

2019 POLICY NOTE ON AFRICA

INFRASTRUCTURE
AND REGIONAL
CONNECTIVITY



INVESTMENT
ENERGY RISK MANAGEMENT
INFRASTRUCTURE INNOVATION
POPULATION GROWTH MIDDLE CLASS
GREEN GROWTH COMMODITIES
SKILLS REGULATIONS TRADE
PRODUCTIVITY
INDUSTRIALISATION
CREDIT

Infrastructure and regional connectivity in Africa

This chapter provides insights and policy recommendations from the private sector on how to unlock opportunities for infrastructure development in Africa. The analysis builds on discussions which took place at the business meeting “Infrastructure and Regional Connectivity” organised by the OECD Development Centre’s Emerging Markets Network (EMnet) at the OECD headquarters in Paris on 30 October 2018, back-to-back with the International Economic Forum on Africa.

Key messages include:

- Africa’s population growth, economic dynamism and rapid urbanisation can generate opportunities for businesses, provided that investments are made to enhance infrastructure and regional connectivity, in line with the Africa Union’s Agenda 2063.
- The Africa Continental Free Trade Area (CFTA) agreement is predicted to help intra-African trade grow by up to 52% while additional facilitation measures can further reduce the time and cost of trading.
- Better trade facilitation measures, such as efficient warehousing and customs procedures, are important to complement improved physical links.
- Over 600 million sub-Saharan Africans are predicted to remain without electricity access between now and 2030. Investment in green energy is necessary and should also include a focus on off-grid and small-scale energy solutions.
- Upgraded digital infrastructure and better e-government services can unlock Africa’s economic potential further, although more developed digital skills are necessary.
- Transparency and public governance are important elements to design successful infrastructure projects.
- Governments must strengthen domestic resource mobilisation while partnerships with public and private financial institutions can crowd in more investment.

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ABBREVIATIONS AND ACRONYMS

ADFD	Abu Dhabi Fund for Development
AFD	Agence Française de Développement (French development agency)
AfDB	African Development Bank
AFESD	Arab Fund for Economic and Social Development
AU	African Union
AUC	African Union Commission
BADEA	Arab Bank for Economic Development in Africa
B-BBEE	Broad-Based Black Economic Empowerment
BRIC	Brazil, Russian Federation, India, China
CAPP	Central Africa Power Pool
CFTA	Continental Free Trade Area
COMELEC	Comité Maghrébin de l'Electricité
EAC	East African Community
EAPP	Eastern Africa Power Pool
EIB	European Investment Bank
EMnet	Emerging Markets Network
FDI	Foreign direct investment
GCAP	Consultative Group to Assist the Poor
GDP	Gross domestic product
GHG	Global greenhouse gas
GW	Gigawatt
IATA	International Air Transport Association
ICA	Infrastructure Consortium for Africa
ICT	Information and communications technology
IDB	Islamic Development Bank
IEA	International Energy Agency
IFI	International financial institutions
ILO	International Labour Organisation
IMF	International Monetary Fund
ITF	International Transport Forum
KFAED	Kuwait Fund for Arab Economic Development
KfW	Kreditanstalt für Wiederaufbau (German development bank)
LAC	Latin America and the Caribbean
MDB	Multilateral development banks
MENA	Middle East and North Africa
MIGA	Multilateral Investment Guarantee Agency
MW	Megawatt

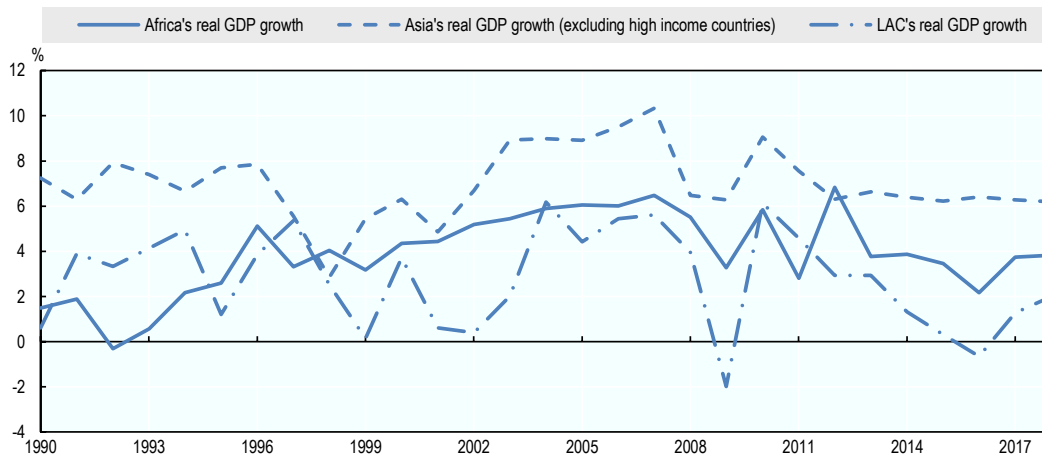
NDC	National determined contributions
NEPAD	New Partnership for Africa's Development
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
OFID	OPEC Fund for International Development
OPEC	Organization of the Petroleum Exporting Countries
PIDA	Programme for Infrastructure Development in Africa
PPI	Private participation in infrastructure
PPIAF	Public-Private Infrastructure Advisory Facility
PPP	Public-Private Partnerships
REC	Regional economic communities
RDB	Regional development bank
REIPPP	Renewable Energy Independent Power Producer Procurement
SAPP	Southern African Power Pool
SDGs	Sustainable Development Goals
SFD	Saudi Fund for Development
SME	Small and medium-sized enterprises
TTTFP	Tripartite Transport and Transit Facilitation Programme Eastern and Southern Africa
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department for Economic and Social Affairs
UNECA	United Nations Economic Commission for Africa
UNSD	United Nations Statistics Division
WAPP	West African Power Pool
WTO	World Trade Organization

AFRICA'S ECONOMIC AND BUSINESS OVERVIEW

Africa's economic growth continues, but volatility remains

Africa's real gross domestic product (GDP) is projected to grow at 3.9% for the period 2018-22, although volatility has increased (AUC/OECD, 2018). Figure 1 demonstrates the differences in real economic growth rates between Africa, Asia and Latin America and Caribbean (LAC). Between 2000 and 2008, Africa's economic growth rate was about 5.5% per year, significantly better than LAC, where growth stood at 3.6%, but lower than Emerging Asia's¹ average growth of 8.0% over the same period (IMF, 2018). Growth has been less stable since 2008. Initially, due to price shocks in commodities, net importer countries faced increases in oil and food prices. Then, the end of the commodity super-cycle has conversely affected net commodity exporters (AUC/OECD, 2018).

Figure 1. Real economic growth in Africa, Asia and LAC, 1990-2018



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

Growth volatility varies widely across the continent. Although resource-rich countries have had stronger terms of trade and have recorded an economic growth rate of 6% per year since 2000, thanks to high commodity prices, a high concentration of export earnings has led to unstable government revenues. This has deterred long-term investment and social spending (AUC/OECD, 2018). Between 2012 and 2016, a sharp reduction in commodity prices decreased domestic revenues in resource-rich countries by 44%. Since then, there has been more stable growth in non-resource-rich countries, averaging 4% per year since 2000 (IMF, 2018).

Demographic growth creating “demographic dividends”

Africa has the world’s fastest-growing population. With 1.26 billion people in 2018, it is expected to reach 1.7 billion by 2030 and 2.5 billion by 2050 (AfDB/OECD/UNDP, 2016). This implies that Africa’s share of the world population will reach 25% by 2050. The corresponding growth of the workforce could lead to “dividends” for African economies in two ways. Firstly, a rise in the working age population could boost economic growth by increasing the effective labour supply, improving the annual growth of GDP per capita by up to half a percentage point at constant output per worker. Secondly, a demographic dividend may arise from an increase in the activity ratio (i.e. increase in the proportion of the working age population aged 15-64 relative to the dependent-age population aged under 15 and over 65). This can lead to accumulating savings, investments in physical and human capital, and productivity gains (AUC/OECD, 2018). However, the extent to which demographic dividends materialise depends on the number and quality of jobs created in the economy and on the quality of education systems. Rapid population growth could also create high pressure on local environmental resources, if their consumption grows as rapidly as it has in more advanced economies (AfDB/OECD/UNDP, 2016).

