BUSINESS INSIGHTS ON EMERGING MARKETS 2018

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OECD EMERGING MARKETS NETWORK

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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 see http://www.oecd.org/dev/oecdemnet.htm.

FOREWORD

This edition of Business Insights on Emerging Markets captures the private sector's perspectives and approaches on what it will take to design and implement policies to promote economic and social development in emerging markets. A positive global economic outlook provides a window of opportunity to implement structural policy reforms, increase private investment and build a foundation for long-term inclusive growth.

Notwithstanding this window, the short-term outlook for emerging markets remains in some ways challenging. Escalating trade tensions, tightening financial conditions and political risks generate uncertainty. Furthermore, better growth prospects and expected higher interest rates could reorient investment flows, generating currency risks that some emerging economies are experiencing already. Asia's growth is expected to remain robust due to strong levels of consumption and investment, though uncertainty remains with regard to trade prospects. Latin America's economic recovery benefits from stabilising commodity prices but is undermined by trade tensions, weakening investor confidence and the erosion of the social fabric. In Africa, growth is driven by domestic demand, better macroeconomic management and increased diversification. However, progress remains uneven across countries and policies aimed at improving skills, business clusters and financing are necessary to support job creation, industrialisation and entrepreneurship.

Across all these diverse regional contexts, the private sector seeks to be a partner for inclusive growth — even in the face of some of these potential risks. Businesses have an opportunity to play a central role in achieving the 2030 Development Agenda and the Sustainable Development Goals (SDGs), advancing at the same time both corporate and community interests. Take, for example, the push for green investments. Declining prices in renewable energy is redirecting investments away from traditional fossil fuels. Effective climate policies, such as carbon pricing, can prove to be a cost-effective solution to reducing emissions and spurring innovation. Indeed, achieving the SDGs can open up new and untapped market opportunities.

How to best capitalise on the private sector's role in emerging markets for sustainable development is at the heart of why the OECD Emerging Markets Network (EMnet) exists. As the OECD Development Centre's business platform, EMnet brings together top executives, high-level government officials and senior OECD experts for a frank policy dialogue on doing business in the emerging economies of Africa, Asia and Latin America. It is precisely those EMnet meetings and working group discussions over the course of the last twelve months that fed this Business Insights on Emerging Market 2018. Thus, we very grateful to our EMnet members for participating in these debates and sharing their valuable insights, which this report captures and consolidates.

Let us now use this strong foundation to inspire additional policy discussions and greater inclusion of the private sector in a development policy dialogue that is mutually beneficial to all.

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

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Chapter 1 *"Investments from Emerging Markets: Comparing Government Support Policies Between China, Korea and Brazil"* was written by Lourdes Casanova and Anne Miroux of the Emerging Markets Institute of the Samuel Curtis Johnson College of Business at Cornell University. This chapter builds on a previous publication by both authors.

Chapter 2 *"Energy Challenges and Business Opportunities in Asia"* was drafted by Kate Eklin and Hannah Rothschild from the EMnet team. Federico Bonaglia, Kensuke Tanaka, Prasiwi Ibrahim, David Carnegie and Juita Mohamad of the OECD Development Centre also contributed insights to this chapter. This chapter also benefitted from useful comments from Siddhartha Roy, former Chief Economist of Tata Group, Anne Miroux and Lourdes Casanova of the Emerging Markets Institute of the SC Johnson College of Business at Cornell University.

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ABBREVIATIONS AND ACRONYMS

4G	Fourth generation
AACSB	Association to Advance Collegiate Schools of Business
ADB	Asian Development Bank
AEO	African Economic Outlook
AfCTFA	African Continental Free Trade Area
AfDB	African Development Bank
AGOA	African Growth and Opportunities Act
AIIB	Asia Infrastructure Investment Bank
AMBA	Association of MBAs
APG	ASEAN Power Grid
ASEAN	Association of Southeast Asian Nations
AU	African Union
BEECs	Building energy efficiency codes
BNDES	Brazilian Development Bank
CAF	Development Bank of Latin America
CAFTA-DR	Dominican Republic-Central American Free Trade Agreement
CAR	Central African Republic
CCS	Carbon capture and storage
CDB	Chinese Development Bank
CDP	Carbon Disclosure Project
CEEF	Clean Energy Equity Fund
CEMAC	Central African Economic and Monetary Community
CEN-SAD	Community of Sahel-Saharan States
CITES	Centre for Technological, Business and Social Innovation
CLM	Cambodia, Lao PDR and Myanmar
CLMRS	Child Labour Monitoring and Remediation System
CNG	Compressed natural gas
COMESA	Common Market for Eastern and Southern Africa
COP21	21st Conference of the Parties
CPEC	China-Pakistan Economic Corridor
CSR	Corporate social responsibility
CTGC	China Three Gorges Corporation

CwA	Compact with Africa
DFI	Development finance institution
DRC	Democratic Republic of Congo
EAC	East African Community
ECCAS	Economic Community of Central African States
ECLAC	Economic Commission for Latin America and the Caribbean
ECOWAS	Economic Community of West African States
EQUIS	European Quality Improvement System
ESG	Environmental, social, and governance
ETITC	Escuela Tecnológica Instituto Técnico Central (Colombia)
ETS	Emission trading system
EU	European Union
EV	Electric vehicle
FDI	Foreign direct investment
FET`	Fair and equitable treatment
FIT	Feed-in tariff
FTA	Free trade agreement
G20	Group of Twenty
G2P	Government to person
GDP	Gross domestic product
GEI	Global Energy Interconnection
GEIDCO	Global Energy Interconnection Development and Cooperation Organization
GERD	Gross domestic expenditure on research and development
GHG	Green-house gas
GVC	Global value chains
GW	Gigawatt
ICC	International Code Council
ICI	International Cocoa Initiative
ICT	Information and communication technology
IDB	Inter-American Development Bank
IEA	International Energy Agency
IFC	International Finance Corporation
IGAD	Intergovernmental Authority on Development
ILO	International Labour Organization

IMCO	Mexican Institute for Competitiveness
IMF	International Monetary Fund
IoT	Internet of Things
ISA	International Solar Alliance
IT	Information technologies
ITU	International Telecommunications Union
IWMP	Integrated Watershed Management Programme
KOTRA	Korean Investment and Trade Agency
LCR	Local content requirements
LNG	Liquefied natural gas
LPG	Local Promotion Group
M&A	Mergers and acquisitions
MBA	Master of business administration
MDG	Millennium Development Goal
MENA	Middle East and North Africa
MIGA	Multilateral Investment Guarantee Agency
MinTIC	Ministry of Information Technologies and Communications
MNE	Multinational enterprise
MSE	Micro and small scale enterprise
Mtce	Million tons of coal equivalent
MW	Megawatt
MWh	Megawatt-hour
NAFTA	North American Free Trade Agreement
NDB	New Development Bank
NGO	Non-governmental organisation
OBOR	One Belt One Road Initiative
OCP	Office Chérifien des Phosphates
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
OFDI	Outward foreign direct investment
PHES	Pumped-heat electrical storage
PIAAC	Programme for the International Assessment of Adult Competencies
PISA	Programme for International Student Assessment
PPA	Purchasing power agreement

PPP	Purchasing power parity/Public-private partnerships
PV	Photovoltaic
R&D	Research and development
RBC	Responsible business conduct
RCEP	Regional Comprehensive Economic Partnership
REC	Regional Economic Community
REIPPPP	Renewable Independent Power Producer Procurement Programme
ROI	Return on investment
SACF	Sino-Arab Chemical Fertilizers Company
SADC	Southern African Development Community
SDGs	Sustainable Development Goals
SEZ	Special economic zone
SGCC	State Grid Corporation of China
SME	Small and medium-sized enterprise
SOE	State-owned enterprise
SR4Y	Safe Roads 4 Youth Initiative
STEM	Science, technology, engineering and mathematics
TAGP	Trans-ASEAN Gas Pipeline
T&D	Transmission and distribution
TCFD	Task-Force on Climate-related Financial Disclosures
tCO_2e	Tonnes of carbon-dioxide equivalents
TFP	Total factor productivity
Toe	Tonnes of oil equivalent
TPES	Total primary energy supply
TPP	Trans-Pacific-Partnership
TPSDI	Tata Power Skill Development Institute
UHV	Ultra-high voltage
UMA	Arab Maghreb Union
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific and Cultural Organization
VAT	Value-added tax
VET	Vocational education and training

VOA	Visa on arrival
WAPP	West African Power Pool
WEF	World Economic Forum
WorldGBC	World Green Building Council
WWF	World Wildlife Fund

EXECUTIVE SUMMARY

Business Insights on Emerging Markets 2018 provides a private sector perspective on investment opportunities and challenges in Asia, Latin America and Africa. This publication brings together analyses and insights from meetings of the OECD Development Centre's Emerging Markets Network (EMnet) and interactions with its corporate members. A chapter by the Emerging Markets Institute, Cornell S.C. Johnson College of Business at Cornell University complements this publication with a comparative study of policies promoting outward foreign direct investment (OFDI) in Brazil, China and Korea.

Investments from emerging markets: Comparing government support policies between China, Korea and Brazil

While most developing and emerging economies have designated policies to attract inward investment, many are still shy about putting forward equally effective outward FDI policies. Brazil, the People's Republic of China (hereafter "China") and Korea are among the few countries that have adopted proactive OFDI policies, to support some of the largest investors in their respective regions. While Latin America was a forerunner in the first phase of the OFDI expansion from emerging markets in the 1970s, in more recent years, Asian countries such as Korea and China have been able to increase OFDI through a number of supportive economic policies. Implemented reforms include the easing of OFDI restrictions, pro-market strategies and the promotion of an internationalisation of domestic firms. Continued support for these efforts is nonetheless less clear in the current global context and remains contingent on how emerging economies continue to adapt to the end of the commodity super cycle in countries like Brazil, as well as increased oversight of OFDI activities in countries like China.

Energy challenges and opportunities in Asia

Emerging Asia is expected to grow at 6.6% in 2018 while the positive trend is due to continue in 2019, thanks to strong levels of consumption and investment. Developing the energy sector will be critical to supporting this economic expansion, considering that the demand for energy will more than double in India and Southeast Asia from 2013 to 2040. In this context, Asian countries are faced with the challenge of increasing private investment in the energy sector. Asia continues to be an attractive destination for energy investments. The region has become the leading player in renewable energy, attracting more the 50% of global renewable energy investments. Technological improvements, supportive policy reforms and a broadened consumer base have opened up market opportunities and increased Asia's attractiveness. Nevertheless, a number of roadblocks to the overall investment climate remain. Political risks, infrastructure gaps and FDI restrictions weigh down on the region's investment prospects. Designing policy reforms to enhance the business climate, improving access to affordable long-term finance and reducing the current skills shortage can help unlock further investment from the private sector and reduce the infrastructure gap.

Navigating uncertainty: Strategies for innovation and growth

Latin America and the Caribbean's economic outlook has improved after years of slowdown to reach between 2% and 2.5% of growth in 2018. However, uncertainty generated by global trade tensions can still have a negative impact on the region's economic prospects and on its business attractiveness. Furthermore, a number of internal and external challenges remain, such as growing protectionist sentiments, low productivity and a lack of trust in public institutions. Investments in innovation and skills can prove to be effective drivers of growth, particularly to decrease current skills shortages, create effective and efficient financial markets, improve transparency, upgrade regional infrastructure and encourage the adoption of digital technologies.

The future of Africa: Industrialisation, technology and entrepreneurship

With an economic growth forecasted at 3.8% in 2018, industrialisation is a critical driver for Africa that can help translate this positive outlook into higher competitiveness, more investment and job creation. Tapping into the private sector's full potential to support renewed industrialisation efforts will require a sustained commitment from governments to create a sound investment climate, develop skills, support entrepreneurship and develop infrastructure, particularly in the transport, energy and digital sectors. Government policies can further support entrepreneurs particularly in high-growth potential industries like agro industries and horticulture, where African countries can have a competitive advantage. The development of renewable energy solutions, on the other hand, is an encouraging prospect to improve access to electricity, a key business concern on the continent. Furthermore, infrastructure development can enhance connectivity and regional integration, which are critical drivers of chnage in light of the recently signed African Continental Free Trade Area.

Better business for 2030: Putting the SDGs at the core

In September 2015, the United Nations adopted the 2030 Agenda for Sustainable Development and established the 17 Sustainable Development Goals (SDGs). Firms are increasingly recognising that there is a business case for placing SDGs at the centre of decision-making processes. Adopting sustainable practices can benefit companies in many ways, including enhancing competitiveness, opening up new market opportunities and increasing the capacity to attract and retain talents. The private sector can constitute a key partner in working towards more sustainable economies by bringing its capacity for innovation and its means to replicate successful experiences. However, a number of hurdles persist, such as a lack of awareness of the SDGs in the business community, short-term profitability considerations and sustainability not being seen as a strategic corporate priority. Governments have a role to play to address these issues and create the conditions for more inclusive business models to emerge, while firms can work on giving a more prominent role to sustainability and accountability considerations.

Energy investment and carbon pricing in emerging markets

The shift to a greener economy can drive growth and create business opportunities. Both investments in renewable energy and the adoption of carbon pricing practices are drivers of the transition towards a low-carbon economy and constitute key areas in which the private sector has

an important role to play. Global energy investment declined in 2016 but new opportunities are emerging. Notably, the renewable sector continues to attract investors, driven by emerging markets such as China, India and Brazil. New technologies such as off-grid and mini-grid solutions are changing the way energy systems function, while digitalisation is presenting firms with new business opportunities. At the same time, firms have increasingly adopted carbon-pricing practices to support green innovation, manage climate-related risks and anticipate future climate policies. Governments can support the private sector's transition towards a greener economy by providing the right incentives to adopt sustainable practices. Policies must be stable, coherent and transparent, in order to ensure an equal treatment of firms while taking into account the potential upward pressure on consumer prices.

Investments from emerging markets: Comparing government support policies between China, Korea and Brazil

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While most developing and emerging economies have designed policies to attract inward foreign direct investment (FDI), others are still shy about putting forward equally bold outward FDI (OFDI) policies. Only a few countries have adopted pro-active policies to support OFDI. This chapter looks at the role of the state in OFDI expansion and focuses on three countries: 1) Brazil, the largest outward investor from Latin America; 2) the People's Republic of China (hereafter "China") and 3) Korea, the top two investors from Asia.

Key messages include:

- Although Latin America dominated OFDI growth from emerging markets in the early 1990s, recent years have seen Asia first catch up and eventually lead in OFDI expansion from emerging markets.
- The state plays a significant role in supporting OFDI. In the cases of Brazil, China and Korea, OFDI was accompanied by economic, institutional and political reforms.
- While OFDI support-promotion policy began in Korea slightly earlier than in China, the latter has become very active in this area in recent years. For both economies, strong policy support was instrumental to the observed surge in OFDI flows.
- Brazil has also encouraged outward FDI, but the nature of its support has been less pro-active and less consistent compared with that of China and Korea - a divergence that partly explains the difference in their OFDI performances.

INTRODUCTION

Emerging economies have long developed clear policies to attract FDI in their domestic economies and have built institutions - the so-called investment promotion agencies - dedicated to fomenting inward FDI. In the case of OFDI, however, the picture is still quite different. In spite of the shift that took place among emerging economies towards increased liberalisation and a more supportive position on OFDI - especially since the 1980s - the number of emerging economies with proactive OFDI promotion policies is still limited.

China, in this respect, is the most notable outlier, since it moved, in less than two decades, from an OFDI policy of overwhelming restriction to enthusiastic promotion and support. Its “Go Global” strategy is a dramatic illustration of this shift and its far-reaching implications. Indeed, since its adoption in 1999, the “Go Global” strategy has set in motion the largest surge in outward investment in history in such a short period, championed by Chinese multinationals. Although the initial surge was motivated by the need of China to secure access to natural resources, it focused in later stages on services and beyond. Korea is another success story, progressively liberalising its OFDI policies since the early 1980s and adopting a large number of proactive support measures to encourage Korean firms to invest abroad. Other Asian emerging markets such as Singapore and Malaysia followed Korea’s lead in OFDI support, while Latin America - which promotes inward FDI - has yet to match its support for outward FDI with that of its inward investments, with the exception of Brazil.

In what follows, we examine the various phases of OFDI evolution comparing China, Korea and Brazil. As we shall see, these phases did not affect all three countries equally. In fact, while Brazil flourished in the first phase of OFDI, it lost out in the following periods just as Asia became the leader among emerging markets in OFDI expansion. Since 2014, a new phase of OFDI development has surfaced, which (to date) is marked by heightened uncertainty, a turn towards inward-looking policies in the west, and a globalisation push among leading emerging markets, mainly China and Korea, while Brazil may take a more inward looking approach.

PHASE ONE: LATIN AMERICAN LEADERSHIP WITHIN THE EMERGING MARKET OFDI (1970–1982)

The first phase of emerging market OFDI expansion began in the early 1970s and was spearheaded by Latin America. Brazil is very much representative of this period, with a number of Brazilian companies establishing operations in their so-called “natural markets” - i.e., countries with a shared cultural affinity and/or a geographical proximity (see Casanova and Kassum, 2014). Many family-owned companies in particular, Odebrecht, Votorantim, Camargo Corrêa, Andrade Gutierrez, Tigre, and WEG as well as Petrobras, the oil giant, began business operations abroad during this period. Target markets included not only Latin American countries but also Spain and Portugal, as well as Portuguese-speaking African countries.

This trend was made possible by the “economic miracle” of the 1960s-70s, during which expansionist policies unleashed a prosperous cycle of industrialisation-focused growth. The process began during the Juscelino Kubitschek (1956-1961) administration, which promoted protectionist policies to develop local industries, but also opened up the economy to foreign companies, especially in the automobile industry. These economic forces incentivised small family companies to expand from their regional centres and into the entire domestic market to fend off foreign competition - paving the way for later experiments in international expansion.

Meanwhile, China and Korea were comparatively far behind. In Korea, from the 1970s until the mid-1980s, OFDI remained quite negligible. A number of regulations and conditions (such as pre-approval and strict foreign exchange controls) constrained outward investment. During the same period, China maintained the classic characteristics of a “closed country”. China then only had a few state-owned foreign trade companies, whose investment projects were highly regulated by the Ministry of Foreign Trade and only approved on a case-by-case basis. With the exception of a few projects undertaken in partnership with state-owned companies, foreign investment into China - not to mention OFDI - was rare.

PHASE TWO: THE START OF ASIAN OFDI AND THE DEBT CRISIS IN LATIN AMERICA (1983–1992)

Following the boom period of the 1960s and 1970s, Brazil and Latin America suffered a long period of economic stagnation triggered by the 1980s debt crisis. Hard pressed by freefalling sales at home, internationalisation became the only viable option for companies to keep growing. Construction firms were especially vulnerable in the face of public investment cuts, and as a result, foreign markets became a lifeline. Odebrecht, for instance, which already had infrastructure projects in Chile and Peru, entered Africa by 1984 with the construction of an Angolan hydroelectric power plant. Meanwhile, swift and comprehensive institutional and political reforms signalled a major change in China, including decentralisation of power, the gradual reform of the agricultural sector and the partial liberalisation of certain industries. Ultimately, this move provided a significant opportunity for the private sector.

China broke ground by establishing new special economic zones (SEZs), which gave Chinese authorities unique means to attract foreign enterprises (Martinek, 2014). The first four special economic zones were created in 1980 in the country’s south-eastern coastal region where local governments provided tax benefits and other incentives to attract foreign investors and to develop their own infrastructure without the approval of the central government. At the same time, Chinese private business enterprises boomed in this region, as they learned from their foreign partners and improved the quality of their own products. The special economic zones were strategic in this respect, as they led to an infusion of new capital, technology and skills into parts of China’s economy, while protecting Chinese enterprises from international competition at home. State-owned enterprises (SOEs) flourished against this backdrop.

In the mid-1980s, a series of regulations established the principles and administrative processes governing the approval of overseas investment by Chinese enterprises. OFDI from China was undertaken by state-owned enterprises almost exclusively, and remained extremely limited (barely reaching USD 300 million on average during the 1980s), and its impact on Chinese firms' ability to compete abroad had yet to be felt. By 1992, during a tour of Southern China, Premier Deng Xiaoping delivered what was called his "South speeches": he reaffirmed that the economic reforms underway would accelerate and expand into the inland regions. In many ways, this was a landmark event, with the emphasis on "reform and opening" as the key mantra for the future.

In Korea, the turn to overseas investment was deemed more urgent than in China as the country faced increased production costs and a limited home market in addition to the need to secure access to natural resources. By the early 1980s, a strong desire was felt for reform away from the state-led development that the country had then known. A major pro-liberalisation policy swing began to take hold. Korea's OFDI policies adopted at that time reflect such a swing. A number of restrictions and controls (including specific requirements on investors' business experiences and host country conditions) were relaxed and the requirement for pre-approval of outward investment by the Bank of Korea was removed and replaced by a more flexible and simplified system (UNCTAD, 2007). OFDI from Korea increased between 1983-1992 for instance, from USD 169 to USD 1 376 million.[1]

PHASE THREE: THE 'WASHINGTON CONSENSUS' AND INTEGRATION OF EMERGING MARKETS IN THE GLOBAL ECONOMY (1993-2003)

The "Washington Consensus" years marked a time of major economic changes across Latin America. Along with debt restructuring, the IMF and the World Bank imposed structural adjustment programmes which obliged these governments to abandon their import-substitution policies and adopt pro-market strategies, including a wave of privatisations in the telecommunications, banking, mining, energy and transportation sectors. In Brazil, the impact of this "competitive shock" was two-fold (Cyrino and Tanure, 2009). First, Brazilian companies restructured their operations by consolidating their domestic positions, pursuing comparative advantages and accelerating their international expansion to survive the threat of heightened competition from local subsidiaries of foreign multinationals (Casanova, 2009). Second, the most fragile companies were acquired by foreign firms.

The free movement of capital and flexible exchange rates were part of the adjustment programme prescriptions. A new central banking regime was consolidated, which would use interest rates as a primary means to control the value of a currency by setting an annual inflation target. Because of better and cheaper access to financial resources, foreign companies were better equipped than the local ones to enter the region through the privatisation process mainly. A wave of European companies, mainly Spanish, took leading position in telecommunications (Telefónica and also Telecom Italia, mainly in Brazil), banking (BBVA and Santander), utilities (Endesa and later the Italian company Enel). This significantly increased foreign investments in the region, but not from the region abroad. In Brazil, for instance, the unpegging of the real, the local currency, against the dollar in January 1999 resulted in a devaluation of 100%, which made it almost impossible for

Brazilian companies to invest abroad. Only those that were already international and had a bulk of their revenues in hard currencies could continue expanding internationally, such as Petrobras and Vale. By ending hyperinflation, policymakers attracted more FDI into the economy. Between 1995 and 2000, FDI inflows in Brazil grew from USD 4.9 billion to USD 32.9 billion, far surpassing the growth of OFDI during the same period.

Meanwhile, China took a number of radical steps in economic policymaking. One of them was its accession to the World Trade Organisation (WTO) in 2001, which marked a turning point for China's FDI (inward and outward). China's entry into the WTO unleashed its power as a significant actor in international trade and investment. This move, combined with the privatisation of a number of state-owned enterprises, as well as the restructuring of the financial sector, enhanced China's position versus foreign investors, economic partners and in international organisations alike. The arrival of foreign companies with the subsequent transfer of knowledge (in many cases imposed and closely monitored by the Chinese government) contributed to accelerating the internationalisation process of Chinese companies and their insertion into the global economy (Tian & Deng, 2007). At the same time, a number of new trade rules and regulations were put in place to provide support for investing abroad, in line with the government's goal of nurturing national champions in strategic sectors. Incentives took the form of export tax rebates or financial assistance for specifically targeted industries (IT with Huawei a clear frontrunner) or large state-owned enterprises at the forefront of Chinese outward investment expansion (like Sinopec or China National Petroleum).

The "Zou Chuqu" (or "Go Global") policy introduced in 1999 to promote Chinese investments abroad is a notable example of China's commitment to internationalising its companies, (Yelery, 2014). A number of these outward investments tended to be in the natural resources sector (e.g., mining or oil and gas projects in Africa or Latin America) to facilitate access to primary materials that would feed into Chinese manufacturing for subsequent exporting. In addition, Beijing was concerned about the trade dependence of its manufacturing sector and was encouraged by the demands of entrepreneurs for a new, more sustainable, model of business expansion that would include foreign investment. The "Go Global" policy marked a fundamental shift in China's FDI policy from attracting foreign investment to actively encouraging Chinese firms to invest abroad.

Throughout the 1990s, Korea actively promoted OFDI as part of its broader industrial policy to increase firm competitiveness. The notification system, established a few years earlier in lieu of the approval system, was expanded in 1997 to apply to virtually all industries. The government implemented a number of measures in order to facilitate foreign exchange transactions (by simplifying procedures and relaxing conditions) for Korean firms investing abroad and provide export credit insurance and investment insurance to protect investors against no-commercial risks (such as losses resulting from expropriation or acts of war). It also set up services to provide administrative support to potential outward Korean investors and assist them in collecting information. The government also actively encouraged cooperation abroad among Korean firms like Hyundai or Samsung (Françoise, Thomsen and Bang, 2013).

PHASE FOUR: THE GOLDEN DECADE OF EMERGING MARKETS - SOUTH-SOUTH INVESTMENTS (2003-2014)

The so-called “South-South” investments and beyond became a visible reality during this phase, which also saw the increasing role and weight of emerging markets on the global scene: as the Global Financial Crisis hit the United States and Europe, they were called along with the G7 countries to meet. Hence, the G20 was launched in 2008, marking the Emerging Markets coming of age as partners to find a solution. The so-called “South-South” investments and beyond become a reality. One of the most visible organisations representing the trend is the BRIC (Brazil, the Russian Federation, India and China) summit launched in 2009. The first one was hosted by the Russian Federation (hereafter “Russia”), with South Africa joining the summits in 2011, becoming BRICS.

The turn of the 21st century marked a period of soaring commodity prices, high growth rates, and a more aggressive global expansion of emerging market Multinational Corporations (eMNCs), notably through the acquisition of foreign firms and assets (see e.g. Casanova, 2009). This phase benefitted natural resource-based companies, whose strong cash position permitted large-scale acquisitions in both advanced and emerging markets.

In Brazil, commodities giants in Brazil such as Odebrecht, Vale and Petrobras underwent their most intensive experiment with internationalisation. This period was marked by high growth rates, increased public investments in infrastructure, and social policies that contributed to wage growth and increased domestic demand. The government took measures to facilitate outward investment and gave tax cuts and other incentives to companies to become “national champions” and also to expand internationally, especially in high-value sectors. In 2005, for instance, it abolished the need for prior authorisation that was required for investment exceeding USD 5 million. The Brazilian Development Bank (BNDES) provided direct financial support - through securities subscriptions - to the OFDI projects of Brazilian firms. In addition, Brazilian companies could have access to financing at a rate of around 6%, still high but more affordable than before. This was especially significant because companies had long struggled to access cheap financing. By 2014, the BNDES had about USD 250 billion in outstanding subsidised loans to Brazilian companies (both headquartered in Brazil and abroad),[2] in what the Brazilian government considered strategic sectors such as energy, transportation and telecommunications. Although internationalisation was not the primary target of these loans, they made the financial resources more easily available to companies, which subsequently could internationalise with more ease. The most significant tax benefit was the payroll tax cut, given to companies listed in 50 economic categories.[3] Particularly targeted for such a support policy were those companies that could become global leaders in certain industries such as the meat company JBS, as the nurturing of national champions that could expand internationally was an important element of the industrial development policy followed between 2007 and 2011, known as the Production Development Policy.

By the end of the period, however, government support to OFDI became less clear. The general financing support provided by BNDES for Brazilian enterprises came under criticism, and BNDES ended its direct support to OFDI projects. In addition, while one of the goals of the previous industrial policy was to create Brazilian firms that would become global leaders and facilitate their outward expansion, the policy that followed in 2011, the Plano Mayor did not explicitly include such a goal; it did not include any specific objective either, nor any further support measures on OFDI.[4] OFDI policy support was also affected by the political situation that developed after 2014 and the turmoil that led to the impeachment of President Dilma Rousseff in 2015.

During this same period, Chinese political and economic institutions faced a turning point over how the country could sustain its soaring growth rates. Against this backdrop, the constitution was amended to include guarantees on private property in 2004, and a law on private property was enacted in 2007, implicitly recognising the role of private business in the transformation of China's economy.[5] At the same time, the preferential tax rates for foreign enterprises investing in China disappeared. In line with the aforementioned "Go Global" strategy, Chinese enterprises were increasingly encouraged to pursue overseas investments and extend manufacturing beyond their safe-bases in China.

Another significant driving force behind China's OFDI revolution has been its massive foreign reserves accumulated since the early 2000s. While mostly consisting of U.S. government debt, China's reserves have generated discontent for some in China due to their low returns on investment. Following the global financial crisis in 2008, this discontent turned into widespread anxiety that China's holdings of U.S. dollar assets would lose value as a result of American economic problems and macroeconomic policies. In response, a consensus emerged that China would be better off by investing in other types of assets overseas such as acquisitions of foreign firms.

The "Go Global" policy was further developed through measures to improve OFDI support policies, including streamlined approval procedures, relaxed restrictions on foreign exchange, and various types of assistance such as easier access to finance, interest-subsidised loans for investment in priority industries, subsidies in the context of aid programmes and tax incentives. Equally significant was the administrative, financial and commercial support provided by a network of institutions such as the Ministry of Commerce, the National Development and Reform Commission, the China Export and Import Bank, the China Development Bank (CDB) and the China Export and Credit Insurance Corporation.

As part of its support for outward expansion, China also began engaging in active investment diplomacy: for instance, the Chinese President visited Africa in 2013 and 2014. Such visits were followed later on by several tours in Latin America. Other major initiatives, such as the "One Belt and One Road Initiative" (OBOR)[6] that was unveiled in 2013, of which the Chinese government has been the main promoter, are expected to fuel China's OFDI expansion in the years ahead along the ancient Silk Road trade routes and beyond. Such support and promotion of OFDI resulted in dramatic increases in OFDI flows: in 2014-15 they were ten times their 2005 level, making China the third-largest investor in the world. The gap between inward and outward FDI was substantially reduced, bringing OFDI on the verge of exceeding inward FDI flows by 2015.[7]

During the “Golden Decade” Korea experienced a surge in OFDI: its outflows increased more than six-fold from 2003 to 2014. The strong OFDI support of the previous phase was only reaffirmed as government policy became increasingly pro-active. Remaining restrictions on overseas investment were lifted (such as the limit on the maximum amount per investment project) and further support and promotion measures were adopted which enhanced the financial support, fiscal incentives, information and administrative services, and investment insurance provided to Korean firms investing abroad. In 2007, Korea adopted its “Policy for Supporting Korean Firms to Invest Abroad” and created the Committee for Global Business Operations chaired by the Prime Minister (Françoise, Thomsen and Bang, 2013). Particular attention was paid to Korean small and medium-sized enterprises (SMEs) to assist them in their overseas expansion (helping them for instance, in prospecting for potential foreign acquisitions and in facilitating access to government- co-investment funds).[8] A tight network of government agencies has been involved in providing such support over the years; these include for instance the Korean Trade and Investment Agency (KOTRA), the Korea Export Import Bank and a number of government related organisations. Partly as a result of such a policy, Korea has constantly been over the past eleven years a net FDI capital exporter, with its FDI outflows always exceeding its inward flow since 2006. Since 2011, it has almost constantly figured among the top-15 international investors in the world.[9] During that period, Samsung established itself as the leader in mobile phones in terms of the number of units sold, while the cosmetics company Amore Pacific became the leader in Asia.

PHASE FIVE: CHANGING TIMES FOR EMERGING MARKETS. BELT AND ROAD INITIATIVE, NEW EMERGING MARKET-LED MULTILATERAL ORGANISATIONS (2015-PRESENT)

With the collapse of commodity prices towards the end of 2014, emerging markets have faced more political and economic uncertainty. Economic growth in these economies, while still quite high for many, is less buoyant relative to the previous period. Still, the BRICS summits continue and the BRICs launched a new development institution in 2015, the New Development Bank. In this bank, power is shared equally between its founding member (Brazil, Russia, China, India and South Africa) and its goal is to finance infrastructure and sustainable development projects in the BRICS and other emerging economies and developing countries.[10]

In the case of Brazil, economic difficulties were amplified by the political crisis and subsequent corruption scandals that involved some major Brazilian enterprises, including some of the country’s national champions such as Petrobras and Odebrecht. In the process, government support for OFDI became somewhat unclear. The involvement of national champions in the corruption scandals and political affairs of the past few years have tarnished their image in Brazilian public opinion. This has not helped in reviving policy support for OFDI –of which they were seen as major beneficiaries.

In Korea, the government has been keeping on with its strong support and promotion policy and the measures it had adopted over the years to encourage the outward FDI expansion of its enterprises. Among others, Samsung maintained its leadership position in number of 3G phones sold, while Hyundai and LG ascertained their leadership among the most important in their industries. A number of corruption scandals affected the reputation of some of these big conglomerates but did not seem to affect their international expansion. Korean expansion in China

in 2017, its most important trading partner, suffered from the Chinese boycott to Korean products following Korea's agreement the previous year of hosting a US's anti-missile system. This boycott seemed to have eased at the end of 2017 and in the beginning of 2018.

In China, the situation has been a little bit different: while the government policy overall remained very supportive of outward FDI expansion, the remarkable outflows of capital in 2016 and the surge in mergers and acquisitions led authorities to take steps to rein in the phenomenon. Indeed, concerned by the downward pressure on the yuan, and the risk of destabilisation resulting from the significant capital outflows in 2015 and 2016, Chinese authorities increased scrutiny and tightened regulations on capital outflows, including closer monitoring of Chinese firms' acquisitions overseas. Authorities also feared that a number of acquisitions made by private companies were mostly motivated by the desire to transfer money abroad - mainly in the case of acquisitions outside the buyer's core area of business. As part of their move to better control the phenomenon, they announced stricter approval requirements for merger and acquisition (M&A) deals worth more than USD 10 billion (or USD 1 billion if the acquisition fell outside the investor's core business area) in the fall of 2016.[11] They also restricted real estate purchases abroad worth more than USD 1 billion by state-owned enterprises for instance.

China's One Belt One Road (OBOR or BRI) which was mentioned for the first time in 2013, has become a reality. This initiative covers about 68 countries which comprise about 65% of the world's population and wants to be one of the largest infrastructure and investment projects in history. Two financial institutions where created in parallel: the Asian Investment and Infrastructure Bank (AIIB) opened in 2016 with more than 60 member countries with the goal to provide loans to those projects, and the Silk Development Fund, launched in November 2015, to invest in businesses.

With further scrutiny in China about Chinese firms' investments abroad and in the recipient countries in Europe and USA about Chinese investment in some of their key industries, new policies were launched. In China, this scrutiny came among claims of possible corruption involved in some of these investments. In August 2017, the State Council issued "guidelines on overseas investment" that formalised the fall 2016 announcements and clarified a number of issues. In line with the national economic and strategic interests of China, the guidelines classified overseas investments into three main categories: 1) encouraged investments; 2) restricted investments; and 3) prohibited investments.[12]

Restricted investments include, among others, real estate, hotels, entertainment, and sport clubs - industries in which Chinese authorities flagged a number of deals as questionable regarding their true objectives and actual economic rationale. Outdated industries and projects in countries with no diplomatic relations with China or in regions suffering from high degrees of instability have also been restricted. Prohibited investments include, inter alia, investments in gambling and "lewd industries" as well as those that provide access to sensitive sectors such as core military. On the other hand, firms are encouraged to actively engage in investments that promote the Belt and Road Initiative (in particular in infrastructure and connectivity projects), as well as in investments that "strengthen co-operation with overseas high-tech and advanced manufacturing companies".[13] They are especially incentivised to establish research and development (R&D) centres abroad. For encouraged investments, the Chinese government intends to adopt a number of measures to provide, among others, further tax, exchange rate, insurance and customs benefits.

Tougher policies from Chinese authorities may be in the pipeline. In December 2017, the National Development and Reform Commission, along with four other agencies, released a code of conduct for private companies investing abroad, also largely motivated by some highly leveraged and risky outbound acquisitions, which may be seen as possible threats to the financial stability of those major companies and the country. Mega deals of large Chinese groups - such as Wanda, Fosun, HNA and Anbang - are said to be particularly targeted. As per the guidelines, Chinese firms should not overextend financially, avoid high leverage financing and stay within their core area of activities, as well as respect local laws and regulations such as social and environmental standards. The new guidelines also require firms to report investment plans to the government and to seek approval for investments in sensitive countries or industries.[14] While some observers contend that the code of conduct does not include hard and fast rules,[15] the warning to Chinese foreign investors is clear. A code of conduct for state-owned enterprises is also reported to be in the making.

While the full impact of these new rules and guidelines on China's capital outflows remains to be seen, it is estimated that Chinese outbound M&As already declined in 2017, by about a third compared to 2016, though buying remained active in technology related sectors[16]. This reflects the ongoing hold on mega-deals as a result of the increased government scrutiny and monitoring mentioned above, combined with reduced access to financing (not to mention an outright ban in certain sectors). At the same time, the increased transparency and support for "encouraged deals" under the new guidelines are bound to facilitate such transactions. In this case, however, the obstacle lies not in China but on the receiving end of its outward investment - i.e. with the host country governments, some of which are already wary of Chinese investment in their high-tech industries.[17] The "clarifications" brought about by the guidelines adopted in August 2017– where *encouraged* investment explicitly refers to high-tech and advanced manufacturing - will likely not assuage those fears. All in all, however, Chinese OFDI is likely to continue rising, boosted *inter alia* by the Belt and Road Initiative and its impact on the trade and investment links between China and BRI countries and by the government support to M&A deals in high technology and advanced manufacturing.

LOOKING AHEAD

As we witness the rise of emerging markets, mainly led by China, we observe a change in their policies from opening up and attracting inward FDI to supporting the outward expansion of their enterprises. China and Korea stand out among emerging economies in that respect. They are both characterised by long-term and consistent OFDI policies and they both experienced a sequential process of OFDI expansion via:1) the relaxation of foreign investment controls and prohibitions coupled with administrative reforms to streamline approval procedures; and 2) active and direct assistance to outward investment whether it be knowledge-based, financial or otherwise. In both cases, strong policy support has been instrumental to the surge in OFDI flows. Korea's OFDI policy promotion began earlier than China, but the latter has become most active in recent years in this area. As to Brazil (and Latin America) that was a pioneer in OFDI, the government has supported and at times encouraged OFDI, but its OFDI policy has been less pro-active and less consistent than that of China and Korea, which partly explains the difference in their OFDI performance and, as the largest regional economy, the divergence in this regard between Asia and Latin America.

Both China and Korea have experienced high economic growth over the past decade. By contrast, growth in Brazil and Latin America has been more volatile and the region is an example of what some call the “middle-income” trap. While it may be too early for a definite answer, it is nonetheless important to start having a closer look at the contribution of outward investments to China’s and Korea’s economic performance and explore the policy implications this may have for emerging economies.

Notes

[1] Based on data from UNCTAD, http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx.

[2] The total value in Real of these loans: USD 513 billion *reals*. See BNDES at: http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/empresa/download/2015_captacoes_tesouro.pdf.

[3] The new tax obligation is calculated differentially, depending on sector, as a percentage of total revenue (varying depending on sector), but excludes external revenue. The exclusion of external revenue has provided an incentive to companies to invest abroad.

[4] Emerging Market Multinationals Report 2016.

[5] See for instance: Chen Jianfu, "The Revision of the Constitution in the PRC", China Perspectives [Online], 53 at http://chinaperspectives.revues.org/2922.

[6] The Belt and Road Initiative (BRI), formerly known as One Belt, One Road initiative was launched by the Chinese government in 2013. It aims to foster integration and cooperation by building infrastructure, developing cultural exchange, and increasing trade among countries in Asia, the Middle East and North Africa along two axes: the Silk Road Economic Belt (essentially the original silk road) and the 21st Century Maritime Silk Road.

[7] By 2016, OFDI flows were reported to exceed Inward FDI. As usual, though, statistics on Chinese FDI inward and outward flows need to be taken with a pinch of salt, partly because of the so called 'round tripping' with Hong Kong where investments go back and forth between China and Hong Kong because of tax reasons. In addition, 2015 and 2016 were marked by a significant wave of Chinese outbound Mergers and Acquisitions.

[8] ASEAN Investment Report, 2016.

[9] Excluding offshore financial centres. Based on data from UNCTAD (accessed on 9 February 2018), at http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx.

[10] See Casanova L. And A. Miroux, Emerging Market Multinationals Report 2016, Chapter 1. New members can join the New Development Bank but, as per the Bank's founding agreement, emerging economies and developing countries will hold at least 80% of the voting share and together the BRICS cannot have less than 55%.

[11] See "China to clamp down on outbound M&A in war on capital flight", Financial Times, November 29, 2016 https://www.ft.com/content/2511fa56-b5f8-11e6-ba85-95d1533d9a62.
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"Chinese outbound M&As: 4 key questions", Latham and Watkins LLP May 2017, http://www.latham.london/2017/05/chinese-outbound-ma-4-key-questions.

