force and 80% of employment in rural areas (data refer to 2018). Of the 6.3 million employees in the sector, 90% are in agriculture and the remaining 10% in food processing

(ILO, 2020[3]). Egypt has the second-largest agro-food industry (by total value added) in Africa, behind Nigeria. Agro-food accounts for 14% of GDP, similar with other neighbouring countries such as Morocco (16%) and Tunisia (13%) [authors' elaboration based on United Nations (2021[4]) and UNIDO (2021[5])].

Egypt specialises in the production of primary agro-food commodities. About 90% of total value added in agro-food for Egypt comes from field crops – mainly cereals, vegetables and fruits; the remaining 10% is ascribable to food and beverage industries. Agro-food in Egypt has increased its export orientation. Agro-food accounted for 17% of total exports during 2018-20, double the 8% during 2005-07 [authors' elaboration based on UN Comtrade (2021[2])]. This increase stems mainly from the increase in production of fresh products and processed fruits and vegetables, due to modernisation of existing farms and processing/production facilities. Oranges are the main export, accounting for 13.3% of total agro-food exports. In 2019, Egypt became the largest world exporter of oranges in term of quantity, and the third in terms of value behind Spain and South Africa (ITC, 2020[6]). Other relevant exports include other fresh fruits, such as grapes and strawberries (which account for approximately 10% of total agro-food exports), dairy products (6%), potatoes and frozen vegetables (5% each) [authors' elaboration based on UN Comtrade (2021[2])]. Primary agricultural products account for 56.3% of Egypt's agro-food exports – similar to Morocco (48%), but over three times the share in Italy (16%). However, when it comes to Egyptian exports to Africa, the share of primary products decreases to 25% and that of processed products reaches 75%. Egypt remains a net importer of agro-food products because local production has been unable to keep up with rapid population growth, with the value of exports equal to between 30% and 40% of imports in recent decades. Wheat accounted for 21.6% of total agro-food imports during 2018-20, followed by maize (14.4%) [authors' elaboration based on UN Comtrade (2021[2])]. The country's top agro-food import sources during 2018-20 were grain producers, such as Russia (14.4% of total imports), Brazil (14%) and Ukraine (10%) (Figure 3.1).

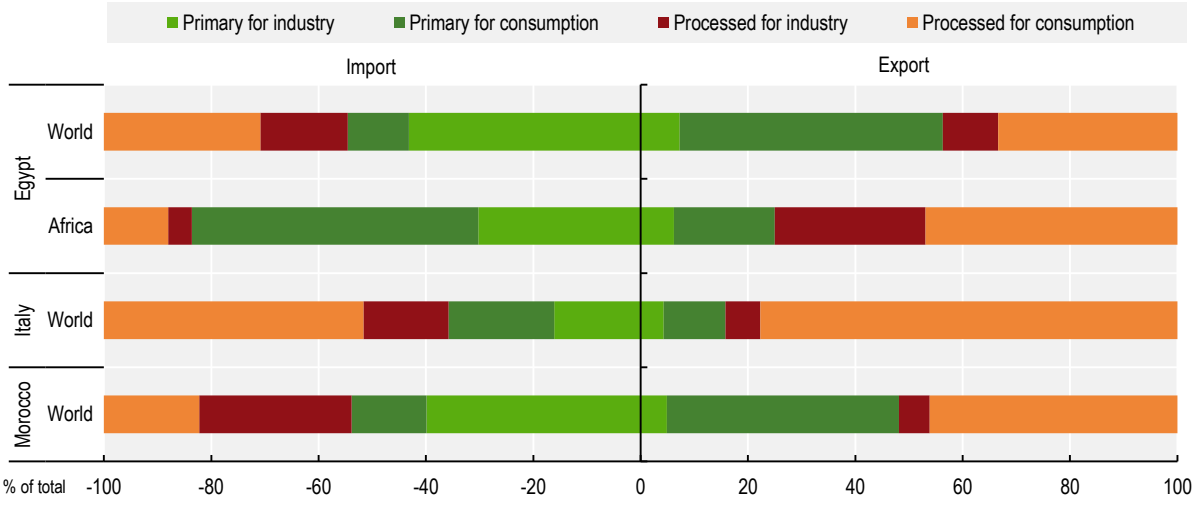
Africa is an important market for Egypt's agro-food industries. The continent accounts for 18% of Egyptian exports, higher than the merchandise average of 15.4% (Figure 3.1). Within Africa, Egypt's main export destinations are located in the nearby Northern African market – namely, Libya, Morocco and Algeria, which together account for 8.3% of total agro-food exports; and East Africa, such as Eritrea (2%) and Kenya (1%). Africa is the third largest market for Egyptian agro-food products after Western Asia, with countries such as Saudi Arabia (11% of total agro-food exports), United Arab Emirates and Jordan the main destinations. Europe has also been a traditionally large market for quality Egyptian products and, together with Asia, offers opportunities to market higher-value products. Consumers in Europe and other advanced markets value freshness, which nearby Egypt can provide, while African consumers are looking to Egypt to supply them with processed foods for their industry and final consumption (Figure 3.2).

Figure 3.1. Agrofood exports, by region and country, 2018-20



Note: Percentages may not amount to 100% due to rounding.
Source: Authors' elaboration based on UN Comtrade (2021[2]), *database*, https://comtrade.un.org/.

Figure 3.2. Composition of agro-food trade, Egypt and selected countries, 2018-20



Note: Agro-food definition in HS classification combined with the classification by Broad Economic Categories (BEC) to generate breakdowns by type of commodity (primary or industrial) and destination (consumption or industry). Data for Morocco are for 2017-19.
Source: Authors' elaboration based on UN Comtrade (2021[2]), *database*, https://comtrade.un.org/.

Subsistence and small scale agriculture continues to be prevalent. Egypt's agro-food is marked by dualism, where large swathes of subsistence agriculture, particularly in the Delta, co-exist with large modern, capital-intensive farms, often located in reclaimed desert lands. Over 87% of agricultural farms occupy less than 1 hectare in Egypt (according to the last census carried out in 1999/2000), and these cover 47% of the agricultural area. By contrast, medium and large farms with over 20 hectares account for 0.1% of farms, but 11% of total area. In fact the average land holding size in Egypt is small and decreased from 1.6 hectares in the 1960s to 0.8 hectares in the 2000s, much lower than Tunisia (10.5) and Morocco (5.8) (FAO, 2013[7]; Lowder, Skoet and Raney, 2016[8]). Employment statistics yield similar results, with 86% of agricultural establishments in Egypt having between 1 and 4 employees, compared to 77.6% in manufacturing (CAPMAS, 2018[9])

While modern commercial firms, predominately of larger size, are reaping the benefits of agro-food exports and local markets (Box 3.1), smaller farmers are facing a wide range of issues. One is high business informality: around 63% of agriculture smallholders are in the informal sector, with difficulties in accessing finance, labour shortages due to increasing urbanisation, low levels of technological adoption, and lack of knowledge of agricultural practices (CAPMAS, 2018[9]; Oxford Business Group, 2019[10]; Ministry of Trade and Industry, 2018[11]). In addition, several firms lack certification and awareness of the importance of quality and standards that make it difficult to maintain food safety, avoid contamination and use resources efficiently.

Box 3.1. Egyptian agro-food businesses are capturing the benefits of growing markets and new technologies

Egypt has several large agro-food businesses. Whereas some have had an international perspective from the beginning, others have more recently built on their success in the domestic market to move into new products and capture export markets. Among these, Edita Food Industries and Juhayna stand out as two of the largest food companies (and the most recognisable brands) in Egypt. They were the 19th and 22nd largest firms by market capitalisation in Egypt in 2020, and the 9th and 11th largest in Africa in the food sector.

Juhayna is a dairy company founded in 1983 and headquartered in Giza, Egypt. Since the late 2000s, Juhayna has diversified its business from dairy to also include juice and has moved upstream to create an integrated production model that goes from farming to distributing. The firm now owns approximately 1 000 hectares of cultivated land in the New Valley Governorate and more than 1 500 hectares in Bahareya Oasis (Al-Aseela), as well as 4 production facilities and 28 distributions centres across the country. Products under the company's 10 brands are exported to over 30 countries, mainly in the Middle East.

Edita Food Industries is a snack food manufacturer founded in 1996 and headquartered in 6th of October. Chipita International is a major shareholder. After producing its first packaged croissants in 1997, over time Edita expanded its offerings, adding other baked snacks as well as cakes and wafers, and by 2019 had established five production facilities. During 2005-08 the firm upgraded its facilities and acquired quality certifications (e.g. ISO). The company now exports to 17 countries in the Middle East and North Africa, with exports comprising 8.5% of total revenue in 2019, up from 6.5% in 2015.

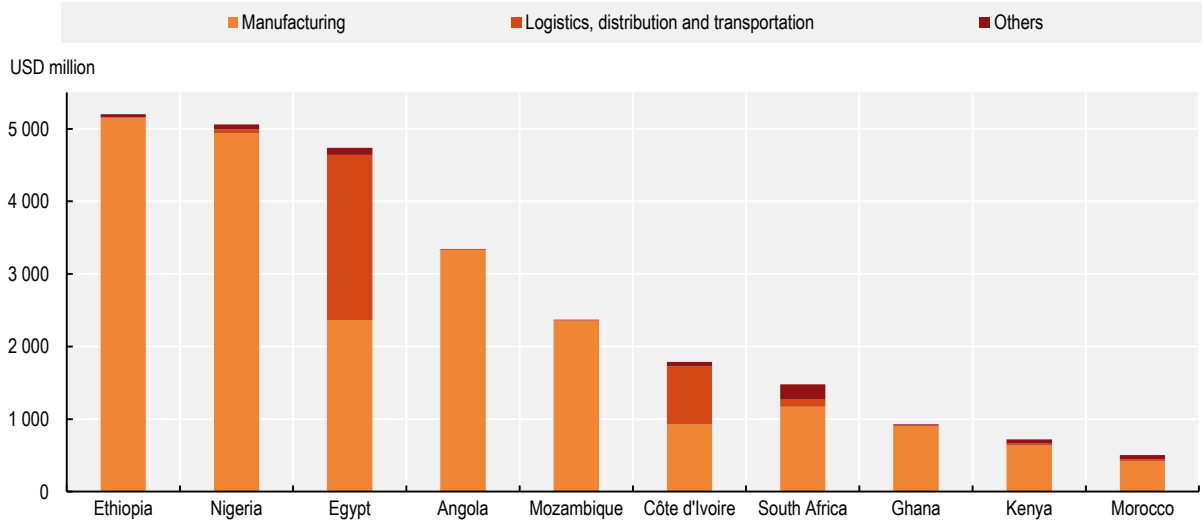
Start-ups are also emerging in Egypt to develop new technologies for the country's agro-food sector. Baramoda is a start-up founded in 2016 that seeks to reduce agricultural waste by converting it to organic fertilisers. According to the company's data, its processes can reduce water usage by 30%. The company has already built a factory in Qena. Baramoda has been growing rapidly, processing 2 000 tons of fertilisers in 2017, 9 000 in 2018 and 15 000 in 2019.

Source: Annual reports, African Business Magazine (2020[12]), AmCham Egypt (2020[13]).

Egypt's large market is attractive to foreign investors in agro-food. Since 2016, Egypt has been the third-largest recipient of agro-food greenfield foreign direct investment (FDI) in Africa, after Ethiopia and Nigeria. The rebound of the economy in 2016 attracted a number of new foreign investments in agro-food, totalling USD 4 billion. Whereas in most countries manufacturing projects make up the majority of investments, FDI in logistics and distribution plays an equally important role in Egypt. With an export mix concentrated on primary products, effective logistics platforms are crucial. Some of the largest FDI projects in agro-food in Egypt include the construction of grain silos and barges in Egyptian ports to facilitate imports (Figure 3.3).

Figure 3.3. Since 2016, Egypt is the third-largest recipient of agro-food greenfield FDI in Africa

Top 10 countries in agro-food greenfield FDI in Africa, USD millions, 2015-2020



Note: FDI investments are estimated figures. Agro-food sector defined based on the North American Industry Classification (NAIC) 2007 codes that relate to agriculture and food processing activities.
Source: Authors' elaboration based on Financial Times (2021[14]), *fDi Markets database*, https://www.fdimarkets.com/.

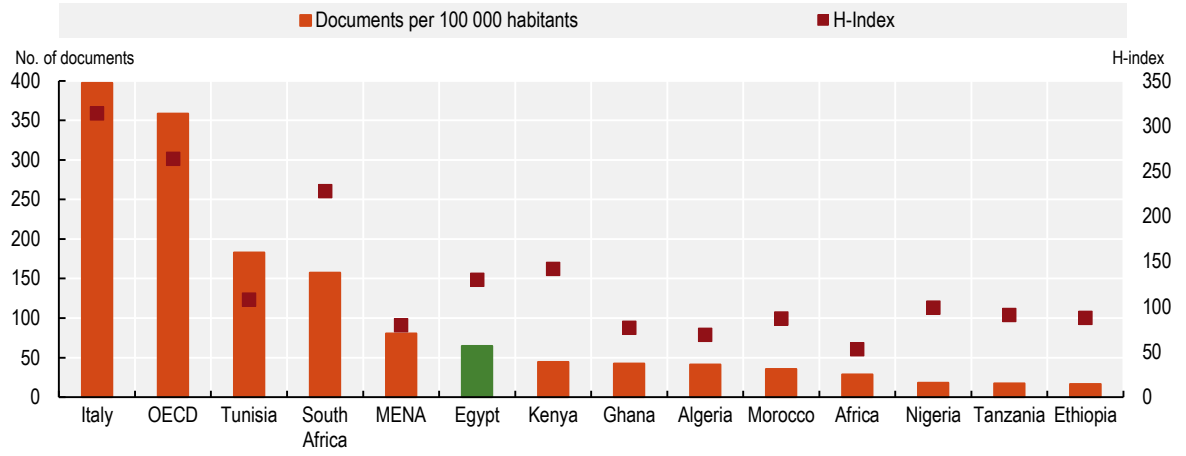
Investments in agricultural innovation could be higher. Egypt, in line with other developing countries, has focused its scientific and other innovative efforts on agriculture, in line with the sector's importance for food security and employment. About 22.7% of all full-time researchers in the country are employed in agricultural and veterinary sciences [authors' elaboration based on UNESCO (2021[15])]. The Agriculture Research Center (ARC), the principal agency within the Ministry of Agriculture and Land Reclamation (MALR), alone accounts for 41% of the total number of researchers in the public sector (MHESR, 2019[16]). Other public institutions – such as the National Research Center, the National Water Research Center, the Desert Research Center, the Food and Agriculture Council, and universities – conduct relevant research and development (R&D) (Stads, Moussa and Badwan, 2015[17]). As a result, Egypt is the second-largest country in Africa in terms of scientific publications in agriculture after South Africa, and the third-highest in terms of papers per inhabitant. Egypt produced 64 publications per 100 000 inhabitants during 2017-19, more than two times higher than the African average (29) but lower than the MENA one (80). Nevertheless, the impact of scientific publications is lower than for some other regional peers (Figure 3.4).

Investments are also lagging behind. As data on business R&D in agriculture are lacking, government investments (which account for 95.4% of total R&D in Egypt) are used as proxy. According to FAO data, Egyptian investments in agricultural R&D stood at 0.62% of agricultural value added in 2016 – the same level as the government's overall R&D investments as a share of GDP (0.68%) that year, but 3.7 times

lower than South Africa (3.7%) and well below the 1% target recommended by the United Nations and the New Partnership for Africa's Development (NEPAD).

Figure 3.4. Egypt has the third-highest number of scientific publications in agriculture per 100 000 inhabitants

Scientific publication per 100 000 inhabitants and H-Index in agricultural sciences, Egypt and selected economies 2017-2019

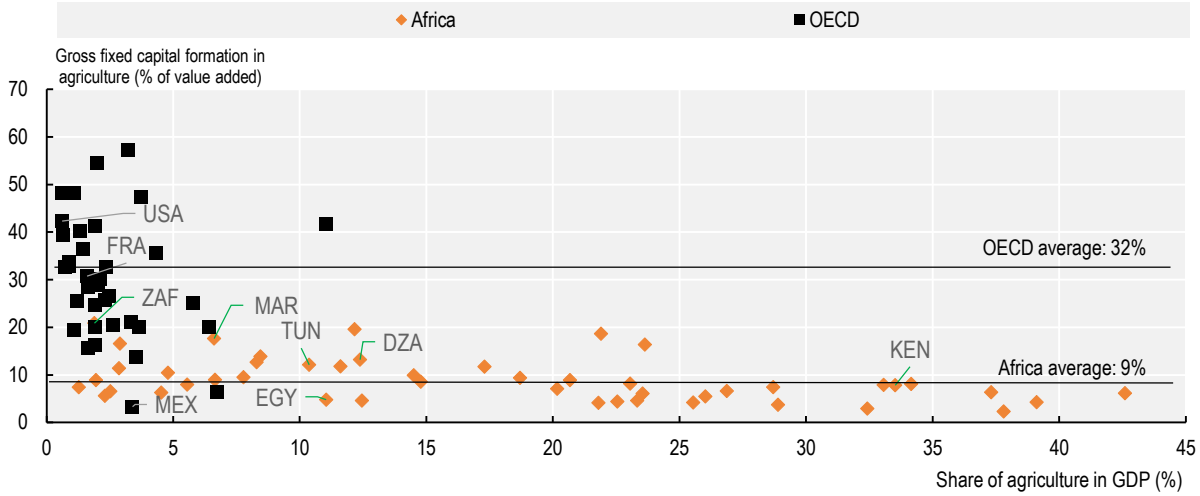


Note: H-index is an indicator that aims to quantify productivity and impact of scientific publication. It measures a country's number of articles (h) that have received at least h citations.
Source: Authors' elaboration based on Scimago Journal & Country Rank (2021[18]), *country rankings*, https://www.scimagojr.com/.

Investments in modern technologies are also low in Egypt. Raising investments in fixed assets (including, machinery, buildings and other infrastructure) will be crucial for raising productivity and enabling agro-food firms to compete on the global stage. However, in Egypt, businesses lag behind in investing in such relevant assets. The share of gross fixed-capital formation in agriculture stood at 5% of agricultural value added in Egypt, more than six times lower with respect to the OECD average (32%) and also lower than the African average (9%) (Figure 3.5).

Figure 3.5. Gross fixed-capital investments in Egypt's agriculture are 5% of value added compared to 32% in the OECD, 2019

Gross fixed capital formation, share of agricultural value added (%) and share of agriculture in GDP (%), OECD and African countries



Source: Authors' elaboration based on FAOSTAT (2021[19]), *Database*, http://www.fao.org/faostat/en/#data; and World Bank (2021[20]), *World Development Indicators*, https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?name_desc=false.

Policies for agro-food in Egypt focus on exports, infrastructure and land management

Several bodies in Egypt oversee the development of the agro-food sector in Egypt. These include the Ministry of Trade and Industry, which promotes trade and industrial development; the Ministry of Agriculture and Land Reclamation (MALR), which charts agricultural strategies and policies; the Ministry of Irrigation and Water Resources (MIWR), which (together with MALR) regulates the distribution of water; and the Ministry of Supply and Internal Trade (MSIT), which is involved with the internal market, price-setting for strategic commodities, distributing subsidies and managing state-owned food enterprises.

A recent achievement in Egypt includes the establishment of the National Food Safety Authority (NFSA) in 2017 under the Prime Minister's Office, which has reshaped the food standards compliance landscape. The NFSA is now the main regulator protecting consumer health, ensuring food producers and processors meet standards of food safety and hygiene. The agency consolidated food safety functions that were previously spread over various ministries, agencies, municipal authorities, and other institutions, and simplified the implementation of food safety laws. The establishment of the NFSA was accompanied by new norms and regulations and the refurbishment of laboratories, enabling parts of the agro-food sector to increase their levels of certification. According to the (NFSA, 2020[21]), 445 agro-food companies have registered with the agency, indicating that they are on the way to being certified or have been certified already. The establishment of clearer quality standards is already helping to drive exports to new markets.