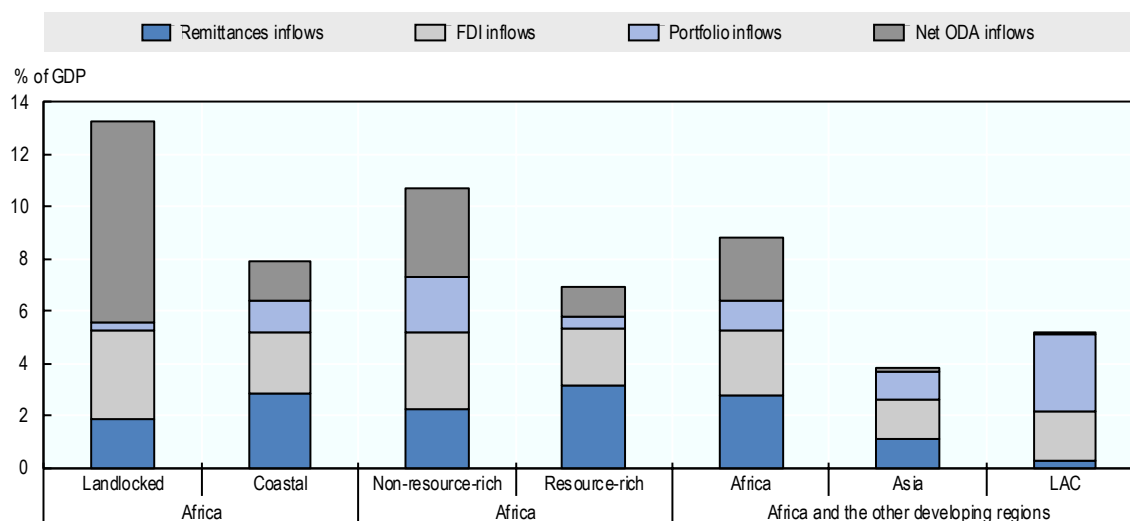
Rapid transition towards urbanisation

Rapid urbanisation brings opportunities to create new markets and improve productivity. By 2035, half of the African population will reside in urban areas (UNDESA, 2018). Foreign direct investment (FDI) to top African urban markets is also increasing. An estimated 83% of all jobs directly created by FDI between 2003 and 2014 were located in cities (AfDB/OECD/UNDP, 2016). However, the potential of rapid urbanisation is constrained by low employment outside informal sectors, spatial urban expansion without the benefits of densely populated areas, and urban poverty. Tackling these issues requires continually upgrading urban infrastructure, strengthening rural-urban linkages and managing related social and environmental challenges (AUC/OECD, 2018).

Remittances, official development assistance and FDI flows affect African economies differently

Africa has witnessed significant financial inflows over the last decade, and continues to prove itself as an attractive destination for FDI (AUC/OECD, 2018). Total financial inflows (remittances, FDI, portfolio inflows and net official development assistance (ODA) into Africa reached 8.8% of GDP between 2009 and 2016 (AUC/OECD, 2018). This is higher than the average for Asia (3.8%) and LAC (5.2%) (Figure 2). FDI inflows to Africa were forecasted to increase by 20% in 2018. Although Africa’s foreign trade is highly dependent on primary products, the 2018 African CFTA agreement can help build domestic capacity and support export diversification by strengthening intra-continental trade. The Economic Commission for Africa estimates that the removal of tariffs and non-tariff barriers among countries has the potential to boost intra-African trade by 52.3% by 2020 (UNCTAD, 2018a).

Figure 2. Total financial inflows as a percentage of GDP in Africa, Asia and LAC, 2009-16



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

Between 2009 and 2016, financial inflows into Africa relied much more on remittances and ODA than they did in other continents, accounting for 2.8% and 2.4% of Africa's GDP respectively (AUC/OECD, 2018). Remittances largely went into household consumption rather than private investment. Several countries face a high dependence on remittance flows as a proportion of GDP, including Liberia (27%) and Lesotho (18%). Although ODA has helped to reduce poverty in many heavily indebted countries, it can also play a key role in de-risking investment in productive assets and encouraging small and medium-sized enterprises (SMEs) to comply with international standards (AUC/OECD, 2018).

African firms increasingly engage in Africa-to-Africa investment

FDI outflows from Africa increased by 8% to USD 12 billion in 2017. This reflects primarily a significant increase in outward FDI by South African (up 64% to USD 7.4 billion) and Moroccan firms (up 66% to USD 960 million) (UNCTAD, 2018b). Several other African multinationals have expanded their footprints within the region. Some notable examples include South African firms expanding into Namibia (e.g. Standard Bank) and strategic investments and partnerships made by Ethiopian Airlines to revive struggling African airlines across the continent (UNCTAD, 2018b).

The CFTA agreement can support regional integration

The CFTA agreement is expected to strengthen intra-African trade. Currently, intra-continental merchandise exports account for less than 19% of total trade, in comparison to 63% in Europe (EU-28) and 58% in Emerging Asia (AUC/OECD, 2018). This low percentage is partly due to persisting high barriers to trade. For example, for capital, services and people, borders remain difficult to cross, and regulatory restrictions still hamper trade in services (AUC/OECD 2018). The state of hard infrastructure, such as roads, ports and transportation links, and soft infrastructure, such as warehousing and customs facilities, pose additional challenges (UNCTAD, 2014).

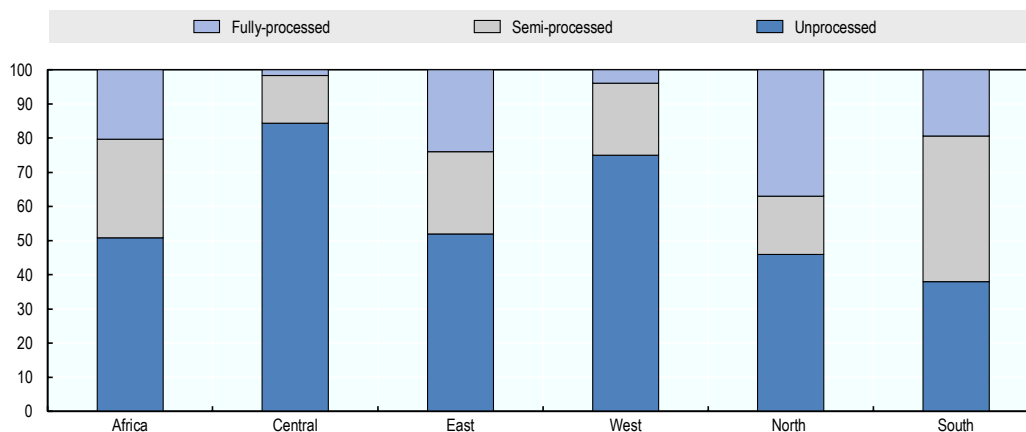
Forty-nine African countries have signed the CFTA agreement. This Free Trade Area will create a single market for trade in goods and services among the African countries (UNCTAD, 2018). The single market will be accompanied by co-operation on investment measures, intellectual property rights and competition policies, in order to support innovation, competitiveness, and trade diversification. It has been estimated that full liberalisation will lead to an expected 1-3% increase in GDP and a 33% increase in value of intra-African trade (UNCTAD, 2018c).