[12] See "China issues guidelines on overseas investments", 21 August 2017 http://www.kwm.com/en/au/knowledge/insights/china-issues-guidelines-overseas-investments-capital-restricted-prohibited-20170821.
"China Steps Up Warnings Over Debt-Fuelled Overseas Acquisition" New York Times, 18 August, accessed September 13, 2017, https://www.nytimes.com/2017/08/18/business/dealbook/china-companies-deals-debt.html?mcubz=1.
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"China State Council Rules on Outbound Investment" at https://www.mingtiandi.com/real-estate/china-real-estate-research-policy/china-state-council-circular-on-overseas-investment-full-text/.

[13] See https://www.mingtiandi.com/real-estate/china-real-estate-research-policy/china-state-council-circular-on-overseas-investment-full-text/.

[14] See "China Tightens Overseas Investment To Reduce Risks", Forbes, 22 December 2017, https://www.forbes.com/sites/sarahsu/2017/12/22/china-tightens-overseas-investment-to-reduce-risks/#c790bc772cfd.

[15] See "China issues code of conduct for private firms investing overseas", Japan Times, 10 December 2017, https://www.japantimes.co.jp/news/2017/12/19/business/china-issues-code-conduct-private-firms-investing-overseas/#.

[16] See "Wanda hopes for global lifestyle empire fade as it beats retreat" Financial times, 15 February 2018, https://www.ft.com/content/dc8cec14-01aa-11e8-9650-9c0ad2d7c5b5?ftcamp=crm/email/_2018___02___20180215__/emailalerts/Keyword_alert/product
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[17] See L. Casanova and A. Miroux "Chinese Multinationals, Global Acquirers?", AsiaBrink, 21 March 2017, at http://www.brinknews.com/asia/chinese-multinationals-global-acquirers/.
"Juncker to lay out plans for screening foreign takeovers in EU", Financial Times, September 11, 2017, https://www.ft.com/content/b59475aa-9701-11e7-b83c-9588e51488a0.
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Energy challenges and business opportunities in Asia

This policy note provides insights and policy recommendations from the private sector on energy opportunities and challenges in Asia. The analysis builds on discussions at the OECD Emerging Markets Network (EMnet) meeting on doing business in Asia, "Energy Challenges and Business Opportunities", held on 14 March 2017 at the OECD headquarters in Paris. It examines the latest macroeconomic and energy trends and provides overview of recent energy policies, highlighting how policy makers are supporting private-sector-led investments in energy generation and energy technologies.

Key messages include:

- Emerging Asia's energy needs are expected to surge with demand more than doubling in India and Southeast Asia from 2013 to 2040. China is expected to continue to be the largest energy consumer globally.
- Asia provides impressive growth opportunities for both energy and non-energy companies looking to invest in energy-related technologies.
- Strained energy infrastructure capacity remains a key business concern in Southeast Asia and India. Underdeveloped transmission and distribution grid infrastructures are constraining the benefits of increased generation capacity.
- In contrast, China is facing excess capacity and pollution challenges and is prioritising clean energy and improved efficiency.
- Barriers continue to inhibit investment decisions. Public sector reforms to ease investment restrictions and efforts to lower administrative hurdles can improve Asia's investment outlook.
- Despite a rapid ramp up in coal energy production, renewable energy will attract the majority of new private investments due to favourable policies and ambitious renewable targets.
- Increased access to affordable long-term finance will unlock further investment from the private sector that will be critical to closing the infrastructure gap in the region.
- The public and private sectors will need to further work together to overcome the skills shortage arising from the massive surge in green jobs in the region.

ASIA'S ECONOMIC AND BUSINESS OVERVIEW

Introduction

Emerging Asia will continue to grow at a steady pace and energy demand will surge across Asia in the coming decades which will require significant investment from local and international firms. The International Energy Agency (IEA) projects large increases in Total Primary Energy Supply (TPES) in the region. The TPES is an indicator of energy demand and consumption and is expected to rise by 60% between 2013 and 2040 in Emerging Asia (i.e. the People's Republic of China, hereafter, "China"), India and the ten Association of Southeast Asian Nations (ASEAN) member countries. This growth in demand can be attributed to a number of socio-economic factors, including robust and sustained GDP growth, an increasing population, and an expansion of energy access and industrial needs (OECD, 2017a).

This surge will generate several energy challenges in terms of energy access, security and infrastructure. Private investment will be pivotal to unleash Asia's growth potential. Domestic large firms and multinational corporations are already playing a key role in scaling up investment; however technical, administrative and economic barriers continue to hinder higher investment flows into the region (OECD, 2017a).

Economic growth will remain robust in Emerging Asia

Growth in Asia is resilient. Emerging Asia is expected to grow by 6.3% on average for the period of 2018-22 (Table 1.1). Growth in China will continue to slow and a 6.2% average growth is expected over the same period. While private consumption and investment continue to drive growth, risks remain due to excess capacity and weaknesses in the financial markets. India's growth in 2018 is expected to average 7.3% with private consumption, foreign investment and public spending underpinning this trend. Within the ASEAN-5[1], the Philippines and Viet Nam are expected to lead economic growth. In the Philippines remittances-driven private consumption and potential increase in infrastructure spending are expected to support growth. For Viet Nam, consumption and exports are the key drivers. Indonesia's growth is expected to remain stable, driven by strong private consumption and an improved enabling environment for investment. Malaysia's average growth will decline softly with private consumption and robust foreign investment largely supporting economic activity. Thailand's growth is expected to improve, due to higher trade and investment flows. The CLM economies (Cambodia, Lao People's Democratic Republic and Myanmar) will continue their strong growth path through 2022 with average 2018-2022 growth rates expected to reach 7.2%, 7.1% and 7.3% respectively (OECD, 2018).

Table 2.1. **Real GDP Growth in ASEAN, China and India**

Annual percentage change

	2016	2017	2018-22 (average)	2011-15 (average)
ASEAN-5 countries				
Indonesia	5.0	5.0	5.4	5.5
Malaysia	4.2	5.5	4.9	5.3
Philippines	6.9	6.6	6.4	5.9
Thailand	3.2	3.8	3.6	2.9
Viet Nam	6.2	6.3	6.2	5.9
Brunei Darussalam and Singapore				
Brunei Darussalam	-2.5	0.0	0.5	-0.1
Singapore	2.0	3.2	2.3	4.1
CLM countries				
Cambodia	6.9	7.1	7.2	7.2
Lao PDR	7.0	6.9	7.1	7.9
Myanmar	5.9	7.2	7.4	7.3
China and India				
China	6.7	6.8	6.2	7.9
India	7.1	6.6	7.3	6.8
Average of ASEAN-10	4.8	5.1	5.2	5.1
Average of Emerging Asia	6.4	6.4	6.3	7.1

Note: The cut-off date is 31 October 2017. ASEAN and Emerging Asia are the weighted averages of those of the individual economies in these groupings. Data for India, Lao PDR and Myanmar follow fiscal years. The projections of China, India and Indonesia for 2017 are based on the results from the OECD Economics Department's Short-Term Economic Prospects (STEP) Meeting in October 2017.

Source: OECD Development Centre, MPF-2018 (Medium-term Projection Framework). For more information on the MPF, please see www.oecd.org/dev/asia-pacific/mpf.htm.

While growth is solid, there are downside risks. One of the risks to Emerging Asia's growth is a faster than expected monetary normalisation in advanced economies. Should interest rate differentials narrow sharply, capital outflow could ensue which can in turn increase currency depreciation pressures. Rising interest rates per se could also spell some difficulties for highly leveraged companies. Moreover, private-sector debt, as a proportion of GDP, has risen substantially in several Asian economies since 2010. China, Singapore and Hong Kong (China) have all seen large increases in both household and corporate debt (OECD, 2018). Finally, any rise in trade restrictions or an increase in global protectionism will create an additional element of risk. Given China's economic weight in the region, any sharp downturns in growth or trade activity can also have an effect on regional trends as a whole (Dizioli, et al., 2016).

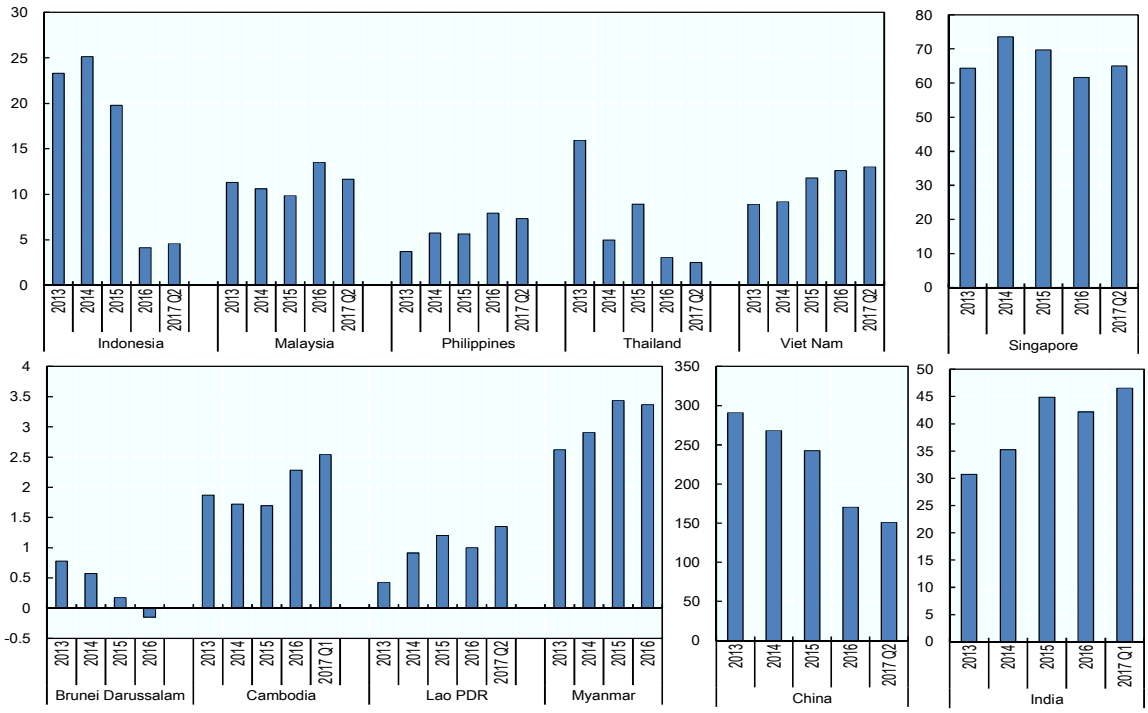
Investors continue to be attracted to the region

FDI trends are positive and expected to continue. Asia is increasingly becoming the preferred planned destination for future FDI, according to an UNCTAD survey of business executives. After the United States, China and India are top global prospective destinations for foreign investment. Furthermore, Indonesia, Thailand, the Philippines, Viet Nam and Singapore are all among the top-15 host economies for 2017-19 (UNCTAD, 2017).

FDI should continue to grow as trade volumes improve, domestic demand continues to grow and large infrastructure projects are developed. Governments are also pushing to develop information technology industries and are providing incentives to spur investment in the digital economy (OECD, 2018). Governments continue to reduce market access barriers and facilitate investment procedures. In India, retail trade manufacturing is fully liberalised and the bankruptcy code has been simplified. China is developing free trade zones which could be a source of additional investor interest. Viet Nam also undertook reforms in 2017 to improve the investment climate (OECD, 2018).

Figure 2.1. **Net foreign direct investment in Emerging Asian countries, 2013-17**

USD billion



Note: Myanmar and India follow fiscal years ending March the following year. Quarterly data are annualised (i.e. 4-quarter sum as of the period indicated).

Source: OECD (2018), drawing from OECD Development Centre calculations based on CEIC, national sources, IMF International Financial Statistics database.

Trade integration continues but more work remains to be done

2017 marked the 50th anniversary of ASEAN and progress towards the ASEAN Economic Community continues to advance. The ASEAN Trade in Goods Agreement has advanced, as countries like Cambodia, Lao People's Democratic Republic (hereafter Lao PDR), Myanmar and Viet Nam reduced tariffs in 2017. The liberalisation of trade in services remains a priority. Although ASEAN ministers committed to liberalising services by 2015, progress has been slow and there remains work to be done. Trade facilitation is progressing through the ASEAN Single Window initiative which seeks to create a regional platform to exchange border documents for the public and private sector. It is already in operation in Indonesia, Malaysia, Singapore and Viet Nam and the platform in the Philippines is expected to become operational soon (OECD, 2018).

The Regional Comprehensive Economic Partnership (RCEP) free trade agreement has the potential to be a substantial undertaking that goes beyond the existing ASEAN-plus-one agreements[2] and can become a major driver of trade growth. The agreement will require considerable time to finalise, particularly given the large number of countries implicated[3] and the wide variance in development levels across economies. In addition, many countries lack free trade agreements with other participants, which will require further efforts to set up new negotiations. The RCEP agreement notably lacks considerations for SOEs and for government procurement, which reduce the likelihood of a level playing field for international and domestic investors. There are also gaps remaining regarding dispute settlements that remain to be clarified, which will limit the impact it terms of economic integration (OECD, 2018). Another major step towards integration, the Trans-Pacific-Partnership (TPP) agreement that was revived in January is expected to be an important driver of trade and potentially generate significant gains in exports for member countries, even without the participation of the United States (Alschner, Seiermann and Skougarevskiy, 2017).

ENERGY CHALLENGES IN ASIA

This chapter will focus on the particular issue of energy as a driver of growth for the region and will address opportunities and challenges that energy presents for Southeast Asia, China and India in the medium term.

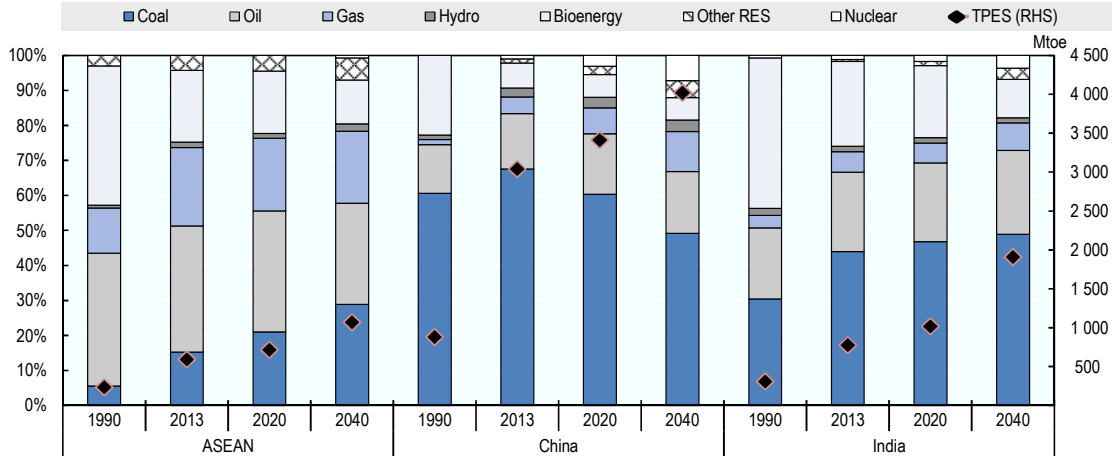
Challenges vary across the region

Southeast Asia, China and India show signs of positive economic momentum yet energy issues can be a driver of or, potentially, a drag on growth for the region. While energy is a fundamental factor for growth across Emerging Asia, substantial variation in natural resource endowments, existing infrastructure and technical capacities exist between countries. While the energy supply mix between China, India and Southeast Asia vary (Figure 2.2), energy demand and infrastructure capacities have also stark differences.

China will continue to have the largest share of energy demand in Emerging Asia in 2040; however, its share of the region's Total Primary Energy Supply will decline by 12% between 2013 and 2040 due to a ramp up in energy production in India and in ASEAN countries (IEA, 2015a; IEA, 2015b). India's energy supply has surged ahead with large increases in coal but also in solar and wind. Still, the energy infrastructure gap is holding back social wellbeing and corporate investment in manufacturing

(OECD, 2017c). Southeast Asia will double its electricity demand from 2013 to 2040 (OECD, 2017a). To prevent shortages, energy supply needs to increase by 80% over the same period (IEA, 2015b). Consequently, Southeast Asia will face severe infrastructure constraints in the coming decades. The IEA estimates that USD 2.5 trillion is needed to close the infrastructure gap with an additional USD 420 billion needed for investment in energy-efficiency investments (IEA, 2015c).

Figure 2.2. **Total primary energy supply in ASEAN, China and India, 1990-2040**

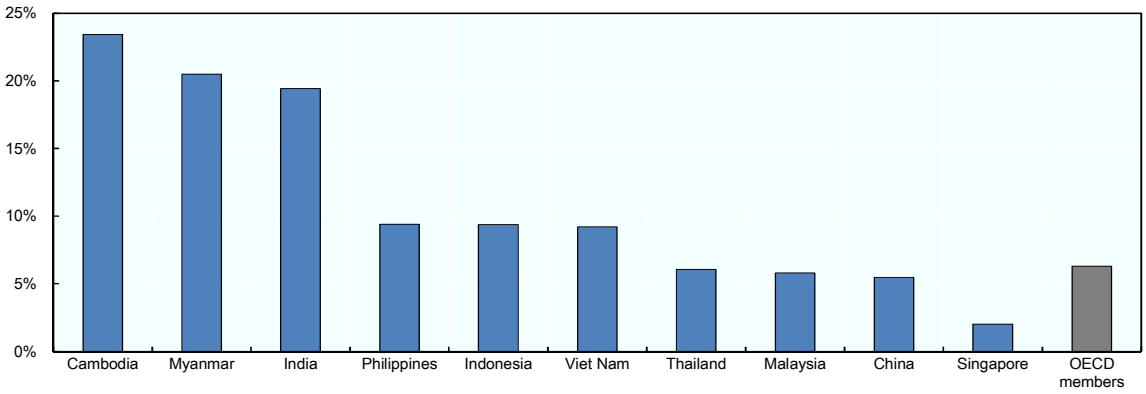


Note: Other RES include wind, solar PV, and geothermal. Calculations are based on IEA's New Policy Scenario.

Source: OECD (2017a), Economic Outlook for Southeast Asia, China and India; OECD Development Centre, based on IEA (2015a), World Energy Outlook 2015; IEA (2015b), World Energy Outlook 2015: Special Report on Southeast Asia.

The quality of energy infrastructure is just as vital as the quantity. Stressed grids and aging infrastructure have led to transmission and distribution (T&D) losses. Within Emerging Asia, Cambodia, Myanmar and India face considerable limitations to the quality of their grid infrastructure, while China's grid sees low losses due to high investment in technological innovations such as ultra-high voltage (UHV) transmission. Singapore, Malaysia and Thailand's low T&D losses also indicate robust grid infrastructure (Figure 2.3) (ADB[4], 2017).

Figure 2.3. **Electric power transmission and distribution losses in selected Asian countries, 2014**

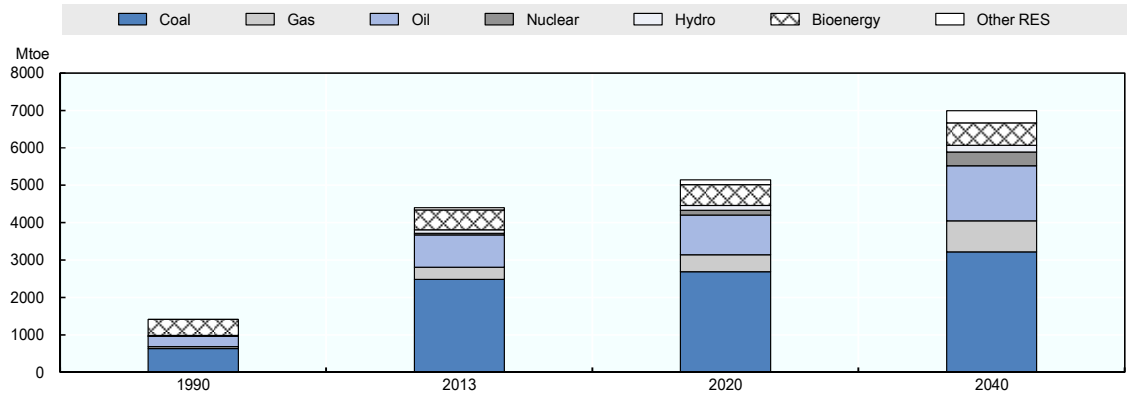


Source: Author's design based on World Bank (2014), World Bank World Development Indicators database (accessed 1 May 2017).

Fossil fuels will be the dominant energy source through to 2040

Fossil fuels are expected to continue to be the most used energy source in Emerging Asia. Fossil fuels' share of total primary energy supply will only decrease from 83% in 2013 to 79% by 2040, despite ambitious plans to accelerate renewable energy production in the region (Figure 2.4). Throughout Emerging Asia, coal is the preferred energy source but this trend has already started to reverse in China with efforts to transition from fossil fuels to cleaner sources. The continued use of fossil fuels has also prompted the adoption of clean energy technologies to curb carbon emissions.

Figure 2.4. **Emerging Asia's total primary energy supply by source, 1990-2040**



Note: Other RES include wind, solar PV, and geothermal. Calculations are based on IEA's New Policy Scenario.

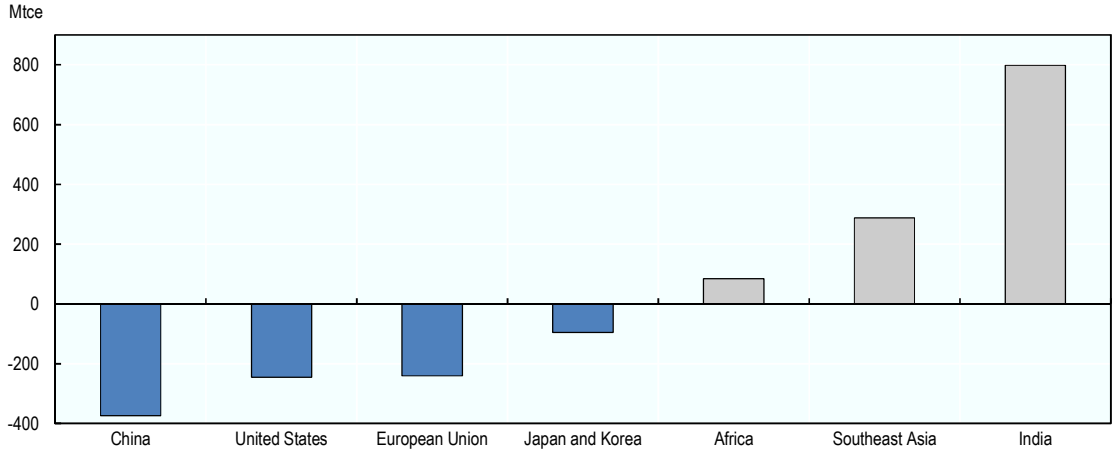
Source: OECD (2017a), *Economic Outlook for Southeast Asia, China and India*; OECD Development Centre, based on IEA (2015a), *World Energy Outlook 2015*; IEA (2015b), *World Energy Outlook 2015: Special Report on Southeast Asia*.

Coal demand rises in India and Southeast Asia while declining in China

Coal continues to be the dominant energy source in Emerging Asia. India and China led growth in global coal investment, which increased by an average of 4.7% per year from 2000-10 (IEA, 2016a). While coal investment declines globally, India and Southeast Asia are expected to continue to ramp up coal capacities to meet rapid demand growth as quickly as possible, while also increasing investment in renewables (Figure 2.5) (IEA, 2016a). Southeast Asia's coal demand will triple and see the fastest growth globally at an average of 4.4% per year from 2014 to 2040 (IEA, 2016a). In 2015, India surpassed China as the leading global coal importer and overtook the United States as the second largest coal consumer. India's coal consumption will rise from 540 million tonnes of coal equivalent (Mtce) in 2014 to reach 1 340 Mtce by 2040, equal to 48% of primary energy demand (IEA, 2016a).

In contrast, China's coal use is in decline after peaking in 2013. This is due to slower economic growth and a transition to less energy-intensive sectors. The IEA estimates that over-investment in coal reached 50% in 2012. To resolve over-capacity difficulties, China made a clear pledge to cut investment and transition away from coal as an energy source (IEA, 2016a). The construction of new coal power plants are also being halted; in 2017, 103 plants were cancelled to keep China's total coal generation capacity limited to 1 100 gigawatts (GW) (Forsythe, 2017). China's coal mining capacity will also be reduced by 150 million tonnes (OECD, 2017b). These actions ensure that coal use will decline by a further 13% by 2040 (IEA, 2016a). A reduction in coal will help to curb dangerous air pollution levels that have a severe impact on the country's health and safety. Furthermore, China's shift away from coal investment has allowed global GDP growth to decouple from increases in coal demand (IEA, 2016a).

Figure 2.5. **Change in coal demand by region 2014-40**



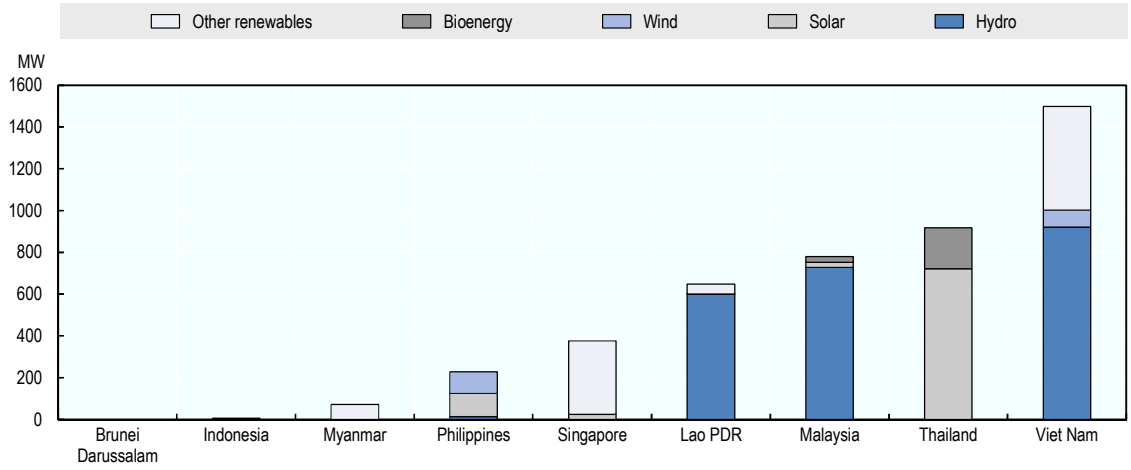
Source: IEA (2016a), *World Energy Outlook 2016*, OECD/IEA Publishing, Paris, http://dx.doi.org/10.1787/weo-2016-en.

Notably, the IEA estimates that 50% of the coal infrastructure in use by 2040 will rely on outdated technology (IEA, 2015b). For this reason, the continued growth of investment in coal power, to ramp up energy supply, risks creating a surge in CO_2 emissions. Introducing climate-mitigation technologies, such as carbon capture and storage (CCS), as well as retrofitting existing coal infrastructure (IEA, 2016c) are necessary.

Asia takes the lead in renewable energy investment and expansion

Asia has become the leading player in renewable energy, attracting more than half of global renewable energy investment (IEA, 2016a). Firms from Emerging Asia, particularly China, are also increasing their outward foreign direct investment in energy with a notable increase in renewable energy investment (Casanova and Miroux, 2017). Increases in renewable capacities will come from diverse sources (Figure 2.6). By 2021, a third of all solar photovoltaic (PV) capacity and onshore wind generation will be in China (IEA, 2016e). India has rapidly expanded renewables to become the fifth largest global renewable energy investor in 2015 with a focus on wind and solar technology (OECD, 2017a). Renewables accounted for 17% of ASEAN's energy mix in 2016 (IEA, 2016e). Hydropower accounts for 70% of renewable generation in the region. Meanwhile geothermal generation is expanding in Indonesia and the Philippines, and Thailand's attractive policies led to a surge in solar PV capacity (IEA, 2016e).

Figure 2.6. **New installed capacity of renewable energy by energy source in Emerging Asia, 2015**



Note: Other renewables includes waste, solid, other biofuels, biogas, geothermal.

Source: OECD (2017a), *Economic Outlook for Southeast Asia, China and India*; OECD Development Centre, based on IRENA (2016), *Renewable Capacity Statistics 2016*, and Federal Ministry for Economic Affairs and Energy (2016), *Thailand Solar PV Policy Update 05/2016*.

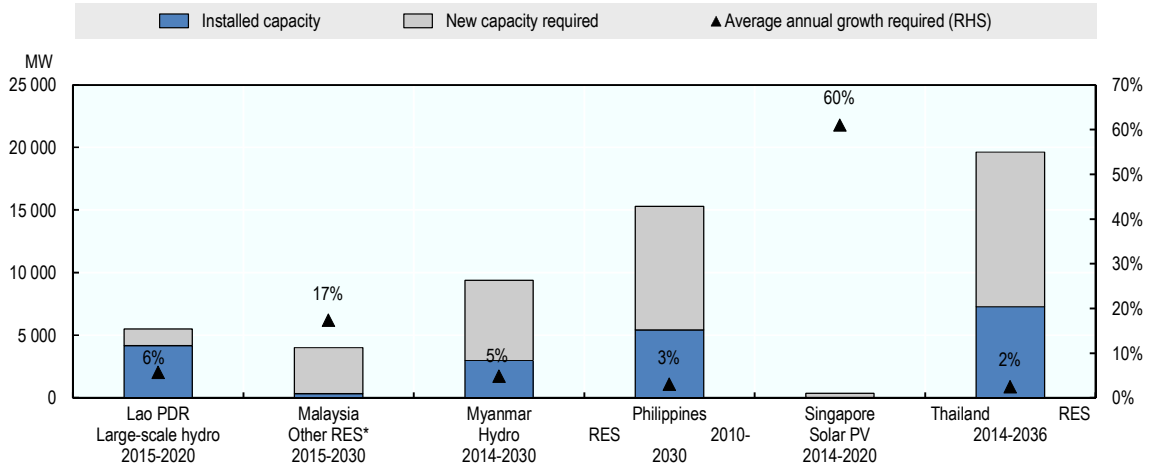
China is the main overall investment destination, followed by India and Thailand. China attracted the most global investment, totalling USD 90 billion in 2015 with 70% going to solar and wind generation (IEA, 2016c). USD 10 billion was invested in India in 2015, marking a 20% increase from the previous year (IEA, 2016c). Thailand attracted the third-largest share of investment in renewables amounting to USD 1 billion. Indonesia was also able to attract USD 11.9 billion in greenfield FDI in renewables between 2003 and 2016 (OECD, 2017a).

The rapid scale-up in renewable investment has contributed to a decrease in costs making the sector more competitive. For example, India's solar capacity increased by a factor of eight while contract prices halved (IEA, 2016c). The increased competitiveness of renewables can also be reflected in the rising of outward FDI from Emerging Asia. While traditional energy investments in fossil fuels have continued, China and India have shown particular growth in outward FDI in renewable and alternative energies (Casanova and Miroux, 2017).

However, expectations will need to remain realistic due to technological and natural resource constraints, despite Asia's progress in expanding the share of renewables in primary energy demand and success in attracting global investment. Technological limitations such as inefficient battery storage capabilities suppress fully maximising renewable resources. Regional disparities in natural resource endowments hinder more forcefully adopting renewable energy (IEA, 2015c).

This growing market has been supported by global trends and political support from governments. Following the Paris Agreement at the 21st Conference of the Parties (COP21), countries pledged to lower carbon emissions and increase renewable energy supply to contain the global rise in temperature to less than 2 degrees Celsius. China's COP21 announcement outlines plans to increase wind energy to 200 GW and solar to 100 GW by 2020 (IEA, 2016a). India plans to expand renewable energy capacity to 175 GW by 2022 (IEA, 2015b). ASEAN has committed to reaching 23% renewable in their energy mix by 2025 (IRENA & ACE, 2016). On national levels, Southeast Asian countries, with the exception of Cambodia, have adopted individual energy targets. For example, Lao PDR and Myanmar set targets aimed at building up the hydropower sector specifically (Figure 2.7) (OECD, 2017a). These targets, in addition to physical infrastructure expansion plans and policies encouraging private participation in renewable energy markets highlighted in the next section, will help to ensure that renewable energy continues to be an attractive investment opportunity. Finally, despite the June 2017 announcement that the United States will cease to implement the Paris Agreement (White House, 2017); Asian economies remain engaged with their climate change goals. In July 2017, G20 economies also reaffirmed their commitment to the Paris Agreement (G20, 2017).

Figure 2.7. **Targets for installed capacity in renewable energy in selected ASEAN member states**



Note: RES=renewable energy source, *Other RES include biogas, biomass, small-scale hydropower and solar PV. The average annual percentage point increase was calculated from the initial year to the end of the period.

Source: OECD (2017a), *Economic Outlook for Southeast Asia, China and India*; OECD Development Centre, based on national energy plans and Intended National Determined Contributions (INDCs).

PUBLIC POLICIES TO EXPAND ENERGY IN ASIA

For energy supply to keep up with the growth in demand, Asian governments will need to attract further private investments from both local and multinational firms. Sub-national, national and regional initiatives to expand energy infrastructure grids provide strong building blocks for further private investment. In addition, governments have used policy reforms to promote renewable energy investment, ease administrative hurdles and facilitate a transition to a greener economy. The transition to cleaner energy sources is accompanied by cuts in fossil-fuel subsidies and support for carbon pricing.

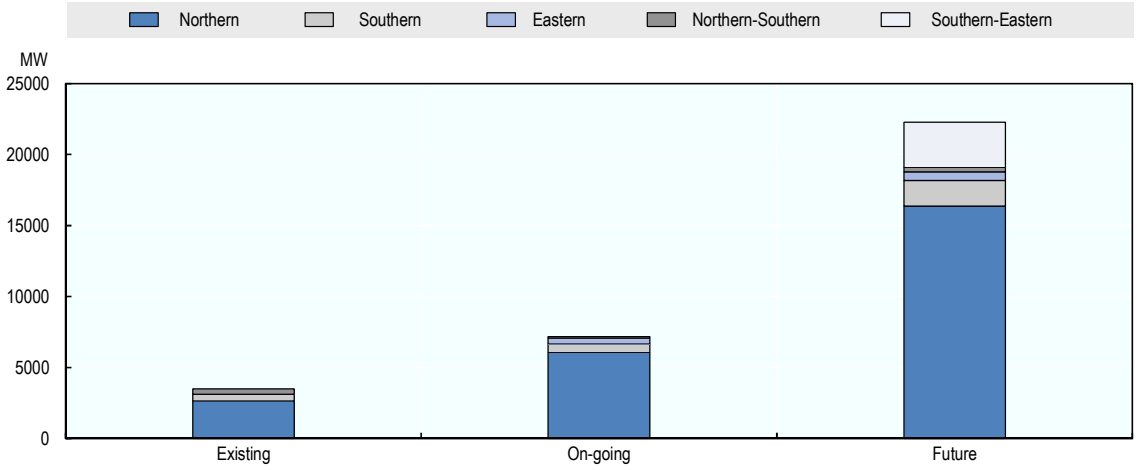
Infrastructure expansion is supporting private investment in energy

Asian governments have prioritised energy infrastructure expansion. This increase in generation capacities and grid networks will improve energy access and security and help to improve the region's investment climate. Poor energy supply is cited as the number one obstacle to growth for firms in Southeast Asia, alongside other barriers such as access to finance, corruption and political risks (ADB, 2016).

Public efforts to expand grid policies are critical to support energy supply increases. The time needed to build grid infrastructure can be considerably longer than installing renewable generation capacities. Thus, even if investment in renewables expands, the increase in energy supply may not be realised if the necessary grid infrastructure is lacking (IEA, 2016a). Finally, participants in the EMnet meeting highlighted how local authorities and local energy agencies have an important role to play to ensure effective and reliable power distribution.

Policies for regional integration initiatives such as the ASEAN Connectivity Masterplan 2025, which includes plans for the ASEAN Power Grid (APG) and the Trans-ASEAN Gas Pipeline (TAGP), can further help catalyse infrastructure growth and attract private investment. The APG has a completed capacity of over 5 000 megawatt (MW) already with an additional 3 300 MW planned to be added to become operational between 2018 and 2021 (Figure 2.8). Progress for the TAGP has been slow, though the creation of liquefied natural gas (LNG) terminals, which can be constructed without the same need for regional co-operation, has progressed faster than the expansion of physical gas in recent years. To expand regional energy infrastructure, governments will need to work together to achieve better synchronisation of legal, regulatory and technical standards (OECD, 2017a).

Figure 2.8. **Transmission capacity of the ASEAN Power Grid**



Source: OECD (2017a), Economic Outlook for Southeast Asia, China and India, http://dx.doi.org/10.1787/888933443628; HAPUA Secretariat (2014), *ASEAN Power Grids Interconnection Projects for Energy Efficiency and Security of Supply*, https://www.carecprogram.org/uploads/2014-Energy-Trade-Pres-Session3-3.pdf

Sub-regional projects have also become more frequent and domestic multinational firms are playing a key role in this expansion. India has pursued sub-regional grids through its 2006 Integrated Energy Policy by connecting generation capacities in Bhutan and Nepal to consumption centres in India through inter-state distribution networks. China has led efforts in expanding grid infrastructure though ultra-high-voltage transmission. China is using their state-owned multinational enterprise, the State Grid Corporation of China (SGCC), to lead grid development. The size and strength of State Grid is particularly notable as it is the world's largest utility and second-largest company in the world, according to the Fortune Global 500 ranking (Fortune, 2017). (Box 2.1)

Box 2.1. China's national and international transmission expansion

China has become a leading player in grid expansion in Asia, driven by their state-owned multinational enterprise, State Grid Corporation of China (SGCC). As the world's largest utility, SGCC has developed ultra-high-voltage (UHV) technology that has facilitated the rapid transmission of renewable energy over long distances. Projected UHV project plans consist of 89 000 km of grid networks by 2020; however, as of 2015, only 11 900 km were in operation.

These investments will facilitate energy transmission from the resource-rich western provinces to major demand centres in the east. Thus, renewable energy investment in rural areas will be able to access consumers in high-demand manufacturing regions, overcoming the geographic boundaries impeding energy targets for decarbonisation set by the government.

This technology is expected to further integrate China's national grid as well as help to connect other grids. Global Energy Interconnection Development and Cooperation Organization (GEIDCO), an NGO based in Beijing focused on sustainable energy development, aims to promote SGCC's grid and the 5+1 strategy that will connect five grids (Northeast Asian, Southeast Asian, Middle Asian, South Asian, West Asian) to the China grid. This grid interconnection will help to transmit clean energy produced in northern China, Mongolia and the Russian Federation to China and Japan as well as increase the development of grid infrastructure in South and Southeast Asia. GEIDCO envisions the creation of similar regional grids on other continents through the creation of development plans, standardization of technical requirements and by promoting international co-operation on research and innovation. These grids could eventually be merged to create a trans-continental "Global Energy Interconnection" (GEI)

Sources: GEIDCO (2016), *Intracontinental Interconnection*, http://www.geidco.org/html/qqnycoen/col-2015100789/-column_2015100789_1.html; IEA (2016c), *World Energy Investment Report 2016*, OECD/IEA, Paris, http://dx.doi.org/10.1787/9789264262836-en; International Electrotechnical Commission (IEC) (2016), *Global Energy Interconnection*, White Paper, http://www.iec.ch/whitepaper/pdf/iecWP-globalenergyinterconnection.pdf; The Lantau Group (2016), *UHV Lines: Shaping the Future of China's Power Sector Landscape*, http://www.lantaugroup.com/files/tlg-china_uhv_jan16.pdf.Xinhua (2017), "Asian Energy Interconnection Inevitable For Cleaner Future: Chinese Expert", China Daily, 18 January, http://www.chinadaily.com.cn/business/2017-01/18/content_27988738.htm.

Governments in Asia acknowledge that investment in off-grid and micro-grid energy technologies may be a more cost-efficient option to close the energy access gap for remote areas disconnected from existing infrastructure (IEA, 2016a). Governments encourage such off- and micro-grid options in areas where grid extension costs are very high. For example, Indonesia's 1 000 Islands programme aims to develop hybrid solar-diesel off-grid energy infrastructure in the outer Indonesian

islands (IEA, 2015b). The private sector views off-grid solutions as an opportunity for growth due to their flexibility. Engie, a French multinational focused on electricity, natural gas and energy services, has partnered with Electric Vine industries to invest USD 240 million over five years to build smart solar PV micro-grids for 3 000 villages in Indonesia, providing electricity to 2.5 million people (Engie, 2017).

Public policies to support investment in renewable energy

With grid infrastructure in place, a number of policies have helped to encourage private investment in renewable energy including feed-in tariffs, efficient pricing mechanisms and tax breaks. In addition, energy efficiency and renewable energy expansion is further supported by fossil-fuel subsidy reforms and carbon pricing (Table 2.2).