Other important pillars of the quality infrastructure (QI) system in Egypt's agro-food include the Egyptian Accreditation Council (EGAC), the Egyptian Organisation for Standardisation and Quality (EOS) and the National Food Safety Authority (NFSA). In future, Egypt could look to strengthen QI along the value chain – particularly in the upstream segment of agriculture production, which is outside of the purview of the NFSA – and ensure that services are accessible and affordable, particularly for the country's MSMEs.

Finally, working with other African countries to harmonise standards in the continent will also be important in allowing Egypt to capture the benefits of the African Continental Free Trade Area (AfCFTA) (Box 3.2).

Box 3.2. Prioritising agro-food products in the harmonisation of quality standards in Africa

The volume and complexity of technical regulations and the variation in certification, testing and inspection practices and standards used by different African countries continue to pose an impediment to intra-African trade. Some progress has been achieved at the level of the Regional Economic Communities (RECs) in harmonising quality standards, with a particular focus on agro-food products. In the Common Market for Eastern and Southern Africa (COMESA) region, all standards which have been harmonised relate to the agro-food sector, including standards for pulses, sugars, fish, vegetable oils, mangoes, processed meat and poultry and requirements for food hygiene, labelling of pre-packaged foods and pesticide residues. Significant gaps remain, however, and efforts by the RECs have not been sufficiently co-ordinated at the continental level.

The African Continental Free Trade Area (AfCFTA) offers a platform for African countries to co-operate more effectively on quality infrastructure systems in support of the continent's regional integration process. Annexes 6 and 7 of the Agreement include commitments of State parties to facilitate trade through co-operation in areas related to technical barriers to trade as well as sanitary and phytosanitary measures. African regional standards already exist, providing a basis for advancing standards harmonisation in the context of the AfCFTA. With the support of the African Organisation for Standardisation (ARSO), a total of 1 353 standards have been harmonised across Africa, of which 345 (25%) relate to agriculture and foods products.

A prioritisation strategy is required to improve Africa's standards harmonisation process. The harmonisation of standards is a complex task that requires extensive, costly and lengthy negotiations. As a result, it will not be possible to harmonise all standards at once, and a well-informed and appropriate prioritisation strategy will be needed to maximise the impact of standards harmonisation in the framework of the AfCFTA.

In 2020, the United Nations Economic Commission for Africa (ECA), African Union Commission (AUC) and ARSO published a report which identifies priority products and value chains for standards harmonisation in Africa, informed by an analysis of RECs' commonly traded goods, comparative advantage vis-à-vis Africa, and existing industrialisation priorities and harmonised standards catalogues. Agro-processing was identified as a value chain with comparative advantage across all Africa's RECs, offering significant potential for strong forward and backward linkages. Products were identified as priorities for standards harmonisation in Africa if they met two critical criteria: (a) the product has comparative advantage in at least two RECs, and (b) a harmonised standard for the product already exists in at least one REC. According to this methodology, agro-food products featured heavily in the recommended list of priority products for standards harmonisation, which included fish, milk products, fruits and fruit juices, edible oils and cereals such as rice, wheat, maize and sorghum.

Source: ECA, AUC and ARSO (2020[22]), Identifying priority products and value chains for standards harmonization in Africa.

Egypt's policy mix to support agro-food can be grouped under three different instruments:

- **Direct and indirect support for firms.** The Export Development Fund (EDF) supports exporters of agro-food products through a non-repayable financial contribution of up to 10% of the total value exported (see also Chapter 2). In addition, the Export Development Authority (EDA), the Egypt Expo and Convention Authority (EECA) and the Agriculture Export Councils each provide various

types of support, such as dissemination of market information, capacity building and organisation of missions to trade fairs. Egypt also has in place various consumption subsidies for basic food items that shape incentives for producers (Box 3.3).

- **Infrastructure provision in the form of industrial parks**. The government has promoted industrial parks and zones (see also Chapter 2). Hundreds of various types of parks and zones exist in Egypt, promoted by different agencies. Some parks or zones aim to attract foreign investments, while others emphasise value addition of local products or the integration of large factories with small suppliers. Some even include large settlement and housing facilities with much public service infrastructure, from shopping malls to schools and hospitals. At least 67 industrial zones specialise, at least partly, in agro-food industries. Some of these parks allocate land to industrial developers that create the infrastructure for agro-industrial projects, including the use of side-products and residues and the recycling of waste as well as other services. Such sites in zones near the Suez Canal, the Delta, main agricultural production sites along the Nile and the new desert cultivation projects have been populated by agro-industrial companies. Applying best practices in the development of agro-industrial parks can help such investments realise their potential (Box 3.4).
- **Land reclamation**. Reclaiming desert lands and redistributing them for agricultural purposes has been a central element of agricultural strategies in Egypt for many decades (Box 3.3). The aim is to expand the available agricultural land and boost food production.

Box 3.3. A brief history of agricultural strategies in Egypt

In the 1970s, Egypt saw the emergence of food security support policies in reaction to the world food crisis prevailing in the beginning of that decade. Egypt adopted policies and programmes to increase production of the main food commodities. An intensive programme was put in place to subsidise several food commodities, under a central planning and management system covering the production and distribution of most of the agricultural products. The subsidisation of basic food items, such as bread, edible oils and some other food items continues to this day.

In the 1980s, Egypt began implementing three different strategies to foster the development of the agricultural sector, mirroring developments in the wider economy:

- The **1980s Agricultural Development Strategy**, which dealt mainly with the liberalisation of the agricultural sector and adjustment of pricing policies and mechanisms as a means to reallocate resources and provide incentives to farmers to increase agricultural productivity. Reclamation activities from desert land also intensified during this period, with the total estimated at 2.5 million feddans until 2007. Irrigation facilities in such reclaimed areas have made possible desert agriculture, such as in Nubaria, Bustan, Toshka and East Owainat.
- The **1990s Agricultural Development Strategy**, which concentrated on completing the economic reform programme in the agricultural sector – liberalising cotton production, marketing and export; promoting agricultural research; and reviewing the policies and standards used in selecting the beneficiaries for distributing newly reclaimed lands.
- The **Agricultural Development Strategy Towards 2017**, elaborated in 2003, concentrated on achieving self-sufficiency in cereals and continuing the land reclamation programme. It also focused on the decentralisation of water management.
- The **Sustainable Agricultural Development Strategy (SADS) Towards 2030**, elaborated in 2009, with the main objectives of improving sustainability and productivity, raising competitiveness and investments and improving rural living standards.

The SADS was updated in 2019, with the **Strategic Objectives of Sustainable Agricultural Development 2030: Sustainable and Inclusive Agricultural Growth,** with the aim of achieving economic development, reducing poverty, enhancing food security, creating job opportunities and fostering climate change adaptation and mitigation. Among the main targets set are to:

- Increase the contribution of agriculture to the Egyptian national income from 11.5% (rate of 2015-2018) to 14% by 2025, and 17% by 2030.
- Increase the percentage of agriculture employment from 25.3% (ratio of 2015-2018) to 27% by 2025 and to 30% by 2030.
- Increase the value of exports of fresh and processed agricultural commodities and products by 100% by 2030. Increasing the value of exports from USD 5 billion in 2019 to USD 7 billion by 2025 and to USD 10 billion by 2030.

The Sustainable Development Vision (SDS) 2030 places additional emphasis on agro-industrialisation and the use of modern technologies, such as biotechnology and nanotechnology, in agriculture. The SDS also points to establishing (a) logistics stations to reduce waste and (b) a Center for Modernization of Agriculture as a new entity to implement initiatives in the sector.

International co-operation has been important for the implementation of agro-food development policies and practices in Egypt, and has included multiple partners, such as FAO, IFAD and UNIDO. Egypt is currently implementing the Country Strategic Opportunities Programme 2019-24 in co-operation with IFAD which aims at contributing to the sustainable improvement of rural incomes and resilient livelihoods in Egypt. Egypt also works with FAO to funds projects to increase the resiliency of agro-food systems and improve rural incomes across the country.

Note: 1 feddan (fed) = 0.420 hectares, 1.037 acres.
Source: Ministry of Agriculture and Land Reclamation (2009[23]), *Sustainable Agricultural Development Strategy Towards 2030*, https://far-malr.gov.eg/pdf/en/Full%20SADS2030.pdf and Ministry of Planning and Economic Development (2016[24]), *Sustainable Development Strategy: Egypt Vision 2030*, https://mped.gov.eg/EgyptVision?lang=en and additional information provided by official sources.

Box 3.4. Integrated Agro-industrial Park Development in Egypt

According to UNIDO (2019[25]), Integrated Agro-Industrial Parks (IAIPs) are a geographical cluster of independent firms grouped together to gain economies of scale and positive externalities by sharing infrastructure – roads, power, communication, storage, packaging, by-product utilisation, effluent treatment, logistics and transport, laboratory facilities, etc. They are designed to establish synergies between agricultural producers and processors, input providers, and the recycling and use of agro-industrial waste and residues.

In its support for agro-industrial park development, UNIDO draws from best practices for setting up and operating industrial zones in the wider sense and for designing the installations and services that agroindustry businesses require at such parks. Cropping exploitations, livestock production units and collection centres outside the park should be “integrated” into the part design. Processing at the park must be linked to the value chain through stable contractual relationships with suppliers and solid plans for the marketing of final products including side-products. Where sourcing of primary materials is unsecure (for example because small farmers may change their production and sales decisions), the establishment of satellite rural collection and transformation centres should become part of the park design.

In Egypt, UNIDO has supported the development of an integrated agro-park in Qalioubeya (GTI, 2016[26]). The park aims to set up vegetable fruit and dairy and poultry processing units on 21 hectares; create income opportunities for 1 000 vegetable producers, 200 dairy farmers and 200 poultry farmers; and create jobs for 200 skilled workers and an additional 200 positions in services, logistics and the upstream and downstream segments in the value chains. The design foresees a "single internal transportation 'one way' system". There are three functional elements in the design of the park:

- Location of processing businesses from the region combining production, processing, collection, R&D, trade and social functions;
- Rural transformation centres outside the park combining collection and storage of farmers' products with rural advisory services; and
- A consolidation centre that serves as a metropolitan market, putting end-product producers in direct contact with consumers.

Source: UNIDO (2019[25]), *International Guidelines for Industrial Parks*, https://www.unido.org/sites/default/files/files/2019-11/International_Guidelines_for_Industrial_Parks.pdf and GTI (2016[26]), *Integrated Agro-Industrial Parks in Egypt*, https://www.unido.org/sites/default/files/files/2019-05/Agro-Industrail%20Parks%20-%20Qalyoubia%20case%201.pdf.

A roadmap for unleashing agro-food potential

To fully realise its agro-food potential, Egypt would benefit from prioritising the following three areas. Firstly, Egypt should actively seek to enhance partnerships that will enable it to transition towards Agro-food 4.0 (i.e. the use of Industry 4.0 technologies in agro-food) and use it to make agriculture and agro-food sustainable, inclusive and innovative. Secondly, the country would benefit from enhancing national branding and better signalling the quality and originality of its produce to increase market value and gain increased market access in Africa and globally. Thirdly, Egypt should continue to improve its policies regarding MSMEs to ensure that all firms, especially micro and small ones, can benefit from technological change and new markets, while also addressing environmental issues and land and water scarcity. The following paragraphs present specific details for each of these areas.

Enhancing partnerships for Agro-food 4.0 to make it sustainable, inclusive and innovative

Increasing the adoption of Industry 4.0 technologies in agro-food could be a game-changer for Egypt. Water scarcity is currently a major problem faced by the Egyptian agro-food sector. Agricultural lands have seen their access to water reduced. Egypt's annual renewable water resources per capita stood at 596.2 m^3/capita in 2017, below the threshold of water scarcity defined by the UN (700 m^3/capita), while projections estimate that it will drop below the level of absolute scarcity (500 m^3/capita) by 2030 (FAO, 2016[27]; 2021[28]). According to CAPMAS (2019), agriculture consumes three-quarters of all water available. Groundwater, which is increasingly rising in importance as a source of drinking water and irrigation for the country, is facing salinisation due to over extraction and lack of drainage systems (FAO, 2016[27]). Salinisation of intensely irrigated lands as well as sedimentation of dams, rivers and feeder canals contribute to the inefficiency of water use. Climate change could further exacerbate these challenges for agricultural production and the food industries it supports. The WFP estimates that by 2040 Upper Egypt could lose 30% of its food production (WFP, 2017[29]). Continuing and expanding existing investments in modernising irrigation schemes and improving the quality and efficiency of use of water resources will be crucial (FAO, COMESA, AgWA and the Government of Egypt, 2015[30]).

Technological and organisational solutions to improve the productivity of the agro-food system need to embrace more prominently the opportunities that digitalisation, the Internet of Things, big data, artificial intelligence, remote sensing and new IT technology provide. Such Agro-food 4.0 technologies**,** applied at the level of primary production as well as manufacturing, pave the way to a more resource-efficient intensification of agricultural production and value addition. This goes beyond precision-farm applications, and has an impact along the entire value chain, providing smart solutions to producers, suppliers, manufacturers and buyers for the optimisation of production processes, equipment performance, logistics and customer management. Finally, Agro-food 4.0 can also be important in saving water in production and processing, a key challenge for Egypt.

Public policies could do more to foster Industry 4.0 in the economy including in agro-food (see Chapter 2). Increasing support for innovation as a whole, and for Agro-food 4.0 in particular, both in the public research system and in businesses, is vital. Egypt should also consider fostering technology adoption and adaptation, an area which has been relatively neglected compared to upstream innovation efforts. To make this happen, Egypt needs to consider updating and modernising its policy mix, by diversifying policy instruments available for agro-food firms and linking direct and indirect support to the development and adoption of technologies. For example, integrating digitalisation with green-growth incentive schemes and regulations to reduce waste and improve natural resource use, such as through targeted loans and grants, could help reap the benefits of digital technologies for sustainability. Finally, increasing support for researchers to acquire skills in Agro-food 4.0 is essential.

Global partnerships can also contribute to foster innovation in agro-food, including in Agro-food 4.0. Innovation does not flourish in a vacuum; rather, it relies on multiple stakeholders interacting together over time, forming a dense and varied ecosystem. International linkages can be critical in this respect, fostering cross-border access to new technologies, facilitating knowledge sharing, and helping adapt innovations to local markets. In this respect, attracting foreign investment in high-value-added activities is an important component for learning and building capabilities. In 2015-20, Egypt was the third-largest African recipient of FDI related to R&D activities in agro-food. Although the entire continent is still playing a marginal role at the global level, with only 5% of the total, it represents a big leap with respect to 2005-10, when Africa absorbed only 1% of total global investment and Egypt recorded none (Financial Times, 2020[31]).

Other means of building international partnerships can involve multiple stakeholders and formats (e.g. co-operation between governments; between the public, research and private sectors; or even only among businesses). They can also have multiple objectives, from strengthening investments in basic agriculture research to joint applied and development activities that involve technology transfer and technical co-operation to increase competitiveness of both farmers and food producers. Egypt is also a member of the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), which has fostered innovation and start-expansion in agro-food in Italy and its member countries (Box 3.5).

Box 3.5. CIHEAM: Promoting agro-food innovation through partnerships

The International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM) is devoted to the development of agriculture and sustainable food systems and to the support of an inclusive growth in rural and coastal Mediterranean territories. Jointly founded in 1962 by the OECD, the European Council and the governments of southern European countries, CIHEAM has 13 member countries: Albania, Algeria, Egypt, France, Greece, Italy, Lebanon, Malta, Morocco, Portugal, Spain, Tunisia and Turkey. The organisation operates as a training, research and co-operation platform with four agronomic institutes: Bari (Italy), Chania (Greece), Montpellier (France) and Zaragoza (Spain). The Italian Institute in Bari (CIHEAM Bari) is the largest one.

The current CIHEAM mission is organised under the Action Plan For the Mediterranean 2025 (CAPMED2025), which is aligned with the United-Nations Agenda 2030 for Sustainable Development. In the implementation of its plan, CIHEAM relies on three main complementary tools that cover food security, food safety and nutrition; innovative agricultural production systems; natural resource management; and entrepreneurships:

- **Education and capacity building.** CIHEAM offers both specialised courses and master programmes that target post-graduates, officials and professionals of agri-food sectors in the Euro-Mediterranean Region, with a focus on enhancing gender opportunities and equality. During 1998-2020 the share of female MSc students rose from 29% to 61%, and female PhD students from 8% to 25%.
- **Applied scientific research**. CIHEAM engages in in-house academic and scientific production, organises forums for PhD students and Young Researchers, and leads a platform of researchers that use CIHEAM Institutes research facilities as well as affiliated institutes.
- **Co-operation projects**. CIHEAM pursues a bottom-up problem-solving strategy which involves local stakeholders (farmers, producers and associations) as well as national regional authorities in the assessment of their specific needs through a collaborative approach in the areas of sustainable food systems, precision agriculture, organic production and adaption to climate change, among many others.

CIHEAM Italy leverages on the excellence of Italian agri-food system

In 2020, CIHEAM Bari hosted the Mediterranean Innovation Hub as a midpoint between public and private stakeholders aiming to foster innovation in agro-food. The project involves young start-ups that provide innovative solutions to private sector challenges. It brings together the competences of several stakeholders along the entire value chain – such as private companies, industrial associations (Confindustria), agri-food cooperatives (Confcooperative and Legacoop) and universities – that together create new opportunities for innovative start-ups and youth entrepreneurship within networking programmes at various territorial and international levels.

CIHEAM Bari's network of collaborations with the Italian public and private sector comprises 45 academic institutions and research bodies, 48 organisations and private companies, 68 administrations (including regions and municipalities), and 32 industrial associations and productive districts.

Source: Teodoro Miano, Italian Government Delegate to CIHEAM Governing Board and Vice President, International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), presentation during the public-private roundtable on "The future of agri-food in Egypt", Paris, 26th October 2020.

Updating branding, signalling quality

Leveraging Egypt's country image is also a promising option to increase value addition. In a highly competitive global landscape, branding and reputation can help set Egyptian products apart and become an asset for penetrating new markets. Egypt could leverage on the country's unique geography, history and culture to signal quality in high-value markets both abroad and domestically (Box 3.6). Within Egypt there is also scope to better familiarise local consumers with quality and culturally distinctive products from the country's different regions by supporting marketing campaigns, setting up specialised shops and retail outlets and ensuring public food procurement takes into account the different local foods that Egypt is producing.

Box 3.6. Leveraging the potential for typical Egyptian terroir food products

The programme on market access for agro-food products (UNIDO-PAMPAT) seeks to improve market access for "terroir products" and supports efforts by local producers to commercialise such products – not along global value chains, but to local high-value markets. The purpose of the programme is to generate higher value and more income and jobs for producers in the context of local economic development, and to promote healthy and higher-quality food products with more nutritional value for consumer.

In Egypt, the focus of UNIDO-PAMPAT is on products that are typically Egyptian, come from certain regions, and require specific knowledge for production and preparation. For example, the programme has organised a national contest showcasing some 400 local products from 27 governorates.

Source: UNIDO (2020[32]), *Inventorying of Egyptian Typical/Terroir Products*, Final Report, https://www.unido.org/sites/default/files/files/2020-08/Inventorying_of_Egypian_Terroir_Food_Products.pdf.