Africa's foreign trade is still highly dependent on primary products

Between 2000 and 2016, Africa tripled its trade with the rest of the world, from USD 276 billion to USD 806 billion, primarily through an expansion of trade with China and India. In 2016, trade with emerging economies accounted for 51% of Africa's exports and 46% of imports (UN, n.d.). However, increasing trade with emerging economies has not diversified the continent's export basket so far.

On average, African economies face low product diversification and a high dependency on export of unprocessed goods (Figure 3). Intermediate and capital goods represent 49% of Africa's imports; by contrast, the comparable figures are 55% in LAC and 64% in Emerging Asia (AUC/OECD, 2018). Falling commodity prices have led to large trade deficits and caused a current account deficit of 6% of GDP in 2016 (UNCTAD, 2017).

Figure 3. Export compositions in Africa, 2016



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

Vulnerable employment and declining productivity growth challenge Africa's economy

African countries have witnessed strong capital accumulation, a reduction in extreme poverty and some production transformation. However, the continent also faces rapid population growth and rising inequalities that call for further efforts to reduce poverty. At the same time, the proportion of vulnerable employment remains high and a lack of skills and infrastructure is hindering productivity growth.

Africa's proportion of vulnerable employment as own-account or family workers remains high and is likely to persist at 66% until 2022 (ILO, 2018). More than 282 million people are in vulnerable employment, and 30% of workers remain poor (AUC/OECD, 2018). Furthermore, Africa has the highest level of informal employment outside the agricultural sector, ranging from 34% of employed people in South Africa to 91% in Benin (ILO, 2018). Informal workers are highly vulnerable to economic shocks and often excluded from social protection systems. Because of rapid demographic and urban growth, youth unemployment has become a critical issue. In low-income African countries, only 17% of the working youth (7% of all youth) are full-time employees (AfDB et al., 2012).

Since 2000, labour has moved from less to more productive sectors of the economy. Furthermore, domestic consumption has increased, propelled by a surge in natural resource rents and remittances, while private investment and competition has helped expand activities with higher productivity levels. However, productivity gains from labour reallocation are now diminishing, as the most labour-absorbing sectors of the economies are experiencing a decline in their productivity. As a result, today African productivity lags behind Asia's in several sectors, including agriculture, transport, financial activities, construction and manufacturing (AUC/OECD, 2018).

INFRASTRUCTURE CHALLENGES IN AFRICA

The positive impact of physical infrastructure on economic prosperity and business is well recognised. Improved infrastructure services such as transport, electricity, telecommunications, sanitation and sewerage systems positively affect productivity and encourage more regional integration and trade. Africa has recently experienced substantial economic growth, with an average annual growth rate of 4.7% between 2000 and 2017 (AUC/OECD, 2018). Simulations suggest that improving Africa's infrastructure could boost GDP growth by an additional 2.2% a year (Foster and Briceño-Garmendia, 2010). Increased access to infrastructure can also facilitate more intra-regional trade, particularly following the signing of the African CFTA agreement in March 2018 (UNECA/AUC/AfDB, 2017). In 2015, intra-African trade represented 18% of total exports in Africa, a 10% increase since 1995, although still a relatively low figure by comparison with Asia and Europe. Intra-regional trade for these areas stands at 59% and 69% respectively (Sow, 2018).

Improving connectivity is also essential in order to enhance Africa's integration into regional and global value chains. Effective and efficient transport networks enable companies to reach out to regional and international markets at lower cost. In addition to faster delivery of goods through improved cross-border roads, railways, and international ports and airports, African countries could import raw materials and intermediate goods more cheaply and export manufactured products more competitively.

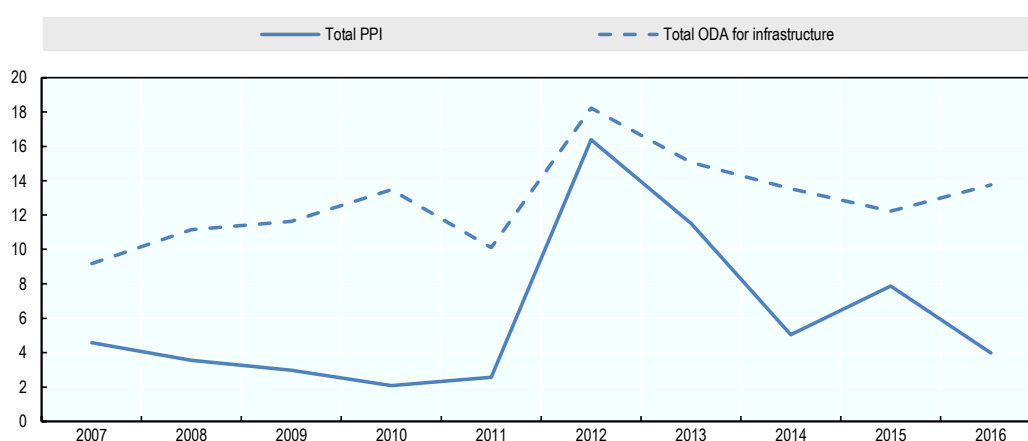
However, infrastructure gaps persist in Africa, and can have a major impact on regional competitiveness. The gaps are present across several sectors, imposing additional costs on businesses and reducing productivity. For example, the poor quality of road, railway and harbour infrastructure generates an additional 30% to 40% of costs for intra-Africa commodity trading (UN-Habitat, 2014). Today, goods travelling between Lagos (Nigeria) and Accra (Ghana) are frequently transported by sea, despite the land proximity between the two cities (OECD, 2018a). The port of Lomé in Togo, a small West-African country, has become the leading port in the West African region, while Lagos' port in Nigeria has lost 30% of its container traffic since 2015 due to abnormally high costs and notorious congestion (Dynamar, 2018). Shortages of power and water supplies and inadequate information and communications technology (ICT) infrastructure can reduce productivity by as much as 40% (AfDB, 2013). Nearly 5% of annual sales are lost due to electrical outages in sub-Saharan Africa; the cost of fuel for backup power generation was estimated to be at least USD 5 billion in 2012 (OECD/IEA, 2014). Moreover, poor transport infrastructure accounts for 40% of logistics costs in coastal countries and 60% in landlocked countries (UN-Habitat, 2014). Finally, beyond improvements in physical hard infrastructure, investments in soft infrastructure should not be overlooked. The harmonisation of transport procedures and regulations, the simplification of customs procedures, and the improvement of warehousing management could be important ways to reduce transit costs and further benefit connectivity and trade (OECD, 2018a).

Infrastructure financing trends in Africa

Africa is facing a challenge in securing finance to meet its infrastructure needs. Current estimates suggest that the continent's infrastructure investment needs will amount to USD 68-152 billion per year (roughly 3-7% of GDP) over the coming decades (EIB, 2018). These sums cover both the maintenance and replacement costs of the existing infrastructure stock, as well as the construction

of new assets. In addition, new needs are arising from rapid urbanisation (50% of Africans are expected to reside in urban areas by 2035), a growing population (doubling from 1.2 billion in 2019 to 2.5 billion by 2050) and economic growth, as well as the need to make infrastructure resilient to climate change (AUC/OECD, 2018). In order to fill this financing gap and to scale up infrastructure development, the continent must better involve the private sector (UNECA, 2017a). Despite their potential, private participation in infrastructure (PPI) projects have been limited so far (Figure 4).