Table 2.2. **Renewable energy policy supports in Emerging Asia**

Country	Economic support policies and fiscal incentives								Regulatory support	
	Feed-in tariff	Capital Subsidy grant or rebate	Public investment, loans or grants	Tax relief	Net metering	Auction schemes	Carbon Pricing	RPS	RE Act/Law (REA)/(REL)	RE Action Plan/Roadmap
ASEAN										
Brunei Darussalam										
Cambodia										
Indonesia	✓	✓	✓	✓		✓			2014 Geothermal	Roadmap NRE 2015-25
Lao PDR				✓						
Malaysia	✓	✓	✓	✓		✓			2011 REA	2010 FIT RE Action Plan
Myanmar				✓						
Philippines	✓	✓	✓	✓	✓			✓	2008 REA	NREP 2011-30
Singapore		✓		✓						
Thailand	✓	✓	✓	✓						AEDP 2015-36
Viet Nam	✓	✓		✓						REDS 2015-30
China and India										
China	✓	✓	✓	✓		✓	✓		2005 REL	13th FYP 2016-20
India	✓	✓	✓	✓	✓	✓	✓			

Source: OECD (2017a), Economic Outlook for Southeast Asia, China and India; OECD Development Centre, based on ASEAN Centre for Energy (2016), ASEAN: Renewable Energy Policies; REN21 (2016), Renewables 2016 Global Status Report.

Feed-in tariffs are a vital tool used by most Emerging Asian countries. Feed-in tariffs provide long-term purchasing power agreements (PPAs) to energy producers often with guaranteed access to the grid and priority dispatch (Table 2.3). As such, feed-in tariffs are able to reduce both price and volume risks for investors. Thailand's Adder programme, launched in 2007, featured attractive fixed feed-in premiums for solar energy through PPAs, which saw solar PV investment expand rapidly. Subsequently, Thailand introduced a new feed-in tariff (FIT) scheme in 2015 (OECD, 2017a). Meanwhile, other Southeast Asian nations, such as Viet Nam and Indonesia, have not yet set feed-in tariffs that are attractive enough for investors (IEA, 2016c).

Table 2.3. **Comparison of FIT systems in ASEAN-5, China and India**

Country	Technology						Tariff differentiation					Funding			Design features		
	Bioenergy	Geothermal	Hydropower	Municipal waste	Solar PV	Wind power	Capacity size	Location	Technology	Voltage of grid	Peak/Off-peak	Rate payer	Tax payer	State electricity board	Duration(years)	Guaranteed grid access	Degression rates
ASEAN-5																	
Indonesia	✓	✓	✓	✓	✓		✓	✓	✓	✓			✓		20		
Malaysia	✓	✓	✓		✓		✓		✓			✓			16-21	✓	✓
Philippines	✓		✓		✓	✓			✓			✓			12-20	✓	✓
Thailand	✓		✓	✓	✓	✓	✓	✓	✓			✓			10-20		
Viet Nam						✓					✓	✓			20		
China and India																	
China	✓		✓		✓	✓		✓	✓			✓			20	✓	
India*	✓		✓	✓	✓	✓	✓	✓	✓					✓	13-35	✓	

Recent policy highlights:

- **Indonesia: New government decree on solar FITs in July 2016**
- **Thailand: Replaced Adder programme with FiT PPAs in 2015**

Note: *FIT systems have been introduced on a state-level in India.

Source: OECD (2017a), Economic Outlook for Southeast Asia; OECD Development Centre, based on ASEAN Centre for Energy (2016), ASEAN: Renewable Energy Policies; Federal Ministry for Economic Affairs and Energy (2015), Wind Energy in Viet Nam: Potential, Opportunities and Challenges; Government of India Ministry of New and Renewable Energy (2015), Augmentation and Maintenance of the Indian Renewable Energy and Energy Efficiency Policy Database (IREEED): March 2015 Summary Sheet – Policies and Regulation; The Climate Group (2015b), RE100 China Analysis: April.

Policy instruments that are designed to achieve efficient energy pricing will help to attract private investors. Accurate tariff setting, particularly for renewable energy through FITs or long-term PPAs, will increasingly be done through competitive auctions. China, India and Indonesia have already used this tool to uncover accurate production costs for renewable energies and set feed-in tariffs accordingly (OECD, 2017a). Competitive auctions have reduced contract prices for renewable energies. Better pricing has reduced the risk outlook for renewable energy and decreased financing costs (IEA, 2016e).

Time-of-day pricing can also decrease pricing risks for investors. It helps to limit supply shortages by encouraging energy users to self-regulate around peak and off-peak energy times. Thailand, for example, differentiates between peak and off-peak pricing and has improved the investment outlook by increasing revenues for renewable producers who are active during off-peak hours and works in conjunction with FIT policies (OECD, 2017a).

Tax breaks and financial incentives are helping to draw renewable investment into Asia. India offered a ten-year tax holiday for companies that would be able to feed renewable energy into the grid before March 2017 (KPMG, 2015). India offers further tax and fiscal incentives by limiting taxes on engineering and construction procurement that can amount to 10-20% of renewable project costs (KPMG, 2015). Viet Nam lowered its corporate tax from 22% in 2014 to 20% in 2016 and increased competition laws. China offers a corporate tax rate of 15% for new technology companies in solar, wind, geothermal and biomaterial energy. China includes value-added tax (VAT) refunds on the sale of wind power, self-produced solar PV and bioenergy as an additional incentive for investment in renewable energy (KPMG, 2015).

Public policies to reduce fossil-fuel subsidies and price emissions

Asian governments also recognise that to make renewable energy investment attractive, fossil-fuel subsidies will need to be removed. This policy shift was facilitated by lower oil prices as well as by the political momentum arising from regional co-operation initiatives, the Group of Twenty (G20) pledge to phase-out inefficient fossil-fuel subsidies, which includes China, India, Indonesia, Japan, and Korea, as well as COP21 commitments. In addition, carbon pricing and emission trading systems will incentivise more green investments in Emerging Asia.

Many governments in the region have already started phasing out fossil-fuel subsidies. In 2014, fossil-fuel subsidies in Southeast Asia totalled USD 36 billion but proved to be inefficient at targeting poor and vulnerable households (IEA, 2015b). Since then, Indonesia, Malaysia, Myanmar and Thailand have been very effective at phasing out fossil-fuel subsidies. Indonesia and Malaysia removed gasoline and diesel subsidies. Thailand regulated prices for compressed natural gas (CNG) in July 2016 (IEA, 2016a). India slashed its fossil-fuel subsidy expenditures from USD 38 billion to USD 19 billion between 2014 and 2015, while its subsidies for renewable energy increased by almost 40% to USD 2 billion (IEA, 2016a).

Taxes on carbon emissions will also affect energy prices. However, only India and China have implemented carbon pricing policies to date. China will roll out its national cap and trade carbon emissions system in 2017, after a number of successive emission trading system (ETS) pilots. China's national ETS targets four billion carbon tonnes worth of emissions and can have a substantial global impact as China is responsible for 27% of all carbon emissions (OECD, 2017b).

This will have wide-ranging effects on the country's economy as the ETS will cover six sectors across all provinces, with implications for 10 000 businesses (Hongliang, 2016). It is also likely that other emerging economies in Asia will follow suit and develop their own individual ETS.

BUSINESS INSIGHTS ON ENERGY CHALLENGES AND EVOLVING OPPORTUNITIES

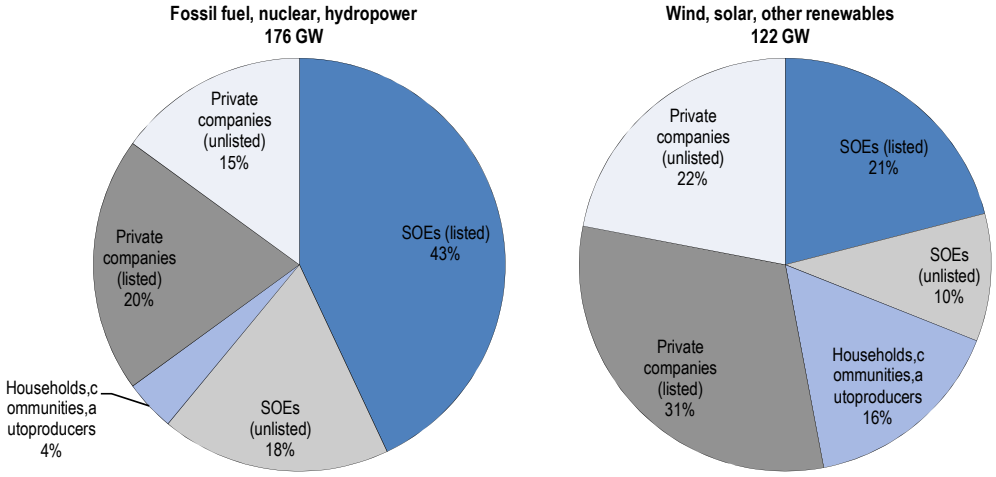
Participants at the EMnet business meeting agreed that Asia is at the heart of future opportunities for growth, including in the energy sector. A number of countries, including India, Myanmar and Indonesia, are undertaking policy reforms to attract private companies to bridge the infrastructure gap (OECD, 2017a). Ongoing progress in removing restrictive regulations and introducing more transparent legal frameworks has improved Asia's attractiveness for business. This section features insights from the EMnet Asia meeting held in Paris on 14 March 2017 and explores where the private sector sees new opportunities for energy investment, particularly in renewable capacity expansion. It highlights barriers hindering investment, including unpredictable policies, regulatory constraints, limited financing tools and skills mismatches. Ultimately, it provides recommendations and solutions from business leaders' perspectives.

Asia's renewable energy market is attracting the private sector

Energy expansion in emerging economies has principally been demand driven (IEA, 2016a). This is clearly the case for Asia's thriving energy sector. An ongoing surge in energy demand provides attractive opportunities for both large-scale global energy companies and small independent power producers. Participants highlighted that the slowdown in energy demand in other global economies has added to Asia's attractiveness as a main investment location. In addition, clear renewable energy targets set by governments are sending a signal to companies looking for long-term investment opportunities (OECD, 2017a).

The private sector favours investment in the renewable energy sector. After telecommunications, the power sector is the second-largest destination for private investment in infrastructure in Developing Asia[5], based on analysis by the Asian Development Bank (ADB, 2017). China, India and Indonesia attracted more than 60% of the region's greenfield FDI inflows in renewable energy (OECD, 2017a). Globally, 55% of renewable power generation capacities are owned by private companies, compared to only 35% private ownership of fossil-fuel generation capacities (Figure 2.9) (IEA, 2016c).

Figure 2.9. **Ownership of global power generation capacity commissioned in 2015**



Note: SOE = state owned enterprise; plants with mixed ownership are fully attributed to the majority owner.

Sources: IEA (2016c), World Energy Investment Report 2016. Calculations based on Platts (2016), World Electric Power Plants Database; Bloomberg LP (2016), Bloomberg Terminal; Bloomberg New Energy Finance (BNEF) (2016a), Renewable Energy Projects.

Asia is attracting the highest amount of private investment due to decreasing technology costs and innovation capacities. For example, solar PV technology costs in China are 15% lower than the global average (IEA, 2016c). This rise in investment is producing new opportunities for the private sector. For example, the Spanish wind turbine company Gamesa has invested heavily in Asia. This confidence has paid off as the company has realised substantial growth with a 34% market share in India. The region now constitutes 50% of Gamesa's sales, mainly in India, the Philippines and China (Reve, 2016). Asian firms are also increasingly looking to the energy markets for outward FDI both within neighbouring Asian countries and beyond. There is strong growth in outward FDI from both China and India in renewable energies (Casanova and Miroux, 2017).

Non-energy companies see new opportunities in the energy sector to generate more profits

The investment potential of Asia's energy demand and growing consumer base will not only benefit energy companies; other international companies not traditionally involved in the energy sector are becoming new players as energy producers. Diversification into energy is a strategic way for companies to access new revenue streams or cut costs by reducing energy consumption from the grid. Examples of companies that have entered the energy market include Indian multinational conglomerate Tata and Tereos, a French sugar, starch and ethanol company. Tata Power, a Tata group subsidiary, has an installed capacity of over 10 000 MW, a third of which is renewable, making it India's largest renewable energy company (Tata Power, 2017a). High energy needs encouraged Tereos to find alternatives to fossil fuels by including co-generation facilities in their corn and wheat facilities in China. There, the company uses by-products to generate renewable energy, cut energy costs and reduce carbon emissions (Tereos, 2016).

Technology has opened up new market opportunities in environmental technologies

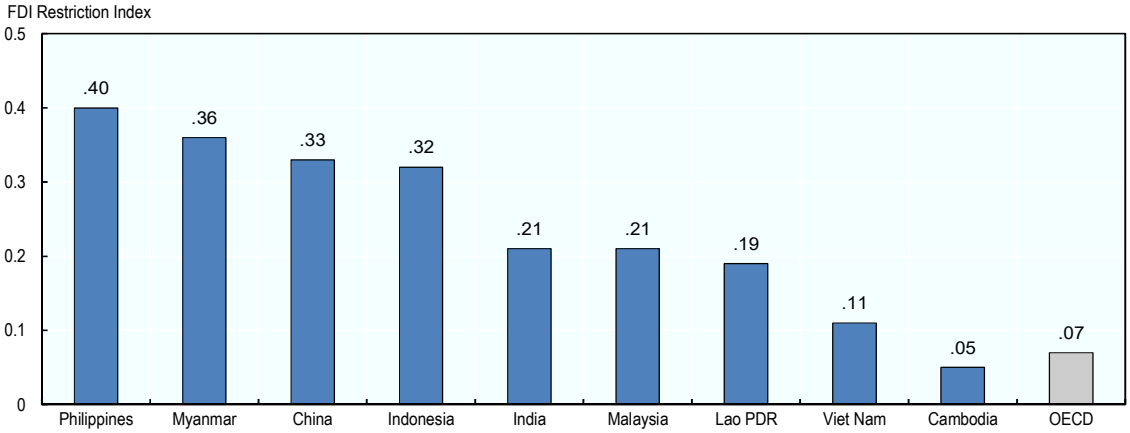
The private sector is well placed to lead innovation in environmental technology and energy efficiency solutions. The region's continued expansion of fossil fuels, predominantly coal, will create a large market for CCS, technologies and techniques that allow for CO_2 to be captured, transported and stored. While EMnet participants were concerned about the high costs of these technologies, further national commitments to climate change adaptation and stringent emission limits are expected to support the development of new and more efficient environmental technologies.

Energy digitalisation is also being led by the private sector to increase energy efficiency through smart technologies such as sensors, smart grids and digital management systems, especially in cities. In 2016, Singapore signed partnership deals worth USD 10 million with five private companies through the Singapore Power Centre for Excellence. The centre was launched in 2015 to support innovative energy pilot projects. Companies such as GE's Grid Solutions, NEC and IJENKO will provide smart grids and energy analytic platforms for cities (GE, 2016; IJENKO, 2016).

Investment in Asia still faces roadblocks

While showing promising growth, investment in Emerging Asia continues to face policy hurdles including policy unpredictability, restrictions on foreign ownership and stringent local content requirements (LCR) that can significantly restrict foreign investment (Figure 2.10). Participants at EMnet Asia 2017 highlighted these aspects as barriers to business expansion and provided insights on how governments can improve the overall investment climate.

Figure 2.10. **FDI Restriction Index in selected Asian countries**



Note: Includes all types of restrictions.

Source: Author's elaboration based on OECD (2016b), *FDI Regulatory Restrictiveness Index* (accessed on 15 May 2017).

Predictable policies and stable environments can facilitate investment

Participants at EMnet Asia 2017 stressed the need for a predictable policy framework to attract more private investment in the energy sector (OECD, 2015b). Short-term policies and retroactive changes make investors wary about the unforeseen impact these sudden shifts can have on long-term fixed investments, such as power plants or grid enlargements. Even if policies are made transparent and comprehensive, participants highlighted specific areas of concern including energy prices, grid access and carbon pricing. These three aspects crucially influence the private sector's long-term planning for investments as they impact the prospects of future returns.

With the marginal costs of renewable energy continuing to decline, combined with more accurate energy tariffs, energy prices are expected to decrease. However, how this will impact private energy producers who have signed long-term PPAs remains uncertain. Should governments enforce energy tariff reductions, companies may face increased difficulty to repay investment costs. Current policies for competitive bidding auctions for energy projects are also pushing down energy prices to very low levels, which decrease the prospective return on investment in the energy sector. This combination is creating uncertainty and potential future risk.

FIT policies have been used as a mechanism to attract private energy producers into the grid through guaranteed grid access. However, after reaching renewable contribution goals, certain countries are removing support policies that prioritise private producers. For investment to continue, countries need to clarify the extent and lifespan of FIT policies as well as make sure that any policy changes regarding subsidies and grid access are foreseeable for companies making long-term investments (OECD, 2015b).

Carbon pricing will also benefit from predictable and transparent planning. Policy instruments like ETS or carbon taxes will help companies internalise the environmental costs of carbon emissions. Participants are in favour of carbon pricing and ETS and are aware that it will help to generate a more competitive and equal energy market. In 2016, the Indian multinational Mahindra & Mahindra was the first company in Asia to implement an internal carbon pricing at USD 10 per tonne of carbon emitted. The carbon price will help the company achieve its pledge of a 25% reduction in greenhouse gas emissions in three years (Mahindra & Mahindra, 2016).

Restrictions on foreign investment remain a challenge to attract investment

Foreign ownership restrictions for energy projects have been highlighted as an important barrier to FDI in Asia. For example, energy projects in the Philippines only allow a 40% foreign equity stake (OECD, 2017a). In Malaysia, energy companies may not exceed 49% foreign ownership if they wish to be eligible for FITs. Indonesia also inhibits foreign companies from participating in FIT bidding schemes unless they partner with local firms for tax registration purposes (OECD, 2017a). Policies limiting foreign ownership can act as a substantial deterrent for private sector investment in energy infrastructure as well as for FDI overall. Allowing majority ownership for foreign firms can attract regional and international multinational investors who are willing to share investment risks and provide new technology and innovations. On the opposite end of the spectrum, some countries have opened up the renewable sector to full foreign ownership in an effort to rapidly increase capacities. For example, Myanmar allows 100% foreign ownership in hydropower as it attempts to increase energy capacities in the sector.

Local content requirements need to be aligned with domestic capacities

LCRs are policies set by governments that require firms to use domestically manufactured goods or domestically supplied services to operate in an economy (OECD, 2016a). However, LCRs can act as a constraint on foreign investment (OECD, 2015a). The OECD's *Policy Guidance for Investment in Clean Energy Infrastructure* specifies that personnel requirements and other related LCRs may limit an important source of investment by preventing the integration of independent power producers in the energy industry. LCRs can pose the following problems for foreign investors: 1) Strong LCRs make investors dependent on the capacity and quality of local supply chains. 2) It may prevent cost-competitiveness as investors may not be able to import lower-cost inputs from other markets. 3) It poses a technology risk by requiring investors to use local technology from local manufacturers that may be more expensive and less effective than technology from more developed markets (OECD, 2015b).

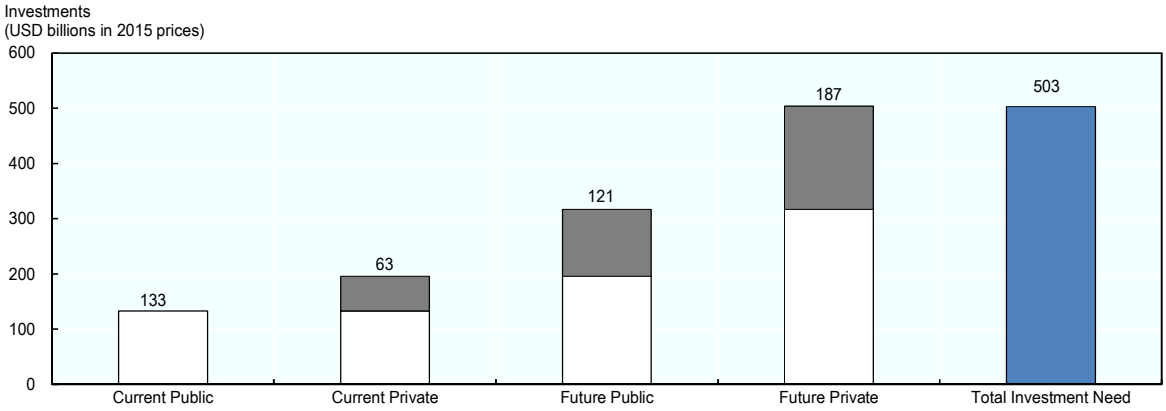
Companies at the EMnet Asia business meeting felt that certain LCRs may prevent foreign investment. This is because local manufacturing capacities may be at a lower standard or that the quality of input goods is insufficient. This can lead to inefficiencies, higher costs or poorer final products. While acknowledging the potential valuable contribution of LCRs for economic development, companies suggested that they should be carefully adapted to the local context to benefit both domestic communities and foreign investors.

Some countries in Asia have more capacity and better developed value chains to ensure that LCRs are not prohibitive for foreign investors. Participants suggested that India and China are markets in which LCRs are manageable. Sometimes, less developed economies decide not to implement LCRs as the government recognises that it does not have the local capacity required. Myanmar, for example, has made exemptions for LCRs in its oil and gas sector to attract foreign investment (IEA, 2015b). Participants highlighted that LCRs will not lead to substantial job creation necessarily, as manufacturing jobs account for less than 40% of total job creation in the clean energy sector (OECD, 2015a).

Financing Asia's energy expansion

Financing gaps for infrastructure investment in Asia are considerable. The Asian Development Bank estimates that Developing Asia[5] requires USD 503 billion of infrastructure investment to meet future needs but faces an investment gap of USD 308 billion between 2016-20 – the majority of which the private sector is expected to meet (ADB, 2017). However, private investment in infrastructure in Asia only amounted to an estimated USD 63 billion in 2016 (Figure 2.11) (ADB, 2017).

Figure 2.11. **Meeting the Investment Gaps: Selected ADB Developing Member Countries*, 2016–2020**



Note: *Selected countries include: Afghanistan, Armenia, Bangladesh, Bhutan, Cambodia, India, Indonesia, Fiji, Kazakhstan, Kiribati, Kyrgyz Republic, Malaysia, Maldives, Marshall Islands, Federated States of Micronesia, Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, People's Republic of China, Sri Lanka, Thailand, Viet Nam.

Source: ADB (2017) *Meeting Asia's Infrastructure Needs;* ADB (2016a); Country sources; Investment and Capital Stock Dataset, 1960–2015, IMF; Private Participation in Infrastructure Database, World Bank; World Bank (2015a and 2015b); World Development Indicators, World Bank; ADB estimates.

However, companies looking to Asia for investment expressed that underdeveloped financial markets create difficulties for private investment. The lack of long-term finance for critical energy projects remains an obstacle that prevents many projects from taking place. Participants highlighted that this is due to local banks preferring short-term maturities, but other limitations include a lack of banking competition, poor risk assessment for projects and an aversion for lending to new actors such as foreign private firms (OECD, 2015b). Asia's need for infrastructure is vital and a number of innovative financing tools such as green bonds are helping to improve the outlook for investment opportunities. However, participants highlighted how a shortage of accessible local financing options for infrastructure projects in Asia can expose investments to currency risk if foreign capital is utilised. Furthermore, investment projects in risky geopolitical areas struggle to attract sufficient capital to break ground and will require strong partnerships to find financing solutions.

Public finance and new tools to attract private investment

Multilateral development banks such as the Asian Development Bank (ADB) provide an important source of financing. In total, these multilateral banks supported 2.5% of infrastructure investment in Developing Asia. This percentage increases to over 10% if China and India are excluded. The ADB sees infrastructure as an essential sector for growth and will increase its annual loan and grant approval to USD 20 billion per year by 2020 (ADB, 2017). There are also new players among multilateral development banks, notably the New Development Bank (NDB) and the AIIB launched in 2015 and 2016 respectively. The NDB, sometimes known as the BRICS development bank, is jointly owned by Brazil, Russia, India, China and South Africa. The New Development Bank

has a strong focus on infrastructure, particularly clean energy, water and transport (NDB, 2017). It is also using green financing instruments such as green bonds (NDB, 2017). The AIIB is led by China and aims to expand infrastructure and support regional connectivity projects. As part of its draft energy sector strategy *Sustainable Energy for Asia,* the AIIB will support renewable and clean coal investments in developing countries to promote sustainable infrastructure, cross-country connectivity and private capital mobilisation (AIIB, 2017).

Governments are looking into how to leverage public funding to attract private investment, including through blended finance. For example, the Indian government has set up the Clean Energy Equity Fund (CEEF) for both private and public companies (USD 2 billion) to attract investment into renewable energy generation for New Delhi. This project is part of a wider renewable energy programme that seeks to attract USD 175 billion in investment (Das, 2016). Domestic green investment banks have prioritised renewable energy expansion with a focus on solar PV and wind generation (OECD, 2016c).

The development of green bonds is another way to stimulate private investment in renewable energy and green technologies. Green bonds are fixed income securities that are pledged to projects with a positive environmental impact. Globally, the market for green finance has grown rapidly with USD 95 billion of investment capital raised in 2016 through green bonds compared to USD 3 billion in 2011 (OECD, 2017d). Green bonds can help increase available finance for infrastructure in Asia but it is still in its infancy in the region. However, Hong Kong has outlined a strategy to become a regional green finance hub (Box 2.2). Hong Kong is not the only Asian economy looking to grow its green financial market. Japan, Indonesia, Malaysia and Singapore have made progress on their own initiatives (FSDC, 2016). As of 2016, China has also issued several green bonds to the value of USD 8 billion, some of which are backed by renewable energy assets (IEA, 2016c).

Box 2.2. Hong Kong as a green finance hub for Asia

Hong Kong, China sees green finance as an opportune area for growth to increase its standing in the international bond and project finance market. The Financial Secretary's budget speech for 2016/17 highlighted that the government will support the development of Hong Kong's bond and infrastructure financing markets. This commitment was influenced by the People's Bank of China's estimate that over USD 1.5 trillion will be needed in China alone to finance green projects during the 13th Five Year Plan.

Hong Kong's green bond market will leverage financial capital for renewable energy investment. This capital will be crucial to achieve the goals outlined in Hong Kong's Climate Action Plan 2030+ that include reducing per capita carbon emissions from 6.2 tonnes to 2.3-3.8 tonnes and cutting overall carbon emissions by 26-36% by 2030. Notable green bonds that were issued in 2016 in Hong Kong include a USD 500 million bond (2.875%) from Link Asset Management Ltd. It was the first green bond from an Asian property company and will be used to develop an energy-efficient office development in East Kowloon. MTRCL, the Hong Kong rail network operator, issued a ten-year USD 600 million green bond (2.5%) to speed up investment in environmental performance.

Sources: Environment Bureau of Hong Kong, China (2017), Hong Kong's Climate Action Plan 2030+. www.climateready.gov.hk; Financial Services and Development Council, Hong Kong (FSDC) (2016*), Hong Kong as a Regional Green Finance Hub*. FSDC Paper no. 23. http://www.fsdc.org.hk/sites/default/files/Green%20Finance%20Report-English.pdf.

Exposure to currency risk remains a challenge for infrastructure investment

EMnet participants noted currency risk concerns regarding infrastructure investment in Asian markets. Financing roadblocks caused by underdeveloped or illiquid local credit markets can be eased by facilitating international borrowing for local infrastructure projects. While funds for infrastructure from international capital markets are increasingly becoming available, borrowing substantial sums in a foreign currency increases a project's exposure to currency risk.

At present, participants highlighted that currency risk mitigation tools are underdeveloped in Emerging Asia. Still, a number of mechanisms can be put in place to limit exchange rate volatility risks including: private insurance for currency risk coverage, partial credit guarantees as well as syndicated loans to ensure that at least a portion of an infrastructure project is funded by local credit institutions (OECD, 2015b).

Risky regions in Emerging Asia face additional challenges

Participants emphasised how political uncertainty can limit private investment in energy infrastructure projects. To overcome hesitations around geopolitical risks, partnerships between the public and private sector as well as other institutional actors can ensure that these projects break ground. An example includes the 720 MW Karot hydropower plant in Pakistan led by the independent power company China Three Gorges Corporation (CTGC). The International Finance Corporation (IFC) invested USD 100 million for a 15% equity stake in the USD 1.7 billion project that aims to reduce Pakistan's large power deficit (Bermingham, 2017). Other project partners include China Export Import Bank, China Development Bank and Silk Road Fund. The project is part of the wider China-Pakistan Economic Corridor (CPEC) that has contributed to a more stable risk environment for Pakistan (IFC, 2016; Energy Business Review, 2017).

New skills are needed for a growing energy sector

Job creation and skills development are vital aspects of the growing renewable energy market in Emerging Asia. Foreign Direct Investment (FDI) is contributing to rapid growth in green jobs. As a result, the private sector faces a considerable skills shortage when hiring local labour. Manufacturing components for renewable energy, managing and maintaining infrastructure, and using new technologies will require a rapid scaling of skills capacities. To ensure that Emerging Asia's workforce is better adapted to the future needs of employers, the public and private sector have to look into new and innovative ways to further work together to bridge the skills investment gap.

The current shortage of relevant skills can limit the growth in green jobs generated by the renewable energy sector

Expansion in the energy sector can contribute to job growth throughout Emerging Asia. Boosted by private investment in the renewable sector, green jobs in China, India and Japan already employed 4.3 million people in 2015 (IRENA, 2016). Overall, Asia's global share of renewable energy jobs rose to 60% in 2015, up from 51% in 2013 (IRENA, 2016). In comparison, the number of jobs created through FDI in traditional fossil fuel energy sectors has declined (OECD, 2017a). Skills geared towards renewable energy and energy technology will be increasingly important. For example, India's goal of reaching 100 GW of solar energy production by 2020 holds massive

potential for job creation. Up to 1.1 million job opportunities could be created, and at least 30% would be for skilled labour (IRENA, 2016). This highlights the need for training schemes that develop the appropriate skills to implement energy projects.

Participants at the EMnet Asia meeting highlighted that a shortage of necessary skills is inhibiting opportunities for further growth. For energy projects to increase productivity, companies will need to find labour locally with the right set of skills. Companies are competing with other sectors such as Information and Communication Technology (ICT) and transport for workers with transferable skills applicable in the energy industry.

Analysis by the Council on Energy, Water and Environment and the Natural Resource Defence Council's survey of 40 solar companies in India noted similar findings. 83% of companies said that the largest impediment facing the labour market was that skilled workers were difficult to find. A diverse set of skills in renewable energy needs to be developed to fill jobs in manufacturing, business development, data management, design and construction (CEEW and NDRC, 2016).

Furthermore, finding staff for energy infrastructure investments in areas facing geopolitical risks can be challenging. Heightened safety concerns could lead to labour shortages with potential candidates being unwilling to work in these areas.

Technology advancements mean that energy workers will need digital skills

The rapid adoption of digital energy tools will mean that the labour market in Asia will need to develop new skills and invest in skills adaptation for changing roles. The digitalisation of energy will increase the demand for skills in engineering, computer literacy and digital security. Digital technology itself, such as wearables, could reskill and upskill workers in this field by assisting them with technical aspects of their jobs (Spelman, 2016). Data management will become a critical skill needed by companies as smart grids and digital management become an integral part of the energy sector.

The private and public sectors can work together to improve training

Public-private partnerships could help to decrease the skills mismatch arising from the rapid energy transition in Asia. In that survey of 40 solar companies, questions about renewable energy skills found that 70% of workers are taught skills by internal training programmes run by companies, while only 46% received formal vocational training and 16% learnt skills at academic institutions (CEEW and NDRC, 2016). However, companies and governments can work together to improve training programmes and help to ensure that workers' skills are developed to match the private sector's needs. Tata Power, for example, provides a market-driven response through the Tata Power Skill Development Institute. It has trained 11 000 youth in critical skills needed in the power sector through four training hubs across India (Tata, 2017).

Governments are aware that current public training programmes are insufficient. Solar companies in India also highlighted that training facilities are located too far from where workers are needed (CEEW and NDRC, 2016). To overcome this, online courses and educational materials are becoming key tools for training workers for the new skills needed in energy sectors (Spelman, 2016). For example, in 2017 the Indian government announced the launch of an online training certification for solar technicians (NIWE, 2016).

CONCLUSION

Energy is at the centre of business opportunities in Asia, while continuing to be a challenge. Continued robust economic growth has expanded the region's consumer base and driven up energy demand, thus creating vast opportunities. For the business sector, renewable energy holds great potential due to the abundance of natural resources as well as strong political support from across sectors, as governments aim to bridge the investment gap with private capital or though blending resources. Opportunities abound in power generation, energy efficient production, and the development of technological solutions that will help to improve energy access, efficiency and security, including smart grids, sensors and environmental technologies. Firms outside the energy sector are also becoming energy producers to generate revenues or reduce costs.

Asian firms and newly-created development institutions are also showing leadership in developing energy infrastructure and making it top priority. Asian multinationals, particularly those from China and India, are expanding investment in energy not only within their home countries but also within the region and beyond. Recently-created multilateral development banks such as the New Development Bank and the Asian Infrastructure Investment Bank are prioritising energy infrastructure development. Divergent energy capacities will have an impact on business opportunities in Asia. Companies looking to expand manufacturing capacities, particularly in Southeast Asia and India, will need to be wary of strained infrastructure capacity. While investors in China may not face critical infrastructure shortages, they will need to be aware of changing policies and stricter environmental regulations as the economy matures and growth slows.

Ongoing progress is necessary on removing barriers for investment. This involves overcoming administrative hurdles and ownership restrictions and improving policy stability and access to finance. Yet, the rapid growth of energy capacities and the political support for a regional transition to a sustainable low-carbon future signal that new investment opportunities in Asia will continue opening up for the private sector.

Notes

[1] ASEAN-5 member states include Indonesia, Malaysia, the Philippines, Singapore and Thailand.

[2] ASEAN-Plus-One agreements are a series of accords establishing Free Trade Areas between the ASEAN member states and some of the world's major economies such as: China, Japan, Korea, Australia, New Zealand and India.

[3] RCEP member states include Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam, Australia, China, Korea, India, Japan and New Zealand.

[4] The Asian Development Bank (ADB) includes 45 member governments as part of Developing Asia and but has excluded India and China from this analysis. Developing Asia includes the following countries: Central Asia: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan; East Asia: People's Republic of China, Hong Kong (China), Korea, Mongolia, Chinese Taipei; South Asia: Afghanistan, Bangladesh, Bhutan,, India, Maldives, Nepal, Pakistan, Sri Lanka; Southeast Asia: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam; The Pacific: Cook Islands, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu, Vanuatu.

[5] See previous note for the list of the 45 countries that form part of "Developing Asia", according to the Asian Development Bank (ADB).

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Navigating uncertainty: Strategies for innovation and growth

With an improved economic outlook, Latin America has an opportunity to lay the foundation for innovation-driven growth. This note provides insights and suggests policy recommendations from the private sector on ways to enhance productivity and innovation in Latin America. It gives an overview of regional economic and business trends, highlights public policy efforts to upgrade skills and enhance innovation, and offers private sector insights on topics such as regional integration, digital economy and skills. The analysis builds on discussions at the OECD Emerging Markets Network (EMnet) meetings on doing business in Latin America, held on 9 June 2017 in Paris, France, and in Buenos Aires, Argentina on 14 October 2017, in addition to desk research and bilateral discussions with EMnet members.

Key messages include:

- Despite facing several internal and external challenges, Latin America's economic prospects are finally improving. The region must leverage this positive outlook to implement policies that will support innovation.
- Trade will play an essential role in increasing productivity and underpinning growth. Latin America will need to enhance regional integration, diversify its economies and build new partnerships with markets in Europe and Asia.
- Significant skills shortages persist in the region in an era when digitalisation is changing labour market needs. Public initiatives to promote ICT skills and improved co-operation between the public sector, private sector and academic actors are needed to reduce skills gaps and increase digital literacy.
- Corruption can come at a high price to investment in Latin America. Fighting corruption by enhancing the rule of law and strengthening its enforcement is essential to improve business confidence and attract foreign investors.
- Access to funding for innovative projects is still lacking in Latin America. The strengthening of financial markets and the mobilisation of public funds can kick-start innovative projects and stimulate growth.
- Coverage gaps for high-speed mobile and internet connections remain and inhibit innovation. Policies can play an important role in providing a solid legal and regulatory framework for investments in infrastructure projects.

LATIN AMERICA'S ECONOMIC AND BUSINESS OVERVIEW

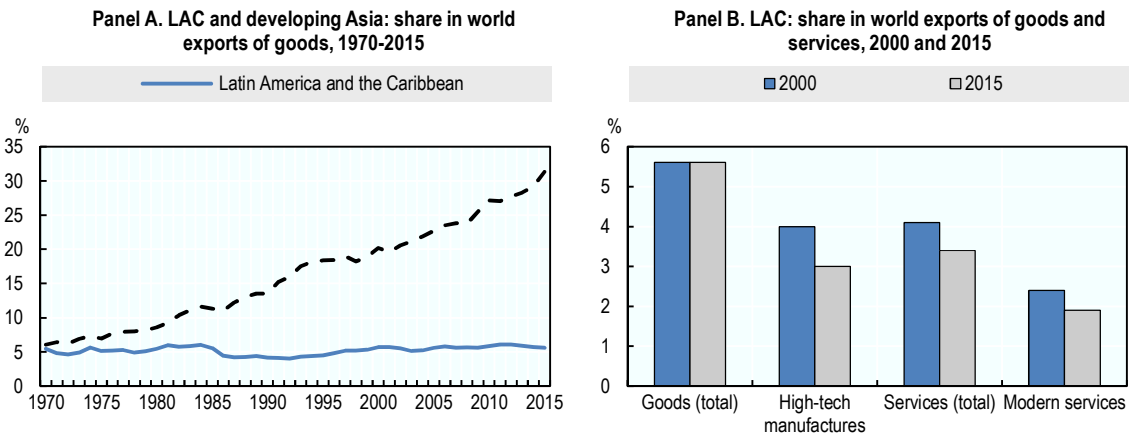
Return to economic growth although internal and external challenges remain

Latin America is finally coming out of a prolonged economic slowdown. After two consecutive years of recession, the region is expected to recover in 2017 with GDP growth around 1-1.5% and 2-2.5% in 2018 (OECD/ECLAC/CAF, 2018). The economic outlook highlights the diversity in economic performance across the region. Commodity exporters in South America are expected to do better, driven by the rise in commodity prices and reduced inflation. Brazil and Argentina will exit their recessions, but economic performance will remain moderate. The Andean region will continue to adjust to lower, yet improved commodity prices. The Caribbean region is expected to recover slightly after contracting in 2016 (OECD/ECLAC/CAF, 2018). Slowdowns in large infrastructure investments could also threaten growth, particularly in Argentina, Colombia, Panama and Peru, where a number of projects linked to corruption scandals have recently experienced turmoil. For example, in Peru, a large infrastructure project to build a gas pipeline in the southern part of the country was put on hold. The resulting paralysis, which put 15 000 people out of work, forced the government to put the project out to tender again (Mitchell, 2017). In terms of external pressure, trade policy uncertainty in the United States can negatively impact the economies of Mexico and Central America, in particular.

Global trade is rebounding but Latin America needs increased integration and product complexity

Globally, world trade is recovering but has not yet reached past levels. This improvement can be attributed to economic recovery in Europe, an improvement in the electronics trade in Asia as well as a transition to greater global investment demand, which draws more heavily on imports (OECD, 2017d). The pace of new trade restrictions in G20 countries is also slowing (OECD/WTO/UNCTAD, 2017). Yet, Latin America is not showing signs of taking full advantage of these improved global trends. The region's share of world trade has remained stagnant with an average of 5.4% from 1970-2015, whereas other regions, such as Asia, have seen their share of world exports rise steadily (Figure 3.1).

Figure 3.1. **Latin American exports as share in world exports**



Note: Developing Asia excludes Western and Central Asia.

Source: OECD/ECLAC/CAF (2018 forthcoming), Panel A based on data from UNCTAD, UNCTADSTAT database. Panel B based on COMTRADE database (goods) and WTO (services).

The composition of exports has not changed significantly, as larger economies such as Argentina and Brazil remain reliant on natural resources. Changes in prices have had strong effects on Latin America's export performance in the past, primarily due to the important role that commodities play in the region's exports (OECD/ECLAC/CAF, 2018). The high commodity prices in recent years led many countries to rely too heavily on primary products while neglecting more value-added industries (OECD/ECLAC/CAF, 2018). The challenge now is to promote economic diversification, enhance production transformation and broaden participation in global value chains.

At present, Latin America's participation in global value chains (GVCs) remains limited. Only small fractions of domestic value added originating from Latin American countries go into the exports of other countries. Similarly, little foreign value is added to the gross exports of the countries in the region. The region has made limited progress in this regard since the 1990s, as the region's participation in world exports' value added remains negligible. For example, Latin America was at the origin of 4% of the value added in the world's exports in 2014, up from 3% in 1995, based on data from seven countries (Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru) (OECD/ECLAC/CAF, 2018). Furthermore, Latin America's use of imported intermediate products in its exports is limited. In 2014, 13% of the exported value in Argentina, Brazil, Chile, Colombia, Costa Rica and Peru originated in other countries, a low figure compared to 19% for NAFTA countries and around 30% for the European Union, China and Southeast Asia (OECD/ECLAC/CAF, 2018). Within the region, these linkages are dominated by a few countries. Notably, Brazil and Mexico each represent one-third of the region's foreign value added (OECD/ECLAC/CAF, 2018).