Don't leave MSMEs behind

Realising the full potential of agro-food in Egypt requires addressing and minimising the dualism in the sector and identifying ways to better connect small, traditional farming with lead firms, domestically and internationally. The optimisation of food production – capital-intensive as it already is – will be easier to achieve in the higher-value food segments, especially for exports. It is important that the productivity increase also unfolds in traditional (staple) food production and processing that mainly caters to the domestic market, and this will require targeted and effective support – not only through adequate financing schemes, but especially through technical assistance and modernised extension services. In particular:

- *Co-operatives and shared infrastructure and services could do more to foster collaboration along the value chains*. Co-operatives have a long history in Egypt, from the start of the 19th century, and now have a reach that includes almost all farmers in Egypt. However, they largely focus on carrying out administrative functions in relation to agricultural policies and strategies (Ghonem, 2019[33]; IFAD, 2018[34]). Going forward, initiatives such as jointly operated collection centres and packaging stations for primary and semi-processed food products (as well as joint arrangements for cultivation of land, use of technology and marketing of products) could be collective actions that can be fostered by co-operatives.
- *Increasing technical assistance is vital for raising productivity across the board.* The traditional extension system can provide only part of the technical assistance that the smaller farmers need because it is overwhelmed by outdated skills among its agents, outdated training techniques, lack of resources and transportation facilities, and loss of reputation, among other factors. While upgrading of extension services seems to be an important element to improve farm operations among smallholders, private advisory services provided by input providers, buyers and finance institutions will also need to complement the diffusion of knowledge and innovation among farmers in Egypt. Technical assistance, demonstration courses and vocational training for the development of better skills are also required in the processing sector. In the food processing sector, continued efforts are necessary by MSMEDA and IMC to support small enterprises in product development, quality improvement, business development, and training and capacity-building, as well as in lending.
- *Facilitating access to finance is needed, particularly for micro and small firms*. Public policies have been enhancing access to finance for micro, small and medium enterprises (MSMEs) in recent years. The Agricultural Bank of Egypt (ABE), the main source of agricultural finance, is undergoing reforms to improve its services and delivery to the agro-food sector and to also employ credit

officers with knowledge of farming and agro-food to better cater to the sector's needs. ABE has also entered into a twinning arrangement with Rabobank, an international corporate bank specialised in agricultural value chain finance, and has signed a contract with MSMEDA worth EGP 50 million (USD 2.791 million) to extend credits to agro-processing MSMEs. The National Bank of Egypt in 2019 also reported that 14% of its credit portfolio is going to primary agriculture and food processing, and the share of agriculture-related lending has risen at an increasing rate over the last few years. The COSOP, a programme with IFAD, is also aiming to impove access to finance firms to foster value chain development in agriculture (IFAD, 2018[34]).

However, more can be done to increase financing for smaller firms. Only 2.26% of small agro-food firms receive loans compared to 21% of medium ones, according to CAPMAS (2018[9]). Expanding such initiatives to alleviate financing constraints for small firms – particularly devising instruments and increasing outreach for informal firms and those that may not be able to easily meet the collateral, credit history and other stringent requirements needed to access credit – will help unlock the potential of MSMEs in agro-food. In turn, using extension services to improve financial literacy among smallholders and MSMEs could also improve their ability to reach out to credit institutions to finance their needs. In addition, current land-reclamation initiatives could accommodate more small producers with limited access to resources. This would require additional investments in technical assistance and advisory services as well as specific credit schemes for small producers.

- *Supporting businesses in complying with standards is needed to strengthen quality.* Incentivising small businesses to access the quality infrastructure system – for example, by attaching relevant conditions to loans and other forms of direct and indirect support and training – has the potential to increase compliance. Designing a pay-off for the informal sector to participate will also be important. A starting point would be developing a culture of quality among producers and consumers. This could be initiated, for example, through a campaign for food safety that can be also linked to current COVID-19 containment measures, including on-line and in-person demonstrations for consumers and producers, starting with washing hands and handling food products. Demonstrations of new equipment and technology designed to improve quality management in production and distribution would then become a second step, to be followed by investment schemes that truly improve the income situation of informal businesses.

Focus on E&E in Egypt

A growing industry

Globally, electronics and electrical equipment (E&E)[1] is the top industry by manufacturing value added (MVA), accounting for nearly 13% of total, equal to the GDP of Korea [authors' elaboration based on UNIDO (2021[5])]. Production E&E employs around 29 million people (equal to the population of the Netherlands and Greece combined), making it the top world manufacturing employer, together with textiles (which also has a global workforce of around 29 million workers). The top world producer is the People's Republic of China (hereafter "China"), accounting for a third of the world's total (33.6%), followed by the United States (17%) and Japan (9.8%). E&E accounts for approximately 20% of global merchandise exports during 2017-19. China is the world's largest exporter (24%), followed by the United States (7%) and Germany (6%).

In Egypt, E&E generated around 3.8% of the country's MVA in 2018, or approximately 0.6% of the country's GDP. According to the latest establishment census, in 2017 the sector employed 55 000 people, or 2% of total manufacturing employment. Egypt is a small producer compared to global hubs, accounting for approximately 0.6% of E&E world value added and exports. However, it has potential within the African continent. UNIDO provides statistics on the value added generated by the industry for a group of eight countries in the continent. Out of these, Egypt was the third-largest hub, generating about 60% the value

added of South Africa, the top performer, and accounting for nearly 23% of the group's total. Similarly, Egypt is the fourth-largest exporter, after Morocco, Tunisia and South Africa – generating about 13% of the continental total and double the country's average share of continental exports [authors' elaboration based on UNIDO (2021[5]) and UN Comtrade (2021[2])].

E&E emerged in Egypt via the domestic market, mostly through state-owned enterprises that licenced foreign technologies or set up joint ventures with global leaders (UNIDO, 1994[35]). Since the mid-1970s, liberalisation reforms have enabled the entry of foreign and local firms into the sector (UNIDO, 1994[35]; UNCTAD, 1999[36]; Refaat, 1999[37]). Since Egypt's entry into WTO and the development of bilateral and multilateral FTAs focused on neighbouring regions, the country has reduced tariffs for E&E overall. The average most favoured nation (MFN) tariff is 8.4%, while for many of Egypt's FTA partners the rate is 0%. Nevertheless, an escalating tariff remains, with final products charged on average 10.5% (going as high as 60% for some radio and television receivers), while electronic components (e.g. chips) have zero tariffs (Table 3.1). The combination of regional FTAs, together with the proliferation of various zones that allow for duty-free intermediate imports as long as final products are exported (see Chapter 2), has encouraged some foreign investments in Egypt targeting Middle Eastern markets.

Table 3.1. Average tariff rates for Egypt's E&E industry, by trade agreement and value chain segment, 2017-19

Value chain segment	MFN	EU/COMESA/Agadir/PAFTA	Turkey	EFTA	MERCOSUR
Electronic components	0.0	0.0	0.0	0.0	0.0
E&E sub-assemblies and parts	7.3	0.0	0.1	0.1	5.4
Other E&E components	7.0	0.0	0.1	0.0	4.6
Final E&E products	10.5	0.0	0.0	0.0	4.1
Total E&E	8.4	0.0	0.0	0.0	4.2

Source: Authors' elaboration based on WTO (2020[38]), *Tariff Download Facility* (database), http://tariffdata.wto.org/default.aspx.

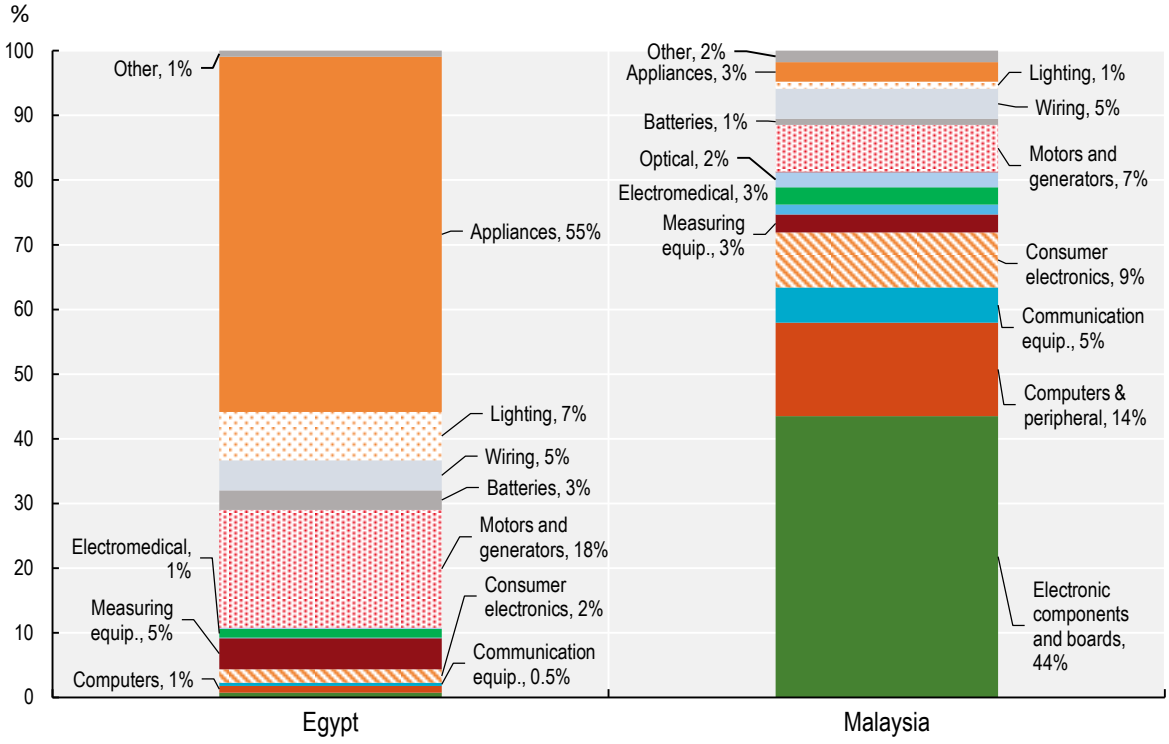
The lion's share of production in Egypt is generated by domestic electrical appliances, which absorb 55% of employment in E&E and are mostly directed to the domestic market, followed by electric motors and generators (18%) and lighting equipment (7.3%). Wiring and measuring and testing equipment account for 5% respectively. Egypt's pattern of specialisation in the production of final consumer appliances and some electrical components is markedly different to that of Malaysia, an export-oriented E&E hub in Southeast Asia that is among the world's top 15 global producers in the industry. Malaysia specialises in upstream electronic components and boards, which account for 44% of total E&E employment in the country. Malaysia also produces relatively more sophisticated final products, such as computers and peripherals (14%) and consumer electronics (9%) (Figure 3.6).

E&E firms concentrate in or near Greater Cairo. Greater Cairo, which includes the governorates of Cairo, Giza and Qalyubiya, accounts for 50% of all firms in the industry; within this, Giza accounts for the highest share, with 19% of total. An additional 15% of E&E firms are located in Sharqia governorate, and 9% in Alexandria (CAPMAS, 2017[39]). This review cross-checked lists of exporting manufacturing E&E firms provided by three different online sources, the International Trade Centre (ITC) through Kompass database, the Engineering Export Council (EEC) and the Information Technology Industry Development Agency (ITIDA). Additional research was conducted to locate the addresses of manufacturing facilities of these businesses through company websites and reports. The results were narrowed down to 104 Egyptian firms and foreign subsidiaries. In line with the census data, the majority of these firms were concentrated in Greater Cairo (57%). Most (17.3%) were in 6th of October, a city that was developed to house industries in Giza; the El Obour industrial zone (8%); and other Cairo and Giza locations. 10th of

Ramadan, one of Egypt's largest industrial areas located 60km away from Cairo at Sharqia, hosted 28% of these firms.

Figure 3.6. Structure of E&E industry by employment, Egypt and Malaysia, 2014-16

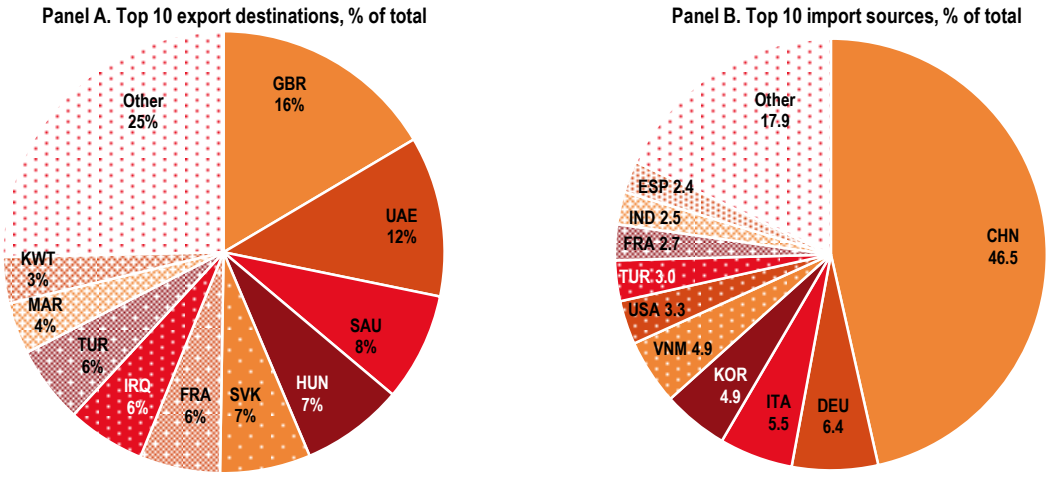
ISIC - 4 digits, share of total E&E employment, %



Note: ISIC descriptions have been shortened for visual purposes. Labels shown only for products that account for more than 0.5% of total.
Source: Authors' elaboration based on UNIDO (2021[5]), *INDSTAT* (database), https://stat.unido.org/database/INDSTAT%204%202020,%20ISIC%20Revision%204.

Even though the country is a net importer in E&E, both exports and imports have been rising rapidly, more than doubling since 2010. Egypt's E&E exports have been among the most dynamic in Egypt's export basket, increasing by 10.6% annually during 2010-19, 6.3 times the merchandise export average (1.68%) and higher than E&E imports (8.4%) [authors' elaboration based on UN Comtrade (2021[2])]. During 2020, E&E exports fell by 8.7%, less than the overall contraction of 12.5% experienced overall (ibid.). Exports of E&E now account for approximately 6% of Egypt's total merchandise exports (2018-20), higher than at the beginning of the decade (4% during 2010-12). Egypt imports E&E mostly from China (which accounts for 46.5% of total imports), followed by Germany (6.4%), Italy, and Korea (approximately 5% each) (Figure 3.7). East Asia as a whole accounts for 53% of imports and Europe for 24%, while Africa accounts for less than 1%. In terms of exports, the top three export destinations in 2018-20 were the United Kingdom (17%), the United Arab Emirates (12%), and Saudi Arabia (8%). Africa accounted for 15.8% of Egyptian E&E exports, in line with the continent's overall share in Egyptian merchandise exports, and MENA for 43.2%, higher than the region's overall share at 31%.

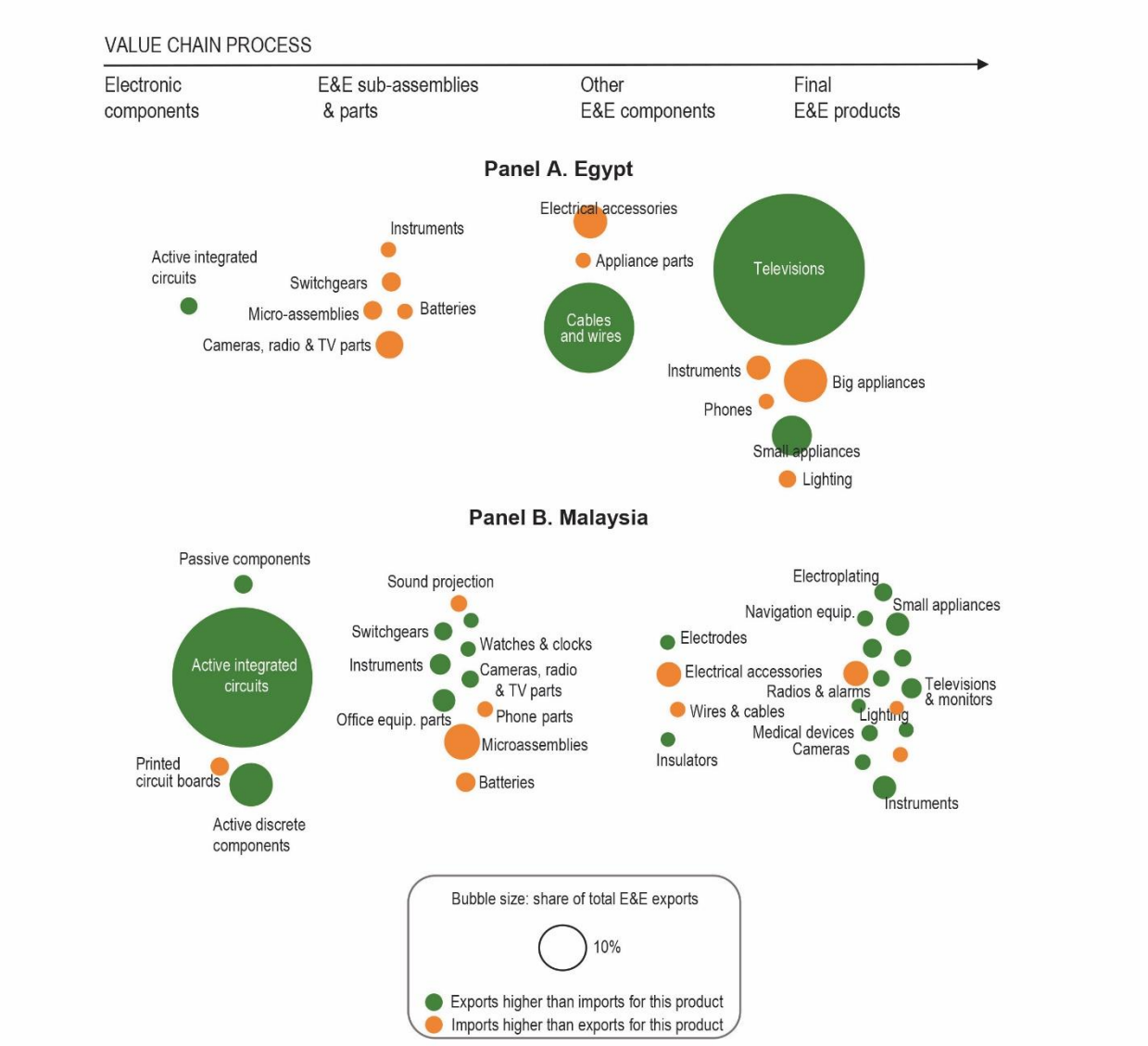
Figure 3.7. Egypt's top 10 export destinations and import sources for E&E, 2018-20



Source: Authors' elaboration based on UN Comtrade (2021[2]), *Database*, https://comtrade.un.org/data.

Egypt participates in value chains by manufacturing and assembling consumer products, which account for 63% of E&E exports (Figure 3.8). Typically, producers in the E&E value chain reap higher value when they are specialised in upstream segments that are complex and require high technology and skills, such as integrated circuits. Assembling these into final products is a less sophisticated process that can take place in a higher number of locations worldwide. The high share of final product exports suggests that Egypt connects to value chains downstream, at the end of the assembly process. Egypt mainly exports televisions (42% of E&E exports), whose export value has increased by ten times since 2012, while big and small domestic appliances (where Egyptian production is concentrated and where domestic brands are active) account for 17% of the total. Further upstream, Egypt exports wires and cables, which generate a quarter (23.6%) of total exports. Egypt exports few sophisticated upstream components, such as integrated circuits (ICs) (chips), and sub-assemblies for E&E, such as panels. In contrast, Malaysia has become a big value-chain participant by tapping into more-upstream segments. In Malaysia, ICs account for 44% of total E&E exports, and other types of electronics components reached 12.8%; these go to other countries to be assembled into final products. In addition, Malaysia exports more product categories along the value chain, with 33 products accounting for more than 0.1% of total Malaysian E&E exports, double with respect to Egypt's 15. The variety of exports is an indication of the more diverse ecosystem and existing expertise across a number of fields in Malaysia in this industry, which can be attractive for value chains.

Figure 3.8. E&E exports from Egypt and Malaysia, by value chain segment, 2018-20



Note: Value segment definition based on a combination and aggregation of categories found in Bamber and Gereffi (2013[40]), *Costa Rica in the Electronics Global Value Chain: Opportunities for Upgrading*, https://gvcc.duke.edu/wp-content/uploads/2013-08-20_Ch2_Medical_Devices.pdf and Frederick and Gereffi (2016[41]), *The Philippines in the Electronics and Electrical Global Value Chain*, https://gvcc.duke.edu/wp-content/uploads/2016_Philippines_Electronics_Electrical_Global_Value_Chain.pdf. Only product categories with more than 0.1% of exports are included for visibility purposes. Data for Malaysia are for 2017-19.
Source: Authors' elaboration based on UN Comtrade (2021[2]), *Database*, https://comtrade.un.org/data.