Figure 4. Official development assistance (ODA) and PPI in Africa, 2007-16 (USD billion)



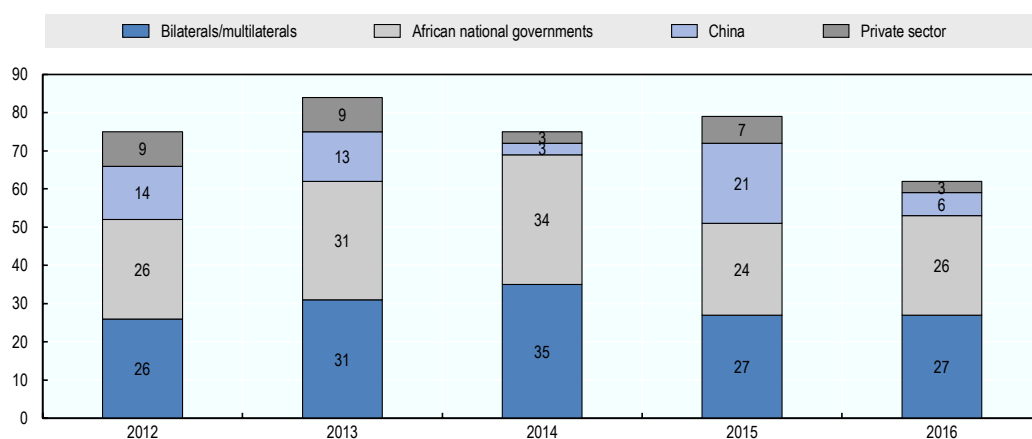
Note: PPI measures the investment in public infrastructure projects in which the private sector has at least a 20% participation.

Source: EIB. (2018), "Financing Infrastructure in Africa", in *Banking in Africa: Delivering on Financial Inclusion, Supporting Financial Stability*,

https://www.eib.org/attachments/efs/economic_report_banking_africa_2018_en.pdf.

The overall annual commitments to infrastructure financing in Africa have fluctuated from USD 75 billion in 2012 to USD 62.5 billion in 2016, with 2013 recording the highest figure at USD 84 billion. The recent decline is due to a reduction of reported funding from China and a drop of private sector investments. Governments serve as the main source of infrastructure finance. In 2016, African national governments represented 42% of total infrastructure financing (more than USD 26 billion), while private investment commitments reached USD 2.6 billion, representing only 4% of the total (Figure 5).

Figure 5. Infrastructure commitment trends in Africa by source*, 2012-16 (USD billion)



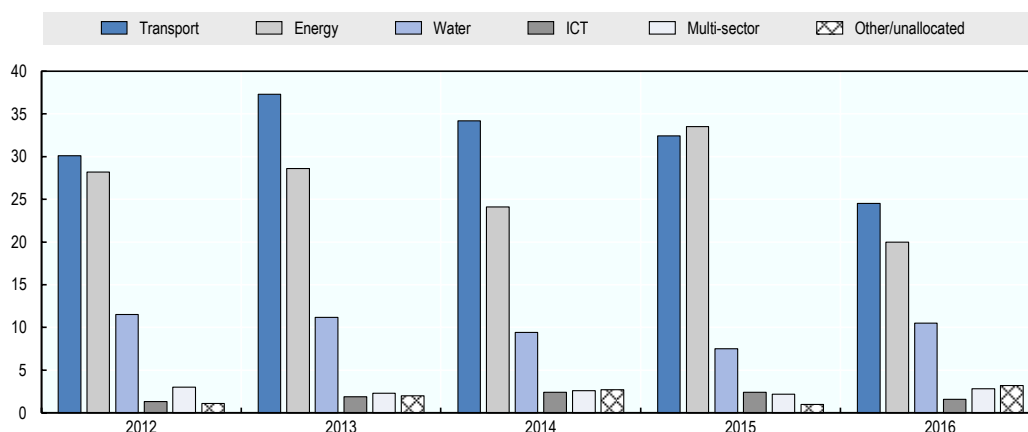
* Bilateral and multilaterals include contributions from BRIC (Brazil, Russian Federation, India, China), regional development banks (RDBs), G20, the World Bank, the African Development Bank (AfDB), the European Commission, the European Investment Bank (EIB), the Development Bank of Southern Africa, the Arab Fund for Economic and Social Development (AFESD), the Islamic Development Bank (IsDB), the Kuwait Fund for Arab Economic Development (KFAED), the Abu Dhabi Fund for Development (ADFD), the OPEC Fund for International Development (OFID), the Arab Bank for Economic Development in Africa (BADEA) and the Saudi Fund for Development (SFD).

Source: EIB (2018), "Financing Infrastructure in Africa", in *Banking in Africa: Delivering on Financial Inclusion, Supporting Financial Stability*,

https://www.eib.org/attachments/efs/economic_report_banking_africa_2018_en.pdf.

The sectors with the largest proportion of financial commitments are transport and energy; these sectors captured 43% and 36% of total commitments respectively between 2012 and 2016. On the other hand, the proportion of infrastructure investments in water and ICT remains relatively low. These sectors drew in an average annual share of 14% and 2.6% respectively during the same period (Figure 6).

Figure 6. Infrastructure investments in Africa by sector, 2012-16 (USD billion)



Source: ICA (2017), *Infrastructure Financing Trends in Africa – 2016*, https://www.icafrica.org/fileadmin/docu-ments/IFT_2016/Infrastructure_Financing_Trends_2016.pdf.

Between 2012 and 2016, East Africa received an average of USD 16.8 billion in annual infrastructure financing, followed by West Africa (USD 15.8 billion) and North Africa (USD 14 billion). The relatively large volume of investments in East Africa was the result of increased public investments by Ethiopia, Kenya, Mauritius and Rwanda, mainly in transport and energy projects (EIB, 2018).

Challenges to attracting private investment for infrastructure

Africa needs to reduce its infrastructure deficits and attract more private investments in order to realise its full economic potential. Countries must address key constraints to investments, such as insufficient regulatory frameworks, limited public sector capacity to deal with large infrastructure projects and inefficient financial markets (EIB, 2018).

Fostering a stable business environment must be a priority in order to attract long-term investment. African countries should address the policy and regulatory obstacles that are hindering private investment in infrastructure, such as regulatory uncertainties, bureaucracy and bribery (AUC/OECD, 2018). Stable and transparent regulatory frameworks encourage long-term planning and investment decisions. OECD estimates have shown that 10-30% of investments in publicly funded construction projects may be lost because of mismanagement and bribery (OECD, 2015a). Furthermore, regional initiatives to harmonise policies, laws and regulations have the potential to facilitate cross-border infrastructure development. For example, the Programme for Infrastructure Development in Africa (PIDA), developed by the African Union (AU), the United Nations Economic Commission for Africa (UNECA) and other partners, aims to harmonise the cross-border rules, regulations, laws and policies governing cross-border infrastructure projects (UNECA, 2017b).

Firms have already highlighted at EMnet meetings how limited public sector capacity to manage large infrastructure projects and poor co-ordination across levels of government can be important

barriers to the involvement of the private sector (OECD, 2017). Successful initiatives require not only co-ordination and shared responsibility between central and local governments, but also adequate capacity to design, prepare and implement bankable projects (OECD, 2015a).

Africa's financial markets serve as a barrier to resource mobilisation, as some local banks are not able to collect funds needed for long-term infrastructure investment. In particular, loans with long maturities are rare, interest rates can be excessively high, and infrastructure-related bonds are rarely issued (EIB, 2018). Considering these limitations, risk mitigation instruments can help mobilise additional private capital, such as for example the guarantees issued by the Multilateral Investment Guarantee Agency (MIGA), which is part of the World Bank Group.

Promoting quality infrastructure

While addressing major constraints to infrastructure development is important, promoting quality infrastructure is also necessary. Quality infrastructure has become a central subject in global discussions following the adoption of the Ise-Shima Principles for Promoting Quality Infrastructure Investment (Box 1) under the Japanese presidency of the G7 in 2016 (OECD, 2018a).

These principles emphasise the need to develop sustainable and socially inclusive infrastructure that takes into account its social and environmental impact and follows economic and social development strategies. Quality infrastructure investments should provide a reliable supply of basic services while promoting safety, job creation and transfer of expertise to local communities, and avoiding competitive advantages based on compromised labour or environmental practices. Further G20 summits have affirmed these essential elements and have added open access, transparency and responsible financing as important elements to quality infrastructure.