Expanding trade within the region is crucial. Only 16% of Latin America's exports go to other countries in the region. The region's size, geography and poor transport infrastructure hinder expansion of trade (OECD/ECLAC/CAF, 2018).Trade also remains highly concentrated in a few large economies. Argentina, Brazil, Chile, Mexico and Venezuela have represented more than 70% of total exports and imports in the past 15 years (OECD/ECLAC/CAF, 2018).

The region has made progress in opening economies to trade, as countries throughout Latin America are liberalising tariff measures. Members of the G20 (Argentina, Brazil, Mexico) in particular, are taking active steps to facilitate international trade. However, restrictions from non-tariff barriers remain. These barriers include measures such as standards and technical regulations that inadvertently restrict imports. The most common non-tariff barriers in Latin America are related to local content requirements, non-export subsidies, tariff-rate quotas and import-licensing procedures (OECD/ECLAC/CAF, 2018).

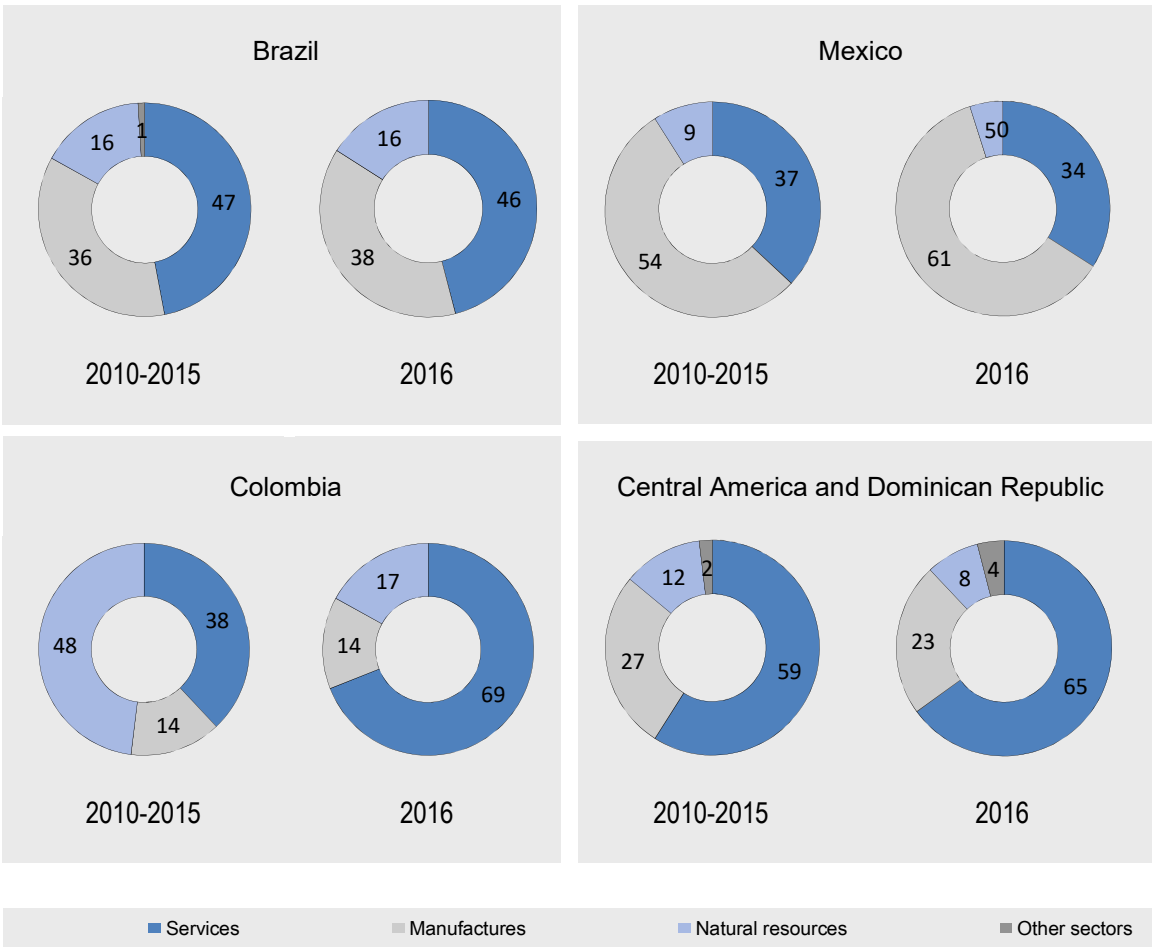
Foreign direct investment continues to decline but is diversifying beyond extractives

FDI into Latin America has declined between 8 and 14% in 2016 depending on the different estimates from the Economic Commission for Latin America and the Caribbean (ECLAC) and the United Nations Conference on Trade and Development (UNCTAD). According to ECLAC, FDI inflows declined by 7.8% in 2016 to USD 167.2 billion and have decreased by 16.9% since 2011 (ECLAC, 2017a). UNCTAD's *World Investment Report 2017* estimated that FDI to the region recorded a loss of 14.1% in 2016 to reach a total of USD 142.1 billion (UNCTAD, 2017). In Latin America, Brazil is the main recipient of FDI (47%), followed by Mexico (19%), Colombia (8%) and Chile (7%) (ECLAC, 2017a).

FDI performance in the region has been varied, with FDI flows into South America decreasing overall, while increases were seen in Central America and the Caribbean. In South America, FDI increased in Brazil, Colombia and Paraguay in 2016, but declined elsewhere (ECLAC, 2017a). Argentina (-64.0%), Ecuador (-43.7%) and Chile (-40.3%) showed the largest declines in FDI (ECLAC, 2017a). Central America's share of regional FDI rose to 7.2% in 2016, increasing from 3.7% in 2010. Panama's share of FDI in Central America reached a new high of 44% (USD 5.2 billion) and the Dominican Republic lead the Caribbean with its FDI flows increasing by 9% to USD 2.4 billion (ECLAC, 2017a).

Investment in extractive industries continued to decline and represented13% of investments in 2016. Investment in manufacturing (40%) and the services sector (47%) have increased and are mostly concentrated in renewable energy, telecommunications and the automobile industry (Figure 3.2) (ECLAC, 2017a). Overall, FDI flows to the region in 2017 are estimated to decline another 10% to USD 130 billion, weighed down by decreased investment in greenfield projects, particularly in the extractive sector, as well as uncertainty regarding the United States' trade and economic policies (UNCTAD, 2017).

Figure 3.2. **Distribution of FDI by Sector for selected sub-regions and countries, 2010-16 (%)**



Source: Economic Commission for Latin America and the Caribbean (ECLAC) (2017a), Foreign Direct Investment in Latin America and the Caribbean, 2017 (LC/PUB.2017/18-P), Santiago, https://www.cepal.org/en/publications/type/foreign-direct-investment-latin-america-and-caribbean.

Investment in Latin America is dominated by investors based in the United States and Europe (ECLAC, 2017a). However, China continues to expand its role as a major player in the region, having invested over USD 110 billion since 2003, and more than USD 60 billion in Brazil alone (Avendano, Melguizo and Miner, 2017). Although the USA and the Netherlands remain Brazil's top providers of FDI, China has poured investments into Brazil in recent years, reaching a seven-year high of USD 20.9 billion in 2017, a trend that is expected to continue growing in 2018 (Spring, 2017). Furthermore, Chinese investments have moved beyond extractive industries to include investments in services, finance, electricity, renewable energies and ICT (Avendano, Melguizo and Miner, 2017).

Outward investment from Latin American firms declined by 47% in 2016 (USD 25.6 billion). Brazil, Chile and Mexico dominate outward investment and accounted for over 80% of external flows from 2010-2016. Colombia has also become an active outward investor in recent years and was the third largest investor in the region behind Brazil and Chile in 2016 (ECLAC, 2017a). The largest deal of 2016 was by the Mexican firm Grupo Carso that acquired an additional 25.7% of the share capital of the Spanish construction company, Fomento de Construcciones y Contratas S.A., for USD 6.9 billion (Reuters, 2016). Colombian and Mexican firms also made notable acquisitions in the US construction sector, betting on opportunities for future infrastructure investment (ECLAC, 2017a).

Downside risks could threaten Latin America's recovery

Beyond this modest economic recovery and an improved outlook for commodity prices and global growth, Latin America still faces internal structural challenges as well as external risks that could threaten progress. Many elections across the region in 2018 risk creating policy uncertainty related to the implementation of planned reforms (IMF, 2017). External shocks due to global economic events or rising protectionism could also reduce growth. Countries must also manage internal risks related to rising vulnerable populations, widespread informal employment, stagnant productivity and increasing citizen discontent with government performance.

An upturn in protectionism or global uncertainty could hurt the region

Latin America is highly vulnerable to external shocks and to changes in US policies. Uncertainties around the new US administration and its trade policy decisions are being watched by Latin American governments closely. New trade barriers could gravely affect countries that are particularly dependent on exports to the United States such as Mexico and the Central American economies (OECD/ECLAC/CAF, 2018).

A rejection of globalisation in advanced economies could further limit Latin America's growth prospects. Financial markets, for example, are closely monitoring the evolution of US fiscal policy choices as well as European elections and Brexit milestones. While these events have had an impact on financial markets, the effects have not threatened broader economic prospects in developed and emerging economies (OECD/ECLAC/CAF, 2018).

At the same time, China's economic slowdown has stabilised, moderating risks for the region. Economic performance in China has major implications for trade in some Latin American countries. This is particularly true in South America which has strong trade linkages with China (OECD/ECLAC/CAF, 2018).

Economic downturn could hurt progress on poverty reduction and weaken the middle class

Latin America's middle class now exceeds the number of individuals living in poverty, for the first time in decades, yet much of the population remains vulnerable to falling back into poverty. In 2015, around 34.5% of the population were part of the "consolidated middle class" (living on USD 10-50 per day, expressed at constant 2005 prices in purchasing power-parity), representing an important increase from 21% in 2001. At the same time however, a vulnerable class has grown from 34% in 2000 to around 40% of the population in 2015. These vulnerable individuals are living on USD 4-10 per day and could easily fall back into poverty if faced with a negative economic shock (OECD/ECLAC/CAF, 2018).

Low productivity and high levels of informality leaves populations at risk and weakens growth

The low levels of productivity in Latin America continue to constrain growth. Labour productivity, measured as the GDP produced by an hour of labour, has been in decline over the past decade when compared to advanced economies. In 2016, the average productivity in Latin America relative to the average productivity in the United States was lower than it was 60 years ago. Analysis shows that this low labour productivity can explain 70% of the difference in GDP per capita between Latin American countries and the top half of OECD countries (OECD/ECLAC/CAF, 2018).

In addition, high informality rates increase the population's vulnerability to loss of income or unemployment and reduce productivity. Around 55% of the employed population is working in the informal sector (OECD/ECLAC/CAF, 2018). Across the region, unemployment is also expected to rise in 2017 to 9.4% in urban areas, increasing from 8.9% in 2016, reflecting an increase of 7 million unemployed people since 2014 (15.8 million to 22.8 million) (ECLAC 2017b).

Weaknesses in the social fabric of Latin American societies could threaten economic progress

Latin Americans are increasingly losing trust in their governments and institutions. Notably, the latest *Latin American Economic Outlook 2018* highlights that 75% of Latin Americans showed little or no confidence in national governments in 2017, an increase from around 55% in 2010. Individuals across income spectrums are dissatisfied with public services. For instance, high-income individuals, while contributing to public services, increasingly opt-out and use private health and education options. Vulnerable individuals cannot afford to use private options but remain, nonetheless, dissatisfied with the public services made available to them (OECD/ECLAC/CAF, 2018).

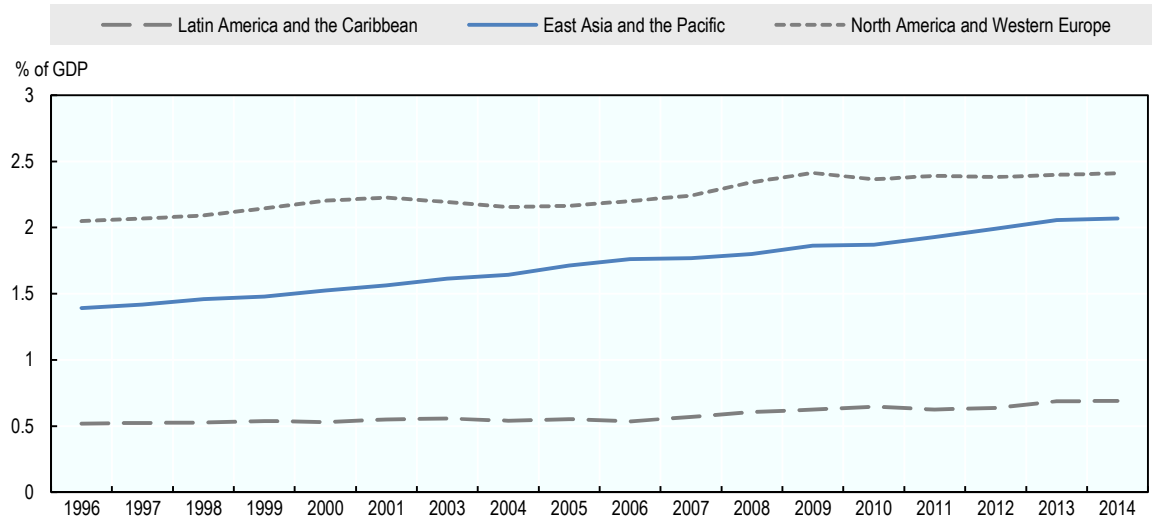
These challenges and risks require a strong response from both the private and the public sector to boost productivity and business confidence. Investing in skills and greater innovation, as well as stronger governance both at the corporate and public levels could foster confidence, stimulate long-term growth and set the stage for greater trade and investment opportunities.

INNOVATION AND SKILLS FOR LONG-TERM GROWTH

Private and public investment in innovation is low in the region compared to OECD countries

To boost long-term growth, the region must increase knowledge-intensive production and innovation (OECD/ECLAC/CAF, 2016). Taking investment in R&D as a measure for innovation levels, Latin American economies perform well below other regions such as Europe or East Asia and the Pacific. Brazil is the only country in the region that invests more than 1% of GDP on R&D with about half coming from the private sector (OECD/IDB, 2016a). Other Latin American economies invest much less. For example, Chile, Colombia and Peru all spend less than 0.5% of GDP on R&D (UNESCO, 2018). Moreover, between 1996 and 2014, countries in the region have on average spent slightly more than 0.5% of their annual GDP on R&D. Conversely, North America and Western Europe spent 2.2% of their GDP on an annual basis during that same period, while countries in East Asia and the Pacific have spent annually 1.7% of their GDP (Figure 3.3).

Figure 3.3. **Gross domestic expenditure on R&D (GERD) as a percentage of GDP, 1996-2014**



Source: United Nations Educational, Scientific and Cultural Organization (UNESCO) (2018), Gross Domestic Expenditure on R&D (GERD) database, http://data.uis.unesco.org/Index.aspx?queryid=74 (accessed on 30 August 2017).

The percentage of R&D expenditure financed by the domestic private sector is also relatively low compared to other sources of financing (government, non-profit organisations, universities and foreign investment). On the positive side, the regional average of private sector investment in R&D grew from 17% in 2013 to 25% in 2015 (UNESCO, 2018).

The Global Innovation Index evaluates a variety of innovation indicators and provides additional insights on Latin America's relative innovation performance among the 127 economies included in its ranking (Cornell University, INSEAD, and WIPO, 2017). In Latin America, Chile leads the regional performance (46th), followed by Costa Rica (53rd), Mexico (58th), Panama (63rd) and Colombia (65th). No Latin American economies were identified in 2017 as "innovation achievers", meaning that none of the countries outperformed in innovation relative to their respective level of development (Cornell University, INSEAD, and WIPO, 2017).

Through a study of Brazil's performance, Monteiro and Casanova (2016) found that although investments in innovation were made, be it on research projects or tangible assets such as ICT infrastructure, the level of innovation outputs (such as high value added knowledge and creative products) did not increase accordingly. In fact, when compared to the level of investments in innovation, Brazil's gap in output decreased from 2011 to 2016 (Monteiro and Casanova, 2016). Clearer identification of priorities and stable policies, improved data collection and monitoring, and greater incentives for public and private investment could all help to reduce the innovation output gap in Brazil (Monteiro and Casanova, 2016).

Skills shortages in the labour market persist due to low quality education

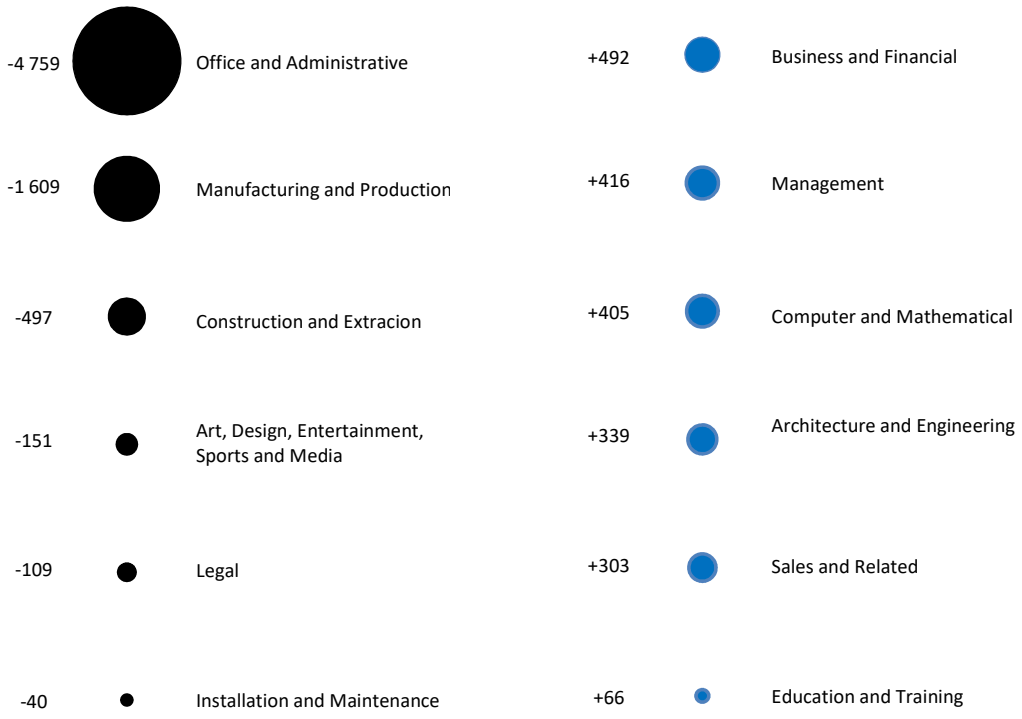
Latin America is among the regions that show the greatest gap between private sector demand for skills and the available pool (OECD/ECLAC/CAF, 2016). In this context, improving education is critical to achieve long-term growth. In this regard, Latin America must make substantial progress to improve educational outcomes, as low quality primary and secondary education constitutes an obstacle for the development of specific skills in demand by the labour market. Ten Latin American countries participate in the OECD Programme for International Student Assessment (PISA) that assesses the skills and knowledge of 15-year-old students in reading, mathematics and science (OECD, 2016c). All participating countries in Latin America had relatively more low achieving students than the OECD average of 13%. The Dominican Republic and Peru both ranked last in the region with the share of low achievers representing 70.7 and 46.7% of 15 year-old students respectively. The share of top performers in reading, mathematics or science was also well below the OECD average of 15.3%. Chile scored highest in the region with 3.3% of top performers while, the Dominican Republic, where only 0.1% of students were ranked as high performers in one of the three subject areas, ranked last in the region (OECD, 2016c).

Digitalisation is changing the labour market and increasing the demand for new skills

In an increasingly digitalised and automated world, new technologies are changing the labour market. Advances in technology are not only shifting the nature of tasks employees perform but are also transforming certain job categories. Certain tasks are increasingly being completed by machines, resulting in employment destruction. Nevertheless, numerous jobs will be created in occupation categories such as computer science and mathematics, architecture and engineering, sales and education (WEF, 2016). Automation is affecting certain sectors more markedly. For instance, employment in the next five years may decline for: office and administrative roles, manufacturing and production activities, as a well as in the construction sector, according to a study of 15 global focus countries by the World Economic Forum (Figure 3.4) (WEF, 2016). Estimates indicate that by 2030, 3.4 million jobs could be lost in Latin America due to automation, mainly in the construction and the manufacturing sectors (OECD/ECLAC/CAF, 2016).

Figure 3.4. **Net employment outlook by job category for focus countries, 2015-2020**

(employees, by thousands)*



Note: Focus countries include 15 economies from OECD countries (e.g. Australia, Mexico, United States) and emerging countries (e.g. Brazil, India, South Africa) to cover approximately 65% of the global workforce.

Source: WEF (2016), "The future of jobs: Employment, skills and workforce strategy for the fourth industrial revolution", Global Challenge Insight Report, World Economic Forum, Geneva, http://reports.weforum.org/future-of-jobs-2016/.

It should be noted that automation may primarily have adverse effects for low-skilled workers in developing countries, where the phenomenon could impact two-thirds of all job categories (World Bank, 2016). The pace of this replacement might take longer in lower income countries because the use of ICTs (information and communication technologies) at work is still relatively low and low wages make investments in technology less attractive (World Bank, 2016).

Automation will modify the core skills sought by employers as mastering ICT skills will be become crucial. Yet, 43% of adults in 28 OECD countries surveyed had little or no ICT skills, according to the 2015 OECD Survey of Adult Skills (PIAAC). More specifically in Latin America, in Chile, for example, large gaps persist in terms of ICT skills, as 78% of adults surveyed had limited or no ICT skills (OECD, 2016a). Developing soft skills, however, remains essential as employees will require competencies that technology cannot replicate such as socioemotional as well as advanced cognitive skills. As the nature of jobs will shift, people will perform activities that are complementary to the work of machines (McKinsey Global Institute, 2017). Creativity, emotional intelligence, and cognitive flexibility are going to be part of the 10 most in-demand skills by 2020, according to ManpowerGroup (ManpowerGroup, 2017).

PUBLIC POLICIES FOR INNOVATION AND SKILLS

Countries in the region have developed policies to support innovation at firm and industry levels. Colombia and Argentina have, for example, created funds in order to support companies with projects in science, technology and other innovative areas. In Colombia, the department of Science, Technology and Innovation (COLCIENCIAS) provides credit lines and matching grants for firms to engage in business innovation projects or pursue collaboration with universities. An evaluation of the impact of these programmes found that they increased labour productivity at a firm level by 15% between 1995 and 2007. The beneficiary companies became not only more efficient, but also increased their market share. The programme also helped increase product offerings as beneficiary companies introduced on average 12% more new products into their markets between 1995-2007 (Crespi, Maffioli, Meléndez, 2011).

Argentina's National Agency for Promotion of Science and Technology has a technological fund (FONTAR) to finance private sector technological innovation that is making a positive impact on innovation outcomes for both direct and indirect beneficiaries. The fund supports the development of innovative products, the development of new prototypes, and modernisation of technological equipment, creation of cluster-level industries, recruitment of staff with advanced technological skills and the creation of a technological council to stimulate innovation in SMEs. These programmes can support innovation spill-overs to other firms over time. Evidence suggests that financial incentives to companies also spilled over to firms that were not direct beneficiaries of the FONTAR support (Castillo et al., 2014). By estimating knowledge spill-over through the mobility of workers, firms that were indirect beneficiaries of the programme increased their employment rate by 15%, while direct beneficiaries increased it by 17% (Castillo et al, 2014).

Public initiatives to promote ICT skills in the region are expanding

Many countries in the region have taken initiatives to help citizens better interact with digital technologies and enable them to use such technologies both at work and in everyday life. National policies throughout the region are aimed at developing the population's ICT skills in order to better equip students as well as the working population to face labour market requirements. For example, Peru approved the National Digital Literacy Plan in 2012 which aims to train every citizen in the use of computers and mobile devices (OECD/IDB, 2016b). Uruguay has a television programme (Ceiba Channel) that is broadcast on local networks that focuses on the use of computers (OECD/IDB, 2016b). In Costa Rica, public universities offer ICT training courses open to the public with targeted programmes for the elderly and disabled (OECD/IDB, 2016b).

Countries are also promoting initiatives to acquire more advanced ICT knowledge. Peru and Brazil, for example, have focused on scholarships for research in sciences and technology fields. Brazil launched its *Brasil Mais TI* initiative, operating in three essential areas of vocational training: knowledge, skills and opportunities. The programme offers free online courses to students and professionals in order to develop their ICT proficiency as well as job postings to help respond to the needs of the labour market (OECD/IDB, 2016b). Peru funds scholarships (*Beca 18, Beca Presidente de la Republica)* for undergraduate and graduate students in ICT-related fields in national universities or in Spain or Colombia (PRONABEC, 2017). Businesses discussed how investment in more advanced ICT skills will become increasingly relevant as a driver of higher level of productivity and growth.

Training programmes for working adults are enhancing IT exports and certifying skills

The region also targets ICT learning for working adults through firm-level training on enhancing information technologies (IT) export offerings or through skills certification. Colombia's Ministry of Information, Communication and Technologies has developed, a training programme dedicated to IT and digital content companies with ProColombia, the export promotion agency. The programme consists of specialised training courses on how to boost exports for the IT industry (ProColombia, n.d.). Chile has launched in 2008 *Chile Valora,* a programme to certify certain skills without taking into account the means by which the individuals have acquired such knowledge (professional experience, formal education or online training courses count equally). The aim of the programme is to give visibility to employers regarding current or potential employees' skillset and career potential, and help unemployed workers find a job (ChileValora, n.d.).

Furthermore, governments in the region are taking steps to improve the detection of skills shortages. For example, Chile and Brazil are working on some anticipation mechanisms. In Chile, skills councils are being created in the mining and wine industries to better identify needed skills and estimate future needs (Melguizo and Pages-Serra, 2017). Nevertheless, there is still room to enhance the effectiveness and impact of these initiatives, which are often isolated and not systematically adopted to influence policies or investment in skills development (González-Velosa and Rucci, 2016).

PRIVATE SECTOR INSIGHTS

Business representatives recommend strengthening governance at both national and regional level to enhance a stable political environment for long-term economic growth. In addition, multinationals investing in the region have emphasised the need to provide flexible market regulations to support innovation, improving digital infrastructure and increasing funding for innovative projects. Furthermore, to address skills mismatch in the labour market, firms advise governments to focus on training the workforce, notably in the use of new digital technologies, but also to improve soft skills and to continue to engage in public-private partnerships, to identify and close relevant gaps. Finally, key areas for additional discussions on institutional governance could include potentially improving anti-corruption legislation, promoting open governance, and the deepening of financial markets.

Creating a supportive business environment

Strengthening the rule of law and making regulations consistent can reduce risks for investors

Corruption threatens government legitimacy and credibility and can discourage private investment. Solid institutions, in particular an independent and well-functioning judiciary system, can increase business confidence and reduce the perception of investment risk. Companies stressed the importance of the rule of law in their decisions to invest and in their risk management activities. World Bank Enterprise Surveys show that nearly 25% of firms in Latin America and the Caribbean see the court systems as a major constraint (World Bank, 2017). The figure rises to over 40% of firms in Argentina, Brazil, Guatemala, Honduras and Suriname (World Bank, 2017).

Furthermore, making the application and interpretation of regulations more consistent will also help reduce the business risk. EMnet members mentioned as an example the controversial case of a Colombian arbitration court that in 2017 overruled the renegotiation of some clauses of a contract regarding the property of the installed telecommunication infrastructure between the country and two local telephone service providers, Claro and Movistar, resulting in an important fine for the two companies. This created a sense of uncertainty around contractual protections that could hamper through this precedent the fruition of further negotiations on investment opportunities in this sector or even more generally (Reuters, 2017a).

Businesses welcome new anti-corruption measures but also stress the importance of enforcement

Companies argue that corruption generates additional transaction costs and risks. According to the World Bank Enterprise Survey (2017) nearly 10% of firms in Latin America and the Caribbean experience at least one bribe request, almost 20% of companies expect to give gifts to secure government contracts and nearly 40% of firms see corruption as a major constraint. A study by Transparency International ranks countries around the globe on perceptions of corruption and attributes a score on the Corruption Perceptions Index, which ranges from 0 (highly corrupt) to 100 (very transparent). Any score below 50 indicates that governments are failing to tackle corruption. Results from this study show that, on average. Latin American countries scored 41.9 out of 100, below the average of OECD member countries (68.37) or Asia and the Pacific (44.19) (Transparency International, 2017).

Corruption can pose a real threat to the national economic growth potential. For instance, a 2015 report by the Mexican Institute for Competitiveness (IMCO) estimated that corruption in Mexico costs the national economy as much as 5% of its GDP (IMCO, 2015). Firms highlighted that although government responses to corruption have been improving, it is essential that they are also accompanied by appropriate enforcement and capacity building. For instance, the National Anti-corruption System that was implemented in Mexico in 2016 aims to reduce corruption in the country and improve the national business environment. The system tackles corruption through measures such as the creation of new Co-ordination and Citizen Participation Committees, responsible for designing new anti-corruption policies, as well as a Special Anti-corruption Prosecutor, in charge of enforcement efforts (OECD, 2016d).

It was noted that corruption risks can also make firms reconsider their decision to invest in certain countries. In Colombia, for example, the Fourth Generation Program (4G), a USD 50 billion private-public partnership infrastructure programme was put on hold because of corruption scandals affecting the relevant construction companies. As a result, it was discussed how local banks have been less willing to engage in project finance due to these past negative experiences. Even when in the case of the 4G road infrastructure programme specifically, exposed banks will be repaid through a trust fund and by government funds (Weinman, 2017).

Open government can be a useful tool to improve governance

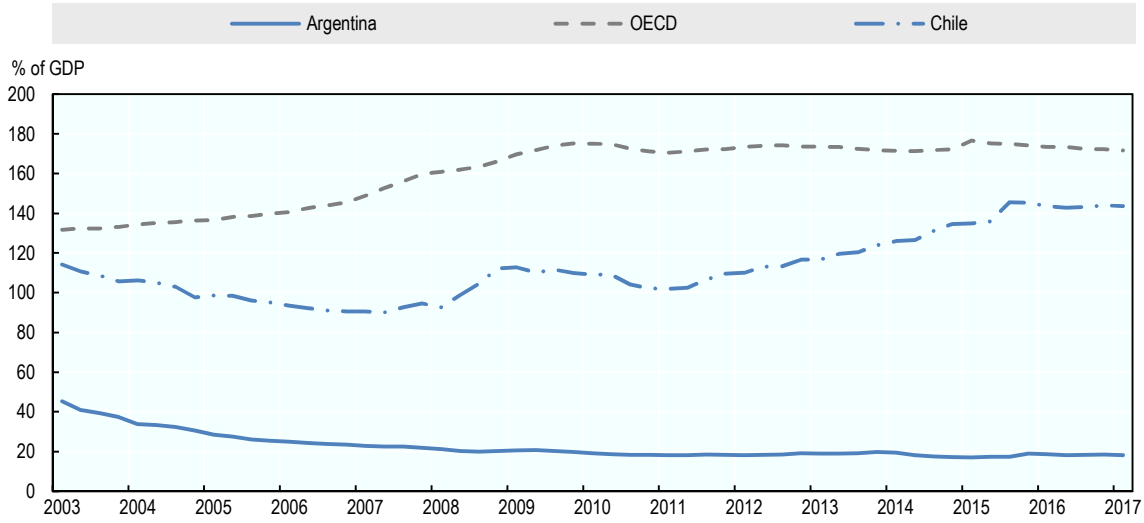
Firms agreed that a greater use of open government practices constitutes a step in the right direction to improve transparency and encourage accountability. Latin American countries are making progress in this area and 62% of countries in the region have adopted open government strategies (OECD, 2016b). As of July 2017, 15 countries participate in the Open Government Partnership, a global initiative for open governance launched in 2011 (Open Government Partnership, 2017). Some countries have created citizen councils to bring together civil society, academia and the private sector to discuss and make decisions about local development issues. These countries include Brazil, Colombia, Guatemala, Mexico, Paraguay and Peru (OECD/ECLAC/CAF, 2018,).

Deepening financial markets

The deepening of financial markets is needed to improve access to long-term finance. The private sector highlighted the case of Argentina as a country with a particular need for developing long-term finance mechanisms (Figure 3.5). Financial markets in the country are smaller now than they were in 2000 with both bank credit to the private sector and stock market capitalisation far below levels of OECD and other Latin American countries. SMEs are particularly hurt by financing limitations (OECD, 2017a; OECD, 2017d). In Costa Rica, a country where access to finance by SMEs is particularly limited, less than 10% of total credit flows to these enterprises, in contrast to the OECD average of 25% (OECD, 2013).

Figure 3.5. **The financial sector is less developed than in other countries**

Loans to private non-financial sector



Source: OECD (2017e), OECD Economic Outlook, Volume 2017 Issue 2: Preliminary version, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_outlook-v2017-2-en.

Leveraging the improvement of global trade prospects for the region

Growing protectionism in developed economies creates opportunities for increased inter-regional trade

New US administration policies regarding trade barriers could gravely affect countries that are dependent on exports to the American market such as Mexico or Central American economies (OECD/ECLAC/CAF, 2015). For example, 80% of Mexico's exports go to the United States and 50% of the country's imports come from the United States. Furthermore, Mexico's manufactured goods are integrated in many US firms' manufacturing supply chains (Deloitte, 2015). Mexico's interlinkages with its northern neighbour were strengthened in 1994 with the enforcement of the NAFTA agreement. The United States has expressed interest in renegotiating the treaty

(White House, 2017). Any renegotiation of the NAFTA agreement would create considerable uncertainty for Mexico and could delay investment plans (OECD, 2017d). This would not only impact Mexico, but could also spread to other Latin American countries. Central America in particular, which harbours some of the region's fastest growing economies, could be at risk as an unsuccessful renegotiation of the NAFTA agreement could set a precedent for similar agreements such as the Dominican Republic-Central American Free Trade Agreement (CAFTA-DR) (Feinberg, 2017).

Furthermore, increasing global protectionist rhetoric has further increased the risk posed to Latin American economies, as restrictive measures to trade in Europe or China would negatively impact trading partners. In Europe for example, the Brexit referendum marks a new era for trade relations in the region.

Within this context, businesses think that Latin American economies could take advantage of a potential commercial withdrawal of the United States in the region. For example, commodity exporters such as Brazil or Argentina could challenge the predominant position of the United States in the Mexican market. Mexico imported USD 2.6 billion in corn from the United States in 2016 but is considering increasing corn purchases from Brazil and Argentina (Semple, 2017).

Companies put an emphasis during the EMnet discussions on the importance of leveraging regional integration as a way of fighting growing global protectionism. For instance, firms highlighted the need to identify sectors that could benefit from commercial integration through improved competitiveness or better developed value chains. In the case of Peru for instance, fish meal and oil, zinc, plastics, chemical products, alcoholic beverages and fabrics and woven goods could be ideal focus sectors for greater trade within the Pacific Alliance, a regional initiative that includes Peru, Chile, Colombia and Mexico (Ruiz, 2016b).

Companies also stressed the importance of the Pacific Alliance's achievements towards the creation of a free trade zone. One major achievement for commercial integration has been the enforcement of the Additional Protocol as of 1 May 2016. The measure creates a free trade zone for 92% of the goods traded within the zone, with the intention to eliminate tariffs on the remaining 8% (primarily agricultural products) by 2030. In addition to the creation of a free-trade zone, the Additional Protocol aims at improving the region's integration into international global value chains through harmonisation and accumulation of rules of origin (EY, 2015). Accumulation of origin can facilitate trade as it allows for inputs from a member country to be used in another member country as domestic input (OECD, 2017b). However, there is still work to be done to increase trade between Pacific Alliance members. Trade amongst countries in the Alliance only represented 4% of the total foreign trade of each country (Ruiz, 2016a).

Businesses encourage a private public dialogue to lift existing barriers to trade in the Pacific Alliance

To increase inter-regional trade, firms highlighted the need to continue the dialogue between the public and private sectors. The Pacific Alliance's Business Council was identified as a valuable initiative to promote a policy discussion to lower existing barriers to investment and move towards a more business-friendly regulatory framework. Created in 2013, the Business Council of the Pacific Alliance is composed of the business associations from the four Pacific Alliance member countries. It provides recommendations regarding the progress of economic integration initiatives and

suggests areas for future co-operation. The Business Council can provide "real world" feedback, facilitate integration and promote dialogue. The Council has been working on recommendations regarding trade facilitation, uniformity of tax regulation, financial integration, harmonization of technical standards, co-ordination in education, and support to entrepreneurship (EY, 2015). The Council has been also an active advocate of tax uniformity. Fiscal regulations are different in the four countries, and only recently has the Alliance made progress in this area, such as for instance the agreement to harmonise taxation for investments made by pension funds (Reuters, 2017b).

The Pacific Alliance should leverage the momentum gained with the Mercosur

Companies participating in the EMnet meeting welcomed the trade momentum between the Pacific Alliance and the Mercosur. In Argentina, the current government aims at promoting the country's attractiveness abroad, and reinserting Argentina in the global economy by liberalising and increasing trade and investment flows (Marczak and George, 2016). Similarly in Brazil, there are efforts to pursue a more outward-looking strategy for economic development (Marczak and George, 2016). Argentina and Brazil have advocated for deeper commercial relationships between the Mercosur and the Pacific Alliance. As a result, representatives from the two trade institutions met in Buenos Aires in April 2017 to discuss greater co-operation. A joint communiqué was issued after the meeting outlining a roadmap for a common line of work in trade facilitation and promotion, custom co-operation, identification of regional value chains and support for development of SMEs (Ministry of Foreign Affairs of Argentina, 2017). Businesses in both regional blocks could benefit from deeper commercial ties through larger market access. In addition, through this type of engagement, Pacific Alliance countries could provide a bridge between East Asia and the region's Atlantic coast (Marczak and George, 2016). This is particularly relevant given the increasing importance of Asia and in particular China, to the region's development and the need to remain competitive to reap the benefits from this strengthening partnership (OECD/CAF/ECLAC, 2015).

Encouraging innovation in Latin America

Economies in the region remain reliant on natural resources and on activities with low value-added, highlighting the need for greater innovation. In Peru for instance, more than half of workers are employed in low-productivity sectors: retail, hospitality and agriculture (OECD/IDB, 2016a). Although factor accumulation has increased in the region, total factor productivity has decreased. The net result of these two opposing trends leads to an 8% increase in the per capita income gap between Latin America and the United States (OECD/IDB, 2016a). Companies argued that investing in innovation and in the digital economy, with a focus on developing the broadband infrastructure (for example, access to 4G), could support the transition to higher-value added products and services.

EMnet participants noticed that initiatives such as Universal Service Funds, systems of telecommunications subsidies aimed at funding broadband extension efforts, constitute an effective policy tool to support innovation. There are already several existing Universal Service Funds operating in the region such as the FONATEL, PRONTIS and FODETEL funds, located in Costa Rica, Bolivia and Ecuador respectively (OECD/IDB, 2016b).

Finally, traditional industries, such as agriculture, should not be ignored as they can also offer opportunities for innovation and higher productivity. Companies highlighted the importance of agribusiness in many countries and the use of technological innovations to improve the sector's productivity. Biotechnology, for example, holds a significant potential for development, but the region thus far has had limited success in developing the sector (Solleiro et al., 2017).

Enhancing competition policies for innovative technologies

Companies highlighted that market regulations should be flexible and support competition. If regulations do not favour competition they can potentially prevent high-technology firms from accessing local markets. Following OECD recommendations, Mexico initiated a reform of its telecommunications sector in 2013, allowing for 100% foreign corporate ownership, which led to greater competition and increased productivity (OECD, 2017e). Foreign firms such as AT&T, a US mobile operator, have made substantial investments in Mexico subsequent to these reforms. The company announced investments of USD 3 billion for 4G coverage and expects a customer base of 100 million people by 2018 (AT&T, 2015). OECD recommendations promote pro-competition regulations and reforms in the region with the aim to encourage companies to be more innovative and efficient, especially in the energy and telecommunication sector (OECD/IDB, 2016b). Enhanced competition can lead to lower prices, benefitting households and professional consumers. In the case of Mexico's 2013 reform of the telecommunications sector, the increase in competition resulted in a 25% reduction in prices for businesses and consumers (OECD, 2017e). Companies highlighted that further efforts in this area are still required. In countries like Colombia for instance, companies stressed the need to continue working towards implementing reforms enhancing competitiveness. Although Colombia has significantly improved its regulatory framework, by simplifying administrative procedures for starting a business, for instance, regulations in industries such as electricity and transports (roads and rails) remain very stringent. In the rail sector, infrastructure and provision of services are managed by a single operator, while in the road sector prices are controlled and barriers to entry persist (OECD, 2017f).

