

# BUSINESS INSIGHTS

## ON EMERGING MARKETS

2020



INVESTMENT  
SMART CITIES DIGITALISATION  
INFRASTRUCTURE INNOVATION  
SUSTAINABILITY NEW TECHNOLOGIES  
REGIONAL INTEGRATION MARKETS  
SKILLS REGULATIONS TRADE  
PRODUCTIVITY  
INDUSTRIALISATION  
COMPETITIVENESS



Cite this study as:  
OECD (2020), "Business Insights on Emerging Markets 2020", OECD  
Emerging Markets Network, OECD Development Centre, Paris,  
<http://www.oecd.org/dev/oecdemnet.htm>.

# BUSINESS INSIGHTS ON EMERGING MARKETS 2020



## OECD DEVELOPMENT CENTRE

The Development Centre of the Organisation for Economic Co-operation and Development (OECD) was established in 1962 and comprises 56 member countries, of which 27 are OECD members and 29 are developing and emerging economies. The European Union also takes part in the work of the Centre.

The Development Centre occupies a unique place within the OECD and in the international community. It provides a platform where developing and emerging economies interact on an equal footing with OECD members to promote knowledge sharing and peer learning on sustainable and inclusive development. The Centre combines multidisciplinary analysis with policy dialogue activities to help governments formulate innovative policy solutions to the global challenges of development. Hence, the Centre plays a key role in the OECD's engagement efforts with non-member countries.

To increase the impact and legitimacy of its work, the Centre adopts an inclusive approach and engages with a variety of governmental and non-governmental stakeholders. It works closely with experts and institutions from its member countries, has established partnerships with key international and regional organisations and hosts networks of private-sector enterprises, think tanks and foundations working for development. The results of its work are discussed in experts' meetings as well as in policy dialogues and high-level meetings, and are published in a range of high-quality publications and papers for the research and policy communities. For more information on the Centre, please visit [www.oecd.org/dev](http://www.oecd.org/dev).

## OECD EMERGING MARKETS NETWORK

Emerging Markets Network (EMnet) is an OECD-sponsored initiative dedicated to the private sector. Managed by the OECD Development Centre, the Network fosters dialogue and analysis on emerging economies and their impact on global economic and social issues.

EMnet gathers top executives (chief executive officers, vice-presidents, managing directors, chief financial officers, heads of strategy, chief economists) of multinational companies from diverse sectors, willing to engage in debates with high-level policy makers, including heads of state and ministers, and OECD experts.

EMnet events are closed to the public and media and operate under Chatham House rule to encourage open and dynamic discussions on doing business in Africa, Asia and Latin America. To learn more about EMnet, please consult [www.oecd.org/dev/oecdemnet.htm](http://www.oecd.org/dev/oecdemnet.htm).

## EDITORIAL

The world is changing fast. The Coronavirus (COVID-19) crisis has impacted our lives in previously unimaginable ways. The way we choose to adapt to this new reality – together or apart, accelerating our efforts to address existing challenges or deferring them – will shape our reality in the years to come.

The OECD Development Centre believes the international response to COVID-19 must combine immediate and co-ordinated efforts to confront the health crisis and protect the most vulnerable with a medium-term and long-term commitment, to enhance resilience by strengthening the local economic and industrial base and improving national health and social protection systems.

As we survey current policy responses across the globe, we echo the voices from across the private sector that call for avoiding protectionism and facilitating the continuous flow of goods and services, including food, drugs and medical supplies. There are increasing concerns that as COVID-19 will continue spreading across the globe, further trade restrictions could affect badly needed medical supplies and generate supply-chain disruptions in food or other essential goods and services. The repercussions of this would be particularly severe for developing countries.

Heterogeneity across developing economies and uncertainty as to the length and depth of the effect of COVID-19 make it difficult to estimate the full impact of the crisis. There is a risk that the global slowdown and the shutdown of domestic economic activities can erase years of hard-won progress towards poverty reduction and worsen pre-existing structural challenges and inequalities, compromising the already difficult trajectory to the Sustainable Development Goals (SDGs). While the situation is severe, this extraordinary context could also be an opportunity to have governments and other stakeholders work hand in hand to rebuild social trust and implement the long-term policy reforms needed to strengthen fiscal capacities, increase resilience and promote a more inclusive recovery.

This edition of the *Business Insights on Emerging Markets* comes at a critical time and is a welcome contribution to the discussion on the policy levers that can bring about this recovery. It provides private sector perspectives on existing barriers and potential enablers for business in areas that can contribute to long-term investment and sustainable growth across emerging markets, from new technologies in Latin America and smart cities in Asia to production transformation in Africa. In spite of the pandemic, it will be more important than ever before to remain focused on pending structural reform agendas included in this report, such as improving the investment climate, promoting innovation, enhancing hard and soft infrastructure and closing the digital gap in terms of quality and coverage.

Even as we address aspects of immediate concern we must not lose sight of this long-term view. Once we have managed this crisis, the challenges that existed before it will remain, or will be exacerbated. The Development Centre will continue to promote a dialogue across countries at different levels of development, together with a multiplicity of economic actors, including the private sector, to design a truly global and sustainable recovery.

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

## ACKNOWLEDGEMENTS

The OECD Development Centre's Emerging Markets Network (EMnet) prepared this publication, which includes a contribution from the Emerging Markets Institute of the Samuel Curtis Johnson College of Business at Cornell University. Bathylle Missika, Head of the Networks, Partnerships and Gender Division, and Lorenzo Pavone, Deputy Head of the Networks, Partnerships and Gender Division, guided the project. The publication was developed by Melanie Vilarasau Slade, EMnet Co-ordinator, and Robbert van Eerd, EMnet Policy Analyst.

Chapter 1 *“China, forging ahead on the innovation path”* was written by Lourdes Casanova and Anne Miroux of the Emerging Markets Institute at Cornell's Samuel Curtis Johnson College of Business, Cornell University. This chapter builds on a previous publication by both authors.

Chapter 2 *“Smart cities as engines for growth in Asia”* was drafted by Robbert van Eerd and Jaya Jain of the EMnet team. The first section of this chapter was prepared with the help of Leah Zinonos, MBA student at the INSEAD business school. Kensuke Tanaka, Head of the Asia Desk, and Prasiwi Ibrahim, Economist at the OECD Development Centre's Asia Desk also contributed to this chapter. The report also benefitted from comments from Elias Miles (Schneider Electric) and by representatives of Schröder.

Chapter 3 *“Leveraging the impact of new technologies in Latin America”* was written by Robbert van Eerd and Martina Fattiboni Ferrara of the EMnet team, with the help of Valentine Staub. The first section of this chapter was prepared with the help of Nadine Farouq, MBA student at the INSEAD business school. Sebastian Nieto-Parra and José René Orozco of the OECD Development Centre's Latin America and the Caribbean Desk provided insights. This chapter also benefitted from comments and inputs from Miguel Abad (MOVO) and representatives from Amazon Web Services, SUEZ and Telefónica.

Chapter 4 *“The future of production in Africa: The case for regional integration”* was written by Robbert van Eerd and Oumar Ba from the EMnet team. The first section of this chapter was prepared with the help of Akhil Khurana, MBA student at the INSEAD business school. The report also benefitted from comments from Dr. Arthur Minsat, Head of the Europe, Middle East and Africa Desk at the OECD Development Centre; Bakary Traoré, Economist, and Francesco Napolitano, Policy Analyst, at the Middle East and Africa Desk at the OECD Development Centre; and Melanie Vilarasau Slade, EMnet Co-ordinator. The private sector insights section benefitted from comments by Dr. Patrick Ndzana Olomo from the African Union Commission, and from comments from Adam Lane (Huawei Kenya), Elisabetta Purlalli (Eni), Elzo Kannekens (MSD Animal Health), and Olga Kayayan (Boniswa Group). Views from representatives of Intesa Sanpaolo further sharpened the analysis.

The team is very grateful to the OECD Development Centre's Communications and Publications Unit, especially Delphine Grandrieux, for their support in producing this publication, as well as the copy-editors Brenda O'Hanlon and Jane Marshall. The authors also thank Elizabeth Holbourne from the Director's Office of the Development Centre for her contribution. Finally, special thanks go to Bréanne Mallat, Cristina Aguado Medrano, Grace Dunphy, Sonja Märki and Carolina García Valencia (OECD Development Centre) for their valuable assistance throughout the drafting and publishing process.

The opinions expressed and arguments employed here are the sole responsibility of the authors and do not necessarily reflect the official views of the member countries of the OECD or its Development Centre, or of EMnet members.

© OECD 2020

This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

The statistical data for Israel is supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## TABLE OF CONTENTS

<b>Abbreviations and acronyms.....</b>	<b>9</b>
<b>Overview.....</b>	<b>14</b>
<b>1. China, forging ahead on the innovation path.....</b>	<b>20</b>
Introduction.....	21
How did China get there?.....	21
China moving up the innovation ladder.....	23
Case study: Huawei, research and innovation at the core of its development strategy.....	26
Case study: Tencent, an innovation leader.....	27
Conclusion: What can China's success teach other emerging countries?.....	30
<b>2. Smart cities as engines for growth in Asia.....</b>	<b>33</b>
Asia's economic and business overview.....	34
Smart cities as engines for growth.....	38
Private sector insights on smart cities as engines for growth.....	43
Conclusion.....	53
<b>3. Leveraging the impact of new technologies in Latin America.....</b>	<b>60</b>
Latin America's economic and business overview.....	61
Leveraging the impact of new technologies.....	65
Private sector insights on leveraging the impact of new technologies.....	71
Conclusion.....	80
<b>4. The future of production in Africa: The case for regional integration.....</b>	<b>88</b>
Africa's economic and business overview.....	89
The business opportunities in regional integration.....	96
Private sector insights on the future of production in Africa.....	106
Conclusion.....	117



## ABBREVIATIONS AND ACRONYMS

<b>ADB</b>	Asian Development Bank
<b>AEC</b>	African Economic Community
<b>AFCAC</b>	African Civil Aviation Commission
<b>AfCFTA</b>	African Continental Free Trade Area
<b>AfDB</b>	African Development Bank
<b>AFF</b>	African Forest Forum
<b>AI</b>	Artificial Intelligence
<b>AIDP</b>	Artificial Intelligence Development Plan
<b>AIRC</b>	Artificial Intelligence Research Centre
<b>ARPANET</b>	Advanced Research Projects Agency Network
<b>ASCN</b>	Association of Southeast Asian Nations Smart Cities Network
<b>ASEAN</b>	Association of Southeast Asian Nations
<b>AU</b>	African Union
<b>AUC</b>	African Union Commission
<b>AUDA</b>	African Union Development Agency
<b>AUDA-NEPAD</b>	African Union Development Agency-New Partnership for Africa's Development
<b>B2C</b>	Business-to-Consumer
<b>BCR</b>	Binding Corporate Rules
<b>BEPS</b>	Base Erosion and Profit Shifting
<b>CAB</b>	Current Account Balance
<b>CAF</b>	<i>Corporación Andina de Fomento</i> (Development Bank of Latin America)
<b>CCTFA</b>	Central Corridor Transit Transport Facilitation Agency
<b>CEMAC</b>	Central African Economic and Monetary Community
<b>CEN-SAD</b>	<i>Communauté des États sahélo-sahariens</i> (Community of Sahel–Saharan States)
<b>CEO</b>	Chief Executive Officer
<b>CEPAL</b>	<i>Comisión Económica para América Latina y el Caribe</i> (see ECLAC)
<b>CFO</b>	Chief Financial Officer
<b>CIA</b>	Central Intelligence Agency

<b>CLM</b>	Cambodia, Lao PDR and Myanmar
<b>CNNIC</b>	China Internet Network Information Centre
<b>COMESA</b>	Common Market for Eastern and Southern Africa
<b>CPNC</b>	Communist Party National Congress
<b>DDI</b>	Data-Driven Innovation
<b>DRC</b>	Democratic Republic of the Congo
<b>EAC</b>	East African Community
<b>EACO</b>	East Africa Organisation of Communications
<b>ECB</b>	European Central Bank
<b>ECCAS</b>	Economic Community of Central African States
<b>ECLAC</b>	Economic Commission for Latin America and the Caribbean
<b>ECOWAS</b>	Economic Community of West African States
<b>EDB</b>	Economic Development Board (of Singapore)
<b>EMnet</b>	Emerging Markets Network
<b>EU</b>	European Union
<b>EV</b>	Electric Vehicle
<b>EPA</b>	Export Promotion Agency
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FDI</b>	Foreign Direct Investment
<b>Fintech</b>	Financial technology
<b>GDP</b>	Gross Domestic Product
<b>GDPR</b>	General Data Protection Regulation
<b>GERD</b>	Grand Ethiopian Renaissance Dam
<b>GFDRR</b>	Global Facility for Disaster Reduction and Recovery
<b>GGWSSI</b>	Great Green Wall for the Sahara and the Sahel Initiative
<b>GII</b>	Global Innovation Index
<b>GIZ</b>	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i> (German Corporation for International Co-operation)
<b>GNI</b>	Gross National Income
<b>GPS</b>	Global Positioning System
<b>GSMA</b>	Global System for Mobile Communications Association

<b>GST</b>	Goods and Services Tax
<b>GVC</b>	Global Value Chain
<b>GWh</b>	Gigawatt hours
<b>IATA</b>	International Air Transport Association
<b>ICT</b>	Information and Communications Technology
<b>IDA</b>	Infocomm Development Authority of Singapore
<b>IDB</b>	Inter-American Development Bank
<b>IEA</b>	International Energy Agency
<b>IXP</b>	Internet Exchange Point
<b>IGAD</b>	Intergovernmental Authority on Development
<b>IISD</b>	International Institute for Sustainable Development
<b>ILO</b>	International Labour Organization
<b>IMF</b>	International Monetary Fund
<b>IMR</b>	International Mobile Roaming
<b>IoT</b>	Internet of Things
<b>IPv4</b>	Internet Protocol version 4
<b>IRENA</b>	International Renewable Energy Agency
<b>IT</b>	Information Technology
<b>ITS</b>	Intelligent Transportation System
<b>ITU</b>	International Telecommunication Union
<b>IUCN</b>	International Union for Conservation of Nature
<b>JSE</b>	Johannesburg Stock Exchange
<b>KNOMAD</b>	Global Knowledge Partnership on Migration and Development
<b>KSEZ</b>	Kigali Special Economic Zone
<b>LAC</b>	Latin America and the Caribbean
<b>LCR</b>	Latin America and the Caribbean Region
<b>Mbps</b>	Megabits per second
<b>Mercosur</b>	<i>Mercado Común del Sur</i> (Southern Common Market)
<b>MOE</b>	Ministry of Education (China)
<b>MPAC</b>	Master Plan on ASEAN Connectivity
<b>MPF</b>	Medium-term Projection Framework

<b>MRA</b>	Mutual Recognition Agreement
<b>MSME</b>	Micro, Small and Medium-sized Enterprise
<b>Mtoe</b>	Million tonnes of oil equivalent
<b>NAFTA</b>	North American Free Trade Agreement
<b>NEPAD</b>	New Partnership for Africa's Development
<b>NIIDT</b>	National Innovation Institute of Defense Technology
<b>NTB</b>	Non-Tariff Barrier
<b>NTFC</b>	National Trade Facilitation Committees
<b>O2O</b>	On-line to Off-line
<b>ODA</b>	Official Development Assistance
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>OICA</b>	<i>Organisation Internationale des Constructeurs d'Automobiles</i> (International Organization of Motor Vehicle Manufacturers)
<b>OSBP</b>	One-Stop Border Post
<b>PAIC</b>	Pan-African Investment Code
<b>PBX</b>	Private Branch Exchanges
<b>PPP</b>	Public-Private Partnership
<b>RAN</b>	Radio Access Network
<b>R&amp;D</b>	Research and Development
<b>RBC</b>	Responsible Business Conduct
<b>REC</b>	Regional Economic Community
<b>SAATM</b>	Single African Air Transport Market
<b>SADC</b>	Southern African Development Community
<b>S&amp;T</b>	Science and Technology
<b>SATA</b>	Southern African Telecommunications Association
<b>SDG</b>	Sustainable Development Goal
<b>SEZ</b>	Special Economic Zone
<b>SME</b>	Small and Medium-sized Enterprise
<b>SOE</b>	State-Owned Enterprise
<b>STRI</b>	Services Trade Restrictiveness Index
<b>UMA</b>	<i>Union du Maghreb Arabe</i> (Arab Maghreb Union)

<b>UN</b>	United Nations
<b>UNCCD</b>	United Nations Convention to Combat Desertification
<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>UNDESA</b>	United Nations Department of Economic and Social Affairs
<b>UNECA</b>	United Nations Economic Commission for Africa
<b>UNEP</b>	United Nations Environment Programme
<b>UNESCAP</b>	United Nations Economic and Social Commission for Asia and the Pacific
<b>US</b>	United States
<b>USD</b>	United States dollar
<b>USF</b>	Universal Service Fund
<b>USRC</b>	Unmanned Systems Research Centre
<b>VAT</b>	Value Added Tax
<b>VC</b>	Venture Capital
<b>WAEMU</b>	West African Economic and Monetary Union
<b>WCDMA</b>	Wide-Band Code Division Multiple Access
<b>WEF</b>	World Economic Forum
<b>WHO</b>	World Health Organization
<b>WIPO</b>	World Intellectual Property Organization
<b>WTO</b>	World Trade Organization

## OVERVIEW

The 2020 edition of *Business Insights on Emerging Markets* provides a private sector perspective on investment opportunities and challenges in Asia, Latin America and Africa. This publication brings together analysis and insights from the business meetings of the OECD Development Centre's Emerging Markets Network (EMnet), interactions with the private sector and desk research, organised in three regional chapters. An opening chapter by Cornell University's Emerging Markets Institute at Cornell's S.C. Johnson College of Business complements this publication.

At the time of publishing of this report, the Coronavirus (COVID-19) pandemic is rapidly spreading around the world. OECD analysis indicates a severe impact on the global economy, whose growth prospects were weak but stabilising when the virus hit. Restrictions on the movement of people, goods and services together with containment measures, factory and border closures have cut output and reduced demand sharply - first in the People's Republic of China (hereafter: 'China') and then globally. Like the rest of the world, emerging markets are facing an unprecedented health and economic crisis, with potentially extreme economic and social consequences. This publication mostly cites figures from before the pandemic, however more recent figures have been added and a box has been inserted after the executive summary and ahead of every chapter to provide a preliminary impact assessment of the crisis. For the latest information on impact and consequences of the coronavirus pandemic, please visit [www.oecd.org/coronavirus](http://www.oecd.org/coronavirus).

### China, forging ahead on the innovation path

This chapter explores the rise of Chinese firms in technological frontiers, such as electrical vehicles, mobile payments and Artificial Intelligence. This rapid progress has been possible through co-operation between governments, academia and businesses, with the result that China has moved from an imitator to a leader in innovation. Reforms in the 1980s and 1990s boosted educational institutions, firms and government research agencies, creating the conditions to quickly rise up international technology and innovation rankings. The analysis concludes with two case studies on Huawei and Tencent, to provide examples of firms that have established strong leadership in innovative industries and are indicative of the way Chinese multinationals have become globally competitive. Through a strong focus on R&D investment, Huawei has become the number one telecom supplier and number two manufacturer of smartphones in the world. Tencent is now one of the world's biggest technology conglomerates, owing to a global ecosystem of linked services and companies.

### Smart cities as engines for growth in Asia

Emerging Asia showed a robust economic performance with an average growth of 5.8% in 2019, supported by a fast-growing urban population, strong FDI inflows and rapid digital transformation. However, the outbreak of the Coronavirus pandemic, combined with persistent trade tensions and slowing demand from China are hampering economic prospects. Growth in 2020-24 in Emerging Asia was expected at 5.7% on average, according to the *Economic Outlook for Southeast Asia, China and India 2020*, but growth projections have been slashed to just over 2% for 2020.

Smart cities initiatives and smart technologies have catalysed private investment in recent years, particularly by technology firms, telecommunications, utilities and transport companies, and real estate developers, amongst others. Companies have increasingly contributed to this trend by investing, together with governments, in upgrading ICT infrastructure and providing innovative solutions to address urban policy challenges. Collaborative ecosystems that promote public-private partnerships and co-operation between national and sub-national governments are essential to adopt smart technologies, promote data sharing and encourage more private investment. For example, through Smart Cities Mission, the Indian government leveraged private-sector expertise to meet infrastructure demand through joint-ventures with multinational companies such as Mahindra and Infosys. Similarly, the Master Plan on ASEAN Connectivity 2025 allowed the private sector to play an important role in funding and data sharing in Southeast Asia.

Sound policy frameworks that promote innovation and competition are equally important. Open government data holds the potential to boost innovation for firms and the public sector alike. Agile regulation and regulatory “sandboxes” can further promote innovation while protecting consumers. However, several barriers to private investment in smart cities remain. For example, businesses are facing a shortage of highly skilled workers, particularly in Cambodia, Indonesia and Thailand, while fixed broadband speeds in the majority of ASEAN countries are well below the global average.

### Leveraging the impact of new technologies in Latin America

Economic growth in Latin America and the Caribbean was already faltering before the Coronavirus hit. Regional GDP was initially expected to grow by 2.6% in 2020, but with the onslaught of the crisis, forecasts now predict a recession with growth at -4.6%. Internal vulnerabilities include structural challenges such as low productivity, social discontent and political tensions, while external risks include the region’s exposure to the volatility of commodity prices, global interest rates and international trade flows.

Investment in new technologies can boost productivity and allow Latin America to overcome a lack of competitiveness compared to other regions. The 2013 telecommunications reform in Mexico almost halved mobile phone costs and significantly reduce the price of mobile service packages. In addition, technological solutions and innovations are also helping to drive economic and social sustainability, by reducing informality in the economy and by promoting social inclusion. Colombia’s *Vive Digital* plan, investing in free Internet connectivity in public spaces, has successfully reduced the digital divide and expanded Internet access in rural areas. The private sector is also contributing: the digital platform *Tienda Pago*, active in Mexico and Peru, has helped small businesses to finance their weekly inventory on line; in Mexico the retailer Walmart has introduced a digital wallet allowing clients without a bank account to pay for utility bills or other services.

Yet, barriers to realising the full potential of new technologies remain, as the region grapples with a lack of quality, affordable and accessible hard and digital infrastructure; a mismatch between labour demand and supply and weak investment regulations. Governments and companies can work together to expand digital access and increase the benefits of the digital economy, for example by further promoting infrastructure sharing initiatives. *Internet para Todos*, a project spearheaded by Telefónica, Facebook, the Inter-American Development Bank (IDB) and the Development Bank of Latin America (CAF), has already made Internet available through tens of thousands Peruvians

in the highlands, by working together with rural mobile infrastructure operators and local communities, in line with the national government's commitment to enhance rural connectivity. Companies note that further regulatory reforms related to transparency, anti-corruption, taxation and data privacy are also needed to improve the investment climate, develop digital infrastructure and generate trust in the digital economy ecosystem. Chile, in an effort to enhance trust in the digital economy beyond its borders, has incorporated regulations with respect to on line privacy, cross-border data flows, on line consumer protection and others in its trade negotiations.

### **The future of production in Africa: The case for regional integration**

With an average GDP growth of 3.6% in 2019 and 3.8% in 2020 (pre-crisis estimate), Africa includes several of the world's fastest growing economies such as Rwanda, Ethiopia, Côte d'Ivoire, Ghana and Tanzania. With COVID-19 affecting African economies, more recent forecasts show that recessions are likely: depending on the containment of the virus, GDP growth in 2020 could drop to -1.12%. While the positive economic momentum was fuelled by domestic factors, economic disparities between the various countries remained even before the pandemic hit. Furthermore, regional sourcing in Africa stood at 13% of inputs before the crisis, a much lower percentage than in other emerging regions such as Southeast Asia (21%). The African Continental Free Trade Agreement, signed by 54 African Union member countries by December 2019, can help reduce regional differences and create a pan-African market. It holds the potential to reduce tariffs across the continent, provide a framework for further economic integration, boost long-term inclusive growth and hasten the recovery from the COVID-19 impact.

Now more than ever, economic stability, good public governance, sound regulations and basic infrastructure provision remain essential to attract the investments needed to increase regional production and support economic integration. In particular, strategic clusters of firms and the establishing of special economic zones, in which governments provide access to quality infrastructure and dependable regulation, can further support industrialisation and regional specialisation. The success of such recent measures are demonstrated in Ethiopia, Morocco or Rwanda.

Companies welcome existing progress on reducing intra-African tariffs but stress that lowering non-tariff barriers, liberalising trade in services and increasing freedom of movement can support greater integration and harmonisation. Companies also note that creating conditions for economies of scale, providing security of investment and increasing transparency could help to attract more investment. Yet, while countries have attempted to increase domestic resource mobilisation and reduce investment risks through guarantees and other financial instruments, public-private partnerships for infrastructure projects remain concentrated mainly in Kenya, Nigeria, Uganda and South Africa. While regulatory hurdles still prevent businesses from sourcing talent across African countries, regional bodies such as the Southern Africa Development Community have taken steps to increase labour mobility. Finally, firms highlight how the high cost of doing business can act as a barrier to investment in Africa, citing examples of expensive transportation, lengthy customs procedures, high energy costs and difficult access to digital services.

### Box 1. The Coronavirus crisis in emerging markets: A preliminary impact assessment

At the time of publication of the *Business Insights on Emerging Markets 2020*, the Coronavirus (COVID-19) pandemic is rapidly spreading around the world. A health crisis has set off a global economic crisis, with unprecedented effects in emerging and developing economies (OECD, 2020a; OECD, 2020b). The World Trade Organization is forecasting a drop in world trade of up to 32%, while UNCTAD forecasts a possible decline of global foreign direct investment flows by 30-40%, hitting their lowest levels since the 2008-2009 financial crisis (WTO, 2020; UNCTAD, 2020). Emerging and developing countries are particularly vulnerable, as their health systems are already weak, economies are highly dependent on falling global demand and strict containment policies are difficult to implement (Pezzini, 2020). Income losses in developing countries are estimated to be over USD 220 billion (UNDP, 2020).

The virus's ripple effects on the economies of emerging markets is manifesting itself in several ways, including through impact on demand and consumer confidence, global value chains and trade, and financial, transport and tourism linkages with advanced economies; by disrupting education and labour markets; and by a drop in value of natural resources. If the virus keeps spreading, the downturn could be deeper and more protracted than in advanced economies, with recovery much more gradual (Boone, 2020; OECD, 2020a).

The shutdowns and reduced demand for goods and services are affecting sectors amounting to up to one third of GDP in the major advanced and emerging market economies (OECD, 2020c). Lower international demand, disrupted global value chains and temporary export bans have caused trade to significantly decline in emerging markets. Reduced demand for garment and other goods has impacted India and Southeast Asian exports, while African agri-food supply chains are experiencing disruptions (OECD, forthcoming; World Bank, 2020). Border closures have also hit key sectors for emerging markets such as tourism and transport. Tourism, which provides a major revenue stream particularly in North Africa, Southeast Asia and the Caribbean, could shrink globally between 45 and 70% in 2020 (ILO, n.d.; OECD, forthcoming; OECD, 2020d). In the transport sector, the airline industry is expecting a more than 30% decline of the full year passenger demand in Africa, Asia Pacific and Latin America (IATA, 2020).

Furthermore, the downward trends in commodity prices are significantly impacting the economies of many resource-rich countries in emerging markets. Tensions between the Organization for Petroleum-Exporting Countries (OPEC) and its allies at a time of decreasing demand have caused further downward pressure to steeply dropping global oil prices (Bordoff, 2020). African oil-exporters could see economic growth fall by up to seven percentage points. A slump in global demand is also lowering the price of other primary goods, hurting commodity exporters such as Brazil, Colombia, Indonesia, Mexico and Nigeria (Dabrowski and Domínguez-Jiménez, 2020). African metal-exporters could see economic growth down by eight percentage points compared to the base scenario before the Coronavirus crisis (Calderon, 2020).

Global uncertainty will also impact investments and financial flows. As investors flee to safety, emerging markets see large capital outflows that are much steeper than during the last global financial crisis. Equity markets in the Philippines and Indonesia registered some of the largest regional declines, prompting government intervention (OECD, forthcoming). In Latin America, large outflows from the region caused strong currency depreciation, prompting the value of assets in debt and equity markets to decrease (Bonaglia and Nieto-Parra, 2020). Central banks across emerging markets have cut benchmark rates and eased financial conditions, while a surging US dollar is adding further volatility and stress to emerging economies (Wheatley, 2020).

### Box 1. The Coronavirus crisis in emerging markets: A preliminary impact assessment (cont.)

The virus is also disrupting education and labour markets in emerging economies. More than 1.5 billion learners in more than 190 countries have faced school closures (UNESCO, 2020). With large numbers of infected individuals, the labour force can take a hit too. Local virus outbreaks can force factory closures or extreme “social distancing” policies to contain them, reducing the number of workers available. The virus’ impact will have a disproportionate impact on informal economy workers across the world due to a lack of social protection; this is especially the case in developing countries, where they represent 70% of the workforce (Gerdin and Kolev, 2020). In Latin America, social protection nets only cover just over half of vulnerable populations and just under half of the poor (OECD, forthcoming; OECD, 2020e).

In Africa, Emerging Asia and Latin America, governments have responded with policies to shore up confidence, protect businesses and households and expand social protection. In Latin America, for example, Argentina, Brazil and Peru have temporarily reduced or deferred certain tax payments. A wide range of emerging economies have also cancelled or suspended payments to public utilities or social security contributions (OECD, forthcoming). Government policies should further extend social protection to informal economy workers, as some countries have already done. Other policy measures can include temporary cash transfer programmes to informal workers at risk, as India is doing, or the formalisation of enterprises with access to social protection (Gerdin and Kolev, 2020). Finally, governments have also announced initiatives in support of the private sector ranging from the direct provision of funding to corporate bond purchases (Bonaglia and Nieto-Parra, 2020; OECD, forthcoming).

The global economy, and emerging markets in particular, are in for a difficult year, if not more to come. The ability of governments to stem the spread of the virus, contain the economic fallout and restart their economies will determine the severity of the impact on the private sector. Measures taken by companies on job security, safety nets or payment delays can further provide important relief to individuals, especially when the firms are formalised in order to receive possible government transfers. For the latest information on the consequences of the coronavirus pandemic, please visit [www.oecd.org/coronavirus](http://www.oecd.org/coronavirus).

## References

- Bonaglia and Nieto-Parra (2020), “Latin America and the Caribbean in the time of COVID-19: Preventing the vulnerable from falling behind”, *OECD Development Matters* Blog series, 31 March 2020, Paris, <https://oecd-development-matters.org/2020/03/31/latin-america-and-the-caribbean-in-the-time-of-covid-19-preventing-the-vulnerable-from-falling-behind>.
- Boone, L. (2020), “We may have to prepare for a longer coronavirus crisis”, 23 March 2020, Financial Times, London, [www.ft.com/content/a8d31354-6ce6-11ea-89df-41bea055720b](http://www.ft.com/content/a8d31354-6ce6-11ea-89df-41bea055720b).
- Bordoff, J. (2020), “Why This Oil Crash Is Different”, Foreign Policy, Washington, D.C., <https://foreignpolicy.com/2020/03/09/opec-russia-shale-oil-price-collapse>.
- Dabrowski, M. and M. Domínguez-Jiménez (30 March 2020), “Is COVID-19 triggering a new emerging-market crisis”, Bruegel, Brussels, [www.bruegel.org/2020/03/is-covid-19-triggering-a-new-emerging-market-crisis](http://www.bruegel.org/2020/03/is-covid-19-triggering-a-new-emerging-market-crisis).
- Calderon, C. et al. (2020), *Africa’s Pulse*, Vol. 21 (April), World Bank Group, Washington, D.C., <https://openknowledge.worldbank.org/bitstream/handle/10986/33541/9781464815683.pdf?sequence=10&isAllowed=y>.

- Gerdin, A. and A. Kolev (2020), "Why protecting informal economy workers is so critical in time of COVID-19", *OECD Development Matters* Blog series, 17 April 2020, Paris, <https://oecd-development-matters.org/2020/04/17/why-protecting-informal-economy-workers-is-so-critical-in-time-of-covid-19>.
- IATA (2020), "Deeper Revenue Hit from COVID-19", press release, 24 March, International Air Transport Association, Montreal, [www.iata.org/en/pressroom/pr/2020-03-24-01](http://www.iata.org/en/pressroom/pr/2020-03-24-01).
- ILO (n.d.), "Tourism - an important driving force for inclusive socio-economic development, economic diversification, enterprise and job creation" in Sectoral Policies Department Fact Sheet, International Labour Organization, Geneva, [www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---sector/documents/publication/wcms\\_544196.pdf](http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_544196.pdf).
- OECD (forthcoming), *COVID-19 and developing countries: What policies and partnerships to respond, reset and rebuild?*, OECD Publishing, Paris.
- OECD (2020a), *OECD Economic Outlook, Interim Report March 2020*, OECD Publishing, Paris, <https://doi.org/10.1787/7969896b-en>.
- OECD (2020b), *Developing countries and development co-operation: What is at stake?*, OECD Publishing, Paris, [www.oecd.org/coronavirus/policy-responses/developing-countries-and-development-co-operation-what-is-at-stake-50e97915](http://www.oecd.org/coronavirus/policy-responses/developing-countries-and-development-co-operation-what-is-at-stake-50e97915) (accessed 13 May 2020).
- OECD (2020c), *OECD updates G20 summit on outlook for global economy*, OECD website, [www.oecd.org/newsroom/oecd-updates-g20-summit-on-outlook-for-global-economy.htm](http://www.oecd.org/newsroom/oecd-updates-g20-summit-on-outlook-for-global-economy.htm).
- OECD (2020d), *Covid-19: Tourism Policy Responses*, OECD Publishing, Paris, [https://read.oecd-ilibrary.org/view/?ref=124\\_124984-7uf8nm95se&Title=Covid-19:%20Tourism%20Policy%20Responses](https://read.oecd-ilibrary.org/view/?ref=124_124984-7uf8nm95se&Title=Covid-19:%20Tourism%20Policy%20Responses).
- OECD (2020e), *COVID-19 in Latin America and the Caribbean: Regional socio-economic implications and policy priorities*, OECD Publishing, Paris [https://read.oecd-ilibrary.org/view/?ref=129\\_129904-k3xp17fqbl&title=COVID-19-in-Latin-America-and-the-Caribbean-Regional-socio-economic-implications-and-policy-priorities](https://read.oecd-ilibrary.org/view/?ref=129_129904-k3xp17fqbl&title=COVID-19-in-Latin-America-and-the-Caribbean-Regional-socio-economic-implications-and-policy-priorities).
- Pezzini, M. (2020), "Covid-19: time to unleash the power of international co-operation", *OECD Development Matters* Blog series, 26 March 2020, Paris, <https://oecd-development-matters.org/2020/03/26/covid-19-time-to-unleash-the-power-of-international-co-operation> (accessed 28 April 2020).
- UNCTAD (2020), *Impact of the Covid-19 pandemic on global FDI and GVCs – Updated Analysis*, United Nations, Geneva, [https://unctad.org/en/PublicationsLibrary/diaeiainf2020d3\\_en.pdf](https://unctad.org/en/PublicationsLibrary/diaeiainf2020d3_en.pdf).
- UNDP (2020), "COVID-19: Looming crisis in developing countries threatens to devastate economies and ramp up inequality", United Nations Development Programme, New York, [www.undp.org/content/undp/en/home/news-centre/news/2020/COVID19\\_Crisis\\_in\\_developing\\_countries\\_threatens\\_devastate\\_economies.html](http://www.undp.org/content/undp/en/home/news-centre/news/2020/COVID19_Crisis_in_developing_countries_threatens_devastate_economies.html).
- UNESCO (2020), *COVID-19 Educational Disruption and Response*, UNESCO, Paris, <https://en.unesco.org/covid19/educationresponse> (accessed 29 April 2020).
- Wheatley (2020), "Surging dollar, coronavirus and oil slump hit emerging economies", *Financial Times*, London, [www.ft.com/content/69fc6e2a-69d3-11ea-a3c9-1fe6fedcca75](http://www.ft.com/content/69fc6e2a-69d3-11ea-a3c9-1fe6fedcca75).
- World Bank (2020), *South Asia Economic Focus, Spring 2020: The Cursed Blessing of Public Banks*. World Bank Group, Washington, D.C., <https://openknowledge.worldbank.org/handle/10986/33478>.
- WTO (2020), *Trade set to plunge as COVID-19 pandemic upends global economy*, World Trade Organization, Geneva, [www.wto.org/english/news\\_e/pres20\\_e/pr855\\_e.htm?fbclid=IwAR0BhfywgobFqgRpii078hEDV82794qjz6gPeZi1YEiebQzLd7XXf5Ca1Gs](http://www.wto.org/english/news_e/pres20_e/pr855_e.htm?fbclid=IwAR0BhfywgobFqgRpii078hEDV82794qjz6gPeZi1YEiebQzLd7XXf5Ca1Gs).

# 1. China, forging ahead on the innovation path

**Lourdes Casanova**, Senior Lecturer, Gail and Rob Cañizares Director, Emerging Markets Institute at Cornell's S.C. Johnson College of Business, Cornell University

**Anne Miroux**, Faculty Fellow, Emerging Markets Institute at Cornell's S.C. Johnson College of Business, Cornell University

This chapter explores the rise of the People's Republic of China (hereafter: 'China') in technological frontiers such as electric vehicles, mobile payments and Artificial Intelligence. In the last ten years, Chinese firms have established strong leadership in innovative industries. To capture this swift transformation, the chapter uses the example of two such firms, Huawei and Tencent, as they power China's move from imitator to leader in innovation.

Key messages include:

- China has become a leader in innovation through long-term government planning, policies and investment in support of science and technology over the last 40 years, as well as strategic co-ordination at the firm level.
- Reforms in the 1980s and 1990s boosted educational institutions, firms and government research agencies. The country created a highly-qualified workforce and has risen quickly up international technology and innovation rankings.
- China's leadership is visible in key sectors such as electric vehicles, mobile payments and Artificial Intelligence (AI), turning the country into a powerful innovation hub.
- Combined efforts of multinational research teams, companies and the government have focused on improving the size and quality of the national talent pool.
- The success of Chinese multinationals such as Huawei and Tencent can be explained by a mix of strategies focusing on low prices, strong emphasis on R&D, international expansion and creation of a global ecosystem of interlinked services and businesses.

## INTRODUCTION

China is surely and steadily assuming a new role at the epicentre of global technology and innovation. To mention just a few of the milestones: Beijing's Tsinghua University now produces more of the top 1% most highly-cited papers in mathematics and computing, positioning it as potentially the world's top-ranked science university; China's ratio of research and development (R&D) expenditure has swelled, nearing that of the United States; and perhaps most significantly, the country's companies now find themselves at the helm of the world of innovation, the result of strategic co-ordination at the firm level in new technology and substantial long-term government planning and investment in the last 40 years.

This article highlights some of the milestones of this journey and three technological areas in which China and its companies have excelled: electric vehicles (EV), mobile payments and Artificial Intelligence (AI). Furthermore, it illustrates how shared goals among the Chinese government, academia and business fostered a unique environment for unprecedented growth. First, we explore the phases of government support fuelling this rapid rise. We then dwell on the cutting-edge industries the country now leads. Finally, we move to the two iconic global technology firms and their implications.

## HOW DID CHINA GET THERE?

Governments are a critical part of the ecosystem in science, technology and innovation the world over. The state is uniquely positioned for the heavy investments in research needed to facilitate innovation (e.g., the National Science Foundation, the European Commission, among other innovation funds). In 2019, for instance, the U.S. government budget allocated USD 156.8 billion for R&D. Governments often champion research institutions, such as U.S. defence ARPANET (Advanced Research Projects Agency Network), behind many of the protocols used for the Internet today. Another example is the Global Positioning System (GPS), the satellite-based radio navigation system, operated by the Space Force of the United States government. It is through special educational programmes, government funds and tax subsidies for research activities that intellectual property and expertise in science and technology flourish.

China would heed this insight and since the late 1970s come to pass policies in support of Science and Technology (S&T), as we shall see in the five phases explained below.

### **Experimentation (1978-1985)**

First came a period of experimentation (1978-1985). China's advancement in S&T research lagged that of developed countries. Its adoption of a Soviet S&T research model presented a number of disadvantages, significantly curtailing both research and industry achievements. Policy reforms fixated on spin-offs and partly privatising public research institutions as a result. These newly privatised entities proved valuable, partially alleviating holding institutions' financial burdens. Two successful technology companies established during this period: Lenovo Group (Legend Computer at that time), a spin-off from the Computing Institute of the Academy of Sciences, which has now become the leader in sales of laptops and computers; and Founder Group Co., a spin-off from Peking University, a major Chinese technology conglomerate of pharmaceuticals, real state,

finance, commodity trading and information technology (IT). The initial reforms utilised a bottom-up approach due to limited financial resources.

### **Systematic reform (1985-1995)**

The following 10 years were a period marked by systematic reform (1985-1995). China made the switch to top-down national technology reforms with the introduction of the 1985 S&T System Reform Act. To connect research institutions and industry, the Act gradually strengthened the economic impact of S&T funding and emphasised competitiveness. Meanwhile, the National Natural Science Foundation of China was founded to promote and finance basic and applied research. The government would tie China's higher education system and social development, instituting Project 211 in 1995, which assigned a budget for leading universities across the country.

### **Deepening reform (1996-2006)**

The third phase was characterised by deepening reform (1996-2006). S&T reform began in earnest with the 9th Five-Year National Budget Plan and the Outline of the 2010 National Target. The Act of Promoting Commercialisation of S&T Discoveries and Inventions in 1996 outlined a plan that would focus on innovation in the industrial sectors rather than on public research organisations; enhance the R&D capabilities of the different industries; and increase the commercialisation of academic outputs. In addition, the Chinese government introduced four important initiatives to the national innovation infrastructure: the National Advanced Education Development Fund, which included major technology and engineering universities under its umbrella; the Knowledge Innovation Initiative, in the Chinese Academy of Sciences aimed at strengthening research from public institutions; public initiatives, such as the 973 Programme, which funded basic research; and the Yangtze River Scholars Programme, which increased wages among professors to attract both domestic and international talent.

It is during this period that nine Chinese Universities, the so-called Chinese Ivy League or C9, were promoted through the Project 985 launched in 1998. The goal was to endorse them as centres of excellence both in research and attraction of talent, promoting the organisation of international conference and, at the same time, help Chinese faculty to go abroad to both conferences and as visiting scholars. At the end of the project in 2011 the number of sponsored universities was increased to 39.

### **Focusing on technology and innovation (2006-2014)**

The fourth period (2006-14) would contemplate long-term planning and policy optimisation. In 2006, the National Plan focused on effective policies to achieve four major science and technology goals: nurturing independent innovation; improving the capacity to capitalise in key technology areas; building major infrastructure; and developing leadership on a global scale. In 2012, the 18<sup>th</sup> Communist Party National Congress (CPNC) outlined a development strategy prioritising "innovation-driven growth" to power China to become a "top innovation nation" by 2020. To avoid the lack of co-ordination and cohesiveness of previous policies, the CPNC set clear targets for innovation competitiveness.

One effect of these reforms was to increase the share of high school graduates enrolled in colleges and universities. Proof of its success is the fact that, from 2002-2012, the number of graduates in sciences at every level from college up through Ph.D. grew at an average annual rate of more than 15%. These students swelled the ranks of Chinese R&D professionals from 1.1 million in 2004 to 3.3 million in 2012, an annual rate growth of 10% or higher (National Bureau of Statistics of China, 2013).

#### **Aspiring to be a leader (2015-present)**

In the latest period (2015-present), the Chinese government introduced five major innovation reforms. First, universities were awarded the right to licence patents generated from public R&D funding under an amendment to the National Act for Promoting Technology Transfer. This policy provided inventors with a greater share of the profits. Second, transactions related to intellectual property were simplified in line with the National Intellectual Property Strategy. Third, the government improved the efficiency of S&T projects, increasing accountability to stakeholders. Fourth, a unique new venue for technology start-ups to raise capital was provided through the National Equity Exchange and Quotations. Finally, in order to increase access to crowdfunding and other multilevel capital markets, China issued general guidelines promoting entrepreneurship.

Forty years of continuous support to S&T through coherent policies resulted in major innovation achievements, which will be highlighted in the next section.

## **CHINA MOVING UP THE INNOVATION LADDER**

As a result of the co-ordinated funding of science and technology at different universities and government research agencies, China started moving up the innovation ladder as shown in technology and innovation rankings. For instance, the Global Innovation Index (GII), published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), is one of the most comprehensive measures of a country's innovation capability. The GI provides detailed metrics for more than 120 countries, accounting for more than 96% of the world's gross domestic product (GDP) (Cornell /INSEAD/WIPO, 2019). China's GI-scores indicate that it is close to its 2020 national goal of being recognised as a global leader in innovation. Even as an emerging market, it has risen more rapidly than any other country in the GI-rankings: from a rank of 34<sup>th</sup> in 2012 to 14<sup>th</sup> in 2019, to 10<sup>th</sup> in the Innovation Output Sub-Index, and, perhaps most impressively, to 5<sup>th</sup> in Knowledge and Technology Outputs, the first time China ranked in the top-10 of one of the main GI-indices.

The GI, which also measures the quality of innovation through three variables, namely, quality of local universities, internationalisation of local inventions, and the number of citations that local research documents receive abroad, suggests that there is a gap in the quality of innovation between the USA and China, but that this gap is shrinking. In the GI 2019, China ranks first among middle-income economies in the quality of innovation aggregate measure.

This leadership in innovation implicates a number of industries: high-speed trains, stealthy aircraft, cryptocurrencies, electrical vehicles (EV), mobile payments and Artificial Intelligence (AI). We focus next on the last three.