Box 1. G7 Ise-Shima Principles for Promoting Quality Infrastructure Investment

“Reaffirming the crucial importance for stakeholders to work coherently to bridge the existing global demand-supply gap of infrastructure investment by promoting quality infrastructure investment so as to promote strong, sustainable and balanced growth and to enhance resilience in our society, as well as to contribute to the global efforts for the SDGs [Sustainable Development Goals], we strive to align our own infrastructure investment with the following principles. We further encourage the relevant stakeholders, namely governments, international organizations, including multilateral development banks (MDBs), and the private sector, such as in PPP [Public-Private Partnerships] projects to align their infrastructure investment and assistance with these principles, including the introduction and promotion of a transparent, competitive procurement process that takes full account of value for money and quality of infrastructure.

Principle 1: Ensuring effective governance, reliable operation and economic efficiency in view of life-cycle cost as well as safety and resilience against natural disaster, terrorism and cyber-attack risks

Quality infrastructure investment should ensure effective governance, economic efficiency, sustainability and reliable operation during the life span of a project as well as safety and resilience against natural disaster, terrorism and cyber-attack risks.

Principle 2: Ensuring job creation, capacity building and transfer of expertise and know-how for local communities

Quality infrastructure investment should seek to contribute to job creation for local work forces and to transfer of expertise and know-how to local communities.

Principle 3: Addressing social and environmental impacts

Quality infrastructure investment must consider the social and environmental impacts of infrastructure projects and duly address such impacts including by applying social and environmental safeguards that are in line with international best practices as reflected in the most relevant standards including those of existing MDBs.

Principle 4: Ensuring alignment with economic and development strategies including aspect of climate change and environment at the national and regional levels

Quality infrastructure investment should be aligned with economic and development strategies at the national and regional levels, through dialogues with stakeholders from the project preparation and prioritization phases. Relevant elements of economic and development strategies to be considered include the development of a global supply chain through enhanced connectivity; use of latest technology such as information and communication technology; promotion of private investment and attraction of new industries; medium and long-term plans based on a long-term and cross-sector demand forecast and other relevant information; and debt sustainability and fiscal outlook. Climate change resilience, energy security and sustainability, conservation of biodiversity, [and] disaster risk reduction should be considered including through further promotion of ecosystem-based approaches and green infrastructure.

Principle 5: Enhancing effective resource mobilisation including through PPP

Quality infrastructure investment should effectively mobilize resources including from the private sector through PPP and other forms of innovative financing, including through MDBs. To this end, joint efforts among stakeholders including host country governments to strengthen the enabling investment environment at national and sub-national government levels, as well as to enhance due process and transparency are essential.”

Source: Japan Ministry of Foreign Affairs (n.d.), G7 Ise-Shima Principles for Promoting Quality Infrastructure Investment, <https://www.mofa.go.jp/files/000196472.pdf>.

BUSINESS INSIGHTS ON INFRASTRUCTURE AND REGIONAL CONNECTIVITY

Regional integration is crucial to sustainable and inclusive growth in Africa. Countries are increasing their efforts to create a single continental market for goods and services. Through the African CFTA agreement, governments have committed to remove 90% of tariffs on goods and to promote the free movement of people (see Box 2). Participants at the EMnet meeting agreed that improved infrastructure can facilitate the regional integration process and generate new opportunities for trade and investment. However, firms also confirmed that persisting infrastructure bottlenecks risk undermining current integration efforts. Estimates have put the costs of upgrading Africa's infrastructure at around USD 100 billion per year (AfDB, 2013a), two-thirds of which is required to build new infrastructure and the rest for maintenance activities. Recent capital expenditure only stood at about USD 25 billion per year (AfDB, 2013a).

This section features insights from the EMnet Africa meeting that was held in Paris on 30 October 2018 and explores where the private sector sees opportunities and challenges for infrastructure investment in Africa. It highlights policy reforms and recommendations that the private sector considers important to unlock further private investment.

Box 2. The African Continental Free Trade Area

On 21 March 2018, the heads of 44 African countries met in Kigali, Rwanda, and signed the African CFTA agreement, one of the world's largest free trade agreements. The new African CFTA offers a stepping-stone for Africa's RECs to boost regional integration.

The agreement is to be signed by all 55 members of the African Union, thus uniting 1.2 billion people with a combined GDP of more than USD 2 trillion. As of early 2019, 49 countries have signed the agreement, while the ratification process is ongoing in a number of countries. The agreement enters into force once 22 countries have deposited their instruments of ratification. The African CFTA will be the largest free trade area in number of countries since the formation of the World Trade Organization (WTO).

The agreement will result in the tariffs for 90% of goods being reduced to zero, down from an average of 6.1%. According to the UNECA, the African CFTA has the potential to boost intra-African trade by 52% by 2022, by comparison with figures for 2010.

The African CFTA aims to achieve four main objectives:

- Create a single continental market for goods and services, with free movement of business people and investments, and thus accelerate the establishment of the Continental Customs Union and the African Customs Union
- Expand intra-African trade through better harmonisation and co-ordination of trade liberalisation and facilitation regimes and instruments across RECs and Africa in general
- Resolve the challenges of multiple and overlapping memberships, and expedite the regional and continental integration processes
- Enhance competitiveness at the industry and enterprise levels by exploiting opportunities for scale production, continental market access and better reallocation of resources.

Sources:

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

UNECA (2018a), "African Continental Free Trade Area – Questions & Answers", https://www.uneca.org/sites/default/files/PublicationFiles/qa_cfta_en_230418.pdf.

Businesses and governments should open a dialogue to promote quality infrastructure

Quality infrastructure promotes strong, sustainable and balanced growth while addressing social and environmental concerns, including access to basic services. The private sector is willing to share its expertise and work with governments to design and develop plans for quality infrastructure in Africa.

During the EMnet discussions, companies highlighted the important role that firms can play in ensuring economic and social sustainability through quality infrastructure projects. Job creation, capacity building and transfer of expertise are all key elements of the principles of quality infrastructure (OECD, 2018a). French multinational SUEZ has built more than 500 drinking water and sanitation plants in Africa to serve a fast-growing population. In Egypt, SUEZ and its local partner (ArabCo) have aided the city of Alexandria in rehabilitating and extending a major treatment plant by applying new technologies for biological wastewater treatment (SUEZ, 2018). In Uganda, the company is applying new technologies adapted for the treatment of Lake Victoria's water in order to provide Kampala citizens with drinking water (SUEZ, 2018). Similarly, Veolia is building a wastewater treatment plant in South Africa, which recycles all of its wastewater and reduces the consumption of potable water by recycling wash water (Frankson, 2018). Siemens Gamesa, a leading company in the wind industry, which has built more than 2.9 GW² of wind projects in Africa and 90GW globally, opened the first blade manufacturing facility in the Middle East and Africa region in Tangier, Morocco, in 2017. The facility, which supports more than 600 direct local jobs and 500 auxiliary positions, can help Morocco's national renewables programme, which aims to produce up to 52% of clean electricity by 2030 (with 20% coming from wind energy). In addition to providing high-skilled jobs, the facility can serve markets in the rest of Africa, Europe and the Middle East (Siemens Gamesa, 2017).

Ensuring job creation and transfer of expertise to local communities is essential

Strong linkages between foreign multinationals and the local economy are critically important for the creation of more quality jobs, and the promotion of better knowledge and technology transfers (AUC/OECD, 2018). Companies attending the EMnet meeting stressed the importance of creating a local ecosystem by hiring local staff in charge of the design, construction, operation and maintenance of the infrastructure projects. French multinational electric utility company ENGIE, for instance, has set a goal to recruit locally in Africa, and this mission has been applied to its infrastructure projects (ENGIE, n.d.). For the Dedisa thermal power plant project in South Africa, for example, ENGIE hired 1 500 local workers and created 1 000 indirect jobs in a region highly affected by unemployment (ENGIE, 2016).