Home-grown E&E brands have emerged in E&E in Egypt (Box 3.7). Several firms – such as Unionaire, Universal and Fresh Electrics – have tried to capture the lucrative home-appliance market, where demand grows with increasing incomes and urbanisation. Some firms are assembling smartphones domestically, such as SICO. The emergence of these Egyptian players together with foreign subsidiaries has led to a relatively large number of medium- and large-sized firms in the sector, both in relation to other sectors within Egypt and with respect to other countries (Figure 3.9). Firms with over 50 employees make up 14.5% of the total in electronics manufacturing and 11% in electrical, similar to motor vehicles and beverages, and far higher than the manufacturing total of 1%. The sector average of 12% brings the country in line

with Finland and Brazil in terms of firm structure, but still far from Switzerland (23%), and lower than Austria, Germany and the United States (all between 15%-16%), where medium-sized firms have been historically able to flourish.

Box 3.7. Egyptian businesses in E&E have developed their own brands

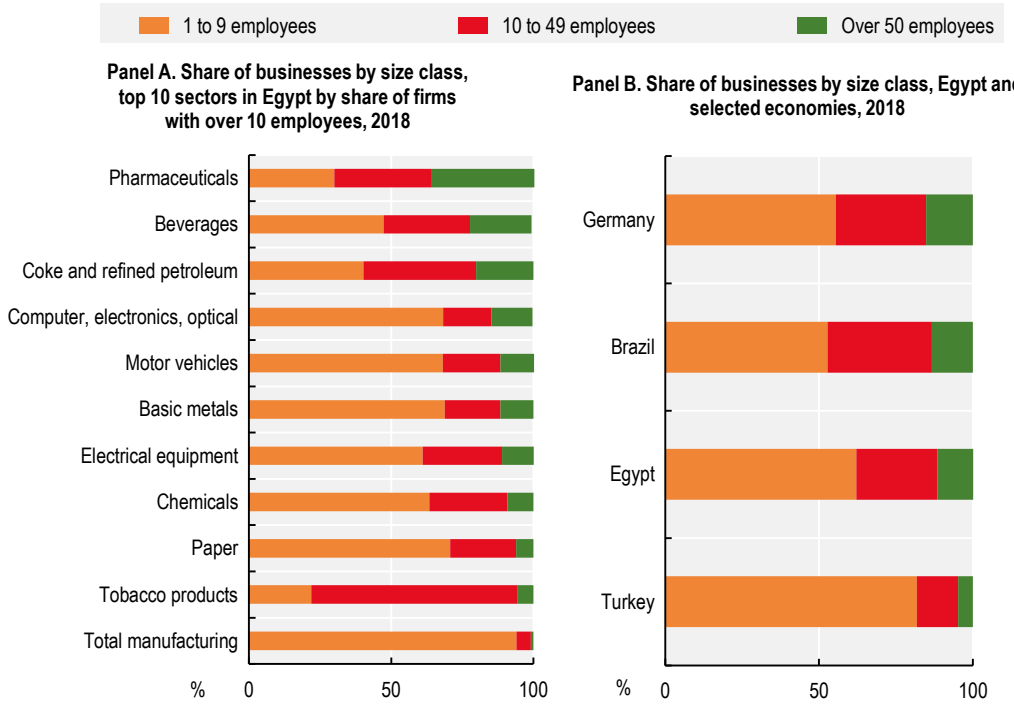
SICO Technology is a telecommunications manufacturer headquartered in Cairo, Egypt, providing technological devices and solutions. The company was set up in 2003, building on decades of experience of trading electronics by its parent group, El Sayed Salem Group. Now the firm is the first producer of 4G handsets in Egypt under its own brand, Nile X. SICO Technology has offices in Africa and the Middle East (Cairo, Egypt; Nairobi, Kenya; Dubai, UAE) and exports 25% of its production. The company has production facilities in Cairo and also in the New Assiut Technology Park. MCIT is a shareholder in the company.

Elsedewy Electric was founded in 1938 as a trader of electrical cables, but is now one of the biggest manufacturers in Egypt and Egypt's sixth-largest firm by market capitalisation. The company started out as the sole manufacturer of cables in Egypt in the 1960s and then used that knowledge to establish its own cable manufacturing business in 1984. Now Elsedewy produces electrical components (e.g. transformers) and carries out power generation infrastructure work, with about 17.5% of its revenue coming out of exports in 2019. It has six subsidiaries in Africa and the Middle East.

Unionaire is a home appliances maker founded in 1995 and headquartered in 6th October industrial zone. Unionaire manufactures, distributes and exports air conditioners and other home appliances products. The firm exports to 70 countries, mainly in Africa and MENA.

Source: Company reports and interviews.

Figure 3.9. Medium and large firms make up 12% of total in Egypt's E&E, compared to 1% in total manufacturing



Note: The Egyptian census counts establishments, whereas the OECD Structural Business Statistics collects information on enterprises; this may lead to discrepancies. Data for Ireland, Spain, Turkey and the United Kingdom are for 2017, United States for 2015 and Brazil for 2014.
Source: Authors' elaboration based on CAPMAS (2018[9]), *The results of the fifth 2017/2018 Economic Census*, https://www.capmas.gov.eg/Pages/Publications.aspx?page_id=7195&Year=22986 ; and OECD (2021[42]), "Structural business statistics ISIC Rev. 4", *Structural and Demographic Business Statistics* (database), https://doi.org/10.1787/8e34f7e7-en (accessed on 20 January 2021).

Targeted policies, talents and market potential have been behind the emergence of E&E in Egypt

Four main factors explain the rise of E&E in Egypt:

- **A sizeable talent pool in relevant subject areas.** Egypt's tertiary education has been an asset for the E&E industry. While it is difficult to judge educational quality, various world rankings are often used for this purpose by prospective students and policy makers looking to boost the image of their educational institutions and compete for talent (OECD, 2019[43]). One of these is the QS World University Rankings, produced by a UK-based consultancy. According to this ranking, Egypt's universities hold a top position in Africa in relevant subject areas, such as electrical and electronic engineering and computer science, with three universities among the world's top 250 in the former and one in the latter (Table 3.2). Graduates from these universities have been the force behind the development of some of Egypt's innovative technology firms in the E&E industry (TechCrunch, 2017[44]). A survey of 200 tech firms by Endeavor Analytics and MC Egypt in 2014 found that a third of the firms had at least one founder that attended the American University of Cairo (17%), Ain Shams University (16%) or Cairo University (9%) (Endeavour Insights and MCEgypt, 2015[45]).

  Nevertheless, there is room for improvement. In the QS ranking, Malaysia, despite having a population nearly three times smaller than Egypt, has two universities in these subject areas in the top world 100 (Universiti Malaya and Universiti Teknologi Malaysia) and another 10 in the top 500.

Moreover, Egypt is also facing skill shortages in some areas and a brain drain in others, indicating that in the future the talent pool may not be able to sustain the industry's further development and upgrading.

One area for improvement is technical and vocational education (TVE). Overall, despite tertiary graduates facing the highest unemployment in Egypt, students have a higher preference for choosing colleges instead of TVE, which is associated with a lower social status (Álvarez-Galván, 2015[46]; Jemalli and El-Hamidi, 2018[47]). Creating targeted, future-oriented TVE programmes that cater to the emerging needs of the E&E value chain could boost the country's competitiveness. This would require strong collaboration between bodies in charge of industrial development, the Ministry of Education that is overseeing TVE programmes, and the private sector to ensure that programmes reflect on-the-ground needs. In addition, talent development also needs to target higher-end and specialised skills, such as materials development and chip design. Stronger linkages between the E&E industry and local universities and international collaboration with diverse technology providers, from academia to private sector, would be key to strengthening capabilities in this respect, particularly for more advanced technologies. For example, the Interuniversity Microelectronics Centre (IMEC) in Belgium, which is a top research and innovation hub in nanoelectronics and other digital technologies, was a key partner in developing SilTerra, a chip maker in Malaysia. IMEC needed a chip designed for a DNA-sequencing machine, and through technology collaboration with SilTerra, the latter was able to expand local skills by making chips tailored to life sciences.

Table 3.2. Universities in Africa in QS top-1 000 world universities and their world ranking, by subject area, 2020

World ranking	Electrical and electronic engineering	Computer science and information technology
151-200	Cairo University (Egypt)	Cairo University (Egypt)
201-250	Ain Shams University (Egypt) Alexandria University (Egypt)	
251-300	University of Pretoria (South Africa)	
301-350	University of Cape Town (South Africa)	Ain Shams University (Egypt) Alexandria University (Egypt) University of Cape Town (South Africa)
351-400	The American University in Cairo (Egypt)	The American University in Cairo (Egypt)
401-450	Stellenbosch University (South Africa)	
451-500	University of Witwatersrand (South Africa)	University of Pretoria (South Africa)
501-550		Stellenbosch University (South Africa)

Source: Authors' elaboration on QS (2020[48]), *World University Rankings*, https://www.topuniversities.com/university-rankings

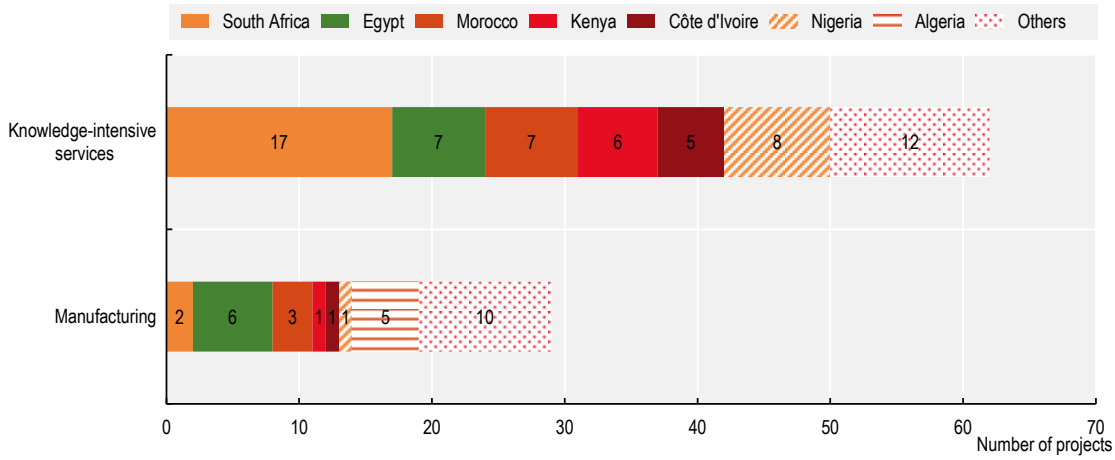
- **A growing emphasis on attracting foreign investments and encouraging exports.** Egypt is among the key players in this emerging industry in Africa. Africa attracted 29 manufacturing projects and 50 knowledge-intensive service projects in E&E during 2017-20 (through July 2020). In manufacturing, Egypt attracted the most in the continent (6 projects) during this period, while in knowledge-intensive services it ranked second.

  Foreign investments in the industry increasingly eye Egypt as a regional export hub for consumer electronics. Investments by Samsung and LG in recent years have expanded the country's production and export of televisions, while some Chinese investors, such as Transsion, are focusing on smartphone production and have started to see Egypt as a hub for regional production (Egypt Independent, 2019[49]; Daily News Egypt, 2018[50]). However, the number of FDI projects in E&E going to Africa, and Egypt within it, is small with respect to the global industry. Mexico alone attracted 47 manufacturing projects and 39 knowledge-intensive service projects during the same period. Moreover, the overall engagement of the country with global value chains is low, restricting

opportunities for fast growth and learning to operate in global markets (Figure 3.10). The share of foreign value added (FVA) in total exports was 20% in Egypt, compared to 40.83% in Malaysia and 60.3% in Viet Nam, according to calculations based on the UNCTAD-Eora Global Value Chain Database.

Figure 3.10. Egypt is among the top 2 hubs in Africa for FDI in E&E

Number of greenfield FDI projects in E&E in Africa, by type, 2017-20



Note: Knowledge-intensive services include research and development (R&D), headquarters and business services.
Source: Authors' elaboration based on Financial Times (2021[14]), *fDi market database*, https://www.fdimarkets.com

- **A large domestic market with linkages to nearby fast-growing regions**. Not only is Egypt's population large (just over 100 million people), but the country is also located within fast-growing markets, such as Africa and the Middle East. According to data gathered by Kearney (2020[51]), total retail sales in Egypt reached USD 115.5 billion in 2019, similar to Nigeria and Malaysia. The latest figures for the market of E&E are from 2016, when it reached some USD 10.4 billion (8% of the total retail market); about one-fourth of this is spent in Cairo (CAPMAS, 2018[52]). The growth of e-commerce in Egypt is also fast and could boost E&E. Total sales in 2017 reached USD 1.6 billion dollars, up from USD 1.1 billion in 2014, reaching a penetration rate of 2.5%. For Egypt and Gulf Cooperation Council Countries, E&E was the top e-commerce category, accounting for 16%, particularly mobile phones (Bain & Company and Google, 2019[53]). Higher demand for E&E can also stimulate output growth from other industries, resulting in multiple benefits for the local economy (Box 3.8).

Box 3.8. Output multipliers in Egypt's manufacturing industries

The output multiplier measures how much overall output changes in the economy on account of a change in demand. Estimates by the Ministry of Trade and Industry and the Industrial Modernization Center in Egypt show that E&E have some of the highest output multipliers in the country. An increase of USD 1 in final demand for electronics increases overall output in the local economy by USD 1.98 in Egypt, while USD 1 in electrical equipment does so by USD 1.88 (Table 3.3).

Table 3.3. Top 10 sectors in Egypt, by size of output multiplier

Industry	Output multiplier
Motor vehicles, trailers and semi-trailers	1.99
Computer, electronic and optical products	1.98
Electrical equipment	1.88
Machinery and equipment	1.77
Rubber and plastics product	1.71
Transport equipment	1.70
Textile	1.67
Basic pharmaceutical and pharmaceutical preparation	1.62
Paper	1.62
Basic metals	1.57

Source: MTI and IMC based on CAPMAS, Input-Output tables 2014/15.

- **A targeted policy for E&E.** Egypt prioritises the development of the E&E industry through targeted policies. The 2016 Industry and Trade Development Strategy (ITDS), elaborated by the Ministry of Trade and Industry (MTI), highlights engineering industries (an industrial grouping that combines E&E, machinery, metals manufacturing and automotive). The National Strategy for Science, Technology and Innovation 2030 also highlights the need to create local capabilities in production of science and knowledge in several sectors, including in E&E. In addition, Egypt launched in 2017 the Presidential "Egypt Makes Electronics" (EME) Initiative, led by the Ministry of Communications and Information Technology (MCIT) (Table 3.4). The aim of this initiative is to boost exports in electronics and electrical (E&E), reduce import dependency and foster job creation. The initiative has two focuses: enabling the design and production of electronic circuits to take place in Egypt, and fostering a manufacturing industrial ecosystem with a focus on employment creation. It is also looking to boost investments in start-ups that are working on Industry 4.0, IoT and electronics design.

Table 3.4. The "Egypt Makes Electronics" Initiative, 2020

Programme	Description	Financing	Conditionalities	Results
Innovative Designs Empowerment	For the design of electronic products and components that are ready for mass-production.	Up to EGP 5 million (co-financing)	Applicants have proof-of-concept published in journal or in a patent, or have promising results or a working prototype	Under implementation
Start-up Support	ITIDA-EME will partner with private sector to support start-ups through acceleration and incubation services.	Total value of fund EGP 0.5-2 million for 0.5-2 years in exchange for 2-4% start-up equity	Start-ups that operate in electronics design, Industry 4.0 manufacturing, IoT systems	Innoventure and AUC Venture Lab were selected
Co-investment Partnership	ITIDA-EME will partner with private sector to finance and grow innovative start-ups.	2:1 first investment, up to EGP 4 million by ITIDA-EME and 1:1 up to EGP 1 million as follow-up. 60% profit share with partner	Start-ups carry out key activities locally (R&D, design, manufacturing). Less than five years old, not subsidiary or JV and has proven innovative potential	Innoventures was selected
Industry 4.0 Implementation Program	Phase I targets providers of IT and technology training, assessment and consulting services for Industry 4.0 that can support selected domestic E&E manufacturers.	Not available	Up to 5 domestic E&E manufacturers selected	Under implementation

Electronics Innovation Complexes Program	Three established: At TIEC in Smart Village, at New Borg ElArab Technology Park, and at New Assuit Technology Park. Operators will finance, maintain, upgrade and manage the three parks, which all have co-working spaces, IoT labs, Fab Labs and PCB Labs.	Each park receives EGP 1.5 million in annual funding	Not applicable	Consortium of SudoTechs, NU, Techne and Med Angels; Idea Space San3aTech and EiTESAL

Source: Authors' elaboration based on Egypt Makes Electronics webpage (http://www.makeelectronics.eg) and Yasser (2020), "Industry Digital Transformation", ITIDA, presentation at the Third PLG e-Meeting of the PTPR of Egypt, held virtually, 10 September.

In addition to the overall incentives for manufacturing in Egypt, firms in E&E benefit from targeted support. ITIDA runs an export development programme for ICT exporting firms. Since 2010 the ITIDA subsidy has supported more than 185 companies with more than EGP 350 million (MCIT, 2020[54]). In addition, the electronics design automation (EDA) programme by TIEC (Technology Innovation & Entrepreneurship Center) during 2015-18 financed between 50% and 95% of the cost of EDA tools for SMEs for the design of circuit boards and semiconductors. Support for start-ups in the E&E industry is provided by private venture capital through the EME programme, operationalised by ITIDA (Table 3.4). ITIDA also finances research and co-operation between academia and the private sector (financing of up to EGP 1 million for developing a prototype and up to EGP 2 million for the commercialisation of a product).

E&E has potential to continue growing

The E&E industry is expected to be a fast-growing one in the post-COVID-19 industrial landscape, shaped by growing demand from existing and new consumers, new opportunities opened up by Industry 4.0, and growing integration between digital and industrial components. The traditional approach to fostering industrial development in E&E in Egypt would benefit from an update which looks more at the overall value chain in terms of changing needs, opportunities for value generation and capture, and the job-creation potential of the various stages and agents involved in the production process in Egypt, Africa and globally (Box 3.9).

- **Aligning FDI attraction and domestic industrial capabilities** could be strengthened to ensure that FDI not only delivers quality jobs, but that it serves as a gateway for domestic industrial capability development. At present, support is fragmented and driven by the different institutions, each targeting specific agents in the value chain. For example, MTI, IMC and the Engineering Export Council work closely with stakeholders across the chain (e.g. electrical equipment makers, component makers and assemblers), while MCIT and ITIDA also target some upstream players (e.g. semiconductor designers and manufacturers), ICT start-ups, and telecommunication and some electronics manufacturers (e.g. those engaged in making computers and phones). Meanwhile, GAFI also plays a big role in attracting foreign investors. Ensuring that support is harmonised and that mechanisms exists for players across the value chain to interact and network with each other will be important – particularly in an era of technological convergence, where combining capabilities across different fields in E&E will be important. In Malaysia, for example, in addition to ministerial councils, implementation is facilitated by the fact that the responsibilities for developing the E&E manufacturing value chain have been brought under one roof. The Malaysian Investment Development Authority (MIDA) has a directorate that is responsible for increasing both domestic and foreign investments in the industry. Local agencies (e.g. industrial park operators/managers and local development agencies) act as co-ordinators and facilitators, helping firms ensure they have access to all support available. While "one-stop shops" have been established in Egypt to simplify business licensing, more is needed to ensure the support is

continuous over the lifetime of the business and that adequate advisory and financial support is offered to firms in their expansion phase.