## Electric vehicles

American, French, German, Italian, Japanese and Korean brands dominate the automotive industry: General Motors, Hyundai, Renault, Toyota or Volkswagen have become mythical global brands. No Chinese firm has been able to win a top global position. Despite being the world's largest automobile market with 23 million cars sold in 2018 (surpassing the 17 million cars sold in the United States), local brands like Chery or Geely are not much known beyond China's border. However, the rising popularity of electric cars could award China an opportunity to dominate this new sector. Electric vehicles' dependence on batteries and simpler design than internal combustion engine cars, has proven to be advantageous for China. Chinese manufacturers can more easily compete with global peers in this market, particularly as Chinese companies have come to dominate the global market for batteries. Seven of the world's top-10 electric vehicles battery manufacturers are in China and the country enjoys over 50% of the global market share. In 2017, for instance, only 6 out of 98 battery manufacturers in the Chinese market were foreign. The Made in China 2025 plan supports domestic production of mega capacity batteries (more than 40 GWh), just as strategic ventures between domestic manufacturers consolidate the domestic battery market and allows the manufacturers to expand globally (e.g. the Chinese company CATL plans to open its first battery plant in Germany in 2022).

Despite a sluggish global car market and declining overall automobile sales in the Chinese market in 2018 (6% decline on year on year basis), sales of electric vehicles continued to increase, holding a 2.2% share of the Chinese automobile market in 2017 (as compared to 1.2% for the U.S.). NIO, an electric car maker established in 2014, had delivered about 11 000 vehicles by December 2018 and is expected to continue its growth, despite stiff competition from Tesla both domestically and abroad. The large (and growing) domestic market for electric vehicles, combined with the government's Made in China 2025 policy promotion of the sector, are likely to drive innovation in this sector for years to come, as well as tackle environmental challenges.

## Mobile payments in China

This is a sector where a weakness became a strength as the country came to vault to the top. Weak credit card penetration prompted e-commerce champions like Alibaba to look for other solutions to expand their business. Thus, the use and adoption of e-commerce accelerated the expansion of mobile payments in China led by Alibaba, followed later by Tencent and JD, only to become an almost universal mode of payment not only for e-commerce payments but for utilities, small loans and transactions of all kinds.

According to the China Internet Network Information Centre (CNNIC), in 2018, 802 million Chinese were active Internet users, of whom 788 million were mobile users, of which 74% used mobile payments. Even consumers shopping off-line made mobile payments (67% of Internet users), accounting for an estimated 10.4 trillion mobile payments transactions valued at USD 22 trillion (ESC Editorial team, 2018). Most users (54%) use third-party mobile payment providers, most commonly WeChat Pay (Tencent) and Alibaba's Alipay.

While before 2013, payments launched by Alibaba were PC-based, the shift to mobile was largely spurred by the 2013 introduction of WeChat Pay. Its users could link bank accounts and send money

to their friends, while vendors could accept payments with a QR-code. This functionality extended mobile payments to off-line applications such as paying bills in restaurants and others. As WeChat Pay and Alipay gained popularity, thousands of third-party developers integrated the mobile payments with enterprise information systems and hardware, reaching institutions as diverse as hospitals, schools and tax collection services.

Mobile payments have expanded to other financial services. WeChat Pay and Alipay processed an incredible 1.7 billion transactions per day in 2018, enabling both companies to assess consumers' creditworthiness based on transaction data. Armed with such information, WeChat Pay and Alipay would begin to lend to consumers and moving into B2B, focusing on small businesses.

At the same time, both Alipay and WeChat Pay have grown rapidly internationally, mainly in Asian countries which rely heavily on cash and low rates of credit card usage. As consumers increase mobile phone use, so does the use of mobile payments. By 2019, Alipay and WeChat Pay users would span 54 and 49 countries respectively.

### Artificial Intelligence

A sector in which China's government is investing heavily is Artificial Intelligence. Even as the United States retains its leadership in AI, China has made major strides toward the top echelons, ahead of Europe in both technology development and market applications. Chinese companies are successfully developing innovative market-competitive products and services around AI applications. The country's expertise in designing and integrating high-performance computing systems has provided fertile ground for companies such as SenseTime, one of the world's leaders in computer vision. Likewise, China's success has also been supported by international collaboration and government support. By July 2017, China's State Council issued the New Generation Artificial Intelligence Development Plan (AIDP), and the National Innovation Institute of Defence Technology (NIIDT), which would establish two Beijing-based institutions - the Unmanned Systems Research Centre (USRC) and the Artificial Intelligence Research Centre (AIRC) - among the largest and fastest-growing government AI research organisations in the world.

Chinese AI achievements are often the result of combined efforts of multinational research teams, companies and the Chinese government focusing on improving the size and quality of China's AI talent pool. In April 2018, the Ministry of Education (MOE) launched the AI Innovation Action Plan for Colleges and Universities. The Plan aims to create 50 national-level high-quality on-line open courses, establish AI colleges, research institutions, or interdisciplinary research centres, and develop world-class teaching materials for undergraduate and graduate studies related to AI applications for specific industries. The MOE also plans to launch a new five-year AI talent training programme to train an additional 500 AI instructors and 5 000 students at top Chinese universities.

In what follows, we showcase two firms at the forefront of international news because of their technological progress: Huawei and Tencent. The former is at the heart of the China-US trade war, and both illustrate the emergence of China in the global innovation landscape.

## CASE STUDY: HUAWEI, RESEARCH AND INNOVATION AT THE CORE OF ITS DEVELOPMENT STRATEGY

The company offers a wide range of products and services, including end-to-end solutions in telecom and enterprise networks, devices, and cloud computing. With a strategy relying heavily on the internationalisation of R&D centres (Casanova and Miroux, 2017; OECD, 2017), Huawei's rise has been particularly remarkable since 1999. From the 397<sup>th</sup> position in the Fortune Global 500 list in 2009, to 61<sup>st</sup> only 10 years later. With sales of USD 122 billion in 2019 and gross profits of USD 40.4 billion in 2018, Huawei Investment & Holding Co., Ltd. became the No. 1 telecom supplier, a major partner for most of the thirty-five largest telecom operators and number two manufacturer of smartphones in the world, trailing only Samsung, and ahead of Apple by number of units sold. Consumer business accounted for 48% of Huawei total revenues in 2018 and almost half of its revenues are generated outside of China.

Headquartered in Shenzhen, Huawei was founded in 1987 as a seller of low-cost private branch exchanges (PBX) and motherboards for the Chinese market, deploying a strategy of heavy R&D investment combined with intelligent marketing campaigns. By the early 1990s, Huawei overtook leading competitors like Cisco, then dominant in the Chinese market. Building on the growing Chinese economy and pursuing its policy of significant R&D investment, from 1993-2000 Huawei experienced breakneck growth, further consolidating its pre-eminent position in the country. The firm's international expansion would begin in this period, moving first into Hong Kong, China and the Russian Federation, then to emerging economies such as Algeria, India, Viet Nam, and Latin America, only to finally break into advanced markets such as Europe and Australia. As China joined the World Trade Organization (WTO) in 2001, Huawei further globalised, expanding into the U.S. market and establishing 21 R&D centres and 36 joint innovation centres worldwide. Meanwhile, Huawei began making inroads into mobile telephones, signing cross-licencing agreements with Ericsson and Nokia, the main patent-holders of Wide-Band Code Division Multiple Access (WCDMA), and in 2004 it launched the first 3G mobile phone of its own.

A strong focus on R&D investment is one of Huawei's defining characteristics. The firm spends more than 10% of its revenues on R&D every year. It was ranked fifth in the world by total investment in R&D in the 2019 EU Industrial R&D Investment Scoreboard, above Apple, and is now one of the world's largest patent holders, with 87 805 granted patents as of December 2018 (Huawei, 2018). The next generation of wireless technology (the so-called "5G") has been at the centre of Huawei's technology push, with the company investing more than USD 4 billion over the last decade for 5G development (Pham, 2019). Compared to other companies, Huawei owned 10% of the 1 450 5G patents filed as of January 2019, while Qualcomm owned 15%, Nokia 11%, ZTE 10% and 8% for Ericsson (Wu, 2019).

One of Huawei's R&D advantages is that it has established joint innovation centres with partners all over the world through its research centres. As a result, Huawei has been able to better leverage partners' technology and understanding of end-users needs, while strengthening its global network of relationships (OECD, 2017). Huawei has collaborated with major partners such as SAP and Accenture toward cloud and enterprise applications initiatives, as a further diversification of its activities portfolio. In addition, it has incentivised its partners to implement their own global strategies with a shortened time-to-market.

Huawei's rise has drawn significant attention, not all of which is positive and is marked by growing policy headwinds. Since the early 2000s, major U.S. firms already fearing the potential threat from Huawei entering their domestic market with low prices and high-end innovations, would begin to fight back. In 2003, for instance, Cisco sued Huawei for copyright violation. Since then, Huawei's U.S. market challenges have worsened as authorities, on national security grounds, progressively ratcheted up scrutiny of Huawei's activities, particularly in strategic sectors such as network infrastructure or software suppliers. In August 2019, Huawei announced that it was developing its own operating system HarmonyOS, known as Hongmeng in China, in response to the sudden severance with Google's Android as a result of growing U.S. restrictions.

Outside the United States the response to the installation of Huawei's 5G networks has been mixed. In 2018, both Australia and New Zealand banned the company from supplying the necessary technology for 5G infrastructure installation. As of February 2020, the European Union does not appear ready to split with Huawei completely. The EU has deferred to members on what part of China's Huawei Technologies should be incorporated in their 5G telecoms networks. The U.K. government approved the licencing of technology from Huawei for the country's 5G network, albeit with limitations, excluding the company from "security critical" core areas.

With China and the United States both having enhanced expertise and a large number of patents, the outcome of the US-China trade war is uncertain. Even as Huawei manages to keep growing, Huawei is yet still the target of much scrutiny by U.S. and other Western economies, turning to its homemade ecosystem to power its innovations. Hence, we may eventually see the emergence of more than one technology system and countries being forced to choose if they are going to adhere to American, Chinese or other technology platforms and standards. It remains to be seen if Huawei will be able to maintain its position globally amidst pushback from U.S. and Western governments. The next few years will be crucial.

## CASE STUDY: TENCENT, AN INNOVATION LEADER

With its innovative products and services and unique business model, Tencent Holdings Ltd. is another case in point of China's emergence as an innovation leader. A world leader in video games and messaging services, the company was founded in 1998. Based in Shenzhen, the firm has become a major technology conglomerate – with USD 47 billion in revenues in 2019 and USD 14 billion in operating profits and 54 309 employees in 2018 – and the fifth market capitalisation among Internet companies in the world (USD 481 billion as of February 2020), not far from colossuses such as Google Inc./Alphabet Inc., Amazon Inc., Facebook Inc., and Alibaba Group Holding Ltd. The marquee business model developed by the firm – providing a wide array of services (including entertainment, on-line advertising services, as well as Internet and mobile phone value-added services) through a universe of interconnected businesses – was key to Tencent's remarkable trajectory.

The firm began as an instant messaging service, QQ. However, due to the free service, the company soon faced a shortage of resources. The first funding would come from a Hong Kong, China-based Information and Communications Technology (ICT) company Pacific Century Cyberworks Ltd. and a U.S.-based venture capital (VC) fund IDG capital, conditional upon the firm altering its business plan and reaching four million users. This set Tencent on a quest to

substantially expand its user base, which Tencent would increasingly monetise due to the remarkable proliferation of smartphones.

To that end, Tencent further invested in Mobile QQ, in co-operation with the state-owned China Mobile Communications Corp. With a 20% fee charged by China Mobile to Mobile QQ users, Tencent became a profitable company, ready to develop a variety of services for its growing user base. In 2005, it launched “Q coin”, a virtual currency that would function as the *de facto* standard for all purchases on Tencent’s ecosystem. To diversify its revenue base, Tencent then developed its “freemium” (free and premium) model according to which services such as video games would be free but users would purchase add-ons or “premiums” as extra-levels, equipment, and additional functionality. To further encourage exchanges on its growing platform, Tencent created Virtual Goods, a world of virtual products ranging from virtual pets, clothing and jewellery to ringtones. Likewise, Tencent launched QQ leisure game portal, offering and licencing games developed in-house and elsewhere, all through its QQ portal website and messenger service, which would promote its array of products and services at low cost to its entire user base.

By 2011, mobile development became the focus of Tencent’s technology and innovation efforts. The result was the debut of the company’s flagship product Weixin (‘WeChat’ in the global market). The multi-functional app combines features similar to Facebook, WhatsApp, Spotify, YouTube, Apple Pay, Uber, Deliveroo, and more, in a single platform. The development of On-line to Off-line (O2O) services was a key factor in WeChat’s success, and in turn, Tencent’s meteoric rise owes much to WeChat’s success. By 2013, Tencent launched its mobile games platform with twenty titles, available to one billion WeChat and Mobile QQ users. Its foray into mobile gaming was so successful that it became the world’s largest video gaming market just 2 years later (Newzoo, 2016).

While forging an ecosystem of linked services, in 1999 Tencent began a series of strategic VC investments that would create a system of linked companies. The pace of investment increased substantially, from less than 30 investments in 2013 to 144 in 2017 and 163 deals in 2018 (Deng, 2019). Tencent’s VC investments amounted to more than USD 30 billion from 2015-2017. Such investments were critical for the company because they enabled Tencent to widen its innovation ecosystem and diversify investments in different industries, thereby creating further opportunities to monetise its user base. It also enabled the company to expand its leadership position in certain business segments such as gaming.

Following rampant success in China, Tencent sought to promote its products and services to a more global audience. Its internationalisation efforts focused on international patent applications, adapting WeChat for international users, and expanding gaming for a global audience. Tencent has invested more than USD 2 billion in the process of internationalisation, more than either SoftBank or Reddit, investing in 46 global unicorns in the United States and worldwide, including a 5% stake in the American firm Tesla in EVs, 7.5% in the Swedish music streaming service Spotify and taking a share in Brazilian credit card operator NuBank.

Tencent’s international expansion began in the early 2000s as the company filed a series of worldwide patents and utility model applications. As of 2020, Tencent is a leader in patent applications, averaging more than 2 000 patent per year; it filed 1 168 patents for AI in 2018, surpassing Samsung’s 1 047 patent filings (Shear, 2018). To maintain its growth while still avoiding

patent infringements, Tencent announced an agreement with Alphabet Inc.'s Google in 2018 to jointly develop technology (Chen, 2018).

WeChat's internationalisation, however, was a heavy lift due to its wide variety of functionalities. To facilitate the process, Tencent allocated significant resources to make the app compatible with iOS, Android, Blackberry, and Windows phones. Overseas, WeChat was most heavily marketed and integrated in some of China's neighbouring "natural" markets such as India, Indonesia, Malaysia, the Philippines and Thailand. By 2013, Tencent opened offices in Singapore, the Philippines, Malaysia and the United States. WeChat also gained market share in Africa (South Africa) and Latin America: Brazil, Argentina, and Mexico. In 2018, WeChat had about around 1.09 billion users, a major leap from 50 million in 2011 (Statista, 2019). Since then, however, Tencent has retreated from its international strategy through WeChat, focusing instead on enhancing its ecosystem in China.

To internationalise its gaming sector, Tencent first purchased major gaming companies, and then supported VC firms to encourage start-ups. The targets were companies that produced some of the world's most popular games, such as the U.S. Riot Games Inc. which developed *League of Legend*, and a 48% stake of U.S.-based Epic Games Inc., the developer of *Unreal Engine*, among others. In 2013, Tencent also purchased a 6% stake in Activision Blizzard Inc., the developer of the iconic *World of Warcraft*. Tencent's acquisitions facilitated its access to diverse markets. At the same time, the firm invested in video game start-up developers (particularly in Asia), showing its commitment to diversify into video game production. Particularly notable was its USD 9 billion investment in the Finnish company Supercell Oy, the developer of *Clash of Clans* in 2016, an acquisition that significantly strengthened Tencent's presence in the industry. Tencent is now the world's largest video game company, with the sector representing two fifths of its total revenues in 2019.

The company has also further diversified its activities in the entertainment industry. As of December of 2019, Tencent with a consortium of companies bought 10% of Universal Music Group, a subsidiary of the French firm Vivendi, for USD 3.4 billion, enlarging its Tencent Music Entertainment Group, the firm's streaming subsidiary which went public in 2018. The company includes production of blockbuster films such as *Wonder Woman* and *Terminator*.

One of Tencent's key innovations is its universe of inter-linked businesses. At the centre of this universe was Tencent's gaming business, on which its instant messaging platforms such as QQ messenger, WeChat and Qzone turn. Tencent's comprehensive suite of services are search engine and email, software and apps, e-commerce platforms, O2O services, mobile payments, entertainment and social media platforms, all of which entice users to stay within Tencent's universe. This model of interconnected businesses has been key to Tencent's success. The firm, for instance, promotes its games to its large user base on its own social platforms, generating significant revenues and increasing customer demand while reducing marketing costs. Its one-stop shop philosophy provides a comprehensive customer experience that fuels customer's loyalty. At the same time, Tencent benefits from the "network effect" inherent in its social network and instant messaging services: the platforms gain users who want to interact with friends or family who already use the same service.

Since 2015, and recognising the potential of its ecosystem, the company strengthened its “connection strategy” in order to expand its business. It focused its efforts on three main revenue categories: fee-based revenue through subscriptions and purchase of virtual goods in games and social networks; traffic-based revenue through on-line advertising; and transaction-based-revenue through fees per transaction (mobile pay, for instance). Its diversity of revenue streams is one of Tencent’s major strengths. Indeed, while Facebook and Google/Alphabet received 98% and 86% of their revenues respectively from advertising in 2018, Tencent only earned 17% of its revenue through advertising, the remainder stemmed from its other services. Cloud and payment services alone accounted for 18% of Tencent’s revenues, reflecting the ongoing growth of mobile payment and cloud services in China.

With a 30% increase in profits in 2018, Tencent still faces challenges such as saturation in its home market and hence the need to expand in other businesses such as health. Its ability to expand WeChat’s usage to the rest of the world poses a number of technical issues such as the need to customise interfaces and features to adapt to each market, accounting for differences in language and customers habits, among others. Other challenges are more subjective, such as the perception of users’ privacy. To address this concern, WeChat intends to distance both its operations and brand from Tencent. WeChat, for instance, has an independent management team, board of directors, and decision-making capabilities. Finally, penetrating the U.S. market, over which Facebook and Instagram reign, has proved particularly difficult. In today’s policy environment, it appears even more daunting.

While Tencent’s main Chinese competitors Alibaba and Baidu have developed their own connected ecosystem, it is still difficult to match Tencent’s “one-stop shop” philosophy. Nevertheless, Tencent’s dependence on the Chinese market may be its Achilles’ heel, rendering it vulnerable to an economic slowdown in China and requiring additional efforts for the firm’s global expansion.

## **CONCLUSION: WHAT CAN CHINA’S SUCCESS TEACH OTHER EMERGING COUNTRIES?**

China has improved its innovation capacity across the board, reaching world leading positions in key R&D parameters, which is reflected in an ever-increasing rank in the Global Innovation Index. As described before, China’s strides in innovation are particularly notable in electrical vehicles, mobile payments and Artificial Intelligence. Together, they are indicative of the accelerating competitiveness of China’s multinationals on a global scale. Among others, two global giants, Huawei and Tencent, exemplify and are behind China’s rapid rise to leadership in global innovation.

## Notes

- <sup>1</sup> This article is based on Casanova, L and A. Miroux (2019). *The Era of Chinese Multinationals: How Chinese Companies Are Conquering the World*. Academic Press. Elsevier. <http://bit.ly/bookchina>.

## References

- Casanova, L. and A. Miroux (2018), *Emerging Market Multinationals Report 2018: Emerging Markets Reshaping Globalization*, Emerging Markets Institute, Johnson School of Management, Cornell University, [www.johnson.cornell.edu/wp-content/uploads/sites/3/2019/04/EMR2018\\_V3\\_FIN-11Jan.pdf](http://www.johnson.cornell.edu/wp-content/uploads/sites/3/2019/04/EMR2018_V3_FIN-11Jan.pdf).
- Casanova, L. and A. Miroux (2017), *Emerging Market Multinationals Report 2017: Emerging Multinationals in a Changing World*, Emerging Markets Institute, Johnson School of Management, Cornell University, [www.johnson.cornell.edu/wp-content/uploads/sites/3/2019/04/EMR-2017-FINAL-FINAL-4dec2017.pdf](http://www.johnson.cornell.edu/wp-content/uploads/sites/3/2019/04/EMR-2017-FINAL-FINAL-4dec2017.pdf).
- Casanova, L. and A. Miroux (2016), *Emerging Market Multinationals Report 2016: The China Surge*, Emerging Markets Institute, Johnson School of Management, Cornell University, [www.johnson.cornell.edu/wp-content/uploads/sites/3/2019/04/2016-EMR-Updated-EMR-Consolidated.v3.pdf](http://www.johnson.cornell.edu/wp-content/uploads/sites/3/2019/04/2016-EMR-Updated-EMR-Consolidated.v3.pdf).
- Casanova, L., P. Cornelius and S. Dutta (2018), *Entrepreneurship and the Finance of Innovation in Emerging Markets*. Elsevier, Academic Press, Cambridge, [www.elsevier.com/books/financing-entrepreneurship-and-innovation-in-emerging-markets/casanova/978-0-12-804025-6](http://www.elsevier.com/books/financing-entrepreneurship-and-innovation-in-emerging-markets/casanova/978-0-12-804025-6).
- Chen, L. (19 January 2018), "Google, Tencent Agree to Share Patents in Global Tech Alliance", Bloomberg, [www.bloomberg.com/news/articles/2018-01-19/google-tencent-agree-to-share-patents-in-global-tech-alliance](http://www.bloomberg.com/news/articles/2018-01-19/google-tencent-agree-to-share-patents-in-global-tech-alliance).
- China Internet Network Information Center (2018), Ministry of Industry and Information Technology of China, <https://cnnic.com.cn>.
- Cornell/INSEAD/WIPO (2019), Global Innovation Index 2019, [www.globalinnovationindex.org](http://www.globalinnovationindex.org).
- Deng, I. (20 February 2019) "Tencent defends investment spree as core strategy amid venture "capital winter" concerns", South China Morning Post, [www.scmp.com/tech/big-tech/article/2186939/tencent-defends-investment-sprees-core-strategy-amid-venture-capital](http://www.scmp.com/tech/big-tech/article/2186939/tencent-defends-investment-sprees-core-strategy-amid-venture-capital).
- ESC Editorial Team (2018), "The three development trends of China's mobile payments in 2018", E-commerce Strategy China, [www.ecommercestategychina.com/column/the-development-and-trends-of-chinas-mobile-payment-in-2018](http://www.ecommercestategychina.com/column/the-development-and-trends-of-chinas-mobile-payment-in-2018).
- Huawei (2018), *2018 Annual Report*, Huawei Investment & Holding Co., Ltd., Shenzhen, [www-file.huawei.com/-/media/corporate/pdf/annual-report/annual\\_report2018\\_en\\_v2.pdf?la=zh](http://www-file.huawei.com/-/media/corporate/pdf/annual-report/annual_report2018_en_v2.pdf?la=zh).
- National Bureau of Statistics of China (2013), *China Statistical Yearbook 2013*, China Statistics Press, Beijing, [www.stats.gov.cn/tjsj/ndsj/2013/indexeh.htm](http://www.stats.gov.cn/tjsj/ndsj/2013/indexeh.htm).
- Newzoo (21 June 2016), "Supercell acquisition: Tencent set to take 13% of this year's \$99.6Bn global games market", Newzoo, <https://newzoo.com/insights/articles/supercell-acquisition-tencent-set-to-take-13-percent-of-the-games-market>.
- OECD (2017), "Business Insights on Emerging Markets 2017", OECD Development Centre, Paris, [www.oecd.org/dev/oecdemnet.htm](http://www.oecd.org/dev/oecdemnet.htm).
- Pham, S. (26 June 2019), "Huawei is still signing up 5G customers despite US pressure", CNN Business, [www.cnn.com/2019/06/26/tech/huawei-ken-hu-mwc/index.html](http://www.cnn.com/2019/06/26/tech/huawei-ken-hu-mwc/index.html) (accessed July 11, 2019).
- Shead, S. (4 December 2018), "Baidu Leads AI Patent Applications In China with 2,368 Filings", Forbes, [www.forbes.com/sites/samshead/2018/12/04/baidu-leads-ai-patent-applications-in-china-with-2368-filings/#13932ef628ae](http://www.forbes.com/sites/samshead/2018/12/04/baidu-leads-ai-patent-applications-in-china-with-2368-filings/#13932ef628ae).

- Statista (2019), "Number of monthly active WeChat users from 4th quarter 2011 to 4th quarter 2018 (in millions)", [www.statista.com/statistics/255778/number-of-active-wechat-messenger-accounts](http://www.statista.com/statistics/255778/number-of-active-wechat-messenger-accounts) (accessed in May 2019).
- Takahashi, D. (26 January 2016), "League of Legends, Clash of Clans, and CrossFire drive digital games to \$61.3 B in 2015", Venturebeat, <http://venturebeat.com/2016/01/26/league-of-legends-clash-of-clans-and-crossfire-drive-digital-games-to-61-3b-in-2015>.
- Tencent (2015), *2015 Annual Report*, Tencent Holdings Limited, Shenzhen, <http://cdc.tencent.com-1258344706.image.myqcloud.com/storage/uploads/2019/11/09/7ff11f32cb38df8cacc59374c0e94b84.pdf>.
- Tencent (2018), *2018 Annual Report*, Tencent Holdings Limited, Shenzhen, <http://cdc.tencent.com-1258344706.image.myqcloud.com/storage/uploads/2019/11/09/da62661e976ea6cf64551dc5cdf079ea.pdf>.
- WIPO (2015), *Telecoms firms lead WIPO international patent filings*, World Intellectual Property Organization, Geneva, [www.wipo.int/pressroom/en/articles/2015/article\\_0004.html](http://www.wipo.int/pressroom/en/articles/2015/article_0004.html).
- Wu, A. (31 January 2019), "Huawei's 5G Patent Race", The Epoch Times, [www.theepochtimes.com/huaweis-5g-patent-race\\_2782903.html](http://www.theepochtimes.com/huaweis-5g-patent-race_2782903.html).

## 2. Smart cities as engines for growth in Asia

This chapter provides insights from the private sector on the opportunities for growth that smart cities can offer in Asian economies. The analysis builds on discussions which took place at the “Global Challenges for Business in Emerging Markets” meeting organised by the OECD Development Centre’s Emerging Markets Network (EMnet) at the OECD headquarters on 28 March 2019, as well as desk research and bilateral conversations with multinationals operating in emerging markets. Growth in 2020-24 was expected at 5.7% on average, but the region’s projections have been slashed to just over 2% for 2020.

Key messages include:

- Urbanisation is increasing rapidly in Asia, where the population of cities grew from 936 million in 2000 to 1.6 billion in 2017.
- Urban sprawl presents a number of downsides. The rapid rate of urbanisation has led to infrastructure challenges, increased traffic congestion, rising air pollution levels and higher energy demand.
- Government-led smart city initiatives provide solutions to the challenges arising from rapid urbanisation and catalyse private investment by, amongst others, real estate developers, technology firms, telecom, utilities and transport companies.
- Companies increasingly contribute to improving the quality of urban transportation systems, by upgrading information and communications infrastructure and providing new technologies, such as intelligent traffic management systems.
- For the success of smart city initiatives, the private sector has emphasised the importance of policies that aim to facilitate innovation and competition in order to close the infrastructure gap.
- Companies view a lack of digital access, as well as digital skills and literacy as major constraints to doing business in Asia.
- Companies note the need to uphold privacy, while allowing companies to access public data that are necessary to develop new products and technologies.
- Companies note an infrastructure gap that must be addressed across the region in order to unlock the potential of smart cities and address environmental concerns.
- Collaborative ecosystems that promote public-private partnerships and co-operation across different levels of government are essential in order to harmonise financing schemes, increase private investment, promote data sharing and encourage the adoption of smart technologies.

## ASIA'S ECONOMIC AND BUSINESS OVERVIEW

Emerging Asian<sup>1</sup> nations continued to experience strong economic growth, supported by a resilience of private consumption, inbound foreign direct investment (FDI) and, in certain cases, remittances. Growth in Emerging Asia for 2020-24 was expected at 5.7% on average, according to the OECD *Economic Outlook for Southeast Asia, China and India 2020*, but recent projections show GDP to grow at just over 2% in 2020 (Sawada, 2020). This chapter covers the period before 2020, and neither it nor the data cited in it take into account the effects of the Coronavirus pandemic. The virus is resulting in significant economic disruption from quarantines, restrictions on travel, factory closures and a sharp decline in many service sector activities. As a result, the world economy is expected to be in its most precarious position since the financial crisis and experiencing a sharp slowdown (OECD, 2020). See also Box 2.1.

### Box 2.1. The Coronavirus crisis in Emerging Asia

This Coronavirus (COVID-19) crisis is resulting in significant economic disruption from quarantines, restrictions on travel, factory closures and a sharp decline in many service sector activities. Growth prospects in Emerging Asia have been slashed, as a consequence of the important economic and social costs of combatting the disease through lockdowns (Tanaka and Pezzini, 2020).

COVID-19 originated in the People's Republic of China (hereafter: 'China'), a country that accounts for 17% of global GDP, 11% of global trade, and 34% of the MSCI EM index. China's increased economic weight means that the effects of disruption cause large ripple effects on both demand and supply in other economies, in particular those strongly linked with the Chinese economy such as Thailand and Viet Nam (Pezzini, 2020; OECD, forthcoming). Preliminary data shows that China's industrial production contracted by 13.5% and its services by 13% during January and February (National Bureau of Statistics, 2020). The associated supply and demand shock is reverberating across the rest of Asia, as many of its economies are strongly interwoven with Chinese supply chains. Exports continue to weaken (OECD, forthcoming). Reduced manufacturing exports is also a major concern, for example in the garment industry which has seen many orders postponed or cancelled. In addition, many countries have strongly restricted travel, which will have an important impact on economies that draw heavily on tourism such as Indonesia, the Philippines or Thailand (ADB, 2020).

Countries in Asia have been cutting benchmark rates to provide more liquidity, and many countries have also announced a stimulus package to boost demand or support faltering industries such as tourism, travel, or transportation, or cheap loans to SMEs. To support corporates in the region, authorities have pledged their support with measures ranging from direct provision of funding to corporate bond purchases (OECD, forthcoming). Rating agencies have slashed growth forecasts as yields on corporate bonds have tightened. In the case of India, Moody's noted that a general lack of social safety nets, weak ability to provide adequate support to businesses and households, and inherent weaknesses in many major emerging market countries will amplify the effects of the virus-induced shock (Moody's, 2020).

For the latest information on impacts and consequences of the COVID-19 pandemic, please visit [www.oecd.org/coronavirus](http://www.oecd.org/coronavirus).

## **Economic growth in Emerging Asia, while still high, is showing signs of moderating**

Global uncertainty and reduced trade and investment growth have contributed to signs of decelerating economic performance across Emerging Asia, which encompasses China, India and the ten countries of the Association of Southeast Asian Nations (ASEAN). Prior to the outbreak of the Coronavirus pandemic, real gross domestic product (GDP) for the region was expected to grow by 5.6% in 2020, which was already a slight reduction from 2018 and 2019 (OECD, 2019a).

### **As inflation eases, central banks in the region have lowered their interest rates**

Inflation remained steady at 2.8% on average across Emerging Asia in 2019, with significant falls in headline and core inflation to 1.6% in the Philippines and 1.9% in Malaysia (IMF, 2019). This was driven by the fall in global oil prices since late 2018, and by local currencies stabilising as a result of tighter monetary policy and capital controls, while food inflation remains mixed (OECD, 2019b). Consequently, central banks are increasingly using monetary policy tools to reduce local economic and financial risks, such as lower private sector demand and risk-taking in property markets (OECD, 2019b). The reserve banks of Malaysia and the Philippines recently reduced their interest rates by 25 basis points to 3.0% and 4.0%, respectively, in order to manage downside risks around global growth and trade (Bank Negara Malaysia, 2019; Bangko Sentral ng Pilipinas, 2019a). Similarly, the Reserve Bank of India has continued to reduce its benchmark interest rate as economic growth tapers (Reserve Bank of India, 2019). China's central bank, however, has maintained a mostly neutral monetary policy position (People's Bank of China, 2019), as it manages both high food inflation and softening export demand (China Bureau of Statistics, 2019; OECD, 2019b).

### **Current account balances weakened, although balance of payment positions remained steady**

Most ASEAN member states, as well as China and India, saw their current account balances (CABs) as a proportion of GDP decline, largely due to lower export growth (OECD, 2019b). This is the result of a combination of increased imports as trade export growth decreased, which was not necessarily offset by transfer outflows (OECD, 2019b). In particular, Viet Nam's CAB has declined, reaching a slight deficit in June 2019, due to lower growth in exports (State Bank of Vietnam, 2019). By contrast, Thailand was the only ASEAN-5<sup>2</sup> country to have maintained a healthy current account surplus in 2019, as its currency remained strong, reducing growth in exports (Bank of Thailand, 2019). China has seen its CAB surplus narrow slightly in 2019 as its economy increasingly rebalances towards reliance on domestic consumption (World Bank, 2019a). Broadly speaking, there is the potential for improvement in the balance of payments if trade exports improve across Emerging Asia.

## **Investment flows, including FDI and remittances, continue to support economic growth**

FDI continues to be robust across Asia. FDI grew by 4% in 2018 to USD 512 billion (United States dollars) (UNCTAD, 2019), even as global FDI flows fell by 13% due to tax reforms hampering outbound FDI from the United States (UNCTAD, 2019). Emerging Asia remains the largest recipient of FDI globally (40% of all flows), with the United States, China and Japan remaining the top investors in the region through greenfield projects and cross-border acquisitions

(UNCTAD, 2019). China received the second-highest investment flows across developed and developing nations, and saw its inbound investment grow by 4% in 2018 to USD 139 billion (UNCTAD, 2019). Flows to the manufacturing sector – both from across Emerging Asia and from Europe – increased sharply after deregulation in foreign ownership laws (UNCTAD, 2019). India's growth of 6% in 2018 was also supported by cross-border acquisitions (UNCTAD, 2019). FDI also grew significantly across many ASEAN member states. Thailand and Indonesia experienced growth of 6.2% and 7%, respectively, as intra-regional investment from China, Japan and Hong Kong, China helped regional value chains in manufacturing industries to develop (UNCTAD, 2019). CLMV economies (Cambodia, Lao PDR, Myanmar and Viet Nam) also experienced growth in FDI from other Asian nations, with China in particular supporting their infrastructure development (UNCTAD, 2019).

Despite strong inbound FDI, outward flows of funds from Asia decreased by 3% in 2018 to USD 401 billion (UNCTAD, 2019). This was driven by a fall in China's overall outbound flows, as capital controls were imposed to limit overseas investment. However, China's investment in Emerging Asian nations increased throughout 2018, driven by mergers and acquisitions across Singapore.

#### **Inflows of remittances continue to strengthen purchasing power**

Overseas remittances continue to be an important contributor to private consumption for some Asian economies: India, China and the Philippines represented three of the top four largest recipients of remittances globally (KNOMAD, 2019), and the Philippines, Cambodia and China saw their flows increase. Except for China, remittance flows have exceeded FDI in low- and middle-income countries since 2015 (KNOMAD, 2019). Remittances into South and East Asia are expected to continue to grow moderately into 2021, with direct transfers boosting consumption and savings while also raising living standards (KNOMAD, 2019). In India, remittances increased by 14% in 2019, potentially due to flooding in Kerala and growth inflows from the United States (KNOMAD, 2019). In the Philippines, personal remittances grew 6.3% in 2019 from the previous year to USD 2.6 billion, largely from land-based overseas Filipinos with work contracts of 1 year or longer (Bangko Sentral Ng Pilipinas, 2019b). The largest sources of its remittances were the United States, Saudi Arabia and Singapore, contributing 9.7% of the Philippines' GDP in 2018 (Bangko Sentral Ng Pilipinas, 2019c). As remittances increase globally, the Organisation for Economic Co-operation and Development (OECD) has identified opportunities for financial technology (Fintech) firms to foster greater financial inclusion through lower-cost platforms for sending money internationally in order to lower fees (OECD, 2018a), in line with the United Nations' Sustainable Development Goal (SDG) of reducing the transaction costs of migrant remittances to less than 3% (UN, 2019).

#### **Trade tensions and growing trade barriers can reduce trade in Asia in the short term**

Increased trade tensions between the United States and China have weakened Chinese net exports, which grew by only 1.1% in 2019 (OECD, 2019c). The trade conflict between the United States and China has seen tariff rates of up to 25% imposed on USD 200 billion of Chinese imports to the United States and USD 60 billion of US imports to China (ADB, 2019). Asian countries will be impacted differently, offering some economies the opportunity to take advantage of trade

diversion and re-allocation (OECD, 2019b). Malaysia, Singapore and Thailand experienced a slowdown in exports in the first quarter of 2019 (OECD, 2019b), but were stable for the remainder of the year (OECD, 2019a). Viet Nam, on the other hand, experienced strong export growth in 2019. Its exports to the United States, its largest export partner, grew 28% in the first 5 months of 2019, suggesting a shift in import sourcing (ADB, 2019). With current tariff trends set to continue, trade redirection can provide benefits to economies such as Malaysia, the Philippines and Thailand (ADB, 2019).

### **Slowing Chinese imports are impacting other Southeast Asian economies**

China's goods imports from ASEAN countries and India have slowed and, in some cases, contracted in 2019 (OECD, 2019a) due to reduced trade flows with the United States. Malaysia and Viet Nam are two Asian economies with relatively higher shares of exports to China, and both these economies have already experienced a noticeable decline in exports of goods to China since mid-2018 (OECD, 2019b). Asian countries can continue to grow their exports through diversification, but the success of this strategy varies depending on the types of goods they can offer (OECD, 2019b). As China remains Southeast Asia's largest trading partner, ASEAN countries and India should reduce the risks associated with future tariffs and changes in import sourcing. Already, Thailand and Viet Nam have diversified away from food and live animal exports towards machinery and equipment, although CLM nations' exports remain more concentrated in agriculture products, textiles and garments (OECD, 2019b). In addition, better regional linkages through improved physical infrastructure (transport and energy) can be a way of improving the ease of trading across Emerging Asian nations (OECD, 2019b).

### **Digitalisation is having an impact on productivity growth**

Digitalisation across Asia-Pacific is increasing. Smartphone penetration, a proxy for digitalisation, is estimated to have increased from 61% of all mobile connections in 2015 to 83% in 2018 (GSMA, 2019). The digital transformation of societies is altering how citizens work, communicate and live through the advent of Artificial Intelligence, robotics and information technologies (OECD, 2019d). It presents an opportunity to increase the productivity of labour and to upskill workers. Yet, automation and increased inequalities due to an increasing digital divide also pose risks. One example of digitalisation, on line job platforms, has facilitated significant self-employment throughout Asian economies (OECD, 2019d). Within Asia, Singapore, through its Smart Nation initiative, has taken a leading role in the implementation of digitalisation policies across delivery of government services, digital infrastructure and building digital capabilities among small and medium-sized enterprises (SMEs) (OECD, 2018b). Many middle-income countries in Asia rely on labour-intensive industries that are exposed to automation. For these economies – e.g. the Philippines, with its growing information technology industry – responding to the threat of automation is critical to their continued economic prosperity (OECD, 2018b).

### **Natural disasters and climate change adaption remain key risks in Asia**

Extreme weather conditions and natural disasters pose material economic and human risks and increased institutional and human capacity may be required in order to respond to threats (OECD, 2018b). Currently, Emerging Asian countries are over-represented in the Global Climate Risk Index

on factors relating to natural disaster exposure, including vulnerability and susceptibility, with Viet Nam and Thailand ranked sixth and tenth on the Index, respectively – the highest in the region (Germanwatch, 2019). The increasing occurrence of natural disasters and extreme weather are having ongoing economic impacts in Asia, with heatwaves and flooding associated with climate change being key sources of concern (Germanwatch, 2019; IMF, 2018), partly driven by the high number of low-lying and highly populated coastal cities (IUCN, 2019). As the region continues to experience high economic growth, it can engage in economic diversification away from weather-vulnerable industries such as agriculture, while developing resilience-building policies in order to reduce the future effects of extreme weather. For example, Viet Nam is working towards ex ante risk reduction through a dedicated disaster risk management agenda that integrates disaster risk into development planning, promotes risk-financing mechanisms for mitigation, and invests in disaster risk management in order to strengthen its urban resilience (GFDRR, 2019a). Similarly, China is developing early warning systems for hydrological hazards such as earthquakes, floods and storms, supporting the USD 300 million disaster-resilient infrastructure project in earthquake-prone Sichuan (GFDRR, 2019b). This approach will be supported at a global level by multilateral treaties, such as the Paris Agreement, as governments shift towards a risk management approach to extreme weather (UN, 2015).

## SMART CITIES AS ENGINES FOR GROWTH

From 2000 to 2017, the population of Asian cities grew from 936 million to 1.6 billion (OECD, 2018b). Sixty cities in the region were among the world's 300 largest metropolitan economies in 2013-14 (WEF, 2018). The ten fastest-growing cities in the world are in India (WEF, 2018). By 2025, China alone will have 221 cities with more than 1 million inhabitants (EIU and Siemens AG, 2011). The urban population of Southeast Asia<sup>3</sup> is expected to grow by more than 150 million people by 2040 (IEA, 2017).

Smart cities<sup>4</sup> are an important component of urban development. Cities and countries can use smart services and smart technologies to build more efficient and liveable urban environments, boost economic growth, foster well-being and facilitate citizen engagement (OECD, 2018b). A denser concentration of the population and new technologies have enabled innovations in service provision, for example in banking, telecommunications, e-commerce and e-health, which are becoming increasingly available to Asia's urban populations. The speed of urbanisation, however, has outpaced planning and investments, causing a substantial gap in infrastructure. The gap presents ample investment opportunities to the private sector, as Southeast Asia alone needs USD 7 trillion in infrastructure, housing and real estate investments in order to support sustainable urban growth (OECD, 2018b).

Cities are increasingly concerned about the downsides of rapid urbanisation, and have started investing in clean water, clean energy, mass transit systems and other measures to improve the quality of urban environments. Policy makers in the region have adopted plans to develop and promote smart city development, often with significant financial backing from governments (OECD, 2018b). They are involving the private sector as an important partner.

## Smart city initiatives are spreading across Asia as a way to address urban policy challenges

Many initiatives focus on improving living standards and the competitiveness of cities, accelerating the pace of economic and social development, and providing solutions to challenges arising from rapid urbanisation (OECD, 2018b). New cities in China, India and Korea are challenging the established concept of how a city operates by running digital networks that interweave electricity, water, waste and gas systems, creating a unified matrix of urban operations and explosive growth in information sharing (Herzberg, 2017). Smart cities can offer significant opportunities for real estate developers; technology firms; and telecommunications, utility and transportation companies. Estimates for Southeast Asia show that the market for smart mobility applications could be as large as USD 70 billion, while opportunities to improve the built environment using new and advanced technologies could be worth USD 26 billion (McKinsey & Company, 2018). In India, the Smart Cities Mission was established to support the development of smart and digital solutions to address core infrastructure challenges and offer a better standard of living to citizens through a cleaner and more sustainable environment (Ministry of Housing and Urban Affairs, Government of India, 2017; WEF 2016). The Smart Cities Mission has acknowledged the importance of involving the private sector to meet the infrastructure demands of water supply, sewerage and solid waste management, for example by jointly executing projects through public-private partnerships (PPPs), joint ventures or turnkey contracts (Ministry of Housing and Urban Affairs, Government of India, 2017). Companies participating include Mahindra, Infosys and Deloitte (Ministry of Housing and Urban Affairs, Government of India, 2018), while the government encourages further private participation, particularly in the urban water supply (Ministry of Urban Development, Government of India, 2017). In Viet Nam, the local government of Ho Chi Minh City works with US companies in the design, energy, water and waste sectors to build infrastructure and technological capabilities for the city, supported by the United States Commercial Service (EDB, 2016).

Government policies can encourage the development of smart cities by ensuring that key enabling factors are met. Several countries in Asia have a dedicated smart city strategy, including China, India, Indonesia, Malaysia, Singapore and Thailand (OECD, 2018b). Policy makers engage in efforts to make their cities “smarter” by leveraging data and digital technology, using emerging technologies such as the Internet of Things (IoT), big data analytics, Artificial Intelligence, energy-storage technologies and blockchain. Smart grids can improve energy management, smart meters and pipes can boost the quality and efficiency of the water supply, and smart sensors can improve traffic flow. Similarly, mobile applications can facilitate education, healthcare, or citizen engagement (OECD, 2018b).

### The digital economy for smart cities is growing

Southeast Asia’s digital market is expected to increase from USD 31 billion in 2015 to USD 200 billion by 2025. Even though ASEAN’s population is increasingly embracing digital services, the adoption of such services by businesses has generally been slower, with regulatory bottlenecks and a lack of trust in electronic transactions stifling the growth of digital systems (Thomas, 2019).

ASEAN countries, aware of this gap, have undertaken multiple initiatives to encourage the adoption of digital technologies for smart cities while seeking to maintain consumer data privacy. For instance, the 2000 e-ASEAN Framework Agreement outlined regional plans to develop the information and communications technology (ICT) sector, reduce the digital divide within and among member states, promote co-operation between the public and private sectors, and promote liberalisation of trade in relevant goods and services as well as investment (OECD, 2018c). The ASEAN ICT Masterplan 2020 aimed to transform ASEAN into a digital economy by 2020, while the ASEAN Strategic Action Plan for Consumer Protection 2025 aims to develop a Common ASEAN Consumer Protection Framework that includes product liability and safety standards, as well as consumer data privacy policy (Berananda, 2016). Some companies urge governments to go further in strengthening the digital economy, and are asking governments to set up contingency plans which include backup facilities for operational centres and data centres. Disaster control provides improved resilience to fend off unforeseen system failures, as well as a better disaster response and recovery of critical digital infrastructure and services.