EMnet meeting participants also highlighted that localising the labour force from the early stages of a project is essential, as it results in more highly trained and skilled people available to operate and maintain the infrastructure once construction is finished. In South Africa, multinationals such as Veolia have set up partnerships with local firms in line with the country's Broad-Based Black Economic Empowerment (B-BBEE) regulations in order to share economic benefits with the wider community (Veolia, 2017).

However, the hiring of more local employees alone does not always result in a transfer of expertise to local communities. Positive spill-over effects are also generated when on-the-job training helps local employees to improve their skills (AUC/OECD, 2018). For example, Huawei Technologies has established training centres for its employees, partners and customers in several African countries.³ The centres offer training on telecommunications engineering, project management, and “soft skills” such as communication and team work (Tsui, 2016). SUEZ is another example of a company transferring expertise and know-how to local communities. In addition to supplying drinking water via a project in the Niger Delta, Nigeria, the company provides training and assistance on water management to local associations of users (SUEZ, 2018). By 2017, Siemens Gamesa had devoted 366 000 hours of employee training to Moroccans, both in-house in Tangier and at other locations, in a major effort to boost the skills of its employees (Siemens Gamesa, 2017).⁴

Involving all relevant stakeholders at the onset of the project is important

Businesses attending the EMnet meeting emphasised that the success of infrastructure projects relies on project structuring. At the onset of the project, all relevant stakeholders need to be consulted on costs and benefits, and the outcomes of the consultations should be incorporated into the planning and implementation phases. Companies stressed that their early and broad involvement was important for later success. For example, contractual specifications and distribution of responsibilities regarding how to implement the project are indispensable in preventing potential future conflicts (Spiess and Felding, 2008).

OECD analysis on stakeholder engagement in water infrastructure projects demonstrates that stakeholders’ participation may help increase economic and social benefits (OECD, 2015b). For example, the benefits of stakeholder engagement include stronger acceptance of the project and a greater sense of ownership. Although the costs of involving all relevant stakeholders from the early stages of a project should not be underestimated, the benefits that may arise in the long term should be considered of greater impact (OECD, 2015b).

Sustainable projects should take debt servicing capacity into account

EMnet meeting participants highlighted that African countries need to undertake infrastructure development spending without jeopardising debt sustainability. Debt vulnerability increases the exposure of countries’ budgets to external shocks, such as the availability of liquidity in international markets, interest rate volatility, and currency fluctuations (AUC/OECD, 2018). The issue of over-indebtedness can also be problematic at the subnational level – for example, when a province or municipality is the contractor for a major infrastructure project. The OECD has provided guidelines on public investments across levels of government, including that co-financing with the private sector should always be tailored to the constraints of the subnational governments. In OECD member countries, subnational governments undertook 72% of all public investments on average in 2012 (OECD, 2013a).

Businesses stress the importance of enhancing transparency

Companies participating in the EMnet Africa meeting pointed out that African governments should benefit from international experience and good practices for enhancing transparency and fostering efficiency in infrastructure development projects. There is indeed evidence that corruption is concentrated in sectors with large spending on infrastructure (Sobják, 2018). According to the *OECD Foreign Bribery Report: An Analysis of the Crime of Bribery of Foreign Public Officials*, two-thirds of foreign bribery cases occurred in four sectors highly related to infrastructure: extractives (19%), construction (15%), transport and storage (15%), and information and communication technologies (10%) (OECD, 2014a). In a joint report, the OECD and the African Development Bank estimated that USD 148 billion is lost to corruption every year (AfDB/OECD, 2016).

The OECD's *Integrity Framework for Public Investment* provides further guidance and good practices by identifying corruption entry points over the entire investment cycle. The framework identifies tools and mechanisms to promote integrity, including measures on ethical standards, conflicts of interest, monitoring and evaluation systems, and transparency (OECD, 2016b).

Strengthening public governance and regulations

Strengthening public governance and regulations for infrastructure projects can boost public investment and avoid delays, extra spending and quality issues (OECD, 2015a). Business representatives emphasised that investment depends on trust and on the assessment of the overall business risk. In this respect, adequate design, preparation and implementation are vital in order to generate the interest of private investors. Companies also stressed that the rules of tenders need to be clear and accessible. Identifying public sector capacity to manage infrastructure projects and provide support is critically important for enhancing investments. In this regard, the OECD report *Towards a Framework for the Governance of Infrastructure* highlights a number of challenges and solutions to infrastructure policy making in order to help governments better manage these projects (OECD, 2015a).

EMnet meeting participants also stressed that simple and stable policy and regulatory frameworks enhance predictability and visibility, helping long-term investment decisions. Companies highlighted that establishing regulations as well as incentives for enhancing infrastructure are critical, specifically for project preparation, procurement and contract management (PPIAF, 2018). The adoption and implementation of regional initiatives to harmonise policies, laws and regulations across the continent can help overcome regulatory hurdles for cross-border infrastructure. A relevant example is the Tripartite Transport and Transit Facilitation Programme Eastern and Southern Africa (TTTFP), which aims to develop and implement harmonised road transport policies, laws, regulations and standards for efficient cross-border road transport in the eastern and southern African regions (EAC, 2017). Several governments have also implemented clear programmes to attract investment from independent power producers, for example in Egypt (Infinity Solar) through its new feed-in tariff (Climatescope, n.d.) or in South Africa through the Renewable Energy Independent Power Producer Procurement (REIPPP) Programme (South Africa Department of Energy, n.d.).

Developing financial markets is key for resource mobilisation

At the EMnet meeting, companies stressed that underdeveloped financial markets limit resource mobilisation for infrastructure projects. Africa's capital markets remain relatively small and illiquid, which limits the ability of countries to attract and efficiently direct domestic and foreign investments (NEPAD/OECD, 2009). Furthermore, companies indicated that the banking sector in Africa does not cater to the long-term needs of infrastructure investments, as many bank loans are offered with short maturities and high interest rates (AfDB/OECD/UNDP, 2017). According to a World Bank cross-country analysis, 20-year loans were available in only 6 of 24 African countries surveyed. In three of those six countries, the loan interest rate was above 20% (EIB, 2018).

Risk mitigation instruments, convertible bonds and guarantee schemes are some examples of ways to enhance investor confidence in local capital markets (NEPAD/OECD, 2009). Furthermore, strengthening domestic resource mobilisation through increased tax compliance and efficient tax administration systems can help governments raise additional finance for infrastructure projects (EIB, 2018).

PPPs as an instrument to upgrade infrastructure

PPPs are long-term contractual arrangements between the government and the private sector whereby the latter delivers and funds public services using a capital asset, sharing the associated risks (OECD, 2012). EMnet meeting participants stressed that the effective alignment between public objectives and profitability for the private sector is key for the success of PPP projects. In addition, the capability of the government to prepare, procure and manage such projects is a prerequisite to secure the expected efficiency gains (World Bank, 2018). Discussions during the EMnet meeting focused on identifying the most important determinants of efficient PPPs in infrastructure projects in Africa.

PPPs can be an effective financing mechanism

Companies participating in the EMnet meeting agreed that well-designed PPPs can bring greater efficiency and sustainability to infrastructure projects. To further that goal, companies recommended that governments open specific PPP offices within relevant government departments. OECD analysis confirms that by harnessing the private sector's expertise, PPPs can sometimes provide a service in a more efficient manner than can be achieved from other forms of procurement (OECD, 2012). Additionally, in return for reasonable financial compensation, a PPP is a well-balanced instrument for complex projects and is ideal for governments wishing to devote resources to other projects and to allocate risks to the partners best suited to manage them (Groupe ADP, 2018). The PPP model used in the Madagascar Airport concession provides a good example of how PPPs can be an effective financing mechanism (Box 3).