- **Building trust and prioritising and signalling quality.** Tapping into the potential African market and developing a denser continental E&E value chain requires building trust and increasing competitiveness. Competition in the E&E value chain is fierce, particularly from low-cost and already trusted exporters outside Africa. Initiatives such as the ones already in place by the EEC that organise trade missions and collective participation to trade fairs should be continued and expanded where possible, in an effort to increase interactions with the African market and identify new opportunities. A quality infrastructure system that meets the needs of this sector by offering local reliable and accessible testing and certification services will be crucial in enabling Egypt to further develop the industry.
- **Increasing the efficiency of logistics.** The E&E value chain is particularly trade-intensive and even small changes in logistical costs can make a big difference in product competitiveness. Access to both port and airport infrastructure close to production and export sites is crucial, as high-value components can often travel via air cargo. The importance of air cargo is demonstrated by its resilience during COVID-19. The active fleet of air cargo globally dropped by 22% in February 2020 compared to 2019, but subsequently increased by a monthly average of 5% during March-December (ICAO, 2021[55]). Increasing the density of connections is also important for reducing time to production. Finally, the need for multiple component imports for exported products means that simplifying import procedures is necessary, beyond the SEZs.

Box 3.9. Harnessing trade integration to boost industrial upgrading: E&E in Malaysia

Since the 1970s, when Malaysia built the first free-trade zone in Penang, the country has looked to leverage export-oriented investments in E&E manufacturing to create jobs and upgrade industrial capabilities. Malaysia's strategy in this respect has consisted of three dimensions that have reinforced each other to create positive synergies:

- *Reducing barriers to exports and imports for E&E.* Malaysia has worked to build a thick network of agreements. The country has seven bilateral free trade agreements (FTAs) in place (Australia, Chile, India, Japan, New Zealand, Pakistan and Turkey), is a member of six regional FTAs through ASEAN – with China (2003), Korea (2006), Japan (2009), Australia and New Zealand (2010), and India (2010) – and is a member of the ASEAN Trade in Goods Agreement. Malaysia is also a member of the Regional Comprehensive Economic Partnership (RCEP) and has signed the Trans-Pacific Partnership Agreement (TPPA) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).
- *Implementing a policy mix to encourage increasingly sophisticated investments in E&E.* Malaysia has historically used a large array of fiscal incentives to incentivise investments in E&E and other promoted manufacturing and service activities.
  - New incentives have been introduced over time to progressively encourage more sophisticated activities. In 1958, Malaysia introduced the Pioneer Status incentive (a tax exemption for promoted industries), which now grants a tax exemption of 70%-100% for 5-10 years; and since 1968 it has granted a tax investment allowance for firms that cannot benefit from Pioneer Status. In the 1980s the country added tax allowances for in-house R&D expenditures. The Multimedia Super Corridor (MSC) status was also introduced in the mid-1990s, providing tax exemptions of up to 5 years for ICT firms that develop or use multimedia technologies. An automation capital allowance was introduced in 2015 to encourage a shift away from labour-intensive activities, and a tax exemption for intellectual property income (up to 100% for up to 10 years) in 2019.

- Special funds have been introduced to strengthen investments in strategic areas. In the late 1990s a Technology Acquisition Fund was launched, funding expenditures of up to RM 4 million, followed by the High Impact Fund, a matching grant for R&D and training activities. Efforts in this direction were renewed with the Domestic Investment Strategic Fund launched in 2012 with a size of RM 1 billion (approx. USD 324 million) to provide 1:1 matching grants to firms engaging in R&D, training, modernisation or upgrading of facilities, licencing or purchasing of new/high technologies, and obtaining international standards and certifications.
- The requirements for obtaining fiscal incentives were progressively made stricter. For example, before 2012 the Pioneer Status was available to firms operating along the entire E&E value chain. After 2012, this was restricted to semiconductor design and fabrication, advanced displays, equipment for digital convergence and other advanced components and equipment. Moreover, the incentive is higher for high-technology firms, which are defined as those with at least 7% of their workforce being science and technology (S&T) graduates and at least 1% of gross sales devoted to R&D.

- *Building long-lasting channels of communication with the private sector*. Malaysia's E&E industry began with a factory built by Intel in 1972 in Penang that assembled semiconductors. From an initial staff of 100, the firm has grown to employ 9 000 people today. The work of MIDA (Malaysia Investment Development Authority) and PDC (Penang Development Corporation) was essential in winning over Intel and convincing the company to consider Malaysia over other locations in Southeast Asia. Since, then, the two institutions have been building informal communication ties with foreign investors in Penang and elsewhere in the country to ensure that the physical infrastructure continues to be updated in line with global trends in the industry and that the policy mix stays attractive in a competitive global environment.

Source: Cayzer, Rob (2020), "The Malaysian Experience in Electrical and Electronics (E&E) sector", MARA Corporation, presentation at the PTPR of Egypt Government-Business Roundtable on the Future of E&E in Egypt, held virtually on 16 July 2020.

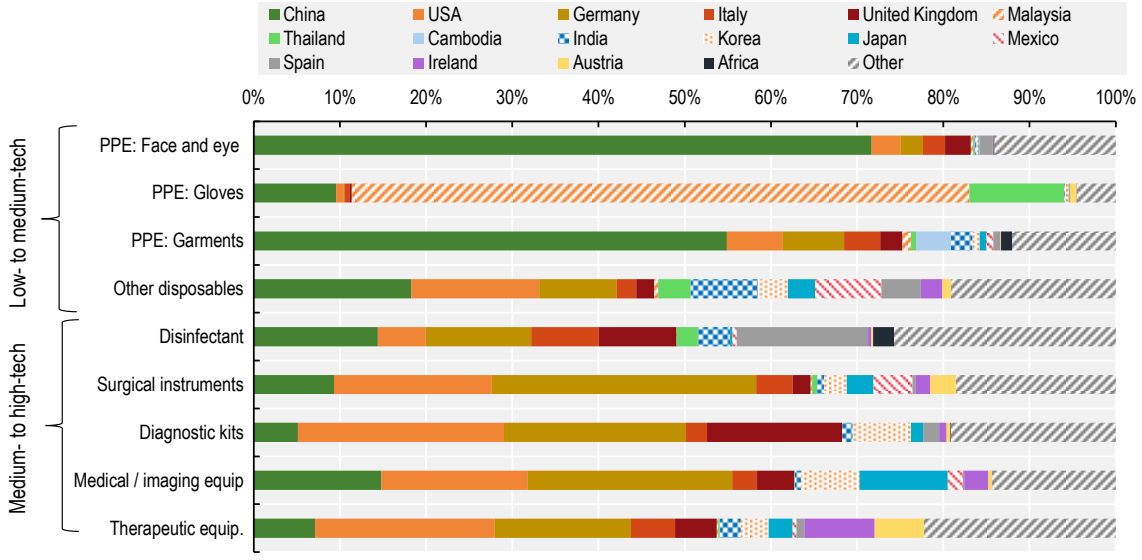
In addition to the above, new opportunities are emerging for some E&E segments, such as the medical device industry, which includes electro-medical goods and other medical supplies (Box 3.10). Medical devices face similar challenges to the E&E industry as a whole as the industry moves towards greater digitalisation, but also unique ones that stem from their role in protecting human health and the need for high regulatory oversight (Box 3.11). In this context, Egypt would benefit from actions to link businesses to the growing regional and global markets, ensure quality and conformity to standards and harness linkages along the value chain.

- **Tapping into the benefits of the continental markets.** The ongoing COVID-19 pandemic is strengthening the need to develop continental supply chains in medical devices to increase resilience (Box 3.10). Africa is a marginal market for medical devices, with the continent accounting for roughly 2% of total global revenues in medical devices. The difficulty of sourcing needed medical equipment and supplies increased exponentially during the pandemic – a major risk for a continent that is home to 17% of the world's population. And apart from Tunisia and Morocco, which are the continent's top exporters of protective garments, all countries in Africa, including Egypt, are net importers of Personal Protective Equipment (PPE). 65% of PPE in Egypt come from two countries (Malaysia and China in 2018-20), with Malaysia being the main glove source and China the source of protective garments, masks and visors (Figure 3.11). Egypt is also dependent on imports of high-tech medical devices such as medical and imaging equipment and therapeutic equipment, from x-ray machines to ventilators and implanted devices. In these medium-to-high-tech segments, imports are sourced from advanced economies, such as Germany (19.4%), and

the United States (16.9%). In terms of exports, Egypt was the fourth largest exporter of PPE in Africa, accounting for 6.4% of the continent's total during 2017-19, after Morocco, Tunisia and South Africa.

Figure 3.11. China, Germany and Italy supply 59% of Egypt's PPE, 2018-20

Share of Egyptian imports, by country and PPE/device category (% of total imports)



Note: PPE: Personal Protective Equipment. PPE and disinfectant HS codes follow WCO (2020), *HS classification reference for Covid-19 medical supplies*, 2nd Edition, http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/nomenclature/covid_19/hs-classification-reference_edition-2_en.pdf?la=en. Medical devices follow the classification of (Bamber and Gereffi, 2013[40]) and (Torsekar, 2018[56]).
Source: Authors' elaboration based on UN Comtrade (2021[2]), *Database*, https://comtrade.un.org/data.

- **Investing in safety and quality**. Even the simplest medical devices can have large consequences on human health and this increases the requirements for such products to be reliable and safe for human use. Expanding and improving the quality infrastructure system to provide fast and low-cost access to the full range of testing and certification needs for both the local and the export market is crucial. Given the increasing digitalisation of medical devices, this will also necessitate co-operation across the quality infrastructure system and potentially the development of new services to meet this demand. Adapting the policy mix to incentivise investments in quality in innovation by medical device makers could also help unlock their potential (see Chapter 2).
- **Improving linkages along the value chain.** As the medical device sector moves towards greater digitalisation and the incorporation of more electronic and ICT technologies in final products, Egypt could look to boost linkages and co-operation with E&E players and start-ups. For example, exploring joint actions, such as networking and match-making initiatives, by respective business associations could help in this regard. Aligning policies that support E&E as a whole with those that support medical devices and ensuring that E&E actions also take into account the specific challenges faced by electromedical firms will also be important to create synergies. In addition, linkages could also be strengthened with the cotton and chemicals value chains to develop products that rely heavily on these as raw materials, such as face masks and other PPE. Malaysia, the world's top surgical glove exporter, leveraged its ample rubber resources and built capabilities in rubber-based goods by investing in institutions and partnerships to increase value addition. For example, the Malaysian Rubber Board and the Rubber and Plastics Institute Malaysia conduct R&D along the rubber value chain, from crops to processing and derivative materials and products.

Box 3.10. The global medical devices industry and pandemic preparedness: An opportunity for developing continental value chains in Africa

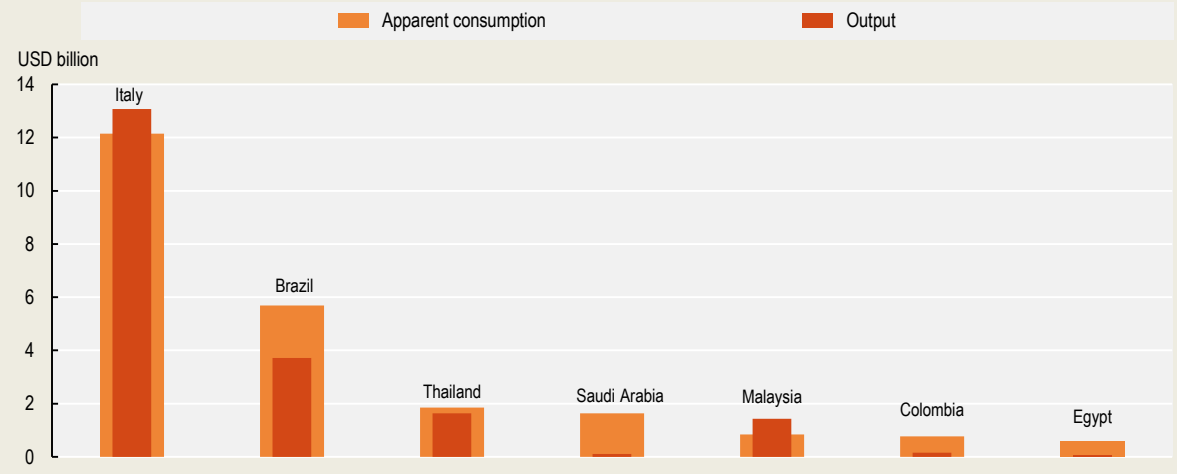
Before the pandemic, the global demand for medical devices was driven by developed economies with high levels of health expenditures and aging populations. The United States was the largest market (43%), followed by Europe (27%) and Japan (7%) (MedTech Europe, 2020[57]). Developing and emerging economies accounted for a smaller portion of the global market, but they still represent an important growth opportunity for the sector. In particular, demand in large emerging economies, including Brazil, China and India, shows double-digit growth since 2005 as a result of expanding and aging middle-class populations, more health insurance, and increased national healthcare expenditures (US International Trade Administration, 2016[58]).

The industry is highly concentrated, with five companies accounting for 60% of global market share in 2018. These companies invest heavily in R&D activities that fuel new prototypes and products. In 2018, J&J Medical Devices and Medtronic, the two largest medical-device companies in the world, invested USD 11 and 2.4 billion, respectively, equal to 11% and 8% of revenues (Medical device and diagnostic industry, 2020[59]). Leading operations such as R&D and design are usually performed in-house, whereas intermediate production stages of components are often outsourced abroad via offshoring activities. The localisation strategies depend on several factors, including the final market of reference, the scalability of production, and the total landed cost (TLC) – which includes transportation fees (both inland and ocean), customs duties, taxes, tariffs, insurance and currency conversion. For example, low-tech, high-touch products such as surgical gloves, bandages and syringes are produced in countries with competitive labour-cost advantages – like Central America and Caribbean, where in the mid-1990s US-based original equipment manufacturers (OEMs) started to move considerable production segments to Mexico, Costa Rica and the Dominican Republic (OECD/UNCTAD/ECLAC, 2020[60]).

The most recent available data show that Egypt's industrial structure in medical devices and equipment comprises 85 production plants that contribute USD 195 million in total value added (1.31% of total manufacturing value added). Likewise, the apparent consumption of such products (production plus imports minus exports), a proxy for domestic demand, is USD 575 million. Malaysia and Thailand, with 1/3 and 2/3 of Egypt's population, respectively, have larger domestic demand (USD 1 430 million and 1 630 million, respectively) and production capacities as much as 20 times bigger (Figure 3.12).

Over the years, these countries have developed domestic industrial capabilities as part of national industrialisation strategies in parallel with large public and private investments in new hospital facilities and medical infrastructures that back demand for more sophisticated medical treatments. For example, in 2015 the government of Malaysia designated the medical device sector as a "high growth potential" industry within a five-year strategic economic plan for 2016-20 that also envisaged the achievement of universal access to quality healthcare (EPU, 2015[61]; US International Trade Administration, 2016[58]). The average health expenditure per capita in Malaysia is USD 247, whereas in Egypt it is USD 106 – above the regional average of USD 85, but below other leading countries in the region such as South Africa (USD 499) and Tunisia (USD 250).

Figure 3.12. Apparent consumption and output in medical devices and equipment, Egypt and selected economies, 2017



Note: a) Apparent consumption is the result of total output + imports - exports. b) Data for Egypt and Malaysia refer to 2016. c) The analysis covers the following ISIC Rev. 4 classes: 2660 Manufacture of irradiation, electromedical and electrotherapeutic equipment and 3250 Manufacture of medical and dental instruments and supplies.
Source: Authors' elaboration based on UNIDO (2020[62]), *Industrial Demand-Supply Balance Database*, https://stat.unido.org/content/dataset_description/idsb-2021%252c-isic-revision-3.

In response to the pandemic, new solutions have been implemented to raise the continent's capabilities in PPEs and medical supplies. For example, after Medtronic released designs for one of its ventilators in March 2020 (including open-source manufacturing instructions), a state-run company in Egypt created the first locally produced ventilator prototype using Medtronic's designs (OECD, 2020[63]). Foreign direct investment (FDI) could also be a source for accumulating knowledge as well as technical and industrial competences. For example, in 2018 Sysmex, a Japanese haematology diagnostic-instruments and technology company, announced the launch of its first subsidiary in Egypt in response to increasing local demand. Similarly, in 2020 Philips invested in the city of New Cairo to set up an ultrasound training centre in collaboration with Health2All (H2A), a subsidiary of the SAMCRETE group (Financial Times, 2020[31]).

Box 3.11. Key challenges faced by the medical devices sector in Egypt

A study undertaken by the Industrial Modernization Centre (IMC) and the Federation of Egyptian Industries (FEI) in 2007 on the development and prospects of the medical devices sector in Egypt outlined the key challenges faced by businesses at the time. Among the main issues highlighted were:

- Few linkages with the local economy, as most raw materials are imported (with the exception of some packaging materials) and feeder industries lack scale
- Low economies of scale within the firm, as most businesses are small
- Lack of well-defined standards for producers, lack of quality conformity, as well as of laboratories and defined standards for inspecting, auditing or evaluating product quality
- Low access to bank financing which inceases the cost of capital
- Country image of Egyptian products is not up to potential
- Low availability of skilled labour (particularly specialised software developers)
- Absense of research and development (R&D) capabilities
- Low attraction and utilisation of foreign direct investment (FDI).

Source: IMC and FEI (2007[64]), *Egyptian Medical Equipment and Supplies Industry Development Strategy Report*, prepared by Hand-on Management Consulting in collaboration with Navigant Consulting International.

Conclusion

Worldwide, the agro-food and E&E industries have been undergoing rapid changes, even before the COVID-19 pandemic, that have been redefining the assets needed to compete in a global market. The pandemic has accelerated some of these trends, notably a shift towards digitalisation and an emphasis on regional markets and sustainability. While the future remains highly uncertain, Egypt will need to update its traditional approach to unleash the potential of these two industries and enable them to continue growing in this new landscape. Already the country has taken some positive steps. In agro-food, the establishment of the National Food Safety Authority (NFSA) represents an advancement in fostering quality in local food production; while for E&E, policies have paid increasing attention to start-ups. Drawing on peer learning from Italy and Malaysia, the PTPR process has identified elements for a forward-looking strategy in each of the two industries, given their unique history, structure and potential. For agro-food, Egypt should focus on building and enhancing partnerships for Agro-food 4.0 to make it sustainable, inclusive and innovative; on updating branding and signalling quality; and on taking actions that will enable MSMEs to better capture the potential of a growing industry. For E&E, priority actions should include ensuring better alignment between policies and institutions (to attract FDI and build domestic capabilities), prioritising quality and building trust, increasing logistics efficiency, and tapping into the benefits of continental markets.

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Note

[1] E&E encompasses products that rely on electrical and electronic technologies to function. According to the International Standard Industrial Classification (ISIC) Rev. 4, E&E encompasses the following activities:

- *Manufacture of computer, electronic and optical products.* Sub-groups include electronic components, computers and peripherals, communication equipment, consumer electronics, measuring and testing equipment and electromedical equipment.
- *Manufacture of electrical equipment.* Sub-groups include batteries, cables, motors, wires, lighting equipment and domestic appliances.

4 AfCFTA could be Egypt's next game changer

The African Continental Free Trade Area (AfCFTA) has the potential to be a game-changer for the continent and for Egypt. The result of a long process of continental integration, AfCFTA could, and should, be a powerful tool for supporting the development and upgrading of industrial capabilities on the continent. Benefiting from enhanced continental ties is, however, not an automatic process, and targeted national strategies will be needed to make the most of an integrated Africa. This fourth chapter of the PTPR of Egypt presents a snapshot on AfCFTA, clarifies the potential opportunities it offers for Egypt, and identifies key policy areas to make the most of it.

Introduction

Africa is putting continental integration and structural transformation in the spotlight. The African Union's *Agenda 2063: The Africa We Want*, adopted in 2015 by the continent's heads of state, outlines a pan-African vision and roadmap for the continent's transformation towards a united, prosperous, inclusive and sustainable future. Within that agenda, continental integration and the African Continental Free Trade Area (AfCFTA) are presented as a key pillar for achieving prosperity on the continent (Box 4.1).