### **Smart healthcare technology offers new solutions for citizens**

Rapid urbanisation has made the provision of quality healthcare a challenge for cities struggling to meet growing demand. It is estimated that smart healthcare technology has the potential to reduce the disease burden for Southeast Asia by up to 12 million disability-adjusted life years (i.e. it would not only extend overall life expectancy, but also add years of good health) (McKinsey & Company, 2018). An integrated smart healthcare model in the city of Khon Kaen in Thailand has emerged as a result of a partnership between local healthcare service providers, government agencies and universities. It comprises smart ambulances, a preventive healthcare service, blockchain and data analytics, and aims to create a seamless emergency medical system (Matshazi, 2018).

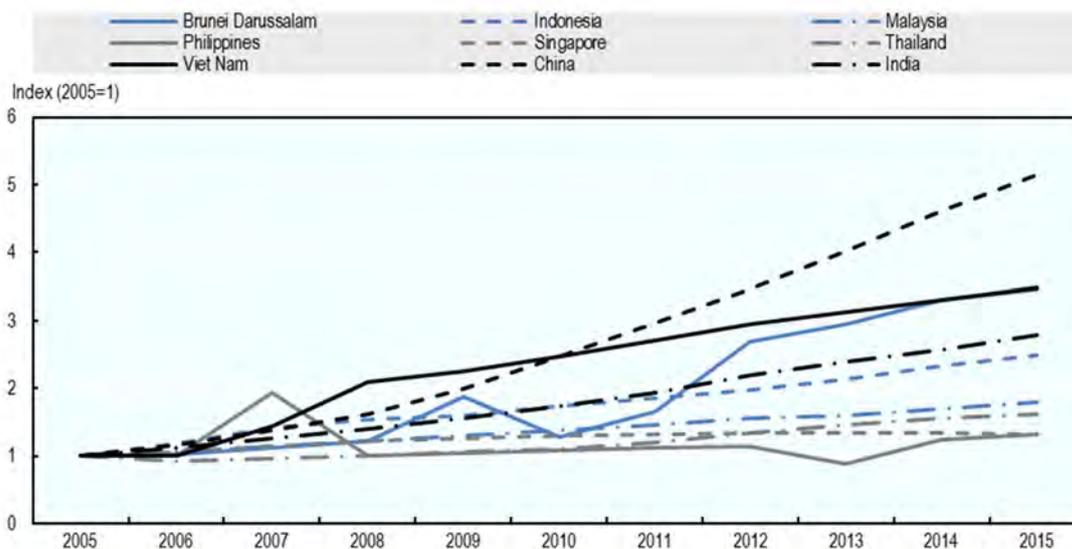
### **Smart cities can help address the environmental consequences of urban growth**

While cities are central to national economies, and urbanisation has played a vital role in economic development in Asia (UNESCAP, 2017), urban growth has had negative side effects, such as air pollution and congestion. Economic growth will cause energy demand in Southeast Asia to grow by almost two-thirds by 2040 (IEA, 2017). Even though the supply of low-carbon and renewable energy is growing strongly, coal was still covering almost 40% of the total energy demand for Southeast Asia in 2017 (IEA, 2017). Concerns about air pollution in Asia's largest cities (Delhi and Beijing) have amplified, as fossil fuel consumption has led to a 75% increase in energy-related carbon dioxide emissions (IEA, 2017). Climate change is also affecting low-lying coastal cities such as Bangkok, Ho Chi Minh City, Jakarta and Manila, which suffer from periodic and catastrophic floods (ADB, 2012). Governments are implementing new urban policies to address these concerns and encourage more private investment in green infrastructure. For instance, Malaysia's Government Green Procurement programme aims to encourage the adoption of more green technologies, and government ministries were to attain a minimum threshold of 20% green procurement by 2020 (Malaysian Green Technology Corporation, 2020).

## Embracing smart transport solutions can help reduce traffic congestion

Urban population growth, rising incomes and limited transportation alternatives have contributed to growing automobile use in Asian cities, where growth in the stock of motor vehicles and in the motorisation rate has happened at a faster rate than the average of OECD member countries (OECD, 2016). The estimated number of motor vehicles in use increased by an average of 13% per year between 2005 and 2015 (OECD, 2018b) (Figure 2.1). Policy solutions to improve urban transportation systems include the development of efficient public transportation, incorporating new technologies, reforming land use and improving urban planning (McKinsey & Company, 2018). Intelligent traffic and transit solutions can save up to 8 million person-years<sup>5</sup> in annual commuting time in Southeast Asia alone (McKinsey & Company, 2018). Multiple smart city initiatives focus on improving and facilitating urban public transportation. Examples include the Taipei IoT integration of transportation and the Smart Petepete initiative in Makassar, Indonesia, both of which aim to use real-time surveillance systems to resolve traffic congestion. Apart from improving public transportation, various companies are also developing new private transit modes such as autonomous vehicles, which have the potential to radically change urban mobility in the years to come (McKinsey & Company, 2018).

Figure 2.1. Estimated total motor vehicles in use, 2005-15



Note: Data not available for Cambodia, Lao PDR or Myanmar.

Source: OICA (2018), *World Vehicles in Use*, as cited in OECD (2018b), *Economic Outlook for Southeast Asia, China and India 2019: Towards Smart Urban Transportation*, <https://doi.org/10.1787/saeo-2019-en>.  
StatLink  <https://doi.org/10.1787/888933886930>.

The benefits of combining technology and data are evident in traffic management and are in line with efforts to build intelligent transportation systems (ITS) (OECD, 2018b). For instance, as part of Singapore's Smart Nation initiative, the government's Infocomm Development Authority (IDA) has been working with other government bodies and private companies to establish a network of more

## **PRIVATE SECTOR INSIGHTS ON SMART CITIES AS ENGINES FOR GROWTH**

This chapter features insights from companies which participated in the Emerging Markets Network (EMnet) meeting on Asia held in Paris on 28 March 2019. It explores businesses' views on the significant opportunities offered by the possibilities of smart cities in the region, as well as on the challenges associated with their development. The chapter finishes with policy recommendations on public-private co-operation in order to unlock more private investment.

### **Smart cities in Asia offer significant opportunities for the private sector**

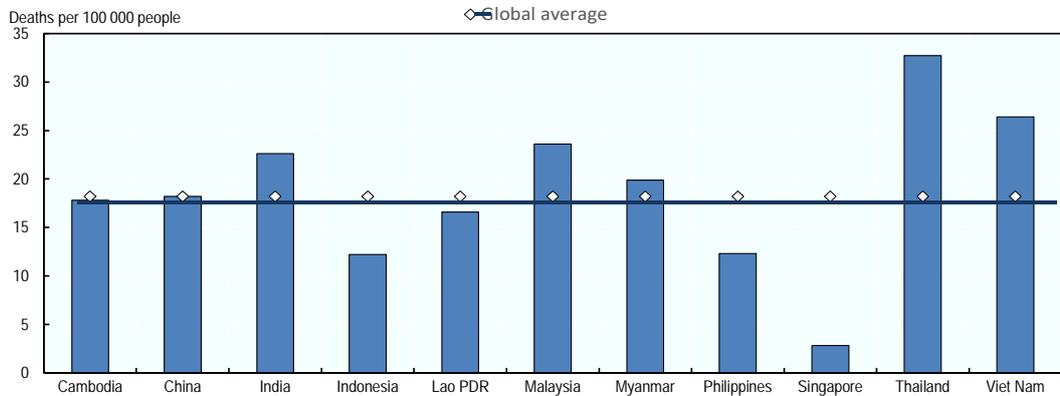
The global market size of smart cities was valued at USD 71.3 billion in 2018 and is estimated to grow at an annual rate of 18.9% between 2019 and 2025 (Grand View Research, 2019). The Asian smart city market in particular is projected to generate the most opportunities due to rapid urbanisation and the rising demand for energy, infrastructure and mobility solutions (Grand View Research, 2019). Furthermore, several Asian governments are promoting the construction of smart cities, with investments which were expected to grow from USD 55.6 billion in 2013 to USD 260 billion in 2020 (Frost and Sullivan, 2017a).

Business representatives emphasise that cities have become engines for growth in Asia, attracting investments, promoting new technologies and developing innovative solutions to improve citizens' quality of life. Multinational corporations investing in the region emphasise that smart solutions offered by the private sector can help cities solve some of the current economic, social and environmental challenges resulting from their high concentration of people and economic activities.

### **The private sector can take part in providing better connectivity and smart transportation**

EMnet meeting participants agree that smart technologies and innovations can help solve urban transportation challenges, such as traffic congestion and fatalities generated by the increased use of private motor vehicles. In the Asia region, India, Malaysia, Myanmar, Thailand and Viet Nam have fatality rates above the global annual average of 18.2 per 100 000 people (Figure 2.2) (WHO, 2018). There are many possible targets for initiatives using intelligent transportation system (ITS) tools, but public transportation, vehicle and ride sharing, and logistics services are often the most important areas in which new technologies can improve efficiency (OECD, 2018b).

Figure 2.2. Road traffic fatalities in Emerging Asia, 2016



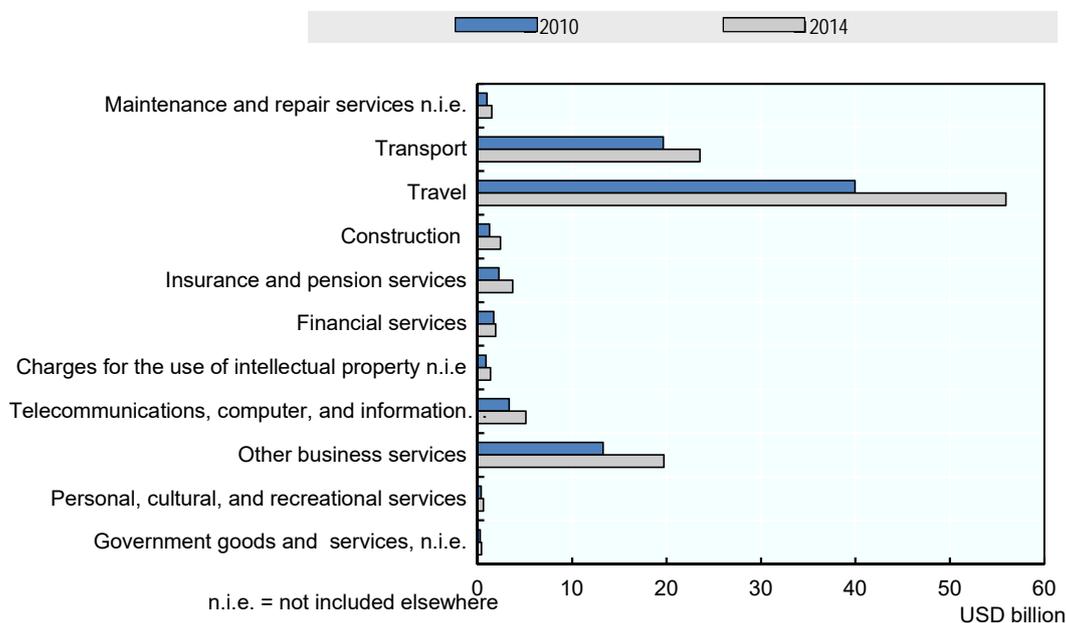
Source: Author's own graph based on WHO (2018), *Global Status Report on Road Safety 2018*, [www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2018/en](http://www.who.int/violence_injury_prevention/road_safety_status/2018/en).

Private solutions, such as ride-sharing mobile applications like Uber and its local competitors, are transforming urban mobility and contributing to reducing the demand for private cars (Pau and Qu, 2016). In Southeast Asia, the largest taxi application player, GrabTaxi, was undertaking almost 3.5 million rides daily across eight countries in 2018 (Iwamoto, 2018). The Chinese mobile transportation platform DiDi Chuxing, together with national authorities, launched an integrated solution for smart city traffic management called DiDi Smart Transportation Brain. Integrating anonymised traffic information with other data from local governments and business partners, this technology provides cities with instruments to design a new range of infrastructure improvements for traffic flow measurement, smart signalling and reversible lane systems (DiDi, 2018).

**The private sector can be a partner in the development of innovative and smart public services**

Services are a key component of smart cities. The liberalisation of trade in services in the region is progressing; Figure 2.3 illustrates the growth in trade in services by category (OECD, 2018b; 2017). EMnet participants highlight how the private sector can contribute to the development of innovative urban services for citizens. Smart cities in Asia are improving citizens' experiences by leveraging new technologies and innovative ways of providing key services such as healthcare, education, housing and other public services in an enhanced and efficient manner, and can thus benefit from service liberalisation.

Figure 2.3. Intra-ASEAN trade in services by category in 2010 and 2014



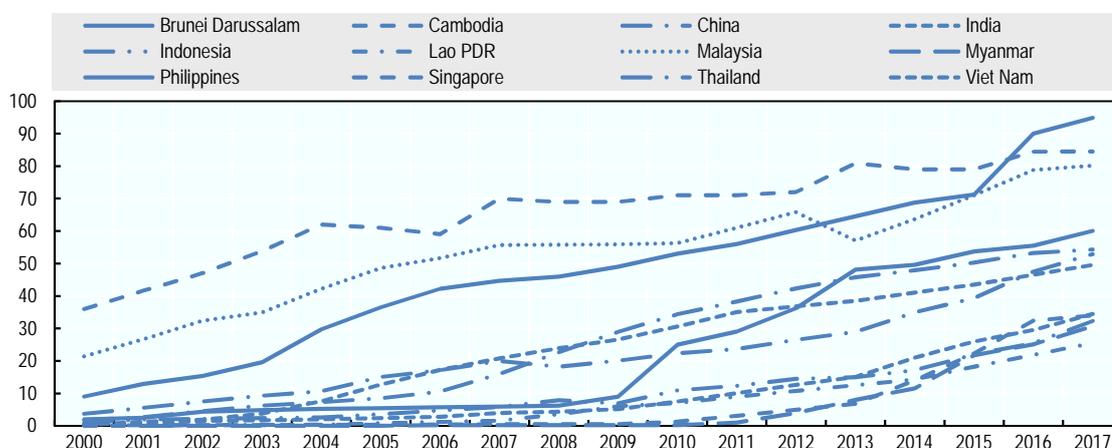
Source: ASEAN (2016), ASEAN Stats (database), <http://aseanstats.asean.org>, as cited in OECD (2017), *Economic Outlook for Southeast Asia, China and India 2017: Addressing Energy Challenges*, [www.oecd.org/dev/asia-pacific/SAEO2017\\_PV.pdf](http://www.oecd.org/dev/asia-pacific/SAEO2017_PV.pdf), StatLink <http://dx.doi.org/10.1787/888933443547>.

In Bandung, Indonesia, city operations have been enhanced thanks to an IBM command centre launched in 2015. The city uses a global positioning system (GPS) tracking system to monitor traffic and track assets such as public buses, ambulances and fire trucks. Public safety has also been improved by means of a security application called Panic Button that alerts a command centre when citizens tap on it (EDB, 2016). In 2018, the US-ASEAN Smart Cities Partnership was announced in an effort to spur investments in ASEAN's digital infrastructure by US-based technology companies. Google announced a third Singapore-based data centre and a new Google Cloud Platform in Jakarta. Similarly, Amazon plans to invest USD 924 million in Indonesia, in addition to launching its e-commerce service in Viet Nam in collaboration with local e-businesses (Tran and Natalegawa, 2018).

### Bottlenecks remain with respect to digital access, literacy and skills

EMnet participants also highlight some challenges they have encountered while supporting the development and implementation of smart services in Asian cities, notably in the areas of connectivity, regulatory frameworks and digital skills (OECD, 2018c). Digital access, literacy and skills play a critical role in propelling the adoption of technology-led services and have important implications for smart city development. While more than 80% of adults in Singapore accessed the Internet in 2016, this figure was 25% or less in Lao PDR and Myanmar (Figure 2.4) (Pilat, 2017).

Figure 2.4. Percentage of people using the Internet in Emerging Asia, 2000-17



Note: The percentage of people using the Internet refers to the proportion of individuals who used the Internet from any location in the last 3 months. Access can be via a fixed or mobile network.

Source: Author's own graph based on ITU (2018), *World Telecommunication/ICT Indicators* (database), [www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx](http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx).

Similarly, while more than 25% of Singapore's inhabitants had access to fixed broadband networks in 2016, less than 1% of the inhabitants of Cambodia, Lao PDR and Myanmar did (Pilat, 2017). With the exception of Malaysia, Singapore and Thailand, the average speeds over fixed broadband in the seven other ASEAN countries are well below the global average (World Bank, 2019b). Individuals, businesses (including SMEs) and governments need reliable, affordable and widespread access to digital networks and services in order to benefit from digital opportunities (Pilat, 2017). However, Internet speeds vary considerably across Asia and many people do not have access to high-speed broadband Internet, which is particularly crucial for data-intensive business applications. High-speed connections are especially rare in India and the Philippines, with only 42% and 39% of Internet Protocol version 4 (IPv4) addresses having speeds above 4 Megabits per second (Mbps), respectively (OECD, 2018c).

EMnet participants discuss how enhancing digital access for individuals and businesses at an affordable price would require sound policy frameworks. They call for policies in support of more investment in telecommunications, a wider diffusion of digital networks, and additional measures (such as national broadband strategies) that can help reach the underserved. Digital trade also has the potential to open up new opportunities for entrepreneurship, innovation and job creation, while digital tools can help firms (and SMEs in particular) overcome barriers to growth by facilitating payments, enabling collaboration, promoting the use of cloud-based services and generating alternative funding mechanisms (Pilat, 2017).

EMnet participants also note the shortage of digital skills in the region. For countries to be internationally competitive in the digital era, a skilled labour force is needed. Cambodia, Indonesia and Thailand in particular are facing a shortage of skilled labour and a surplus of unskilled labour (OECD, 2019a). The trends show that skills mismatch is likely to decrease in 2021, but a shortage of skilled labour will remain high in many countries. In general, the lack of skilled labour is a key challenge in the region (OECD, 2019a).

### **Regulatory systems should afford privacy protection while accommodating innovation**

The private sector would like to see regulations that provide sufficient privacy protection to consumers without impeding innovation. The evolution of ICTs is disrupting the traditional landscape of urban infrastructure services and raising questions for existing regulatory frameworks (Finger, 2017). Governments face the challenge of managing risk with regard to securing digital assets and services as well as privacy, for example when linking initially separate datasets or when opening up government data to the public (OECD, 2019g). They are attempting to mitigate those risks through regulatory frameworks, which have sometimes been criticised for having an adverse effect on the entry of new firms, competition, innovation and technological diffusion (OECD, 2019h).

Firms indicate that the volumes of data, their heterogeneity and conflicting processing requirements pose challenges to collaboration. EMnet business meeting participants state that Emerging Asian economies looking for a global reference can take a cue from the European Union's General Data Protection Regulation (GDPR), citing it as an example of a regulatory framework aiming to facilitate innovation while maintaining data privacy. In particular, they emphasise the need for data sharing at the city level in order to enhance digital innovation and develop smart services. The OECD Going Digital project also recommends digital innovation and increased adoption of digital technologies through policy experimentation, including agile regulation and regulatory sandboxes that can promote innovation while protecting consumers (OECD, 2019g).

### **Challenges to improving the quality of urban environments remain**

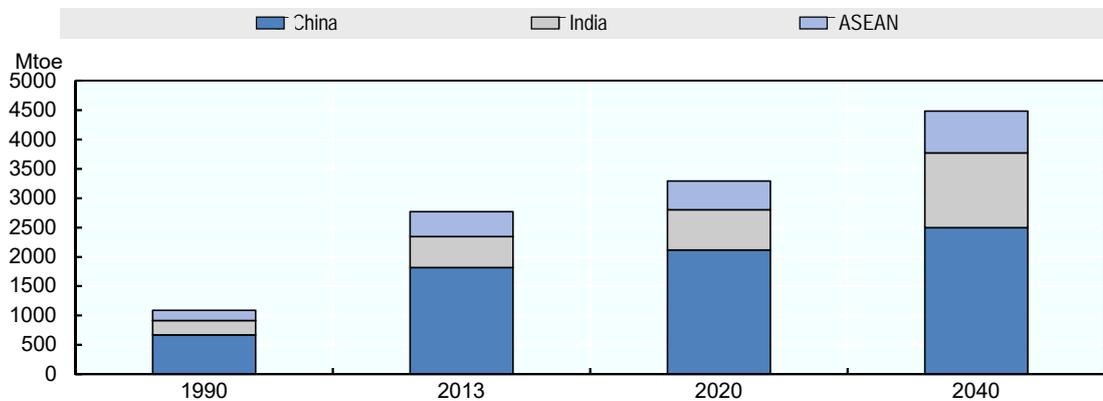
Asian cities share a common environmental challenge in ensuring the sustainability of their rapid development. EMnet business participants agree that smart technologies could help promote a low-carbon economy, improve the quality of urban areas and reduce air pollution.

#### **Urban sprawl has created environmental challenges**

EMnet business participants acknowledge the environmental challenges related to urban development and stress the opportunity to promote a low-carbon transition by harnessing smart energy solutions. Urban sprawl and congestion are the most visible consequences of rapid urbanisation in Asia. This has led to multiple environmental challenges such as high levels of air pollution and quickly rising amounts of solid waste. All major cities in the ASEAN-5 region show concentrations of particulate matter<sup>8</sup> above the World Health Organization's standards. In the Bandung Metropolitan Area in Indonesia, there was a 77% increase in solid waste between 2006 and 2014 (OECD, 2016). Despite the high levels of air pollution, the small share of total patenting in green innovations (e.g. air pollution abatement) remains a challenge (OECD, 2019b).

Furthermore, the region's cities are characterised by rising energy consumption and greenhouse gas emissions (IEA, 2015a). The total energy consumption in Emerging Asia is projected to increase by almost 38% between 2013 and 2040 (Figure 2.5) (OECD, 2017). In Viet Nam, carbon emissions increased from 103.8 million tonnes in 1994 to 246.8 million tonnes in 2010 and are projected to reach 760.5 million tonnes by 2030 (OECD, 2016).

Figure 2.5. Emerging Asia's total final energy consumption by country group, 1990-2040



Note: Million tonnes of oil equivalent (Mtoe) is a unit of measurement of energy consumption. Calculations are based on the International Energy Agency's New Policy Scenario.

Source: OECD Development Centre, based on IEA (2015a) and IEA (2015b), as cited in OECD (2017), *Economic Outlook for Southeast Asia, China and India 2017: Addressing Energy Challenges*, [www.oecd.org/dev/asia-pacific/SAEO2017\\_PV.pdf](http://www.oecd.org/dev/asia-pacific/SAEO2017_PV.pdf).

StatLink  <http://dx.doi.org/10.1787/888933443666>.

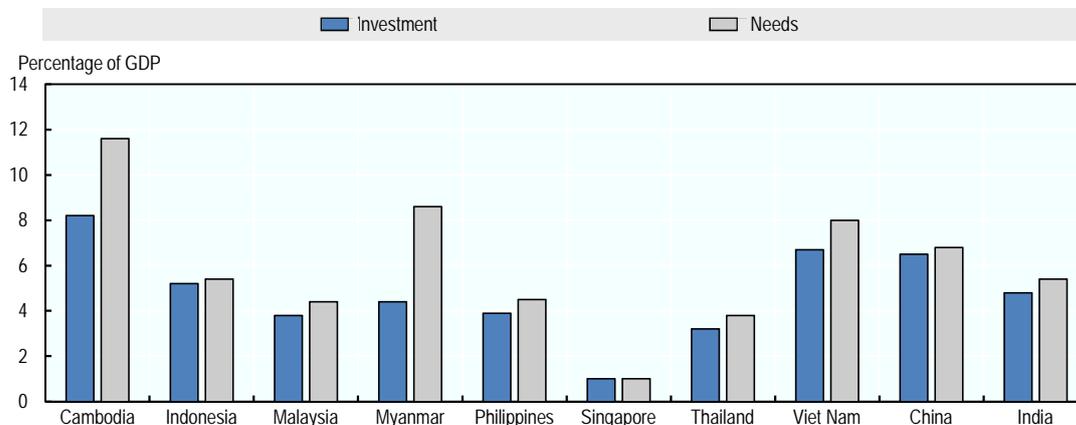
Smart cities hold the potential to build quality urban environments by leveraging technologies in order to maintain a clean environment; promote the sustainable use of ecosystems, natural resources and biodiversity; and strengthen resilience against disaster risks and potential climate change impacts. China, in particular, is increasingly adopting smart technologies such as offshore wind farms, smart grids, pollution sensors and air purifying towers with the aim of reducing its air pollution levels (Clapaud, 2018).

In 2012, the ASEAN SHINE programme was set up as a public-private partnership (PPP) focused on the promotion of highly efficient air conditioners and efficient lighting. The programme is expected to reduce ASEAN countries' annual energy consumption by 24 173 GWh<sup>9</sup> and to reduce their greenhouse gas emissions by 13.9 million tonnes by 2020 (EU/UNEP/ICASEA, 2017). Schneider Electric, a global specialist in energy management and automation, has been leveraging the use of the Internet of Things (IoT) and smart grids to build more efficient infrastructure around Asia, including in China and Indonesia. Schneider Electric's software, which is integrated with the grid, is able to tell factory operators to increase production when it detects higher activity from windmills. The company helped improve the efficiency of a cement manufacturer in India that uses wind energy to power some factories (Eco-Business, 2015).

### Smart cities need more investment in infrastructure

Participants in the EMnet meeting agree that there is an important infrastructure gap that must be addressed in order to unlock the potential of smart cities. Across the region, the levels of infrastructure investment fall below the required levels to meet existing demand (Figure 2.6) (OECD, 2018d). China alone needs USD 28 trillion in investment between 2016 and 2040, representing 30% of global infrastructure investment requirements (Global Infrastructure Hub/Oxford Economics, 2017).

Figure 2.6. Estimated infrastructure investment and needs in Emerging Asia, 2017



Note: Estimates of infrastructure investment and needs are not available for Brunei Darussalam or Lao PDR.  
 Source: Global Infrastructure Hub/Oxford Economics (2017), *Global Infrastructure Outlook. Infrastructure investment needs 50 countries, 7 sectors to 2040*, [www.oxfordeconomics.com/recent-releases/Global-Infrastructure-Outlook](http://www.oxfordeconomics.com/recent-releases/Global-Infrastructure-Outlook).  
 StatLink  <https://doi.org/10.1787/888933800214>

Policy makers are increasingly supporting smart city initiatives as a way to address urban policy challenges. They are seeking more private investments and partnerships with the private sector in order to close the infrastructure investment gap. Cities can experience challenges soliciting private investments on their own, as such investments require long-term financial instruments that are available only through national governments. In order to bypass this problem, participants in the EMnet meeting recommend that cities proceed with comprehensive work in one sector rather than in many sectors, working vertically rather than horizontally. The ASEAN Smart Cities Network (ASCN) encourages industries and businesses in ASEAN countries to capitalise on new technologies, using innovation as a catalyst to build smart cities. Comprising 26 cities, including Bangkok, Kuala Lumpur, Manila and Singapore, the ASCN helps cities connect with the private sector in order to identify and launch practical and commercially viable projects (CLC; Ministry of Foreign Affairs, Singapore, 2018). For instance, the Amata Smart City project in Thailand will work with the Yokohama Urban Solution Alliance to build smart energy management systems for efficient electricity management, and to reduce carbon footprints and energy costs in industrial estates (Amata Corporation Public Company Limited, 2018).

### Policy reforms can encourage more private investment in infrastructure

Maximising private investment is crucial to closing the large regional infrastructure gap. From 2004 to 2018, firms invested almost USD 529 billion in infrastructure in Emerging Asia (World Bank, 2018). However, these investments can entail risks for private investors, such as cost overruns during construction, delayed completion, traffic risks,<sup>10</sup> currency risks and political risks generated by future changes in policy direction (Tanaka and Ibrahim, 2017; World Bank, 2016). In order to address these risks and encourage further private investment, EMnet participants emphasise the

need for policy reforms that encourage co-operation between the public and private sectors, collaboration between different levels of government, and the harmonisation of financing schemes. In their view, it remains key to align the interests of all parties while maintaining a level of value for the private sector.

Policy makers in Asia could look at diversifying financing methods in order to accelerate private investment by using a wide range of fiscal instruments, including revenues from carbon taxes and petroleum taxes, earmarking special funds for smart city development, and public sector borrowing through bond issuance (Tanaka and Ibrahim, 2017). Local governments in particular could generate revenue from fees and charges. In 2016, fees and charges accounted for only 2% of the total revenue of the Bangkok Metropolitan Administration (Thailand) and 6% of Metro Cebu (Philippines), compared with an average of 14.9% for subnational governments in OECD member countries (OECD, 2016).

Moreover, even though financing the required infrastructure for smart cities remains a major concern for city governments across the region, the EMnet meeting underline the differences in the state of infrastructure development across Asia. As a consequence, a “one-size-fits-all” solution for the region is not viable, as the return on investment for one country might be very different from another. For example, in the case of India, even though the nation has technological capabilities for deploying smart cars, many of its cities lack the road infrastructure required for them to operate.

#### **National and local governments should improve co-ordination and alignment**

A lack of co-ordination across different levels of government can lead to difficulties in creating a specific and detailed strategy for a smart city. Cities often rely on a narrow revenue base that does not create sufficient fiscal space for investment in large-scale urban infrastructure. As a result, the financial resources required to fund smart cities can be onerous for municipal authorities (Gouldson et al., 2015). India’s city governments and municipalities, for example, record revenues in the range of 1-2% of GDP (OECD/UCLG, 2016). National governments in Southeast Asia are often the central decision makers; they exert various degrees of influence over the main opportunity areas for smart city development through their financial power and policy, and their legal authority (OECD, 2016). In some cases, national governments have retained direct management of certain urban utilities, such as within the Bangkok Metropolitan Region; the Metropolitan Electricity Authority, the Metropolitan Waterworks Authority, and the Bangkok Mass Transit Authority are all state-owned corporate entities (OECD, 2015). While decentralisation trends in the region have progressively transferred some responsibilities to local governments, a lack of formal and informal forms of policy alignment and co-ordination across levels of government remains (OECD, 2015). As many of the smart city initiatives are dependent on regulations from the national government, this lack of co-ordination across different levels of government can lead to difficulties in creating a specific and detailed strategy for a smart city. For instance, smart electricity or water meters can create real-time, dynamic pricing of energy and water consumption at the household or local government level, instead of traditional metering based on installed capacity of supply networks. Thus, without support from the national government, a local initiative such as smart metering can be challenging to implement. Local initiatives could also be hindered, because there is little incentive to be an early adopter of new smart city technologies due to the high risk involved (OECD, 2019b). With limited investment scope, subnational governments may not choose to invest in research and

development. The Smart City Strategy developed in the Bandung (Indonesia) 2015 ICT Master Plan, for example, has no similar counterpart in Indonesia's national or provincial governments. Smart cities can be well supported if city-level governments encourage the adoption of metropolitan-wide development and smart city plans into the constituting local governments' annual planning and budgeting cycle, and encourage the support of national governments (OECD, 2019b).

### **Public-private co-operation can promote the adoption of smart technologies**

EMnet participants place particular importance on creating collaborative ecosystems for smart city development and promoting co-operation between the public and private sectors in order to further enhance private investment and the adoption of smart technologies. Companies stress that successful PPPs require an ecosystem that cultivates opportunities for businesses and encourages innovation, as well as involving non-governmental organisations that enlist citizens, universities and research centres. From 2004 to 2018, 2 289 out of the 2 397 infrastructure projects undertaken by the private sector in Emerging Asia were PPPs (World Bank, 2018). They play a crucial role in introducing competition and innovation in the smart city market and in closing the infrastructure investment gap (Tanaka and Ibrahim, 2017). For instance, PPPs are playing a significant role in India's Smart Cities Mission, with one-quarter of the smart city funds being sourced through this instrument (Frost and Sullivan, 2017b).

Asia laid the legal and administrative groundwork for PPPs in the early 1990s but institutional weakness, inadequate capital markets and a lack of technical expertise initially detracted from the attractiveness of such deals (OECD, 2018d). However, over the past decade, governments in the region have been more aggressive in creating suitable conditions for PPPs (OECD, 2018d). ASCN member cities are benefitting from a collaboration between international banks, private developers and governments in public-private financing partnerships. The Keppel Corporation, a Singapore-based engineering and construction firm, has set up Keppel Urban Solutions to focus on building large-scale smart developments. Its flagship project was the Saigon Sports City, a smart township in Ho Chi Minh City, Viet Nam (CLC; Ministry of Foreign Affairs, Singapore, 2018).

PPP can also play a crucial role in the efficient management of public transportation systems. In many countries in the region, and in Southeast Asia in particular, public transport organisations and local authorities lack sufficient capacity to effectively manage urban transportation issues (OECD, 2018b). Private sector expertise and funding can therefore help develop, upgrade and expand smart urban transportation systems. For instance, one of the aims of the Master Plan on ASEAN Connectivity 2025 (MPAC 2025) is to increase public and private infrastructure investment and the deployment of smart urbanisation models across ASEAN countries. Initiatives to enhance micro, small and medium enterprises' (MSMEs') technology platforms, develop digital financial inclusion in the region and advance sustainable strategies in ASEAN cities are being undertaken in order to achieve the MPAC 2025 objectives (ASEAN Secretariat, 2016).

In order to ensure the development of smart infrastructure in Asian cities, companies indicate that it is essential to break silos within municipalities by sharing infrastructure and by co-investing with the private sector. Aligning different stakeholders can be spurred by thinking across sectors and concrete collaboration. An important element in this is the communication between different systems and their technical interoperability. EMnet participants stress the importance of

interoperability between networks and devices in realising the potential of smart cities. In an example of concrete co-operation for interoperability and interchangeability between IoT devices from various suppliers, companies such as Schröder (a leading outdoor lighting solution provider) and others have teamed up with cities and utilities in a non-profit alliance with the aim of unlocking smart city and utility markets by promoting the adoption of smart technologies (uCIFI, n.d.).

Subnational governments in the region can develop the capabilities to optimise the use of PPPs for smart cities. Local governments in particular often lack the expertise to implement PPPs effectively and in a short period of time, as they require complex procurement, administrative and legal procedures and capacity (OECD, 2016). Moreover, companies in different jurisdictions must navigate a wide variety of rules and regulations around PPPs, which adds to the challenge on their side. Firms recommend further sharing of expertise on PPPs among Asian smart cities, combining global best practices with local knowledge. Governments, in turn, find it difficult to present the private sector with a compelling business case for sectors with a lack of cost recovery. For example, it is challenging for urban PPPs operating in the transport, solid waste, and water sectors, as these sectors present high upfront infrastructure costs but low returns on investment due to low fees, charges and tariffs (OECD, 2016).

## CONCLUSION

Smart cities have become engines for growth in Asia, attracting investments, promoting new technologies and developing innovative solutions to improve their citizens' quality of life. The private sector can play a significant role in the development of smart cities. Rapid urbanisation and the rising demand for energy, infrastructure and mobility solutions present important opportunities for smart city initiatives. However, EMnet meeting participants highlight several challenges: there is an infrastructure investment gap; a lack of formal and informal forms of policy alignment and co-ordination across levels of government; inadequate levels of digital skills and literacy; and a lack of appropriate and comprehensive regulatory frameworks that facilitate innovation while maintaining consumer data privacy. It can also be a challenge for public sector officials to stay on course with the long-term pace of smart city processes, which are often liable to setbacks, suspensions, or other unforeseen events.

The region needs sound policy frameworks that create collaborative ecosystems for smart city development, promote co-operation between the public and private sectors, enhance private investment, and encourage data sharing and the adoption of smart technologies. Regulatory policies encouraging the entry of new firms, competition, innovation and technological diffusion while protecting consumer data privacy need to be put in place. Contingency plans can boost the resilience of smart cities in case of disaster. Finally, the private sector is a key partner in the smart city ecosystem; companies stand ready to inform and support smart city initiatives, and their recommendations and participation can ensure that policy initiatives in support of smart cities work for citizens.

## Notes

- <sup>1</sup> Emerging Asia encompasses the People's Republic of China (hereafter "China"), India and the ten ASEAN member states: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic (hereafter: Lao PDR), Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam.
- <sup>2</sup> ASEAN-5 includes Indonesia, Malaysia, the Philippines, Singapore and Thailand.
- <sup>3</sup> Southeast Asia in this publication refers to the ten member countries of ASEAN.
- <sup>4</sup> This Policy Note defines smart cities as "initiatives or approaches that effectively leverage digitalisation to boost citizen well-being and deliver more efficient, sustainable and inclusive urban services and environments as part of a collaborative, multi-stakeholder process" (OECD, 2019h).
- <sup>5</sup> Person-years (or man-years) is a unit of measurement for the amount of work done by an individual throughout the year, expressed in number of hours.
- <sup>6</sup> The STRI helps to identify which policy measures restrict trade. The STRI database is based on regulations currently in force. STRI indices take the value from 0 to 1, where 0 is completely open and 1 is completely closed. They are calculated on the basis of information provided in the STRI database.
- <sup>7</sup> The United Nations Population Fund states that countries with the greatest demographic opportunity for development are those entering a period in which the working-age population has good health, quality education, decent employment and a lower proportion of young dependents. Smaller numbers of children per household generally lead to larger investments per child, more freedom for women to enter the formal workforce and more household savings for old age. When this happens, the national economic payoff can be substantial. This is a "demographic dividend."
- <sup>8</sup> Particulate matter, also known as particle pollution or PM, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulphates), organic chemicals, metals, and soil or dust particles.
- <sup>9</sup> Gigawatt hours, abbreviated as GWh, is a unit of energy representing 1 billion (1 000 000 000) watt hours and is equivalent to 1 million kilowatt hours. Gigawatt hours are often used as a measure of the output of large electricity power stations.
- <sup>10</sup> Traffic risk refers to the risk of the actual traffic being lower (or higher) than forecast, and to the inaccuracy of traffic forecasts, often due to an optimism bias. Inadequate traffic forecasts have caused financial problems for numerous toll roads, as toll revenues were significantly lower than initially forecast.

## References

- ADB (2020), *The Economic Impact of the COVID-19 Outbreak on Developing Asia*, Manila, [www.adb.org/what-we-do/covid19-coronavirus](http://www.adb.org/what-we-do/covid19-coronavirus).
- ADB (2019), *Asian Development Outlook Supplement 2019*, Asian Development Bank, Mandaluyong, [www.adb.org/sites/default/files/publication/513146/ado-supplement-july-2019.pdf](http://www.adb.org/sites/default/files/publication/513146/ado-supplement-july-2019.pdf) (accessed 30 November 2019).
- ADB (2012), *Key Indicators for Asia and Pacific 2012*, Asian Development Bank, Mandaluyong, [www.adb.org/sites/default/files/publication/29940/ki2012.pdf](http://www.adb.org/sites/default/files/publication/29940/ki2012.pdf).
- Amata Corporation Public Company Limited (2018), *Amata: Sustainable Development Report 2018*, AMATA Corporation Public Company Limited, Thailand, <https://issuu.com/ar.amata.thai/docs/20190322-amata-sdr2018-en>.
- ASEAN (2016), ASEAN Stats (database), <http://aseanstats.asean.org> (accessed on 8 December 2016).
- ASEAN Secretariat (2016), *Master Plan on ASEAN Connectivity 2025*, The ASEAN Secretariat, Jakarta, <https://asean.org/storage/2016/09/Master-Plan-on-ASEAN-Connectivity-20251.pdf>.

- Bangko Sentral Ng Pilipinas (2019a), "Monetary Policy Decisions", [www.bsp.gov.ph/monetary/monetary.asp](http://www.bsp.gov.ph/monetary/monetary.asp) (accessed 22 November 2019).
- Bangko Sentral Ng Pilipinas (2019b), "Media Releases", [www.bsp.gov.ph/publications/media.asp?id=5205](http://www.bsp.gov.ph/publications/media.asp?id=5205) (accessed 30 November 2019).
- Bangko Sentral Ng Pilipinas (2019c), "Media Releases", [www.bsp.gov.ph/publications/media.asp?id=4940&yr=2019](http://www.bsp.gov.ph/publications/media.asp?id=4940&yr=2019) (accessed 30 November 2019).
- Bank Negara Malaysia (2019), "Monetary Policy Statement", [www.bnm.gov.my/index.php?ch=en\\_press&pg=en\\_press&ac=4850&lang=en](http://www.bnm.gov.my/index.php?ch=en_press&pg=en_press&ac=4850&lang=en) (accessed 22 November 2019).
- Bank of Thailand (2019), "Balance of Payments", [www.bot.or.th/App/BTWS\\_STAT/statistics/BOTWEBSTAT.aspx?reportID=646&language=eng](http://www.bot.or.th/App/BTWS_STAT/statistics/BOTWEBSTAT.aspx?reportID=646&language=eng) (accessed 30 November 2019).
- Berananda, U. (2016), "E-commerce and Development: An ASEAN Perspective.", World Trade Organization, Geneva, [www.wto.org/english/tratop\\_e/ecom\\_e/s3usanabernanda\\_asean.pdf](http://www.wto.org/english/tratop_e/ecom_e/s3usanabernanda_asean.pdf) (accessed 5 July 2019).
- Business and Sustainable Development Commission (2017), *Better Business Better World*, London, <http://report.businesscommission.org/uploads/BetterBiz-BetterWorld.pdf>.
- Clapaud, A. (2018), "Smart Cities: China Awakens.", webpage, L'Atelier BNP Paribas, <https://atelier.bnpparibas/en/smart-city/article/smart-cities-china-awakes> (accessed 3 July 2019).
- CLC; Ministry of Foreign Affairs, Singapore (2018), *ASEAN Smart Cities Network*, Centre for Liveable Cities, Singapore.
- China Bureau of Statistics (2019), Producer Price Indices for Farmers, <http://data.stats.gov.cn/english/easyquery.htm?cn=B01> (accessed 30 November 2019).
- DiDi (2018), "DiDi introduces smart transportation solution for traffic management", [www.didiglobal.com/news/newsDetail?id=186&type=news](http://www.didiglobal.com/news/newsDetail?id=186&type=news) (accessed 1 June 2019).
- Eco-Business (2015), "Schneider's big bet on smart energy", [www.eco-business.com/news/schneiders-big-bet-on-smart-energy](http://www.eco-business.com/news/schneiders-big-bet-on-smart-energy) (accessed 1 June 2019).
- EDB (20 October 2016), "The business of creating Asia's smart cities", webpage, [www.edb.gov.sg/en/news-and-events/insights/innovation/the-business-of-creating-asia-s-smart-cities.html](http://www.edb.gov.sg/en/news-and-events/insights/innovation/the-business-of-creating-asia-s-smart-cities.html) (accessed 11 February 2019).
- EIU and Siemens AG (2011), *Asian Green City Index*, Siemens AG, [http://sg.siemens.com/city\\_of\\_the\\_future/docs/Asian-Green-City-Index.pdf](http://sg.siemens.com/city_of_the_future/docs/Asian-Green-City-Index.pdf).
- EU/UNEP/ICASEA (2017), *Promoting highly efficient air conditioners in the ASEAN region to reduce energy consumption*, International Copper Association Southeast Asia, Bangkok, [www.aseanshine.org/news-activities/d/promoting-highly-efficient-air-conditioners-in-the-asean-region-to-reduce-energy-consumption](http://www.aseanshine.org/news-activities/d/promoting-highly-efficient-air-conditioners-in-the-asean-region-to-reduce-energy-consumption).
- Finger, M. (2017), *Network Industries Quarterly*, Vol 19: Issue 3, Lausanne, [https://cadmus.eui.eu/bitstream/handle/1814/48008/NIQ\\_2017\\_Vol%2019\\_No3.pdf?sequence=1&isAllowed=y](https://cadmus.eui.eu/bitstream/handle/1814/48008/NIQ_2017_Vol%2019_No3.pdf?sequence=1&isAllowed=y).
- Frost & Sullivan (2017a), "10 Cities in Asia-Pacific Poised to be Smart Cities by 2025", press release, 29 August, <https://ww2.frost.com/news/press-releases/10-cities-asia-pacific-poised-be-smart-cities-2025/>, (accessed 1 June 2019).
- Frost & Sullivan (2017b), *Smart Cities of India, 2016-2021*, Frost & Sullivan, <https://store.frost.com/smart-cities-of-india-2016-2021.html>.
- Germanwatch (2019), *Global Climate Risk Index 2019: Who Suffers Most From Extreme Weather Events? Weather-related Loss Events in 2017 and 1998 to 2017*, Germanwatch, Bonn, [https://germanwatch.org/sites/germanwatch.org/files/Global%20Climate%20Risk%20Index%202019\\_2.pdf](https://germanwatch.org/sites/germanwatch.org/files/Global%20Climate%20Risk%20Index%202019_2.pdf) (accessed 30 November 2019).
- GFDRR (2019a), Vietnam, Global Facility for Disaster Reduction and Recovery, [www.gfdrr.org/en/vietnam](http://www.gfdrr.org/en/vietnam) (accessed 30 November 2019).