Box 3. Madagascar Airport PPP Case Study

The Madagascar Airport concession is a PPP between a consortium that includes Aéroports de Paris International, the French construction company Bouygues, and the government of Madagascar. The partnership involves a 28-year concession to operate the Antananarivo and Nosy Be airports in Madagascar. The project, which reached financial closure in 2017, was designed at zero cost and zero debt for the public finances of Madagascar, as all costs were borne by the consortium. The project revenues were in euros, funded from the fees paid by passengers travelling from abroad, rather than in the local Malagasy currency (ariary). This arrangement significantly reduced the exchange rate risk, particularly during a time of volatility for the domestic currency (World Bank, 2015).

Sources:

Groupe ADP (2017), "Success stories in Africa, ongoing projects in Africa, focus on the Madagascar case", presentation at the Accra, Africa Air Show, 2017.

Paris Airport (2017), "Ravinala Airports, the concession company for the Antananarivo and Nosy Be airports in Madagascar, formed by Groupe ADP, Bouygues Bâtiment International, Colas and Meridiam Africa, finalises its funding arrangements and begins work", press release, <https://www.parisaeroport.fr/docs/default-source/groupe-fichiers/presse/cp-juillet-septembre-2017/pr-05072017-funding-arrangements-madagascar-airports.pdf?sfvrsn=2>.

Morocco's largest solar power station, located in Ouarzazate (Box 4), is considered a good example of a successful PPP model and illustrates how to engage key stakeholders for the success of the initiative (Falconer and Frisari, 2012).

However, PPPs are not always the best solution for infrastructure development projects. EMnet meeting participants stressed that the selection of PPP projects should be based on securing value for money, which means the optimal combination of quality, features and price, calculated over the entire project cycle (OECD, 2012). OECD PPP guidelines recommend conducting a prudent investigation into which investment method is likely to yield the most value for money. In addition, the government should ensure that there is sufficient competition in the market when a tender process is launched (OECD, 2012). Successful PPPs require careful public involvement and expertise in addition to strong government leadership (AUC/OECD, 2018). Furthermore, the expected gains from PPPs can only be realised when local authorities possess adequate skills to properly manage this particular projects. Otherwise, the PPP financing model could eventually become a costly option (OECD, 2017).

Box 4. Solar power in Morocco

Morocco has shown strong, diversified FDI inflows, contrasting with the wider trend in North Africa (UNCTAD, 2018b). While carmakers have been attracted by Morocco's special economic zones, tax incentives and easy access to Europe, its natural resource potential has also been receiving large amounts of investment.

The Ouarzazate (Noor) Solar Power Station, once fully constructed and commissioned, will provide 580 MW⁵ of green electricity to a country that, just a few years before, used imported fossil fuels for 98% of its energy needs. With electricity demand growing at 7% per year since 2003, the government proposed an increase in the proportion of renewables to 42% of the total energy mix by 2020 by promoting green energy as a way to establish energy security and environmental sustainability.

The Noor 1 plant has been operational since 2016, providing 160 MW of electricity. The first phase was funded by the AfDB (EUR 500 million), while the overall investment in phase two (USD 2 billion) was made possible with funds from the AfDB, AFD, EC, EIB, KfW and the World Bank. Chinese companies are currently constructing Noor 2 and 3 in what is to be the largest solar park in the world.

Other recent investments in Morocco's renewable energy sector include the French company Voltaia's plans to build two hydropower plants. A consortium including the Moroccan company Nareva, the Italian utility Enel Green Power and Siemens Gamesa completed the first 200MW wind farm of a 850MW wind programme, representing USD 1.2 billion of investments. Furthermore, Sumitomo of Japan and ACWA Power International from Saudi Arabia are also developing solar plant in Morocco.

Sources:

European Commission (2019), "Noor III: Tower plant of the Ouarzazate Solar Complex", https://ec.europa.eu/europeaid/blending/noor-iii-tower-plant-ouarzazate-solar-complex_en.

Klassa, A. (2018), Morocco positions itself as more independent FDI portal to Africa, <https://www.ft.com/content/28187230-f970-11e8-a154-2b65ddf314e9>.

UNCTAD (2018b), World Investment Report 2018: Investment and New Industrial Policies, http://unctad.org/en/PublicationsLibrary/wir2018_en.pdf.

World Bank (2014), "Expansion of Morocco's largest solar complex to provide 1.1 million Moroccans with clean energy", press release, <http://www.worldbank.org/en/news/press-release/2014/09/30/expansion-morocco-solar-complex-clean-energy>.

Partnership with multilateral development banks can crowd in more investment

Multilateral development banks (MDBs) play a key role in infrastructure financing in Africa, by providing de-risking elements and bridging the finance gap. Estimates show that multilateral and bilateral debt was used in 6 out of 23 PPI projects in sub-Saharan Africa in 2015, providing USD 363 million in loans to projects worth USD 3.2 billion in total (PPI Projects Database, 2015). MDBs have also taken a number of initiatives – such as the Public-Private Infrastructure Advisory Facility (PPIAF) – to support infrastructure investments in Africa beyond financing (EIB, 2018). Programmes such as the World Bank's Scaling Solar programme (IFC, 2019) or the European Union's External Investment Programme (EC, 2018) further unlock private investments in Africa through expertise, finance, guarantees and policy dialogue.

EMnet participants highlighted that the expertise and investment flexibility of MDBs in infrastructure projects can be very important in order to crowd in more investment from institutional investors (including insurance companies, pension funds, and sovereign wealth funds). MDBs can also provide technical support to increase the quality and impact of projects and to make them bankable and attractive for the private sector (EIB, 2018).

Enhance regional transportation networks to better integrate global value chains

Firms attending the EMnet meeting agreed that regional transportation links can provide opportunities to diversify exports and develop business internationally. Strengthening value chains by deepening connectivity is particularly important in a context of rising domestic demand, where Africa's population is growing fast, a new middle class is emerging, and the demand for food is projected to triple by 2030 (AUC/OECD, 2018).

More investment is required in physical and soft transport infrastructure

Investment to enhance transportation connectivity is necessary in order to improve Africa's integration in regional and global value chains. However, according to the EMnet meeting participants, a number of issues remain. For instance, despite some progress, transport infrastructure for intra-African trade is still less developed than Africa's links with the rest of the world (AfDB/OECD/UNDP, 2017). In many regional communities, tariffs have been significantly lowered, but the time and cost of moving goods across borders remain high (AfDB/OECD/UNDP, 2017). For instance, in 2012, shipping a 20-foot container by sea from China to Mombasa, Kenya, cost approximately USD 2 000, whereas transporting the same container from Mombasa to Kigali, Rwanda, cost twice as much (Sebuny, 2015).

Roads remain the main mode of transport, carrying 90% of passengers and 80% of goods, although approximately 50% of the roads in Africa remain unpaved (OECD, 2018a). Major transport corridors such as the Maputo Development Corridor linking South Africa to Mozambique and the electric rail linking Djibouti and Ethiopia, which opened in 2016, provide exemplary cases that can be replicated in other contexts (AfDB/OECD/UNDP, 2017).

In addition to improvements in physical infrastructure, participants of the EMnet meeting stressed the importance of the soft aspect of transportation systems. Inefficiencies remain, due to complex transit regulations and extensive delays in obtaining documentation at borders (Sebuny, 2015). The harmonisation of transport procedures and regulations and the improvement of customs clearance and warehousing are all elements that can reduce transit costs, increase cross-border trade and boost business productivity (OECD, 2018a).

Air connectivity has great potential

EMnet meeting participants also stressed that the need to improve transport infrastructure can become an opportunity. Discussions centred on sectors with great potential for investment in Africa. According to the International Air Transport Association (IATA), Africa is set to become one of the fastest-growing aviation regions in the next 20 years, with an annual expansion rate of nearly 5%. A regional initiative, the Single African Air Transport Market, is set to open Africa's skies and facilitate improving intra-African air connectivity (EI-Houry, 2018).