In addition, companies expressed that the regulatory framework in key sectors, such as telecommunications and energy, often do not clearly separate responsibilities between regulating entities. This results in overlapping responsibilities among different institutions that can create confusion for businesses. Colombia was mentioned by the private sector as a country that would need to strengthen the independence of the regulator for telecommunications. In this instance, the dual presence of the Colombian state as both a regulator and regulated entity increases the complexity of the sector (OECD, 2014a). Another example from Argentina was also discussed. In this case, businesses highlighted how the lack of co-ordination between provincial and federal regulatory entities has resulted in different electricity tariffs for consumers in Buenos Aires and in the rest of the country. Electric utilities located in the province of Buenos Aires are supervised by a local regulator, the *Ente Nacional Regulador de Electricidad*, which is subject to the national legislation. However, electric utilities located in other parts of the country are subject to provincial legislation and a different group of regulators.

Infrastructure to support innovative technologies still needs to be improved

Businesses highlighted how Latin America needs better infrastructure to support innovation. Internet access, for example, remains one of the main challenges to the expansion of digital services (OECD/IDB, 2016b). The share of the population connected to the Internet more than doubled in Latin America from 21% in 2006 to 56% in 2016, while remaining low compared to the OECD average of 79% (World Bank, 2018). An estimated 300 million people still do not have access to the Internet in the region (OECD/IDB, 2016b).

Private sector investment in network deployment could resolve this connectivity problem. EMnet members highlighted that governments should establish a sound regulatory and legal framework, to ensure the economic viability for private sector investments in the long run. Further network deployment faces certain specific obstacles, notably, an absence of basic infrastructure, particularly in remote areas, and the lack electricity services. Furthermore, the lack of roads can make it difficult to install the basic infrastructure for internet deployment (OECD/IDB, 2016b).

Businesses also argue that the quality of infrastructure could be improved, even though countries are committed to support the deployment of new technologies, particularly in ICT. For example, businesses suggest that mobile deployment has, in general, been a success but that the network for broadband coverage needs to be upgraded. In 2015, approximately 64 million people in the region as a whole did not have 3G/4G mobile broadband coverage, representing approximately 10% of the population (GSMA, 2015).

Companies also stressed the importance of considering social inclusion, ensuring that that low-income people have access to the digital economy. Policies can play an important role in reducing the “affordability gap”, which refers to the number of people or households that cannot afford ICT services (OECD/IDB, 2016b). The private sector is playing an increasingly important role in addressing the digital divide. For instance, within the context of its “Internet for All” initiative, Telefónica has worked on extending broadband coverage in the most remote areas across Latin America (Telefónica, 2017). A similar project in Chile, called “Todo Chile Comunicado”, announced by Entel and the government of Chile in 2010, aims at extending broadband services to the country’s rural areas. It has been estimated that up to 1,474 rural communities and over three million people have been able to gain access to internet and mobile services as a result of this programme (Entel, nd).

Better institutional co-ordination is needed to boost innovation

Innovation requires better co-ordination between academic institutions, public entities working on innovative projects and the private sector. When developing ICT policies, for instance, co-ordination between different stakeholders is useful to identify existing regulatory barriers. In the area of digitalisation, multinational companies, such as Ericsson, Facebook and Nokia have called for stronger interdepartmental collaboration through the Broadband Commission for Sustainable Development. This commission is an International Telecommunications Union (ITU) and UNESCO initiative aimed at expanding broadband access, with the help of private sector. Partners include Microsoft, Huawei and Digicel (Broadband Commission for Sustainable Development, 2017). The OECD also recommended more co-operation between public and private sectors to build cross-sectoral initiatives and enhance the impact of digital innovation (OECD, 2014b).

Companies further recommended identifying one "champion" entity (e.g. ministry, agency, inter-departmental body) to lead and co-ordinate digital initiatives across different sectors. Colombia, for example, has adopted this co-ordination strategy through its Ministry of Information Technologies and Communications (MinTIC), which is responsible for co-ordinating all digital initiatives and overseeing the implementation of digital strategies across different sectors (MinTIC, 2017).

More public funding to kick-start innovative projects is needed

Access to finance for innovative projects is essential. Businesses highlight that public funding could kick-start innovation particularly for R&D in digitalisation. Furthermore, it was discussed how initial public funding for a project can incentivise more private sector involvement. Costa Rica, for example, could benefit from a new strategy to enhance financial support for science and technology, as well as business innovation programmes (OECD, 2017g). In the region as a whole, public funding is particularly needed. Gross Domestic Expenditure on R&D (GERD) represents at best 1% of GDP across the region. Chile, Colombia and Peru all spend less than 0.5% of GDP on R&D (UNESCO, 2018).

Furthermore, companies expressed their interest in following the example of countries such as Israel in areas related to funding and assistance for innovative firms. They recognised how Israel has developed technological incubators that provide financing for SMEs or researchers that would like to develop technology-intensive projects. Incubators, which are partly funded by the government as well by the private sector, provide financial assistance, as well as administrative and legal support to these firms (see Israel Innovation Authority, n.d.).

Companies across industries are developing incubators and accelerators to support innovation and scale up small firms. For example, in Argentina, the insurance company Sancor Seguros has developed a technology incubator that funds projects in biotechnology, nanotechnology, engineering and other technology-related field. The goal of this incubator, the Centre for Technological, Business and Social Innovation (CITES), is to create a cluster of start-ups working on innovative projects with high-value added for the economy and the society. CITES can invest up to USD 500 000 per start-up and also provides access to co-working space, mentoring, networking opportunities with investors, and training programmes (CITES, n.d.). Telefonica, the Spanish telecommunications firm, has created a network of business accelerators through its Wayra platform. Wayra helps entrepreneurs to connect with financiers and build professional networks to expand their businesses, through its presence in 11 countries across Latin America and Europe (Telefónica, n.d.).

Enhancing skills

Soft skills and technical skills are still lacking in the region

Companies discussed how employers in the region encounter difficulties when filling positions because they lack applicants with the needed skills, either hard (technical competencies) or soft (workplace competencies). Businesses stressed in particular the importance of soft skills in the years to come. Digitalisation is changing the nature of work and increasing emphasis is given by employers to problem-solving skills, creativity and emotional

intelligence (OECD/ECLAC/CAF, 2016). The region still lags behind in equipping its labour force with the skillset companies are looking for. In Latin America, formal companies report a higher talent shortage average (44%) than the global average (40%). Peru, Colombia and Argentina score the worst in this Talent Shortage survey with 46%, 50% and 59% respectively (Manpower Group, 2016). Some countries are addressing this issue by investing intensively in their education systems. For example, Costa Rica is devoting around 8% of its GDP on education, surpassing the OECD average of 5.2% (OECD, 2017f).

Companies are increasingly developing training programmes and partnerships to address skills gaps

In response to the skills shortage, employers are increasingly developing training programmes for staff in order to reskill or upskill their workforce. Globally, 53% of employers offer training and development to existing staff according to ManpowerGroup (2017). Businesses are also eager to build partnerships between both public and private educational institutions to improve training and reduce skills gaps. These partnerships are particularly relevant to vocational education and training (VET) programmes. The OECD Education Policy Review of Chile highlights that engaging employers more systematically in the development of VET programmes could help adapt course content to labour market requirements (OECD, 2017h).

Bancolombia has a leadership training programme for new employees recruited for management positions. Furthermore, the bank offers more than 200 online training courses on different subjects. It has also developed a scholarship program *"Becas de Excelencia"* dedicated to the banks' employees wishing to enrol in a graduate programme (Master degree or Master of Business Administration). This scholarship programme has existed since 1997 and every year an average of 20 employees get to study abroad for one of two years and then return to the bank.

Partnerships can also be used to improve skills for potential clients. Bancolombia offers a training programme on corporate governance for Colombian SMEs in partnership with the International Financial Corporation and Medellin's Chamber of Trade. The programme includes training on corporate governance given by experts as well as a website with online training and guidelines on good corporate governance principles (Bancolombia, 2017).

Ferreycorp, a Peruvian heavy goods equipment distributor active in the construction and mining industries, has partnered for the past 10 years with a private technical school TECSUP to train students as mechanics for Caterpiller machinery as part of their "Think Big" programme. The two-year programme mixes trainings with on-the-job experiences and provides employment options within the company at the conclusion of the training (Ferreycorp, n.d.).

CONCLUSION

The economic outlook for Latin America is improving but there is still much work to be done. A number of barriers remain for businesses to truly benefit from the strengthening global economy. Institutional weaknesses persist and companies stress the importance of reducing corruption, improving innovative infrastructure and deepening financial markets for long-term investment.

As growth momentum builds, Latin America has an opportunity to improve innovation and skills to support higher investment in productivity. Greater innovation is needed to upgrade traditional industries as well as support the development of an inclusive digital economy. Improving digital infrastructure, particularly high-speed internet is also essential. Tailored training programmes and public-private co-operation can help to reduce skills gaps and mismatches in the labour market.

Greater trade integration within the region as well as partnerships with external markets are essential. The Pacific Alliance and Mercosur are showing signs of collaboration and developing further trade with Asian and European markets holds promise. The region must take steps to diversify offerings and take advantage of a new trade momentum, to enhance its productive capacity and better integrate into global value chains.

With targeted support from the public sector in areas such as skills development and innovation and through effective policy design and implementation, there is potential for new business opportunities to emerge in the region which can enhance competitiveness by better integrating Latin America into global value chains and set the foundations for stronger and more consistent levels of economic growth over the long term.

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The future of Africa: Industrialisation, technology and entrepreneurship

This edition of the OECD Emerging Markets Network (EMnet) Africa Policy Note provides insights and policy recommendations from the private sector on ways to support industrialisation, entrepreneurship and technology development in Africa. The note gives an overview of recent regional, economic and business trends, and highlights current public policy efforts and private sector insights on how policy makers can promote sustainable industrialisation in the continent. The analysis builds on discussions from the business meeting held at the OECD Headquarters in Paris on 5 October 2017 and organised by EMnet, as well as on analysis carried out by the Africa Unit of the OECD Development Centre, desk research and bilateral discussions with EMnet members.

Key messages include:

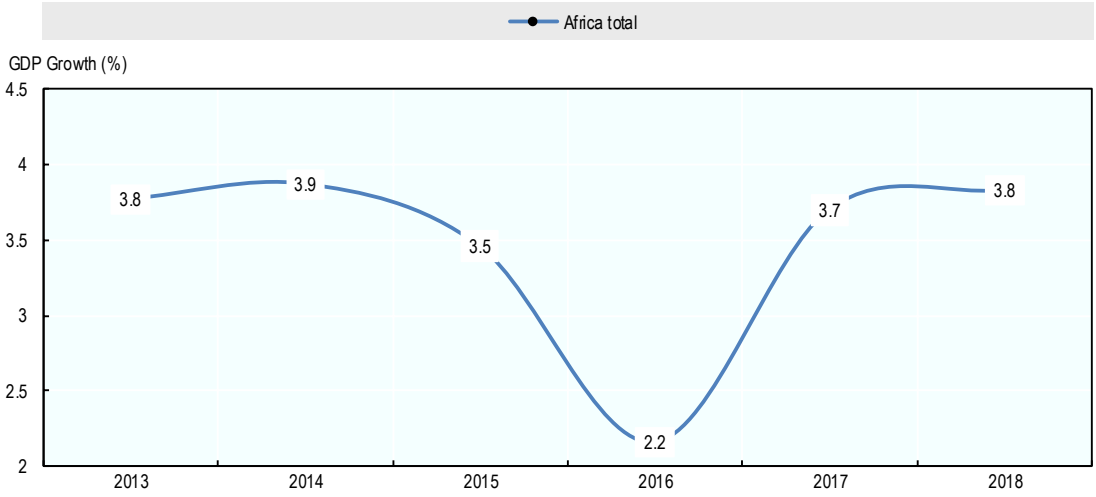
- Industrialisation is an important dimension of Africa's policy agenda. Participants at the EMnet Africa meeting identified a number of critical factors that can support industrialisation and unlock more private investment, including skills development, entrepreneurship, infrastructure, access to energy and digitalisation.
- Finding the right skill set remains a challenge. Investment in skills development, education and training programmes can prove successful over time and provide the private sector with a more qualified African workforce.
- Entrepreneurship is critical. Government policies can support entrepreneurs particularly in high-growth potential industries like agro-industries and horticulture, where African countries have a competitive advantage.
- Infrastructure development projects can support industrialisation and regional trade, if properly planned and appropriate policy reforms mitigate risks for private investors.
- Domestic resource mobilisation can reduce currency volatility and investment risks.
- Africa's power shortages remain a key bottleneck to industrialisation. The development of renewable energy solutions is an encouraging prospect to improve access to energy for a larger segment of the population.
- Government policies in support of the development of the digital economy will be key to harnessing productivity and technology gains supporting industrialisation.

AFRICA'S BUSINESS AND ECONOMIC OVERVIEW

Growth prospects of the African continent are promising overall

Africa's economic outlook remains positive after a period of slowdown. The recovery is on a par with global economic growth and estimates show an increase of 3.7% and 3.8% in 2017 and 2018 (IMF, 2018). This situation is an improvement from the 2.2% growth recorded in 2016, which was the slowest rate in the last decade. Moreover, for the 2018-2022 period, Africa's real GDP growth is projected at 3.9%, which, though positive, is significantly below the goal fixed by African leaders of 7% over the long term (AUC/OECD, 2018). The recovery is not sufficient, to raise GDP-per-capita in many countries in the region. Growth remains heterogeneous, and in some countries, population growth outpaces economic growth (AfDB/OECD/UNDP, 2017).

Figure 4.1. **Africa's economic growth, 2013-2018**



Source: Adapted from AUC/OECD (2018), *Africa's Development Dynamics*, calculations based on IMF (2018), *World Economic Outlook* (database) http://dx.doi.org/10.1787/888933782411, Latest data update 2 July 2018.

A recovery in the global economy leads Africa's growth

Africa's economic rebound can be attributed to three main factors. First, a recovery in the global economy; second, increasing domestic demand coupled with public investment in infrastructure; and third, a decline in fiscal and current account deficits. Economic diversification through industrialisation can help to maintain growth. Industrialisation strategies can help countries prioritise other sectors of the economy beyond natural resource extraction, given that commodity prices are volatile and over-reliance on commodities may negatively affect growth (AfDB/OECD/UNDP, 2017).

Public investment in Africa is boosting demand

Favourable growth can also be attributed to increased public investment in infrastructure by many of the countries in the region as well as a steady increase in domestic demand. Infrastructure funding needs in Africa are estimated to be USD 1.2 trillion from 2017 to 2025, with a yearly funding gap of USD 30-40 billion (Africa 50, 2016). To address the gap, African countries such as Ethiopia have started to ramp up public investment in various infrastructure projects. Overall, public investment stands at about 7% of gross domestic product (GDP) in 2009-2016, while private investment accounts for 15% of GDP in the same period (AfDB/OECD/UNDP, 2017). In addition to increasing investments, more attention should be given to delivering quality infrastructure (OECD, 2015). For instance, only one-third of rural inhabitants live within 2 km of an all-weather road, compared with two-thirds in other developing regions (AfDB/OECD/UNDP, 2017).

Improving fiscal situation

Fiscal and current account deficits are declining in Africa. This is contributing to a positive performance of the continent's economy. Current account balances have improved following the rise in oil and other commodity prices as well as a better export performance in 2017 (IMF, 2017a). Exchange rate pressures have eased in many countries including Nigeria (Africa's largest economy) and improved financing conditions have brought frontier economies in Africa back to the market, with some of them issuing foreign currency bonds (Harvard Business Review, 2016; Sow, 2017). Côte d'Ivoire, Nigeria and Senegal issued Eurobonds in the first half of 2017 (IMF, 2017a). There has also been an effort at greater revenue balancing by African governments, both through reduction in spending and through domestic revenue mobilisation, by establishing better tax policies and a better administration (OECD/ATAF/AUC, 2017).

East Africa is maintaining the lead in Africa

Greater economic diversification and lower dependence on commodities have helped East and North Africa perform well (Table 4.1). East Africa maintained a lead in regional growth rates with (estimated) rates of 5.1% in 2016, 5.4% in 2017 and 5.8% in 2018. Growth in East Africa is driven mainly by increased domestic demand, private investment and more public spending in infrastructure. Djibouti, Ethiopia, Kenya, Rwanda and Tanzania recorded growth rates above 6% in 2016, with Ethiopia leading the pack with an impressive 8%. North Africa ranks second in growth with 3.1% in 2016 and 2017 with a projected 3.6% in 2018. Recoveries in Egypt, Morocco and Algeria in particular aided in the positive performance of the overall region (AfDB, 2017b).

Commodity-dependent regions have experienced weaker economic performance, although improvements are expected. Following the increase in mining output and rising commodity prices, growth in Southern Africa is expected to reach 2.0% and 2.3% in 2017 and 2018 respectively, up from 0.9% in 2016. West and Central Africa were hardest hit in 2016 owing to the dominance of oil production in the local economy (AfDB, 2017b).

Nigeria is the largest contributor to the GDP of West Africa: it makes up 72.4% of the region's GDP. In 2016, the recession in Nigeria led to a contraction of the region's growth rate, closing at 0.4% in 2016, which was the lowest among all African regions. In 2017 and 2018, however, with oil production in Nigeria recovering and broader increases in commodity prices, West Africa is expected to record improvements with projections of 2.5% and 4.0% of growth in 2017 and 2018 respectively (AfDB, 2017b).

Central Africa closely followed West Africa; it had a growth rate of 0.5%. The Economic and Monetary Community of Central Africa (CEMAC) countries - Gabon, Cameroon, the Central African Republic (CAR), Chad, the Republic of the Congo (hereafter "Congo"), and Equatorial Guinea – continue to experience slow growth in 2017 due to lower oil prices, the consequent low revenues, and rising debt levels (World Bank, 2017a). Armed conflicts have also played a role in this more subdued growth, notably in the CAR, Cameroon and the Democratic Republic of the Congo (hereafter "DRC") (AfDB/OECD/UNDP, 2017).

Table 4.1. **Regional GDP growth, 2016-2018**

Region	2016	2017(e)	2018(p)
East Africa	5.1	5.4	5.8
North Africa	3.1	3.1	3.6
Southern Africa	0.9	2.0	2.3
Central Africa	0.5	1.6	3.1
West Africa	0.4	2.5	4.0
Africa	**2.2**	**3.0**	**3.7**

Note: (e) estimates; (p) projections

Source: Author's design based on AfDB (2017b), *Africa's Economic Performance improves in 2017*, African Development Bank, Abidjan
https://www.afdb.org/en/news-and-events/africas-economic-performance-improves-in-2017-17424/.

African governments are making efforts to improve the general outlook of their countries. Armed conflicts and civil wars have wound down, and the political situation has improved in a number of countries including South Africa, Zimbabwe, and Kenya. These developments, together with other improvements to the general business and investment climate, are driving growth (NEPAD, 2017). Moreover, African governments are reducing their dependency on natural resources by promoting economic diversification, specifically across sectors such as wholesale, retail, transportation, telecommunication and manufacturing (NEPAD, 2017). The economic data discussed above from 2016 demonstrated that diversification efforts remain important, as the trend of lower commodity and oil prices contributed to depressed growth in the region and remains a risk. Moreover, despite growth prospects in the near future, certain challenges in the region remain. They include the challenge of demographics and an over-reliance on resource extraction. It should be noted however, that population growth can both act as a catalyst for domestic demand while also being a driver of growth.

Domestic demand and reforms are driving growth, while exports are diversifying

The Africa region currently has the second-fastest growing economies behind South Asia (AfDB, 2017c). This is linked to an increase in domestic demand (AfDB/OECD/UNDP 2017). The increase in domestic demand encompasses both private consumer spending – the largest factor – and to a lesser extent an increase in public infrastructure investment. The increase in domestic demand is largely driven by the growing population and growing disposable incomes. The expanding middle class in Africa is currently estimated at 350 million (McKinsey Global Institute, 2016).

There is a strong drive to improve the business environment in African countries, which has further contributed to growth. A number of countries for instance have moved up in the general rankings in the World Bank *Doing Business* report for 2017 following the implementation of reforms (AfDB/OECD/UNDP, 2017). Mauritius and Rwanda ranked in the top-50 countries for ease of doing business, but Uganda, Kenya, Mauritania, Senegal and Benin were among the top ten reformers. Keeping this in mind, it is noteworthy that sub-Saharan Africa had the highest number of implemented reforms, showing a commitment to improve their macroeconomic and investment climate and attract more investors. Out of the ten economies showing the most notable performance with respect to their ranking in the *Doing Business* indicators in 2017, four were African: Malawi, Zambia, Nigeria and Djibouti (World Bank, 2017b).

The continent gradually moved away from its dependence on natural resources and primary commodities (AfDB/OECD/UNDP, 2017). This development has improved African countries' resilience to external shocks. Even though natural resources and primary commodities are still substantial sources of revenues in several African countries, their role as a driver of growth is diminishing. In Nigeria for example, oil now accounts for 10% of GDP compared with 25.6% in 2000 (AfDB/OECD/UNDP, 2017).

Downside risks remain

Commodity price recovery is weak

African economies are often still dependent on commodity exports and the decline in their prices that began in mid-2014 affected the overall economic performance of many countries. Commodity prices have once more picked up from late 2016 to date. However, subdued growth in China has had an adverse effect on Africa. Most of the continent's exports to emerging economies are dominated by China, which accounts for 27% of Africa's global exports (Pigato and Tang, 2015). With respect to crude oil, the picture is mixed. The United States has continued to increase production, which has the possibility of increasing the global supply of crude. This can put the current rise in prices at risk in the medium to long term (AfDB/OECD/UNDP, 2017). Following these trends, it has become necessary for oil-exporting countries to generate more non-commodities related revenues. Such revenues represented still only about 9% of GDP for sub-Saharan Africa in 2016 and even less in countries such as the following: only 3.3% of GDP in Nigeria and 4.5% of GDP in Equatorial Guinea (IMF, 2017a).

Table 4.2. **Selected commodity price data**

Indicators	Jan 14-Dec 14	Jan 15-Dec 15	Jan 16-Dec 16	July-17	Aug-17	Sep-17
Energy						
Crude oil, Brent ($/bbl)	98.9	52.4	44.9	48.7	51.4	55.2
Agricultural Commodities						
Wheat ($/mt)	285	205	166	202	171	179
Rice ($/mt)	423	386	395	417	393	402
Sugar, world (Cents/Pound)	37	30	40	32	32	32
Coffee, robusta (Pound)	222	194	199	231	230	219
Cocoa (Cents/kg)	306	314	284	199	199	200
Tea, Kolkata auctions (Cents/kg)	258	242	237	289	279	261
Cotton (Cents/kg)	183	155	165	185	175	178
Metals and Minerals						
Aluminium ($/mt)	1 867	1 665	1 665	1 903	2 030	2 096
Copper ($/mt)	6 863	5 510	5 510	5 985	6 486	6 577
Gold ($/toz)	1 266	1 161	1 161	1 237	1 283	1 314
Iron ore, spot (c/dmtu)	97	56	56	68	76	72
Lead (Cents/kg)	210	179	179	227	235	237
Silver ($/mt)	1 910	1 572	1 572	1 615	1 695	1 743
Zinc (Cents/kg)	216	193	193	279	298	312

Note: $ = US dollar; bbl. = barrel; dmtu = Dry Metric Ton Unit; kg = kilogram, mt= metric ton; toz = troy oz.

Source: Adaptation from Development Prospects Group, World Bank and AfDB Statistics Department, October 2017, AfDB (2017a) Statistical Brief on selected socio-economic indicators on Africa, African Development Bank, Abidjan; latest data released 12 October 2017.
https://www.tralac.org/images/docs/12275/statistical-brief-on-selected-socio-economic-indicators-on-africa-afdb-october-2017.pdf.

The economic performances of regional heavyweights are important for Africa's overall performance

Nigeria and South Africa account for 18% and 12% of Africa's total GDP respectively (AfDB/OECD/UNDP 2017). The sharp decline in the growth rate for West Africa was influenced primarily by the rapid decline in oil prices in Nigeria, by exchange rate and policy uncertainties, and by the attacks on oil fields in the Delta region (Jenkins, 2017). Low growth in Southern Africa was mainly driven by a slow-down in South Africa, the most important economy in the region. This lagging performance in 2016 was in large part due to power deficits, the El Niño-induced drought that crippled agricultural production and low prices for commodities that affected the mining sector (AfDB/OECD/UNDP, 2017).

Domestically, some African countries are struggling with high costs of public debt. Nigeria is projected to spend significant amounts of its revenue in 2017 to service debt, to the detriment of other priorities. Countries such as Angola, Congo, Gabon, Mozambique and Zambia received a downgrade in 2016 from rating agencies concerned about debt levels (AfDB/OECD/UNDP 2017). Notwithstanding the situation in some of the countries, there has also been an improvement in the external financing conditions since 2016. Nigeria, in spite of its debt levels, managed to issue its Eurobond in the first half of 2017 (IMF, 2017a). South Africa recorded a boost in mining, which helped its fiscal position, while a good harvest was expected following an improvement in weather conditions. In general, fiscal deficits are broadly stabilising in 2017. In 2018, on the other hand, growth is estimated to be lower than projected in spite of reports of relatively strong levels of consumer confidence and a normalisation of the mining and agriculture production after 2017. The International Monetary Fund (IMF) warned that ongoing policy uncertainties in Nigeria and South Africa hinder a strong rebound from the previous growth plunge. Furthermore, growth is not expected to increase much further in 2019 (IMF, 2017a).

Conflict and political instability remain a drag on growth

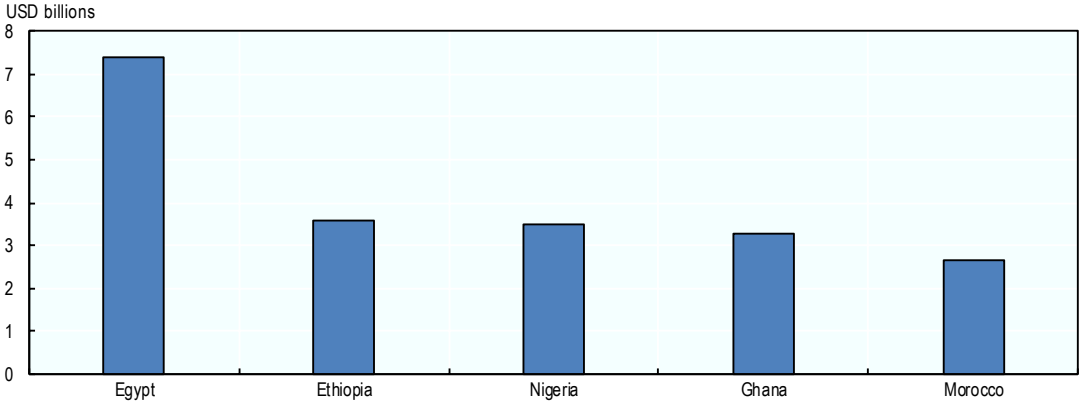
The continued presence of armed conflict and political instability remain important risks to economic growth hindering economic activity and investment in the region. Africa still accounts for the largest share of armed conflicts in the world (AfDB/OECD/UNDP, 2017). In 2017, pockets of conflict continue to linger. Low-level violence is also an issue as it continues for example in the border regions of Ethiopia as well as in Kenya following the re-run of the presidential elections. Tensions also continue in the northern region of Cabo Delgado in Mozambique, in South Sudan, in the Central African Republic and in Cameroon (AfDB/OECD/UNDP, 2017).

Private flows continue to drive growth in external finance to Africa

FDI is projected to increase

Between 2015 and 2016 foreign direct investment (FDI) flows to Africa declined, with resource-rich countries suffering the most. Inflows remained unevenly distributed; the top five receiving countries were Egypt, Ethiopia, Nigeria, Ghana and Morocco (Figure 4.2).

Figure 4.2. **Top FDI recipients in Africa, 2017**



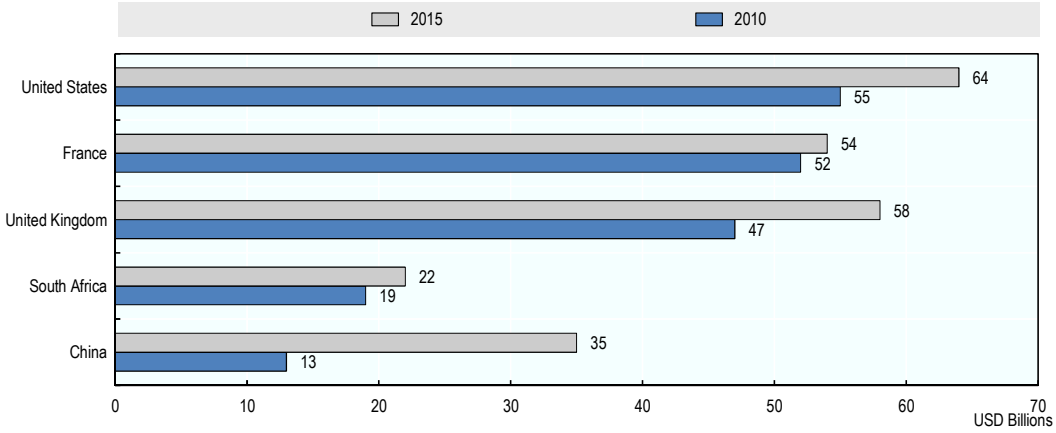
Source: Adapted from UNCTAD (2018), *World Investment Report 2018: Investment and New Industrial Policies*, United Nations Conference on Trade and Development, Geneva, https://unctad.org/en/PublicationsLibrary/wir2018_overview_en.pdf.

In 2017, FDI flows to Africa decreased to USD 42 billion, down 21% from 2016. The decline was concentrated in the large commodity exporters (UNCTAD, 2018). This was lower than 2016, when the figure stood at USD 59 billion, and significantly lower than 2014 when FDI peaked at USD 71 billion (UNCTAD, 2017). Lingering effects from the commodity bust and weak oil prices were interpreted to have been a factor in the 2017 drop (UNCTAD, 2018). Diverse economies such as Ethiopia and Morocco proved more resilient than commodity exporters such as Nigeria, Angola, and Egypt (UNCTAD, 2018).

In spite of the relevance of the extractive sector, countries like Morocco, for example, received FDI flows towards the auto industry, amounting to about USD 1.3 billion, mainly from PSA Peugeot-Citroën and Renault (France) and Ford (United States) (UNCTAD, 2017). Other countries are also reviewing policies to attract FDI in the manufacturing sector. Ethiopia for example is attracting investment in manufacturing and services. The Hawassa Industrial Park opened in July 2016 presents an example. It was built by a Chinese corporation and includes 35 manufacturing facilities and a fabric mill (Nicolas, 2017).

The United States is still the largest source of FDI for Africa (Figure 4.3). In recent years, investments from the Far East and Middle East have been increasing. China's investment in Africa has more than doubled in the last five years (AfDB/OECD/UNDP, 2017). Chinese companies announced more than USD 30 billion in investment in greenfield projects across Africa in 2016, according to desk research (fDi Markets, 2017). In 2016, for example, a major USD 20 billion deal was signed between the Egyptian government and the China Fortune Land Development Company in order to develop and manage 5 700 hectares of farm land east of Cairo (Reuters, 2016). Chinese investment in Africa is mainly diversified into oil, transport, construction and clothing (AfDB/OECD/UNDP, 2017).

Figure 4.3. **Top FDI investor economies in Africa, 2010 and 2015**



Source: Adapted from UNCTAD (2017), *World Investment Report 2017: Investment and Digital Economy*, United Nations Conference on Trade and Development, Geneva, http://unctad.org/en/PublicationsLibrary/wir2017_en.pdf.

In 2016, Intra-African FDI was driven by South African and Moroccan firms. Notable deals included South Africa's Sanlam purchasing a 30% stake in Morocco's Saham Finances for USD 375 million and Morocco's Office Chérifien des Phosphates (OCP), the world's largest phosphate exporter, signing a joint-venture agreement with Ethiopia to build a USD 3.7 billion fertiliser plant in Ethiopia (UNCTAD, 2017).

Africa's outward investment

It should be noted that Africa is not only a recipient of FDI. African countries are also investing abroad themselves beyond the continent's shores. Even though China has been Africa's largest trading partner since 2009 and continues to increase its investments, African companies have also made considerable investments in China, totalling USD 14.2 billion in 2012 (Bo Li, 2015).

Apart from China, African companies are active elsewhere. Nigeria's Dangote Group is projected to invest between USD 20-50 billion in the United States and Europe by 2025 in the renewable energy and petro-chemical industries (Bloomberg, 2017). African countries also saw cross-border mergers and acquisitions with companies from India and the United Kingdom. South Africa's Brait invested USD 966 million in the United Kingdom (UK) fashion retailer New Look and USD 852 million in the UK gym chain Virgin Active (UNCTAD, 2017) to highlight some examples.

INDUSTRIALISATION IN AFRICA: OPPORTUNITIES AND CHALLENGES

A new wave of industrialisation

The industrialisation process in Africa has been confronted with several challenges. Renewed thinking necessitated new and improved strategies to change course in the future. In the years following independence, most industrialisation policies of African governments focused on large state-owned enterprises (SOEs) and prioritised capital-intensive manufacturing while protecting the enterprises from foreign competition. Many of these large enterprises failed because countries focused on industries that were heavily dependent on capital and high skills (AfDB/OECD/UNDP, 2017) while not matching the comparative advantage of countries. A wave of privatisation and de-industrialisation followed in the 1980s and 1990s when government support dwindled, prompted by fiscal concerns, often pushed by international financial institutions.

Despite this history, industrialisation remains a priority in Africa as it has potential to provide better-paid jobs for its population. Governments must ensure that economic growth improves the living standards of the entire population. With an estimated 29 million new entrants to enter the job market every year, job creation should be a top priority for African governments. Industrialisation can consequently serve as a catalyst for job creation, greater productivity and innovation. Tunisia and Mauritius are two examples of countries that have been able to push industrialisation by creating special economic zones and by attracting foreign direct investment for exporting industries. The efforts have contributed to pushing them to middle-income status (AfDB/OECD/UNDP, 2017).

Promoting a competitive private sector is essential to achieve the level of industrialisation that Africa needs. It is a key driver and catalyst for industrialisation through the provision of technical know-how, financing and innovation (AfDB/OECD/UNDP, 2017). Under this new wave of industrialisation efforts the private sector must be engaged at the forefront to enable Africa to maximise its intended benefits.

New opportunities are emerging for Africa's industrialisation

New strategies for Africa's industrialisation must be tailored, taking into consideration global economic trends and new opportunities brought about by the Fourth Industrial Revolution, in which information and communications technology (ICT) tends to replace medium and low skilled workers, while requiring more highly skilled workers (AfDB/OECD/UNDP, 2017). African industrialisation strategies can tap into the potential of manufacturing without neglecting other sectors where African economies can have a comparative advantage. Agro-industry and horticulture, for example, show potential for countries to produce value-added products on a larger scale. Agriculture contributed 16% of total GDP in Africa as compared to 11% for manufacturing in 2015 (AfDB/OECD/UNDP, 2017).

The dynamic population growth in Africa – from 1.2 billion in 2015 to 2 billion in 2050 – presents another opportunity for industrialisation. Within this growing population, entrepreneurs are essential agents of industrialisation (AfDB/OECD/UNDP, 2017). Currently, 22% of Africa's working–age population are starting new businesses compared with 13% in Asia and 18% in Latin America.

Around 20% of new African entrepreneurs are innovating with a new product or service (GEM, 2017). Promoting high productivity entrepreneurship is one of the main ways that Africa can advance its quest to industrialise. Entrepreneurs are most successful in creating employment when firms are still small and young – with less than five years of experience. Governments are encouraged to direct financing and support to help high-growth firms realise their potential (AfDB/OECD/UNDP, 2017).

The service sector is a significant contributor to Africa's GDP; as a sector, it has almost doubled from USD 140 billion in 2005 to USD 270 billion in 2015. Improving the service sector will be essential to the industrialisation of the continent; its progress will depend on the adoption of the technologies listed above (AfDB/OECD/UNDP, 2017).

Rising labour costs in East Asia present a further opportunity for Africa to develop competitive investment conditions and become a manufacturing hub in the near future. This opportunity notwithstanding, Africa can still be perceived as an expensive option because a number of relevant costs are high. These are partly driven by insufficient infrastructure leading to high operational costs and the difficulty of doing business in some countries as well as the absence of certain core skills (AfDB/OECD/UNDP, 2017).

Several challenges are hindering efforts to industrialise

Inadequate infrastructure has hindered the establishment of a competitive industrial sector in Africa, resulting in high production and transaction costs. The development of infrastructure at national and regional levels is essential if the continent is to be successful at industrialisation. Regional co-operation in the development of infrastructure can lower transaction costs, enhance regional markets and make production and exports more competitive while facilitating the integration of African manufacturers into global and regional value chains (UNECA, 2015).

In addition, despite efforts by many African governments to improve education, skills remain a prominent issue that negatively affects industrialisation opportunities. Limited capital, particularly in higher education and training, is a hindrance to productivity and the ability of companies to move up the value chain. The Fourth Industrial Revolution is increasing the use of advanced technology and will require new, targeted skills. In order to meet the growing needs of the competitive world economy and to advance industrialisation, there should be more focus on Science, Technology, Engineering, and Mathematics (STEM) related subjects and ICT in educational curricula (AfDB/OECD/UNDP, 2017).

Underdeveloped financial markets in Africa are a challenge to industrialisation and must be developed further to encourage private sector investment through reduction of lending costs and the provision of more favourable terms of lending (AfDB/OECD/UNDP, 2017). The development of an economy's financial markets is closely related to its overall development. Well-functioning financial markets provide easy access to relevant business information. This lowers transaction costs, which in turn improves resource allocation and boosts economic growth (World Bank, 2001). Furthermore, there is room to improve private equity investment, which is not as developed in Africa as it is in the rest of the world (AfDB/OECD/UNDP, 2017).

PUBLIC POLICIES TO SUPPORT INDUSTRIALISATION IN AFRICA

Regional and national agendas now include industrialisation policies

Industrialisation is back on Africa's policy agenda. At least 26 African countries have included industrialisation strategies as part of their national economic policies as of 2017 (AfDB/OECD/UNDP, 2017). Structural transformation remains the highest priority on the agenda of the continent with industrialisation being the top strategy for achieving it in practice (UNECA, 2016). In 2015, regional bodies outlined implementation strategies for accelerating the industrialisation of the region. The African Union (AU), for example, released the "Agenda 2063: The Africa we want", and ECOWAS released its West Africa Common Industrial Policy (WACIP 2015-2020). As a response, industrial policy has resurfaced in the development agenda of the individual countries despite some of the perceived failures of the past.

Low- and lower-middle income countries aim at shifting from resource-based activities such as agriculture and mining to more productive light manufacturing (e.g. consumables, textiles, wood products, leather, or footwear) while the middle-income countries in North and Southern Africa are upgrading their manufacturing sectors to compete globally in more technology-intensive, high-value added activities. Rwanda for example has had its National Industrialisation Policy in place since 2011 (MINICOM, 2011), while in 2017 the new government of Ghana amended the existing industrial policy to the "One District, One Factory" policy aimed at establishing a factory in each of the 216 districts of the country (Government of Ghana, 2017). These efforts by the governments are perceived as encouraging but governments also have fiscal and monetary policy tools at their disposal that can further underscore industrialisation as a priority, not least by boosting infrastructure (AfDB/OECD/UNDP, 2017).

Currently, some countries are already revolutionising the services sector. In Kenya for example, the start-up scene is booming. In its Vision 2030, the government advocated transforming Kenya into the African Silicon Savanah. Konza Techno City near Nairobi is an embodiment of this vision (Kenya Vision 2030, 2014). Companies are revolutionising the service industry and coming up with innovations. Mobile money and other finance technology solutions such as mobile payments systems are becoming extremely popular. M-Pesa, the famous mobile money payment platform, is now used to pay for a large number of services including transport fares. Reforms in the South African telecommunications industry and innovation in the Nigerian banking industry are steps in the right direction towards further adaptation of new technologies (AfDB/OECD/UNDP, 2017).

Automation is expected to replace medium- and low-skilled workers while more job opportunities will be created for a highly skilled workforce. New technologies open up the possibilities for new sectors to emerge, especially in large urban hubs such as Cape Town, Lagos and Nairobi. New technologies also facilitate small-scale manufacturing. The increased use of the Internet will also help firms participate more in global trade (World Bank, 2016a): for every 10% increase in Internet use in the exporting country, the number of products traded increases by 0.4% (AfDB/OECD/UNDP, 2017).

Attracting private investment in infrastructure

The continent is estimated to have an infrastructure funding gap of USD 87 billion to USD 112 billion annually (Bloomberg, 2018). Africa's infrastructure deficit exists particularly in the energy, transportation and ICT sectors and has had a negative impact on the productivity of businesses. Most firms, for example, are generating their own power using diesel generators, which increases production costs (World Bank, 2016b). According to a World Bank survey, more than 50% of the firms in sub-Saharan Africa own a generator compared with 11% in high-income OECD countries (World Bank, 2016b). This general lack of infrastructure is estimated to decrease overall productivity by 40% (AfDB/OECD/UNDP, 2017).