- GFDRR (2019b), China, Global Facility for Disaster Reduction and Recovery, [www.gfdr.org/en/china](http://www.gfdr.org/en/china) (accessed 30 November 2019).
- Global Infrastructure Hub/Oxford Economics (2017), *Global Infrastructure Outlook. Infrastructure investment needs 50 countries, 7 sectors to 2040*, Global Infrastructure Hub, Australia [www.oxfordeconomics.com/recent-releases/Global-Infrastructure-Outlook](http://www.oxfordeconomics.com/recent-releases/Global-Infrastructure-Outlook).
- Gouldson, A., et al. (2015), *Accelerating Low-Carbon Development in the World's Cities*, Working Paper, The New Climate Economy, London and Washington, D.C., [https://newclimateeconomy.report/2015/wp-content/uploads/sites/3/2015/09/NCE2015\\_workingpaper\\_cities\\_final\\_web.pdf](https://newclimateeconomy.report/2015/wp-content/uploads/sites/3/2015/09/NCE2015_workingpaper_cities_final_web.pdf).
- Grand View Research (2019), *Smart Cities Market Analysis Report By Application (Governance, Buildings, Utilities, Transportation, Healthcare, Environmental Solution), By Region, And Segment Forecasts, 2019 - 2025*, Grand View Research, San Francisco, [www.grandviewresearch.com/industry-analysis/smart-cities-market](http://www.grandviewresearch.com/industry-analysis/smart-cities-market).
- GSMA (2019), *The Mobile Economy Asia 2019*, GSM Association, London, [www.gsmaintelligence.com/research/?file=fe8735424e3058f98c3a83bc57bc2af5&download](http://www.gsmaintelligence.com/research/?file=fe8735424e3058f98c3a83bc57bc2af5&download) (accessed 30 November 2019).
- Herzberg, C. (2017), *Smart Cities, Digital Nations: Building Smart Cities in Emerging Countries and Beyond*, Roundtree Press, California, United States of America.
- Matshazi, N. (2018), "Thai City, Khon Kaen Launches Innovative Smart Health Solutions", webpage, Healthcare Weekly, <https://healthcareweekly.com/khon-kaen-launches-innovative-smart-health-solutions> (accessed 27 April 2020).
- Huawei (2018), "Huawei Customers Recognized for Smart City Achievements at Smart City Expo World Congress 2018", webpage, <https://forum.huawei.com/enterprise/en/Huawei-Customers-Recognized-for-Smart-City-Achievements-at-Smart-City-Expo-World-Congress-2018/thread/477029-943#pid2803847> (accessed 12 February 2019).
- IDC (2017), "Fast Growing China Spending on Robotics to Reach \$59.4 Billion in 2020, According to IDC", IDC Media Center, [www.idc.com/getdoc.jsp?containerId=prAP42444817](http://www.idc.com/getdoc.jsp?containerId=prAP42444817) (accessed 26 March 2019).
- IEA (2017), *Southeast Asia Energy Outlook 2017*, International Energy Agency, Paris, <https://doi.org/10.1787/9789264285576-en>.
- IEA (2015a), *World Energy Outlook 2015: Special Report on Southeast Asia*, International Energy Agency, Paris, <https://webstore.iea.org/weo-2015-special-report-southeast-asia-energy-outlook>.
- IEA (2015b), *World Energy Outlook 2015*, International Energy Agency, Paris, <http://dx.doi.org/10.1787/weo-2015-en>.
- IMF (2019), DataMapper: Inflation rate, end of period consumer prices (database), [www.imf.org/external/datamapper/PCPIEPCH@WEO/MYS/PHL/DA](http://www.imf.org/external/datamapper/PCPIEPCH@WEO/MYS/PHL/DA) (accessed 25 November 2019).
- IMF (2018), "The Impact of Climate Change in Southeast Asia" in *Finance & Development September 2018*, International Monetary Fund, Washington, D.C., [www.imf.org/external/pubs/ft/fandd/2018/09/pdf/southeast-asia-climate-change-and-greenhouse-gas-emissions-prakash.pdf](http://www.imf.org/external/pubs/ft/fandd/2018/09/pdf/southeast-asia-climate-change-and-greenhouse-gas-emissions-prakash.pdf) (accessed 30 November 2019).
- ITU (2018), *World Telecommunication/ICT Indicators* (database), International Telecommunication Union, Geneva, [www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx](http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx).
- IUCN (2019), *Climate Change in Asia*, International Union for Conservation of Nature, Gland, [www.iucn.org/regions/asia/our-work/climate-change-asia](http://www.iucn.org/regions/asia/our-work/climate-change-asia) (accessed 30 November 2019).
- Iwamoto, K. (2018) "Grab aims to stay on top with evolution into 'everyday superapp'." , Nikkei Asian Review, <https://asia.nikkei.com/Business/Company-in-focus/Grab-aims-to-stay-on-top-with-evolution-into-everyday-superapp> (accessed 5 July 2019).
- KNOMAD (2019), *Migration and Development Brief 31 2019*, The Global Knowledge Partnership on Migration and Development, Washington, D.C., [www.knomad.org/sites/default/files/2019-04/Migrationanddevelopmentbrief31.pdf](http://www.knomad.org/sites/default/files/2019-04/Migrationanddevelopmentbrief31.pdf) (accessed 30 November 2019).

- Malaysian Green Technology Corporation (2017), "Green Procurement", Green Tech Malaysia, Kuala Lumpur, [www.greentechmalaysia.my/our-services/green-procurement](http://www.greentechmalaysia.my/our-services/green-procurement).
- McKinsey & Company (2018), *Smart Cities in Southeast Asia*, McKinsey Global Institute, [www.mckinsey.com/~/media/McKinsey/Industries/Capital%20Projects%20and%20Infrastructure/Our%20Insights/Smart%20cities%20in%20Southeast%20Asia/MGI-Smart-Cities-in-SouthEast-Asia.ashx](http://www.mckinsey.com/~/media/McKinsey/Industries/Capital%20Projects%20and%20Infrastructure/Our%20Insights/Smart%20cities%20in%20Southeast%20Asia/MGI-Smart-Cities-in-SouthEast-Asia.ashx).
- Ministry of Housing and Urban Affairs, Government of India (2017), "What is Smart City", webpage, <http://smartcities.gov.in/upload/uploadfiles/files/What%20is%20Smart%20City.pdf> (accessed 19 February 2019).
- Ministry of Housing and Urban Affairs, Government of India (2018), "Name Address of Shortlisted Firms for Smart Cities Proposal", web page, [http://smartcities.gov.in/upload/uploadfiles/files/Address\\_of\\_Shortlisted\\_firms\\_for\\_Smart\\_Cities\\_Proposal.pdf](http://smartcities.gov.in/upload/uploadfiles/files/Address_of_Shortlisted_firms_for_Smart_Cities_Proposal.pdf) (accessed 11 February 2019).
- Ministry of Urban Development, Government of India (2017), *Financing of Smart Cities*, <http://smartcities.gov.in/upload/uploadfiles/files/Financing%20of%20Smart%20Cities.pdf>.
- Moody's (2020), *Global Macro Outlook 2020-21: The coronavirus will cause unprecedented shock to the global economy*, Moody's Investors Service, [www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC\\_1220646](http://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_1220646).
- National Bureau of Statistics (2020), *National Economy Withstood the Impact of COVID-19 in the First Two Months*, press release, 16 March 2020 Beijing, [www.stats.gov.cn/english/PressRelease/202003/t20200316\\_1732244.html](http://www.stats.gov.cn/english/PressRelease/202003/t20200316_1732244.html).
- Nedelkoska, L. and G. Quintini (2018), "Automation, skills use and training", OECD Social, Employment and Migration Working Papers, No. 202, OECD Publishing, Paris, <http://dx.doi.org/10.1787/2e2f4eea-en>.
- OECD (forthcoming), *COVID-19 and developing countries: What policies and partnerships to respond, reset and rebuild?*, OECD Publishing, Paris.
- OECD (2020), *OECD Economic Outlook, Interim Report March 2020*, OECD Publishing, Paris, <https://doi.org/10.1787/7969896b-en>.
- OECD (2019a), *Economic Outlook for Southeast Asia, China and India 2020: Rethinking education for the digital era*, OECD Publishing, Paris, <https://doi.org/10.1787/859159ab-en>.
- OECD (2019b), *Economic Outlook for Southeast Asia, China and India 2019 – Update: Responding to Environmental Hazards in Cities*, OECD Publishing, Paris, <https://doi.org/10.1787/859159ab-en>.
- OECD (2019c), *OECD Economic Outlook, Volume 2019 Issue 2: Preliminary version*, OECD Publishing, Paris, [www.oecd-ilibrary.org/sites/856ec885-en/index.html?itemId=/content/component/856ec885-en](http://www.oecd-ilibrary.org/sites/856ec885-en/index.html?itemId=/content/component/856ec885-en) (accessed 30 November 2019).
- OECD (2019d), *OECD Skills Outlook 2019: Thriving in a Digital World*, OECD Publishing, Paris, <https://doi.org/10.1787/df80bc12-en>.
- OECD (2019e), *OECD Services Trade Restrictiveness Index: Policy trends up to 2019*, [https://issuu.com/oecd\\_publishing/docs/stri-policy-trends-2019-web?e=3055080/67430459](https://issuu.com/oecd_publishing/docs/stri-policy-trends-2019-web?e=3055080/67430459).
- OECD (2019f), *Policy Note on Asia: Accelerating Digitalisation in Asia*, OECD Emerging Markets Network, OECD Development Centre, Paris, [www.oecd.org/dev/development-philanthropy/Asia\\_Policy\\_Note\\_Asia\\_final.pdf](http://www.oecd.org/dev/development-philanthropy/Asia_Policy_Note_Asia_final.pdf).
- OECD (2019g), *Going Digital: Shaping Policies, Improving Lives*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264312012-en>.
- OECD (2019h), "Enhancing the contribution of digitalisation to the smart cities of the future", background paper submitted to the OECD Ministerial Council Meeting, [www.oecd.org/cfe/regional-policy/Smart-Cities-FINAL.pdf](http://www.oecd.org/cfe/regional-policy/Smart-Cities-FINAL.pdf).
- OECD (2018a), *Financial inclusion and consumer empowerment in Southeast Asia*, OECD Publishing, Paris, [www.oecd.org/finance/Financial-inclusion-and-consumer-empowerment-in-Southeast-Asia.pdf](http://www.oecd.org/finance/Financial-inclusion-and-consumer-empowerment-in-Southeast-Asia.pdf) (accessed 30 November 2019).
- OECD (2018b), *Economic Outlook for Southeast Asia, China and India 2019: Towards Smart Urban Transportation*, OECD Publishing, Paris, <https://doi.org/10.1787/saao-2019-en>.

- OECD (2018c), *Economic Outlook for Southeast Asia, China and India 2018: Fostering Growth through Digitalisation*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264286184-en>.
- OECD (2018d), *Road and Rail Infrastructure in Asia: Investing in Quality*, OECD Publishing, Paris, <https://doi.org/10.1787/19901372>.
- OECD (2017), *Economic Outlook for Southeast Asia, China and India 2017: Addressing Energy Challenges*, OECD Publishing, Paris, [www.oecd.org/dev/asia-pacific/SAEO2017\\_PV.pdf](http://www.oecd.org/dev/asia-pacific/SAEO2017_PV.pdf).
- OECD (2016), *Urban Green Growth in Dynamic Asia*, *OECD Green Growth Studies*, OECD Publishing, Paris, [www.oecd.org/regional/regional-policy/Urban-GG-Dynamic-Asia-report.pdf](http://www.oecd.org/regional/regional-policy/Urban-GG-Dynamic-Asia-report.pdf).
- OECD (2015), *Green Growth in Bangkok, Thailand*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264237087-en>.
- OECD/UCLG (2016), *India*, OECD, Paris, [www.oecd.org/regional/regional-policy/profile-India.pdf](http://www.oecd.org/regional/regional-policy/profile-India.pdf).
- OICA (2018), *World Vehicles in Use*, International Organization of Motor Vehicle Manufacturers, Paris, [www.oica.net/category/vehicles-in-use](http://www.oica.net/category/vehicles-in-use).
- Pau, J. and Qu, H. (2016), *Smart Cities and Urban Innovation in Asia*, Asia Business Council, Hong Kong, [www.asiabusinesscouncil.org/docs/SmartCities.pdf](http://www.asiabusinesscouncil.org/docs/SmartCities.pdf).
- People's Bank of China (2019), Announcement of Loan Prime Rate (LPR) on August 20, 2019, [www.pbc.gov.cn/en/3688229/3688335/3730276/3886743/index.html](http://www.pbc.gov.cn/en/3688229/3688335/3730276/3886743/index.html) (accessed 30 November 2019).
- Pezzini, M. (2020), "Covid-19: time to unleash the power of international co-operation", *OECD Development Matters* Blog series, 26 March 2020, Paris, <https://oecd-development-matters.org/2020/03/26/covid-19-time-to-unleash-the-power-of-international-co-operation/> (accessed 28 April 2020).
- Pilat, D. (2017) "Background note: Opportunities and Policy Challenges of Digitalisation in Southeast Asia.", 24 August, OECD, [www.oecd.org/southeast-asia/events/regional-forum/Forum\\_Note\\_Digital\\_Transformation\\_STI.pdf](http://www.oecd.org/southeast-asia/events/regional-forum/Forum_Note_Digital_Transformation_STI.pdf). (accessed 18 June 2019).
- PWC (2015), *Smart cities in Southeast Asia: The opportunity for Telcos*, PwC Consulting Services, [www.pwc.com/my/en/assets/publications/smart-cities-in-southeast-asia.pdf](http://www.pwc.com/my/en/assets/publications/smart-cities-in-southeast-asia.pdf).
- Reserve Bank of India (2019), Minutes of the Monetary Policy Committee Meeting October 1, 3 and 4, 2019, [www.rbi.org.in/Scripts/BS\\_PressReleaseDisplay.aspx?prid=48440](http://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=48440) (accessed 30 November 2019).
- Sawada, Y. (2020), *Asian Development Outlook: What drives innovation in Asia? Special topic: The Impact of the Coronavirus outbreak – an update*. Asian Development Bank, Manila, [www.adb.org/sites/default/files/event/575791/files/ado2020-launch-sawada-presentation-03022020.pdf](http://www.adb.org/sites/default/files/event/575791/files/ado2020-launch-sawada-presentation-03022020.pdf) (accessed 28 April 2020).
- State Bank of Vietnam (2019), Balance of International Payment, [www.sbv.gov.vn/webcenter/portal/en/home/sbv/statistic/boip?\\_afLoop=26948756215513577](http://www.sbv.gov.vn/webcenter/portal/en/home/sbv/statistic/boip?_afLoop=26948756215513577) (accessed 30 November 2019).
- Tanaka, K. and Ibrahim, P. (2017), "Broadening financing options for infrastructure in Emerging Asia.", 13 April, *OECD Development Matters*, webpage, <https://oecd-development-matters.org/2017/04/13/broadening-financing-options-for-infrastructure-in-emerging-asia/#fn3> (accessed June 25, 2019).
- Tanaka, K. and Pezzini, M. (2020), "The economic implications of lockdown in Emerging Asia", *OECD Development Matters* Blog series, 15 April 2020, Paris, <https://oecd-development-matters.org/2020/04/15/the-economic-implications-of-lockdown-in-emerging-asia> (accessed 4 May 2020).
- Thomas, J. (2019), "Strengthening ASEAN's digital economy", 17 June, *The ASEAN Post*, webpage, <https://theaseanpost.com/article/strengthening-aseans-digital-economy>, (accessed 5 July 2019).
- Tran, K. and A. Natalegawa (21 December 2018), "Supporting Southeast Asian Smart Cities is Critical for the Region & the United States", *CSIS Asia Program* blog, [www.cogitasia.com/supporting-southeast-asian-smart-cities-is-critical-for-the-region-the-united-states](http://www.cogitasia.com/supporting-southeast-asian-smart-cities-is-critical-for-the-region-the-united-states).

- uCIFI (n.d.), " uCIFI Alliance: Unlock the future of smart cities", <http://ucifi.com/engie-stee-joining-ucifi> (accessed 22 August 2019).
- UN (2019), SDG Indicators, United Nations, New York, <https://unstats.un.org/sdgs/metadata/?Text=&Goal=10&Target=10.c> (accessed 30 November 2019).
- UN (2015), *Paris Agreement*, United Nations, New York, <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> (accessed 30 November 2019).
- UNCTAD (2019), *World Investment Report 2019 – Special Economic Zones*, United Nations Conference on Trade and Development, New York, [https://unctad.org/en/PublicationsLibrary/wir2019\\_en.pdf](https://unctad.org/en/PublicationsLibrary/wir2019_en.pdf) (accessed 30 November 2019).
- UNESCAP (2017), "Urbanization and sustainable development in Asia and the Pacific: linkages and policy implications." United Nations, Economic and Social Council, Bangkok, Thailand. [www.unescap.org/commission/73/document/E73\\_16E.pdf](http://www.unescap.org/commission/73/document/E73_16E.pdf) (accessed 31 July 2019).
- WEF (2018), "These countries are all building brand-new cities", webpage, [www.weforum.org/agenda/2018/12/all-of-the-world-s-top-10-cities-with-the-fastest-growing-economies-will-be-in-india](http://www.weforum.org/agenda/2018/12/all-of-the-world-s-top-10-cities-with-the-fastest-growing-economies-will-be-in-india) (accessed 7 February 2019).
- WEF (2016), *Reforms to Accelerate the Development of India's Smart Cities - Shaping the Future of Urban Development & Services Initiative*, World Economic Forum, Geneva, [www3.weforum.org/docs/WEF\\_Reforms\\_Accelerate\\_Development\\_Indias\\_Smart\\_Cities.pdf](http://www3.weforum.org/docs/WEF_Reforms_Accelerate_Development_Indias_Smart_Cities.pdf).
- WHO (2018), *Global Status Report on Road Safety 2018*, World Health Organisation, Geneva, [www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2018/en](http://www.who.int/violence_injury_prevention/road_safety_status/2018/en).
- World Bank (2019a), "Current Account Balance (% of GDP)", World Bank Group, Washington, D.C., <https://data.worldbank.org/indicator/BN.CAB.XOKA.GD.ZS?locations=CN> (accessed 30 November 2019).
- World Bank (2019b), *The Digital Economy in Southeast Asia: Strengthening the Foundations for Future Growth*, World Bank Group, Washington, D.C., <http://documents.worldbank.org/curated/en/328941558708267736/pdf/The-Digital-Economy-in-Southeast-Asia-Strengthening-the-Foundations-for-Future-Growth.pdf> (accessed 27 April 2020).
- World Bank (2018), Private Participation in Infrastructure (database), World Bank Group, Washington, D.C., <https://ppi.worldbank.org/data>.
- World Bank (2016), *Understanding Traffic Risk and Traffic Forecasting*, PPIAF, Issue Brief, December 2016, World Bank Group, Washington, D.C., <https://ppiaf.org/documents/4358/download> (accessed 19 August, 2019).

### 3. Leveraging the impact of new technologies in Latin America

This chapter provides insights from the private sector on how to harness new technologies and digitalisation for enhancing productivity, innovation and sustainable growth in Latin America and the Caribbean (LAC). The analysis builds on discussions from the meeting “Leveraging the impact of new technologies in Latin America”, organised by the OECD Development Centre’s Emerging Markets Network (EMnet) in Paris on 23-24 May 2019, as well as desk research and bilateral conversations with multinationals operating in the region. Regional GDP in LAC was initially expected to grow by 2.6% in 2020, but with the onslaught of the crisis, forecasts now predict a recession with growth at -4.6%.

Key messages include:

- Growth in LAC was decelerating in 2019, rendering the economy vulnerable to external shocks in a region facing social discontent, growing poverty and risks of a recession.
- Structural challenges weigh down on growth, although effective public policies can address these challenges and help offset the causes of social discontent.
- Strengthening investment in knowledge and innovation can reduce the cost of new mobile and digital technologies, boost productivity and allow Latin America to overcome a lack of competitiveness compared to other regions.
- Technological solutions and innovations are also helping reduce informality and promote social inclusion, by increasing access to new technologies, reducing the digital divide and bringing Internet connectivity to rural areas.
- The gap between supply and demand of skills in LAC remains one of the widest globally. Consequently, firms are now starting to upskill their own workforce.
- Companies stress that further regulatory reforms focused on transparency, anti-corruption, data privacy and taxation are needed to improve the investment climate, develop digital infrastructure, and generate trust in the digital ecosystem. Chile has incorporated such policies in its trade negotiations, in an effort to build trust in the digital economy beyond its national borders.
- Digitalisation can improve public transparency and efficiency, providing rapid access to information, expanding government services and reducing bureaucracy. Sixteen LAC countries have adopted an Open Government Declaration promoting transparency, fighting corruption and empowering citizens.

## LATIN AMERICA'S ECONOMIC AND BUSINESS OVERVIEW

Latin America and the Caribbean (LAC)'s economies have lost growth momentum as countries grappled with deteriorating conditions. Economic growth has been weak over the last 5 years, while several countries have recently faced a complicated domestic environment – including political upheaval – and the external context has become less favourable, owing to the region's exposure to world commodity prices, global interest rate developments and global trade dynamics (IMF, 2020; OECD et al., forthcoming). More investment is needed to improve competitiveness and productivity, while several structural challenges need to be addressed. Some global trends, digitalisation in particular, hold the potential to increase productivity, which can boost growth and create new opportunities for business.

This economic and business overview chapter brings together analysis and insights about LAC's economic growth, financial inflows, international and regional trade as well as megatrends that have affected the continent. Regional gross domestic product (GDP) was initially expected to grow by 2.6% in 2020, but with the onslaught of the crisis, forecasts now predict a recession with growth at -4.6% (AUC/OECD, 2019; World Bank, 2020). This chapter covers the period before 2020, and neither it nor the data cited in it take into account the effects of the Coronavirus (COVID-19) crisis. The virus is resulting in significant economic disruption from quarantines, restrictions on travel, factory closures and a sharp decline in many service sector activities. As a result, the world economy is expected to be in its most precarious position since the financial crisis and experiencing a sharp slowdown (OECD, 2020a). See also Box 3.1 below.

### Box 3.1. The Coronavirus crisis in Latin America

The Coronavirus (COVID-19) crisis is resulting in significant economic disruption from reduced global demand, quarantines and travel restrictions, and a sharp decline in many service sector activities in Latin America. The world economy is expected to be in its most precarious position since the financial crisis and experiencing a sharp slowdown, with important ramifications for LAC (OECD, 2020a).

The COVID-19 crisis is further aggravating a situation of subdued growth in LAC, which was already characterised by deep social discontent and growing poverty, and risks pushing the region into recession (Bonaglia and Nieto-Parra, 2020). It is causing a disruption in global supply chains, a decline in commodity prices and a contraction in tourism, which can severely damage economic prospects by bringing activity to a halt. In Latin America, some 125 million people still lack access to basic health-care services, and without ambitious policy responses the burden of the Coronavirus crisis could disproportionately fall on to vulnerable and poor households (PAHO/WHO, n.d.).

### Box 3.1. The Coronavirus crisis in Latin America (cont.)

With the People's Republic of China (hereafter: 'China'), Europe and the United States as the most important trading partners, slowing international demand will have a strong impact on exports. Falling commodity prices in case of a global downturn further exacerbate the crisis in several oil-producing Latin American nations such as Mexico and Venezuela, and can also hit other resource-rich countries such as Chile and Peru. The Caribbean will be hit by the expected drop in tourism.

On the financial side, sovereign downgrades make it harder to borrow or to honour foreign currency debt, with which some countries in the region were already struggling. Reduced appetite for emerging market debt or equity results in large outflows. Central America and Mexico will also feel that a slowdown in the United States will result in less trade and investment. Two major sources of foreign exchange, remittances and tourism (particularly relevant for the Caribbean), are also heavily affected (Pezzini, 2020).

Around 58% of workers in Latin America are informally employed, and most of them have no social safety net. Because of the virus, many companies may go bankrupt, in particular micro-, small and medium-sized enterprises, which represent 99% of total firms and account for almost 60% of employment in the region. The impact on jobs could be colossal, particularly for the vulnerable middle class just above the poverty level (OECD, forthcoming). Social assistance programmes covering poor households typically do not reach more than 40% of vulnerable households. First estimates from ECLAC stress that poverty in Latin America could go from 185 million to 220 million people in 2020 (CEPAL, 2020).

For the latest information on impacts and consequences of the COVID-19 pandemic, please visit [www.oecd.org/coronavirus](http://www.oecd.org/coronavirus).

## Economic growth remains subdued and vulnerable to external developments

Growth in LAC remains relatively weak compared to other emerging regions and remains insufficient to close the gap with advanced economies. After a decline in 2018, GDP was initially on track to increase in 2019 as commodity prices and domestic consumption stabilised (OECD et al., 2019). However, a slack in domestic demand, weak external demand and fragile international financial markets caused economic stagnation: growth in 2019 was set to grow at a mere 0.1% (IMF, 2020). Growth projections by the United Nations Economic Commission for Latin America showed Brazil to grow by 1%, Mexico by 0%, Colombia by 3% and Argentina by -3%, representing downward revisions from earlier Outlooks (ECLAC, 2019a; OECD et al., 2019). Argentina and Ecuador have experienced sudden stops on capital flows, pushing both countries into recession. A number of other countries in the region, including the Plurinational State of Bolivia (hereafter: Bolivia), Colombia, Chile and Ecuador – have experienced social unrest (IMF, 2020). Political tensions are also strongly dragging down growth in the Bolivarian Republic of Venezuela (hereafter: Venezuela), with the country experiencing strong recessions in 2018 and 2019 (OECD et al., 2019).

## Structural challenges and social discontent weigh on growth

Structural challenges in many Latin American economies have caused growing social discontent (Nieto-Parra, Pezzini and Vázquez, 2019). These challenges or “development traps” negatively impact citizens' well-being, fuelling a vicious cycle that limits the capacity towards greater

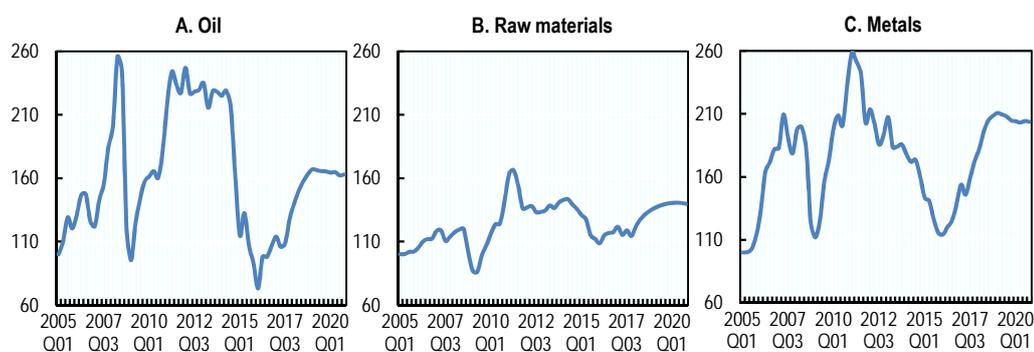
development (OECD et al., 2019). Public institutions are failing to respond to citizens' increasing demands, for example in the provision of public health care (public satisfaction dropping from 57% to 40% in Latin America from 2006 to 2018, well below the OECD average of around 70%), while figures show that only 25% of Latin Americans have confidence in their government, undermining the social contract between citizens and the state (Nieto-Parra, Pezzini and Vázquez, 2019). Other structural challenges can be found in a high level of informality and social vulnerability, threatening middle class purchasing power. The “vulnerable middle class” represents around 40% of the population (OECD et al., 2019). Another structural change is the make-up of the economy: resources are often concentrated in extractives or micro, small and medium-sized enterprises (MSMEs) with low value added, low productivity or a low productivity growth potential (Cerutti, Nieto-Parra and Orozco, 2019).

### Commodity prices recovery underpin growth

LAC exports, reflecting the general composition of the economies as described above, are often concentrated in primary goods and low-technology manufacturing. This means GDP growth and commodity prices are strongly correlated. The major exception is Mexico, which has benefitted from its participation in the North American Free Trade Agreement, or NAFTA (OECD et al., 2019).

Global commodity prices increased in 2018, but weaker global demand weighed on these markets in 2019 - see Figure 3.1 below (OECD et al., 2019). Higher copper prices boosted foreign direct investment (FDI) into Chile up 4% to USD 7.2 billion in 2018 (UNCTAD, 2019a). Inbound FDI to Ecuador more than doubled to USD 1.4 billion in 2018, owing to investment in new copper and gold mines (UNCTAD, 2019a).

Figure 3.1. Commodity prices



Note: 2005=100. Own projections based on Global Vector Autoregressive.

Source: OECD et al. (2019), *Latin American Economic Outlook 2019: Development in Transition*, <https://doi.org/10.1787/q2g9ff18-en>.

StatLink  <https://doi.org/10.1787/888933936406>.

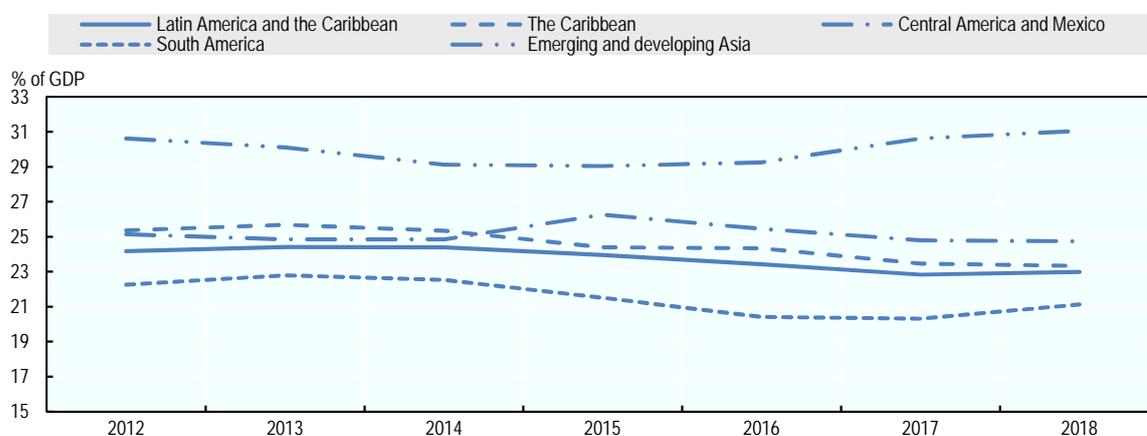
## Investments in LAC do not show a uniform picture across the region

FDI inflows to the LAC region declined in 2018, driven by a drop of 9.4% in Brazil and 20.4% in Colombia (UNCTAD, 2019a). Regional inflows are expected to drop further to USD 140 billion in 2019, down from USD 147 billion in 2018 (UNCTAD, 2019a). Brazil and Mexico remained 2 of the world's top 20 host economies for FDI, with USD 61 billion and USD 32 billion of inflows in 2018 (UNCTAD, 2019a). LAC's largest sources of outbound FDI in 2018 were Mexico, Colombia and Chile, while the largest sources of FDI in the region in 2017 were the United States (US), the Netherlands and Spain (UNCTAD, 2019a). Intra-regional investment comprised 11% of bilateral inward stock in 2017, a lower percentage than every world region except Africa and transition economies (UNCTAD, 2019a).

Overall investment rose in LAC in 2018, recovering slightly from a 3-year decline (IMF, 2018). Growth and investment are heterogeneous across the region, with Bolivia, Chile, Colombia and Peru experiencing strong consumption and investment, while Argentina is facing a recession and currency crisis, as its central bank imposed currency controls in 2019 after annual FDI outflows increased by 65% (OECD et al., 2019; Central Bank of Argentina, 2019; UNCTAD, 2019a). Venezuela experienced a severe recession on the back of hyperinflation and political unrest.

Investment as a percentage of GDP is some 10 percentage points lower in Latin America than in Emerging Asia and developing Asia,<sup>1</sup> although with strong variation in the different sub-regions, as illustrated in Figure 3.2 (OECD et al., 2019).

Figure 3.2. Total investment as a percentage of GDP



Note: Simple averages. Excludes Venezuela. Forecast for 2018.

Source: IMF (2018), *World Economic Outlook*, [www.imf.org/external/pubs/ft/weo/2018/02/weodata/index.aspx](http://www.imf.org/external/pubs/ft/weo/2018/02/weodata/index.aspx), as cited in OECD et al. (2019), *Latin American Economic Outlook 2019: Development in Transition*, <https://doi.org/10.1787/g2q9ff18-en>.

StatLink  <https://doi.org/10.1787/888933936349>.

## Trading patterns depend on an evolving global context

LAC exports increased by 2.5% in 2018, while imports rose 5.9% (UNCTAD, 2019b). Brazil and Mexico are the region's top exporters and importers of goods and services, followed by Chile and Argentina (World Bank, 2019a). Trading patterns in LAC are heterogeneous; more than 75% of Mexico's exports are to the United States because of its relationship under NAFTA. Meanwhile, Brazil's exports are more diversified, with China, the European Union (EU) and the United States as its top export destinations, comprising 21.8%, 16% and 12.5% of Brazil's exports respectively.

### US-China trade tensions

The US-China trade war has boosted a few Latin American export sectors, but overall exports are declining on slightly lower prices for some commodities and reduced global demand. LAC is heterogeneous when it comes to trade relationships, with Mexico and Central America more dependent on US demand and South America generally more dependent on Chinese demand (OECD et al., 2019). Overall, US and Chinese demand for LAC exports has declined amidst the ongoing trade war, and political uncertainty remains high as US-China relations rapidly change (OECD et al., 2019). Some sectors in LAC have benefitted from the drop in US-China trade, however. For example, Brazil's exports to China rose from USD 47 billion in 2017 to USD 64 billion in 2018, driven by a rise in soy and other agricultural exports to China (Brazil Comex Stat, 2018).

### The EU-Mercosur trade deal

In June 2019, Mercosur (Argentina, Brazil, Paraguay and Uruguay) and the EU reached an in-principle agreement on a trade deal (European Commission, 2019a) that will enter into force when ratified by all EU Member States and the Mercosur countries. The EU as a bloc is Mercosur's top foreign investor and trading partner, with trade between the 2 regions totalling EUR 88 billion in 2018, and EU investors holding EUR 381 billion in FDI stocks in Mercosur (European Commission, 2019b). The agreement is to increase export standards and reduce barriers to trade and investment in Mercosur, which could have positive spill-over effects for Mercosur's trade globally (European Commission, 2019c).

## LEVERAGING THE IMPACT OF NEW TECHNOLOGIES

Technological developments can be leveraged to boost productivity and innovation. Regional hubs see tech start-up ecosystems emerge, while companies are increasingly leveraging the rising demand for e-commerce and adapt to consumers' demand to personalised products. Private investment in new technologies is needed to achieve sustainable growth and development, while investments in infrastructure can bolster productivity and access to services. Reducing barriers to development – notably by mitigating institutional, environmental and social challenges – can allow the private sector to realise the full benefits of digitalisation.

## Technology can boost productivity and innovation, reversing an investment slowdown

LAC has seen its investment momentum begin to slow down from 2011 onwards, partly because of lower commodity prices, greater uncertainty and, more recently, tougher financing conditions. The adoption of new technologies can improve productivity and innovation by making processes more efficient and by enabling firms to offer goods and services to customers at a lower price, in addition to creating new types of digital products (Koellinger, 2008). Investments in productive capacity can boost innovation and support overall growth, but research and development (R&D) expenditure in the region lags behind. In LAC economies, the public sector is responsible for the majority (about 60%) of the region's total R&D expenditure, whereas in OECD economies the private sector invests 70% of this total (OECD et al, 2019). Innovation surveys conducted across Latin American countries including Argentina, Chile, Colombia, Costa Rica, Panama and Uruguay found that firms investing in knowledge are better able to make technological advances, innovate and therefore be more productive than other firms (Crespi and Zuniga, 2012). By 2021, at least 40% of Latin America's GDP is expected to be generated by the digital economy (ECLAC, 2018). Disruptive technologies are set to bring digital transformation to companies in Latin America. By 2020, 40% of large enterprises in the region are expected to have fully articulated an organisation-wide digital transformation strategy. Digital technologies are increasingly applied across different sectors in LAC, with 25% of the top global transaction banks, nearly 30% of manufacturers and retailers, and 20% of health-care organisations expected to use blockchain<sup>2</sup> networks in production by 2021 (ECLAC, 2018). Galvanising investment to boost economic growth requires a shift in investment composition. Currently, investment is often concentrated in the construction sector. This is challenging, because it is not characterised by a high technological content and has the least impact on productivity. Even in the construction sector, investments in machinery and equipment have a higher technological content, and offer greater potential to raise productivity and boost innovation (ECLAC, 2018). The share of machinery and equipment has risen steadily, from 22% of total investment in 1995 to 40% in 2016 (ECLAC, 2018). The adoption of new technological advances by firms leads to increased productivity and economic growth not only for the organisation itself, but also for the economy in general. According to an analysis by the World Bank, an increase of 10 points in fixed broadband penetration could increase GDP growth by 1.38% in developing economies (Minges, 2016). Government policies aim to expand this access. The 2013 telecommunications reform in Mexico, for example, almost halved mobile phone costs and significantly reduced the price of mobile service packages (OECD, 2019a).

### A tech start-up ecosystem is emerging in regional hubs

A tech start-up ecosystem is emerging in regional hubs such as São Paulo, Buenos Aires and Mexico City. Latin America is developing its own tech start-up ecosystem, valued at USD 37 billion in 2018 (IDB, 2017a). There are 123 *Tecnolatinas*<sup>3</sup> valued at over USD 25 million, including 9 "unicorns", or companies valued at more than USD 1 billion each (IDB, 2017a). The majority of start-ups are less than 10 years old, and most are taking advantage of mobile connectivity (IDB, 2017a). SoftBank Group, a Japanese multinational, is launching the SoftBank Innovation Fund: a technology fund focused exclusively on the Latin American market. It is also creating the SoftBank Latin America Local Hub, which is a new operating group that is to collaborate with SoftBank portfolio companies, helping them enter Latin America and navigate local markets. Industries of

particular focus for the Fund include e-commerce, digital financial services, health care, mobility and insurance (Bloomberg, 2019).

### **Companies are increasingly tapping into the rising demand for e-commerce in LAC**

In 2017, Latin America had nearly 350 million mobile Internet subscribers. By 2020, the number is projected to increase to 420 million (GSMA, 2017). Brazil was the fourth largest economy by number of Internet users in the world in 2017 while Mexico was the ninth largest (UNCTAD, 2017). The Latin American market size (number of mobile Internet subscribers) is currently larger than that of the United States and is set to rival the EU's by 2020 (UNCTAD, 2017), allowing companies offering Software-as-a-Service<sup>4</sup> to grow exponentially. The mobile ecosystem in the region provides a large, scalable platform for entrepreneurs and innovators too. Start-ups are optimising this platform and have begun to enter the region's rapidly growing disruptive technology spaces, such as augmented and virtual reality, Artificial Intelligence (AI), robotics and the Internet of Things (IoT). E-commerce in Latin America went from virtually nothing in 1999 to over USD 70 billion in 2015, with many unicorns such as MercadoLibre, Despegar, B2W and OLX active in e-commerce (IDB, 2017a). The increase in the number of on line shoppers in the region can be attributed to declining smartphone prices, increasing availability of subsidies and finance by mobile operators, and the spread of 4G networks across the region (IDG Connect, 2018). Almost 40% of Argentinians shopped on line in 2018, the highest number in the region (Ecommerce Foundation, 2018). In Chile, owing to the country's rapid technological infrastructural development, e-commerce more than doubled in the period 2013-18. In Brazil, middle-class consumers have become aware that prices for consumer goods and customer services policies can be better on line. Thus, they tend to shop more on line while taking advantage of on line discount websites and coupons (Ecommerce Foundation, 2018). However, the propensity of Internet users to shop on line in LAC countries such as Colombia, Paraguay and Peru is still low, with only less than 10% of Internet users purchasing on line (Ecommerce Foundation, 2018).

The Swedish furniture store IKEA, for instance, announced in May 2018 that it planned to sell through on line channels in Chile, Colombia and Peru under a franchise agreement with the Chilean retailer and on line marketplace leader Falabella (Reuters, 2018). MercadoLibre, the region's largest e-commerce platform, is spread across 18 countries and offers 6 e-commerce services selling over a million items per day (MercadoLibre, n.d.). It accounted for 56 million unique visitors in 2018 (Statista, 2019). Avenida, an e-commerce site based in Argentina that sells goods including home products, clothing and electronic devices, delivers 80% of its orders overnight to 11 pick-up locations in Buenos Aires. These small storefronts are cheaper to run than retail stores, but still allow customers to interact with Avenida's staff, which helps to build trust and brand loyalty (Ecommerce Foundation, 2018).

### **Businesses use technology to adapt to consumers' needs and personalise experiences**

A majority of 88% of Latin American CEOs state that investments made to personalise customer experience have generally delivered on the promise of growth benefits (KPMG, 2018). They also believe these investments are not enough, with only 14% stating they are able to exceed customer expectations for a personalised experience (KPMG, 2018). This can be a risk for their business, particularly in the service industry, where there is a global tech-savvy client base (KPMG, 2018).

Companies such as the home-furnishing brand Magazine Luíza in Brazil anticipated these expectations by providing virtual store business models, allowing customers to see and test products in store and then order them on line (Morgan, 2018). Aeroméxico, the Mexican national flag carrier, recently launched new digital services including a new website, check-in kiosks at airports, mobile app and chatbot to make travelling easier and more comfortable (Morgan, 2018). To meet customers' new needs, Grupo Sura, a Colombian multinational company, is creating external alliances through its corporate venture programme. The programme invests in innovation and technology companies with disruptive models, principally in the financial sector (Grupo Sura, n.d.).

### **Private investment in technology is instrumental to sustainable growth and development**

By 2020, nearly 250 million Latin Americans will remain digitally excluded (GSMA, 2017). Despite considerable progress in building out mobile broadband networks, significant barriers remain to full digital inclusion that supports sustainable development, particularly for unserved or underserved population groups which include rural populations, women and low-income citizens (GSMA, 2017). Mobile Internet penetration varies significantly across the region. At 93%, Chile had the highest penetration at the end of 2016, with Argentina closely behind at 90% (GSMA, 2016a). At the other end of the spectrum, the Dominican Republic, Guatemala and Haiti had mobile Internet penetration rates of one-third or less (GSMA, 2016a). Closing these coverage gaps and providing universal mobile broadband access are major goals for governments in the region (GSMA, 2016b). In Colombia, for example, the *Vive Digital plan* focused on developing Internet infrastructure by building 900 Internet centres in villages. It has successfully reduced the digital divide by expanding Internet access, particularly in remote rural areas: in 2017, nearly 10% of Internet users accessed the web from a free public access centre, many of which are located in schools (OECD, 2019b).

### **Governments and the private sector can work together to solve digital inclusivity challenges**

Governments, mobile operators and other companies have a strong interest in expanding access to achieve universal broadband access. Co-operation across the mobile industry can reduce costs, for example by sharing infrastructure in remote areas. Government policy and incentives can further create an enabling environment for extending connectivity (GSMA, 2016b). Governments could consider easing mandatory regulations on coverage and quality of service and allowing more competition in a free and open market to guide mobile operators' investment decisions – alongside other government-led incentives such as financial support and increased spectrum and infrastructure access (TMG, 2014).

### **Fintech firms can provide increased access to financial services**

The development of financial technologies (Fintech) brings new opportunities to increase financial inclusion (OECD et al., 2019). An important trend among Fintech start-ups in Latin America is access to finance for clients who would otherwise be excluded or underserved by the traditional financial service sector, whether they are individuals or small and medium-sized enterprises (SMEs) (IDB, 2017b). In 2016, there were 703 Fintech start-ups in Latin America, with the majority concentrated in Brazil and Mexico (IDB, 2017b). *Tienda Pago*, for instance, is a digital platform that allows small businesses to finance their weekly inventory of consumer goods, creating an

ecosystem of mobile cashless payments in the supply chain. The company pays large distributors directly for inventory purchases, often fast-moving consumer goods; it then delivers them to small stores, who re-pay *Tienda Pago* as they generate cash from selling the inventory (Accion, 2018). Currently, *Tienda Pago* operates in Venezuela, Peru and Mexico and has deals with the major distribution companies. The company allows businesses to buy products, increase sales and profit margins, generate more income and create a formal credit history (IDB, 2017b). Furthermore, a growing number of Fintech players use digital tools to enable farmers to access loans. BanQu, for example, is using blockchain technologies in Latin America to build farmers' economic identities through identification details and transactional data that can support credit profiling. BanQu is piloting a small-plot land-mapping initiative aimed at women farmers to improve gender inclusivity. A testimony to the growing relevance of mobile money is the emergence of new rural pilots in Colombia such as Agromovil. This partnership between Movistar, the second largest mobile operator in the country, and the rural bank Banco Agrario aims to extend digital financial services to agricultural producers and the rural population (Tricarico, 2018).

### **Private investment in hard and digital infrastructure can bolster productivity and access to services**

LAC is trapped in persistently low productivity levels across sectors, owing to an export structure concentrated in primary and extractive sectors with low levels of sophistication. This undermines the participation of the region in global value chains (GVCs) and affects further productivity growth (OECD et al., 2019). Investing in hard and digital infrastructure plays a critical role in providing new tools and opportunities to deliver better public and private goods and services. As an example, retailers are tapping into a network of warehouses to do deliveries and accept payments from customers without bank accounts. These distribution networks employ technology to make deliveries more efficient by accounting for inventory, traffic and weather. Digital technology and analytics help companies expand their customer base by supporting collection and payment systems (GSMA, 2017).

### **Private sector innovation and collaboration can promote sustainable development**

Environmental issues such as pollution and loss of natural resources can be tackled by harnessing new technologies. In an example, the *Compañía Minería del Pacífico* (CAP Minería), a 60-year-old Chilean mining and steel company, pioneered sustainability at its iron ore mine Cerro Negro Norte, launched in December 2014. The company incorporated sustainable processes and modern technologies into its operations, allowing the site to recover greater amounts of water, increase its seismic stability and reduce its pollution due to wind and rainwater erosion – among other benefits. Some companies successfully reconcile their sustainability efforts with profitability. For instance, *Échale a Tu Casa*, a firm specialising in housing projects, addresses the lack of adequate housing for many families at the bottom of the pyramid. By harnessing construction innovations, the company has managed to streamline the self-build process, keep costs down and construction rates up. Already, 30 000 new houses have been built and more than 150 000 existing homes have been improved in Mexico alone. Finally, the mobile operator business community in Brazil launched the WeCare campaign to actively contribute to the UN Sustainable Development Goals. Joint initiatives with local authorities and civil organisations aim to tackle a variety of issues:

handset theft, child protection, public safety, recycling of electronic waste and preparedness for natural disasters. More than 48 mobile operators from 14 countries have joined the campaign (GSMA, 2017).