Box 4.1. Overview of the AfCFTA process

A roadmap for the establishment of the AfCFTA was agreed in 2012 at the 18th Ordinary Session of the Assembly of Heads of State and Government of the African Union (AU), which was held in Addis Ababa, Ethiopia, and negotiations started in 2015. The 10th African Extraordinary Summit, held in Rwanda in March 2018, adopted the agreement's legal text and opened it for signature and ratification by member states of the African Union. By April 2019, 22 member states had ratified the agreement, the number required for putting it into force, and the agreement entered into force on 30 May 2019. As of June 2021, 54 AU member states had signed the AfCFTA and 35 countries had deposited their instruments of ratification.

The AfCFTA builds on decades of initiatives to achieve continental integration (ECA, AU, AfDB and UNCTAD, 2019[1]). The goal of developing the continent by tapping into the opportunities of increased continental integration was part of the 1980 Lagos Plan of Action, backed by the Organization of African Unity (OAU), and was embodied in the 1991 Abuja Treaty that envisaged an African Economic Community (AEC). Since then, various continental integration initiatives have reaffirmed this objective, including the 2000 constitutive act of the African Union and the 2012 Boosting Intra-African Trade action plan.

Africa's Regional Economic Communities (RECs) have been important building blocks in African integration. They comprise: the Community of Sahel-Saharan States (CEN-SAD), the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC), the Economic Community of Central African States (ECCAS), the Economic Community of West African States (ECOWAS), the Intergovernmental Authority on Development (IGAD), the Southern African Development Community (SADC), and the Arab Maghreb Union (UMA). The COMESA-ECA-SADC Tripartite FTA (TFTA) was also an important step to regional integration and contributed to the implementation of the AfCFTA. The TFTA was launched in 2015 and ten members have ratified it, with four more needed to enable it to enter into force.

When fully implemented, the AfCFTA will create an integrated African market of 1.2 billion people, almost equal to the population of India, and the world's biggest single market for goods and services by number of countries. In fact, the agreement aims at removing tariffs on 97% of imported goods from member states over a period of between 5 and 15 years from entry into force. It also aims at reducing non-tariff barriers while fostering standards harmonisation, customs co-operation and trade facilitation.

The scope of the AfCFTA exceeds that of traditional free trade agreements (FTAs). The protocols of the agreement go beyond trade in goods to include trade in services, rules and procedures on the settlements of disputes, investment, competition policy, intellectual property rights and e-commerce. The first three protocols were the subject of the first phase of AfCFTA negotiations, the second three will be negotiated during 2021, and e-commerce will be the subject of a third phase of negotiations that will take place in parallel with the second one (Table 4.1). The AfCFTA is complemented by the Protocol on Free Movement of Persons, Right to Residence and Right to Establishment, which is intended to ease movement of people across the continent; and the Single African Air Transport Market, which aims to improve efficiency in continental air transportation and to increase the continent's share of the global aviation industry.

Table 4.1. AfCFTA Agreement and its protocols

Agreement establishing the African Continental Free Trade Area	**Protocol on Trade in Goods**	Elimination of duties and quantitative restrictions on imports Equal treatment for imports and domestic products Elimination of non-tariff barriers Rules of origin Co-operation of customs authorities Trade facilitation and transit Trade remedies, protections for infant industries and general exceptions Co-operation on product standards and regulations Technical assistance, capacity-building and co-operation
	Protocol on Trade in Services	Transparency of service regulations Mutual recognition of standards, licensing and certification of services suppliers Progressive liberalisation of services sectors Service suppliers shall be treated no less favourably than domestic suppliers in liberalised sectors Provision for general and security exceptions
	Protocol on Dispute Settlement	Rules and Procedures for Settlement of Disputes within the African Continental Free Trade Area
	Phase 2 negotiations	Intellectual property rights Investment Competition policies
	Phase 3 negotiations	E-commerce

Source: Authors' elaboration that updates ECA and African Union (2018[2]), *African Continental Free Trade Area: Questions & Answers*, https://repository.uneca.org/bitstream/handle/10855/43253/b11975106.pdf.

While African countries were working to address the pending issues, the COVID-19 pandemic hit, putting global economies under unprecedented stress. Although this initially hindered the process of ratification and implementation, as well as finalisation of pending issues, the AfCFTA negotiations are now back on track.

Although trading under the AfCFTA Agreement officially began on 1 January 2021, in practice, commercial trading under the preferential terms of the agreement has been limited due to a number of outstanding issues that need to be addressed. Among these the main issues are:

- Finalisation of tariff schedules for trade in goods (i.e. lists of 90% of non-sensitive product lines, 7% of sensitive items and 3% of excluded products).
- Commitments on the five priority services sectors – transport, communications, financial services, tourism and business services.
- Finalisation of rules of origin (i.e. the rules that determine the percentage of the national components in goods that are granted tariff concessions in the free trade area), especially sugar, textiles and wearing apparel, and edible oils.
- Putting in place the necessary customs infrastructure to facilitate preferential trading under the AfCFTA (with the exception of Egypt, Ghana and South Africa, which have already established the required customs arrangements).

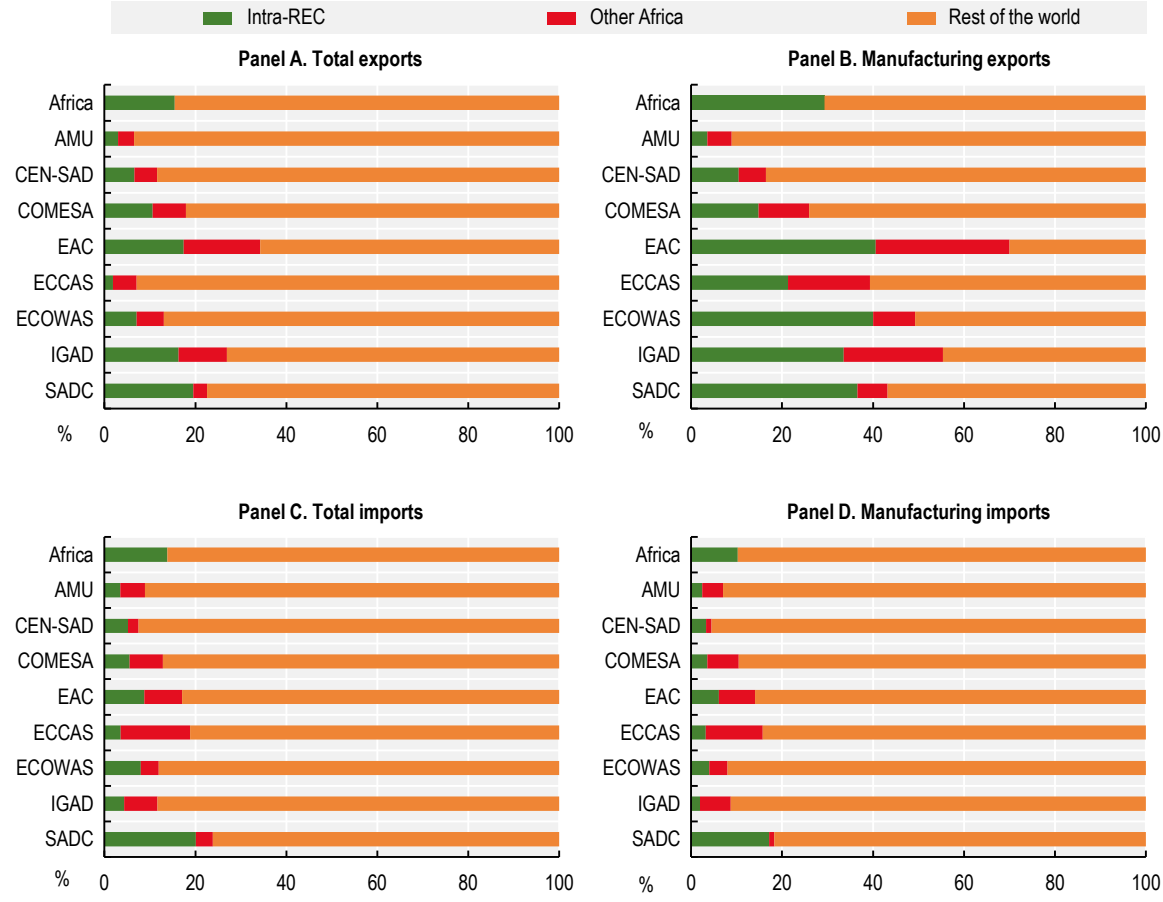
AfCFTA holds promise to unleash the continent's industrial potential

Africa is among the world's least integrated continents and regions. Intra-regional trade on the continent stands at 15%, compared to 67% in Europe and 52% in Southeast Asia. African countries trade little with each other, mostly exporting primary commodities to the world, while being dependent on critical imports from abroad. Enhanced continental integration holds the promise of supporting industrialisation as, in general, Africa trades a higher share of manufacturing products within the continent than it does with the

rest of the world. The share of intra-African manufacturing exports stands at 30%, double that of total exports.

Nevertheless, the aggregate picture masks significant differences in the pace of integration across the continent (Figure 4.1). Most intra-African trade takes place within RECs, although the extent of integration varies (Box 4.2). For example, regional trade is highest in the Southern African Development Community (SADC), where trade within the region accounts for 20% of the total – double the share of the second-ranked REC in this respect, the East African Community (EAC). The AfCFTA offers an opportunity for RECs to tap into under-exploited export markets in African countries outside of their regional groupings. The same holds for imports – the AfCFTA offers countries the opportunity to import possibly cheaper intermediates from African countries outside their RECs. Some RECs show a higher specialisation in intra-regional manufacturing – such as the Economic Community of West African States (ECOWAS), in which intra-REC manufacturing exports reach 45%, as the regional market represents a large outlet for exports of some its major producers such as Côte d'Ivoire, Ghana and Senegal.

Figure 4.1. Exports and imports in Africa's Regional Economic Communities by region, share of total (%), 2017-19



Note: Data for Africa reflect intra-African exports/imports and exports/imports to the rest of the world. REC: Regional Economic Community; AMU: Arab Maghreb Union; CEN-SAD: Community of Sahel-Saharan States; COMESA: Common Market for Eastern and Southern Africa; EAC: East African Community; ECCAS: Economic Community of Central African States; ECOWAS: Economic Community of West African States; IGAD: Intergovernmental Authority on Development; SADC: Southern African Development Community.
Source: Authors' elaboration based on UNCTAD (2021[3]), *UNCTADstat database*, https://unctadstat.unctad.org.

Box 4.2. The continental integration process has benefited from Regional Economic Communities

The continental integration process will benefit from the existing structures, initiatives, knowledge and capacities of Regional Economic Communities (RECs). It is expected that the RECs will co-ordinate and administer Regional Technical Working Groups, Regional Steering Committees and Regional Ministerial Oversight Committees for the implementation of the AfCFTA in their respective member states. RECs will also administer the regional Monitoring and Evaluation Committee for the AfCFTA. The REC AfCFTA institutional structures will then feed into those at the continental level. Consistent with their role in the AfCFTA institutional architecture, RECs will still provide many of the key structures and institutions supporting intra-Africa trade. Specific roles for the RECs include:

- Co-ordinating negotiating positions and providing implementation support to member states
- Mediating disagreements between member states and negotiating solutions to trade-restrictive practices
- Supporting member states in harmonising customs practices and technical barriers to trade (TBT) and sanitary and phytosanitary (SPS) measures
- Promoting the use of the AfCFTA non-tariff barrier (NTB) reporting mechanism and ensuring it is aligned with the existing REC NTB mechanism, if any
- Supporting training and development of national customs administrations to enforce AfCFTA rules, with a view to avoiding trade deflection.

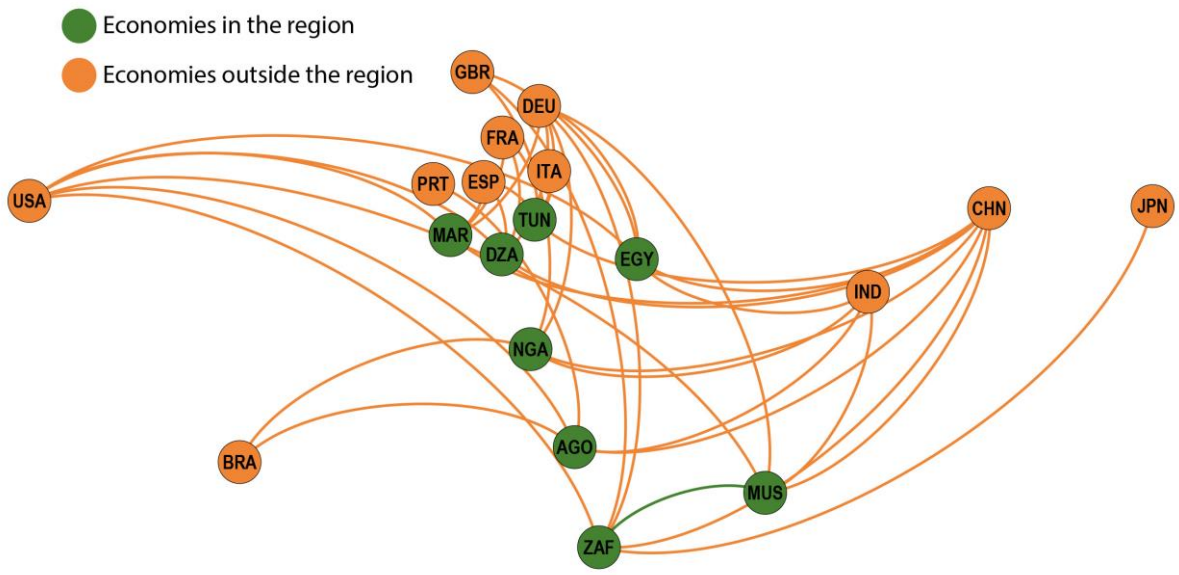
Implementation of the African REC trade liberalisation agendas has frequently been delayed, with varying degrees of progress across member states. The slow and uncoordinated implementation of the Boosting Intra-African Trade (BIAT) initiative also reflects the lack of an overarching monitoring and evaluation (M&E) framework. This offers invaluable lessons for AfCFTA. It will be important for the AfCFTA Secretariat to continually monitor, evaluate, report and follow-up on implementation of the Agreement, building upon national-level reviews. Resource mobilisation efforts, underpinned by African resources, will also be key to ensuring effective and timely implementation of the AfCFTA and its complementary reforms.

Source: Bisong (2020[4]) and ECA, AU and AfDB (2017[5]).

Value chains within Africa are underdeveloped. Approximately 94.8% of the foreign value added (FVA) embedded in African exports comes from outside the continent. Top sources include the People's Republic of China (hereafter "China") (12.3% of total), the United States (11%), Germany (10%) and France (6%) (Figure 4.2). South Africa is Africa's largest value chain hub, and a key source of inputs for exports by Mauritius. For Egypt, China is the top source of FVA, accounting for 16.3% of total, followed by India (13.6%), the United States (9.4%), Germany (8%) and the United Kingdom (5.6%). By contrast, Morocco has higher production linkages with Europe, with France accounting for 16.5% of total FVA, followed by Spain (12.5%).

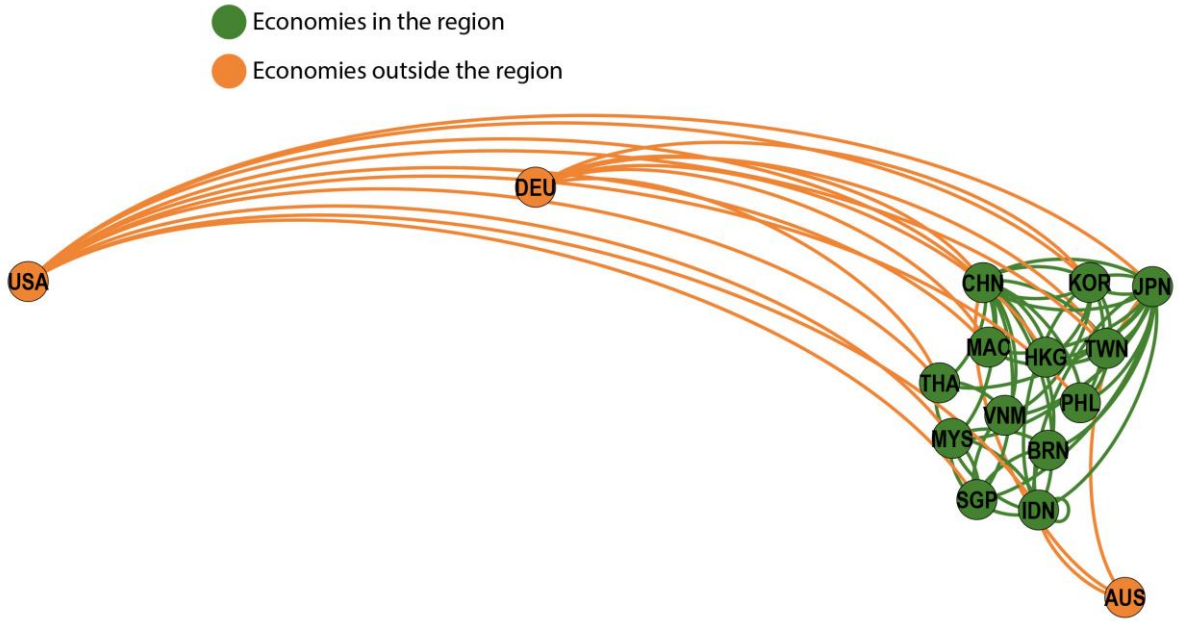
The picture in Africa is very different from East and Southeast Asia, which features dense regional production networks; about half of FVA (55.4%) is sourced from within the region. In East and Southeast Asia, tighter regional integration has been a major driver of industrialisation through waves of foreign investments aiming to tap into the different assets of various locations in the region. In turn, the creation of regional supply chains have underpinned efforts to further regional integration (Figure 4.3).

Figure 4.2. Top economies in Africa, by total foreign value added embedded in exports and their top 5 sources, 2019



Note: The figure includes countries whose total foreign value added (FVA) embedded in exports is higher than the world median.
Source: Authors' elaboration using data from UNCTAD-Eora (2021[6]), *Global Value Chain Database*, https://worldmrio.com/unctadgvc.

Figure 4.3. Top economies in East and Southeast Asia by total foreign value added embedded in exports and their top 5 sources, 2019



Note: The figure includes countries whose total foreign value added (FVA) embedded in exports is higher than the world median.
Source: Authors' elaboration based on data from UNCTAD-Eora (2021[6]), *Global Value Chain Database*, https://worldmrio.com/unctadgvc.