The Addis Ababa Action Agenda, the African Union 2030 Agenda for Sustainable Development and the G20 Compact with Africa (CwA) have put a renewed focus on private infrastructure investment in Africa. The CwA specifically brings together international organisations such as the World Bank Group, AfDB, IMF, and 11 African countries including Ethiopia, Senegal, Morocco and Rwanda in an effort to increase the attractiveness of private investments. The Compact seeks substantial improvements of the macro, business and financing frameworks in these countries (Compact with Africa, 2017). There have been some significant investments from the private sector in the region in recent years including Blackstone Group's USD 2 billion investment in infrastructure projects in Ethiopia, Mozambique, Nigeria and Togo (AfK Insider, 2016), for example. Private equity firms have shown some interest, as highlighted by the recent USD 115 million deal between Helios Investment Partners and Oando Power and Gas in Nigeria (Africa Business, 2016). In spite of these efforts, there is a need to bring together more private financiers, Development Finance Institutions (DFIs) and equity providers to provide alternative forms of financing for investment in infrastructure (AfDB/OECD/UNDP, 2017).

Financing and supporting entrepreneurship to support industrialisation

Firms with fewer than 20 employees and less than five years' experience provide the most jobs in Africa's formal sector (AfDB/OECD/UNDP, 2017). The majority of early-stage entrepreneurs include companies in trade, hotels and restaurants; agriculture, forestry and fishing; and (light) manufacturing. Some African industrialisation strategies already prioritise private sector development, including entrepreneurship. In Kenya, for instance, where the Micro and small scale enterprise (MSE) sector is the largest employer aside from agriculture (Muirui, 2014), there is a long history of government policies that promote small-scale businesses and enterprises (Mbaza, 2017). The Nigerian government has also implemented strategies and established institutions such as the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) to provide support to entrepreneurs (NADDC, 2014).

Table 4.3. **Examples of strategies and initiatives to foster entrepreneurship in African countries**

Country	Strategies and initiatives
Algeria	National Agency for Investment Development, National Agency for SME Development
Burkina Faso	National Strategy for the Promotion of Women's Entrepreneurship
Cameroon	Strategy for the Development of SMEs and the Social and Artisanal Economy
Egypt	Technology innovation and entrepreneurship strategy 2011-2014, Social Fund for Development (for micro and small enterprises), General Authority for Investment (for small and medium enterprises)
Ethiopia	Micro and Small Enterprises Development Strategy (2011), Ethiopian Entrepreneurs Development Centre
Ghana	Yes Initiative, Graduate Entrepreneurial Business Support Scheme, Youth Employment Agency
Kenya	Micro and Small Enterprises Act 2012, Fund for Inclusion of the Informal Sector 2011
Morocco	Law 114-13 on self-employment status 2015
Nigeria	National Policy on Micro, Small and Medium Enterprises
Rwanda	Small and Medium Enterprises Development Policy
Senegal	Charter for the Small and Medium Enterprises
South Africa	National Small Business Act, Small Enterprise Development Agency, Black Industrialists Policy 2015, Broad-Based Black Empowerment, Youth Enterprise Development Strategy
Tunisia	State Bank for SME Financing, Agency for the Promotion of Industry and Innovation (without a specific mandate for SMEs)

Source: AfDB/OECD/UNDP, *African Economic Outlook 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/aeo-2017-en.

PRIVATE SECTOR INSIGHTS ON INDUSTRIALISATION IN AFRICA

Industrialisation is critical to promote competitiveness, economic growth and job creation. Tapping into the private sector's full potential requires a sustained effort from governments to create a sound enabling environment. Participants at the EMnet Africa meeting identified some critical factors in support of industrialisation, including entrepreneurship, skills, access to energy, infrastructure and digitalisation.

Further industrialisation in Africa can boost economic growth

Industrialisation is key to lifting Africa's economic potential. The private sector sees several important priority factors that include ensuring legal protection for private investment, lowering competition barriers, addressing the role of state-owned enterprises (SOEs) and reducing persistent skills gaps.

Ensure legal protection for private investment

Companies mentioned the need to enhance legal protection for their investments and level the playing field between domestic and foreign investors. In some countries, even when the overall legal protection may be officially granted, the lack of clarity in the legal framework and delays in enacting reforms can be a source of concern, which can militate against private investment and further industrialisation. In line with this approach, OECD analysis highlights the importance for investment laws in host countries to incorporate the principles of equal and fair treatment of investors, transparency, good faith and the granting of guarantees against denials of justice (OECD, 2015).

Competition policies are key to attracting private investment

Companies emphasised the need to lower competition barriers across the continent. The OECD has looked at the role of competition authorities in regulating infrastructure sectors. Research suggests for instance that a competition commission can help prevent anti-competitive behaviours in procurement processes and potential conflicts of interest (OECD, 2015).

African integration efforts that include a strengthened competition policy framework have the potential to enhance overall competitiveness, and can help to exploit opportunities for companies to scale (AfDB/OECD/UNDP, 2017). Lastly, competition policy should also include a set of clear, unified rules for the governance of SOEs and their overall engagement to prevent undue influence, particularly with regards to public procurement (OECD, 2016).

State-owned enterprises play a pivotal role in Africa's industrialisation

SOEs were central to the early industrialisation process of many African countries in the 1960s and the 1970s, targeting in particular capital-intensive manufacturing. Many of these investments were then dismantled in the late 1970s and 1980s during structural adjustment programmes. A number of SOEs remain, however, serving a specific industry and sometimes creating barriers to competition (AfDB/OECD/UNDP, 2017).

Nonetheless, EMnet participants discussed how a number of SOEs have the necessary know-how to render an industry more effective and better serve African efforts to produce higher value-added goods and services. OECD research does recognise that state-owned enterprises form a critical component of infrastructure development in most African countries, highlighting their perceived relevance to the continent's industrialisation. Legislation, and increased private participation, should be tailored to improve SOEs efficiency as well as promoting a level playing field for the private sector (OECD, 2014a).

Partial or full privatisation can be a means to increase efficiency of SOEs. Utility markets, for example, can often be characterised in Africa by an interdependence between SOEs and the private sector (OECD 2015). Given this interdependence, participants agreed that undue government intervention in such markets can distort competition, and create an uneven playing field for private companies wishing to enter the market and compete on an equal basis with public enterprises (OECD, 2015).

Businesses continue to point to the challenge of lack of skills

Participants reaffirmed insights from previous EMnet meetings on Africa, highlighting the lack of skills in the local labour force as a main challenge for the private sector (OECD, 2016) and in this particular case to underpin any efforts to foster industrialisation. A lack of managerial skills is still persistent across Africa and there is evidence that the education sector still lags behind the global average (AfDB/OECD/UNDP, 2017).

Businesses discussed how finding the right skill set remains a challenge in some African countries. Some solutions addressed included equipping staff with skills through on the job training and creating the conditions for skilled Africans, who live abroad, to come back with their talents to the continent. Companies did note nevertheless that it is at times possible to recruit locally and find the right people. Some companies have furthermore decided to invest in training for digital skills for young Africans. Google, for example, has publicly committed to train 10 million people – at least 40% women – over the next five years in online skills, offering programmes in Swahili, Hausa, and Zulu (Google, 2017).

Entrepreneurship is key for industrialisation in Africa

Africa is considered the most entrepreneurial continent: 22% of Africa's working-age population is estimated to be currently starting new businesses, higher than any other region. Entrepreneurs innovate, create employment, provide services, and form an important tax base for governments (AfDB/OECD/UNDP, 2017). This gives governments reasons to create an enabling environment for entrepreneurs, stimulate high-potential businesses and facilitate their growth.

Excessive regulations and red tape can create barriers to entrepreneurship

Participants in the EMnet meeting mentioned how excessive regulations and red tape can block growth opportunities for entrepreneurs. Discussions were centred in particular around challenges in the fields of licensing, insufficient and unclear land and property rights, weak contract enforcement, and policy uncertainties in certain countries. It was agreed how these institutional bottlenecks combined with infrastructural problems and fragmented and small markets create

challenges for the development of entrepreneurship across the continent. Participants in the EMnet Africa meeting also confirmed that more open markets, increased regional connectivity and higher inter-regional trade could enhance entrepreneurial potential across the continent. Cumbersome registration processes can be simplified to encourage more people to start a business. Companies pointed specifically at the examples of Mauritius, Rwanda and Morocco, who ranked comparatively high on the *Doing Business* 2018 index (World Bank, 2017b).

Access to finance is essential to support entrepreneurship

Participants in the EMnet Africa meeting suggested focusing public policies on access to finance for entrepreneurship as an important component to promote industrialisation. Discussions addressed how governments could in particular work to encourage domestic finance, given an understanding that local banks are close to the field and are highly knowledgeable regarding local entrepreneurial needs.

Businesses discussed how governments should implement policies to incentivise banks to issue more credit to SMEs and start-ups. Public authorities could also offer state grants and loans that target particularly disadvantaged categories of entrepreneurs, such as women and early-stage entrepreneurs. Governments can also encourage more support to entrepreneurship by non-governmental organisations and foundations. The Tony Elumelu Foundation in Nigeria, for example, provides seed capital each year to outstanding high-growth potential African entrepreneurs (Tony Elumelu Foundation, n.d.). Too often, government support for entrepreneurs has a focus of poverty alleviation or job creation rather than more specifically industrialisation (AfDB/OECD/UNDP, 2017).

Developing infrastructure is a key enabling factor for Africa's industrialisation

EMnet participants highlighted how the infrastructure deficit in Africa can hinder private investment and become a key impediment to industrialisation. This gap costs as much as 2% of GDP growth every year on the continent (World Bank, 2017d). Moreover, the infrastructure deficit is expected to increase over time thanks to a rapidly growing population and urbanisation. The OECD has recommended some policies and risk-sharing arrangements to ensure that infrastructure projects are effectively designed and managed (OECD, 2013; OECD, 2014a; OECD, 2014b; OECD, 2015).

Businesses discussed the relevance of an open consultation process to select the right projects. In this regard, transparent public procurement guidelines and mechanisms, as well as clear PPP frameworks, can facilitate this choice (OECD, 2015). Within the African context OECD analysis highlights the importance of supporting the infrastructure projects that can ultimately provide the most value for money for end-users (OECD, 2015).

EMnet participants agreed that planning is a key component of infrastructure projects. Recent analysis from the International Transport Forum also confirms the importance of strategic planning for infrastructure development. Designing sectoral master plans for infrastructure at the national level, for example has in many cases increased the clarity on political priorities and reduced planning and political risks for investors (ITF, 2017).

Promoting cross-border infrastructure is beneficial to landlocked regions

Transport corridors and cross-border infrastructure are key requisites to lower infrastructure gaps, promote regional trade and integrate global value chains (ICTSD, 2017). Corridors are particularly important for landlocked regions, such as the Nacala corridor connecting inland Mozambique and Malawi to Nacala port in Mozambique, the Entebbe-Mombasa railroad connecting Uganda to the Indian Ocean, and Tanzania's Central Corridor connecting Rwanda, Burundi and the eastern DRC to Dar es Salaam port. Although the perception by business is that progress has been made with respect to the effectiveness of the performance of these physical infrastructures, issues with customs procedures remain a bottleneck to further developing regional transport infrastructure (USITC, 2015).

Businesses see electricity as a key bottleneck for Africa's industrialisation, although green energy investment opportunities are growing

The participants have highlighted electricity as a key bottleneck for Africa's industrialisation. Africa accounts for 13% of the world's population, but only 4% of global energy demand (IEA 2017b). In sub-Saharan Africa, 290 million out of 915 million people do not have access to electricity (IEA, 2017b). In spite of numerous efforts to increase electrification, many areas in Africa are not yet connected to the grid, or suffer from frequent outages. Predictions by the International Energy Agency (IEA) show that more than 600 million Africans will remain without energy access by 2030, even though countries such as Ethiopia, Ghana and Kenya will come close to having universal access (IEA, 2017a).

Business participants confirmed that irregular power supply remains a problem, because it adversely affects production costs. In Nigeria, for example, USD 17 per month is spent on average on the electricity bill, while the cost of generator fuel adds another USD 48 to the overall electricity cost (NOIPolls, 2015).

Despite these difficulties, investments in Africa's electricity generation are expected to increase. In 2014, for the first time Africa's electrification efforts outpaced population growth (IEA, 2017a). In East Africa the construction of the Grand Ethiopian Renaissance Dam is expected to generate 6 000 MW of electricity once completed for the entire region (Water Technology, n.d.). There is still much work to be done, however, as the total energy demand is forecast to double by 2040 (IEA, 2017a).

In order to unlock energy investments further, businesses indicated regional co-operation as a potentially successful way forward to achieving this. The West African Power Pool, an agency of ECOWAS, is an example in West Africa where national utilities co-operate to establish a reliable regional grid and a common market for electricity (WAPP, 2018). Other parts of Africa could benefit from this approach as well. The East Africa region, for example, is improving transmission lines and intra-regional connections, so neighbouring countries can benefit from Ethiopia's large hydroelectricity potential (Reuters, 2015).

An integrated approach is necessary to develop energy infrastructure

EMnet participants also stressed that the power sector needs an integrated approach, especially in cities, delivering smart solutions that improve the control of energy flows and provide a more efficient energy supply.

The private sector highlighted the role of national and local governments as key partners for smart grids solutions. They also stressed the importance of investing in skills, enhancing the necessary competencies to design and implement these projects. In order to support policy makers in designing and implementing smart grids solutions at national, regional and municipal level, the IEA published the *How2Guide for Smart Grids in Distribution Networks*, which highlights the importance of a clear roadmap to smart grid deployment in distribution networks, including planning, stakeholders' involvement and implementation (IEA, 2015).

The digital economy is generating new business opportunities

EMnet participants highlighted how the development of the digital economy will generate significant opportunities for the private sector that foster greater levels of industrialisation. The association of global mobile operators, GSMA, expects that the largest increases of mobile subscribers up to 2025 will occur Africa, owing to a growing mobile network coverage in rural areas and increasing affordability of mobile devices and tariffs (GSMA, 2018).

Increased connectivity will help fill information gaps on products and services

Companies present at EMnet meeting agreed that digitalisation will contribute to filling information gaps on products and services, and help develop businesses. There are large information gaps with respect to prices and quantities, which was partly attributed to low mobile subscriptions and mobile Internet penetration rates. Sub-Saharan Africa, with a 44% penetration rate of mobile subscribers lags behind other emerging economies, such as MENA (62%), Latin America and Asia/Pacific (both 67%) (GSMA, 2018).

Improving digital connectivity therefore represents an important opportunity for businesses, enabling them to reach new markets. Companies mentioned how governments should further encourage investments in digital infrastructure to help the private sector adapt towards the local African context, in terms of products, marketing and technology application. Examples of adapting e-commerce to African markets include allowing for cash-on-delivery, mobile money schemes such as Kenya's M-Pesa (OECD, 2017b), or the development of mobile applications that function well without excessive electricity requirements or data consumption, such as YouTube Go (Google, 2017).

Digitalisation is improving healthcare and government services delivery

The OECD has identified mobile health as one of the fastest growing segments of ICT-based health-care delivery systems in Africa. It cites that Ghana, Kenya, South Africa and Tanzania have all been able successfully to integrate the use of mobile phones as a support mechanism in community-based health-care systems (OECD, 2017c).

Participants discussed how governments have also used digitalisation to improve their service provision. E-governance makes tax systems more efficient, reduces costs and workload for the tax authority but also improves efficiency for companies and individuals to comply. Electronic tax systems, e-filing, the use of mobile technology and other digital innovation in the field of taxation offer prospects for governments and tax-paying businesses alike (OECD/ATAF/AUC, 2017). Mobile payments are also providing new ways to pay utility bills. The French-African start-up Wizall, for example, provides citizens of Senegal and Côte d'Ivoire with the possibility of paying water and electricity bills using mobile money. Apart from facilitating payments, the system also works the other way around. Government-to-person (G2P) payments enable the public administration to transfer money directly into people's mobile accounts. Examples of applications of the G2P technology include payments of pensions, social protection, school subsidies and salaries (CGAP, n.d.).

Governments should reform norms and regulations to accompany the digital age

EMnet companies mentioned the importance of implementing policies to accompany the digitalisation process. In this context, many African countries are leapfrogging stages of development, for example by going from having no phones to having mobile phones, or from no bank accounts to mobile money. This specific and fast-paced phenomenon requires a high degree of adaptation and flexibility from policy makers.

Companies mentioned several important areas for policy reforms in this regard, including consumer and data protection and cyber security. Governments could also encourage infrastructure sharing, particularly in telecommunications. Examples include cell phone towers in rural or sparsely populated districts.

CONCLUSION

The 2017 Emerging Markets Network business meeting on Africa focused on the dual themes of industrialisation and entrepreneurship. This policy note highlighted key topics brought forward by EMnet members and other companies during the discussions of the day.

Promoting industrialisation is back on Africa's economic policy agenda. In the 21st century, industrialisation will go beyond traditional manufacturing, and include other sectors with high-growth potential. To promote a successful industrialisation process, EMnet participants highlighted the importance of removing constraints on entrepreneurship, and bottlenecks such as unreliable electricity service for the private sector at large.

Companies have voiced in particular the need for governments to focus on policies that can support the development of a sound enabling environment for businesses, in particular looking at investment and competition policies, skills, infrastructure, access to energy and digitalisation to drive overall industrialisation policies and growth forward.

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Better business for 2030: Putting the SDGs at the core

An increasing number of firms recognise that the Sustainable Development Goals (SDGs) makes business sense. This Policy Note explores ways in which the private sector can contribute to the SDGs while giving them a more prominent role. It builds on the outcomes of the Emerging Markets Network (EMnet) meeting on "Better Business for 2030: Putting the SDGs at the Core", held on 11 July 2017 at the OECD headquarters in Paris.

Key messages include:

- The private sector can contribute with its resources and know-how to a successful implementation of SDG agenda in emerging markets.
- Companies and governments are increasingly engaging in PPPs in support of the 2030 Agenda for Sustainable Development, as shown by the case studies featured in this Policy Note..
- The Business and Sustainable Development Commission estimated that working towards the achievement of the SDGs can potentially open up USD 12 trillion in market opportunities. Studies have shown that a majority of customers are willing to pay a premium for products and services offered by sustainable businesses: up to 66%, and 73% in the case of millennial consumers.
- However, challenges remain when it comes to genuinely putting the SDGs at the core of business strategies, while balancing sustainable development objectives with profitability. Achieving the SDGs will require a drastic rethinking of how to do business throughout the supply chain to have a positive social, environmental and economic impact.
- To this effect, the OECD has been promoting responsible business conduct, including through the *OECD Guidelines for Multinational Enterprises,* in line with UN efforts on corporate responsibility.

LESSONS ON SUSTAINABILITY AND BUSINESS

Introduction

In September 2015, the United Nations adopted the 2030 Agenda for Sustainable Development and established 17 Sustainable Development Goals (SDGs): a roadmap for transformation to end poverty, protect the planet and ensure prosperity for all (UN, 2017). These 17 goals include poverty reduction, gender equality, clean water and sanitation, decent work and economic growth, climate action and partnerships for development (for a full list, see Annex I to this note). Unlike the Millennium Development Goals (MDGs), which were launched in 2000 and centred on addressing basic human needs throughout the developing world, achieving this new set of ambitious goals calls for bolder action from diverse actors across society, whose collective efforts outweigh what they could deliver individually (UN, 2000; UNIDO and UN Global Compact, 2014).

Much more than for the MDGs, the SDGs call for "partnerships between governments, the private sector and civil society" (UN, 2017). Indeed, business-led initiatives, such as research and development partnerships, knowledge-sharing platforms, technology and skills transfer, together with infrastructure investment have the potential to optimise development outcomes, enable productivity gains, generate better quality jobs, strengthen skills and promote technological progress. Furthermore, the private sector is the premier agent of job creation, which contributes to development by boosting living standards, raising productivity, and fostering social cohesion (IFC, 2013; World Bank, 2013).

The Business and Sustainable Development Commission estimated that working towards the achievement of the SDGs can potentially open up USD 12 trillion in market opportunities (Business and Sustainable Development Commission, 2017). The private sector is indeed essential to deliver sustainable development worldwide (OECD, 2016a). Achieving the SDGs will require a drastic rethinking of how to do business throughout the supply chain and when engaging in coalitions to generate profit, while having a positive social, environmental and economic impact. Over 1 500 companies that participated in the UN's Global Compact realised that a strategic approach to sustainability can drive long-term financial value while improving productivity and growth today (UN Global Compact, 2018). However, while all businesses value the relevance of the sustainability agenda, it sometimes remains a challenge actively putting the SDGs at the core of their strategies, and balancing sustainable development objectives with profitability.

Some efforts to combine business and sustainability pre-date the adoption of the SDGs. Engagements in more responsible business conduct (RBC[1]) have been pivotal to allow companies to proactively minimise the negative impacts of their operations, especially in their supply chains. Beyond operations, issues of social justice, community dialogue and the restoration of trust between citizens, institutions and the private sector have become an essential part of the equation. Furthermore, increasing inequalities in society over the last 30 years have also contributed to a mounting discontent and fragmented social contract, highlighting the need for more inclusive growth and inclusive business (OECD, 2017b).

In this context, the Emerging Markets Network (EMnet) at the OECD's Development Centre hosted a business roundtable with companies operating in emerging markets as well as in OECD countries. These discussions explored how businesses can take further action to put the SDGs at the core of their activities, together with efforts to act responsibly in line with their RBC commitments, while balancing the demands of their shareholders.

Building on the outcomes of the meeting, this policy note provides an overview of current perceptions, ongoing strategies and suggestions to further optimise the private sector's contribution to the SDGs. Furthermore, some case studies provide evidence on how businesses are currently contributing to the SDGs and trying to combine sustainability with profitability.

Figure 5.1. **The 17 Sustainable Development Goals or SDGs (UN, 2017)**

Opportunities for the private sector

Businesses increasingly see investments in sustainability as business opportunities despite the challenges involved (OECD, 2016a). Individual companies recognise that achieving the SDGs creates market opportunities, even though the SDG agenda has not been mainstreamed by multinational enterprises (MNEs) and does not form an integral plan of strategic planning everywhere (Business & Sustainable Development Commission, 2017). There is therefore consensus that sustainability can indeed allow companies to acquire new clients, penetrate new markets, promote innovation, explore new business models and attract and keep talent.

Companies that are more sustainable are more competitive

Evidence suggests that the business case for the SDGs as at the core of companies' strategies is getting stronger. The Business and Sustainable Development Commission estimates that the SDGs will open up USD 12 trillion of market opportunities by 2030 in areas ranging from food and agriculture, cities, energy and materials, and health and well-being (Business & Sustainable Development Commission, 2017). Indeed, companies adopting sound environmental, social and governance practices toward clients, suppliers, employees and the environment are said to be more competitive in the long run (Benhamou and Diaye, 2016), create more jobs, and employ more skilled, and female, workers (ILO, 2017). Evidence furthermore suggests that productivity gains generated by sustainable business conducts can outweigh the additional costs and in turn reduce overall unit labour costs. Employers that provide formal training for their employees, for example, pay 14% higher wages, yet are also 20% more productive.

A sustainable reputation can help companies attract and retain clients. In addition to being more competitive, there is evidence that firms would be able to capitalise on their sustainability image through their pricing structure (WBCSD, 2017). A study conducted by Nielsen shows that the large majority of respondents were willing to pay a premium for products and services offered by sustainable businesses: up to 66% of customers, and 73% in the case of global millennials, are willing to pay more for a more sustainable brand (Nielsen, 2015). The analysis is based on a survey involving 30 000 respondents from 60 countries, and shows that consumers across regions, income levels and categories have a preference for businesses that remain loyal to their values and are ready to support them. The report also mentions that consumers in emerging markets, such as Latin America, Asia, Middle East and Africa, are almost 30% more willing to pay a premium for sustainable offerings than consumers in developed economies. The reason, according to researchers, is that consumers in developing markets are physically closer to surrounding communities and more aware of the daily challenges. Other research has shown that customers are willing to pay more for a greener product with similar performance standards: 70% would pay a 5% premium in industries such as automotive, building, electronics, furniture and packaging, according to a survey assessing the sustainability of industry value chains (Miremadi, Musso and Weihe, 2012).

Access to new markets and opportunities

The SDG framework has created an incentive for researchers, entrepreneurs, and creative minds to work toward a more sustainable world. CEOs believe that the 2030 Agenda provides an essential window of opportunity to rethink and test approaches to sustainability; 89% say commitment to sustainability is translating into real impact in their industry (Accenture, 2016). In its Global Opportunity Explorer, for example, the UN Global Compact and partners have taken a systematic approach: by closely studying the intersections between the fields of health, food, water, and energy, and of those four with technology, traditional markets as well as new opportunities for business have been mapped out. After further consultations with 17 000 business leaders, some 55 specific market opportunities were identified (Connect4Climate).

In their Global Opportunity Report, the UN Global Compact and the project partners were able to match specific opportunities to lagging SDGs (DNV GL, 2018). The report highlights that reduced inequalities (SDG 10), responsible consumption and production (SDG 12), climate action (SDG 13), and life below water (SDG 14) are among the ones with the biggest lag. For each of these SDGs the report also highlights new potential business opportunities that may help to address these gaps.

Some examples include:

- **Reducing inequalities can be addressed by blockchain technology**. Through its secure encryption, blockchain can be used to secure land titles, which is essential for many small rural and urban entrepreneurs in countries with unclear land registries. Moreover, digitalising supply chains using blockchain and smart contracts[2] can increase their transparency and promote a more even distribution of the value added throughout the chain. Fuller transparency can also help customers to know the origins and history of a product or its components. In Africa, where only about 30% of land has been fully surveyed, drones making information on land ownership more readily available. Clear and transparent land titles enable to more easily borrow with the land as collateral while at the same time allowing governments to levy property taxes more accurately to raise general revenue.

- **Greenhouse emissions can be mitigated by exploring innovating and responsible supply for food sources**. Opportunities can be found in alternative sources such as insects or algae, which emit 100 times less greenhouse gasses than pigs or cattle, but are equally rich in protein. The European Union updated its legislation in 2018 (EU, 2018), creating space for insects as a protein-source for human or animal consumption. Insects have also been processed into palm oils, reducing the need for pesticides or fertilisers (IPIFF, 2018).

- **Sustainable construction techniques are increasingly contributing to reduce the sector's carbon footprint.** The industry accounts for a large percentage of carbon emissions (25-40% globally) and of solid waste (up to 40% in the United States). Innovative building techniques leverage prefabricated blocks that can be taken apart easily and re-used as well as construction waste that can be transformed into new materials. 3D-printing can also mitigate the use of superfluous materials and reduce transport costs. Increasingly, architects and developers are seeking a carbon neutrality standard for new buildings. Non-profits such as the World Green Building Council work with corporations to reduce energy and carbon emissions as well as water consumption (WorldGBC, 2018). Some companies have joined the cause: in 2017, JP Morgan Chase announced it would source 100% of global energy needs from renewable resources by 2020. The company has since worked to retrofit all its buildings with LED lighting to cut energy consumption by 50%, in line with the WorldGBC's goal of moving to net zero carbon (JP Morgan Chase, 2017).

- **Life below water addresses the sustainability of ocean resources**, which represent an "asset" worth USD 2.5 trillion per year (WWF, 2015). Ocean resources are currently threatened by the incidence of waste. Some estimates indicate that the ocean will count more plastic than sea by 2050 (MacArthur Foundation, 2016). Consumers' preferences are increasingly driving sustainable packaging solutions. Global consumer goods companies are closely monitoring this trend. For instance, Unilever pledged in 2017 that 100% of its packaging was to be made out of recyclable plastics by 2025 (Unilever, 2017). Surging demand for fish, coinciding with the world's population growth, put pressure on fisheries. Aquaculture and ocean farming hold the potential to feed a population that is growing without further impairing the world's wild fish stocks. The total market for aquaculture is worth USD 176 billion and is expected to grow at 4.6%, making it the fastest growing food industry (DNV GL, 2018). Companies are already applying aquaculture solutions to produce ocean foods at a commercial scale, thus moving towards the realisation of SDG 14.

Opportunities can also be found in other SDGs. The International Energy Agency, in its latest World Energy Outlook, describes opportunities that exist in energy-related aspects of the SDG 7 on affordable and clean energy (IEA, 2017a). In its sustainable development policy scenario, the IEA describes what policies are needed to achieve the objective of universal clean energy access, including a move to achieve peak the level of emissions as soon as possible, to be followed by a substantial decline, and a large reduction of energy-related pollutants. Without policy intervention, 700 million people will still lack energy access by 2030, and 2.3 billion people will still rely on polluting fuels for their basic needs (IEA, 2017b).

The investments associated with the IEA's Sustainable Development Scenario offer opportunities to the private sector. Examples include companies active in delivering energy solutions in decentralised systems far from the main grid ("micro grids"), companies active in the electrical vehicle industry and its supply chain, or in energy transmission and distribution, needed to achieve universal access (IEA, 2017a).

Sustainability leads to technological innovation

New technologies are enabling companies to integrate sustainability more easily into their operations. According to a UN Global Compact study, 75% of CEOs in over 100 countries stated that digital technologies are facilitating the adoption of sustainable practices (UN Global Compact, 2017). Mahindra & Mahindra, an Indian multinational automobile manufacturing company, invested in an agriculture-focused venture dedicated to enhancing farmers' productivity and ethical sourcing of food products through an extensive use of innovative technologies (MASL, 2017). This initiative is supporting the goal set by the Indian Council of Food and Agriculture to double farmers' income by 2022 (Indian Council of Food and Agriculture, 2016). Starting with zero revenue the initiative has grown substantially (see Mahindra & Mahindra Case Study for more information).

Sustainable companies attract talent

The generation born between 1980 and 2000, also called "millennials", is characterised by lower level of loyalty to their employers than previous generations, and higher attention to the alignment with personal and ethical values. This phenomenon is redefining the employer-employee relationship. A study by ManpowerGroup highlights that the majority of people currently entering the workforce say that purpose is a priority in their choice of work (ManpowerGroup, 2016).

With increasing job mobility, only one in five millennials is expected to stay in the same field and progress with one employer; 75% of millennials, interviewed in 2008, said that they expected to have two to five employers throughout their lifetime (PwC, 2011). It is also important to notice that 86% of respondents would consider leaving an employer whose values no longer met their expectations (PwC, 2011).

Taking this into consideration, companies should be more inclined to improve their employees' working experience and offer fair benefits. Companies that invest in social responsibility and sustainability can potentially create a sense of belonging and be more likely to retain talents, keep employees motivated and improve their productivity.

Challenges for businesses

The SDGs' awareness gap

Before addressing the implementation challenges for MNEs, the first hurdle worth noting is one of awareness. While the private sector is expected to play a major role in achieving the 2030 Agenda for Sustainable Development, the view from businesses expressed during the EMnet meeting is that this major shift will not happen without a higher level of global SDG awareness among all relevant stakeholders. As the general public's awareness increases, companies will be able to conduct business more effectively attract and retain better informed customers. Evidence shows that SDG awareness is increasing, but significant hurdles remain. In Japan, for example, research has shown that while SDGs' awareness is 84% of corporate social responsibility (CSR) staff, the figures for top management and middle management are only 28% and 4-5% respectively (GCNJ, 2017).

Evidence shows that customers are more likely to buy goods and services from companies that endorse responsible business conduct (PwC, 2015). Increasing sustainability awareness can therefore be a way to incentivise a positive relationship between customers and businesses, where the importance of the SDGs is recognised and more companies are encouraged to follow the example of industry leaders. According to a large, nearly 1 000-firm global survey conducted by PricewaterhouseCoopers, 71% of business respondents said they had started planning how they will engage with the SDGs, 13% had identified the tools they needed to assess their impact against the SDGs, while 41% said they will embed the SDGs into their strategy within five years (PwC, 2016).

Lastly, it's important for businesses to note that employees are citizens too. In the Netherlands, the SDG Investing Initiative links 18 financial institutions who collectively manage over EUR 2 800 billion of assets, and who in a statement commit to contribute to the 2030 SDG agenda (IISD, 2017). Various EMnet members also involve their employees in their SDG commitments, whether through re-investing salary-based savings (ENGIE, 2016a and 2016b), by organising an annual CSR event for all employees (Pernod Ricard, 2016), or through corporate foundations like the Walmart Foundation, which aspires to provide 4 billion meals to fight against hunger (USCIB, 2018).

The dilemma of reconciling profitability, risk management and sustainability

In spite of clear incentives to further invest and act sustainably, many operational challenges remain. In developing countries in particular, businesses often work in risky environments, where corruption is widespread, the rule of law is not enforced, and infrastructure and services are poor. These are issues that will tend to receive management attention first. Maintaining profitability and navigating challenges thus become first order priorities, often at the expense of sustainability which is then seen as an overall sunk cost. In addition, keeping up with their commitments to RBC has proven complicated for many companies. The OECD reports that 34 new violation instances were submitted against individual businesses in 2016 under the OECD Guidelines for Multinational Enterprises (OECD, 2016b). Alleged violations span across several sectors involving human rights, due diligence, supply chains, stakeholder engagement and the environment. In this context, leadership is critical to allow profitability to become compatible with sustainable and fair business practices.

Challenge of seeing the SDGs as a strategic part of core business

Participants in the EMnet meeting highlighted the importance of integrating the SDGs in the core business. This requires a major shift towards a more horizontal and strategic approach, and a step away from focusing on a few selected SDG targets. Indeed, whereas only 1% of companies planned to assess their impact on all 17 SDGs, 34% indicated they were planning to select specific targets, according to a survey by PricewaterhouseCoopers on businesses and the SDGs (PwC, 2015). By integrating the SDGs into their core strategy and taking a more systemic approach to sustainability in the actual implementation of these strategic guidelines, MNEs could work in enhancing their contribution to the 2030 agenda.

Siemens, a German industrial manufacturing company, uses a methodology called "Business to Society". It entails an objective measurement of the impact of operations on local societies (Siemens, "Business-to-Society") in which the firm operates. The "outside-in" approach focuses on the needs of society and the environment, using the SDGs as a roadmap. The "inside-out" approach analyses how their operations contribute to and add value to those needs. Through this methodology, Siemens considers all of the broader needs of society, including the ones that may not appear to be relevant to the company's immediate operational goals at first glance (see Siemens Case Study for more information).

Importance of including sustainability in management education

Discussions in the EMnet meeting highlighted the importance of including responsible business practices and sustainability into management education as well. Business schools are the primary source of management education for future corporate leaders. However, even though the number of courses offered on corporate social responsibility and sustainability has increased over the years, they are still very detached from core management disciplines (Kolb, Fröhlich and Schmidpeter, 2017). Furthermore, there is evidence that while the senior management is well aware of the importance of business sustainability, middle management and employees in general do not know the SDGs or do not actively engage with them on a frequent basis (CSR Europe, 2017). In response, some universities have begun to incorporate sustainability as part of the core discipline of their curriculum. The CFA Institute, which trains chartered financial analysts, also has taken note of this trend, and reviewed its curriculum to include sustainability at the core of its curriculum (CFA Institute, 2017). Some have furthermore argued that "sustainability" has actually become a selling point for MBA programmes. MBA accreditation commissions such as the European Quality Improvement System (EQUIS), the Association of MBAs (AMBA), and the Association to Advance Collegiate Schools of Business (AACSB) all added to their criteria that a business programme should contain sustainability as a component of the syllabus (Guardian, 2015b).

Lack of co-ordination across supply chains

Companies discussed during the EMnet meeting the challenge of co-ordinating sustainability efforts within a company's internal operations, particularly supply chains. According to RBC principles of "do good" while "doing no harm", companies are also required to look at their suppliers and buyers, and take responsibility for their actions as partners in the value creation process. High-profile cases have shown that non-compliance with RBC standards has had a devastating effect on

certain brands of sneakers and clothing. Recently, Nike was ranked the most sustainable apparel and footwear company in North America following years of reputational challenges (Business of Fashion, 2016).

Companies agreed that embedding sustainability and accountability throughout supply chains is essential to achieving the SDGs. The OECD has been supporting these efforts through the *OECD Guidelines for Multinational Enterprises*. The Guidelines promote responsible business conduct for MNEs, not only in the way they conduct themselves, but also by avoiding harmful impacts caused by their supply chains (Nieuwenkamp, 2014).

The supply chains of a multinational company can be diversified and widespread. For example, approximately 50 different suppliers produce the components for a Dell Computer (World Trade Organization, 2013). Monitoring these complex supply chains can be cumbersome and difficult. During discussions with EMnet members, it was noted that the SDGs could also serve as a roadmap for suppliers and buyers, considering that 75% of the world's poorest population live in the same rural areas where many supply chains begin (Business & Sustainable Development Commission, 2017). By integrating sustainability across supply chains, companies can protect and create value at the same time (GRI, UN Global Compact and WBCSD, 2015). Many companies have formalised demands on sustainability in specific terms and conditions in contracts with suppliers. A company such as Siemens-Gamesa, for example, organised supplier events to share the company's challenges and goals with respect to sustainability. Siemens-Gamesa has also undertaken audits of all of its key suppliers in order to align its supply chain with its CSR Master Plan (Siemens-Gamesa).

Addressing SMEs' engagement with SDGs through multinational corporations

SMEs account for more than half of formal employment worldwide and can play a significant role in achieving the SDGs. In emerging economies, SMEs account for 43% of jobs and are estimated to increase to 90% when taking into account the informal sector (Kamal-Chaoui, 2017). However, SMEs can often lack the capacity, capital and incentives to incorporate sustainable practices in their business operations (OECD, 2017e). MNEs can and should play a role by incentivising SMEs in their value chains so that they incorporate a SDGs approach into their operations. MNEs can also lead by example through their market power: by supporting a critical consumer mass that validates a sustainability premium (i.e. a higher price for a product produced in a sustainable manner) MNEs can thus establish an environment that encourages other firms to focus on sustainability.

Successful MNE and SME partnerships were highlighted. Larger enterprises can benefit from investing in SMEs by getting access to new markets. The French multinational energy company ENGIE, for example, has set up a corporate impact venture fund that invests in social enterprises that aim to provide sustainable energy access for vulnerable population groups around the world (ENGIE, 2016a). Through these investments, ENGIE offers finance to SMEs in the energy sector. On the other hand, ENGIE gains access to a new market that it couldn't reach before.

Internal and external accountability – measuring progress against the SDGs

To achieve the SDGs by 2030, businesses stressed the importance of establishing clear internal and external accountability benchmarks. This can provide MNEs with mechanisms to monitor their progress towards meeting the SDGs. A survey by Accenture found that 86% of CEOs believe that standardised impact metrics will be important in unlocking the potential of business on the SDGs. Furthermore, 73% of respondents believe that business should develop common indicators to measure and communicate impact on the SDGs (Accenture, 2016; WBCSD, 2016).

Discussions during the EMnet meeting addressed how sustainability evaluations should be considered as part of the overall business performance assessment. There was however an agreement that there is no simple way to measure sustainability and compare results. In this regard, Danone, a French multinational food-products company, has designed a programme called "Danone Way". Danone Way uses a set of guidelines aimed at implementing and monitoring sustainability in each business unit. Through these guidelines, Danone can measure the company's overall progress towards SDGs through the performance of each business unit. Each unit is therefore internally accountable and responsible to help the company integrate sustainability goals into its business operations.

As a general approach, businesses touched on how MNEs need to be accountable to their clients and to the public on the actions they take, as they work towards becoming more sustainable. In this context, adopting an overall corporate strategy on responsible business conduct is essential to mitigate reputational risks. As sustainability becomes more mainstream, various countries have started publishing information on specific carbon emissions or climate risk by individual companies (EY 2013). "Virtual whistle-blowing" can damage a firm's reputation, especially when its commitment to sustainability is seen as superficial or disingenuous. Recent examples demonstrate how discovering potentially unlawful working conditions in the value chains can damage the reputation of specific industries, such as the case of the garment industry (Moulds, 2015).

CONCLUSION

The SDGs provide an opportunity to rethink approaches to sustainable value creation. It has therefore become increasingly relevant for businesses to adhere to the SDGs. There are many ways through which companies can integrate sustainability into their operations. Making them a leadership's priority can ensure that sustainability is built into the underlying corporate culture and that efforts towards achieving SDGs take root over time.

Expectations are that the potential for firms to achieve higher levels of labour productivity over the long run through these efforts will allow MNEs to remain more competitive in meeting the needs of their client base and creating a sense of good will. In undertaking these efforts and ensuring their success, it is important that businesses focus as much on their internal operations as on working across the whole supply chain. Working together and integrating SMEs as part of these efforts should be equally relevant.

It should be understood that both governments and the private sector have a role to play by partnering toward more sustainable and inclusive growth to meet the commitments of the 2030 Agenda for Sustainable Development. The case studies addressed as part of this report help to substantiate some examples of how this co-operation can be beneficial in meeting corporate objectives, while at the same time creating benefits for stakeholders more broadly. The case studies go on to provide recommendations for policy makers from a business perspective on how these partnerships can be supported to underpin further success in meeting the overall SDGs. Common messages across various cases that should be taken into consideration include raising awareness of the SDGs, establishing better measurement and data collection mechanisms to evaluate results, establish a culture of co-operation with the businesses already engaged in SDGs and incorporating SDG considerations into the institutional decision-making and the policy implementation framework, in areas such as funding or public procurement for instance. Finally, these messages underpin once more the importance of creating strong partnerships in order to foster a successful implementation of the broader SDG agenda going forward.