### **Barriers remain to realising the full potential of new technologies in LAC**

LAC faces institutional, environmental and social challenges, which pose a risk to social and economic development. On the environmental front, air pollution, congestion, expanding agriculture and natural-resource extraction are degrading the region's natural capital. Latin America lost almost 90 million hectares of its forests between 1990 and 2010 (Martinelli, 2012). The average number of people affected each year by natural disasters in Latin America has doubled over the past decade (Toba, 2009). The cost of hurricanes in the Caribbean is estimated to reach USD 5 billion a year by 2050 (Toba, 2009). On the social front, the regional unemployment rate remains high at around 8.6% (ILO, 2019). The share of workers in vulnerable employment<sup>5</sup> has grown, as relatively low investment in new technologies and skills limits the region's capacity to create quality jobs. Although women's participation in the region's labour force stood at 53% in 2016, men's wages still exceed women's by about 20% (ILO 2018). Institutionally, governments collect relatively low levels of tax: the regional average ratio of tax-to-GDP was 22.8% in 2017, compared to an OECD average of 34.2% (OECD, 2019c). Tax morale is low and has decreased in LAC; in 2016, 54% of the population justified not paying taxes (OECD et al., 2019). In 2015, tax evasion in Latin America was estimated at USD 340 billion, representing 6.7% of regional GDP (Business and Sustainable Development Commission, 2017). Corruption also continues to hamper social and economic progress (Business and Sustainable Development Commission (2017). The region scored 44 out of 100 on Transparency International's Corruption Perceptions Index 2018, where a score below 50 indicates a serious problem of perceived corruption (Transparency International, 2019).

### **An expanding digital economy presents significant tax challenges in LAC**

Digitalisation has significantly changed global value chains and, consequently, traditional tax rules (OECD, 2015). Higher levels of digitalisation of the economy pose new tax challenges that transcend geographical limits. Currently, multinational companies do not always pay tax wherever they have significant consumer-facing activities and generate profit (OECD, 2019d). To respond effectively to the possible technological disruptions and to avoid fragmentation among countries, co-ordination of digital policies at the international level is needed. "Action 1" of the Base Erosion and Profit Shifting (BEPS) Action Plan, devised by the OECD/G20 grouping 134 countries and jurisdictions, proposes several measures in order to deal with tax challenges arising from digitalisation, such as by creating better rules about where tax should be paid ("nexus" rules) and what portion of profits should be taxed ("profit allocation rules").

In the case of Latin America, no fewer than eight countries have already begun some type of initiative on the incorporation of cross-border digital services into the value added tax (VAT) or Goods and Services Tax (GST) tax base. It is recommended that countries implement the OECD's International VAT/GST Guidelines (OECD, 2017a), and in particular the destination principle for determining the place of taxation of cross-border supplies, and consider implementing the mechanisms for the effective collection of VAT/GST presented in the Guidelines. In the case of the application of VAT, countries in the region are adjusting their national framework to incorporate

non-resident companies into the VAT taxpayer registry. The fiscal impact of not meeting the pending challenges about digital taxation can result in a significant loss of resources. For instance, the potential collection generated by the application of VAT and a specific tax on digital services (of a rate of 3%) in ten LAC countries could reach USD 580 million, of which USD 572 million would come from VAT and USD 8 million from the specific tax (ECLAC, 2019b).

The proposed measures are to ensure that multinational enterprises conducting significant business in places where they do not have a physical presence, be taxed in such jurisdictions (OECD, 2019d). Given that the region's tax-to-GDP ratio is significantly below the OECD average, an increase of the fiscal capacity could enhance public investment and service delivery, accelerate development, promote long-term growth and reduce inequalities (OECD, 2019b). Some LAC countries such as Chile, Colombia and Peru are considering a digital services tax on foreign technology companies to boost tax revenue. Argentina (KMPG, 2017), Chile (Baker McKenzie, 2018) and Colombia (Sledz, 2018) have introduced a value-added tax (VAT) on cross-border digital services and on digital services provided by foreign resident suppliers. An example of reform is also the imposition of a VAT or equivalent on cross-border digital services provided by non-resident suppliers to individual consumers (OECD, 2015).

#### **Multiple policy challenges remain before the private sector can realise the full benefits of digitalisation**

LAC firms are unable to benefit fully from digital services and applications owing to restrictions on Internet openness, for example by limits on cross-border data flows. The absence of specific policies to encourage both small and young firms to integrate information and communications technology (ICT) in their business models further impedes digitalisation. The LAC region can develop policies that enhance the potential of e-commerce to increase business performance. In this context, the expansion of broadband infrastructure and the strengthening of competition in telecom markets is particularly important (Sledz, 2018). In addition, to ensure that the private sector contributes to stronger and more inclusive growth, it is essential to build a coherent and comprehensive policy framework that can promote private investment and fair market competition. Finally, there is a lack of human capital possessing particular skills required to use digital technologies professionally such as coding or cloud computing skills (OECD, 2019e). To realise the benefits of digitalisation, the region must increase ICT adoption by firms, while ensuring that the diffusion of digital technologies is accompanied by the development of the skills needed for their effective use (OECD, 2016).

## **PRIVATE SECTOR INSIGHTS ON LEVERAGING THE IMPACT OF NEW TECHNOLOGIES**

This section includes insights and recommendations from the private sector. They are drawn from the EMnet meeting on Latin America on 23-24 May 2019 in Paris, France, and the meetings of the EMnet Working Group on Digitalisation in Barcelona, Spain on 26 February 2019 and Córdoba, Argentina on 2 July 2019, in addition to desk research and bilateral discussions with EMnet members and other private sector representatives. Participants at the meetings highlight that new technologies can open up new business opportunities, and have the potential to address

long-term challenges, such as expanding digital access. However, in order to make the most of technological advances, key challenges related to skills development, regulatory frameworks, appropriate infrastructure as well as data privacy and security need to be addressed.

### **New technologies can open significant opportunities for private sector investment**

Participants in the EMnet meeting emphasise the potential that emerging digital technologies have to boost productivity and growth in the region (OECD et al., 2019). The potential of digitalisation to streamline communications and production and generate productivity dividends has been a key driver of the digital agenda. A study conducted by the OECD in 2014 indicates that digital capabilities such as Data Driven Innovation (DDI) can provide key competitive advantages by raising a firm's labour productivity faster than that of non-using firms by approximately 5% to 10% (Deloitte, n.d). Moreover, while technological advances have the potential to transform almost all sectors of the economy (OECD, 2017b), some estimates show that DDI may also result in up to a tenfold productivity growth in certain sectors such as agriculture (Deloitte, n.d.).

### **New technologies are changing the way in which consumers think, interact and purchase**

The diffusion of new technologies in Latin America is having a profound impact on consumer expectations and on the way they interact with companies. Participants in the EMnet meeting emphasise that new technologies have grown substantially in Latin America and the Caribbean over the past decade. Firms themselves, too, are increasingly connected. The number of firms with a website or home page in Colombia and Ecuador saw an increase from 50 enterprises per 100 in 2010 to 80 enterprises in 2017, while in Peru and Uruguay it rose from 50 in 2010 to almost 70 in 2017 (Pilat, 2019). Increased Internet and mobile penetration has led to a sustained growth of e-commerce. The value of business-to-consumer (B2C) e-commerce in Latin America went from virtually nothing to over 87 billion US dollars in 2018 (OECD/WTO, 2017). IoT and AI are further shaping the digital transformation of companies and increasing the demand for personalised experiences.

### **The digital economy means new markets and businesses**

Latin America is well prepared to embark on a digital transformation and companies agree that the digital economy presents unique opportunities to grow new markets and businesses. Apart from the relatively strong economic base, investments in digital infrastructure, a relatively young population, a relatively high mobile and Internet penetration have allowed the emergence of new innovative enterprises.

According to GSMA, the global telecommunications trade body, in LAC, mobile Internet subscribership stood at 68% in 2019, while the smart phone adoption percentage was 69%. The figures are predicted to rise to 73% and 79% respectively by 2025 (GSMA, 2020). In comparison, the 2019 rates for Asia Pacific, the Middle East and North Africa, and Sub-Saharan Africa were significantly lower (GSMA, 2020). Of the 700 million new mobile subscribers by 2025, around 10% or 69 million will come from Latin America. Increased connectivity facilitates the application of new technologies such as IoT, AI and cloud computing. The last has the ability to affect outsourcing

relationships, for example by lowering the cost of deliveries, speeding up the rate of change or speeding up implementation.

Several successful examples of new markets and businesses already exist. The rapid development of on-demand deliveries reflects the transition underway. Companies such as Rappi, a Colombian delivery platform, Loggi, the Brazilian delivery service, and Glovo, an app-based delivery start-up, were able to achieve exponential growth in the region, leveraging new technologies to respond to an existing demand for convenience and personalised services (Perretto, 2019; Fieser, 2019). Since 2012, USD 5.7 billion has been invested in tech start-ups in Latin America, and the region now boasts multiple unicorns (Contxto, 2019). In the financial sector, the Brazilian Nubank has become the largest digital bank outside Asia by targeting an urban customer base with mobile banking services, in a country where banks traditionally require significant bureaucracy and offer high borrowing rates (Leahy, 2017). Important foreign investors in the new technologies market in Latin America include Ant Financial, Didi Chuxing, SoftBank, Tencent and Walmart (Lavca, 2018).

### **Companies rethink their strategies to meet evolving consumer expectations**

To take full advantage of new technologies and to translate them into actual gains, companies agree that strategies applied in developed markets were not always suitable in the Latin American context. As a result, firms have sought to develop alternative modes and their suggested solutions for the lower business segment have illustrated this point.

Although Latin America is characterised by higher mobile subscription rates than other emerging regions, for example Africa, a large part of its population is not on line. This figure stood at 237 million people or 38% of the population as recently as 2017 (Pilat, 2019). To address consumers with lower access or less advanced devices, companies have had to come up with products tailored to their unique needs. Uber, the multinational transportation company, launched Uber Lite in Latin America, a version of the app geared towards users in less developed areas. The app can be downloaded using less than 5MB memory and operates using less than 20MB of data (Moed, 2018). In Mexico, to cater to customers without a smartphone, Uber installed physical totems in malls and stadiums at which customers can request a ride. Its rival Cabify has built a multi-model application for taxis, private cars, electric scooters or bicycles and is active in the main capitals of the region (Cabify, n.d.), which are considerably more congested and generally characterised by higher transportation costs than cities in OECD economies (OECD/CAF/UN ECLAC, 2018).

Uber also provides an example of tailoring a business to the specific Latin American context, by allowing cash payments in the region. The company recognises that there is a certain market segment in society that does not have credit cards, but that does need convenient, reliable transportation. This particularly applies in contexts where credit cards are less common, public safety can be more precarious and public transportation alternatives sparse. Following the implementation of this policy, Uber states that more than 50% of its trips are paid in cash in the region, reaching more than two-thirds in some countries.

While the digital economy has given rise to many new firms, it has also provided an opportunity to traditional ones to innovate their operations. Walmart is a case in point. The US retailer has taken concrete steps to transform its business from physical stores – 3 200 in Latin America – to selling

platforms that are both physical and digital. In Mexico, for example, Walmart launched an application called Cashi which allows customers without bank account or credit card to deposit cash in store, to be used as a payment alternative. The money on the app allows its customers to buy products in-store, but also pay on line for services such as telephone or electricity. In addition to making its physical stores more digital, Walmart has also increased its on line presence. Customers can order on line and pick up their groceries in-store. In another example, Brazil's third-largest bank Bradesco has agreed a sponsored data programme with mobile providers including Telefónica's Vivo, Claro, TIM and Oi, for customers accessing its mobile application (Bradesco, n.d.). By offering access to the app for free to users, it was able to double its users, becoming the number one banking app in the Brazilian Google Playstore.

### **The private sector can drive economic and social sustainability**

Companies further highlight that new technological solutions and innovations are also helping to drive sustainable development in LAC. For example, new digital solutions are opening up significant opportunities to address regional challenges such as mobility, green economy and social inclusion.

#### **Technology can offer opportunities in smart mobility**

Many LAC cities suffer from high rates of congestion, traffic accidents and pollution (Moed, 2018). MOVO, a shared scooters and electric bicycles start-up active in seven Latin American countries, has found a market in clean, efficient micro-mobility, generating 4 million kilometres of clean travel in its first 5 months of operation (MOVO, n.d). In another example, Telefónica, through its open innovation hub network Wayra, is collaborating with TheVenturyCity a global accelerator of technological ecosystems, to invest in Latin American start-ups focused on advanced technologies touching on AI, machine learning, IoT, video and cyber security (Telefónica, 2019).

#### **New technologies can benefit the green economy**

SUEZ, a French leader in water and waste management, provides an example of a firm that, investing in clean technologies, has developed new activities for operational efficiency, public safety and environmental protection. The company uses digital platforms to ensure optimal and transparent management of water treatment plants, monitoring water inflows and outflows on line with smart meters. Using big data and AI, the company is also working on a project in Colombia to define preventive operational actions for reducing water leakages and providing more real-time information to customers.

Digitalisation can also create more efficient electrical grids that can facilitate large-scale renewable energy provision and create enhanced energy efficiencies. It is estimated that these technologies can reduce the costs of electricity from USD 23 billion to USD 8 billion a year between 2017 and 2031 (Fay et al., 2017). Utilities in the region such as Colombia's Grupo Energía Bogotá (GEB), an emerging market sustainability leader, have made the promotion of low-emissions energy and efficient energy use part of the core strategy. Through shared value projects, GEB is promoting access to sustainable energy solutions for communities previously unconnected to the grid (GEB, 2018).

### **New technologies can be a driver of social inclusion**

Participants further emphasise that new technologies, if implemented and regulated appropriately, can be an important driver of social inclusion. High penetration of mobile services and devices can result in increased inclusiveness and connectedness, especially for rural populations and vulnerable groups. Telefónica, in collaboration with Facebook, initiated the company *Internet para Todos* (Telefónica, 2018). It also received funding from the Development bank of Latin America (CAF), and the Inter-American Development Bank (IDB), and aims to connect over 100 million people in Latin America without Internet access. The project uses new technologies and operating models making wireless broadband deployment more cost-effective and accessible in remote areas. The initiative has already made high-speed mobile Internet available to tens of thousands of Peruvians across the highlands and in the Amazonian rainforest. Using an open approach to network deployment, the company also empowers rural mobile infrastructure operators, local entrepreneurs and communities to collaborate in delivering high-quality connectivity in an efficient and sustainable manner (GSMA, 2017).

Fintech is also contributing to making financial services more accessible. Fintech is advancing well in LAC, where Mexico and Brazil are among the top ten countries with the highest rate of Fintech adoption (OECD et al., 2019). It has already improved access to credit, in particular to SMEs, helping reduce compliance costs and facilitating digital payments at low cost and with high security. This new business is particularly benefitting those segments of society that were previously unbanked or underbanked (OECD et al., 2019).

Business participants also stress the role of digitalisation in strengthening institutional capacities and rebuilding trust in public institutions, by promoting a culture of transparency, accountability and access to information. A majority of LAC countries have adopted national strategies on open government. Moreover, 16 LAC countries have signed the Open Government Declaration, a multilateral initiative for promoting transparency, fighting corruption and empowering citizens (OECD et al., 2019). Both e-government and e-participation indexes show improved performance in LAC countries (OECD/CAF/UN ECLAC, 2018). The private sector can help further improve government efficiency, for example by facilitating the digitalisation of public services. In the utilities sector, for example, SUEZ developed a customer application in Chile and Mexico which provides consumers with better access to water management services, improving efficiency and quality of the service.

### **Challenges exist to increase private investment in new technologies**

EMnet participants stress that a number of barriers to investment in new technologies exist in Latin America and the Caribbean, such as availability of information technology (IT) skills, specific regulations, taxation issues and data privacy and security provisions.

#### **The region continues to face an important shortage of IT skills**

One major challenge which companies highlight is the increase in demand for IT skills brought about by digitalisation. The increasing use of new technologies will significantly change the job market. While Latin American employers are optimistic about the impact of automation on hiring, the region continues to face important talent shortages, with skilled trades, sales representatives

and IT technicians being among the hardest positions to fill. More companies which are automating jobs in LAC also indicate that they plan to increase hiring compared to firms that do not have automation plans, indicating that automation does not have a negative impact on hiring per se (ManpowerGroup, 2019).

In Latin America and the Caribbean the gap between supply and demand of skills remains the widest in the world, and 75% of companies express difficulties in finding and hiring IT-educated workers. As a result, 50% of LAC companies do not find candidates with the skills they need, compared to 36% of firms in OECD countries. Among the digital skills most needed in the region are competencies in information management, service orientation, 'identify and innovate' procedures and the use of computer tools and programmes (ManpowerGroup, 2019). Soft skills, such as advanced cognitive skills, creativity and emotional intelligence, also remain essential requirements for employees to complement the work of machines. In Mexico, 40% of companies planning to increase headcount in IT roles indicate that communication is the most valued soft skill (ManpowerGroup, 2019).

Firms realise that they can no longer expect to find talent easily, and that human capital development will become increasingly essential. In 2018, 77% of employers expected to be upskilling their workforce by 2020, up from 38% in 2011. Workers, too, report a growing willingness to boost their skills through training programmes. A survey by ManpowerGroup shows that 80% of interviewed millennials would change jobs for a role with the same salary, but more skills training opportunities. Similarly, 93% look for lifelong learning opportunities and are willing to spend their own free time and/or money on further training (ManpowerGroup, 2019).

Firms recognise the importance of investing in training programmes and highlight how national education systems need to adapt curricula to equip students with stronger digital literacy and soft skills. Many have started to create corporate training programmes. Walmart, for example, has established an internal academy to train their management. The company also planned a training scheme for 200 000 women from emerging markets for their first jobs in retail, including in Brazil and Mexico (Walmart, 2016). Telefónica, aware of the importance of education in the digital era, has set up a digital education initiative which aims to provide quality education to underserved communities, including in Latin America. This *ProFuturo* project (a collaboration between Telefónica, its foundation and La Caixa bank) has provided digital training to 8 million children already, and aims to expand to 25 million by 2030 (Medina, 2019).

### **Institutional strengthening and improved regulatory practices are a priority in the digital transformation in Latin America**

Companies highlight the importance of creating a strong business and investment environment through good regulatory practices. An "institutional trap" presents significant constraints for businesses in Latin America. Despite improvements in past years, institutions are failing to respond to citizens' increasing demands. Distrust and low satisfaction with the quality of public services are deepening, while citizens see less value in fulfilling their social obligations through paying taxes. This, in turn, makes raising tax resources for public institutions to provide better quality goods and services – which businesses also make use of – more difficult (OECD et al., 2019). The OECD recommends countries prioritise institutional strengthening in terms of modernising public services,

citizen security and justice (OECD et al., 2019). Companies, in turn, stress the need for stronger investment regulations to improve transparency, procedures and co-ordination between national and local policies.

Businesses argue that corruption and legal certainty remain major challenges in the region, generating additional transaction costs and risks. According to the World Bank Enterprise Survey, 8.6% of companies in LAC experienced at least one bribe request in the last 6 months, 14% expected to give gifts to secure government contracts, while 44.5% saw corruption as a major constraint. More than in other regions, 25.4% of firms in Latin America identify the court system as a major constraint (World Bank, 2019b).

Companies stress the importance of the agility of procedures to reduce bureaucracy and offer easier access to regulations and government services. Some firms highlight the need to integrate emerging digital technologies in government practices, for instance in licensing, permitting and payments, in order to facilitate bureaucratic procedures. Removing the “human factor” in licensing and permits can not only increase transparency but also help reduce corruption incentives. Many countries have started implementing initiatives to increase the use of digital technologies for public services. For instance, 62% of countries in Latin America and the Caribbean have already adopted national strategies on digital open government (OECD/CAF/UN ECLAC, 2018), helping promote a culture of transparency, accountability and access to information. Similarly, initiatives in innovation labs started to gain traction across the region. In some cases, these “labs” are created to foster greater collaboration and citizen engagement with public institutions in order to design cost-effective, risk-taking small pilot projects. Initiatives such as *Mi Quito*, *Mi Medellín*, *Agora Rio* have the objective of putting administrative procedures and public services on line.

### **Developing more quality, affordable and accessible digital infrastructure is essential**

EMnet participants highlight how access to quality and affordable digital infrastructure is essential. This includes not only the fixed and digital backbone infrastructure, including the proximity of Internet Exchange Points (IXP), but also access and speed of service. Digitally enabled innovation requires new infrastructure such as broadband, spectrum and new Internet addresses (OECD, 2019e). While significant resources have gone into broadband infrastructure, access to digital technologies remains a challenge. Only 57% of Latin Americans are connected to the Internet and only 103 million citizens have fixed broadband subscriptions. These numbers are lower than the OECD average (OECD et al., 2019). More than 40% of Latin America’s population had access to mobile broadband services but did not have a subscription, pointing to affordability or other consumer challenges. This “usage gap” represents an opportunity to connect an additional 267 million consumers (GSMA, 2019).

Companies stress the need for key policies to enhance the access to digital technologies. They include competition policies in telecommunications markets combined with national broadband strategies, both for current networks as well as for future technologies such as 5G and IoT. Government investments or incentives can help to reduce regional digital divides. Concrete examples of government policies include subsidies, public-private partnerships (PPPs), tax incentives and contributions to Universal Service Funds (USF) – which, if applied correctly, channel additional investments into remote areas (GSMA, 2016a). The availability, cost and allocation of

spectrum bands can further stimulate private investments into coverage expansion. Sometimes a flexible approach to spectrums (e.g. populated areas versus remote, unpopulated areas) can attract more investment. Smart and adequate spectrum allocation procedures are necessary not only to simplify auctions, but also to encourage a long-term perspective that includes room for investment in infrastructure and in new technologies and services to the benefit of the population.

### **Companies need policies that enhance trust in the digital ecosystem**

Ensuring trust is critical for individuals, firms and governments to use digital technologies. Important elements of trust are digital security risk management, including with private sector actors; a privacy strategy that strikes the right balance between privacy protection and intellectual property rights on the one hand, and the benefits of data sharing and reuse on the other; and consumer protection suited to the digital age, which includes fraud and identity theft protection (OECD, 2019a). In an example from LAC, Chile not only applies trust-enhancing policies domestically, but it also incorporated relevant policies for digital transformation in its trade negotiations, in an effort to ensure trust in the digital ecosystem including with its trading partners. Example of measures related to on line privacy, cross-border data flows and on line consumer protection (OECD, 2017b).

Companies indicate that the objectives of open markets, including free flow of information, and data privacy and security need to be carefully calibrated. They recognise that privacy regulations are an important step to building trust among citizens regarding the use of personal data and to maintain a level of trust in digital services. In Argentina, Mexico, Peru and Uruguay, the regulator for data protection is the same as for transparency and access to public information, in a sign of the intimate link between data privacy and transparency (Lehuedé, 2019). In its policy recommendations, the OECD urges countries to focus on a practical implementation of privacy protection through an approach grounded in risk management, recognising that more and extensive use of personal data brings greater economic and social benefits but also increases privacy risks. In its work on the topic, the OECD recognise that data flows across borders amplify the need for improved interoperability among privacy frameworks as well as strengthened cross-border co-operation (OECD, 2013). Argentina and Uruguay are two examples of countries having pioneered data protection in order to facilitate business development, mainly to facilitate the outsourcing of services (Lehuedé, 2019).

Companies note that countries wishing to boost data privacy or security individually can hamper operations across the continent if regulation is not sufficiently co-ordinated. They mention how data localisation requirements can give rise to increased costs to businesses, in particular SMEs, which have fewer resources to invest in security than, for example, cloud-based services. Big data, of growing importance in the digital economy, has great potential to support public policy in different fields. Yet while data protection is important, regulation requiring data to be stored locally can hamper cross-border flows of big data. A solution can be found in countries recognising “adequate” protection abroad in other locations in Latin America. Other solutions to consider include instruments such as Binding Corporate Rules (BCRs). This data protection policy, which originates in the European Union, regulates how companies can transfer data outside the EU but within a group of undertakings or enterprises, while being legally binding and enforceable by every member concerned, thus meeting the dual objective of privacy protection while facilitating the digital

economy (European Commission, n.d.). Some companies have highlighted the EU's General Data Protection Regulation (GDPR) as a regional privacy regulation as a reference for other jurisdictions.

### **Companies see progress on tax collection and the taxation of the digital economy**

Companies discuss the impact of fiscal frameworks on private investment and see a need to keep tax systems relatively simple and inclusive. On the digital economy in particular, EMnet participants welcome the progress of the OECD work on taxation of the digital economy. They deem the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (BEPS), regulating tax contributions of digital companies in the countries in which transactions take place and on cross-border digital services, of particular interest (OECD, 2020b).

Tax structures in Latin America and the Caribbean depend more on indirect taxes, which tend to be less redistributive, than direct taxes as in most OECD economies (OECD et al., 2019). More than half of all tax revenues in LAC comes from consumption taxes such as value-added taxes (VAT) or sales taxes, while personal income taxes represent less than 10% of the total. Several key factors undermine the success of direct tax policies in LAC. For example, there is a relatively small tax base, as calculations show that only 10% of the population in Latin America are registered taxpayers (IDB, 2013). Moreover, the taxable base primarily contributes through taxes on wages as a consequence of tax privileges for returns on capital and high levels of evasion (ECLAC, 2014). Estimates show that about half of potential revenue from personal income taxes is lost through evasion in Latin American countries (IDB, 2013; OECD, 2019c). Personal income taxes are further eroded because of low statutory rates, large standard tax reliefs and high tax allowances (Barreix, Benitez and Pecho, 2017). Taxes, VAT in particular, play an increasingly important role in Latin American public finances. Although trending toward the OECD average, the LAC tax-to-GDP ratio of 23% still trails OECD countries. VAT revenue as a percentage of GDP in LAC countries increased by 3.7 percentage points between 1990 and 2017, trending to the OECD average level (6.0% and 6.8% of GDP respectively in 2016), owing to the increase of VAT rates, the expansion of the taxable base and the strengthening of the VAT collection system (OECD, 2019c).

In this context, participants in the EMnet meeting note that the digitalisation of the economy can create further challenges for public finances and point to the need to find equitable taxation principles for operations in this sector. Global B2C e-commerce sales of goods alone are now estimated to be worth USD 2 trillion annually in the region, with projections indicating they may reach USD 4.5 trillion by 2021. Cross-border e-commerce is expected to reach USD 1 trillion by the same year (OECD, 2019f). Progress in the area could result in a fairer contribution of digital companies to local taxes while contributing to the fiscal sustainability of countries in the region. Companies further recognise that it is difficult for regulators to keep up with the rapid changes in the technological landscape, and recommend a prudent approach to facilitate and encourage more innovation and investment.

## Tax challenges to developing digital infrastructure

Broadband networks are the foundation of digital economies. Increased availability and effective use of broadband services can advance social inclusion, productivity and good governance. EMnet participants note that a significant tax burden on communications companies can act as a barrier to additional investment in digital infrastructure.

The OECD recommends countries in Latin America to avoid sectoral over-taxation that deters broadband expansion and use. Public authorities can also establish incentives and finance networks when markets alone are not able to meet that demand (OECD, 2019a). In Colombia, for example, a recent OECD report found that the taxation and regulation burden on the communication industry can be considered as very high (OECD, 2019b). In an example, Colombia was found to levy an additional tax of 4% on top of the standard VAT on mobile voice and data services on top of the standard VAT of 19%; such “luxury” tax was found to be hard to justify on communication services, which are the necessary foundation of the digital economy and for a sector with positive externalities for the entire economy. An additional tax on mobile services has a direct effect on the total cost consumers have to pay for their communication services and, as a consequence, risks hampering the adoption of such services (OECD, 2019b).

Overall, in the case of Colombia, the OECD recommended finding ways to reduce the overall fees and taxes on the communications sector (OECD, 2019b). In this context, EMnet meeting participants note that certain governments in the region have increased the fiscal burden on telecommunication companies specifically, with participants signalling that an approach more in line with the taxation of other industries could incentivise investment while benefitting the wider economy. Finally, companies stress the need for transparency and predictability of future taxation, as this brings certainty to the business environment and thus facilitates investment.

## CONCLUSION

In a rapidly growing digital economy, the private sector is a key driver of innovation. Making use of digital technologies, companies can create positive dynamics to address long-term challenges in the LAC region by improving productivity, reducing inequalities and expanding digital access. New technologies can also help governments improve their efficiency and transparency.

Companies need people with the right skills to take full advantage of new technologies. It requires governments and the private sector to invest in human capital development to ensure a digitally competent labour force. Governments are also encouraged to adopt new technologies and digitalise government services. Challenges remain related to the quality of digital infrastructure, data privacy, security risks and a fragmentation of regulations between countries. Another important issue for the private sector is the taxation of the digital economy, which the OECD is currently addressing through its OECD/G20 Inclusive Framework on BEPS.

## Notes

- <sup>1</sup> Emerging and Developing Asia encompasses Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Fiji, India, Indonesia, Kiribati, Lao People's Democratic Republic, Malaysia, Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Nepal, Palau, Papua New Guinea, the Philippines, Samoa, Solomon Islands, Sri Lanka, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu and Viet Nam.
- <sup>2</sup> Blockchain is a combination of already existing technologies that together can create networks that secure trust between people or parties who otherwise have no reason to trust one another. Specifically, it utilises distributed ledger technology (DLT) to store information verified by cryptography among a group of users, which is agreed through a pre-defined network protocol, often without the control of a central authority. The marriage of these technologies gives blockchain networks key characteristics that can remove the need for trust, and therefore enable a secure transfer of value and data directly between parties (OECD, 2018).
- <sup>3</sup> A "Tecnolatina" is a technology-based private company born in Latin America. Most of them are entrepreneur-driven digital ventures with an international footprint.
- <sup>4</sup> The concept in which high-speed digital networks transform software delivery from a physical carrying device used to install the software on a machine to remote software delivery via the Internet (Lippoldt and Stryszowski, 2009).
- <sup>5</sup> Vulnerable employment is calculated as the sum of contributing family workers and own-account workers as a percentage of total employment of the relevant group (both sexes, males, females). This indicator captures the proportion of workers who are less likely to have formal work arrangements, and are therefore more likely to lack elements associated with decent employment (ILO, 2009).

## References

- Accion (2018), "Tienda Pago closes series a to boost access to financing for small merchants in Latin America", press release, 3 April, [www.accion.org/tienda-pago-closes-series-a-to-boost-access-to-financing-for-small-merchants-in-latin-america](http://www.accion.org/tienda-pago-closes-series-a-to-boost-access-to-financing-for-small-merchants-in-latin-america) (accessed 26 August 2019).
- AUC/OECD (2019), *Africa's Development Dynamics 2019: Achieving Productive Transformation*, AUC, Addis Ababa/OECD Publishing, Paris, <https://doi.org/10.1787/c1cd7de0-en>.
- Baker McKenzie (2018), *Tax Alert Chile. Chile 2018 Tax Reform Proposal*, [www.bakermckenzie.com/-/media/files/insight/publications/2018/09/al\\_chileantaxalert\\_sep2018.pdf?la=en](http://www.bakermckenzie.com/-/media/files/insight/publications/2018/09/al_chileantaxalert_sep2018.pdf?la=en).
- Barreix, A., J. Benítez and M. Pecho (2017), "Revisiting personal income tax in Latin America: Evolution and impact", *OECD Development Centre Working Papers*, No. 338, OECD Publishing, Paris, <https://doi.org/10.1787/16d42b4a-en>.
- Bloomberg (2019), "SoftBank Group Corp. announces launch of new \$5 billion technology growth fund for Latin America", press release, 7 March, [www.bloomberg.com/press-releases/2019-03-07/softbank-group-corp-announces-launch-of-new-5-billion-technology-growth-fund-for-latin-america](http://www.bloomberg.com/press-releases/2019-03-07/softbank-group-corp-announces-launch-of-new-5-billion-technology-growth-fund-for-latin-america) (accessed 2 April 2020).
- Bonaglia, F. and S. Nieto-Parra (2020), "Latin America and the Caribbean in the time of COVID-19: Preventing the vulnerable from falling behind", *OECD Development Matters Blog series*, 31 March 2020, Paris, <https://oecd-development-matters.org/2020/03/31/latin-america-and-the-caribbean-in-the-time-of-covid-19-preventing-the-vulnerable-from-falling-behind>.
- Bradesco (n.d.), *Abra sua conta pelo App Bradesco*, <https://banco.bradesco/abrasuaconta>.
- Brazil Comex Stat (2018), *General Exports and Imports*, Ministry of Industry, Foreign Trade and Services, Federal Government of Brazil, <http://comexstat.mdic.gov.br/en/geral>.

- Business and Sustainable Development Commission (2017), *Better Business Better World: Sustainable Business Opportunities in Latin America and the Caribbean*, Business and Sustainable Development Commission, London, <http://report.businesscommission.org/uploads/Better-Business-Better-World-Latin-America-the-Caribbean.pdf>.
- Cabify (n.d.), "About us", Cabify webpage, <https://cabify.com/en/about-us> (accessed 10 October 2019).
- Central Bank of Argentina (2019), *Statements by the Governor of the Central Bank*, Buenos Aires, [www.bcra.gob.ar/Noticias/Declaraciones-del-presidente-del-Banco-Central-i.asp](http://www.bcra.gob.ar/Noticias/Declaraciones-del-presidente-del-Banco-Central-i.asp).
- CEPAL (2020), "COVID-19 tendrá graves efectos sobre la economía mundial e impactará a los países de América Latina y el Caribe", press release, 19 March, Comisión Económica para América Latina y el Caribe, [www.cepal.org/es/comunicados/covid-19-tendra-graves-efectos-la-economia-mundial-impactara-paises-america-latina](http://www.cepal.org/es/comunicados/covid-19-tendra-graves-efectos-la-economia-mundial-impactara-paises-america-latina).
- Cerutti, P., S. Nieto-Parra, R. Orozco (2019), "¿Por qué debemos ir más allá del PIB para medir el bienestar de los ciudadanos en América Latina?", *Vox Lacea*, Latin American and Caribbean Economic Association, [http://vox.lacea.org/?q=blog/ibm\\_bienestar\\_amlat](http://vox.lacea.org/?q=blog/ibm_bienestar_amlat) (accessed 17 March 2020).
- Contxtto (2019), *The 19 Latin American Unicorns Galloping to Success*, Contxtto, [www.contxtto.com/en/market-map/the-21-latin-american-unicorns-galloping-to-success](http://www.contxtto.com/en/market-map/the-21-latin-american-unicorns-galloping-to-success).
- Crespi, G. and Zuniga, P. (2012), "Innovation and productivity: Evidence from six Latin American countries", *World Development*, Vol. 40/2, Elsevier, pp. 273-290.
- Deloitte (n.d.), *The value of DDI (Data Driven Innovation)*, Deloitte, [www2.deloitte.com/content/dam/Deloitte/il/Documents/strategy/consulting/the\\_value\\_of\\_ddi\\_english.pdf](http://www2.deloitte.com/content/dam/Deloitte/il/Documents/strategy/consulting/the_value_of_ddi_english.pdf).
- ECLAC (2019a), *Preliminary Overview of the Economies of Latin America and the Caribbean 2019*, Economic Commission for Latin America and the Caribbean, <https://repositorio.cepal.org/handle/11362/45001> (accessed 11 March 2020).
- ECLAC (2019b), *Fiscal Panorama of Latin America and the Caribbean 2019: Tax Policies for Resource Mobilization in the Framework of the 2030 Agenda for Sustainable Development*, Economic Commission for Latin America and the Caribbean, <https://repositorio.cepal.org/handle/11362/44517>.
- ECLAC (2018), *Economic Survey of Latin America and the Caribbean, 2018*, United Nations Publication, Santiago, [https://repositorio.cepal.org/bitstream/handle/11362/43965/131/S1800836\\_en.pdf](https://repositorio.cepal.org/bitstream/handle/11362/43965/131/S1800836_en.pdf).
- ECLAC (2014), *Tax Policy in Latin America: Assessment and Guidelines for a Second Generation of Reforms*, by Juan Carlos Gómez-Sabañi and Dalmiro Morán, United Nations Publication, Santiago, [https://repositorio.cepal.org/bitstream/handle/11362/36806/S1420166\\_en.pdf?sequence=1&isAllowed=y](https://repositorio.cepal.org/bitstream/handle/11362/36806/S1420166_en.pdf?sequence=1&isAllowed=y).
- Ecommerce Foundation (2018), *Latin America Ecommerce Report 2018*, Ecommerce Foundation, Amsterdam, <https://d.dam.sap.com/m/z1bF5E4/Latin%20America%20Ecommerce%20Foundation%20Report%20%20English%20Edited.pdf>.
- European Commission (2019a), *EU and Mercosur Reach Agreement on Trade*, European Commission Directorate-General for Trade, Brussels, <https://trade.ec.europa.eu/doclib/press/index.cfm?id=2039>.
- European Commission (2019b), *EU-Mercosur Trade Agreement, Building Bridges for Trade and Sustainable Development*, European Commission Directorate-General for Trade, Brussels, [https://trade.ec.europa.eu/doclib/docs/2019/june/tradoc\\_157954.pdf](https://trade.ec.europa.eu/doclib/docs/2019/june/tradoc_157954.pdf).
- European Commission (2019c), *New EU-Mercosur Trade Agreement, The Agreement in Principle*, European Commission Directorate-General for Trade, Brussels, [https://trade.ec.europa.eu/doclib/docs/2019/june/tradoc\\_157964.pdf](https://trade.ec.europa.eu/doclib/docs/2019/june/tradoc_157964.pdf).
- European Commission (n.d.), *Binding Corporate Rules*, European Commission, Brussels, [https://ec.europa.eu/info/law/law-topic/data-protection/international-dimension-data-protection/binding-corporate-rules-bcr\\_en](https://ec.europa.eu/info/law/law-topic/data-protection/international-dimension-data-protection/binding-corporate-rules-bcr_en) (accessed 27 August 2019).
- Fay M., et al. (2017), *Rethinking Infrastructure in Latin America and the Caribbean: Spending Better to Achieve More*, International Bank for Reconstruction and Development / The World Bank, Washington, D.C., <https://openknowledge.worldbank.org/bitstream/handle/10986/26390/114110-REVISED-PUBLIC-RethinkingInfrastructureFull.pdf>.

- Fieser, E. (2019), *New Tech Unicorn Aims for Next-Day Delivery Anywhere in Brazil*, Bloomberg Technology, [www.bloomberg.com/news/articles/2019-06-05/new-unicorn-loggi-wants-to-offer-next-day-delivery-across-brazil](http://www.bloomberg.com/news/articles/2019-06-05/new-unicorn-loggi-wants-to-offer-next-day-delivery-across-brazil) (accessed 28 August 2019).
- GEB (2018), *2018 Sustainability Report – Turning Energy into Good Deeds*, Grupo Energía Bogotá, Bogotá, <https://www.grupoenergiabogota.com/informedesostenibilidad2018/pdf/2018fullreport.pdf> (30 April 2020).
- Grupo Sura (n.d.), Grupo Sura website, [www.gruposura.com/en/our-company/about-grupo-sura](http://www.gruposura.com/en/our-company/about-grupo-sura).
- GSMA (2020), *The Mobile Economy 2020*, GSMA Intelligence, London, [www.gsma.com/mobileeconomy/wp-content/uploads/2020/03/GSMA\\_MobileEconomy2020\\_Global.pdf](http://www.gsma.com/mobileeconomy/wp-content/uploads/2020/03/GSMA_MobileEconomy2020_Global.pdf) (accessed 27 April 2020).
- GSMA (2019), *The Mobile Economy: Latin America 2019*, GSMA Intelligence, London, [www.gsma.com/mobileeconomy/latam](http://www.gsma.com/mobileeconomy/latam) (accessed 24 February 2020).
- GSMA (2017), *The Mobile Economy: Latin America and the Caribbean 2017*, GSMA Intelligence, London, [www.gsma.com/latinamerica/resources/mobile-economy-latin-america-caribbean-2017](http://www.gsma.com/latinamerica/resources/mobile-economy-latin-america-caribbean-2017).
- GSMA (2016a), *GMSA Latin America, Country Overview: Argentina – Impact of the Mobile Ecosystem: Perspectives and Opportunities*, GSMA Intelligence, [www.gsma.com/latinamerica/resources/argentina-impact-mobile-ecosystem-perspectives-opportunities](http://www.gsma.com/latinamerica/resources/argentina-impact-mobile-ecosystem-perspectives-opportunities).
- GSMA (2016b), *Closing the Coverage Gap: Digital Inclusion in Latin America*, [www.gsma.com/publicpolicy/wp-content/uploads/2016/09/GSMA2015\\_Report\\_ClosingTheCoverageGap-DigitalInclusionInLatinAmerica.pdf](http://www.gsma.com/publicpolicy/wp-content/uploads/2016/09/GSMA2015_Report_ClosingTheCoverageGap-DigitalInclusionInLatinAmerica.pdf).
- IDB (2017a), *Tecnolatinas: Latin America Riding the Technology Tsunami*, Inter-American Development Bank, Washington, D.C., <https://publications.iadb.org/publications/english/document/Tecnolatinas-Latin-America-Riding-the-Technology-Tsunami.pdf>.
- IDB (2017b), *FINTECH: Innovations You May Not Know Were from Latin America and the Caribbean*, Inter-American Development Bank, Washington, D.C., <http://dx.doi.org/10.18235/0000703>.
- IDB (2013), *More than Revenues, Taxation as a Development Tool*, Inter-American Development Bank, <https://mydata.iadb.org/d/edmz-xf2j> (accessed 24 February 2020).
- IDG Connect (2018), “A look at the mobile ecosystem in Latin America”, [www.idgconnect.com/idgconnect/opinion/1020747/look-mobile-ecosystem-latin-america](http://www.idgconnect.com/idgconnect/opinion/1020747/look-mobile-ecosystem-latin-america) (accessed 9 April 2019).
- ILO (2019), “Unemployment, total (% of total labour force) (national estimate)”, ILOSTAT Database, International Labour Organization, <https://data.worldbank.org/indicator/SL.UEM.TOTL.NE.ZS> (accessed 6 May 2019).
- ILO (2018), *2018 Labour Overview: Latin America and the Caribbean*, International Labour Organization, Peru, [www.ilo.org/wcmsp5/groups/public/---americas/---ro-lima/documents/publication/wcms\\_675285.pdf](http://www.ilo.org/wcmsp5/groups/public/---americas/---ro-lima/documents/publication/wcms_675285.pdf).
- ILO (2009), *Guide to the New Millennium Development Goals Employment Indicators: Including the full set of Decent Work Indicators*, International Labour Office, Employment Sector, Geneva, [www.ilo.org/public/english/employment/download/mdg\\_en.pdf](http://www.ilo.org/public/english/employment/download/mdg_en.pdf).
- IMF (2020), “Outlook for Latin America and the Caribbean: New challenges to growth”, *IMF Blog*, International Monetary Fund, Washington, D.C., <https://blogs.imf.org/2020/01/29/outlook-for-latin-america-and-the-caribbean-new-challenges-to-growth> (accessed 11 March 2020).
- IMF (2018), *World Economic Outlook*, Database, International Monetary Fund, Washington, D.C., <https://www.imf.org/external/pubs/ft/weo/2018/02/weodata/index.aspx>.
- Koellinger, P. (2008), “The relationship between technology, innovation, and firm performance — Empirical evidence from e-business in Europe”, *Research Policy*, Vol. 37, Elsevier, pp. 1 317-1 328.
- KPMG (2018), *Geared for Growth: Latin America’s CEOs Prepare for a More Integrated Future*, 2018 KPMG Cadenas Dosal, S.C., Mexico, <https://home.kpmg/content/dam/kpmg/xx/pdf/2018/05/geared-for-growth-kpmg-latin-america-ceo-outlook-2018-english.pdf>.