Achieving effective continental integration requires more than having an agreement in force. The extent to which agreements are effective depends on multiple elements. The following are some lessons learned from experiences in ASEAN, Latin America and the Caribbean and the EU:

- Tariff reduction and elimination is necessary, but identifying existing non-tariff barriers (NTBs) and adopting a strategy to eliminate them is difficult. For example, the Southern Common Market (MERCOSUR), established in 1991, prioritised tariff elimination, but has not advanced as much on addressing NTBs, hampering effective integration. The AfCFTA also targets eliminating NTBs, and to this end includes a built-in NTB mechanism and annexes on trade facilitation, customs co-operation and transit trade.
- Achieving regional/continental integration is a long-term process. While the elimination of trade barriers can create a space for increased continental production and trade networks to develop, these take time to emerge. Ambition needs to be matched by patience and taking a step-by-step approach in realising the potential of an integrated continental market. ASEAN, for example, experimented with local integration processes in border regions, the so-called “growth triangles” (Box 4.3). Africa could build on similar cross-border initiatives within RECs to build a more macro-level integration.
- Informal ties, trust and networking matter to advance towards integration. While legal instruments can offer some guarantees of operating within integrated regions, cultivating informal ties, networking and trust are essential for working together effectively. In ASEAN, business co-operation through the establishment of business councils, participation in ministerial meetings, and public-private partnerships have been key in exchanging ideas and proposals and fostering connections among stakeholders (Box 4.3). AfCFTA also enjoys the support of the private sector. The AfroChampions Initiative, a set of public-private partnerships and programmes to promote the African private sector, has played a particularly important role in supporting the AfCFTA process, and the private sector is now central to the development of AfCFTA national implementation strategies, supported by the UN Economic Commission for Africa (ECA) and the African Union Commission (AUC).
- Mutual recognition can work better than harmonisation. Harmonisation is a lengthy process and may not necessarily be the best approach when dealing with long-established national regulatory practices. The EU adopts a mutual recognition approach to facilitate market access for goods that are only partly subject to EU harmonisation legislation. Standards harmonisation and mutual recognition agreements in Africa are being promoted by the African Organisation for Standardisation (ARSO).
- The private sector needs incentives to go regional. In certain cases, value chains feature already-established networks of suppliers, and shifting to new vendors can be risky. Also, a fully supportive ecosystem is lacking to enable finding new and reliable partners (e.g. financing and insurance providers for cross-border activities). Incentives are needed to compensate the private sector for the increased risk in exploring the new regional market and fostering ecosystems to be built around the newly formed supply chains. Given the tight fiscal constraints faced by countries, these incentives need to be carefully designed and prioritised for maximum impact.
- A financial and digital ecosystem needs to be in place to realise the potential of trade integration. Trading across regions requires a variety of financial services (e.g. export and credit guarantees, insurance provision for cross-border activities) and non-traditional financial tools, such as fintech. Connectivity, both transport and digital, is also important. Africa is advancing on these issues. For example, the African Development Bank (AfDB) helps mobilise financial resources for the continental market. Since 2013 the AfDB’s trade finance facilities have supported around 1 800 trade transactions, with over 60% (USD 322 million) targeting SMEs. Digital transformation and integration is also important, now more than ever, as highlighted by the COVID-19 pandemic. The digital divide between Africa and the rest of the world remains high. In 2021, Internet speed in Africa was seven times lower than in the OECD [authors’ elaboration on (Ookla, 2021[7])]. To this end, in 2020 the African Union launched the Digital Transformation Strategy for Africa (2020-2030) to harness digital technologies for Africa’s transformation and fast-track national-level adaptation and implementation.

- Africa has the opportunity to take a place-based approach from the get-go. Integration efforts elsewhere, such as those in ASEAN, did not take a local perspective as a starting point. Africa has the opportunity, instead, of following a linear process and relying on a space-blind approach to kick-start a more balanced process that takes regions into account. Emphasising territorial and economic de-centralisation from megacities could be an important component in this respect. Urban growth in ASEAN is already moving towards smaller cities beyond capital regions.
- Measures must be put in place to ensure no one is left behind. The benefits of the AfCFTA, like in other trade agreements, will likely be uneven within countries, with different sectors and firms facing unique opportunities and challenges. Across countries, too, gains will differ depending on a variety of factors, from country size and geography to history and production specialisation, among others. Countries will need to monitor closely the impact of AfCFTA on their economies to ensure that complementary policies and strategies respond to emerging challenges, and to develop social safety nets to ensure that no one is left behind and adjustment to the agreement is smooth.

Box 4.3. The experience of Malaysia and the ASEAN with regional integration

Malaysia is a highly integrated country with strong trade ties to its regional partners. The country's export-to-GDP ratio averaged 68% during 2015-19, more than double the average for East Asia and the Pacific (29%). Regional partners account for a large share of the country's exports. Malaysian exports to other members of the Association of Southeast Asian Nations (ASEAN) account for 29% of total, followed by China (10%) and Japan (7%).

Malaysia has fostered trade through a rich network of bilateral and multilateral free trade agreements (FTAs). It currently has seven bilateral FTAs with Australia, China, India, Japan, New Zealand, Pakistan and Turkey, and it is a founding member of ASEAN – which itself has established FTAs with China (2003), Korea (2006), Australia and New Zealand (2010), and India (2020), as well as a Comprehensive Economic Partnership with Japan (2009). Malaysia is currently negotiating agreements with Iran and the EU (both economic partnership and FTA), and has signed but not ratified the Trans-Pacific Partnership Agreement (TPPA) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Malaysia is also a member of Asia-Pacific Economic Cooperation (APEC), an inter-governmental forum dedicated to promoting free trade and investment.

ASEAN in particular has been key to Malaysia's past trade performance and is set to drive its future competitiveness. Founded in 1967, ASEAN is made up of ten Southeast Asian countries (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam) that collectively have approximately half the population of India, but an aggregate GDP 7% higher. Malaysia is one of ASEAN's larger economies, accounting for approximately 10% of its GDP and 5% of its population. The ASEAN FTA was signed in 1992, and since then the ambition for integration has continued to increase. The flagship initiative of the ASEAN is the ASEAN Economic Community (AEC), founded in 2015, which aims to accelerate integration beyond trade across the ten member countries, through the AEC Blueprint 2025.

ASEAN has some unique features compared to other regions that have shaped its experience and local dynamics:

- It is a diverse region, not only culturally but also in terms of production and trade.
- Even though members are at different stages of development, no single country has become a centre of gravity.

- Production capabilities across the region are distributed based on each nation's industrial maturity (with lower value activities moving from more mature economies to less advanced countries over time).
- Countries share a common mindset of fostering business development and openness to foreign trade and investment.
- The private sector, in collaboration with government, has been a key driver and participant in regional integration, through the creation of business advisory councils and the participation of business in ministerial meetings and public-private partnerships (PPPs). These have enabled a multi-stakeholder exchange of ideas and proposals and fostered a deeper understanding of barriers to integration on the ground.

Since the 1990s, regional integration in ASEAN has been achieved not just through macro-level agreements and principles of the association, but also through micro-level integration processes via seven so-called "growth triangles". These triangles refer to border regions within ASEAN that involve two or more neighbouring countries, such as the Indonesia-Malaysia-Singapore Growth Triangle and the Cambodia-Laos-Viet Nam Development Triangle. Respective governments undertake co-investment activities, education and trade programmes, business forums and programmes to facilitate tourism and trade, with a view to "testing" whether the reality of partnerships can match the vision. These triangles have also provided an opportunity to create connections between the members' investors, policy makers and businesses, building trust and consensus that has fuelled bigger integration efforts.

Going forward, ASEAN could shift its development model from one centred on the capital cities that concentrate the region's resources and population to a more balanced model, fostering development of tier 2, tier 3, and tier 4 cities. A more place-based approach focused on the top 200 cities and towns of the region could unlock the potential of local regions, foster inclusive development and avoid the imbalanced development patterns which characterise the current global economy.

Source: Cayzer, R. (2020), The Malaysian/ASEAN experience in Regional Integration, MARA Corporation, presentation at the Second Peer Learning Group e-Meeting of the PTPR of Egypt, held virtually on 1 July 2020.

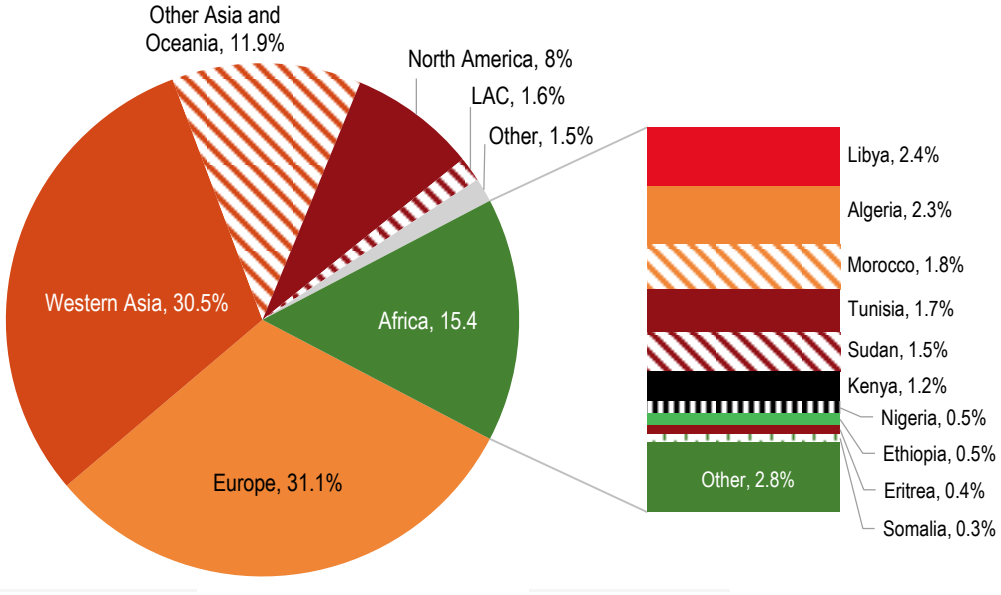
Egypt's path to prosperity is linked to Africa's integration and transformation

Egypt trades little with the rest of Africa. Its exports to Africa have tripled since the mid-2000s, and represent 15.4% of the country's total; this is similar to Nigeria (15.5%), and less than half with respect to South Africa (26%) (Figure 4.4). However, Europe remains the main destination for Egyptian exports, accounting for 31.1% of the total – followed closely by Western Asia (30.5%), which includes countries in the Middle East.

Within Africa, Egypt exports mainly to fellow North African countries, the top three being Libya (2.4%), Algeria and Morocco; while the top sub-Saharan African destinations are Kenya (1.2%), Ethiopia and Nigeria. Africa's share of imports to Egypt is five times less than its share of exports, at around 3%. By contrast, Europe accounts for as much as 37.3% of imports. Egypt's top sources from Africa include Algeria (0.6%), Kenya (0.5%) and Zambia (0.4%). Africa is the only region with which Egypt runs a trade surplus, reaching on average USD 3 billion annually during 2018-20. Egypt's relatively low participation in intra-African trade is in line with trends on the continent.

Figure 4.4. Africa accounts for 15.4% of Egypt's exports, 2018-20

Egypt's merchandise exports by geographical region and its ten export destinations in Africa, 2018-20, share of total exports (%)



Note: Total does not include trade for which the geographical region could not be identified.
Source: Authors' elaboration based on UN Comtrade (2021[8]), *Database*, https://comtrade.un.org.

The AfCFTA could provide more scale to Egypt's African exports while adding to their sophistication, thereby improving Egypt's participation in the world economy. Egypt is the fifth-largest exporter in Africa, accounting for 6.3% of continental exports, about three times less than Africa's top exporter, South Africa (20%) and similar to the level of Morocco (6.1%) (data for 2018-20). Additionally, the country's trade with Africa follows a different structure compared to its trade with the world (Figure 4.5). The majority of the country's African exports are manufactures (61.5%), while its African imports are overwhelmingly primary ones (83.3% of total). By contrast, 52.3% of Egypt's world exports are commodities. Among Egypt's top manufacturing exports to Africa are chemicals (16.5%), such as perfumes, non-metallic mineral manufactures (8%) and plastics (6.8%). Petroleum and gas still makes up a large share of exports to Africa (14.5%) and an even bigger share of imports (25%). Other important imports from Africa include non-ferrous metals (19%) and coffee, cocoa, tea and spices (14.2%). Although the ultimate results of the AfCFTA remain to be seen, estimates suggest that Egypt could leverage its position as one of Africa's key industrial and export hubs to strengthen structural change. For example, ECA's scenarios show that Egypt could experience an increase in both GDP and exports following the implementation of the AfCFTA (Box 4.4).

Figure 4.5. Structure of Egypt's exports and imports to the world and Africa, by manufacturing intensity and product, share of total, 2018-20

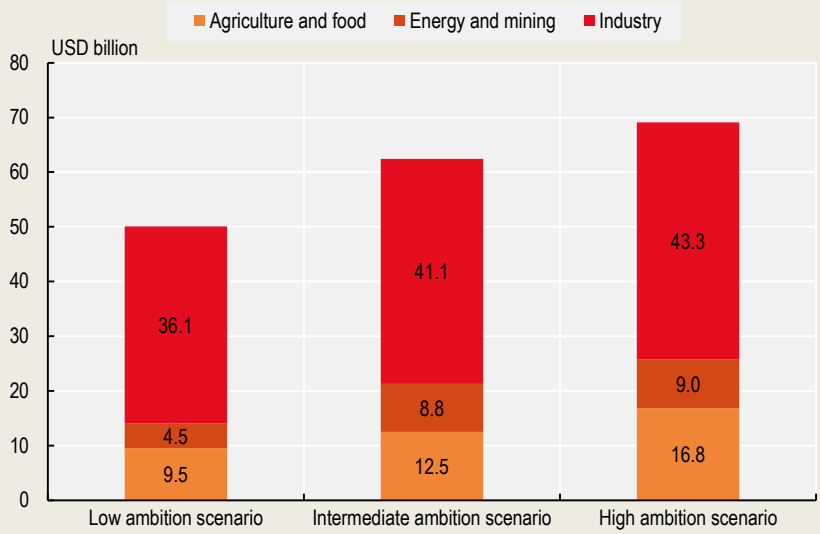
Note: Based on classification of product groups and composition by UNCTAD Standard International Trade Classification (SITC) Revision 3 2-digit codes, https://unctadstat.unctad.org/en/Classifications/DimSitcRev3Products_DsibSpecialGroupings_Hierarchy.pdf.
Source: Authors' elaboration based on UN Comtrade (2021[8]), *Database*, https://comtrade.un.org/data.

Box 4.4. Potential benefits of the AfCFTA: An empirical analysis

While there is no way to know with certainty how the AfCFTA will ultimately affect trade and industrialisation in the African continent, the United Nations Economic Commission for Africa (ECA) has elaborated scenarios based on a computable general equilibrium (CGE) model. These scenarios rely on tariff information at the harmonised system six-digit level. Various "ambition levels" were analysed, from the least ambitious scenario (characterised by delaying tariff-revenue losses) to the most ambitious (full liberalisation), by 2040 (Figure 4.6). This analysis projects that the value of intra-African exports could increase by between 15% (or USD 50 billion) and nearly 25% (or USD 69.1 billion) in 2040, relative to the baseline without the AfCFTA in place. Intra-African exports were found to increase the most for industrial products, with gains ranging from around 25% (or USD 36.1 billion) to almost 30% (or USD 43.3 billion). The analysis suggests that all African countries, including least developed ones, could benefit from increased industrial exports under the AfCFTA.

The ECA's analysis shows that Egyptian exports to Africa could increase substantially (21-30%) depending on the ambition of liberalisation. This increase is found to be potentially more pronounced in agricultural and food sectors, followed by industrial sectors. Egypt's exports to the rest of Africa could increase by more than 25% in textiles and wearing apparel, leather, wood and paper, machinery, vehicle and transport equipment (for industrial sectors) and by over 25% in cereals, plant-based fibres, milk and dairy products, and vegetable oils, as well as meat products. Egypt's exports to all African sub-regions could increase significantly, with the highest increases to countries such as Benin, Botswana, Cameroon, Ethiopia, Ghana, Guinea, Madagascar, Namibia, Senegal and Tanzania.

Figure 4.6. Change in intra-African exports by main sectors, as compared to the baseline without AfCFTA in place, 2040, various scenarios

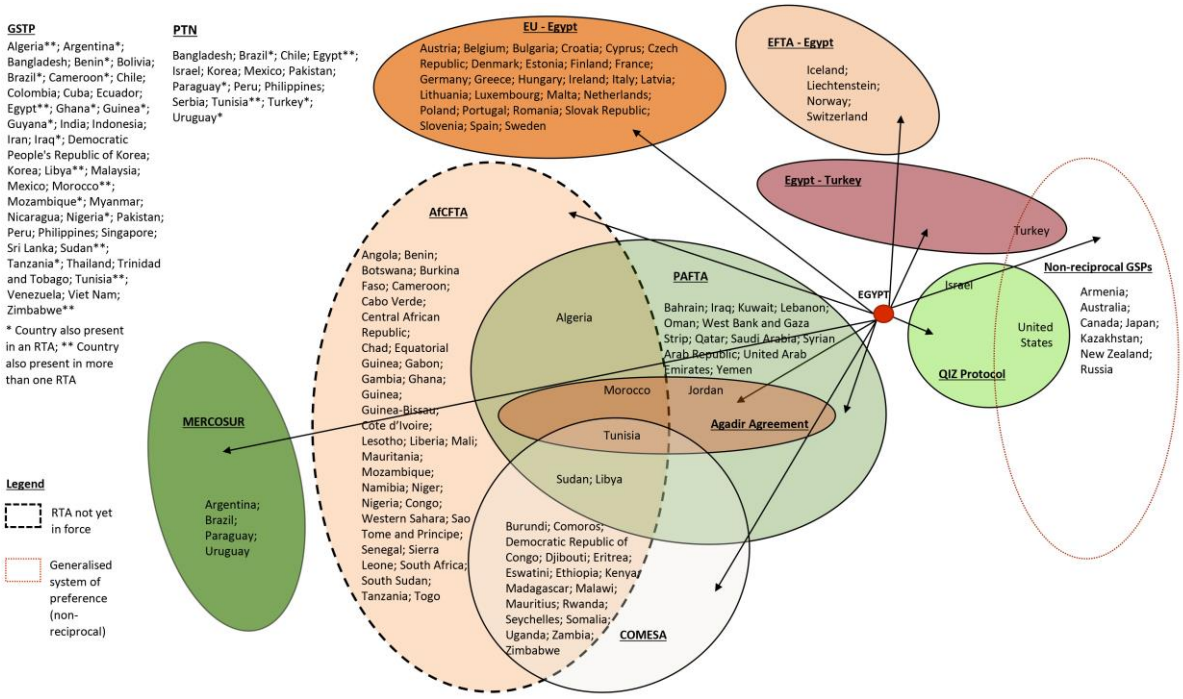


Source: ECA (2020[9]), "An empirical assessment of the African Continental Free Trade Area modalities on goods", https://www.uneca.org/publications/empirical-assessment-african-continental-free-trade-area-modalities-goods.

AfCFTA is expected to add 32 new FTA partners for Egypt (Figure 4.7). This will include some of the continent's largest economies, including Nigeria and South Africa. The AfCFTA adds to Egypt's several existing trade agreements. Egypt became a member of GATT in 1970 and of WTO in 1995. It has also been a member of the Common Market for Eastern and Southern Africa (COMESA) since 1994 (COMESA's FTA was established in 2000) and the Pan-Arab Free Trade Area (PAFTA) since 1998. The 2000s and 2010s brought new FTAs, such as those with the European Union (EU) (2004); with Jordan, Morocco and Tunisia (Agadir Agreement, 2007); with Turkey (2007); the European Free Trade Association (2007); and, more recently, with the Southern Common Market MERCOSUR (2017). Additionally, Egypt has a protocol with Israel and the United States for the export of industrial goods and benefits from non-reciprocal Generalised Systems of Preferences schemes, notably from the United States, among others.

Figure 4.7. AfCFTA adds 32 new free trade partners to Egypt

Egypt's trade agreements and arrangements as of June 2020



Note: AfCFTA: African Continental Free Trade Area; COMESA: Common Market for Eastern and Southern Africa; EFTA: European Free Trade Association; EU: European Union; GSP: Generalised System of Preferences; GSTP: Global System of Trade Preferences; MERCOSUR: Southern Common Market; PAFTA: Pan-Arab Free Trade Area; PTN: Protocol on Trade Negotiations; QIZ: Qualified Industrial Zone.
Source: Authors' elaboration based on WTO (2020[10]), *Regional Trade Agreements Database*, http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx; and GAFI (2020[11]), *Trade Agreements*, https://gafi.gov.eg/English/Sectors/Pages/Trade-Agreements.aspx

The AfCFTA could enable Egypt to connect to traditional partners in Europe and the Middle East as well as to the overall global market. As a result, Egypt and other industrial centres could become hubs for investments in both manufacturing and services. Apart from investments in manufacturing (see Chapters 1 and 3), Egypt is aiming to position itself as a regional service hub, tapping its large workforce. It is already the second-largest exporter of telecommunication, computer and information services in Africa, accounting for 15% of the total – behind only Morocco (30%) [data for 2017-19, elaboration on (ITC, 2021[12])].