ANNEX I: CASE STUDIES

This Section provides examples of how EMnet member companies are taking action towards achieving the Sustainable Development Goals in emerging markets.

Case Study I: Huawei

Further to SDG 3, on health, in Kenya, Huawei has implemented a project around providing a digital health system, enabling remote consultations for patients, and training for doctors and health workers through video conferencing, using Huawei Matebooks with a local Kenyan social enterprise's ZiDi™ software used in health facilities. This is used to improve efficiency of reporting and billing, managing commodities and staffing, and managing and communicating with patients. Its business partner Safaricom provides broadband connectivity over both fixed and mobile networks to cover both urban and rural facilities in the country.

The project addresses a number of key challenges regarding healthcare delivery in Kenya including the poor quality of care in certain areas, the lack of health experts, the long distances citizens travel to receive care and inefficiencies in collecting health data. More specifically the project is seeking to provide safe medication; more reliable data on disease trends; earlier, cheaper and better diagnosis and treatment; a better trained healthcare workforce; and in broad terms a more efficient health-care system.

According to Huawei, the programme saves more than 12 hours of travel time and 20 dollars in costs for each patient receiving specialist consultants through live video. Rural medical officers are also receiving video training. More than 15 000 patients have used the digital health system which is ensuring higher quality and faster access to care.

The project underscores how the public sector health systems in developing economies such as Kenya's can be unstable because of lack of funding and human resources. Huawei says it is working more closely with relevant stakeholders to address these challenges with more intensive training and support, and is trying to show the return on investment and the benefits from using ICT more strategically.

To facilitate its work on the SDGs and remove barriers that limit its actions Huawei recommends that:

- Governments should improve data collection and analysis in order to make better decisions on internal management, programmes and resource allocation as well to provide better public services to citizens.
- Local governments should more proactively engage as well with the private sector and work together to develop the relevant skills sets to support specific sector needs.
- Governments should develop strategic plans and assess all new development projects and opportunities, according to each initiative's potential, to improve efficiency and reduce costs, generate revenue and create impact – and thus prioritise funding accordingly.
- Ministries beyond information and communications technologies (ICT) from both national and local governments should review their strategies, budgets and procurement processes to target investment in technology to enable effective utilisation and resourcing of both capital and operating expenditures including training, maintenance, support and updates with the aim of deploying ICT as a core part of government strategy.

Case Study II: Pernod Ricard

SAFE ROADS 4 YOUTH (SR4Y) is a five-year action research project introduced by Pernod Ricard. It has been implemented in three emerging countries to demonstrate the relevance of community-based interventions in the prevention of drunk driving and traffic accidents in young people.

This case study focuses on Viet Nam where according to the company half of the youth population has had at least one road accident in the last three years. Preventive interventions at community level were carried out in two cities. Local Promoting Groups were created in each community to ensure the participation of the relevant stakeholders at a local level (high schools, universities, companies, taxis, media, police, hospitals, bars, workers' unions, youth associations, non-government organisations [NGOs], etc.). A key goal is to provide a direct and daily support to empower young people in designing, planning and implementing programme activities.

A total of 34 000 young people have participated directly in 146 activities developed in the two sites Activities include: Educational sessions in schools, peer-to-peer programmes, working with parents, awareness campaigns that involve setting up awareness activities in venues selling alcohol as well as establishing links with local law enforcement.

Specific SDGs addressed by this programme include:

- SDG 3 and sub-objectives 3.5 (strengthening the prevention of harmful use of alcohol) and 3.6 (by 2020, halve the number of global deaths and injuries from road traffic incidents) which are directly aligned with the programme's goal to reduce drunk-driving and traffic accidents.
- Through its focus on prevention, the programme addresses SDG 11 and sub-objective 11.2 (by 2030, provide access to safe, affordable, accessible and sustainable transport for all).
- In its focus on youth, SR4Y is targeting a more vulnerable sector of the population (SDG 1).
- In response to SDG 17, to revitalize the global partnership for sustainable development the SR4Y programme has been developed in partnership with leading NGOs and research centres. It is furthermore financed by a grant based on the commitment of Pernod Ricard's 18 000 employees and relies on an independent governance committee, showcasing the degree to which the commitment to working with other sectors can achieve positive outcomes towards achieving SDG commitments.

According to Pernod Ricard, a crucial element for achieving the targeted SDG commitments through this programme is the methodological approach based on young people as critical agents of change, and building community awareness and stakeholder consensus through participatory methods.

The project went through a thorough evaluation process, carried out independently. Some of the key findings highlighted that there was indeed a positive difference between intervention and control sites around drunk-driving behaviour and that there were furthermore positive changes in knowledge, attitude and behaviour of the young people who participated. Knowledge and beliefs (about alcohol and traffic safety) improved globally. Moreover the company highlighted decreases in crash rates per inhabitant in the two intervention sites were greater than those of the national average during the period of implementation. As such, Pernod Ricard believes the project has made a direct contribution to the creation of a supportive road safety ecosystem.

According to Pernod Ricard, the project reveals that it is essential to have messages of responsible and safe alcohol consumption and mobility disseminated into the communities, debated and discussed. As a result preparations are currently under way to expand the programme to other communities following and intervention model that can serve as a blue print for other jurisdictions and countries. The company also highlighted how in Viet Nam, some of the project's activities will be used to support traffic safety interventions and capacity building at a national level.

Pernod Ricard recommends a number of policies that would facilitate its work on SDGs and remove barriers to action:

- Community and participative approaches, and educational and prevention strategies need an accompaniment by public institutions combined with other strategies such as enforcement and mobility offers.
- Tackling harmful use of alcohol requires changing individuals' behaviour, and because there is no simple formula to achieve such a task, inclusive multi-stakeholder platforms and public-private partnerships are the approaches most likely to yield results.
- An effective prevention system needs a reliable data collection mechanism and infrastructure at the local or relevant government levels.
- A research-action project cannot substitute for long-lasting interventions and clear guidelines involving all community stakeholders and policy makers. Further to its results, the SR4Y objectives should support charting a general path that can be followed by local actors and those facing vulnerabilities with regards to safe and responsible alcohol consumption in different areas.

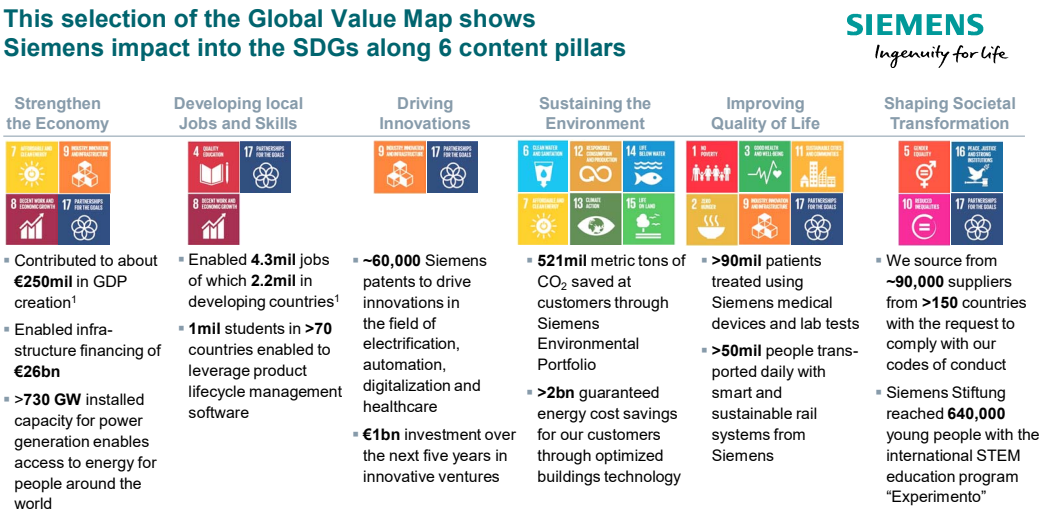
Case Study III: Siemens

By the summer of 2017, Siemens, in the framework of its Business to Society approach, had completed studies in 18 countries and was working with an additional 14 to inform their market positioning, opportunity development and customer engagement strategies relevant to the local context.

The approach showcases Siemens' contribution to the SDGs and the local societal priorities. Siemens prioritises working towards the SDGs via four core levers: Siemens portfolio, operations, thought leadership and corporate citizenship. According to these levers, SDGs were categorised by high, medium or low Siemens impact (see Figure below).

High Impact	Medium impact	Low impact
Portfolio and Thought Leader Activities	Operations and Corporate Citizenship	Indirect Impacts

In terms of the concrete outcomes of the project and the measurement of success, the core deliverable of a Business to Society project is – among others – the Siemens value map that depicts the company's quantified contributions at a site, country, and/or global level. For simplicity, the results are structured along six content pillars. A specific example from the global Business to Society project which formed part if this strategy is showcased as follows:



Siemens identified that success is measured largely by tracking project activities in the identified areas of improvement or in areas of dilemmas. Overall, the Business to Society results are challenged and updated on a regular basis.

As for the lessons learned through this project and the plans for the future, the company claims the transparency and solid understanding of its impacts provide the foundation for informed action. So far, it says, Business to Society projects have proved beneficial for communication and market positioning, for example with customers and the public.

For the future it aims proactively to drive business development in support of the SDGs and/or work towards more in-depth strategy alignment.

Siemens has a number of recommendations to governments that could facilitate its work on the SDGs or remove barriers that limit its actions. They include:

- Governments should work to increasing public awareness for SDGs and facilitate dialogue between government and the private sector to set concrete expectations from business.

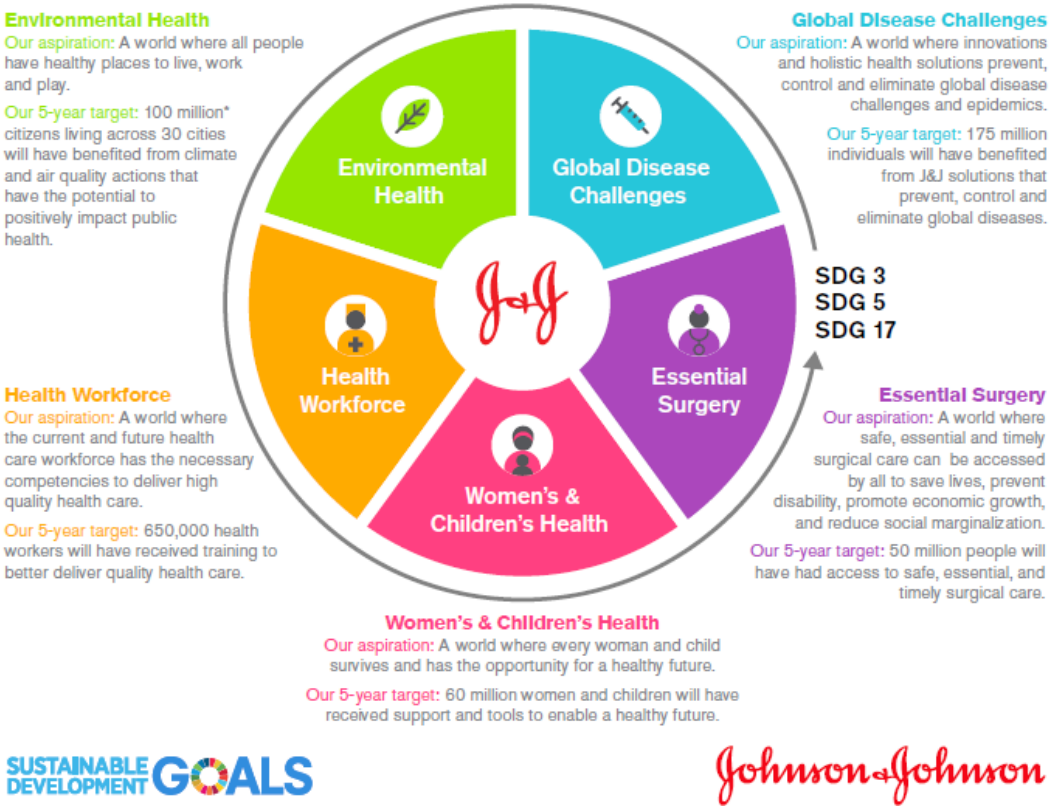
- The intent of the SDGs should be reflected in public tenders, such as requiring information on the total cost of ownership plus information on key externalities to enable decision making oriented towards the long term impact.

- Ensuring reliable and stable regulatory conditions, for the trading CO_2 certificates for instance, to facilitate the translation of SDGs into specific national policy objectives.

- Supporting collective action movements across various sectors and stakeholders.

Case Study IV: Johnson & Johnson

Through its "Our 2030 Promise" initiative Johnson & Johnson has established a strategic programme, responding, and committing resources, to help achieve some of the Sustainable Development Goals. It aims to contribute to good health and well-being (SDG 3), to gender equality (SDG 5) and to strengthening partnerships furthering the SDG goals (SDG 17).



Johnson and Johnson, which employs 127 000 people in more than 60 countries, claims that by "galvanising partners, mobilising employees and engaging communities" it will "dedicate its expertise, ideas and ingenuity to ignite partnerships and catalyse efforts" in five areas where it can "create sustainable and scalable impact". These areas are environmental health, workforce health, women's and children's health, global disease challenges and essential surgery.

The "Our 2030 Promise" programme documents for each of these areas a set of measurable goals for the company, worldwide, that fit with the United Nations' broader SDG goals.

According to Johnson & Johnson, better, more structured and more intense partnerships between international bodies (such as the UN and the OECD), governments, the private sector and civil society are essential for progress, and are a formidable force if they work together towards clear goals. "Legislation and policy development can support the mobilisation of public and private equity to deliver solutions for the challenges that face our global population," Johnson & Johnson indicated their commitment furthermore to being a "loyal partner in those processes".

Case Study V: ManpowerGroup

According to ManpowerGroup's sustainability plan, it supports four of the SGDs including more specifically 4, 5, 8 and 10, for education, gender equality, decent work and inclusive growth respectively. The company indicated its "Hire-Train-Deploy" programme in India for instance is addressing relevant skills shortages and helping people from diverse backgrounds to enhance their skills and position themselves for success.

ManpowerGroup states that work and jobs have a transformative impact on individuals and families, and that in the current skills revolution environment, where new skills emerge as fast as others become obsolete, its plan focuses on enabling all to develop the skills-set that they need for meaningful and sustainable employment.

The company believes talent shortages are a global challenge for employers, and with India being one of the world's leading sources of IT professionals, the country is under incredible pressure to keep up with a growing demand. All too often the available talent lacks the technical training and soft skills that employers need now, and one estimate provided by the company is that up to 48% of IT jobs in India go unfilled. Manpower developed Hire-Train-Deploy in partnership with an Indian IT service provider. The programme is based on an intensive 40-day boot camp to give ambitious but "not quite qualified" job-seekers the skills to succeed. It provides hands-on training for the most sought-after skills – including Java, Oracle, CICS, C++, Informatica and Blue Prism platforms.

In 2017, the programme enrolled more than 1 500 participants from all over India and placed more than 97% of the graduates. According to the company, "remarkably in a country where only a small percentage of women work; more than 700 of these talented people were female." In this regard, "helping young professionals move into some of India's highest-paying, growth-oriented jobs is seen as a triumph in and of itself, but such steps toward gender parity and wage equality, too, can be inspiring, to employers and individuals alike."

According to the company, increasing people's skills for jobs in growth sectors, including IT and engineering, is critical to address the divide between those with skills and those without. Furthermore, throughout the world women are under-represented in the sectors where the greatest growth is expected. The company sees partnering with employers and intermediaries such as ManpowerGroup to develop training focused on real vacancies is essential. It also points out that training programmes which involve employers and specific vacancies have placement rates up to 90% higher than programmes run solely by government.

Case Study VI: Nestlé

The Nestlé Cocoa Plan launched in 2009 tackles child labour throughout its cocoa supply chain, and aims to improve the lives of farmers and their communities through what the company sees as three areas of activity: better farming, better lives and better cocoa. The aim is to train farmers in better agricultural practices, distribute higher-yielding cocoa trees, promote gender equality, address child labour issues and develop long-term relationships with farmer groups.

Through the Nestlé Cocoa Plan, the company sources cocoa from tens of thousands of small-scale producers through supply chain intermediaries, such as co-operatives and large multinational suppliers. In the key sourcing origins of Côte d'Ivoire and Ghana, child labour remains a systemic issue within the supply chain. This is an issue the company indicates it is committed to tackling. Its primary focus to date has been to identify accurately all these producers and their children, using the Nestlé Cocoa Plan's Child Labour Monitoring and Remediation System (CLMRS). Thanks to this identification work, Nestlé and the International Cocoa Initiative (ICI) have been able to uncover which children are involved in (or at risk of) child labour and to begin remediation work directly with them and the responsible stakeholders.

The company describes the process as being extremely challenging, but the initial results are promising. Thanks to the CLMRS community-based approach, farmers have had the confidence to share accurate and reliable information on the numbers of children potentially working in the sector. This has enabled Nestlé and ICI to understand better the full scale of the problem and learn more about the causes of individual cases of child labour, allowing for more focused and effective remediation activities to take place.

Currently according to company estimates, 40 728 young people (5-17 year-olds) are being monitored by the CLMRS. To date the plan has helped 5 232 children in the upstream supply chain through the provision of remedial actions.

Nevertheless, more broadly Nestlé mentions that although child labour has decreased by a third since 2000, 168 million children are still affected worldwide with an estimated 85 million involved in hazardous work. Of relevance to the company, almost 60% of all child labourers work in the agricultural sector.

Nestlé believes successfully eliminating child labour requires not only excluding children from the workforce, but also addressing the root causes of child labour, including poverty and limited access to good-quality education. Low-income families, including farmers, struggling to meet their basic needs, often turn to children for help and if schools are not accessible or non-existent, there are limited alternatives. Nestlé sees formal birth registration as an important tool, both to ensure that children are legally guaranteed school places and to allow employers reliably to identify potential child workers.

A number of the Sustainable Development Goals are directly and indirectly relevant to addressing the issue of child labour, and therefore to the CLMRS. These include:

- **SDG 1** - Focuses on ending poverty through ensuring that no one lives on less than USD 1.25 a day by 2030 (1.1). This target is particularly relevant in the context of eradicating child labour, as poverty is considered one of the root causes of child labour.

- **SDG 4** - Concerns access to education for all. Together with poverty, lack of access to education is considered one of the root causes of child labour. There are numerous reasons why children do not attend school. The cost of transport, school fees, uniforms and books may be too high for some families (4.1), girls may find it especially difficult to attend school through lack of sanitation facilities (4.5), or schools might be inaccessible because they are so far away or simply non-existent (4.a).

- **SDG 8** - Promotes sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Target 8.5 specifically concerns labour rights and Target 8.8 concerns the protection of labour rights, which includes focus on the International Labour Organization Core Conventions, including child labour. Target 8.7 explicitly concerns the eradication of the worst forms of child labour and child labour in all its forms.

- **SDG 16** - Working children are particularly vulnerable to abuse and exploitation (16.2), so companies should make efforts to end this practice. Birth registration (16.9) is relevant in the context of child labour, as a valid birth certificate allows children to enrol in schools and employers can more readily identify child workers.

According to Nestlé, the main success of the programme to date has been to work with over 48 000 farmers and their children to identify which of them are at risk and to put in place measures to improve their situations. Allowing people to open up about the issue has been a significant factor in this, and a notable success in its own right.

Nestlé has tightened the definition of what it means to be “taken out of child labour” so it is too early in most cases to state categorically that a child has been completely removed from child labour without risk of a relapse. However, ICI statistical evaluations show that a significant impact across a representative sample. The company indicates remediation efforts are already improving the lives of over 5 000 children, in over 1 500 communities.

Although it is necessary to wait for the long-term trends to emerge, it is believed that the system is beginning to have an impact in tackling the problem. Having established a baseline of statistical evidence since 2012, Nestlé says it can now start to comprehensively report on ongoing progress.

The company plans to expand the Nestlé Cocoa Plan, and to make the programme more sustainable. It intends to ingrain it into the supply chain more deeply and hand over more responsibility to the co-operatives. These already manage the certification system, the costs of which are paid through the certification premium.

For the future, Nestlé says action by governments can facilitate its work on the SDGs and remove a number of barriers. While many stakeholders from across business, civil society and government have taken measures to address child labour, it recommends more needs to be done *collaboratively* to address this systemic issue. By joining forces, sharing knowledge and co-ordinating actions, the duplication of efforts can be avoided and the best solutions brought to scale.

In situations where the government is unable to provide sufficient access to education for children, especially in the context of agricultural food and beverage value chains, Nestlé recommends the government should look to facilitate the coming together of companies (buyers, manufacturers and producers) and other industry players including civil society, to support access to education. By convening a critical mass of the right players, solutions to address the issue of child labour can be delivered. The company views other areas of support for this initiative specifically could include a combination of improving and modernising the provision of birth certificates that enable children to enrol in schools, and or providing direct financial support to improve school infrastructure and teacher development.

Case Study VII: Microsoft

Microsoft's entry point for putting Sustainable Development Goals at the core of its business is SDG 17, in regards to partnerships towards the SDGs. Microsoft, a partner-led company, stated it is focused on bringing innovative technology and practical solutions to meet the sustainable development needs of multi-sector stakeholders, organisations and individuals.

Each of the United Nations' goals, it says, presents challenges bigger than any one organisation can accomplish alone so it seeks to apply what in its view are the unique assets that a technology company of its scope and scale possesses toward the global, multi-sector effort needed to achieve the SDGs.

It argues that its efforts are helping advance progress towards meeting issues covered by all 17 SDGs. For example, using Microsoft Azure Solutions, the WorldPop research team at the University of Southampton, in the UK, provides critical data for tracking the UN SDGs by counting every person on Earth, where they are and who they are. The team does this using novel data science techniques and cloud computing to combine large datasets drawn from census, surveys, satellite, GIS and other sources to provide governments and NGOs with extremely detailed spatial and temporal mappings – some with resolutions down to 100 meters square.

Microsoft has nonetheless prioritised eight SDGs to leverage its transformative digital technology where the company sees that it can have the greatest impact. Some examples include:

- **SDG 3 - Good Health and Well-being:** The goal is to transform the health industry to enable "health care without walls" so that institutions become less about "sick care" and more of a health-care and preventative care industry. With more than 37 000 contributors working in 130 countries, the Cochrane Transform Project applies artificial intelligence and machine learning to assist systemic reviews by text, mining thousands of research reports and clinical trial data.

- **SDG 4 - Quality Education:** Support is given to programmes and initiatives designed to leverage technology to support teachers in transforming education, inspiring learning anywhere, and unlocking the potential of all young people to prepare them for the jobs of the future. Modernisation of the study environment by increasing the accessibility of modern technologies to students as well as the academic and administrative staff, creates an opportunity for the Riga Technical University (RTU) in Latvia to implement its vision in becoming a digitised university in partnership with the company.

- **SDG 5 - Gender Equality:** To reach gender parity women must fill more computer science-based job roles and not be discriminated against. The aim is to empower girls and women to move from the classroom to the boardroom in high tech. Partnering with GC4women.org and using Microsoft Skype, OneNote and Sway technology, Microsoft Innovator Educators, experts learn how to teach gender equality in the classroom to achieve this goal.

- **SDG 8 - Decent Work and Economic Growth:** According to the company, it empowers the next generation of innovators with the tools, skills and opportunities they need to unleash future opportunity and solve local and global challenges. Microsoft is one of the founding launch partners of the Digital Development Partnership (DDP), a partnership with the World Bank designed to address the findings of the World Development Report by closing the digital economy divide for emerging economies.

- **SDG 9 - Industry, Innovation and Infrastructure:** Microsoft works with governments around the world to deliver next-generation models of citizen engagement, drive efficiency and transparency and empower government workforces to work in a mobile world. Connecting people to markets and markets to people. Diamond Bank is one of the 22 financial institutions operating in Nigeria, with a mission to "Go beyond banking, connect people and markets and markets to people". This mission is brought to life through leveraging innovative Microsoft technologies like Modern Workplace and Azure Solutions to empower the bank to reach more people in a cost-effective way.

- **SDG 11 - Sustainable Cities and Communities:** According to Microsoft, its CityNext platform provides an integrated, flexible, trustworthy approach to help cities engage their citizens, empower their employees, optimise their operations and infrastructure, and transform and accelerate innovation and opportunity.

- **SDG 13 - Climate Action:** The company works with partners to develop innovative solutions and support research efforts by leading environmental groups to help people around the world address climate change. A 2016 drought threatened the livelihood of a huge part of Morocco's rural population. Morocco needed to rapidly deploy an assistance programme to parts of the country with very limited IT infrastructure to gather data, accurately and at scale, on a mobile basis but which could deliver highly detailed information to managers so as to maximise the efficiency of the subsidy scheme. The crisis was successfully dealt with thanks to a special subsidy system delivered nationally through Microsoft technology.

- **SDG 16 - Peace, Justice and Strong Institutions:** From online safety and cybersecurity to emergency response and effective policing, Microsoft has stated committed to helping governments proactively meet these challenges to keep their citizens and communities safe. The Microsoft Call Centre and Dispatch solution connects isolated emergency management systems and enables citizens to report suspicious activities through online and mobile experiences.

In terms of recommendations, Microsoft recognised that with every country's digital transformation, it has learned new lessons. For instance, countries must have a culture that lets collaborators work "boundary-less" across silos; create a data strategy that ties together all data sources to achieve a goal; and pilot solutions quickly to stay ahead of micro-revolutions that are changing the digital world every 12 to 18 months.

Microsoft recognises governments and industry have had to build trust and share some sensitive information. That information has to be collected, cleaned and analysed to form the basis for understanding, which is ultimately what the Microsoft digital benchmark is: a way of collecting data into a framework to understand the maturity of digital nations. By having an informed data strategy, Microsoft believes countries will be in a better position to get ahead of micro-revolutions.

Microsoft offered more specific recommendations in particular areas where building this trust between government and business is essential:

- **Security:** The future of cybersecurity on the Internet will require many steps by many people. It will be necessary to continue to look to tech companies to act proactively to strengthen defences and work closely with customers. Governments need to act together, both to adhere to current international norms and create new laws to fill in the gaps. The world needs a Digital Geneva Convention, as well as many additional steps to become more secure.

- **Connectivity:** More countries need to adopt TV white space regulations for a technology ecosystem to emerge. New technologies, business models and partnerships are needed to deliver affordable and robust Internet access to people around the world yet to be online.

- **Education:** Computer science education should be made available at schools to help ensure every young person gets access to these critical skills for success in their future.

- **Partnerships:** To tackle the enormous challenges of connected societies, coalitions must be developed of interested organisations from across the entire ecosystem of governments, companies, universities and non-profit institutions.

- **Strategy:** Forming a data strategy will prepare nations to more effectively use advanced artificial intelligence and machine-learning capabilities to propel their societies into the future.

Case Study VIII: Mahindra & Mahindra

Mahindra & Mahindra Ltd initiated a public-private partnership with the government of Madhya Pradesh in India, under the Integrated Watershed Management Programme (IWMP), covering 32 villages of Damoh, Madhya Pradesh and a population of more than 20 000. Through its watershed management, Mahindra is investing in farmers and agriculture with the objective of increasing agricultural productivity and enhancing farmers' incomes in a sustainable manner. The project is aligned with its vision to "Deliver farm tech prosperity" and the philosophy of "Rise", and the team has the objective of doubling per capita income as a measure of success for the programme.

Eight of the 17 Sustainable Development Goals are addressed by the Mahindra project, including SDG 1 (no poverty), SDG 2 (end hunger), SDG 3 (health), SDG 6 (water and sanitation), SDG 8 (decent work for all), SDG 9 (industrialisation and innovation) and SDG 16 (peaceful and inclusive societies).

The impact of the four core pillars of an IWMP programme (Water and soil conservation structures, agriculture productivity, micro-enterprises and plantation) has been enhanced by a series of supportive actions such as soil testing, agriculture innovations (Grameen fridge, high-tech cattle manger, azolla as a nutritional supplement for cattle, etc.), IT-enabled monitoring of the implementation of agri-practices, drip irrigation, household sanitation, dairy, bio-gas, health interventions, solar lighting of a village, innovation in household water transportation, etc.

The programme has achieved a number of successful results, including higher and regular access to water, reduction of waste deposits and increased agricultural yield. Furthermore, the set-up of a new milk collection centre has helped farmers earn additional money for their households. The Mahindra team created 397 self-help groups covering 1 985 families who met regularly, opened bank accounts, saved money, learned accounting and started a new business. Commercial vegetable cultivation, poultry, goat-rearing, dairying, basket-weaving, pottery, carpentry, tent house rentals and tailoring are some of the businesses that started using the INR 25 000 (Indian rupees, equivalent to USD 383) revolving fund provided by the project. People earn around INR 3 000 (USD 45) per month through their micro-enterprises. INR 10 425 million (USD 160 million) have been disbursed as a revolving fund, and more than INR 3.8 million (USD 58 255) have come back as repayments and lent out again. Five hundred and eight families contributed to building individual toilet units in addition to Mahindra's contribution and this enabled progress towards eliminating an open defecation area. The dung collected from the cattle mangers was used in bio-gas plants and chimneys were provided in some households so 90 household kitchens became smokeless. Finally, Mahindra estimates that the per capita income in the region rose 2.35 times during the period.

The project revealed that community participation was the key success factor and has actively engaged cross sections of the population as part of this work. According to Mahindra, they have enabled community participation and ensured all representative community bodies are elected through representative gram sabhas[3].

Following the experiences of the Damoh IWMP, two other projects in 38 villages in Bhopal and 13 villages in the Hatta tehsil in Damoh are being implemented in partnership with the government of Madhya Pradesh and the National Bank for Agriculture and Rural Development respectively. Through these projects Mahindra is working on reaching 16 653 hectares touching 8 679 farming households.

Mahindra stressed part of the outcome has been derived from the project engaging closely with the district administration and the relevant state-level Nodal Agency, which gave it access to relevant local information. It stressed this type of private-public engagement is vital to enabled the project's overall success. As such the approach could serve as a benchmark for public policy makers in their efforts to address SDG commitments.

ANNEX II: THE SUSTAINABLE DEVELOPMENT GOALS

17 Sustainable Development Goals

SDG 1	End poverty in all its forms everywhere
SDG 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
SDG 3	Ensure healthy lives and promote well-being for all at all ages
SDG 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
SDG 5	Achieve gender equality and empower all women and girls
SDG 6	Ensure availability and sustainable management of water and sanitation for all
SDG 7	Ensure access to affordable, reliable, sustainable and modern energy for all
SDG 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
SDG 9	Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation
SDG 10	Reduce inequality within and among countries
SDG 11	Make cities and human settlements inclusive, safe, resilient and sustainable
SDG 12	Ensure sustainable consumption and production patterns
SDG 13	Take urgent action to combat climate change and its impacts
SDG 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
SDG 15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably managed forests, combat desertification, halt and reverse land degradation and halt biodiversity loss
SDG 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
SDG 17	Strengthen the means of implementation and revitalise the global partnership for sustainable development

Notes

[1] Responsible business conduct (RBC) entails above all compliance with laws, such as those on respecting human rights, environmental protection, labour relations and financial accountability, even where these are poorly enforced. It also involves responding to societal expectations communicated by channels other than the law, e.g. inter-governmental organisations, within the workplace, by local communities and trade unions, or via the press. Private voluntary initiatives addressing this latter aspect of RBC are often referred to as corporate social responsibility (CSR).

[2] Smart contracts are trusted transactions directly between parties without the need for a central authority, registry, legal system, or enforcement mechanism. The contract is written in lines code and distributed over a decentralised network accessible via the web. The term was first coined in 1997 by the American computer scientist Nick Szabo.

[3] Gram Sabha are Indian community governance bodies consisting of all persons whose names are included in the electoral rolls relating to a village comprised within the area of Panchayat at the village level.

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Energy investment and carbon pricing in emerging markets

The shift to a greener economy can drive economic growth and create opportunities for investment. Investments in renewable energy and carbon pricing are key elements of a possible transition to low-carbon economies, while d the private sector has an essential role to play in this process. This Note provides insights and recommendations from the private sector on energy investment trends and developments in carbon pricing. The analysis builds on discussions at the Working Group meeting held on 23 October 2017 at the headquarters of the Organisation for Economic Co-operation and Development (OECD) in Paris.

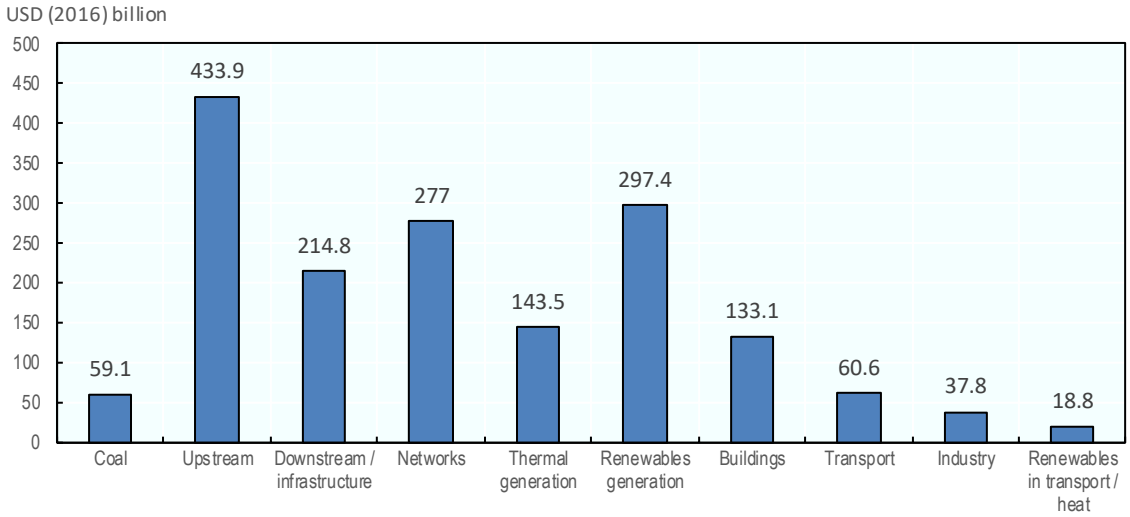
Key messages include:

- Following a peak in 2015, global energy investments declined by 12% in 2016. Latin America and Africa were hit the hardest by the decline, with 16.8% and 20.8% decreases respectively.
- Renewables are playing an increasingly important role in energy investments, driven by emerging economies such as China, India and Brazil. Emerging markets overall accounted for 63% of renewable energy investments in 2017.
- The evolving demand for energy in rural areas globally is changing energy systems. For example, thanks to mini-grid and off-grid innovations, electricity networks are more decentralised and offer effective solutions to facilitate access to energy in remote areas.
- Digitalisation is driving investments and presenting new opportunities for the private sector. Smart meters, new hydrogen technologies and big data analytics are generating increased interest and have the potential to substantially impact energy markets in emerging economies.
- Carefully designed and coherent public policies, such as pro-market reforms, financial support mechanisms or energy efficiency codes and regulations can help support the transition to a greener economy and give incentives for firms to place climate related issues at the centre of their decision-making processes.
- Carbon pricing constitutes an effective instrument in support of climate change policies, offering flexibility to firms whilst reducing emissions. Change is already happening: over 20% of Fortune 500 companies declare that they are already pricing their carbon emissions.

ENERGY INVESTMENT TRENDS IN EMERGING MARKETS

Global energy investment declined by 12% in 2016 to USD 1.7 trillion, driven by a decline in investments in the oil and gas sector (IEA, 2017a). In emerging markets, the decline in energy investments was most severe for Latin America (-16.8%) and Africa (-20.8%) whereas Asia saw only a slight decrease of 1.58% (IEA, 2017a; IEA 2016a). China continues to be the largest market for energy investment with 21% of the world's total (IEA, 2017a). In this context, China is shifting away from new coal plant investments and is focusing more on energy efficiency and low-carbon electricity. India took in the third largest amount of energy investment behind the United States. India's energy investment grew by 7% as the government pushes to expand and improve energy access throughout the country (IEA, 2017a). The continuing rise of renewable electricity has changed the overall composition of energy investment. Investment in the electricity sector, for example, overtook that of oil gas and coal supply for the first time in 2016 (IEA, 2017a). Including electricity networks, clean energy now accounts for over 40% of total energy supply investments (IEA, 2017a). Furthermore, public policies and private spending are increasingly supporting greater rural electrification in Africa, Asia, Latin America and the Middle East. Driven by recent technological improvements, competitive procurement as well as favourable regulatory and institutional frameworks, this shift in demand creates an opportunity for greater investment in decentralised renewable energy and is becoming one of the most cost efficient sources of energy (IRENA, 2017a). Coal plants investment continues to fall and is at its lowest level in nearly 15 years, primarily due to air quality concerns and the emergence of overcapacity in the People's Republic of China (hereafter "China") (IEA, 2017a) (Figure 6.1).

Figure 6.1. **Global energy investment, 2016**



Source: IEA (2017), World Energy Investment 2017, IEA, Paris, https://www.iea.org/publications/wei2017/.

Oil and gas investment has rebounded

Investment in upstream oil and gas increased in 2017, following a 44% decline between 2014 and 2016 due to falling oil prices as well as reduced drilling activity (IEA, 2017a). After North America, Latin America experienced the largest decrease in drilling activity, followed by Africa with a 49% and 43% decrease for both regions respectively. With a 24% decrease, Asia Pacific was the region that was least affected by this trend. The increase in 2017 was driven by investments in shale in the United States but also investments in onshore projects in the Middle East and the Russian Federation (IEA, 2017a). Mexico's development of offshore oil has also contributed to this trend (IEA, 2017a). Reforms to Mexico's regulatory and institutional framework *Reforma Energética* (Energy Reform), initiated in 2013, effectively opened the market to competition and international investment. These reforms have also supported investment and opened up new business opportunities for international players, through the abolition of long standing monopolies by state-affiliated enterprises (IEA, 2016b). The Italian energy company Eni, for example, drilled in 2017 the first well by an international operator in Mexican waters (Eni, 2017). Following new competitive bidding rounds, Eni signed three new exploration and production licenses in the country (Eni, 2017). At the same time, more policy reforms are needed to improve the business climate in emerging economies and increase private investment. In Africa's largest oil producers, Angola and Nigeria, strict local content requirements and unfavourable fiscal terms still create barriers to energy investment, particularly in offshore projects (IEA, 2017a). Similarly, the Southeast Asian offshore sector faces regulatory uncertainties that impede a rebound in activity (IEA, 2017a).

Overall slight declines in electricity investment

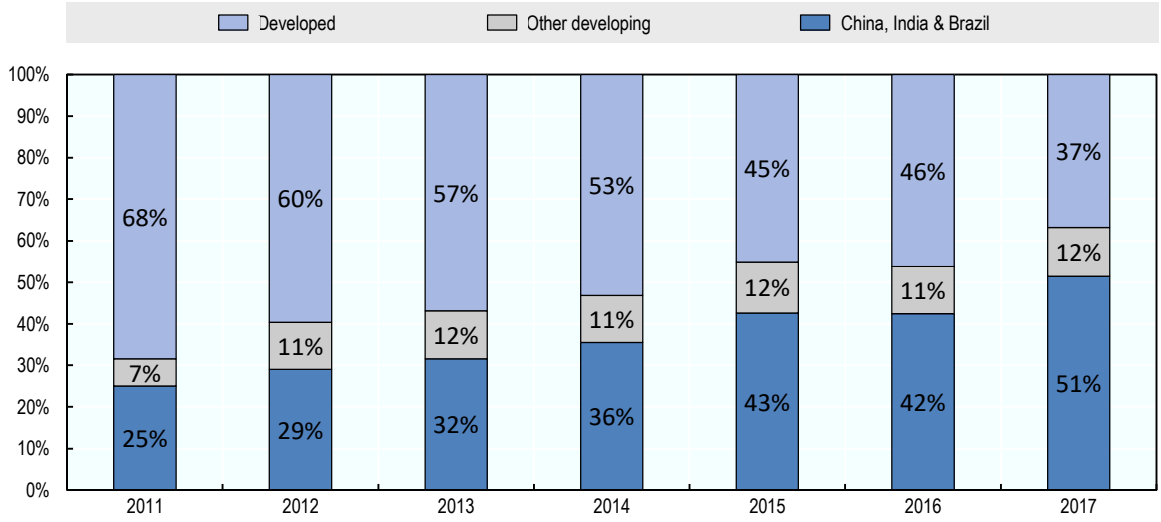
Global investments in electricity fell by almost 1% to USD 718 billion in 2016. The decline in overall expenditure was due to lower spending on electricity generation, although this trend was partially offset by an increase in spending on networks. The decline was driven by a reduction in coal-fired plants as well as lower levels of renewable energy investment, following limited wind and hydropower capacity additions and continued reduction in the price of solar photovoltaics (PV) (IEA, 2017a).