- KPMG (2017), "Argentina: Tax reform proposals include reduced corporate income tax rate", *KPMG Insights*, <https://home.kpmg/xx/en/home/insights/2017/11/tnf-argentina-tax-reform-proposals-include-reduced-corporate-income-tax-rate.html>.
- Lavca (2018), "Unicorns and IPOs: Latin America's record start to 2018", Lavca Venture Investors, <https://lavca.org/2018/11/12/unicorns-and-ipos-latin-americas-record-start-to-2018> (accessed 26 August 2019).
- Leahy, S. (2017), "Fintechs target Brazilian banks' fat margins: Online credit card company Nubank and other upstarts are winning market share", *Financial Times*, 22 August 2017, [www.ft.com/content/78058d7c-7c90-11e7-9108-edda0bcbc928](http://www.ft.com/content/78058d7c-7c90-11e7-9108-edda0bcbc928).
- Lehuedé (2019), *Corporate Governance and Data Protection in Latin America and the Caribbean*, Production Development Series 223, United Nations Economic Commission for Latin America and the Caribbean, Santiago, [https://repositorio.cepal.org/bitstream/handle/11362/44629/1/S1900395\\_en.pdf](https://repositorio.cepal.org/bitstream/handle/11362/44629/1/S1900395_en.pdf).
- Lippoldt, D. and P. Stryszowski (2009), *Innovation in the Software Sector*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264076761-en>.
- ManpowerGroup (2019), Presentation at EMnet meeting, 23 May 2019, OECD headquarters, Paris.
- Martinelli, L. A. (2012), "Ecosystem services and agricultural production in Latin America and Caribbean", Inter-American Development Bank, *Environmental Safeguards Unit (VPS/ESG), Technical Notes*, No. IDB-TN-382, <https://pdfs.semanticscholar.org/2b37/1fcd258e33dc66ba74c718731aa695cb585.pdf>.
- Medina (2019), "Education for the digital era: The need to upskill and reskill ourselves", *Blog de Políticas Públicas*, Telefónica, [www.telefonica.com/es/web/public-policy/blog/articulo/-/blogs/education-for-the-digital-era-the-need-to-upskill-and-reskill-ourselves](http://www.telefonica.com/es/web/public-policy/blog/articulo/-/blogs/education-for-the-digital-era-the-need-to-upskill-and-reskill-ourselves) (accessed 22 April 2020).
- MercadoLibre S.R.L. (n.d.), MercadoLibre website, <http://portal-cbt.mercadolibre.com/about> (accessed 9 April 2019).
- Minges, M. (2016), "Exploring the relationship between broadband and economic growth", Background Paper Digital Dividends, *World Development Report*, World Bank Group, Washington, D.C., <http://pubdocs.worldbank.org/en/391452529895999/WDR16-BP-Exploring-the-Relationship-between-Broadband-and-Economic-Growth-Minges.pdf> (last accessed 30 July 2019).
- Moed, J. (2018), "Uber's wild ride to make Latin America its fastest growing region", *Forbes*, 20 December, [www.forbes.com/sites/jonathanmoed/2018/12/20/is-uber-operating-illegally-in-its-fastest-growing-region/#52f2dcf21925](http://www.forbes.com/sites/jonathanmoed/2018/12/20/is-uber-operating-illegally-in-its-fastest-growing-region/#52f2dcf21925).
- Morgan, B. (2018), "The 10 most customer-focused companies in South America", *Forbes*, 18 December, [www.forbes.com/sites/blakemorgan/2018/12/18/the-10-most-customer-focused-companies-in-south-america/#555d9245201e](http://www.forbes.com/sites/blakemorgan/2018/12/18/the-10-most-customer-focused-companies-in-south-america/#555d9245201e) (accessed 15 April 2019).
- MOVO (n.d.) MOVO website, <https://movo.me/es> (accessed 10 October 2019).
- Nieto-Parra, S., M. Pezzini and J. Vázquez (2019), "Social discontent in Latin America through the lens of development traps", *OECD Development Matters* Blog series, 23 December 2019, Paris, <https://oecd-development-matters.org/2019/12/23/social-discontent-in-latin-america-through-the-lens-of-development-traps> (accessed 17 March 2020).
- OECD (forthcoming), *COVID-19 and developing countries: What policies and partnerships to respond, reset and rebuild?*, OECD Publishing, Paris.
- OECD (2020a), *OECD Economic Outlook, Interim Report March 2020*, OECD Publishing, Paris, <https://doi.org/10.1787/7969896b-en>.
- OECD (2020b), *Statement by the OECD/G20 Inclusive Framework on BEPS on the Two-Pillar Approach to Address the Tax Challenges Arising from the Digitalisation of the Economy – January 2020*, OECD/G20 Inclusive Framework on BEPS, OECD, Paris, [www.oecd.org/tax/beps/statement-by-the-oecd-g20-inclusive-framework-on-beps-january-2020.pdf](http://www.oecd.org/tax/beps/statement-by-the-oecd-g20-inclusive-framework-on-beps-january-2020.pdf).
- OECD (2019a), *Shaping the Digital Transformation in Latin America: Strengthening Productivity, Improving Lives*, OECD Publishing, Paris, <https://doi.org/10.1787/8bb3c9f1-en>.
- OECD (2019b), *OECD Reviews of Digital Transformation: Going Digital in Colombia*, OECD Publishing, Paris, <https://doi.org/10.1787/781185b1-en>.

- OECD (2019c), *Revenue Statistics in Latin America and the Caribbean 1990-2017*, OECD Publishing, Paris, [www.oecd.org/tax/tax-policy/revenue-statistics-latin-america-and-caribbean-2019-launch-version.pdf](http://www.oecd.org/tax/tax-policy/revenue-statistics-latin-america-and-caribbean-2019-launch-version.pdf).
- OECD (2019d), "OECD leading multilateral efforts to address tax challenges from digitalisation of the economy", OECD, Paris [www.oecd.org/tax/oecd-leading-multilateral-efforts-to-address-tax-challenges-from-digitalisation-of-the-economy.htm](http://www.oecd.org/tax/oecd-leading-multilateral-efforts-to-address-tax-challenges-from-digitalisation-of-the-economy.htm) (accessed 14 February 2020).
- OECD (2019e), *Boosting Productivity and Inclusive Growth in Latin America*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264269415-en>.
- OECD (2019f), *The Role of Digital Platforms in the Collection of VAT/GST on Online Sales*, OECD Publishing, Paris, <https://doi.org/10.1787/e0e2dd2d-en>.
- OECD (2018), *OECD Blockchain Primer*, OECD, Paris, [www.oecd.org/finance/OECD-Blockchain-Primer.pdf](http://www.oecd.org/finance/OECD-Blockchain-Primer.pdf).
- OECD (2017a), *International VAT/GST Guidelines*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264271401-en>.
- OECD (2017b), *OECD Digital Economy Outlook 2017*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264276284-en>.
- OECD (2016), "Skills for a digital world: 2016 ministerial meeting on the Digital Economy Background Report", *OECD Digital Economy Papers*, No. 250, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jlwz83z3wnw-en>.
- OECD (2015), *Addressing the Tax Challenges of the Digital Economy, Action 1 - 2015 Final Report*, OECD/G20 Base Erosion and Profit Shifting Project, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264241046-en>.
- OECD (2013), *The OECD Privacy Framework*, OECD Publishing, Paris, [www.oecd.org/sti/ieconomy/oecd\\_privacy\\_framework.pdf](http://www.oecd.org/sti/ieconomy/oecd_privacy_framework.pdf) (accessed 22 April 2020).
- OECD/CAF/UN ECLAC (2018), *Latin American Economic Outlook 2018: Rethinking Institutions for Development*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/leo-2018-en>.
- OECD/WTO (2017), *Aid for Trade at a Glance 2017: Promoting Trade, Inclusiveness and Connectivity for Sustainable Development*, World Trade Organization, Geneva/OECD Publishing, Paris, [https://doi.org/10.1787/aid\\_glance-2017-en](https://doi.org/10.1787/aid_glance-2017-en).
- OECD et al. (forthcoming), *Latin American Economic Outlook 2020*, OECD Publishing, Paris.
- OECD et al. (2019), *Latin American Economic Outlook 2019: Development in Transition*, OECD Publishing, Paris, <https://doi.org/10.1787/q2g9ff18-en>.
- PAHO/WHO (n.d.), EquiLAC II Project, webpage, [www.paho.org/hq/index.php?option=com\\_content&view=article&id=2674:equilac-ii-project-&Itemid=3720&lang=en](http://www.paho.org/hq/index.php?option=com_content&view=article&id=2674:equilac-ii-project-&Itemid=3720&lang=en).
- Perretto, L. (2019), "Latin America has a new unicorn: Loggi, the Brazilian delivery service", *Latin American Business Stories*, <https://labs.ebanx.com/en/news/business/latin-america-has-a-new-unicorn-loggi-the-brazilian-delivery-service> (accessed 28 August 2019).
- Pezzini, M. (2020), "Covid-19: time to unleash the power of international co-operation", *OECD Development Matters* Blog series, 26 March 2020, Paris, <https://oecd-development-matters.org/2020/03/26/covid-19-time-to-unleash-the-power-of-international-co-operation> (accessed 28 April 2020).
- Pilat, D. (2019), Presentation at EMnet meeting, 23 May 2019, OECD headquarters, Paris.
- Reuters (2018), "IKEA pushes into South America with partner Falabella", *Reuters Business News*, 17 May, [www.reuters.com/article/us-ikea-falabella/ikea-signs-franchise-agreement-with-falabella-for-peru-chile-and-colombia-idUSKCN1I12W4](http://www.reuters.com/article/us-ikea-falabella/ikea-signs-franchise-agreement-with-falabella-for-peru-chile-and-colombia-idUSKCN1I12W4) (accessed 9 April 2019).

- Sledz, R. (2018), "Colombian official reminds online digital platforms of new VAT requirements", *Thomson Reuters Tax & Accounting*, 20 June, <https://tax.thomsonreuters.com/blog/colombian-official-reminds-online-digital-platforms-of-new-value-added-tax-requirements> (accessed 15 April 2019).
- Statista (2019), "Most popular online retailers in Latin America as of May 2018, based on number of unique visitors (in millions)", Statista, [www.statista.com/statistics/321543/latin-america-online-retailer-visitors](http://www.statista.com/statistics/321543/latin-america-online-retailer-visitors).
- Telefónica (2019), "Wayra and TheVentureCity sign a global deal to co-invest in Latin-American startups focused on deep tech", Telefónica, press release, 25 September, [www.telefonica.com/en/web/press-office/-/wayra-and-theventurecity-sign-a-global-deal-to-co-invest-in-latin-american-startups-focused-on-deep-tech](http://www.telefonica.com/en/web/press-office/-/wayra-and-theventurecity-sign-a-global-deal-to-co-invest-in-latin-american-startups-focused-on-deep-tech) (accessed 14 February 2019).
- Telefónica (2018), "Telefónica presents 'Internet para todos', a collaborative project to connect the unconnected in Latin America", 26 February 2018, Telefónica, News, [www.telefonica.com/en/web/press-office/-/telefonica-presents-internet-para-todos-a-collaborative-project-to-connect-the-unconnected-in-latin-america](http://www.telefonica.com/en/web/press-office/-/telefonica-presents-internet-para-todos-a-collaborative-project-to-connect-the-unconnected-in-latin-america) (accessed 15 April 2019).
- TMG (2014), "Mobile Infrastructure Sharing: Trends in Latin America", 12 March, ITU, San Jose, Costa Rica, [www.itu.int/en/ITU-D/Regulatory-Market/Documents/CostaRica/Presentations/Session8\\_Daniel%20Leza%20-%20Mobile%20Infrastructure%20Sharing%20-%2012%20March%202014.pdf](http://www.itu.int/en/ITU-D/Regulatory-Market/Documents/CostaRica/Presentations/Session8_Daniel%20Leza%20-%20Mobile%20Infrastructure%20Sharing%20-%2012%20March%202014.pdf)
- Toba, N. (2009), "Potential economic impacts of climate change in the Caribbean community". *World Bank, Latin America and Caribbean Region (LCR) Sustainable Development Working Paper*, No. 32. Washington, D.C., [www.researchgate.net/publication/265616772\\_Potential\\_Economic\\_Impacts\\_of\\_Climate\\_Change\\_in\\_the\\_Caribbean\\_Community](http://www.researchgate.net/publication/265616772_Potential_Economic_Impacts_of_Climate_Change_in_the_Caribbean_Community).
- Transparency International (2019), *Americas: Weakening Democracy and Rise in Populism Hinder Anti-Corruption Efforts*, Transparency International, Surveys, 29 January, [www.transparency.org/news/feature/cpi-2018-regional-analysis-americas](http://www.transparency.org/news/feature/cpi-2018-regional-analysis-americas).
- Tricarico, D. (2018), "Reinventing rural financial inclusion in Latin America: Highlights from Foromic", *GSMA Mobile for Development Blog*, [www.gsma.com/mobilefordevelopment/blog/reinventing-rural-financial-inclusion-in-latin-america-highlights-from-foromic](http://www.gsma.com/mobilefordevelopment/blog/reinventing-rural-financial-inclusion-in-latin-america-highlights-from-foromic) (accessed 29 March 2019).
- UNCTAD (2019a), *UNCTAD World Investment Report 2019: Special Economic Zones*, United Nations Conference on Trade and Development, Geneva, [https://unctad.org/en/PublicationsLibrary/wir2019\\_en.pdf](https://unctad.org/en/PublicationsLibrary/wir2019_en.pdf).
- UNCTAD (2019b), *UNCTAD Trade and Development Report 2019: Financing a Global Green Deal*, United Nations Conference on Trade and Development, Geneva, [https://unctad.org/en/PublicationsLibrary/tdr2019\\_en.pdf](https://unctad.org/en/PublicationsLibrary/tdr2019_en.pdf).
- UNCTAD (2017), "IER - Digital opportunities In Latin America and the Caribbean can be further harnessed, says UNCTAD", press release, 2 October, United Nations Conference on Trade and Development, Geneva, <https://unctad.org/en/pages/PressRelease.aspx?OriginalVersionID=432> (accessed 8 April 2019).
- US Federal Reserve (2019), "Federal Reserve issues FOMC statement", press release, 18 September, US Federal Reserve, Washington, D.C., [www.federalreserve.gov/newsevents/pressreleases/monetary20190918a.htm](http://www.federalreserve.gov/newsevents/pressreleases/monetary20190918a.htm).
- Walmart (2016), "Enhancing the economic mobility and inclusion of workers in retail and its product supply chains", *Global Sustainability Report 2016*, Walmart, <https://cdn.corporate.walmart.com/95/7c/9413c7964f378706bd2ee38bcbc2/qrr2016-6-economic-mobility-inclusion.pdf> (accessed 22 April 2020).
- Werner (2020), "COVID-19 pandemic and Latin America and the Caribbean: Time for strong policy actions", *International Monetary Fund Blog series*, Washington, D.C., <https://blogs.imf.org/2020/03/19/covid-19-pandemic-and-latin-america-and-the-caribbean-time-for-strong-policy-actions>.
- World Bank (2020a), "The economy in the time of COVID-19", *Semiannual Report of the Latin America and Caribbean region*, World Bank Group, Washington, D.C., <https://openknowledge.worldbank.org/bitstream/handle/10986/33555/9781464815706.pdf>.

World Bank (2019a), *World Development Indicators, Exports of Goods and Services*, Washington, D.C.,  
<https://databank.worldbank.org/source/world-development-indicators>.

World Bank (2019b), *Enterprise Surveys*, "Corruption" data,  
[www.enterprisesurveys.org/data/exploretopics/corruption#latinamerica-caribbean](http://www.enterprisesurveys.org/data/exploretopics/corruption#latinamerica-caribbean) (accessed 30 July 2019).

## 4. The future of production in Africa: The case for regional integration

This chapter provides insights from the private sector on the opportunities generated by regional integration in Africa. Regional co-operation holds the potential to be a game-changer for firms, allowing them to rethink their strategies and better serve a growing African market. The analysis builds on discussions which took place at the meeting “The future of production in Africa: The case for regional integration”, organised by the OECD Development Centre’s Emerging Markets Network (EMnet) at the OECD on 20 January 2020, desk research and bilateral conversations with multinationals operating in Africa. Africa’s GDP was expected to grow by 3.6% in 2019 and 3.8% in 2020, but with COVID-19, recent forecasts show that recessions are a likely scenario: GDP growth could drop to -1.12% for 2020.

Key messages include:

- Africa has several of the world’s fastest growing economies - Rwanda, Ethiopia and Côte d’Ivoire – and a growing population, notably in East, West and Central Africa.
- A shift in production towards semi-processed goods is expected to drive further growth in the coming years.
- Lowering tariffs on goods, the African Continental Free Trade Agreement (AfCFTA) creates the basis for a pan-African market that can support further industrialisation.
- Industrialisation depends on increasing local production for intra-African exports, which currently represents only 17% of the continent’s total exports.
- Governments and regional economic communities (RECs) can provide additional impetus for growth by reducing non-tariff barriers, boosting trade in services and investment, and facilitating cross-border movement of workers.
- Businesses note the importance of harmonising regulations at the continental level as well as within and between RECs.
- Providing quality infrastructure, power supply and skilled labour can strengthen regional production networks.
- To further unlock private investment, firms highlight the importance of policies aiming to improve shipping and visa procedures, establish regional energy markets and lowering ICT costs.

## AFRICA'S ECONOMIC AND BUSINESS OVERVIEW

This economic and business overview chapter brings together analysis and insights about Africa's economic growth, financial inflows, international and regional trade as well as megatrends that have affected the continent. This Policy Note covers the period before 2020, and neither it nor the data cited in it take into account the effects of the Coronavirus (COVID-19) crisis. The virus is resulting in significant economic disruption from quarantines, restrictions on travel, factory closures and a sharp decline in many service sector activities. As a result, the world economy is expected to be in its most precarious position since the financial crisis and experiencing a sharp slowdown (OECD, 2020). GDP growth was expected to be 3.8% in 2020 (pre-crisis estimate), but with COVID-19 affecting African economies, more recent forecasts show that recessions are likely: depending on the scenario, GDP growth in 2020 could drop to -1.12% (AUC/OECD, 2019; OECD, forthcoming). See also Box 4.1 below.

### Box 4.1. The Coronavirus crisis in Africa

The Coronavirus (COVID-19) crisis is resulting in significant economic disruption from quarantines, restrictions on travel, factory closures and a sharp decline in many service sector activities (OECD, 2020). As a result, several African economies may see their first recession in 25 years. The potential economic and social crisis in Africa may be more severe than in other emerging and developing economies, as countries face additional vulnerabilities such as weak health infrastructure, a large immunocompromised population, import dependence, weak substitution of input materials, single export commodity dependence, overstretched debt in certain countries and limited fiscal capacity, (OECD, forthcoming).

Africa has dealt with recent health epidemics with devastating impact on local economies, for example the West-African Ebola epidemic in 2014-2016 or the large-scale Ebola outbreak in the Democratic Republic of the Congo in 2018 (Oqubay, 2020). Before the wide introduction of antiretroviral drugs, the HIV/AIDS epidemic caused major economic setbacks, predominantly in Southern Africa (UN/AIDS, 2019). However, the impact of the global COVID-19 crisis has the potential to dwarf these epidemics. There are fears for the populations in informal settlements or those with weakened immune systems, e.g. because of poverty or HIV/AIDS, who could be particularly vulnerable. A factor working in Africa's favour is its young population: COVID-19 seems to affect senior citizens more than youth (WHO, 2020a). With a median age of less than 20 in Africa and just 3% of the population of Sub-Saharan Africa older than 65 (World Bank, 2018), Africa's young population can be a positive factor in this regard (Kaseje, 2020).

#### Box 4.1. The Coronavirus crisis in Africa (cont.)

African countries will experience declines in trade flows as global value chains are being disrupted. Declining or collapsing demand from North America, Europe and the People's Republic of China (hereafter: 'China') will hurt African economies (UNECA, 2020). China's exports were down 16% in the first two months of the year (National Bureau of Statistics (2020). The slowdown in China, a major trading partner, is already having its ripple effects. Besides, many North and West African countries heavily depend on trade with the EU, whose slowdown will also strongly reverberate (OECD, forthcoming). The travel and tourism sector in Africa are particularly vulnerable due to the border closures and travel restrictions. Oil exporting nations were expected to lose up to USD 65 billion in revenues as crude oil prices tumble, with up to USD 19 billion in Nigeria alone (UNECA, 2020; Pezzini, 2020). Commodity-sensitive economies such as Algeria, Angola, Cameroon, Equatorial Guinea, Ghana, Gabon, Nigeria and the Republic of Congo are among the most affected (OECD, forthcoming).

Financial flows will be strongly impacted too. African countries have taken on large amounts of debt in recent years, rising from USD 235 billion in 2008 to USD 634 billion in 2019 (up from 21% to 36% of GDP) (Wheatley, 2019). A rising dollar puts the question of debt servicing on the table. Besides, with an average tax-to-GDP ratio around 17% in 2017, African countries do not have much leeway to cushion the blow (OECD/ATAF/AUC, 2019). Increased uncertainty will also see portfolio investment outflows. Changing fortunes in North America or Europe also have the potential to sharply reduce the flow of remittances to Africa.

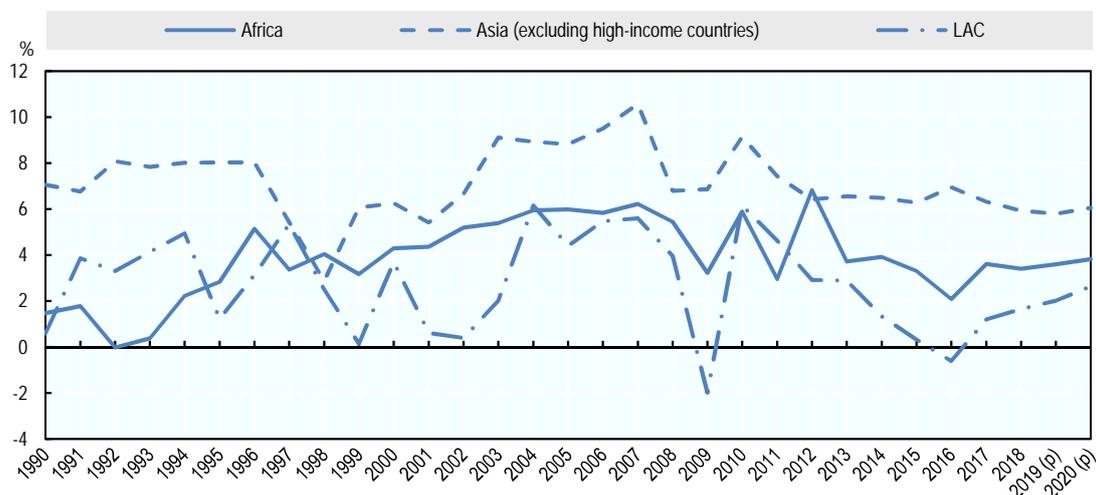
Overall, growth prospects are much reduced, the extent of the recovery will depend on whether African countries and their trade partners manage to bring the virus under control. A rapid implementation of the AfCFTA could also help mitigate the COVID-19 impact (Nyaira, 2020).

For the latest information on impacts and consequences of the COVID-19 pandemic, please visit [www.oecd.org/coronavirus](http://www.oecd.org/coronavirus).

#### African markets experienced moderate economic growth

Africa's gross domestic product (GDP) grew at 3.6% in 2019, registering a slowdown from the 4.6% average annual GDP growth in 2000-2018. The economic performance was better than that of Latin America and the Caribbean (LAC) at 2.6%, but lower than that of Emerging Asia<sup>1</sup> at 7.4% during the 2000-2018 period (AUC/OECD, 2019, see also Figure 4.1). Many of the world's fastest growing economies are African, including Rwanda, Ethiopia, Côte d'Ivoire, Ghana and Tanzania, while Africa's largest economies such as Nigeria, South Africa and Egypt had lower growth, dragging down the continental average: economic disparities between countries remained even before the Coronavirus pandemic had hit (AfDB, 2020).

Figure 4.1. Growth dynamics in Africa, Asia, and Latin America and the Caribbean, 1990-2020



Source: Authors' calculations based on IMF (2019a), as cited in AUC/OECD (2019), *Africa's Development Dynamics 2019: Achieving Productive Transformation*, <https://doi.org/10.1787/c1cd7de0-en>.  
StatLink  <https://doi.org/10.1787/888933966789>.

Historically, consumption has been the main source of demand in Africa. However, its contribution to GDP has declined from 55% in 2015 to 48% in 2018, while investments increased from 14% to 48% that year. This rebalancing trend is expected to continue (AfDB, 2019a). Net exports also contributed strongly to growth, especially for commodity exporting countries as the oil price recovered in 2019 (AfDB, 2020).

During 2000-2018, West and East Africa represented regions with the biggest GDP growth, at 5.9% and 5.2% respectively (AUC/OECD, 2019). Growth in other regions has been relatively subdued. Between 2000 and 2018, Central, North and Southern African growth has averaged 4.8%, 4.3% and 3.4% respectively (AUC/OECD, 2019). Ethiopia has emerged as a recent success story with GDP growth expected to rise to 8.2% in 2019-20, supported by the country's rising incomes, an emerging and potentially large market of 94 million consumers, and increasing urbanisation (AfDB, 2019a). Djibouti, Rwanda and Tanzania have also recorded above-average growth rates (AfDB, 2019a). Beside the outbreak of the COVID-19 pandemic, growth forecasts for Africa are clouded by several risks such as escalating global trade tensions, normalisation of interest rates in developed economies, and internal political transitions across the continent (AfDB, 2019a).

### **Strong domestic factors have supported growth while increasing oil prices helped commodity exporters**

Growth in Africa is currently primarily fuelled by domestic factors. Demand for processed goods in particular is growing 1.5 times faster than the global average (AUC/OECD, 2019). A rise in working age population – from 705 million in 2018 to an expected 1 billion by 2030 –, rising income levels and more concentrated demand in urban centres further boost growth (AUC/OECD, 2019). In commodity-exporters, growth has also been supported by a rebound in commodity prices. The price of Brent crude oil has risen 177% from USD 27 in February 2016 to USD 74 in October 2018 (AfDB, 2019a). Oil-exporting countries such as Algeria, Angola, Chad, Congo, Gabon, Libya and Nigeria have recovered to some extent, although at the expense of rising inflation (AfDB, 2019a).

### **Inflationary pressures are expected to ease in the coming years**

Africa's average inflation reduced from 12.6% in 2017 to 10.9% in 2018, and was expected to reduce further to 8.1% in 2020, according to estimations done before the outbreak of the Coronavirus pandemic (AfDB, 2019a). In African economies where inflationary pressures have relaxed and exchange rates have stabilised, such as Ghana, South Africa and Uganda, central banks have eased monetary policy. For several others, such as Egypt and Tunisia, monetary policy restrictions remain in place to contain inflation (AfDB, 2019a). Low, stable inflation has been associated with economic growth, development outcomes, financial stability and poverty reduction (World Bank, 2019b).

### **Small and medium-sized enterprises and local firms are becoming increasingly important**

African small and medium-sized enterprises (SMEs) and start-ups are important to job creation, and function as pillars of inclusive growth and business innovation (AUC/OECD, 2019). The youngest SMEs that are less than five years old and have fewer than 20 employees comprise 22% of net job creation (AUC/OECD, 2019). About 22% of Africa's working-age population are starting new businesses, the highest rate in the world, compared to 19% for Latin American countries and 13% for Emerging Asia (AUC/OECD, 2019). Local firms also leverage new technologies and business models to tap rising local demand and attract investments (AUC/OECD, 2019). In 2018, African tech start-ups raised USD 1.2 billion in equity compared to USD 560 million in 2017 (AUC/OECD, 2019). Although the amount is growing, it remains relatively small in comparison; India, for example, raised USD 20.5 billion during the same year (Grand Thornton, 2019).

### **Financial inflows are an important contributor to Africa's growth outlook**

Total external financial inflows into Africa make up 11.6% of Africa's GDP, compared to 5.4% at the global level. The inflows, consisting of remittances, official development assistance (ODA), portfolio investments and FDI, grew by 23%: from USD 170 billion in 2016 to USD 209 billion in 2017 (AUC/OECD 2019). See also Table 4.1.

**Table 4.1. Financial flows and tax revenues to Africa and private savings  
(current USD, billion), 2000-2017**

			Average 2000-04	Average 2005-09	2010	2011	2012	2013	2014	2015	2016	2017
<b>External financial inflows</b>	Private	Foreign direct investment	16.1	46.0	46.7	46.7	52.0	50.8	52.4	56.6	53.2	41.8
		Portfolio investments	1.8	10.4	36.8	23.2	37.6	33.7	30.2	20.8	5.9	46.0
		Remittances	14.2	41.9	54.7	61.7	66.8	65.9	70.2	70.0	66.9	74.4
	Public	Official development assistance	20.5	38.8	42.8	46.5	46.4	52.0	47.9	44.9	44.1	47.0
<b>Total foreign inflows</b>			<b>12.1</b>	<b>25.9</b>	<b>52.5</b>	<b>137.1</b>	<b>181.0</b>	<b>178.2</b>	<b>202.8</b>	<b>202.4</b>	<b>200.7</b>	<b>192.4</b>
<b>Tax revenues</b>			<b>44.4</b>	<b>104.4</b>	<b>118.6</b>	<b>266.9</b>	<b>330.3</b>	<b>403.2</b>	<b>417.7</b>	<b>414.5</b>	<b>408.8</b>	<b>339.5</b>
<b>Private savings</b>			<b>35.4</b>	<b>76.8</b>	<b>130.8</b>	<b>299.1</b>	<b>423.5</b>	<b>448.5</b>	<b>475.0</b>	<b>508.0</b>	<b>516.2</b>	<b>427.3</b>

Source: AUC/OECD (2019), *Africa's Development Dynamics 2019: Achieving Productive Transformation*, <https://doi.org/10.1787/c1cd7de0-en>.

#### Remittances have been the largest capital inflow, followed by ODA and portfolio investments

Remittances in 2017 stood at USD 74 billion, larger than other forms of capital inflows. Remittances constituted a relatively high proportion (45%) of financial inflows into West Africa in 2017 (AUC/OECD, 2019), with 70% (USD 24.3 billion) in the region going to Nigeria in 2017 (AUC/OECD, 2019). In 2018, Egypt and Nigeria were the top receiving countries in Africa, with a total of USD 29 billion and USD 24 billion of remittances respectively (AUC, 2019). ODA to Africa peaked in 2013 at USD 52 billion and has since decreased to USD 45 billion in 2017 (AUC 2019b). While all regions saw an ODA increase between 2005 and 2010 and 2011 and 2016, East Africa and West Africa were the largest recipients (AUC 2019b). Portfolio investments are the third-highest contributor to net financial inflows in Africa. In 2017, the size of portfolio investments in Africa was USD 46 billion. Since 2009, Johannesburg in particular has attracted significant portfolio investments: the Johannesburg Stock Exchange (JSE) is Africa's largest stock exchange, and the country's financial sector operates as a hub for pan-African investments (AUC/OECD, 2019).

#### FDI into Africa remains relatively small compared to other regions, but sizeable in relation to GDP

FDI inflows in Africa fell from the 2008 peak of USD 58 billion to a 10-year low of USD 42 billion in 2017 (AfDB, 2019a). In 2018, however, FDI increased by 11% to USD 46 billion, or 5.1% of GDP (UNCTAD, 2019a; EY, 2019). By comparison, Emerging Asia recorded a 4% increase of FDI in 2018 to USD 512 billion and LAC saw a decline of 6% to USD 147 billion (UNCTAD, 2019a). Between 2013 and 2017, total FDI inflows to Africa were USD 51 billion a year and were mainly directed to Southern Africa (USD 12.5 billion per year), North Africa (USD 12 billion) and West Africa (USD 11.6 billion) (AUC/OECD 2019). The largest FDI recipient countries were Egypt with USD 12 billion and South Africa with USD 5 billion (EY, 2019). Based on capital invested, China, France and the United States were Africa's largest investors from 2014 to 2018, investing USD 72 billion, USD 34 billion and USD 31 billion respectively (EY, 2019).

### **Africa's outwards FDI decreases while intra-African investments show increasing momentum**

FDI outflows from Africa dropped from USD 12 billion in 2017 to nearly USD 10 billion in 2018, mainly owing to reduced outward investment from Angola (nearly halted from USD 1.4 billion in 2017) and South Africa (nearly 40% reduction from USD 4.6 billion) (UNCTAD, 2019a). Africa is the fourth largest investor into itself, while intra-Africa investments are growing in importance (UN-Habitat and HIS-Erasmus University Rotterdam, 2018). Major economies on the continent seek a first-mover advantage, with Morocco overtaking South Africa as first intra-African investor (UNCTAD, 2019a). Cairo, Casablanca, Johannesburg, Lagos and Nairobi are identified the most significant hubs for intra-African investment (AfDB, 2019b).

### **Africa's contribution to global trade remains low, yet intra-regional trade is improving**

Africa accounted for 2.6% of global trade in 2018, up from 2.4% in 2017 (Afreximbank, 2019). Intra-African trade has improved to around 16% in 2018 from 5.1% in 1980, but remains low compared to levels of intra-regional trade in other regions, e.g. Europe with 73% and Asia with 52% (Afreximbank, 2019). Africa's low level of regional trade can partly be explained by looking at its main sources of growth – primary commodities and natural resource extraction. These patterns of growth run counter to the continent's participation in a global trading system that is largely dominated by industrial products and manufactured goods with increasing technological content (Afreximbank, 2019). The African Continental Free Trade Agreement (AfCFTA), which came into effect in 2019, will gradually lower tariffs on 90% of goods, and is estimated to give a further boost to intra-African trade of up to 52% by 2025. Removing non-tariff barriers to intra-African trade, such as administrative obstacles, inconsistent application of regulations and uncertainty of exchange rate policies in destination countries, has the potential to increase welfare gains fivefold, from 0.65% to 3.15% of GDP (AUC/OECD, 2019; Brookings Institution, 2019b; GIZ, 2019a).

### **Africa's international trade of goods has expanded but downside risks exist**

Africa's total goods exports grew by 13%, compared to import growth of about 2% (Afreximbank, 2019). Rising commodity prices helped sustain Africa's increase in trade in goods globally. The European Union was Africa's main partner in 2018, accounting for 29.8% of total trade (Afreximbank, 2019). Germany currently leads the EU exports to Africa (USD 9.15 billion), followed by France (USD 6.17 billion) (Brookings Institution, 2019a). Further, two-way trade with the United States fell from a high of USD 100 billion in 2008 to USD 39 billion in 2017, largely owing to US energy self-sufficiency (Brookings Institution, 2018a). African trade with the Global South grew significantly over the last decade to account for more than 35% of the continent's total trade in 2018 (Afreximbank, 2019). China and India are Africa's first and second single largest trading partners, accounting for over 21% of total African trade in 2018 (Afreximbank, 2019). However, escalating global trade tensions and growth deceleration in Europe and China – which combined account for 54% of total African trade – could pose downside risks for African economies (Afreximbank, 2019).

## Megatrends affecting Africa's integration into the global economy

Five megatrends have been identified as key elements that will drive Africa's future economic and social development, as well as its productive transformation (see Table 4.2). The way Africa deals with them will have a significant impact on growth, job creation and equalities. Firms have the possibility of capitalising on innovative opportunities and mitigating potential risks associated with these megatrends.

Table 4.2. Five megatrends affecting Africa's future development

Megatrend	Main Risks	Main Opportunities
"Shifting wealth" and the rise of emerging economies	Competition from other emerging markets; Creating one-dollar jobs; New "scramble for Africa"; Environmental degradation	Diversification of the African exports basket; Reallocation of low-skilled manufacturing from Asia to Africa; Attracting FDI into Africa; New sources of development finance; Skills transfer
New industrial revolution	Automation; Re-shoring manufacturing to advanced economies; Unprepared skill and technological base; Illicit financial flows	Reduction in trade costs, especially for small firms; Creation of new niches and markets; Use of new technologies to improve access to public services and quality of public policies
Demographic transition	High youth unemployment and higher informal sector employment; Increased pressure on public services and environmental resources; Migration and brain drain	Growth of Africa's workforce; Greater savings, consumption and GDP growth due to increased labour supply and wealth creation; Growth of an African middle class
Urban transition	Increased urban poverty and inequality; Inequality between rural and urban areas; Urban congestion; More air pollution and inefficient use of water and other natural resources	Growth of an "urban" middle class and demand for high value-added goods, food and urban infrastructure; Generating economies of scale and social innovation; More sustainable use of resources thanks to efficient sharing of infrastructure in high-density areas
Climate Change	Natural disasters, droughts and changing weather patterns; Loss of livelihoods and economies activities	Expansion of new green sectors; Higher job creation in green sectors

Source: AUC/OECD (2018), *Africa's Development Dynamics 2018: Growth, Jobs and Inequalities*, <https://doi.org/10.1787/9789264302501-en>.

## Digitalisation: A positive factor in favour of productive transformation

The digital age in Africa is promising for the region. In 2018, mobile technologies and services generated 8.6% of GDP in Sub-Saharan Africa, a contribution that amounted to over USD 144 billion of economic value added. This is expected to rise to 9.1% of the GDP by 2023. The mobile ecosystem also supported almost 3.5 million jobs (both directly and indirectly) and contributed with USD 15.6 billion in taxes to the funding of the public sector (GSMA, 2019). In 2018, there were 456 million unique mobile subscribers in Sub-Saharan Africa. It is estimated that half of the region's population – around 600 million – will subscribe to mobile services by 2025. Nigeria and Ethiopia are expected to record the fastest growth rates between 2018 and 2025, at 19% and 11% respectively (GSMA, 2019). To fully harness the potential of such digitalisation, improving proficiency in digital skills would be important as the shift in technology changes the demand for such skills (AUC/OECD, 2019). A 10% increase in mobile broadband penetration can increase GDP per capita by as much as 0.7% (IFC, 2019).

### **Demographic dividends: A growing middle class and the world's second largest workforce**

Africa has the world's fastest-growing population, notably in East, West and Central Africa. It rose from 814 million in 2000 to 1.2 billion in 2015 (AUC/OECD 2018). The population in Sub-Saharan Africa is expected to increase to 2 billion by 2050 and 3.75 billion by 2100 (UNDESA, 2019). A large part of the population will live in cities: the urban population in Africa is expected to double between 2015 and 2035, reaching 893 million people (OECD, 2018a). Leading the urbanisation rate in Africa are countries such as Angola (4.32%), Ethiopia (4.63%), and Uganda (5.7%) (CIA, 2019). While urbanisation in African countries can lead to increased inequality and urban poverty, this transition also represents growth of an urban middle class and increased demand for high value-added goods, food and urban infrastructure (World Bank, 2015; AUC/OECD, 2019). Businesses in Africa have an opportunity to tap into the potential of increased spending by African consumers and businesses, expected to reach USD 6.66 trillion annually by 2030 (Brookings Institution, 2019c). Besides a growing workforce, recent strides in education are improving human capital, resulting in a stronger, more skilled workforce, although still below the global average (AUC/OECD, 2019).

### **Accelerating the development of productive sectors is critical to meet the objectives of the Agenda 2063**

The complexity of supporting productive transformation requires a systemic strategy. Africa's productive firms must connect to the continent's growing regional demand. This will enable them to take advantage of the expanding consumer base to which the AfCFTA will ease access. The challenge here is not only to eliminate tariffs, co-ordinate customs procedures and improve the business environment. Most firms, especially African micro-, small and medium-sized enterprises, may not be able to reap the benefits of AfCFTA's reduced tariffs and larger market size without overcoming internal barriers on their capability and external barriers such as excessive transportation costs, barriers to cross-border investment and other non-tariff barriers (AUC/OECD, 2019).

This systemic approach to productive transformation in Africa entails focusing on three sets of policies: i) developing strategic clusters of firms; ii) facilitating regional production networks and iii) enhancing firms' abilities to thrive in new markets. These policies aim to improve African firms' capabilities, notably their capacity to anticipate future trends, adapt to changing market conditions, be aware of and upgrade their potential, and form linkages with each other (AUC/OECD, 2019).

## **THE BUSINESS OPPORTUNITIES IN REGIONAL INTEGRATION**

Regional integration can have a strong and positive effect on the future of production in Africa. Opportunities abound for firms seeking to access national markets and beyond, but much needs to be done by governments to provide sound regulation, quality infrastructure and a skilled workforce that will reduce costs for firms, facilitate trade expansion and attract investments. Regional co-operation can be a game-changer for firms in Africa, allowing them to rethink their strategies and better serve a growing African market. The African Continental Free Trade Area (AfCFTA) will lower tariffs on the continent, but Africa as a whole will need more to achieve economic integration. Its Regional Economic Communities (RECs) and national governments can stimulate regional

production networks by creating a supportive enabling environment and by ensuring the provision of quality infrastructure, power supply and skills. Emerging opportunities are evident.

### **The AfCFTA raises new hopes of creating pan-African markets to support industrialisation**

On 21 March 2018, member states of the African Union (AU) convened in Kigali, Rwanda, to sign the AfCFTA. As of December 2019, all 54 African member states have signed the agreement (Tralac, 2019a), which was set to come into effect on 1 July 2020. The AfCFTA represents a flagship initiative at the core of the AU's Agenda 2063<sup>2</sup>, in following with its stated vision of making Africa a prosperous and peaceful continent based on inclusive growth, sustainable development, regional co-operation, integration and good governance (AU, 2015). The trade agreement sets the continent to become the largest trade bloc in the world, bringing together 1.2 billion people (UN, 2019).

Under the agreement, 90% of goods originating from an exporting country within the free trade area would be subject to preferential treatment (zero import tariffs) (UNCTAD, 2019b). As a result, it is calculated that intra-African trade could grow by 33% and Africa's total trade deficit could be halved (UNCTAD, 2018). The AfCFTA is also expected to boost the market for intra-African trade in services such as cross-border payments, telecommunications, infrastructure services and professional services (UNCTAD, 2016). It contains a specific Protocol on Trade in Services, although further liberalisation in services is part of future negotiations. The first phase will address the business, communication, financial, transport and tourism sectors. Countries are also negotiating frameworks to foster regulatory co-operation in the services sector (GIZ, 2019b). The United Nations Economic Commission for Africa (UNECA) estimates the AfCFTA could help push African consumer and business combined spending to USD 6.7 trillion by 2030, up from USD 2.7 trillion in 2015 (UNECA, 2019a; Brookings Institution, 2018b). Overall, the AfCFTA has the potential to accelerate industrial development, expand economic diversification and facilitate quality job creation across Africa (Signé, 2018).

Although an important step, much more needs to be done to create one single continental African market for both goods and services. This includes infrastructure development, in particular electricity, investment in human capital, improving production quality and lower costs of corporate debt, by developing regional financial markets. Government efforts should concentrate on stabilising the business environment and simplifying tax systems across countries. Further removing non-tariff barriers reduces uncertainties for exporters and may increase the gains from tariff removal up to fivefold.

### **Further AU initiatives to accelerate regional integration efforts**

Accelerating the development of Africa's productive sectors is critical to meet the continent's objectives. The AU's *Agenda 2063: The Africa We Want* provides a vision based on ten-year action plans to transform Africa into the global powerhouse of the future. Examples of pan-African AU initiatives (Kouassi, 2015a) include the Single African Air Transport Market (SAATM), the pan-African passport, and the Great Green Wall for the Sahara and the Sahel Initiative (GGWSSI). These initiatives underscore the removal of existing barriers to integration and the need for co-ordinated structural transformation and industrial development across Africa.

- The Single African Air Transport Market was established in January 2018 as part of the AU's Agenda 2063 (IATA, 2018). The initiative aims to liberalise civil aviation in Africa and be an impetus to the continent's economic integration and the free movement of people. African airlines carry less than 3% of passengers in Africa, and 80% of total air traffic is by non-African airlines (Proparco, 2016). It is estimated that liberalising routes for just 12 African countries would increase passenger traffic by 81%, creating more than 155 000 jobs and adding an extra USD 1.3 billion (0.1%) to the continent's annual GDP (InterVISTAS, 2014). To date, 32 AU member states have joined this initiative (AFCAC, 2019).
- The AU presented the adoption of a common passport in February 2019 to facilitate mobility across the continent such as student exchanges or business trips (AU, 2018). In addition, several African countries are liberalising their visa requirements and facilitating e-visas. Rwanda, for example, now gives citizens of African countries a visa on arrival. This policy resulted in a 24% increase in tourism, a 50% increase in intra-African trade and a 73% increase in trade with the Democratic Republic of the Congo (WEF, 2018). Starting in January 2020, Nigeria, Africa's largest economy (in 2017 US dollars), is set to give all African travellers visas on arrival, removing requirements to apply in advance (BBC, 2019).
- The Great Green Wall for the Sahara and the Sahel Initiative, a sustainable landscape programme launched in 2007, aims to address the social, economic and environmental impact of climate change, desertification and land degradation (AFF, 2014). The AU project, stretching over 20 countries from Dakar to Djibouti (FAO, 2016), is expected to absorb about 250 million tonnes of CO<sub>2</sub> and generate 10 million green jobs once completed in 2030 (UNCCD, 2019).

Apart from pan-African, continental initiatives such as those listed above, the Regional Economic Communities (RECs) are important actors for regional integration too. The AU recognises eight RECs<sup>3</sup> that facilitate, monitor, evaluate and co-ordinate the AU's Agenda (AU, 2015). These eight building blocks are designed to facilitate regional economic integration between members of the individual regions and through the overarching African Economic Community (AEC, as part of the AU) through a staged approach that involves a free trade area, and, down the line, a common market and monetary integration (AU, 2019a). The International Monetary Fund (IMF) attributes the increase in intra-regional trade to the development of the RECs, where tariffs are close to zero, over the last several decades (IMF, 2019b). According to IMF data, about 80% of all intra-African traded volumes flowed through RECs in 2015 (UNCTAD, 2017). In East Africa, COMESA and EAC are significantly contributing to regional integration by simplifying trade regimes for small-scale traders including informal traders, and by enabling cross-border mobile payments. Similar efforts have the potential to yield new trade opportunities in all eight RECs.

### **Developing strategic clusters of firms and economic zones can unleash productive transformation**

African governments have made significant strides in promoting regional clusters and special economic zones (SEZ) (UNCTAD, 2019c). Firms can benefit from clusters and economic zones when several steps are followed. First, it is critical to identify a good location for clusters by capitalising on the country's comparative advantage in specific sectors, its existing capabilities and

local assets for jobs and value addition. Proximity to strategic inputs, markets or infrastructure is also key for this step. The relatively higher density of companies, suppliers, service providers and associated institutions in a cluster can lead to higher spill-overs and knowledge transfers (AUC/OECD, 2019). Second, governments can attract new capabilities by investing in infrastructure (electricity and transport), ensuring regulatory predictability and efficiency, and setting up dedicated investment promotion agencies as one-stop shops for investors. Third, an effective cluster develops linkages through “match-making” between lead firms and local suppliers, by supporting industrial associations and training for local workers, financial support for suppliers’ upgrading and the engagement of local governments. Governments can thus mobilise investment beyond public spending to sustain clusters and economic zones through foreign direct investment (FDI). This systematic approach could generate additional spill-overs and enable knowledge and technology transfers. The concentration of FDI in the industrial sector is positive for technology transfers, an essential part of productive transformation. FDI in the same sectors will induce countries to compete with each other to attract investors, pressuring countries to improve their institutions and implement reforms (AUC/OECD, 2019). Ethiopia (Hawassa Industrial Park), Morocco (Tangier-Med) and Rwanda (Kigali Special Economic Zone, or KSEZ) are examples of recent clusters where governments provide access to quality infrastructure and a dependable regulatory environment, which has attracted world-class multinationals. For example, the KSEZ in Rwanda’s capital hosts multinationals operating in a wide range of sectors such as automotive, aeronautics manufacturing, textile, garments and shoe production. Firms that moved into the KSEZ saw a 206% increase in sales, a 201% increase in value added and 18% increase in permanent employees in comparison to firms that are not part of the KSEZ (AUC/OECD (2019)).