Making the most of AfCFTA requires targeted national strategies

Egypt can benefit from AfCFTA through a strategy that views it as a way to strengthen its domestic industrial capabilities. Egypt has previously improved infrastructure by establishing shipping lines to the continent and strengthening transport links with Africa. In the context of the Egyptian Exports to African Markets Strategy 2020, the Egyptian Ministry of Public Business Sector has advanced in the implementation of Gosour (bridges), a project to build shipping lines and promote foreign trade between Egypt and Central and East Africa. As part of the first phase of Gosour, a shipping line from Ain Sokhna (Egypt) to Mombasa (Kenya) was launched in 2019. A storage and logistics centre also operates in Kenya, inaugurated in 2017. Egypt has also facilitated trade by implementing the National Single Window (NSW), which was launched by Prime Ministerial decree in 2020, and which Egypt aims to link with the Regional Single Window in Africa, and the ACI (Advanced Cargo Information System) for faster trade lanes,

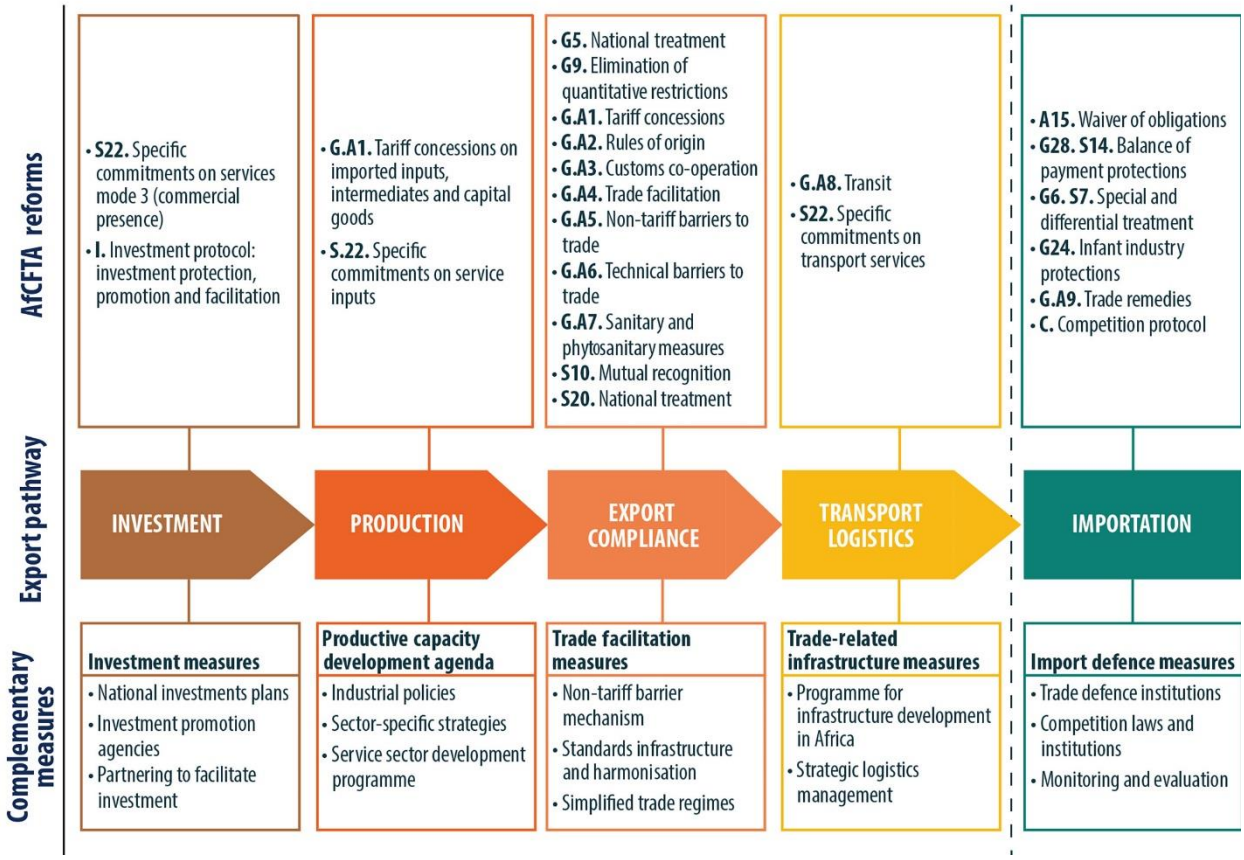
launched in 2021 through Ministry of Finance Decree No. 38/2021. Egypt is also looking to activate the role of the Export Development Bank and the Export Credit Guarantee Company of Egypt (ECGE) to provide trade financing, guarantees and services to exporters to African countries.

However, more is needed in order for Egypt to make the most of AfCFTA. Targeted national strategies designed to take advantage of AfCFTA will ensure that Egypt and other African countries can actually benefit from the agreement. These will require intense processes of consultation with multiple stakeholders and notably with the business community and entrepreneurs. Egypt's national reform agenda involves industrial policies for strengthening productive capacities (discussed in Chapter 2 of this PTPR for Egypt) to competition policies, logistics and infrastructure (Figure 4.8.). AfCFTA is not a aimed at reducing partnerships and internationalisation in Africa; rather, it is a tool for ensuring that trade can effectively benefit African citizens while fostering industrialisation, economic transformation and innovation on the continent. International partners (both traditional and emerging) will play an important role for Africa and Egypt to ensure that AfCFTA acts as a driver of improved and more beneficial integration into the world economy.

Egypt could also harness such partnerships to help craft an integrated vision to benefit from AfCFTA – building on existing initiatives, but going beyond trade to take into account other relevant policy areas, such as local industrial development and investment attraction, and bringing together all relevant stakeholders (Figure 4.8). For example, the ECA is working with governments across the continent to ensure they are defining and implementing their national strategies to capture the benefits of AfCFTA by mapping the different areas of policy that need to be reviewed to take into account the new realities of a more integrated continent (Box 4.5).

Egypt would also benefit from setting up a monitoring and evaluation system to track the progress of AfCFTA implementation in relation to Egypt's Vision 2030 strategic plan. The system can be a powerful tool for reducing the information gap with the private sector, raising awareness on the opportunities and potential challenges created by the AfCFTA and the policies and tools undertaken by the government to ensure effective implementation. Such a system would also enable Egypt to quickly spot emerging issues and adapt strategies to respond to these.

Figure 4.8. Benefiting from AfCFTA: A multi-dimensional reform agenda beyond trade simplification



Source: ECA, AU, AfDB and UNCTAD (2019[1]), *Assessing Regional Integration in Africa ARIA IX: Next steps for the African Continental Free Trade Area*, https://archive.uneca.org/sites/default/files/PublicationFiles/aria9_report_en_4sept_fin.pdf.

Box 4.5. National strategies for AfCFTA: The case of Côte d'Ivoire

The UN Economic Commission for Africa (ECA) and the African Union Commission (AUC) are currently supporting a total of 40 African countries in developing AfCFTA National Implementation Strategies and four regional economic communities – EAC, ECCAS, ECOWAS and IGAD – in developing AfCFTA Regional Implementation Strategies. As of February 2021, 11 countries had already validated their strategies, and ECA and AUC are now working with some of these countries to support implementation activities – including efforts to develop sectoral competitiveness policies, support the domestic application of the AfCFTA, and build the capacity of AfCFTA National Implementation Committees.

The strategies build on existing trade, regional integration and development policies. They have been drafted through an inclusive and consultative process, and therefore reflect national priorities and the interests of a range of stakeholders including government, private sector, civil society and academia. The aim was to identify new opportunities for diversification and value chain development under the AfCFTA, and complementary actions needed to overcome existing constraints to intra-African trade. This was achieved through adopting a cross-sectoral approach, considering not just trade, but also

closely related areas such as agriculture, industry, macroeconomic management and infrastructure development.

Additionally, a set of cross-cutting issues has been incorporated into the strategies, including gender equality, youth employment, climate change and technologies. This was done with a view to aligning the strategies with African's broader goals related to inclusive growth, sustainable development and digital transformation.

For example, ECA assisted Côte d'Ivoire in developing an AfCFTA implementation strategy to make the most of the agreement. The strategy aims at identifying how to strengthen institutional and regulatory systems in order to promote domestic production and continental trade by developing commercial strategies for Ivoirian products with regional market potential. The strategy focuses on fostering co-ordination between agencies and strengthening institutional capacities to implement trade, industrial and innovation policies. In 2018 the country set up the AfCFTA National Committee, under the authority of the prime minister, to define the national strategy. The Committee also works to raise awareness and build consensus in civil society.

Source: ECA and F. Fofana (2020), "How can the AfCFTA unblock regional value chains in Africa?", presentation at the Second Peer Learning Group e-Meeting of the PTPR of Egypt, held virtually on 1 July 2020.

Among the key pillars of a national strategy to benefit from AfCFTA, Egypt needs to address three enabling conditions:

First, Egypt will need to reduce non-tariff barriers that hamper continental integration and participation of domestic firms in continental value chains. In Egypt, the average lead time to export is 6.7 days, the same as Morocco and similar to Malaysia (6.5), but time to import is substantially higher than Egypt's peers, standing at 5 days compared to 3 in Morocco and 2 in Malaysia (World Bank Indicators). A survey of 869 Egyptian importers and exporters by the International Trade Centre (ITC) in 2016 showed that 38% of firms faced regulatory and procedural trade obstacles (ITC, 2016[13]). With regards to domestic obstacles, the most common barriers identified were delays, administrative burdens and high fees and charges. Import licensing and registration requirements are also a burden for importers, particularly those that are based outside of special economic zones or free trade zones that apply different customs regulations (Chapter 2). All importers must seek registration according to Law No. 7/2017. Among some of the conditions imposed for importers are that the company must be majority Egyptian owned (up to 49% foreign ownership – prior to this law only 100% ownership was allowed), that they have been registered in the Commercial Registry for at least a year and that they have a paid-in capital of EGP 5 million (around EUR 26 000). Enhancing market information and intelligence, and helping firms deal with cultural and language barriers when trading across borders, are also important.

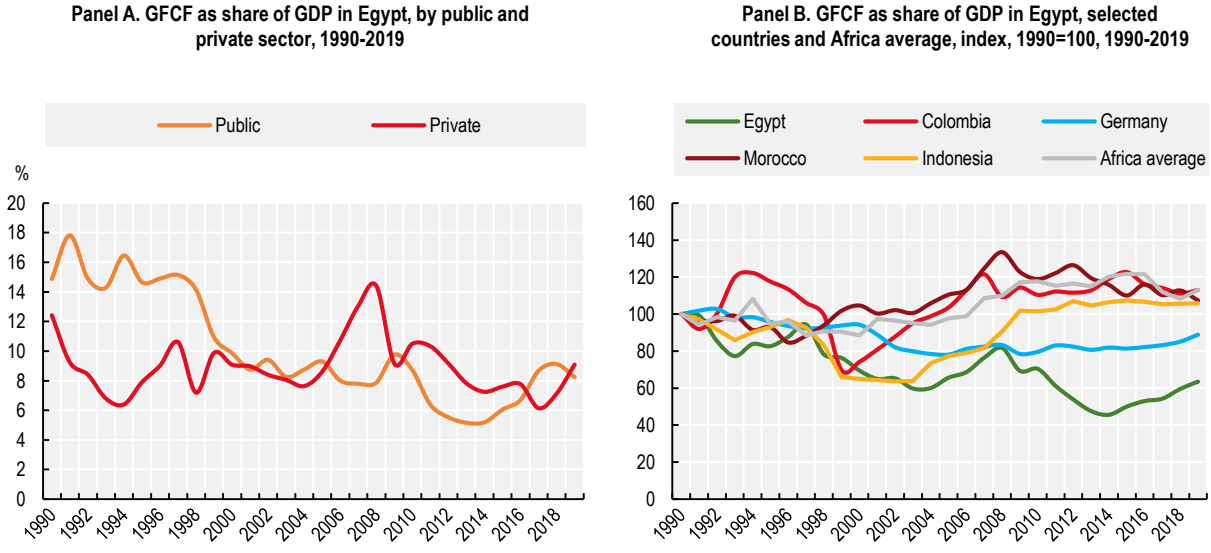
Second, improving infrastructure and transport connectivity is necessary for boosting the capacity of Egypt to reach out to new markets and ensure that critical goods reach the places that need them most. Egypt has a strategic position linking Africa, Europe and the Middle East. This has given it an advantage with regard to maritime transport through the Suez Canal, which handles 7.5% of world maritime traffic. According to UNCTAD's maritime index, Egypt is the second-most-connected country in Africa (after Morocco) and the 22nd-most-connected in the world (UNCTAD, 2021[3]) . However, infrastructure still faces big challenges, such as a fragmented port system, lack of co-ordination among modes of transport and a rail network in need of upgrading (OECD, 2020[14]). This significantly raises the costs of doing business in the country.

It will be crucial to maintain the recent increase in infrastructural investments while ensuring they are well aligned with Egypt's overall production transformation strategy and the country's vision for AfCFTA. In the absence of internationally comparable data on infrastructure spending, investments in fixed assets can

provide a proxy. Gross fixed-capital formation in Egypt reached a peak of around 30% of GDP in the 1980s, but since then has dropped by almost half, with an average of 15.3% during 2010-19. Nevertheless, improved macroeconomic performance in recent years has led to a recent uptick in investments. While Egypt's share of investment has gone down, the African average has gone up by 13% since 1990. Developing countries with an export-oriented strategy have also seen an increase in global capital formation rates, such as Morocco (by 7.3%) and Indonesia (by 6%). Egypt's declining investments are driven by a steady retreat of public sector investments, from around 19% of GDP in 1990 to between 5% and 10% since 2000 (Figure 4.9). Private sector investments have not filled the investment gap, despite a peak prior to the global financial crisis, and have averaged 9% of GDP since the 1990s [see also (OECD, 2020[14])].

Figure 4.9. Egypt needs to continue investing in infrastructure

Gross fixed capital formation, share of GDP



Note: GFCF: Gross fixed capital formation.
Source: Authors' elaboration based on World Bank (2021[15]), *World Bank Indicators*, https://data.worldbank.org/indicator/ne.gdi.totl.zs.

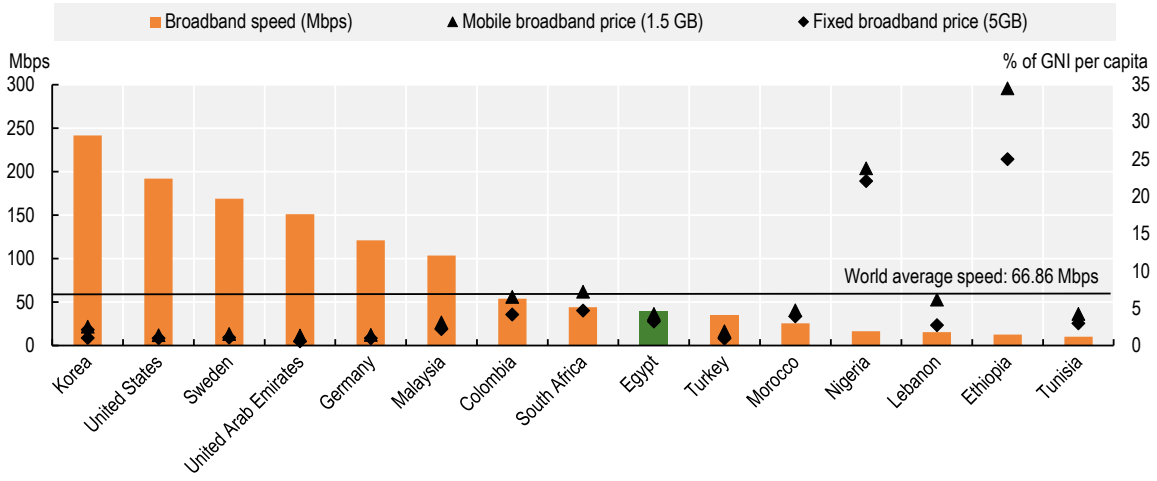
Third, advancing in digital connectivity. Egypt's Internet penetration reached 57.3% of the population in 2019 (ITU, 2021[16]). This is more than double compared to 2010 and twice the African average, and in line with some regional peers, such as South Africa (56.2%). Nevertheless, there is room for improvement. In Germany, as in other advanced countries, the share reaches 88%; in Malaysia it is 84%, and in Morocco it is 74.4%. Egypt has also advanced in terms of mobile connectivity coverage. In 2019 in Egypt 4G made-up 20% of connections of total mobile connections in the country, compared to 9% in sub-Saharan Africa (Figure 4.10). Meanwhile, in the OECD, 4G technologies accounted for 58% of connections in 2019. In January 2020, Egypt was one of seven countries in Africa where operators were investing in 5G technology (GSA, 2020[17]).

Figure 4.10. Share of mobile connections by technology, Egypt and regional averages 2010 and 2019

Source: GSMA (2019[18]), *GSMAintelligence*, https://data.gsmaintelligence.com/.

Egypt is providing some of the most affordable Internet in Africa, and Internet speed has been increasing (Figure 4.11). Fixed broadband costs 3.22% of GNI per capita and mobile 1.1% in 2020, similar to some regional peers, such as Morocco (3.93% and 0.79%, respectively) and Tunisia (2.97% and 1.28% respectively), and lower than the African median (18.26% and 4.67%). There is no standard way to measure Internet speed, but some businesses are aggregating user-generated data to calculate how long it takes to upload or download data. Information collected by Ookla, a US-based firm, suggests that in April 2021 Egypt's fixed broadband speed was 39.66 Mbps, making it the highest in North Africa (the world average is 66.86 Mbps). Based on this data, it would take 18 minutes to download a 5-gigabyte movie in Egypt, but only 3 minutes in Korea, the country with the fastest Internet in the OECD. Egypt's Internet speed has increased by more than six times within a little over a year, from 6.5 Mbps in December 2018. Egypt's improvement in speed has been facilitated by investments to modernise the country's Internet infrastructure since mid-2018 amounting to USD 1.6 billion. This helped accommodate the increased usage during COVID-19 lockdown (March-May 2020), when home Internet usage increased by 99% and that of mobile Internet by 35%, and international calls increased by 19%, while peak Internet usage increased from about 7 hours to 15 hours, according to information provided by the National Telecom Regulatory Authority (NTRA).

Figure 4.11. Broadband Internet cost and speed, selected countries, 2021



Source: Authors' elaboration based on International Telecommunication Union (2021[16]), *Country ICT Data* (database), https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx; and Ookla (2021[7]), *Speedtest global index*, https://www.speedtest.net/global-index.

Conclusions

AfCFTA could be a game changer for Egypt and for the whole continent. The agreement holds the promise of unleashing the continent's industrialisation process, if targeted national strategies are put in place to benefit from it. Africa trades little within the continent and mostly exports commodities and raw materials to the rest of the world. So does Egypt, despite being among the continent's few industrial heavyweights. AfCFTA could change that, by incentivising continental entrepreneurs to set up new continental business ventures, and by fostering upgrading and innovation in established firms across the continent.

But AfCFTA also has substantial potential to facilitate Egypt's and Africa's integration into the world economy. It opens up opportunities for updating international integration and co-operation patterns – with both traditional and emerging partners – to achieve the vision of a prosperous, united and sustainable Africa. The upcoming PTPR Spotlight project "Harnessing the potential of AfCFTA for transforming Egypt", carried out in co-operation with Afreximbank and ECA, will analyse these issues in more depth.

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Production Transformation Policy Review of Egypt

EMBRACING CHANGE, ACHIEVING PROSPERITY

Egypt is one of Africa's industrial heavyweights. Transforming the country's economy to sustain job-rich and sustainable growth are pivotal steps in its march towards prosperity. Today's search for new development models, accelerated by the unfolding of the COVID-19 pandemic, calls for shifting up a gear in raising Egypt's industrial capabilities to compete in an industry 4.0 and agro 4.0 landscape. The *Production Transformation Policy Review (PTPR) of Egypt* uses a forward-looking framework to assess the country's readiness to embrace change. This includes an analysis of the game-changing potential of the African Continental Free Trade Area (AfCFTA) and perspectives on agro-food and electronics (i.e. what in Egypt is referred to as part of the engineering sector), as well as identifying priorities for future reforms. This review is the result of government-business dialogue, and benefited from peer learning from Italy and Malaysia. It also resulted from international and multi-stakeholder knowledge sharing through a dedicated Peer Learning Group (PLG) and the OECD Initiative for Policy Dialogue on Global Value Chains, Production Transformation and Development.

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