Despite the overall decline, investment in electricity networks and storage grew to an all-time high of USD 277 billion, driven primarily by investment in Asia. China in particular accounts for 30% of this spending, while an additional 15% was spent in India and Southeast Asia combined. Network investment reflects a trend to move away from solely providing electricity towards more integrated platforms for digital information (IEA, 2017a). Overall, 45% of investments were directed at expanding grids to better integrate new decentralised power generation assets and increase accessibility (IEA, 2017a). In general, although great progress has been made in terms of increasing electricity access, 1.1 billion people remain without access to electricity, including in particular 500 million in sub-Saharan Africa (IEA, 2017b). Although investments in electricity networks have helped reduce the access gap, new solutions such as mini-grids and off-grid systems can provide the most cost-effective solutions in sparsely populated rural areas (IEA, 2017b). In India, a country that has increased access to energy from 43% in 2000 to 82% in 2016, over 99% of the individuals benefitted from significant grid extension efforts (IEA, 2017b). The scheme for rural electrification named *Deendayal Upadhyaya Gram Joyti Yojana* has effectively contributed to these efforts, by providing financial assistance to electricity distribution companies involved in the deployment of the grid in rural areas (Government of India, 2016).

Driven by emerging economies, the renewables sector continues to attract investments

Global investment in renewable energy reached USD 279.8 billion in 2017, up 2% since the previous year (FS-UNEP/BNEP, 2018). Renewables account for 80% of electricity sector investments, reflecting a continued push towards cleaner sources of energy (IEA, 2017a). Emerging markets, which provide considerable renewable energy resource endowments, especially in solar and wind, are leading the trends in global investment (IRENA, 2018). In 2017, emerging economies accounted for over 63% of global investment in the renewable energy sector, representing a 20% increase from 2016. Together, China, India and Brazil accounted for over half of overall spending, with a record high of USD 143.6 billion invested in 2017 (Figure 6.2). At the same time, investments in developed countries dropped 19% to USD 102.8 billion (FS-UNEP/BNEF, 2018).

Figure 6.2. **Global investment in renewable energy, 2011-2017**



Note: New investment accounts for re-invested equity. Figures used for developed countries are based on OECD countries except Mexico, Chile and Turkey.

Source: Authors' elaboration based on Frankfurt School-United Nations Environment Programme and Bloomberg New Energy Finance (2018).

Asian economies led the performance of emerging economies in renewable energy investment from 2013 to 2016, reaching USD 88 billion in 2016 largely driven by China. Latin America and the Caribbean saw their investments fall from USD 17 billion to USD 9 billion from 2015 to 2016, weighed down by lower onshore wind investment in Brazil. This was somewhat offset by investment in solar PV, which increased by USD 700 million to USD 2.3 billion across the region in 2016 (IRENA, 2018). Furthermore, investment was heavily concentrated in a few countries: Mexico and Argentina saw their commitments to renewable energies rise remarkably with investments jumping nine-fold (FS-UNEP/BNEF, 2018). Africa remains behind in terms of renewable energy investment, although there are also positive initiatives to note. An example is the Renewable Independent Power Producer Procurement Programme (REIPPPP) in South Africa, which facilitates a competitive bidding process in order to draw private sector investment into the renewable sector (IRENA, 2016).

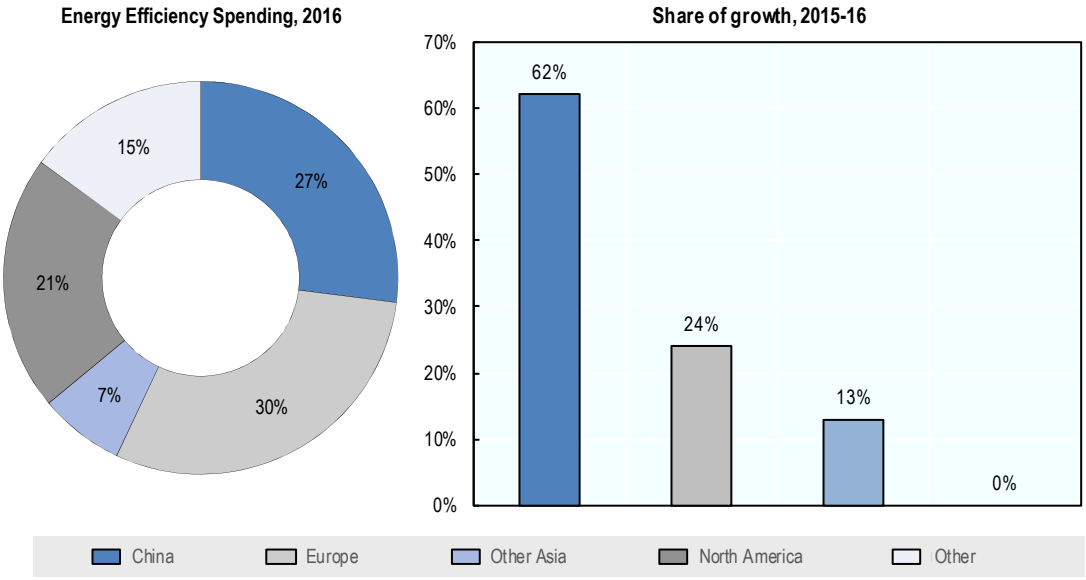
Its design, with a rolling competitive bid window and a standard suite of agreements and contractual arrangements[1], has enhanced the bankability of power procurement programmes in the country (IRENA, 2016). The programme has been successful at channelling private funds, with a total of USD 15.7 billion invested since its inception in 2011 to the end of 2016 (IRENA, 2016). Operations from 53 independent power producers (IPP) had already added 2.8 GW of power generation capacity by October 2016 (IRENA, 2016).

Public policies and other support mechanisms such as feed-in tariffs or power purchase agreements (PPA) continue to play an important role in supporting private investment, by underpinning returns and mitigating risks. Although feed-in tariffs provide a level of revenue certainty for energy producers, they do not always adapt to the decreasing costs of renewable technologies (OECD, 2017). Auctions are increasingly being used as an alternative instrument. Through auctions, governments can reward cost-effective developers, whilst securing competitive prices for end users (FS-UNEP/BNEP, 2018). Since 2012, the annual amount of capacity being awarded through auctions has increased globally 18-fold, reaching 50.6 GW in 2017 (FS-UNEP/BNEP, 2018).

Energy efficiency is improving and electric vehicle sales are growing

Energy efficiency has an important role to play in tackling climate change. Accordingly, investments toward greater energy efficiency continue to grow. In 2016, spending on energy efficiency jumped 9% to reach USD 231 billion, representing 13% of total energy investment. Globally, in 2016, Europe was the leading destination for energy efficiency investments while China has shown the strongest growth, with a 24% increase from 2015 to 2016 (IEA, 2017c) (Figure 6.3). The large majority of energy efficiency investments were concentrated in the building sector (58%), followed by the transport sector (26%) and industry (16%) (IEA, 2017c). Governments can implement policies, such as codes and standards as well as energy utility obligation programmes to encourage the purchase of more energy-efficient equipment and appliances and support the refurbishment of buildings. While these codes demand minimum energy performance standards, utility obligations specify the target of energy savings without prescribing the mechanisms to achieve them. These complementary measures have helped drive energy efficiency in the industrial, transport and construction sectors (IEA, 2017a).

Figure 6.3. **Energy efficiency investment by region and sector, 2016**



Source: IEA (2017), World Energy Investment 2017, IEA, Paris, https://www.iea.org/publications/wei2017/.

The growth in electric vehicle (EV) sales is also contributing to expanding global energy efficiency investments (IEA, 2017a). Sales of EVs grew by 38% in 2016 to reach 750 000 units, with China leading the world in sales (340 000 units). Globally, around USD 6 billion was invested in charging points for EVs in 2016, representing a 42% increase since 2015 (IEA, 2017a). Governments around the world are supporting the adoption of EVs through fiscal incentives as well as special access to driving lanes and parking. In China EVs have also been exempted from some specific licensing requirements (IEA, 2017a).

Research and Development (R&D) spending on energy has stalled

Global R&D spending on energy has remained subdued in recent years. R&D spending in the energy sector represented only 5% of total expenditure on all R&D (IEA, 2017a). The IEA estimates that USD 65 billion was spent globally by public and private entities on energy-specific R&D spending in 2015, 3% lower than the previous year (IAE, 2017a). The private sector was the most important contributor to R&D spending, with non-SOE corporate spending accounting for 44% of the R&D expenditure in 2015 (IAE, 2017a).The United States and Europe spent the most in absolute terms. However, when evaluated as a share of GDP, China leads spending on energy R&D, having overtaken Japan in 2014 (IEA, 2017a).

On the other hand, investment in R&D specifically focused on renewable energy set a record high in 2017 reaching USD 9.9 billion. Governments continue to provide the majority of investments with USD 5.1 billion. The private sector is however increasingly becoming an important actor: corporate investment in R&D stood at USD 4.8 billion in 2017, up 12% from the year before (FS– UNEP/BNEF, 2018).

Digital infrastructure continues to attract investors

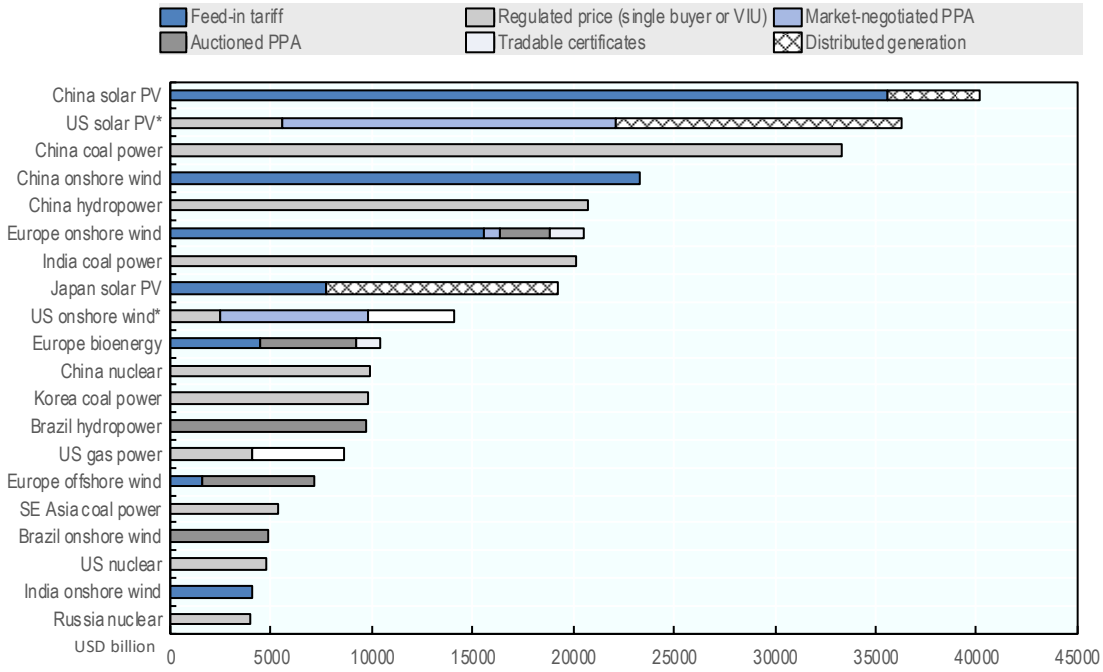
Companies and governments continue to invest in digital infrastructure for their energy systems, recognising its potential for both financial purposes and environmental benefits. The IEA estimates that USD 47 billion was spent in 2016 on smart grids, connected buildings and industrial control systems, as well as charging infrastructure for EVs. In addition, USD 2 billion was spent on software by utilities, which is used to integrate new digital infrastructure into their systems (IEA, 2017a). These investments have grown by 50% since 2014 and are now greater than the total amount of investment in gas-fired power plants. Smart meters[2], in particular, have become the largest category of investments in digital electricity infrastructure with Japan and China accounting for almost half of the global market in 2016 (IEA, 2017a). Smart meter penetration is still increasing; it is expected to reach 53% globally by the end of 2025, with a forecast penetration rate of 70% in Asia Pacific. Latin America and Africa are also increasingly adopting smart meter technologies, after a slow initial take-off (Navigant Research, 2016). In Mexico, for example, investment in smart grid technology has been reinvigorated by issuing numerous tenders for more than two million smart meters (Smart Grid Congress, 2017). In Nigeria, utility company Ibadan Electricity Distribution Company has secured a USD 400 million investment from the Trans Sahara Consortium to roll out its smart meter programme. On top of fighting energy theft, the programme will generate efficiency gains in terms of billing processes for the company and is expected to create over 250 000 jobs in the country (IBEDC, 2017).

Governments are key actors in shaping the energy investment landscape

Governments are important actors in the energy investment landscape, both as regulators and as investors, often through state-owned enterprises (SOEs). The role of regulatory policy cannot be overstated in influencing energy investment. According to the IEA, 94% of global power generation investments came from firms with fully regulated revenues or specific regulatory mechanisms to manage revenue risks. At the same time, the role of competitive mechanisms such as auctions is growing. In the case of utility-scale renewables, over 35% of investments was subject to auctions or corporate contracting (IEA, 2017a) (Figure 6.4).

Figure 6.4. Investment in the top 20 power-generation sectors by main business model, 2016

*Renewables in the United States benefit as well from federal tax credits and market-negotiated. PPAs are often struck to satisfy utility purchase obligations.



Note: Distributed generation breakdowns are only available for solar PV; VIU = vertically integrated utility; PPA = power purchase agreement.

Source: IEA, 2017, World Energy Investment 2017, IEA, Paris, https://www.iea.org/publications/wei2017/.

State-owned energy companies continue to play a major role. The share of state actors in total energy investment rose from 39% in 2011 to 42% in 2016, largely owing to SOEs in China, as well as national oil companies in upstream oil and gas (IEA, 2017a).

Other emerging markets are fostering investment opportunities through the implementation of market reforms. Mexico, for example, introduced an auction system offering long-term contracts for energy, capacity and clean energy certificates to attract investment from new players. In 2017, an auction with an estimated value of USD 2.4 billion of investment directed at sixteen selected projects constituted one of the world's most price-competitive large-scale clean energy auctions (Mexican Government, 2017). Two previous auctions in 2016 awarded nearly USD 7 billion worth of power generation (IEA, 2017a). It is worth mentioning that beyond its state players, through the reform of its electricity market, China has also seen an increase in participation from private actors in the distribution sector. Open market-based electricity trading has increasingly occurred via independent companies. Such transactions accounted for 30% of total power generation in 2016 (IEA, 2017a).

BUSINESS INSIGHTS ON ENERGY INVESTMENT TRENDS

The private sector constitutes a central player in the transition to a greener economy, representing 47% of total energy investments in 2017. Companies see energy-related sectors as a key source of new opportunities and are aware of the role they can play in support of the economic and social development of emerging markets, by for example driving innovation, promoting clean technologies and developing infrastructure. EMnet participants highlighted the importance of network interconnectedness, the use of digital technologies and the role of energy storage as key drivers of private energy investment.

Declining prices for clean energy are reducing the competitiveness for traditional fossil fuels

Firms welcome the expansion of renewable energy sources, particularly solar and wind, and also highlight the effects that they are having on energy markets. Participants highlighted that the rapidly declining prices for clean energy are reducing the competitiveness for traditional fossil fuels. The example of hydropower in China and India was frequently mentioned, as the sector has now become the cheapest source of electricity in both countries (IRENA, 2018). In parallel, project developers for coal and other traditional fuels are finding less opportunities in the market (IEEFA, 2017).

Technologies such as hydrogen and fuel cells are generating increased interest from both the public and private sector as alternative energy sources that can provide flexible, low-emission opportunities (IEA, 2015). For example, together with 12 energy and mobility companies, ENGIE launched the Hydrogen Council, which aims to foster the adoption of hydrogen technologies worldwide to achieve the low-carbon energy transition (ENGIE, 2017). This global initiative – the first of its kind – provides recommendations to policy makers, investors and international agencies to place hydrogen among the key solutions of the energy transition (The Hydrogen Council, n.d.).

Distribution of energy faces unresolved infrastructure constraints

Participants expressed the importance of investments in transmission and distribution infrastructure. Firms stressed that the energy shortages they sometimes face are often linked to distribution and transmission deficiencies, more than lack of energy supply. This issue is particularly relevant for the distribution of renewable energies, where poor connections or limited transmission capacity in the grid are more evident.

Some countries have already begun improving the transmission capacity of their grids. For instance, significant investments in ultra-high voltage (UHV) transmission systems in China have connected the resource-rich western regions with the eastern provinces where demand is booming (Kemp, 2014).

Furthermore, participants focused on the need to ensure that capacity is increased to handle the frequency of larger occurring peak loads. Renewables now account for the majority of new capacity additions each year and the share of renewables in electricity generation is expected to rise to 40% in 2040 globally (IEA, 2017d).

The role of digital technology in the energy sector is expanding

The IEA has highlighted the role that digitalisation can play in achieving various energy policy objectives. Increased productivity and efficiency, enhanced revenue collection and improved security are some of the benefits that digital tools can grant to achieve higher energy access (IEA, 2017e).

Digitalisation has helped energy producers increase productivity and decrease costs throughout the supply chain. In the upstream oil and gas sector for example, the widespread use of new technologies has the ability to enhance the recovery of oil and gas resources by 5%, representing up to 75 billion tonnes of oil equivalent (toe) and reducing costs by around 10-20% (IEA, 2017e). While the hardware used for energy systems is constantly improving and dropping in cost, the role of software to manage energy production and distribution is also growing (BNEF, 2017).

Companies highlighted the importance of using big data in production of renewable energies. Indeed, utility companies need to understand which technologies, such as wind or solar, work the best depending on the climate of specific locations. Big data analytics can be used to predict and evaluate the production capacity of renewable generation and help firms plan investments and maintain supply reliability (ESMAP, 2017). Participants highlighted the fact that managing consumer demand through digital technologies is also playing a significant role. Smart meters for instance were mentioned as a demand-side management tool, useful for deepening companies' understanding of household consumption patterns as well as encouraging reductions in energy usage (IEA, 2017e). Smart meters have shown great potential in reducing energy use through increased visibility on consumption patterns. Research conducted in the UK found that 85% of people with smart meters have adopted consumption habits that reduce use of energy and 56% have implemented changes to their home to be more energy-efficient (Smart Energy GB/Populus, 2017). Similarly, the potential gains in emerging markets from this new technology are significant, both in energy use and improved demand management. Although the majority of smart meter investment has been in developed countries as of yet, a study of 50 emerging countries showed that these countries are projected to invest USD 268 billion in smart grid infrastructure from 2017 to 2027 (BusinessWire, 2017).

Energy efficiency continues to improve

Concerns about cost reduction are driving improvements in energy efficiency. Companies see new opportunities, particularly in the area of energy-efficient equipment as well as buildings. Energy intensity – the final energy consumption per unit of gross value added – in manufacturing dropped by 30% from 2000 to 2016, in both IEA member countries[3] and major developing economies, with major improvements made in emerging markets. Most notably, energy intensity in China fell by 5.2% (IEA, 2017c).

In addition, the IEA has highlighted the opportunities to improve energy efficiency in cooling, particularly around air conditioners, which account for an increasing share of energy consumption. Average annual sales growth in air conditioning reached over 40% from 2014-16 in countries such as Bangladesh and Viet Nam, and over 20% in Nigeria, Mexico and Colombia. Demand for cooling installations is likely to rise faster in Africa and Latin America, as these regions increase their disposable income over the coming years (IEA, 2017a).

The building sector is also progressively contributing to the efficiency efforts to achieve global climate commitments (IEA, 2017c). Policies such as building energy efficiency codes (BEECs) present great potential in reducing heating, cooling and lighting loads in newly constructed buildings (ESMAP, 2014). The Mexican government e.g., in collaboration with the International Code Council, published the *Mexico Conservation Code for Buildings,* which establishes minimum requirements for energy efficient buildings for the country (ICC, 2016).

New technologies improve energy storage and create new business opportunities

Businesses highlighted the importance of supporting the development and commercialisation of efficient energy storage technologies. Renewable energy sources, such as solar and wind, are inherently variable. Therefore, greater flexibility to improve the match of supply with demand will progressively become an essential component of the electricity systems (IRENA, 2017b). Technologies such as Pumped Heat Electrical Storage (PHES), which uses heat pumps to store and recover electricity with a round trip efficiency of 70-75% (EASE, n.d.) or hydrogen and fuel cell technologies present considerable opportunities to increase storage capacity.

Electric vehicles (EV) show promise to reduce emissions but many barriers remain

Participants agreed that significant quality and durability improvements of electric car batteries are required to serve as a viable and efficient alternative to the existing fossil fuel operating vehicles. Nowadays, despite an increase of 60% in EV car stock when compared to 2015 (IEA, 2017f), the sector only accounts for 0.2% of the total worldwide vehicle stock, representing over 2 million units (IEA, 2017a). Furthermore, according to the IEA, electric cars sold in 2016 will decrease oil consumption by only around 10 000 barrels per day (IEA, 2017a). This decrease in oil consumption represents a relatively small contribution, considering that global daily oil consumption for road freight is about 16 million barrels (IEA, 2017a).

Companies agreed that there is a strong role for policy makers to play in terms of supporting the growth of the EV market and the adoption of fuel-efficient vehicles (IEA, 2017f). Financial incentives such as direct rebates, tax breaks or tax exemptions can stimulate electric car deployment. In Brazil for example, an acceleration in vehicle efficiency improvements was underpinned by the government's "Inovar-Auto" programme, which encourages production of fuel-efficient vehicles through fiscal incentives for manufacturers (ICCT, 2013).

Participants stressed, however, that there is a need to envisage ways to meet the increased electricity demand generated by EV penetration. The IEA predicts that additional electricity demand required by electric vehicles will amount to 1.5% of the global demand by 2030 (IEA, 2017f).The additional stress during peak hours that EV charging will induce on local distribution grids can accelerate the ageing of grid infrastructure and thus lead to possible service interruptions (Thomas, 2017). Charging patterns for EVs are concentrated in time, which can lead to localised surges in electricity demand. The largest proportion of electric car charging is forecasted to occur at home, in offices or in public charging facilities (IEA, 2017f). Investment in the reinforcement of networks at local hotspots as well as the deployment of charging infrastructure is therefore very important (IEA, 2017f). The use of price signals to encourage off-peak charging could also mitigate pressures the hours of highest consumption (IEA, 2017f).

Firms play an essential role in financing energy investments

More than 90% of global energy investment is financed from the balance sheets of firms (47% private vs. 42% SOE) or from individuals' own assets, originating either from borrowing, equity, cash flows or savings (IEA, 2017a). Companies stressed the importance of the cost of capital as an factor that can hinder investments in low emissions projects. The level of risk associated with these projects determines the level of the cost of capital and the return that investors demand. Several risks such as political and regulatory risks can be greater for projects that strongly rely on public support, such as for example low-carbon infrastructure projects. In this case, the potential short and medium-term volatility of public sector support, depending on policy priorities, can contrast with the long-term planning of infrastructure development (OECD, 2017). This uncertainty contributes to an increase in the financing cost of energy investments.

Policies that help to reduce the cost of capital and improve the cost-reflectiveness of electricity pricing are especially important in countries where electricity demand is growing (IEA, 2017a). In India and Indonesia for instance, two countries that are expected to constitute a fifth of global demand growth in the coming years, policies to reduce the cost of capital or mitigate risks have been implemented to improve the financial attractiveness of green investment. A recent public tender in the Indian Madhya Pradesh province, in which de-risking mechanisms from the central and state governments played key roles, awarded a 750 megawatt hour (MWh) solar park at a price of USD 55/MWh, one of the lowest prices awarded through an auction in the country (Waldron, 2017).

Firms see a clear movement away from financing fossil fuels to cleaner energy sources

The carbon content of an investment is increasingly viewed as a potential source of risk. Although the climate change is a long-term process, investors increasingly recognize the importance of considering the carbon footprint as part of their entire investment portfolio (EY, 2016). Climate risks are already reflected in investment decisions, as illustrated by the 20% drop in Chinese coal investment from 2015 to 2016 (IEA, 2017a). In 2017, a five-year investor-led initiative, Climate Action 100+, was launched to ensure companies improve their governance to reflect climate change issues. The initiative was launched with the collaboration of both large investor groups dedicated to the transition to a greener economy and the United Nation's Principles for Responsible Investment (UN PRI, 2018). 279 institutional investors, who manage nearly USD 30 trillion in global assets, have taken part and committed to tackle climate change through their worldwide investments (Climate Action 100+, n.d.).

Public sector and international financial institutions are also driving this trend. For instance, the World Bank has recently announced that it will no longer finance upstream oil and gas projects after 2019 (World Bank, 2018). Similarly, inter-governmental coalitions can make a positive contribution to help support cleaner energy adoption. Launched in 2015, the International Solar Alliance (ISA) encourages the use and deployment of solar energy in countries with substantial solar resource endowments (UNFCCC, 2015). ISA member countries undertake steps to create a common market by amalgamating and harmonising requests for capital, technologies and innovation in solar energy.

Regulatory financial frameworks are also moving to consider climate-change risks and expand financial markets for green investments. For example, France and Sweden announced additional co-operation to increase green and sustainable finance through a strategic partnership for innovation and green solutions (Government Offices of Sweden, 2017). Both countries already have carbon disclosure requirements for corporate and financial institutions. These measures could begin to serve as benchmarks for other economies when designing and implementing policies that address the same issues. At the same time, in 2017, the G20-comissioned Task Force on Climate-related Financial Disclosures (TCFD) developed a framework to promote more informed investment decisions through the production and use of climate-related financial disclosures, looking at governance, strategy and risk management practices (TCFD, 2017). The recommendations issued by the TCFD provide a foundation to support investment decisions through a better assessment and management of climate-related risks.

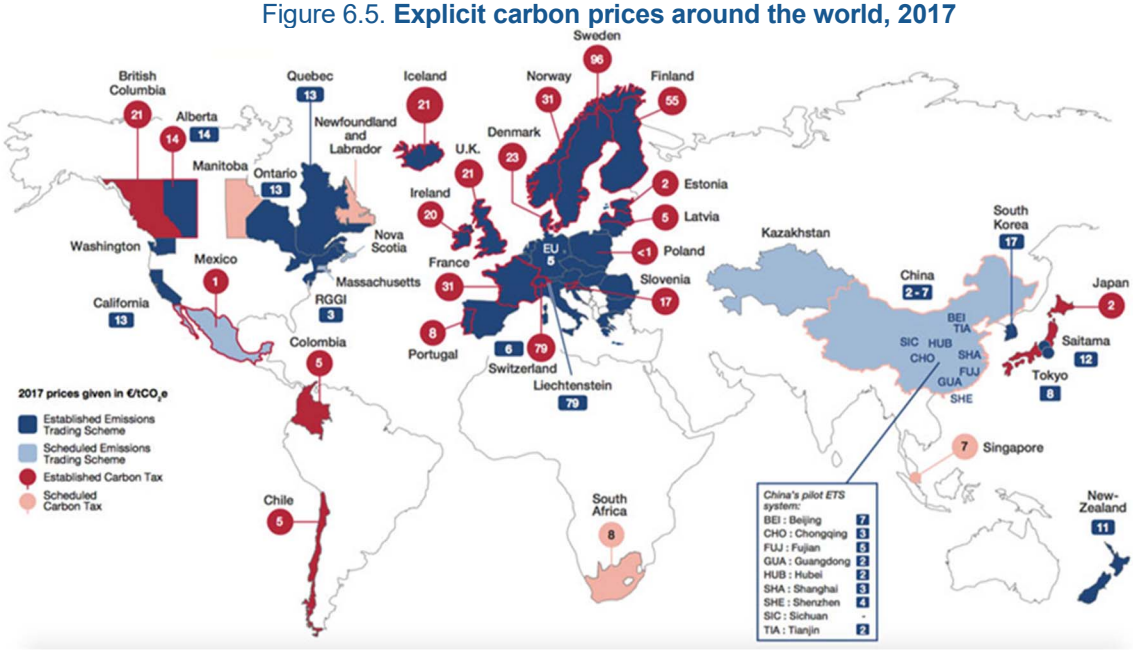
CARBON PRICING TRENDS

Putting a price on emissions and pollution through carbon pricing tools such as energy taxes and tradeable permits is an essential part of the climate change mitigation strategies (OECD, 2018a). Argentina, Brazil, China, India, Indonesia and South Africa are among the countries that have put in place energy use taxes, each at various degrees and levels. Although these recent developments reflect progress, current carbon pricing efforts vary widely across countries and price levels fall short of the recommended EUR 30 per tonne of CO_2. Furthermore, carbon pricing measures alone are not sufficient and should be complemented by other measures that respond to local barriers and challenges that could include for instance targeted investment incentives, the removal of fossil fuel subsidies or the support for low-carbon innovation developments (OECD, 2017).

Carbon pricing refers to policy measures that put a price on greenhouse gas (GHG) emissions and include taxes on energy use, carbon taxes and carbon emission permit prices. The term "effective carbon prices" or "effective carbon rates" include both explicit carbon prices through carbon taxes and emissions trading systems (ETS) as well as the implicit carbon prices from energy taxes. Using this approach, effective carbon rates are low or absent in sectors outside road transportation. In G20 countries, 84% of energy-related emissions take place beyond road transport, with only 2% of those emissions priced at EUR 30 per tonne or more (OECD, 2017).

The introduction of carbon taxes began in the 1990s and has since expanded throughout the world (Arlinghaus, 2015). Countries and sub-national areas continue to implement carbon pricing initiatives. Currently, 67 jurisdictions are implementing or planning to implement carbon pricing around the globe. Taken together, these jurisdictions account for about 50% of the global economy and 25% of global emissions (World Bank, 2017). Emerging markets across the globe are making progress as well. In Latin America, Mexico is preparing for an ETS pilot and Colombia and Chile are evaluating the development of an ETS after launching carbon taxes. China is launching a nation-wide ETS system after experimenting with regional pilots while Viet Nam plans to development a carbon market and Singapore is working to price carbon in 2019 (World Bank, 2017).

Figure 6.5. **Explicit carbon prices around the world, 2017**



Source: Institute for Climate Economics (2017) with data from ICAP, IETA, World Bank and public information, https://www.i4ce.org/wp-core/wp-content/uploads/2017/10/Global-panorama-carbon-prices-2017_5p_Final-version.pdf.

The pricing levels per tonne of CO_2 emitted vary widely as well as the use of proceeds (see Figure 1.5.). The damage from a tonne of CO_2 emissions can conservatively be estimated at EUR 30 (OECD, 2016). However, 90% of carbon emissions are priced at less than EUR 30, based on an OECD study of 41 OECD and G20 countries (OECD 2016). Moreover, the price for carbon is significantly context-dependent, as certain countries will charge less than others to allow businesses to operate within sustainable production costs. For example, Sweden (USD 140/tCO_2e) and Switzerland (USD 87/tCO_2e) have the highest carbon taxes per tonne of carbon dioxide equivalents (tCO_2e), while pilot ETS systems in China, and carbon taxes in Chile, Colombia and Mexico are priced at less than USD 10 per tonne (World Bank, 2017). The use of public revenues from carbon pricing is an essential aspect of policy design. The revenues collected are used for a variety of purposes but often go to finance tax cuts, support green investments or are allocated to the general budget (I4CE, 2017). The OECD has recommended that revenues originating from carbon pricing should both generate social benefits and ensure widespread support in carbon pricing policies. This can be done, for example, reducing growth-inhibiting taxes, increasing inclusiveness, compensating for loss of competitiveness or supporting low-emissions R&D (OECD, 2017). China uses revenues from new ETS to enhance firms' competitiveness. Mexico's carbon revenues go into the general budget and India's coal taxes funds a national Clean Energy Fund (OECD, 2017).

BUSINESS INSIGHTS ON CARBON PRICING DEVELOPMENTS

Companies find strategic reasons to support carbon pricing and more firms around the world are taking action to set internal carbon prices irrespective of the regulatory framework in which they operate. EMnet participants stressed the importance of governments developing carbon prices that are transparent, stable, long-term and that create a level playing field. A wide range of internal prices and strategic rationales exist within companies for carbon pricing. Firms highlighted in particular that carbon pricing can drive innovation, improve efficiency, enhance internal productivity and better position businesses to manage future risks. It is also a way to satisfy investors and customers that are increasingly seeking additional transparency and commitment to climate change. Furthermore, the private sector is recognising the urgency to be accountable to their clients and to society in general (OECD, 2018b).

Carbon pricing as a cost-effective solution to reduce emissions

Businesses find carbon pricing a cost-effective way to reduce emissions and generate funds, which can be used to accelerate further climate action. Through a global survey, executives affirmed that carbon pricing regulation would have a positive impact on fostering innovation (78% of respondents) and investment in green growth opportunities (81%) (EY, 2015). In their view, market-based approaches, such as a carbon taxes or cap-and-trade programmes, can help reduce emissions at the lowest possible cost. These approaches offer firms the flexibility to choose the most economical way to reduce emissions, rather than mandating one single approach.

More public-private collaboration is essential in designing climate policy

Despite the broad support, businesses highlighted that carbon pricing policies must be carefully designed. In particular, more consultation between both the private and public sectors is encouraged to ensure a successful carbon pricing policy. Several initiatives to foster collaboration between multiple stakeholders have been launched to this effect. For instance, governments, businesses and the World Bank have supported the launch of the Carbon Pricing Leadership Coalition. This initiative, which brings together government and non-government stakeholders, aims to deploy carbon pricing worldwide through experience sharing and expanding knowledge on effective carbon pricing systems and policies (World Bank, 2017).

Carbon pricing policy stability and transparency are key concerns for businesses

Firms highlighted that a stable and long-term system is more important than whether the carbon price is executed as a tax or permit system. Firms, however, tend to find taxes to be more stable than emissions trading schemes and more conducive to long-term planning. Companies furthermore stressed the importance of treating firms equally across and within sectors, to create a level playing field notwithstanding the fact that different priorities and approaches will exist in different countries and industries.

Companies fear "carbon leakage"

Carbon leakage can occur when emissions shift from a country with stricter carbon pricing to a country with less stringent measures. This phenomenon implies that climate mitigation policies are less effective and more costly in containing emission levels, making it a main concern for governments (IEA, 2008). Firms are concerned about the carbon leakage's impact on competitiveness, as companies may attempt to avoid regulation by shifting production to countries with less stringent climate change requirements. Although a review of the impact of carbon pricing on competitiveness by Arlinghaus (2015) showed that negative effects on competitiveness due to carbon pricing are limited, many firms receive exemptions or preferential rates, and few studies compare the competitiveness impacts of companies that are fully exposed to carbon pricing versus firms that are exempt. In order to reduce the risk of carbon leakage, governments can implement measures that can compensate energy-intensive sectors that see increased electricity costs as a result of climate policy. This is the case in Europe for example, where the European Commission gives Member States the possibility to provide financial compensation to exposed sectors through national state aid schemes (European Commission, 2012).

More companies are putting a price on carbon for their internal operations

In 2017, over 1 300 global companies reported using a carbon price or planned to implement one within the next two years and over 1 in 5 Fortune Global 500 companies currently price carbon internally (CDP, 2017a). The Carbon Disclosure Project (CDP), a global non-profit, runs a global disclosure system that helps companies to measure and manage their environmental impacts. The CDP found that the energy and utilities sectors have the highest proportion of companies currently using an internal carbon price with 79% and 84% of disclosers respectively (CDP, 2017a). In terms of growth, the materials and industrials sectors have shown the strongest expansion since 2014 (CDP, 2017a).The greatest expansion in companies pricing carbon comes from China, Japan, Mexico and the United States (CDP, 2017a). China's nascent ETS, the largest in the world, is likely to drive increased disclosure by Chinese companies in particular (Feng, 2017; CDP, 2017a). Indeed, the implementation of the Chinese national ETS is estimated to increase the share of emissions covered by carbon pricing initiatives from 13% to 20-25% of global GHG emissions (World Bank/Ecofys/Vivid Economics, 2016). Internally, firms have a wide range of carbon prices, often known as "shadow prices", which put a financial value on carbon emissions. The Indian vehicle manufacturer Mahindra & Mahindra, for example, uses an internal price of USD 10 per metric tonne, whereas Mexican cement producer CEMEX and the French tyre manufacturer Michelin set carbon prices at USD 30 and USD 59 respectively (CDP, 2017a).

A corporate carbon price can improve efficiency and develop new opportunities

Internal prices and targets can drive innovation within the company, spurring internal programmes and products that can help the firm meet its goals. Implementing internal carbon prices can incentivise resource allocation towards low-carbon activities, improving the business case for R&D investments and help firms identify hidden risks and opportunities in their own operations and supply chains (CDP, 2017b; Chang, 2017). A study of the impact of the European Union Emissions Trade System (EU ETS) found that its implementation prompted an increase of 36% in low-carbon patents in the firms examined (Calel and Dechezleprêtre, 2016).

Carbon pricing can help to reduce a company's carbon footprint. Companies noted that once they had priced carbon, they quickly came to see their energy use from a different perspective. When companies calculate their carbon footprint, they typically find that their energy consumption accounts for a large majority of their directly measurable emissions impact. As a result, energy shifts from a seemingly small cost item to the biggest part of their carbon footprint. Viewed from this perspective, businesses see a case for energy efficiency and low-carbon energy solutions. This has been confirmed by studies that have found the disclosure of climate risk and mitigation strategies to be linked to stronger financial performance. Indeed, among S&P 500 companies, industry leaders (i.e. firms that provide the most comprehensive information about the management and measurement of their carbon footprints) make a 18% higher return on investment (ROI), generate earnings that are 50% less volatile and distribute dividends to shareholders that are 21% higher than low scoring peers (CDP, 2014).

Setting an internal carbon price as a way to manage risks for climate policies

Companies view potential carbon regulations as a major climate-related risk and cite preparation for future policy initiatives that address this as one of the main motivations for adopting internal carbon prices (C2ES, 2017). In countries where carbon pricing mechanisms have not yet been implemented, 73% of respondents believe that these will be put in place in the next five years (EY, 2015). By implementing internal prices now, firms will have a head start in assessing and planning their emissions and their future impact on the overall operations and cost structures. They will consequently be better placed to remain competitive and handle any future regulatory change.

Shareholders and customers demand transparency on climate-related issues

Implementing internal carbon prices is viewed as a way to improve disclosure and better evaluate environmental risks, to better respond to stakeholders' demands. Investors are increasingly asking for additional disclosures on climate-related issues within their portfolios, and for strategies to handle potential risks coming from additional regulations on emissions. Shareholders' pressure can compel companies to adopt measures that reduce emissions and disclose risks that climate change poses to their business. For instance, large oil and gas companies ExxonMobil, Shell and BP have all announced initiatives to report climate change risk due to mounting shareholder demands for greener practices (Berke, 2017).

Additional costs associated to greening efforts should be included in the cost-benefit analysis

Although firms recognise that there are clear net benefits to climate policies, such as carbon pricing, they also highlighted the fact that other costs associated to the greening efforts should be included in the cost-benefit analysis and explain some cases of rising end-use energy prices. For example, total real end-use energy prices in the OECD rose by 3% year-on-year with the largest increase reported in Mexico (9%) (IEA, 2017g).

Although energy production costs have been decreasing on the supply side, the European electricity industry association (Eurelectric) published a report highlighting that additional costs coming from the application of energy policies has been contributing to rising prices in some sectors. On average, policy support costs and energy taxes made up 36.5% of total household prices in Europe. Policy support costs between 2008 and 2014 have increased by 170%, whereas the supply-side component has decreased by 7% (Eurelectric, 2016; Thomas and Ward, 2017).

Firms highlighted the need to better analyse the weight of all costs in final energy prices. Businesses in particular suggested taking into consideration more variables beyond carbon and energy taxes and emission permits, when estimating business contributions to achieving lower emissions. Some companies stressed that the additional costs of policies aimed at decarbonising the energy system, which may not necessarily be considered as taxes from a legal standpoint, are also integrated into the final price to consumers and exercise the same influence on their behaviour as a tax would. For this reason, new research on effective carbon rates should include them in the analysis.

CONCLUSION

More than two years after the Paris Agreement on Climate Change, companies remain committed to the climate action and the strategic value of embracing clean energies, particularly in emerging markets. Multinational companies see their role at the forefront of the transition towards more sustainable and are already collaborating with governments. Digital developments are opening up new investment prospects for both energy networks as well as energy efficiency.

The private sector sees carbon prices as an effective way to internalise the cost of emissions, especially when they are stable and transparent. Businesses are increasingly engaging in carbon pricing within their internal operations even if not legally required. Companies view this as an effective approach to improve transparency towards their investors, customers and other key stakeholders.

Although the private sector is increasingly embracing and driving the transition to a greener economy, much progress remains to be made in enabling companies to fully embrace climate policies. Governments have an important role to play in fostering an environment that not only catalyses low-carbon investments but also provides a stable, transparent and coherent policy framework. Companies also recognise the risks associated with climate policy. Namely, the risk of carbon leakage as well as additional hidden policy support costs, which risk to be ultimately transferred to the final consumer.

Notes

[1] REIPPPP contractual agreements include implementation agreements, government support agreements, power purchase agreements and direct agreements.

[2] Smart meters are a new generation of gas and electricity meters that give consumers real time information on energy use.

[3] IEA member countries include: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, The Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States

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