### **A focus on comparative advantages can strengthen regional production networks**

African governments can create stronger regional production networks and scale up their economies by focusing on their comparative advantages and addressing specific challenges. A shift in production towards semi-processed goods is expected to drive further growth in the coming years. Currently, African producers source 12.9% of their inputs from the continent itself for intermediate goods, while regional sourcing in Southeast Asia can be as high as 21.6%. The comparable figure for final goods stood at 17% of total exports. A better co-ordination of strategies between countries can help identify regional competitive advantages, strengthen existing linkages among firms and, consequently, increase regional sourcing. There is an overlap in industrialisation strategies in about 49% of the targeted sectors in the region. Yet the World Bank’s Enterprise Surveys indicate that more than 60% of African firms rely on their own ideas and skills to develop product innovations; in Nigeria, 85% of firms depend entirely on internal capabilities (World Bank, 2019c).

Co-ordinated regional strategies are important to curb capability gaps between large multinationals and small domestic firms. For example, increasing capital financing for small domestic firms can help them compete both nationally and at the continental level (UNCTAD, 2018). Additionally, strong linkages between multinationals and local economies are critically important for the creation of more quality jobs and for the promotion of better knowledge and technology transfer. Moreover, sharing and harmonising management practices and product standards across firms and regions can also bridge capability gaps. For example, in Ghana, the top 1% most productive firms produce on average 169 times more value added per firm than the other 99% (Teal, 2016).

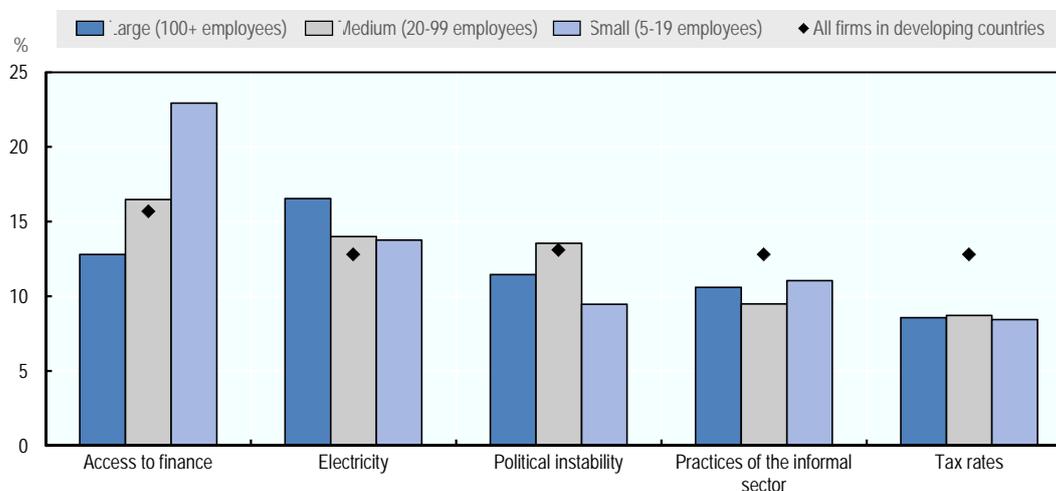
### **Enhancing firms' ability to thrive in new markets can ensure their survival**

African firms can harness the opportunities of intra-African trade and existing clusters to develop their business. The launch of the AfCFTA can facilitate the opening and access to new markets and enable firms to tap into new demands. For example, larger firms can benefit from larger economies of scale notably through a wider production and distribution base, while small and medium-sized enterprises (SMEs) can tap into new markets for their products or ideas (Parenti, 2018). In terms of global export, targeted policy schemes can support young exporting firms (OECD, 2017). Export Promotion Agencies' (EPAs) targeted schemes could increase young firms' survival rates (AUC/OECD, 2018). Moreover, EPAs could provide information on destination markets, facilitate trade-financing solutions and promote branding (AUC/OECD, 2018). The AfCFTA also gives African exporters the opportunity to thrive in new markets across the region through the removal of tariff and non-tariff barriers. However, African exporting firms experience a relatively low survival rate in new markets. On average, African exporting firms send 5.4 products to 2.5 destinations, whereas other developing countries export 5.9 products to 3.0 markets. To tackle this low survival rate, African firms could significantly benefit from joining business clusters and economic zones, allowing companies to acquire more experience through knowledge and technology transfers, benefit from existing business linkages, anticipate future trends and fine-tune production processes and management practices.

### **Key conditions to attract FDI relate to macroeconomic stability, governance and regulations**

Strengthening public governance and regulations fosters trust, transparency and alleviates investment barriers (OECD, 2016). Lower tax rates and low labour costs can be very appealing. However, alone they are not sufficient in fostering a conducive business environment. Stability and access to basic services are the basics for attracting FDI. Domestic political and macroeconomic stability and the dependability of the regulatory environment rank among the top determinants of FDI inflows (Figure 4.2).

**Figure 4.2. Top five constraints to doing business globally and in developing countries, by firm size**



Source: World Bank (2019c), *World Bank Enterprise Surveys* (database), as cited in AUC/OECD (2019), *Africa's Development Dynamics 2019: Achieving Productive Transformation*, <https://doi.org/10.1787/c1cd7de0-en>.  
 StatLink  <https://doi.org/10.1787/888933966808>.

Among the top factors to source from local suppliers are the skills of local suppliers. Clear governmental policies along with harmonised regional integration procedures can help create a stable business environment. For example, strong policies and institutions can provide for a better structure to attract more traditional and non-traditional sources of finance. Countries such as Côte d'Ivoire, Rwanda and Senegal have significantly improved their transparency International Index, which measures corruption perception levels (Transparency International, 2018). Their improvements can be attributed to the positive effects of their legal, institutional and policy reforms implementation. For efficient business environments, Côte d'Ivoire eliminated the requirement to notarise company deeds to start a business and expanded its credit bureau's borrower coverage (World Bank, 2019d). Senegal adopted a law that regulates all aspects of mediation, decreasing the time needed for property registration (World Bank, 2019d). Rwanda increased its foreign trade by removing trade restrictions including minimisation of border controls on goods moving between neighbouring countries. Mauritius has implemented important tax reforms and risk-based inspections and increased transparency in the administrative process of registering property. Such policies enabled Mauritius and Rwanda to rank among the top African countries when it comes to *Ease of Doing Business* (World Bank, 2019d).

## **Infrastructure challenges hinder regional integration and access to markets**

With growing regional demand induced by intra-African trade and the AfCFTA, it is necessary to enhance infrastructure to access regional markets. Better transportation, energy and digital infrastructure can improve connectivity and access to national, regional and continental markets. Adopting a regional approach to infrastructure reform could help overcome the inefficiencies that emerge as formal trade barriers such as tariffs and administrative procedures are reduced. Regional trade could benefit from dynamic regional corridors between land-locked areas and outlets on the coast. Indeed, the poor quality of Africa's transport infrastructure accounts for 40% of logistics costs in coastal countries and 60% in landlocked countries. Moreover, infrastructure financing remains challenging. Fiscal space is limited, with an average African tax-to-GDP ratio of 17.2% in twenty-six countries surveyed compared to an OECD average of 34.2%, although the AfCFTA is expected to boost tax revenues in the long run due to its positive impact on GDP (OECD/ATAF/AUC, 2019). Closing the infrastructure gap requires long-term solutions including common approaches to domestic resource mobilisation.

## **Investing in transport infrastructure can remedy existing bottlenecks and high costs**

Significant investments in transport infrastructure could facilitate Africa's integration in regional and global value chains and unlock private sector activity. African governments are collaborating on cross-border transport infrastructure to materialise this shared vision, as showcased by corridor initiatives between countries at the regional level. For example, the planned Kinshasa-Brazzaville Bridge road and rail project could alleviate logistic bottlenecks on the Congo River and potentially accommodate 3 million passengers and 2 million tonnes of freight annually by 2025. Another example is the "Central Corridor", which has lowered the cost of linking Central Africa to the Indian Ocean by connecting the Democratic Republic of the Congo (DRC) to the port of Dar es Salaam in Tanzania by road, rail and inland waterways through Burundi, Rwanda and Uganda (CCTTFA, 2019). In ECOWAS, the Abidjan-Lagos corridor facilitates trade between five countries (Benin, Côte d'Ivoire, Ghana, Nigeria and Togo). This initiative has been credited for reducing border crossing time and the large number of road checkpoints between member countries. Moreover, infrastructure corridors can play an important role in spatial development by enhancing the connectivity of rural areas. For example, the Walvis Bay transport corridor extends over and connects five Southern African Development Community (SADC) countries to Namibia. Additional initiatives are in progress such as Trans-African highway projects, which include a Cairo-Dakar highway and Algiers-Lagos highway.

## **Renewable, affordable energy provides opportunities for universal access and economic growth**

Energy demand in Africa is projected to triple by 2030 as the continent is industrialising and increasing access to an already growing population (IRENA, 2015). By 2040, one-in-two people added to the world population will be African and 580 million Africans will live in urban areas (IEA, 2019a). Countries in the region are thus confronted with the challenge of finding new sources of energy. Energy deficits are often cited amongst the most important constraints for doing business in Africa: inadequate energy infrastructure and access hamper firms' productivity and competitiveness. Although electricity production has expanded overall, it is still at the same per

capita level as it was in 2007 due to population growth. Countries in the region have unequal access to electrification, with access rates ranging from 83% for Gabon to only 5.6% in Chad. According to one simulation ran by International Energy Agency (IEA), 530 million Africans will still lack access to electricity and nearly 1 billion will have no access to clean cooking in 2030 under the 'Stated Policies Scenario' (IEA, 2019a).

Meeting growing energy demand at the national, regional and continental levels requires combining different sources of energy. The IEA projects that Africa's shift towards modern energy sources, such as renewables and natural gas and efficiency improvements, can fuel an economy four times larger than today with only 50% more energy (IEA, 2019a). Currently, Africa heavily relies on a mix of biomass and fossil fuels. While biomass accounts for approximately half of the continent's total primary energy supply, coal and natural gas account for about 14% each, and oil accounts for approximately 22%. Hydropower represents only about 1% of the total primary energy supply (IRENA, 2015). Regional energy markets can leverage comparative advantage by harnessing the enormous potential of renewable energy, which is becoming increasingly important in the overall energy mix. According to the IEA, solar photovoltaic would provide the cheapest source of electricity for many of the 600 million people across Africa without electricity access today (IEA, 2019a).

The energy potential of Africa is vast. The main energy potential of Central Africa and North Africa resides in hydropower. Other regions can leverage enormous water, wind and solar potential. High-profile examples include the Grand Ethiopian Renaissance Dam (GERD) under construction, the proposed extension of the Inga-III dam in the Congo River in the DRC, and the "Noor" solar power plant in Ouarzazate, Morocco, the largest in the world of its kind. Regional integration presents an opportunity to tackle energy deficiency through "power pools" and regional interconnections. Regional power pools could create savings of USD 41 billion per year by 2040. Additionally, the levelled cost of energy would lead to savings of between 6% (in Southern Africa) and 10% (East Africa) for end-users, equivalent to nearly USD 10 billion per year (Castellano et al., 2015). The Central African Economic and Monetary Community (CEMAC) recently established a Central African Energy Policy for 2035 to ensure reliable, efficient energy infrastructure for the region's physical integration (AfDB, 2019c). The Central African Energy Pool aims to create a regional energy market through physical connections (e.g. transmission lines) and harmonised regulations. Progress so far includes a Central African Electricity Procurement Code and a development fund for the region's electricity sector.

Decreasing prices of renewable energy create a business case for bridging Africa's infrastructure gap with green energy. South Africa has shown – through a large, USD 14 billion programme with the goal of providing 13 225 MW by 2025 – that renewable energy can deliver power at competitive prices (Eni, 2020). Moreover, governments can create competitive clusters in renewable energy. As investment in infrastructure is costly, lenders need political guarantees so that they can see returns on their investments in the long term. Access to finance and security of investment remain important constraints to expanding energy infrastructure. While Africa is not a major CO<sub>2</sub> emitter (4.3% projected increase from 2019 to 2040), the continent experiences first-hand the effects of a changing climate (IEA, 2019a). With 1.2 billion Africans living in areas where the average daily temperature exceeds 25 degrees by 2040, energy infrastructure must be climate-resilient (IEA, 2019b).

## Digital connectivity requires investments and the harmonisation of regulations

Mobile phone-based technology has the potential to offer immediate results in terms of digital inclusion as well as the provision of mobile-services platforms. The digital revolution has pushed the mobile phone penetration rate to 96% at the continental level, although the penetration of mobile broadband remains low. Africa's digital integration is also generating a new demand of skills. For example, 41% of all firms in Tanzania, 30% in Kenya, 9% in South Africa, and 6% in Nigeria, have identified inadequately skilled workforces as a major constraint to their productivity. Similarly, a lack of proficiency in digital skills remains a major hindrance for firms.

Attempts to put in place policies enhancing Information and Communications Technology (ICT) skills have already been made in African countries such as Botswana, Rwanda, Uganda and Zambia (Banga and Willem te Velde, 2018). Digitalisation has opened up the possibility to provide high-quality training on a large scale. In rural Niger, mobile phone-based training within the *Alphabétisation de Base par Cellulaire* project (Cellular Basic Literacy project) increased adults' writing and mathematics test scores by 20-25% higher than the standard adult literacy and numeracy programme. Similar efforts can progressively reverse Africa's low score on the *Global Talent Competitiveness Index* and enable African firms to grow, attract and retain talent (INSEAD, 2019). Countries such as Ghana, Kenya, Rwanda and Senegal have made significant strides toward this objective.

Digital transformation opened up new and larger markets across the continent via e-commerce platforms such as Nigeria-based Jumia or Kenya's M-Kopa, a solar energy company and possible next unicorn. New logistics and payment services such as M-Pesa or Orange Mobile Money can pave the way for the growth of e-commerce. Growth in the digital economy will require governments to: i) invest in connectivity; ii) invest in human capital; and iii) design new legislation and regulations around cyber security, on line payments, data protection, servers, privacy, and so on. To this end, African governments will be able to address low Internet use (only 23% of the population in Sub-Saharan Africa has mobile Internet access) and low broadband penetration in the majority of African countries (GSMA, 2019). Other notable efforts include the creation of regional ecosystems which combines mobile money systems, connectivity and innovative. For example, the member states of the West African Economic Monetary Union (WAEMU) are building an interoperable system that will connect 110 million people to more than 125 banks, dozens of e-money issuers, and more than 600 microfinance institutions (GSMA, 2019).

Digital government services can play a critical role in unlocking Africa's economic potential. For example, e-government has great potential to deliver more efficient and higher-quality public services. The South African e-procurement system, for example, allows open and transparent bidding on government tenders, and the e-filing initiative facilitates the electronic submission of tax returns and payments by taxpayers and tax practitioners (Mutula et al, 2010). Moreover, compliance costs decreased by 22.4% after the South Africa Revenue Service introduced e-filing. Rwanda and Kenya introduced mobile payment of taxes through their M-Service platforms in 2013 and 2014 respectively (AUC/OECD, 2019). At the continental level, governments have recognised that taking advantage of the opportunities of the AfCFTA requires the development of a robust digital identity and payment system (UNECA, 2018). Other key regional initiatives to pursue include: enacting model laws on telecoms, ICT and cybersecurity as well as a regulatory framework for cross-border

interconnections; attracting foreign investors in ICT infrastructure and security (following the Brazzaville Declaration); and creating regional Internet exchange points (AfDB, 2019d).

## Building a new consensus around sustainable development in Africa

While new business opportunities can be found in the various regional integration efforts, political alignment around Africa's development continues to build momentum. The Dakar Consensus, launched by several governments and international organisations in 2019, provides an African perspective on sustainable development that is of relevance to the private sector (see Box 4.2 below). Its goals are to promote productive transformation in Africa, produce more quality jobs and improve the well-being of the population. To achieve these goals, Africa requires greater and sustained investments in human capital, infrastructure and productive activities capable of strengthening complementarities at the regional and continental level. Discussions centred on levers to amplify investments and guarantee the sustainability of investments, in particular by changing the perception of risk. Additional private resource mobilisation – through banks, financial markets, funds, and savings – will be a key factor.

### Box 4.2. The Dakar Consensus

The Dakar international conference on *Sustainable Development & Sustainable Debt: Finding the Right Balance* was held on 2 December 2019. It was co-organised by the President of Senegal, the IMF, the United Nations and the Cercle des Économistes. It ended with a joint statement: "The Dakar Consensus".

#### The Dakar Consensus: Seven points of agreement

- Strengthen the mobilisation of domestic resources, taxes and public savings to finance development.
- Continuously improve public financial governance and the business environment.
- Take into account, for African countries, the particular constraints related to environmental impact, including climate change, and security expenditure in the face of the terrorist shock.
- Given the urgency of investment needs in Africa, development partners must take into account the value of assets in analysing the debt sustainability of each of the continent's countries.
- Combat unequal trade, in particular the low remuneration of raw materials and the still persistent deficit in the creation of value chains through local processing of products.
- Restore an objective view by international institutions of risk perception in Africa that is now exaggerated and has an impact on investment project ratings.
- Maintain collaboration between African countries and bilateral and multilateral partners for more equitable global financial governance and for Africa to be a driving force for global growth.

Source: Cercle des Économistes (2019), *The Dakar Consensus, International Conference – "Africa Sustainable Development & Sustainable Debt"*, <https://lecercledeseconomistes.fr/en/evenements/africa-sustainable-development-sustainable-debt>.

## PRIVATE SECTOR INSIGHTS ON THE FUTURE OF PRODUCTION IN AFRICA

This section features insights from companies that participated in the EMnet meeting on Africa held in Paris on 20 January 2020. It explores business views on the significant opportunities offered by the possibilities of regional integration in the region, as well as on some of the key policy solutions at the continental, regional and national level to unlocking this potential.

The African Continental Free Trade Area agreement, championed by the African Union Commission (AUC), raises new hopes of creating a pan-African market for the continent's industrialisation and socio-economic transformation. Companies at EMnet's meeting hail the AfCFTA agreement as an important starting point to reducing tariffs and liberalising trade in services, but indicate that more needs to be done. The mobility of labour and inter-African co-operation on investment policy remains critical to the success of pan-African business operations. The Regional Economic Communities (RECs) can help to advance bottlenecks at the regional level. Additionally, companies indicate that addressing non-tariff barriers (NTBs) can be the real game changer for the creation of regional markets: the harmonisation of norms and regulations, together with streamlining certification requirements, could promote intra-African trade further and boost the quality of exports. Companies see an important role for regional bodies in promoting further harmonisation and identifying best practices from international standards.

Regional production networks, which take into account comparative advantages, can lead to economies of scale and could be a way of realising the potential for Africa's industrialisation. Companies indicate that larger, regional markets have the potential to attract greater investments, but they also point to the need for a greater skills base and infrastructure provision, through additional investments in education, training and physical and digital infrastructure. Lowering risk perceptions and ensuring the security of investments were also seen as key factors to attract more FDI.

The final section dives deeper into costs across three areas which firms say are key to doing business in the region – transportation, energy and digitalisation – while making propositions on how these could be reduced.

### **The AfCFTA will reduce tariffs and provide a framework for further economic integration**

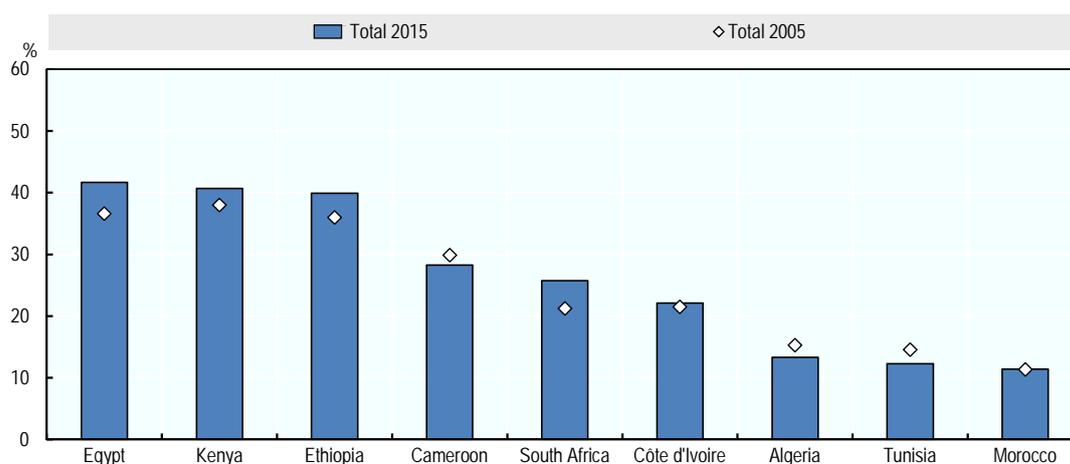
Companies welcome progress on lowering tariffs on goods, but are equally interested in the further steps that the AfCFTA framework will provide on liberalising trade in services, free movement of labour, and co-operation on investment towards a single continental. The AfCFTA is expected to enhance competitiveness at the industry and enterprise level through exploitation of opportunities for scale production, continental market access and better allocation of resources (Tralac, 2019a).

### **Liberalising trade in services is a critical aspect of regional integration**

Companies stress that further liberalisation of trade in and reduction of tariffs on services is needed to increase market access and regulate service provision on the continent. Services already account for more than 50% of GDP growth in Africa, while the share of industry and agriculture is projected to be declining further in the coming years (AfDB, 2020). Services further account for 75%

of greenfield investments, but only 22% of trade. Indeed, Africa only accounts for 2% of global services exports (GIZ, 2019b). Services such as ICT, marketing, transport or distribution play an important part in the value-added to the manufacturing, mining and agricultural sectors (see Figure 4.3 below); in 2015, services accounted for more than 40% of value addition in these sectors in Egypt, Kenya and Ethiopia (AUC/OECD, 2019).

**Figure 4.3. Services value-added contents in total export of manufacturing, mining and agricultural products in nine African countries**



*Note:* Total export of “manufacturing, mining and agricultural products” defined as ISIC codes D01 to 03 (agriculture) + codes D05 to 09 (mining) + codes D10 to 33 (manufacturing).

*Source:* Authors’ calculations of preliminary results based on the underlying data sources of OECD Inter-Country Input Output System for the 2018 TiVA indicators in AUC/OECD (2019), *Africa’s Development Dynamics 2019: Achieving Productive Transformation*, <https://doi.org/10.1787/c1cd7de0-en>.  
*StatLink*  <https://doi.org/10.1787/888933966637>.

As part of the AfCFTA, the Protocol on Trade in Services is a first step in the direction of service liberalisation (Tralac, 2019b). The 2019 WTO World Trade Report highlights that the barriers to increased trade in services lie in regulatory regimes deep behind borders (Drake-Brockman, 2019), which are typically difficult to adjust and constrain commercial service business across borders. Progress on trade in services also requires a number of countries to address the absence of rules-based national regulatory regimes before they can be aligned between countries (Erasmus, 2019).

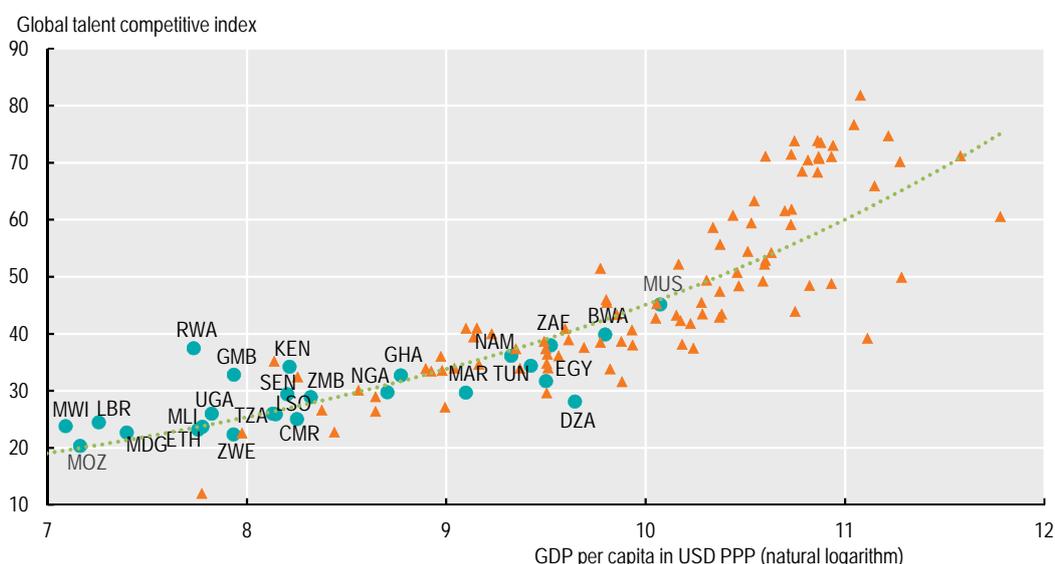
The AfCFTA can play its part by stimulating national regulatory regimes and their international alignment based on best practices, by stimulating market access and by lowering or abolishing surcharges such as that on international incoming telecommunications traffic that some countries have put in place. The first phase of the prospective negotiations focuses on five priority sectors: business, communication, financial, transport and tourism services. Negotiations of the remaining seven sectors is planned to follow thereafter (GIZ, 2019b). This development provides another impetus to policy makers to facilitate trade in services across the continent, whether through the RECs or at the continental level. Currently, five of the eight RECs have negotiated regional service

agreements or policies, allowing some firms to move from domestic markets only to servicing regional markets (GIZ, 2019b).

### Free movement of labour is important to overcome a shortage of skills

For their operations, companies need skilled labour, which is in short supply: for example, 41% of all firms in Tanzania and 30% of firms in Kenya indicate an inadequately skilled workforce as a major constraint to their productivity (AUC/OECD, 2019). The Global Talent Competitiveness Index ranks Africa lower than other developing regions when it comes to growing, attracting and retaining talent (AUC/OECD, 2019; INSEAD, 2019).

**Figure 4.4. Global Talent Competitive Index scores versus gross domestic product per capita**



Source: INSEAD (2019). *The Global Talent Competitiveness Index 2019*, <http://bit.ly/GTCI2019report>, as cited in AUC/OECD (2019), *Africa's Development Dynamics 2019: Achieving Productive Transformation*, <https://doi.org/10.1787/c1cd7de0-en>.  
StatLink  <https://doi.org/10.1787/888933966884>.

EMnet meeting participants indicate that increasing the freedom of movement, in particular for skilled labour, is critical to their operations. It can help match demand and supply of Africa's human capital and help companies find the right mix of skills when establishing new operations or subsidiaries in third countries. A recent survey found that internal talent mobility was important to 76% of respondents (Deloitte, 2019). Companies note that policy makers should ease the processes of visa approvals and work permits, citing examples of not being able to hire or move talented workers from one country to another. The AfCFTA or regional agreements can help to remove the obstacles to free movement of (skilled) workers between countries (AfDB, 2020). Experience in the SADC, where most members states have exempted each other from visa requirements, shows that

progress is possible, but also that potential imbalances in migration flows can slow down ratification of such protocols (UNECA, n.d.).

### **Enhancing investment through regional co-operation**

The AfCFTA not only reduces tariffs, it also provides a framework for future co-operation on investment. Several of the RECs already have active investment protocols that seek to stimulate foreign direct investment. The AfCFTA will now reduce tariffs and non-tariff barriers, which will lead to more factories being built across the continent as industries develop (Absa, 2020). Beyond that, the AfCFTA is to include a protocol on investment, competition and intellectual property rights in its Phase II (IISD, 2019), with negotiations currently in their early stages. The focus will likely be on supporting mainly intra-African investment, to promote socio-economic and industrial development and enhance competitiveness (Chidede, 2019). In several instances, participating companies in the EMnet meeting stress the importance of market access, notably in the infrastructure and telecommunications sectors. A protocol could for example tackle barriers to entry, facilitate the issuing of permits, enhance institutional co-ordination, or raise the bar for responsible business conduct (RBC) (Chidede, 2019). The private sector, through individual company actions and trade associations, will have a key role to play in supporting an all-of-industry approach to RBC. The OECD Guidelines for Multinational Enterprises can also help, providing non-binding principles and internationally recognised standards on RBC (OECD, 2018b).

A harmonised investment framework with effective dispute settlement remains a question to be addressed. Although companies welcome the progress in this field, they also stress the importance of creating a level playing field between domestic and multinational companies. At the continental level, co-operation on investment can build on the Pan-African Investment Code (PAIC), which was devised as a possible solution to the patchwork of international investment agreements in Africa. Although a non-binding document, this strategic framework adopted by the African Union member states reflects a first African consensus on the shaping of international investment law which can guide countries when engaging in investment negotiations (Mbengue, 2016; AUC, 2016).

### **The AfCFTA can support achievement of the Sustainable Development Goals**

The AfCFTA can also be instrumental to accelerate progress on the achievement of the Sustainable Development Goals (SDGs), as expanded trade, investment, and job creation will lead to greater economic and social development (Ndagijimana, 2020). In an example, while digitalising its African operations, the Italian energy company Eni is supporting the communities that host its operations through partnerships in line with the energy company's commitment to the SDGs, exploring new digitally-enabled ways of co-operation in Africa. Local communities can benefit from the development of digital infrastructure supported by Eni, as well as digital solutions and know-how at Eni's plants. They are further disseminated through projects in support of health, agriculture and education in collaboration with the community, strengthening mutual trust. Through public-private partnerships or partnerships with international organisations, companies can also scale their efforts (Mattei, 2019). In a partnership with the UN Food and Agricultural Organization (FAO), Eni has built wells in Nigeria, powered by solar power, to provide clean and safe water to internally displaced persons and host communities (Mattei, 2019).

With Africa being home to 30% of the world's mineral reserves, much attention has focused on using Africa's natural capital toward achieving the SDGs through a financial, economic, social and environmental contribution (UNEP, n.d.). However, African multinationals across sectors show examples of contribution to wider societal goals: Dangote Industries provides youth from its host communities with vocational training, the OCP Group collaborates with African farmers to promote sustainable agriculture, and MTN Group built over fifty multimedia centres in seven countries in an effort to boost digital education impacting thousands of students on the continent (Bello, 2019; OCP Group, 2020; MTN, 2019).

### **Lowering non-tariff barriers will unlock further opportunities**

Companies attending the EMnet business meeting note that addressing non-tariff barriers (NTBs) can be the real game changer when it comes to unlocking business opportunities on the African continent. They stress the need for harmonisation, but also underline the importance of quick implementation across jurisdictions. Provisions that improve the contractibility of intermediate goods are important to smooth out differences in contractual institutions and reduce uncertainty in international transactions (AUC/OECD, 2019). EMnet meeting participants indicate their willingness to contribute to a harmonisation process, via consultations in line with good regulatory practice, noting that trade associations and standard-setting bodies could play a key role in recognising international industry standards and quality assurance programmes. Estimates show that implementing the WTO Trade Facilitation Agreement would reduce trade costs in African economies by 16% (AUC/OECD, 2019).

Companies also mention the important role that the African Union Commission (AUC) and the Regional Economic Communities (RECs) can play in reducing trade barriers. They point to National Trade Facilitation Committees (NTFC) that the AUC has started preparing, empowering public-private partnerships for trade facilitation, and also highlight examples of REC co-operation in creating regional markets.

### **Customs procedures and border infrastructure are important to trade**

Businesses indicate that the cost on exports of lengthy customs procedures and poor border infrastructure can be more significant than that of tariffs, and that progress in this area, such as simplifying procedures and improving freight and warehousing management (including specialised facilities e.g. certified cold stores to enable cold chain<sup>4</sup>) at or near the border would be welcome. In this area, companies indicate the importance of clear, transparent and uniform guidance at border inspection posts and improvements in trade logistics. Already, regional policies have shown that 'quick wins' are possible: the implementation of the East African Community (EAC) Single Custom's Territory, for example, significantly reduced transit times (50%) and costs (30%) for goods at the Mombasa Port in Kenya.

Businesses also underline the importance of investing in cross-border, multimodal and holistic infrastructure. At present, for example, it takes over 200 hours to comply with export border procedures for maritime transport in Côte d'Ivoire and Cameroon, compared to 13 hours in OECD countries (World Bank, 2020a). In 2009, Africa did not have one-stop border posts (OSBPs). The Programme for Infrastructure Development in Africa identified 76 future OSBPs and realised ten of

them by 2016. The EAC in turn has operationalised 12 OSBPs by 2018, reducing transit times and costs in a move that is welcomed by businesses (EAC Secretariat, 2018).

### **Harmonising regulation, adopting common norms and equivalence agreements**

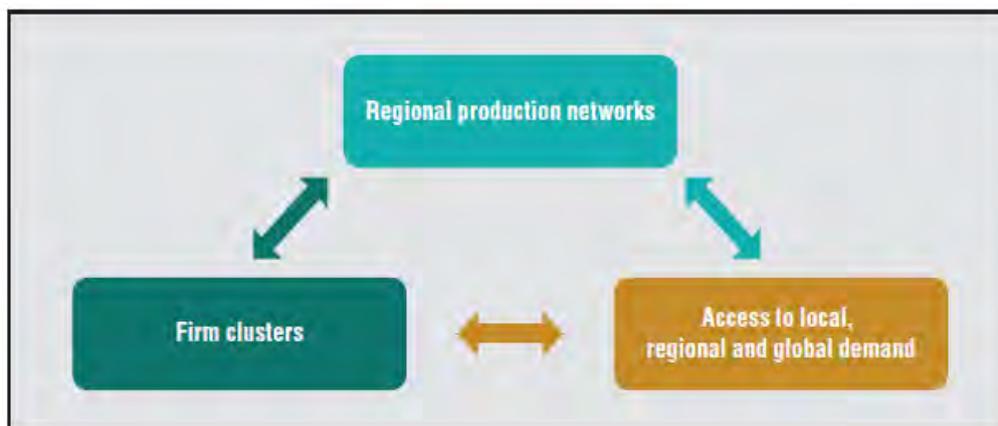
Adopting and implementing harmonised policies, common norms and regulatory equivalence agreements can significantly increase cross-border trade. Businesses express the importance of non-discriminatory, impartial, transparent and proportional regulations across jurisdictions and also indicate that regulations should be forward looking, taking into account technological innovations. In certain highly-regulated sectors, streamlining certification requirements; sanitary, phytosanitary and technical standards; and market approval requirements, notably in the areas of public and veterinary health; can enhance the volume and the quality of exports (AUC/OECD, 2019).

The development of common norms and reference to international standards are also necessary to decrease export costs and harmonise regulations. Regulatory equivalence could be achieved through mutual recognition agreements (MRAs), which can help reduce or eliminate the cost of re-testing and re-certifying goods, services and labour, thus enabling immediate entry into markets (AUC/OECD, 2019). Several regional bodies, e.g. COMESA, the EAC, ECOWAS and SADC, already have MRAs in place, although implementation across the RECs is advancing slowly.

### **Regional production networks can help to attract more FDI**

Foreign Direct Investment (FDI) in Africa remains small by global standards, but prominent in relation to GDP: the continent attracted 733 projects and USD 82 billion per year during the 2014-18 period, which represented 5.1% of African GDP in 2018 (EY, 2019). In order to help attract more investments to Africa, firms agree that a systemic approach of regional productive transformation can be adopted, focusing on three sets of policies: developing strategic clusters of firms; facilitating regional production networks; and enhancing firms' abilities to thrive in new markets (see Figure 4.5).

Figure 4.5. Three inter-related sets of policies to support African firms in productive transformation



Source: Authors' elaboration. AUC/OECD (2019), *Africa's Development Dynamics 2019: Achieving Productive Transformation*, <https://doi.org/10.1787/c1cd7de0-en>.

#### Regional markets have the potential to attract greater investment

Companies confirm that regional complementarities can provide new competitive advantages for African economies, and encourage governments to join forces to attract more FDI and help firms generate regional economies of scale. In this context, investment promotion strategies need further coherence at national and regional levels, to fine-tune the main selling points to investors and become more attractive globally (AUC/OECD, 2019). Creating regional financial markets can also create higher levels of liquidity. Ongoing initiatives to link regional stock markets can encourage cross-border investment and draw in more international investors (Garrido and Overdahl, 2019). SADC countries are already collaborating on expanded regional markets with higher levels of liquidity, in order to facilitate FDI and portfolio investments (SADC, n.d.).

#### Investors need a secure and stable environment for their business

A secure and stable environment is an important prerequisite to attract investment. Important elements for security of investment include a stable political environment (low political risk), a stable policy and regulatory environment, predictability of policy changes, and transparent procurement and tendering procedures. The enforceability of contracts and clear procedures for licences and permits are also key for the security of investment. Additionally, firms stress the importance of a stable and predictable fiscal environment and their regional harmonisation as a way of stimulating long-term investment. Only two Sub-Saharan African countries are among the top-50 in the World Bank's *Ease of Doing Business* ranking, while the region as a whole would rank 150<sup>th</sup> among 190 countries. From the largest economies, only Morocco (43), Kenya (56) and South Africa (87) make it in the top-100. Sub-Saharan economies performed best in the areas of getting credit (113). The region scored below average in terms of getting electricity (146), trading across borders (140)

and registering property (129). African countries with the most regulatory reforms in 2019 included Egypt, Kenya, Nigeria, Togo and Zimbabwe (World Bank, 2020a; World Bank, 2020b).

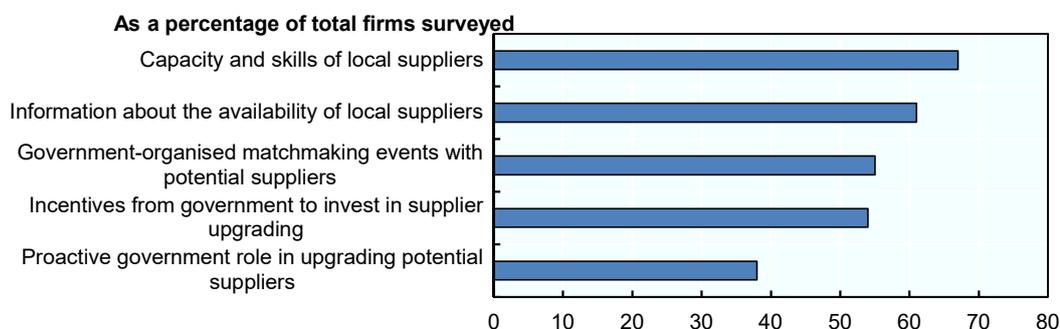
### **Basic infrastructure provision can unlock further investments**

Participants in the EMnet meeting agree that to meet the needs of Africa's growing population and domestic demands across sectors and industries, more investment in infrastructure is needed, particularly in transportation, energy, and digital infrastructure. The African Union Commission highlights how bridging the infrastructure gap can also be an economic opportunity for the private sector, if policy makers and companies work together on a common platform (AU, 2019b). The current infrastructure gap is estimated at 3.1-6.9% of GDP per year, and covers the investment needs for maintenance and replacement costs as well as new infrastructure construction. Gaps exist across sectors. In transport, for example, only one-third of Africans living in rural areas are within 2 km of an all-season road. With respect to investment trends in energy, projections show that it will take Africa until 2080 to achieve full electricity access, while current power outages hurt and drive up costs for businesses. And while the Internet can play an important role in promoting skills, entrepreneurship and SME development, only 15% of African households have Internet access, compared to two thirds in Central Asia. The gaps remain a major impediment to private sector development in Africa (Ashiagbor et al., 2018). Constraints to infrastructure development include a lack of well-structured, bankable investment opportunities; underdeveloped markets and regulatory barriers; and other issues related to the overall business environment. Unlocking further private sector investments in infrastructure requires addressing these constraints, for example by lowering (perceived) risk, market fragmentation and information asymmetries; by improving access to long-term financing; and by improving the enabling policy environment, including transparency and the local capacity to deal with these complex projects (Ashiagbor et al, 2018; AUC/OECD, 2019).

### **Companies need continuous investment in human capital**

Businesses stress the importance of a trained workforce in domestic SMEs, to be able to source from local suppliers (Figure 4.6). Efforts at the national and continental level focus on reducing the skills mismatch for socio-economic transformation, by equipping young people with the skills required by the labour market and by creating an environment that promotes innovation and start-up development. RECs too can play an important role. SADC, for example, has identified Centres of Specialisation and Centres of Excellence with the goal of developing technical capabilities in support of its industrialisation strategy (AUC/OECD, 2019; SADC 2012).

**Figure 4.6. What matters for foreign investment firms to source from local suppliers, in 2017**



*Note:* The total sample of the survey includes 750 multinational investors and corporate executives. The percentages represent respondents who answered “important” or “critically important” to the question “How important are the capabilities of local firms to act as suppliers in your decision to invest in developing countries?”

*Source:* OECD Development Centre, based on World Bank (2017a), *Global Investment Competitiveness Report: Foreign investor Perspectives and Policy Implications*, as cited in AUC/OECD (2019), *Africa’s Development Dynamics 2019: Achieving Productive Transformation*, <https://doi.org/10.1787/c1cd7de0-en>. StatLink  <https://doi.org/10.1787/888933966656>.

Large multinationals can also contribute in upskilling the workforce (Google, 2020; TechGig, 2019; Eni, n.d.). Technology companies such as Google and Facebook have made on line training courses available to young Africans (Digify Africa, n.d.). The energy company Eni has put programmes in place that boost digital skills of local employees as part of their digital transformation strategy, encouraging the adoption of new digital tools.

## Reducing cost of doing business in Africa can unlock further opportunities

Companies in the EMnet business meeting highlight important costs to doing business related to transportation and mobility, energy and digital access, and point to practical problems such as difficulties in obtaining visas or expensive broadband and roaming across different African countries.

### Transport and other mobility costs hamper private sector activity

Logistics costs present a challenge to businesses, especially related to transport and travel. The high cost of travel can include poor transport infrastructure and road safety. Companies in the EMnet meeting illustrate these points, noting that in certain instances it can be easier to import a container from China or ship goods to the United States, rather than from one African country to another. Data on global shipping confirm the high costs associated with some African ports. It is almost twice as expensive to ship a container from New York to Lagos compared with shipping to South Africa, even though Nigeria is much closer (Kazeem, 2018). Shipping from Asia (Shanghai) to Lagos was over 200% more expensive than shipping from Shanghai to Northern Europe or the Mediterranean (UNCTAD, 2019d). Ports in Sub-Saharan Africa are the least efficient of any region (World Bank, 2020a).

In addition to high monetary costs, road safety statistics also show that there are real, high costs in human health and human lives due to unsafe transportation: 90% of the world's fatalities on the roads occur in low- and middle-income countries, even though these countries have approximately 54% of the world's vehicles (WHO, 2020b). And while Africa only has 2.3% of the world's cars, it accounts for 16% of the world's road deaths, with more than 300 000 road traffic crash deaths per year (Global Alliance of NGOs for Road Safety, n.d.; UNECA, 2019b).

Businesses also see opportunities for the private sector to contribute, for example, to enhance roads, railroads, airports and hotels infrastructure. Public-private partnerships (PPP) could offer a way to unlock such opportunities (see last year's EMnet Policy Note – OECD, 2019). PPPs are long-term contractual arrangements between a government and the private sector in which the latter delivers and funds a public service using a capital asset while sharing the associated risk. Well-designed PPPs can bring greater efficiency and sustainability to infrastructure projects as they allocate risks to partners best suited to manage them, while harnessing the private sector's expertise in return for reasonable financial compensation (OECD, 2019). Hundreds of PPP infrastructure projects have taken off on the African continent, but African PPPs remain a small portion – between 2 and 12% – among the total number of these projects in emerging markets. Most of the projects are energy or transport PPPs, and most projects in Sub-Saharan Africa are concentrated in South Africa, Nigeria, Kenya and Uganda, which account for nearly half of the number of projects in the past 25 years. Domestic resource mobilisation remains difficult in many countries due to low tax revenues, weak banking systems and underdeveloped capital markets (World Bank, 2017b).

Finally, companies urge governments to address the ease of mobility for business travellers on the continent by liberalising visa regimes, lowering visa costs and enhancing the ease of acquiring a visa. According to the Africa Visa Openness Index, African citizens still needed a visa to travel to 51% of the other African countries in 2017, down from 54% in 2016. Ghana and Rwanda are among countries that have started to offer the possibility of visa on arrival (VOA) for a number of countries including those of the African Union, although subject to conditions and sometimes at a considerable fee (Accra airport; 2020; Rwanda 2020).

### **High energy costs act as a constraint on companies**

According to data from the International Energy Agency, many African economies are hampered by unreliable electricity supply and high energy costs (IEA, 2019a). In one study conducted in Nigeria, high connection costs were cited as the main reason for not being connected to the grid in 62% of cases (GTM Research, 2017). The cost to obtain a permanent electrical connection in Sub-Saharan Africa is 3 times higher than the global average, and 52 times higher than in OECD economies (World Bank, 2020a). Retail prices for road transport (gasoline and diesel) are also often higher than the world average, for example in Tanzania, South Africa, Ghana and Kenya, with the notable exception of a few hydrocarbon exporting countries that subsidise fuel in the domestic market such as Algeria, Angola, Egypt and Nigeria.

Regional integration of energy markets could help bring down energy costs. Estimates show that in a full energy integration scenario, power pools could save USD 33 billion per year by 2040 (PIDA, n.d.). In addition to power pools, a shift toward renewable and clean energy sources can reduce

energy costs and induce growth. For example, given the dynamism of Africa's intermediary cities, cross-border special economic zones can provide the scale required to accelerate the deployment of renewables in Africa (Traoré and Saint-Martin, 2020). Furthermore, the AfCFTA provides new opportunity to align energy policies such as network codes across the region. In its *Agenda 2063*, the AUC emphasises the implementation of the Grand Inga Dam Project,<sup>5</sup> a proposed mega project on the Congo River, as a development priority and a means to support regional power integration (AUC, 2015; AU, n.d.).

The IEA estimates that African electricity production capacity needs to increase to 270-600 GW by 2040, which in turn requires investments of USD 45 billion to USD 100 billion per annum (IEA, 2019a). The public sector, which includes governments, SOEs and development banks, can only fund a modest portion; consequently, the private sector can help to fill the gap. However, in 34 countries out of 43 in Sub-Saharan Africa, current regulatory frameworks for energy supply do not allow private sector participation in transmission and distribution activities (IEA, 2019a). Policy initiatives could focus on introducing regulatory frameworks conducive for private investment and developing financial instruments that de-risk debt and equity investments.

#### **Africa's digital economy remains fragmented and expensive**

Companies indicate that Africa's digital economy remains fragmented and expensive, particularly due to coverage gap and high costs of broadband Internet and roaming. While 35% of people in Sub-Saharan Africa did not have mobile Internet access in 2018, another 41% lived within the footprint of a network, but could not access mobile Internet services because of affordability issues, lack of digital literacy, and sometimes a lack of content in local languages (Richard, 2019). According to the Alliance for Affordable Internet, the average costs for 1 GB of data in Africa is 7.12% of the average monthly salary, subjecting citizens to the least affordable Internet prices in the world (A4AI, 2019).

High tariffs, low broadband penetration and slow Internet speed directly constrain the growth of the ICT industry (AUC/OECD, 2019). Digital and ICT companies find that inadequate regulatory frameworks and a lack of competition from global actors are often major constraints for the growth of the digital economy in Africa. Proposed policy actions for countries in the region include reforms to increase investments in mobile and fixed broadband infrastructure, strengthening competition among Internet service providers, and improving the quality/price ratio for ICT services (AUC/OECD, 2019).

Substantial progress has been made within and between RECs with regards to roaming costs, which, however, still remain a concern for the private sector. Past data show that Africans on average paid 25% of monthly gross national income (GNI) for mobile cellular calls, versus 11% in other developing nations (World Bank/AfDB, 2012). Companies in the EMnet meeting stress how international mobile roaming (IMR) charges are an impediment to doing business across borders. In 2018, the East African Communications Organisation (EACO) organised cross-border frequency co-ordination exercises to prevent forced roaming in border areas (Adepoju, 2018). Further south, recognising high roaming costs, 13 ministers of ICT of the SADC came together in 2019 and announced the gradual implementation of a proposed single roaming tariff (Myles, 2019). Negotiations took place under the umbrella of the Southern African Telecommunications

Association (SATA) and its Digital Launch Platform provides an interface of exchange of ideas and collaboration. Discussions about abolishing roaming charges have also started in ECOWAS through its Roaming Initiative, a regional initiative committed to free roaming services for voice, SMS and data in West Africa (Tralac, 2017; Adepaju, 2019).

## CONCLUSION

The future of regional production in Africa looks promising and regional integration is providing an additional impetus. The Africa Continental Free Trade Agreement, spearheaded by the African Union Commission, brought important political alignment around the creation of one pan-African market. Businesses can also benefit from further integration with regards to trade in services, investment and freedom of movement.

Companies believe that non-tariff barriers can be a real game changer that can boost intra-African trade and investment. National governments and regional bodies are important actors to achieve more harmonisation of regulations and widespread adoption of common norms or equivalence provisions, to make it easier to do business across African borders.

African countries can further boost their attractiveness to investors by creating economies of scale and by improving the enabling environment through enhanced security of investment, transparent regulations, basic infrastructure provision and the availability of skilled workers. Designing strategic clusters of firms and establishing special economic zones, in which governments provide access to quality infrastructure and dependable regulation, can further support industrialisation and regional specialisation. Finally, firms highlight how the high cost of doing business can act as a barrier to investment in Africa, citing examples of expensive transportation, lengthy customs procedures, high energy costs and difficult access to digital services. Public-private partnerships can help unlock more private investments in infrastructure, while governments can help bring down costs of cross-border business by lowering visas fees and requirements and by promoting the integration of the digital economy across country borders.

## Notes

- <sup>1</sup> Emerging Asia encompasses the People's Republic of China (hereafter "China"), India and the ten ASEAN member states: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic (hereafter: Lao PDR), Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam.
- <sup>2</sup> "Agenda 2063: The Africa We Want" is the Africa Union's blueprint and master plan to transform Africa in the global powerhouse of the future. Devised in 2013, it sets a strategic framework for the socio-economic transformation of the continent over the next 50 years. It builds on, and seeks to accelerate the implementation of past and existing continental initiatives for growth and sustainable development. It includes a series of flagship projects and five Ten Year Implementation Plans (see also AU, 2013).
- <sup>3</sup> The eight RECs are: the Arab Maghreb Union (UMA), the Common Market for Eastern and Southern Africa (COMESA), the Community of Sahel-Saharan States (CEN-SAD), 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), and the Southern African Development Community (SADC).
- <sup>4</sup> The 'cold chain' is a system of storing and transporting vaccines at recommended temperatures from the point of manufacture to the point of use (WHO, 2020c).
- <sup>5</sup> The Grand Inga Dam project, when completed, would generate over 40 000 MW of power, ensuring access to clean and affordable energy (AU, n.d.). The project would be located in the Congo River, the second-largest river in terms of flow after the Amazon, 50 km upstream in the western Democratic Republic of the Congo. The potentially transformative project is supported by a number of pan-African organisations, including AUDA-NEPAD, SADC, EAPP, and ESKOM, South Africa's largest utility. If completed, the dam would generate twice as much a power as the current largest dam in the world, China's Three Gorges Dam (International Rivers, n.d.) The project is experiencing significant take-off difficulties and shows large gaps in the planning (Misser, 2018).

## References

- A4IA (2019), *2019 Affordability Report*, <https://a4ai.org/affordability-report/report/2019> (accessed 20 March 2020).
- Absa (2020). *Absa Group: Why the AfCFTA is the key to unlocking the Africa-Europe corridor*, [www.absa.co.za/corporate-and-investment-banking/news-and-events/events/afcfta-the-africa-europe-corridor](http://www.absa.co.za/corporate-and-investment-banking/news-and-events/events/afcfta-the-africa-europe-corridor).
- Accra airport (2020), Visas and entry conditions in Ghana, web page, Kotoka airport – Accra international airport, [www.accra-airport.com/visa\\_on\\_arrival\\_ghana.php](http://www.accra-airport.com/visa_on_arrival_ghana.php) (accessed 23 March 2020).
- Adepoju, P. (2019), *West African states cement free roaming agreement*, IT Web Africa, (<https://itweb.africa/content/G98YdqLY3AZvX2PD>) (accessed 23 March 2020).
- Adepoju, P. (2018), *East Africa rallies to end forced roaming*, IT Web Africa, [www.itwebafrica.com/telecommunications/335-africa/244401-east-africa-rallies-to-end-forced-roaming](http://www.itwebafrica.com/telecommunications/335-africa/244401-east-africa-rallies-to-end-forced-roaming) (accessed 25 February 2020).
- AFCAC (2019), *Executing Agency*, [http://afcac.org/en/?option=com\\_content&view=article&id=109](http://afcac.org/en/?option=com_content&view=article&id=109).
- AfDB (2020), *African Economic Outlook 2020: Developing Africa's Workforce of the Future*, African Development Bank Group, Abidjan, [www.afdb.org/en/documents/african-economic-outlook-2020](http://www.afdb.org/en/documents/african-economic-outlook-2020) (accessed 28 February 2020).
- AfDB (2019a), *African Economic Outlook 2019: Macroeconomic performance and prospects*, African Development Bank Publication, Abidjan, [www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/2019AEO/AEO\\_2019-EN.pdf](http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/2019AEO/AEO_2019-EN.pdf).
- AfDB (2019b), *Annual Development Effectiveness Review 2019: Integrating Africa, Connecting People*, [www.afdb.org/fileadmin/uploads/afdb/Documents/Development\\_Effectiveness\\_Review\\_2019/ADER\\_2019\\_EN.pdf](http://www.afdb.org/fileadmin/uploads/afdb/Documents/Development_Effectiveness_Review_2019/ADER_2019_EN.pdf).

- AfDB (2019c), Central Africa Economic Outlook, African Development Bank, Abidjan, [www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/2019AEO/REO\\_2019-Central\\_Africa.pdf](http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/2019AEO/REO_2019-Central_Africa.pdf).
- AfDB (2019d), *African Economic Outlook 2019*, African Development Bank, Abidjan, [www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/2019AEO/AEO\\_2019-EN.pdf](http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/2019AEO/AEO_2019-EN.pdf).
- AFF (2014), The Great Green Wall of Sahara And Sahel Initiative, Climate Change And Gender Issue, [http://afforum.org/sites/default/files/English/English\\_79.pdf](http://afforum.org/sites/default/files/English/English_79.pdf).
- Afreximbank (2019), *African Trade Report 2019*, Afreximbank Publication, Cairo, [https://s3-eu-west-1.amazonaws.com/demo2.opus.ee/afrexim/African-Trade-Report\\_2019.pdf](https://s3-eu-west-1.amazonaws.com/demo2.opus.ee/afrexim/African-Trade-Report_2019.pdf).
- Ashagbor, D. et al. (2018), "Financing infrastructure in Africa", in *Banking in Africa: Delivering on Financial Inclusion, Supporting Financial Stability*, European Investment Bank, [www.eib.org/attachments/efs/economic\\_report\\_banking\\_africa\\_2018\\_en.pdf](http://www.eib.org/attachments/efs/economic_report_banking_africa_2018_en.pdf) (accessed 16 April 2020).
- AU (2019a), Regional Economic Communities (RECs), <https://au.int/en/organs/recs>.
- AU (2019b), *PIDA Week: Private and public sector partnerships key to unlocking Africa's infrastructure funding*, Press Release, Programme for Infrastructure Development in Africa, Addis Ababa, <https://au.int/en/pressreleases/20191126/pida-week-private-and-public-sector-partnerships-key-unlocking-africas> (accessed 16 April 2020).
- AU (2018), *New Year's Message of the Chairperson of the African Union Commission, Moussa Faki Mahamat*, <https://au.int/en/pressreleases/20181231/new-years-message-chairperson-african-union-commission-moussa-faki-mahamat>.
- AU (2015), AU 2063 Background Note, [https://au.int/sites/default/files/documents/33126-doc-01\\_background\\_note.pdf](https://au.int/sites/default/files/documents/33126-doc-01_background_note.pdf).
- AU (2013), Agenda 2063: The Africa We Want. <https://web.archive.org/web/20191213181702/https://au.int/en/agenda2063/overview> (accessed 27 February 2020).
- AU (n.d.), Grand Inga Dam Project, <https://au.int/en/flagships/grand-inga-dam-project> (accessed 25 February 2020).
- AUC (2019), *High level meeting of African Ambassadors of main countries of origin of African migrants in the Middle East and the Gulf Cooperation Council (GCC)*, Addis Ababa, <https://au.int/en/pressreleases/20191029/high-level-meeting-african-ambassadors-main-countries-origin-african-migrants>.
- AUC (2016), *Pan-African Investment Code*, <https://au.int/en/documents/20161231/pan-african-investment-code-paic> (accessed 13 March 2020).
- AUC (2015), *Agenda 2063 first ten-year implementation plan 2014-2023?*, Addis Ababa, <https://www.un.org/en/africa/osaa/pdf/au/agenda2063-first10yearimplementation.pdf>.
- AUC/OECD (2019), *Africa's Development Dynamics 2019: Achieving Productive Transformation*, AUC, Addis Ababa/OECD Publishing, Paris, <https://doi.org/10.1787/c1cd7de0-en>.
- AUC/OECD (2018), *Africa's Development Dynamics 2018: Growth, Jobs and Inequalities*, AUC, Addis Ababa/OECD Publishing, Paris, <https://doi.org/10.1787/9789264302501-en>.
- Banga and Willem te Velde (2018), *Digitalisation And The Future Of Manufacturing In Africa*, [https://set.odi.org/wp-content/uploads/2018/03/SET\\_Digitalisation-and-future-of-African-manufacturing\\_Final.pdf](https://set.odi.org/wp-content/uploads/2018/03/SET_Digitalisation-and-future-of-African-manufacturing_Final.pdf).
- BBC (2019), Nigeria's Muhammadu Buhari Promises Africans Visas On Arrival, [www.bbc.com/news/world-africa-50758323](http://www.bbc.com/news/world-africa-50758323).
- Bello (2019), *Corporate Social Responsibility: The Dangote Example*, Leadership, Nigeria, 25 March 2019, <https://leadership.ng/2019/03/25/corporate-social-responsibility-the-dangote-example> (accessed 23 April 2020).
- Brookings Institution (2019a), *Africa in Focus: France-Africa relations challenged by China and the European Union*, [www.brookings.edu/blog/africa-in-focus/2019/02/05/france-africa-relations-challenged-by-china-and-the-european-union](http://www.brookings.edu/blog/africa-in-focus/2019/02/05/france-africa-relations-challenged-by-china-and-the-european-union).

- Brookings Institution (2019b), *Foresight Africa: Top Priorities for the Continent*, Africa Growth Initiative, Washington, D.C., [www.brookings.edu/wp-content/uploads/2019/01/BLS18234\\_BRO\\_book\\_007\\_WEB.pdf](http://www.brookings.edu/wp-content/uploads/2019/01/BLS18234_BRO_book_007_WEB.pdf).
- Brookings Institution (2019c), *Foresight Africa: Spotlighting opportunities for business in Africa and strategies to succeed in the world's next big growth market*, [www.brookings.edu/research/spotlighting-opportunities-for-business-in-africa-and-strategies-to-succeed-in-the-worlds-next-big-growth-market](http://www.brookings.edu/research/spotlighting-opportunities-for-business-in-africa-and-strategies-to-succeed-in-the-worlds-next-big-growth-market).
- Brookings Institution (2018a), *Africa in Focus: Competing in Africa: China, the European Union, and the United States*, [www.brookings.edu/blog/africa-in-focus/2018/04/16/competing-in-africa-china-the-european-union-and-the-united-states](http://www.brookings.edu/blog/africa-in-focus/2018/04/16/competing-in-africa-china-the-european-union-and-the-united-states).
- Brookings Institution (2018b), *Capturing Africa's High Returns*, [www.brookings.edu/opinions/capturing-africas-high-returns](http://www.brookings.edu/opinions/capturing-africas-high-returns).
- Castellano, A. et al. (2015), *Brighter Africa: The Growth Potential of the Sub-Saharan Electricity Sector*, McKinsey, [www.icafrica.org/fileadmin/documents/Knowledge/Energy/McKensey-Brighter\\_Africa\\_The\\_growth\\_potential\\_of\\_the\\_sub-Saharan\\_electricity\\_sector.pdf](http://www.icafrica.org/fileadmin/documents/Knowledge/Energy/McKensey-Brighter_Africa_The_growth_potential_of_the_sub-Saharan_electricity_sector.pdf).
- CCTFA (2019), *Central Corridor Transport Observatory Report 2018*, Central Corridor Transit Transport Facilitation Agency, Dar es Salaam, Tanzania, <https://centralcorridor-ttfa.org/e-resources/#> (accessed 03 May 2020).
- Cercle des Économistes (2019), "The Dakar Consensus" – International Conference – "Africa Sustainable Development & Sustainable Debt", <https://lecercladeseconomistes.fr/en/evenements/africa-sustainable-development-sustainable-debt> (accessed 25 February 2020).
- Chidede, T. (2019), *How can the AfCFTA Investment Protocol advance the realisation of the AfCFTA objectives?*, [www.tralac.org/blog/article/14065-how-can-the-afcfta-investment-protocol-advance-the-realisation-of-the-afcfta-objectives.html](http://www.tralac.org/blog/article/14065-how-can-the-afcfta-investment-protocol-advance-the-realisation-of-the-afcfta-objectives.html) (accessed 26 February 2020).
- CIA (2019), *The World Factbook (Field Listing: Urbanization)*, [www.cia.gov/library/publications/the-world-factbook/fields/349.html](http://www.cia.gov/library/publications/the-world-factbook/fields/349.html).
- Deloitte (2019), *Leading the social enterprise: Reinvent with a human focus*, 2019 Deloitte Human Capital Trends Report for South Africa, [www2.deloitte.com/content/dam/Deloitte/za/Documents/human-capital/30\\_May\\_final\\_report\\_2019\\_HCtrends\\_MA\\_SOUTH\\_SOUTH%20AFRICA\\_Repro\\_Digital.pdf](http://www2.deloitte.com/content/dam/Deloitte/za/Documents/human-capital/30_May_final_report_2019_HCtrends_MA_SOUTH_SOUTH%20AFRICA_Repro_Digital.pdf).
- Digify Africa (n.d.), *Digital Skills for Africa's Future*, [www.digifyafrica.com](http://www.digifyafrica.com) (accessed 13 March 2020).
- Drake-Brockman, J. (2019), *Why regulatory cooperation matters for business*, Opinion Piece in World Trade Report 2019: The future of services trade, World Trade Organization, [www.wto.org/english/res\\_e/booksp\\_e/00\\_wtr19\\_e.pdf](http://www.wto.org/english/res_e/booksp_e/00_wtr19_e.pdf) (accessed 3 March 2020).
- EAC Secretariat (2018), *EAC Operationalizes 13 One Stop Border Posts*, East African Community, [www.eac.int/press-releases/142-customs/1276-eac-operationalizes-13-one-stop-border-posts](http://www.eac.int/press-releases/142-customs/1276-eac-operationalizes-13-one-stop-border-posts) (accessed 2 March 2020).
- Eni (2020), *New energy for Africa, from renewables to gas*, [www.eni.com/en-IT/low-carbon/renewable-energy-projects-africa.html](http://www.eni.com/en-IT/low-carbon/renewable-energy-projects-africa.html) (access 16 March 2020).
- Eni (n.d.), *Local development: a priority for Eni*, [www.eni.com/en-IT/just-transition/local-development.html](http://www.eni.com/en-IT/just-transition/local-development.html) (accessed 13 March 2020).
- Erasmus (2019), *What is the AfCFTA Approach to the Regulation of Trade in Services?*, [www.tralac.org/blog/article/14289-what-is-the-afcfta-approach-to-the-regulation-of-trade-in-services.html](http://www.tralac.org/blog/article/14289-what-is-the-afcfta-approach-to-the-regulation-of-trade-in-services.html) (3 March 2020).
- EY (2019), *How can bold action become everyday action?*, EY Attractiveness Program Africa September 2019, [www.africa-newsroom.com/files/download/85e818067c5cdc9](http://www.africa-newsroom.com/files/download/85e818067c5cdc9).
- FAO (2016), *Building Africa's Great Green Wall*, [www.fao.org/3/a-i6476e.pdf](http://www.fao.org/3/a-i6476e.pdf).

- Garrido, F. and Overdahl, S. (2019), African stock exchanges link up to boost liquidity, foreign investment, <https://w.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/50279868> (accessed 2 March 2020).
- Grand Thornton (2019), *The Fourth Wheel 2019 Private equity in the corporate landscape*, [www.granthornton.in/globalassets/1.-member-firms/india/assets/pdfs/the\\_fourth\\_wheel\\_2019.pdf](http://www.granthornton.in/globalassets/1.-member-firms/india/assets/pdfs/the_fourth_wheel_2019.pdf) (accessed 20 March 2020).
- GIZ (2019a), *AfCFTA – African trade pact launched*, Deutsche Gesellschaft für Internationale Zusammenarbeit, Addis Ababa, [www.giz.de/en/downloads/Policy%20Paper%20-%20Launch%20of%20the%20AfCFTA.PDF](http://www.giz.de/en/downloads/Policy%20Paper%20-%20Launch%20of%20the%20AfCFTA.PDF).
- GIZ (2019b), *AfCFTA and Trade in Services for development*, Xaver Keller, Deutsche Gesellschaft für Internationale Zusammenarbeit Discussion Paper, Addis Ababa, [www.giz.de/de/downloads/Policy%20Paper%20-%20Trade%20in%20Services.pdf](http://www.giz.de/de/downloads/Policy%20Paper%20-%20Trade%20in%20Services.pdf) (accessed 18 February 2020).
- Global Alliance for NGOs for Road Safety (n.d.), Africa Chapter, <https://roadsafetyngos.org/africa-chapter> (accessed 3 March 2020).
- Google (2020), *Announcing our first developer Space in Africa*, Google Africa blog, <https://africa.googleblog.com> (accessed 3 March 2020).
- GSMA (2019), *The Mobile Economy: Sub-Saharan Africa 2019*, GSMA Intelligence, London, [www.gsma.com/mobileeconomy/wp-content/uploads/2020/03/GSMA\\_MobileEconomy2020\\_SSA\\_Eng.pdf](http://www.gsma.com/mobileeconomy/wp-content/uploads/2020/03/GSMA_MobileEconomy2020_SSA_Eng.pdf).
- GTM Research (2017), *Living Under the Grid: 110 Million of Africa's Unconnected Customers Represent a Massive Opportunity*, GTM Research, New York, [www.greentechmedia.com/articles/read/living-under-the-grid-110-million-of-africas-unconnected-customers-represen](http://www.greentechmedia.com/articles/read/living-under-the-grid-110-million-of-africas-unconnected-customers-represen) (accessed 03 May 2020).
- IATA (2018), *IATA Welcomes Single African Air Transport Market but Says Effective Implementation is Key*, [www.iata.org/pressroom/pr/Pages/2018-01-28-01.aspx](http://www.iata.org/pressroom/pr/Pages/2018-01-28-01.aspx).
- IEA (2019a), *World Energy Outlook 2019*, International Energy Agency, Paris, [www.iea.org/reports/world-energy-outlook-2019](http://www.iea.org/reports/world-energy-outlook-2019).
- IEA (2019b), *Africa Energy Outlook*, International Energy Agency, Paris, [www.iea.org/reports/africa-energy-outlook-2019](http://www.iea.org/reports/africa-energy-outlook-2019).
- IFC (2019), *Bringing Africa up to high speed*, International Finance Corporation, Washington, D.C., [www.ifc.org/wps/wcm/connect/news\\_ext\\_content/ifc\\_external\\_corporate\\_site/news+and+events/news/cm-stories/cm-connecting-africa#page0](http://www.ifc.org/wps/wcm/connect/news_ext_content/ifc_external_corporate_site/news+and+events/news/cm-stories/cm-connecting-africa#page0) (accessed 23 March 2020).
- IISD (2019), *AfCFTA enters into force; Phase II on investment, competition, IPRs to last through 2020–2021*, International Institute for Sustainable Development, [www.iisd.org/itn/2019/06/27/afcfta-enters-into-force-phase-ii-on-investment-competition-iprs-to-last-through-2020-2021](http://www.iisd.org/itn/2019/06/27/afcfta-enters-into-force-phase-ii-on-investment-competition-iprs-to-last-through-2020-2021).
- IMF (2019a), *World Economic Outlook*, April 2019 (database), International Monetary Fund, Washington, D.C., [www.imf.org/external/pubs/ft/weo/2019/01/weodata/index.aspx](http://www.imf.org/external/pubs/ft/weo/2019/01/weodata/index.aspx) (accessed 23 May 2019).
- IMF (2019b), *Sub-Saharan Africa Regional Economic Outlook: Recovery Amid Elevated Uncertainty*, Washington, D.C., [www.imf.org/en/Publications/REO/SSA/Issues/2019/04/01/sreo0419](http://www.imf.org/en/Publications/REO/SSA/Issues/2019/04/01/sreo0419).
- INSEAD (2019), *The Global Talent Competitiveness Index 2019: Entrepreneurial Talent and Global Competitiveness*, Fontainebleau, France, [www.insead.edu/sites/default/files/assets/dept/globalindices/docs/GTCI-2019-Report.pdf](http://www.insead.edu/sites/default/files/assets/dept/globalindices/docs/GTCI-2019-Report.pdf) (accessed 28 February 2020).
- International Rivers (n.d.), *Grand Inga Hydroelectric Project: An Overview*, [www.internationalrivers.org/resources/grand-inga-hydroelectric-project-an-overview-3356](http://www.internationalrivers.org/resources/grand-inga-hydroelectric-project-an-overview-3356) (accessed 1 March 2020).
- InterVISTAS (2014), *Transforming Intra-African Air Connectivity: The Economic Benefits of Implementing the Yamoussoukro Decision*, [www.iata.org/en/iata-repository/publications/economic-reports/transforming-intra-african-connectivity-the-economic-benefits-of-implementing-the-yamoussoukro-decision-report2](http://www.iata.org/en/iata-repository/publications/economic-reports/transforming-intra-african-connectivity-the-economic-benefits-of-implementing-the-yamoussoukro-decision-report2).

- IRENA (2015), Africa 2030: Roadmap for Renewable Energy Future, [www.irena.org/-/media/Files/IRENA/Agency/Publication/2015/IRENA\\_Africa\\_2030\\_REmap\\_2015\\_low-res.pdf](http://www.irena.org/-/media/Files/IRENA/Agency/Publication/2015/IRENA_Africa_2030_REmap_2015_low-res.pdf).
- Kazeem, Y. (2018), It costs more to ship goods to Nigeria from the US than any other destination, <https://qz.com/africa/1417764/it-costs-more-to-ship-to-nigeria-from-the-us-than-anywhere-else> (accessed 20 March 2020).
- Kouassi, R. (2015), *L'Afrique : un géant qui refuse de naître – La solution, c'est de tout reprendre à zéro*, L'Harmattan.
- Mattei, M. (2019), *How important is the private sector to the development of Africa?*, ENI, [www.eni.com/en-IT/global-energy-scenarios/development-projects-africa.html](http://www.eni.com/en-IT/global-energy-scenarios/development-projects-africa.html).
- Mbengue, M. (2016), *The quest for a Pan-African Investment Code to promote sustainable development*, ICTSD, [www.ictsd.org/bridges-news/bridges-africa/news/the-quest-for-a-pan-african-investment-code-to-promote-sustainable](http://www.ictsd.org/bridges-news/bridges-africa/news/the-quest-for-a-pan-african-investment-code-to-promote-sustainable) (accessed 13 March 2020).
- Misser, F. (2018), *World's biggest non-existent dam gets bit bigger, bit further from existing*, <https://africanarguments.org/2018/04/11/worlds-biggest-non-existent-dam-gets-bit-bigger-bit-further-from-existing-congo-grand-inga> (accessed 1 March 2020).
- MTN Group (2019), Sustainability Report 2018, [www.mtn.com/wp-content/uploads/2019/03/MTN-Sustainability-Report.pdf](http://www.mtn.com/wp-content/uploads/2019/03/MTN-Sustainability-Report.pdf) (accessed 23 April 2020).
- Mutula, S.M. and J. Mostert (2010), "Challenges and opportunities of e-government in South Africa", *The Electronic Library*, Vol. 28/1, Emerald Group Publishing, Bingley, pp. 38-53, <http://dx.doi.org/10.1108/02640471011023360>.
- Myles (2019), *13 out of 15 SADC countries signed the MOU on the abolition of roaming charges*, Extensia, <https://extensia-ltd.com/2019/09/17/13-out-of-15-sadc-countries-signed-the-mou-on-the-abolition-of-roaming-charges> (24 February 2020).
- National Bureau of Statistics (2020), "National Economy Withstood the Impact of COVID-19 in the First Two Months", press release, 16 March, Beijing, China, [www.stats.gov.cn/english/PressRelease/202003/t20200316\\_1732244.html](http://www.stats.gov.cn/english/PressRelease/202003/t20200316_1732244.html).
- Ndagijimana, U. (2020), *Strategies for delivering on the Sustainable Development Goals: Some lessons from Rwanda*, Brookings, Africa in Focus, Washington, D.C., [www.brookings.edu/blog/africa-in-focus/2020/01/20/strategies-for-delivering-on-the-sustainable-development-goal-some-lessons-from-rwanda](http://www.brookings.edu/blog/africa-in-focus/2020/01/20/strategies-for-delivering-on-the-sustainable-development-goal-some-lessons-from-rwanda) (accessed 16 March 2020).
- Notre Dame Global Adaptation Initiative (2019), *ND-GAIN Country Index*, <https://gain.nd.edu/our-work/country-index>.
- Nyaira, S. (2020), "Ways Africa's Free Trade Area could help mitigate effects of COVID-19", Africa Renewal web page, United Nations Economic Commission for Africa, Addis Ababa, [www.un.org/africarenewal/web-features/coronavirus/ways-africa%E2%80%99s-free-trade-area-could-help-mitigate-effects-covid-19](http://www.un.org/africarenewal/web-features/coronavirus/ways-africa%E2%80%99s-free-trade-area-could-help-mitigate-effects-covid-19) (accessed 03 May 2020).
- OCP Group (2020), OCP Africa: a subsidiary dedicated to the development of sustainable agriculture in Africa, [www.ocpgroup.ma/en/who-are-we/our-commitments/our-commitments-alongside-africa](http://www.ocpgroup.ma/en/who-are-we/our-commitments/our-commitments-alongside-africa) (accessed 23 April 2020).
- Our world in Data (2018), *CO2 and Greenhouse Gas Emissions*, <https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions>.
- OECD (forthcoming), *COVID-19 and developing countries: What policies and partnerships to respond, reset and rebuild?*, OECD Publishing, Paris.
- OECD (2020), *OECD Economic Outlook, Interim Report March 2020*, OECD Publishing, Paris, <https://doi.org/10.1787/7969896b-en>.
- OECD (2019), *Infrastructure and regional connectivity*, 2019 Policy Note on Africa, OECD Emerging Markets Network, [www.oecd.org/dev/development-philanthropy/AfricaPolicyNote%202019.pdf](http://www.oecd.org/dev/development-philanthropy/AfricaPolicyNote%202019.pdf).
- OECD (2018a), *Active with Africa*, OECD Publishing, Paris, [www.oecd.org/africa/Active-with-Africa.pdf](http://www.oecd.org/africa/Active-with-Africa.pdf).
- OECD (2018b), *OECD Guidelines for Multinational Enterprises*, <https://mneguidelines.oecd.org/mneguidelines> (accessed 13 March 2020).

- OECD (2017), Enhancing The Contributions Of SMEs In A Global And Digitalised Economy, [www.oecd.org/industry/C-MIN-2017-8-EN.pdf](http://www.oecd.org/industry/C-MIN-2017-8-EN.pdf).
- OECD (2016), Promoting Productivity for Inclusive Growth in Latin America, Better Policies, OECD Publishing, Paris, <https://doi.org/10.1787/9789264258389-en>.
- OECD (2015), *OECD Investment Policy Reviews: Nigeria 2015*, OECD Publishing, Paris. [www.oecd.org/countries/nigeria/oecd-investment-policy-reviews-nigeria-2015-9789264208407-en.htm](http://www.oecd.org/countries/nigeria/oecd-investment-policy-reviews-nigeria-2015-9789264208407-en.htm) (accessed 3 March 2020).
- OECD/ATAF/AUC (2019), *Revenue Statistics in Africa 2019: 1990-2017*, OECD Publishing, Paris, <https://doi.org/10.1787/5daa24c1-en-fr>.
- Oqubay, A. (2020), "When COVID-19 Comes to Africa", *OECD Development Matters* Blog series, Paris, <https://oecd-development-matters.org/2020/03/17/when-covid-19-comes-to-africa>.
- Parenti, M. (2018), "Large and small firms in a global market: David vs. Goliath", *Journal of International Economics*, Vol. 110, pp. 103-118, <http://dx.doi.org/10.1016/j.jinteco.2017.09.001>.
- Pezzini, M. (2020), "Covid-19: time to unleash the power of international co-operation", *OECD Development Matters* Blog series, 26 March 2020, Paris, <https://oecd-development-matters.org/2020/03/26/covid-19-time-to-unleash-the-power-of-international-co-operation> (accessed 28 April 2020).
- PIDA (n.d.), *The PIDA Energy Vision*, [www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/PIDA%20brief%20Energy.pdf](http://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/PIDA%20brief%20Energy.pdf) (accessed 30 March 2020).
- Proparco (2016), *Air transport, a vital challenge for Africa*, Private Sector & Development, No 24, Proparco, Paris, [https://issuu.com/objectif-developpement/docs/revue\\_psd\\_24\\_uk/2](https://issuu.com/objectif-developpement/docs/revue_psd_24_uk/2).
- Richard, S. (2019), *3 reasons why most Africans aren't on the Internet – and how to connect them*, World Economic Forum, [www.weforum.org/agenda/2019/08/3-reasons-why-most-africans-arent-on-the-Internet-and-how-to-connect-them](http://www.weforum.org/agenda/2019/08/3-reasons-why-most-africans-arent-on-the-Internet-and-how-to-connect-them) (accessed 23 March 2020).
- Ritchie, H. and M. Roser (2018), "CO2 and Greenhouse Gas Emissions", *Our World in Data*, <https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions>.
- Rwanda (2020), *Visa on Arrival*, Web page, Rwanda Directorate General of immigration and Emigration, [www.migration.gov.rw/our-services/visa](http://www.migration.gov.rw/our-services/visa) (accessed 23 March 2020).
- SADC (2012), *Education and skills development*, [www.sadc.int/themes/social-human-development/education-skills-development](http://www.sadc.int/themes/social-human-development/education-skills-development) (accessed 3 March 2020).
- SADC (n.d.), regional indicative strategic development plan (RISDP) [www.sadc.int/about-sadc/overview/strategic-pl/regional-indicative-strategic-development-plan](http://www.sadc.int/about-sadc/overview/strategic-pl/regional-indicative-strategic-development-plan) (accessed 2 March 2020).
- Signé, L. (2018), "How can the new African free trade agreement unlock Africa's potential?", <https://oecd-development-matters.org/2018/10/22/how-can-the-new-african-free-trade-agreement-unlock-africas-potential>.
- Teal, F. (2016), "Firm Size, Employment and Value-added in African Manufacturing Firms: Why Ghana Needs Its 1 Per Cent", CSAE Working Paper Series, Centre for the Study of African Economies, Oxford Uni, [www.csae.ox.ac.uk/materials/papers/csae-wps-2016-07.pdf](http://www.csae.ox.ac.uk/materials/papers/csae-wps-2016-07.pdf).
- TechGig (2019), *Google provides free online digital course via Digital Skills for Africa platform*, <https://content.techgig.com/google-provides-free-online-digital-course-via-digital-skills-for-africa-platform/articleshow/68918836.cms> (accessed 3 March 2020).
- Tralac (2019a), *AfCFTA Legal Texts and Policy Documents*, Stellenbosch, South Africa, [www.tralac.org/resources/by-region/cfta.html#legal](http://www.tralac.org/resources/by-region/cfta.html#legal).
- Tralac (2019b), Stellenbosch, South Africa, [www.tralac.org/blog/article/14289-what-is-the-afcfta-approach-to-the-regulation-of-trade-in-services.html](http://www.tralac.org/blog/article/14289-what-is-the-afcfta-approach-to-the-regulation-of-trade-in-services.html).

- Tralac (2019c), *How can the AfCFTA Investment Protocol advance the realisation of the AfCFTA objectives?*, Stellenbosch, South Africa, [www.tralac.org/blog/article/14065-how-can-the-afcfta-investment-protocol-advance-the-realisation-of-the-afcfta-objectives.html](http://www.tralac.org/blog/article/14065-how-can-the-afcfta-investment-protocol-advance-the-realisation-of-the-afcfta-objectives.html) (accessed 26 February 2020).
- Tralac (2017), COMESA region set to abolish roaming charges, [www.tralac.org/news/article/12229-comesa-region-set-to-abolish-roaming-charges.html](http://www.tralac.org/news/article/12229-comesa-region-set-to-abolish-roaming-charges.html) (accessed 2 March 2020).
- Transparency International (2018), Corruption Perceptions Index, [www.transparency.org/cpi2018](http://www.transparency.org/cpi2018).
- Traoré, B. and E. Saint-Martin (2020), *Energising Africa's productive transformation: how intermediary cities can be a game changer*, OECD Development Matters Blog series, Paris, 6 March 2020, <https://oecd-development-matters.org/2020/03/06/energising-africas-productive-transformation-how-intermediary-cities-can-be-a-game-changer> (accessed 19 March 2020).
- UN (2019), *Africa's free trade area: the journey begins*, [www.un.org/africarenewal/magazine/august-november-2019/africa%E2%80%99s-free-trade-area-journey-begins](http://www.un.org/africarenewal/magazine/august-november-2019/africa%E2%80%99s-free-trade-area-journey-begins).
- UN/AIDS (2019), *People living with aids* (database), <http://aidsinfo.unaids.org>.
- UNCCD (2019), The Great Green Wall Initiative, [www.unccd.int/actions/great-green-wall-initiative](http://www.unccd.int/actions/great-green-wall-initiative).
- UNCTAD (2019a), *World Investment Report 2019*, United Nations Publications, New York [https://unctad.org/en/PublicationChapters/WIR2019\\_CH2.pdf](https://unctad.org/en/PublicationChapters/WIR2019_CH2.pdf).
- UNCTAD (2019b), *Rules of Origin Key to Success of African Continental Free Trade Area*, Geneva, <https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=2128>.
- UNCTAD (2019c), *World Investment Forum – Special Economic Zones*, Geneva, [https://unctad.org/en/PublicationChapters/WIR2019\\_CH4.pdf](https://unctad.org/en/PublicationChapters/WIR2019_CH4.pdf).
- UNCTAD (2019d), *Review of Maritime Transport 2019*, Geneva, [https://unctad.org/en/PublicationsLibrary/rmt2019\\_en.pdf](https://unctad.org/en/PublicationsLibrary/rmt2019_en.pdf) (accessed 23 March 2020).
- UNCTAD (2018), *African Continental Free Trade Area: Challenges and Opportunities of Tariff Reductions*, Geneva, [https://unctad.org/en/PublicationsLibrary/ser-rp-2017d15\\_en.pdf](https://unctad.org/en/PublicationsLibrary/ser-rp-2017d15_en.pdf).
- UNCTAD (2017), *From Regional Economic Communities To A Continental Free Trade Area*, Geneva, [https://unctad.org/en/PublicationsLibrary/webditc2017d1\\_en.pdf](https://unctad.org/en/PublicationsLibrary/webditc2017d1_en.pdf).
- UNCTAD (2016), *African Continental Free Trade Area: Some Issues in Liberalizing Trade in Services*, Geneva, [https://unctad.org/en/PublicationsLibrary/webditc2016d6\\_en.pdf](https://unctad.org/en/PublicationsLibrary/webditc2016d6_en.pdf).
- UNDESA (2019), *World Population Prospects 2019*, New York, [https://population.un.org/wpp/Publications/Files/WPP2019\\_Highlights.pdf](https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf).
- UNECA (2020), "ECA estimates billions worth of losses in Africa due to COVID-19 impact", webpage, [www.uneca.org/stories/eca-estimates-billions-worth-losses-africa-due-covid-19-impact](http://www.uneca.org/stories/eca-estimates-billions-worth-losses-africa-due-covid-19-impact).
- UNECA (2019a), *Civil Society organizations urged to play 'complimentary political roles'*, [www.uneca.org/stories/civil-society-organizations-urged-play-%E2%80%98complimentary-political-roles%E2%80%99](http://www.uneca.org/stories/civil-society-organizations-urged-play-%E2%80%98complimentary-political-roles%E2%80%99).
- UNECA (2019b), *Africa Poised to Accelerate Road Safety Action through the African Road Safety Observatory*, [www.uneca.org/stories/africa-poised-accelerate-road-safety-action-through-african-road-safety-observatory](http://www.uneca.org/stories/africa-poised-accelerate-road-safety-action-through-african-road-safety-observatory) (accessed 3 March 2020).
- UNECA (2018), "Vera Songwe advocates AfCFTA, digital identity, investment opportunities and strengthened partnerships at UNGA side events", press release, 1 October, United Nations Economic Commission for Africa, [www.uneca.org/stories/vera-songwe-advocates-afcfta-digital-identity-investment-opportunities-and-strengthened](http://www.uneca.org/stories/vera-songwe-advocates-afcfta-digital-identity-investment-opportunities-and-strengthened).
- UNECA (n.d.), SADC - Free Movement of Persons, [www.uneca.org/pages/sadc-free-movement-persons](http://www.uneca.org/pages/sadc-free-movement-persons) (accessed 2 March 2020).
- UNEP (n.d.), *Our work in Africa*, United Nations Environment Programme, Nairobi, [www.unenvironment.org/regions/africa/our-work-africa](http://www.unenvironment.org/regions/africa/our-work-africa).

- UN-Habitat and IHS-Erasmus University Rotterdam (2018), *The State of African Cities Report 2018: The geography of African investment*, UN-Habitat Publishing, Rotterdam  
[www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/The\\_State\\_of\\_African\\_Cities\\_-\\_Part\\_A.pdf](http://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/The_State_of_African_Cities_-_Part_A.pdf)
- Verisk Maplecroft (2018), *Emerging economies will slow down as temperatures rise*,  
[www.maplecroft.com/insights/analysis/emerging-economies-will-slow-down-as-temperatures-rise](http://www.maplecroft.com/insights/analysis/emerging-economies-will-slow-down-as-temperatures-rise).
- WEF (2018), Africans need the freedom to travel in their own continent. Here's why,  
[www.weforum.org/agenda/2018/01/africans-need-the-freedom-to-travel-in-their-own-continent-heres-why](http://www.weforum.org/agenda/2018/01/africans-need-the-freedom-to-travel-in-their-own-continent-heres-why).
- Wheatley (2020), "Surging dollar, coronavirus and oil slump hit emerging economies", Financial Times, London,  
[www.ft.com/content/69fc6e2a-69d3-11ea-a3c9-1fe6fedcca75](http://www.ft.com/content/69fc6e2a-69d3-11ea-a3c9-1fe6fedcca75).
- WHO (2020a), *Coronavirus disease 2019 (COVID-19): Situation Report – 46*, WHO, Geneva,  
[www.who.int/docs/default-source/coronaviruse/situation-reports/20200306-sitrep-46-covid-19.pdf?sfvrsn=96b04adf\\_2](http://www.who.int/docs/default-source/coronaviruse/situation-reports/20200306-sitrep-46-covid-19.pdf?sfvrsn=96b04adf_2).
- WHO (2020b), *Road Safety*, WHO | Regional Office for Africa, [www.afro.who.int/health-topics/road-safety](http://www.afro.who.int/health-topics/road-safety) (accessed 3 March 2020).
- WHO (2020c) *EPI Logistics*, WHO African Region: Ethiopia,  
[www.who.int/countries/eth/areas/immunization/epi\\_logistics/en/index1.html](http://www.who.int/countries/eth/areas/immunization/epi_logistics/en/index1.html) (accessed 13 March 2020).
- World Bank (2020a), *Doing Business 2020, Fact Sheet: Sub-Saharan Africa*, World Bank Group, Washington, D.C.,  
[www.doingbusiness.org/content/dam/doingBusiness/pdf/db2020/DB20-FS-SSA.pdf](http://www.doingbusiness.org/content/dam/doingBusiness/pdf/db2020/DB20-FS-SSA.pdf) (accessed 16 April 2020).
- World Bank (2020b), *Doing Business 2020, Fact Sheet: Middle East and North Africa*, World Bank Group, Washington, D.C.,  
[www.doingbusiness.org/content/dam/doingBusiness/media/Fact-Sheets/DB19/FactSheet\\_DoingBusiness2019\\_MENA\\_Eng.pdf](http://www.doingbusiness.org/content/dam/doingBusiness/media/Fact-Sheets/DB19/FactSheet_DoingBusiness2019_MENA_Eng.pdf) (accessed 16 April 2020).
- World Bank (2019a), *Africa's Pulse: An Analysis of Issues Shaping Africa's Economic Future (No. 20)*, World Bank, Washington, D.C., <https://elibrary.worldbank.org/doi/abs/10.1596/978-1-4648-1509-6>.
- World Bank (2019b), *Inflation in Emerging and Developing Economies: Evolution, Drivers, and Policies*, Washington, D.C., [www.worldbank.org/en/research/publication/inflation-in-emerging-and-developing-economies](http://www.worldbank.org/en/research/publication/inflation-in-emerging-and-developing-economies).
- World Bank (2019c), *World Bank Enterprise Surveys* (database), [www.enterprisesurveys.org](http://www.enterprisesurveys.org) (accessed February 2019).
- World Bank (2019d), *Doing Business: Training for Reform*  
[www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2019-report\\_web-version.pdf](http://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2019-report_web-version.pdf).
- World Bank (2018), *World Bank Indicators* (database), Washington, D.C., <https://data.worldbank.org/indicator>.
- World Bank (2017a), *Global Investment Competitiveness Report 2017/2018: Foreign Investor Perspectives and Policy Implications*, World Bank Group, Washington, D.C.,  
<https://openknowledge.worldbank.org/bitstream/handle/10986/28493/9781464811753.pdf>.
- World Bank (2017b), *Africa's Pulse – An analysis of issues shaping Africa's economic future*, World Bank Group, Washington, D.C.,  
<http://documents.worldbank.org/curated/en/348741492463112162/pdf/114375-REVISED-4-18-PMWB-AfricasPulse-Spring2017-vol15-ENGLISH-FINAL-web.pdf>.
- World Bank (2015), *Urbanization in Africa: Trends, Promises, and Challenges*, Accra,  
[www.worldbank.org/en/events/2015/06/01/urbanization-in-africa-trends-promises-and-challenges](http://www.worldbank.org/en/events/2015/06/01/urbanization-in-africa-trends-promises-and-challenges).
- World Bank/AfDB (2012), *The Transformational Use of Information and Communication Technologies in Africa*, Washington, D.C./Tunis,  
<http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/282822-1346223280837/MainReport.pdf>.

**For more information about the OECD Emerging Markets Network,  
contact the Secretariat:**

[dev.emnet@oecd.org](mailto:dev.emnet@oecd.org)

[www.oecd.org/dev/oecdemnet.htm](http://www.oecd.org/dev/oecdemnet.htm)

**EM»net**  
OECD EMERGING MARKETS NETWORK



Cornell  
SC Johnson College of Business  
Emerging Markets Institute