Further liberalisation of visa regimes can boost the aviation sector and the wider economy. Already, the African Union and individual countries are taking important steps in the right direction (AU, 2018). The *Africa Visa Openness Report*, a joint publication by the African Union and the African Development Bank, shows that Africans do not need a visa to travel to 25% of other African countries (up from 22% in 2017) (AfDB/AU, 2018). Furthermore, they can obtain visas on arrival in 24% of other African countries and need visas to travel to 51% of other countries in the continent.

The African Union and the African Development Bank recommend further improvements in air connectivity, for example by promoting visa-free regional blocs, multi-year visas, visa-on-arrival schemes and e-visas (AU, 2018). As well as boosting the aviation sector, increased connectivity also yields benefits to the wider economy. The authors of a study undertaken in 2017 calculated that liberalisation in South Africa alone could create 15 000 new jobs and generate USD 284 million in additional GDP (Kacou and El-Houry, 2017).

Proper pricing for transport infrastructure is necessary

The importance of flexibility from governments regarding the pricing of transport infrastructure was identified as a key component of a successful infrastructure project. EMnet participants stressed how price differentiation could be an important element in the concession agreement, introducing a fixed fee for small vehicles but a higher fee for SUVs or trucks.

Apart from flexibility, the companies also suggested the need for more clarity upfront about the cost structures for infrastructure projects. In order to lower business risks and uncertainties for the private sector, the International Transport Forum has stressed the importance of including some elements on the pricing model already in the planning phase of the project (ITF, 2017b).

Clean and renewable energy infrastructure to build Africa's sustainable future

The private sector considers green energy infrastructure to be a sector that will generate important investment opportunities, given the expected growth in electricity demand, coupled with Africa's vast renewable energy potential and the current limited power supply. EMnet discussions addressed the role that governments can play in scaling up investment in green infrastructure. In sub-Saharan Africa, only 43% of the population has access to electricity (IEA, 2018). Roughly, 600 million sub-Saharan Africans remain without access to energy, a number that is set to remain stable this decade due to population growth and in spite of recent electrification efforts (OECD/IEA, 2014). Eighty percent of those without access to electricity are located in the rural areas.

Africa must diversify its energy mix

Given that energy demand in Africa is projected to triple by 2030 (IRENA, 2015), countries in the region are confronted with the challenge of finding new sources of energy. Currently, Africa heavily relies on a mix of biomass and fossil fuels. While biomass accounts for approximately half of the continent's total primary energy supply, coal and natural gas account for about 14% each, and oil accounts for approximately 22%. Hydropower represents about 1% of the total primary energy supply in Africa (IRENA, 2015). By 2018, 49 out of 54 African countries had ratified their National

determined contributions (NDCs) as part of the Paris Agreement. Although the continent produces less than 4% of total global greenhouse gas (GHG) emissions, it has much to contribute to the achievement of the long-term goal on climate mitigation.

Africa could turn the need to increase the electricity supply into an opportunity by building a more resilient, green and sustainable power sector. EMnet participants confirmed that there is an important untapped opportunity for investment in renewable energy. Many African countries have abundant solar resources, while central and southern regions have more biomass and hydropower potential. Wind energy resources are of the highest quality in the northern, eastern and southern regions, while geothermal energy is mainly concentrated along the East African Rift Valley (OECD/IEA, 2014). Studies also show that the continent could potentially meet nearly one-quarter of its energy needs by 2030 through indigenous sources of clean and renewable energy (IRENA, 2015). The International Renewable Energy Agency's (IRENA's) *Africa 2030: Roadmap for a Renewable Energy Future* estimates a 100 GW potential for both hydro and wind energy, and another 90 GW for solar energy (IRENA, 2015). The use of modern renewable energy technologies is on the rise across Africa, where countries are uniquely positioned to leapfrog the traditional centralised energy supply model (IRENA, 2015).

African countries have to attract more investment and harness their own plentiful renewable energy sources. Estimates show that the continent will require USD 70 billion per year for the power sector between 2015 and 2030 in order to keep pace with rising energy demand. This can be split into USD 45 billion annually for generation capacity and USD 25 billion for transmission and distribution. Renewable energy sources could account for two-thirds of total investments in generation capacity – or up to USD 32 billion per year (Table 1).

Table 1. Cumulative investment needs in the power sector in Africa, 2015-30 (USD billion)

Region	All generation	Large hydro	Other renewables	Transmission and distribution
North Africa	342	2	218	186
West Africa	89	36	31	52
Central Africa	32	13	17	14
East Africa	72	36	21	49
Southern Africa	145	18	94	74
Total	681	106	381	375

Note: Totals may vary due to rounding estimates.

Source: IRENA (2015), *Africa 2030: Roadmap for a Renewable Energy Future*, https://www.irena.org/DocumentDownloads/Publications/IRENA_Africa_2030_REmap_2015_low-res.pdf.

Small-scale solutions for renewable energy production are becoming more popular

EMnet participants emphasised that along with meeting energy needs in a cost-effective and environmentally sustainable manner, the deployment of renewable energy technologies can promote inclusive economic and social development. The benefit comes from renewable energy technologies' characteristics that allow them to be deployed locally both at small and large scale, which in turn opens up new forms of financing and productive uses, and broadens electricity access that can run independently from central control. This is particularly the case for rural and dispersed communities not served by the main electricity grid (IRENA, 2015).

Some African countries have started to reap the benefits of proven technologies, including mini- and off-grid energy solutions combined with battery storage systems. For instance, the use of wind for off-grid applications for water pumps in the agricultural sector is widespread in southern Africa, where more than 300 000 units are in operation (IRENA, 2015). In addition, sizeable markets for off-grid solar home systems have been created in countries such as Kenya and Tanzania. The falling cost of technology along with energy efficiency gains in end-use devices are facilitating this market growth (OECD/IEA, 2017).

Public policies to facilitate investment in renewable energy are required

Firms agreed that governments could do more to implement policies to encourage more private investment in renewable energies. In particular, they highlighted that it would be important to integrate renewables into national and regional energy plans, providing investors with stable, long-term and attractive policy frameworks. Several countries have implemented specific initiatives and measures to scale up renewable energy (IRENA, 2015). For example, South Africa is on track to achieve near-universal access to electricity by 2030, largely as a result of its Integrated National Electrification Programme, which combines grid extension and solar home system strategies (OECD/IEA, 2017). Governments can give further public support to renewable energy by providing clear energy distribution plans and by updating the grid and transmission infrastructure.

In addition, companies emphasised the importance of building an ecosystem that could enable people to pay for electricity and reimburse the long-term investment made to build the infrastructure. In many cases, end-user electricity tariffs do not fully reflect costs or a reasonable return on invested capital. In particular, low returns and high transmission and distribution costs often deter additional investment in the sector (OECD/IEA, 2014). An optimal mix of support mechanisms, such as for example feed-in tariffs and net metering regulations, was suggested as a way to incentivise more private investment. OECD analysis also recommends that governments choose their own optimal incentive schemes, taking into account national circumstances such as their renewable energy potential, the current energy policy framework and the degree of energy market liberalisation (OECD, 2013b).

Regional integration in the power sector further promises to facilitate investments in Africa. Examples of "power pools" include the Central Africa Power Pool (CAPP), the Comité Maghrébin de l'Electricité (COMELEC) for northern African countries; the Eastern Africa Power Pool (EAPP); the Southern African Power Pool (SAPP); and the West African Power Pool (WAPP) (AfDB, 2013b). Power pools can attract investment and increase the security of the energy supply and mix. They

can reduce the cost of doing business and prices for consumers (IRENA, 2015). In a full energy integration scenario, power pools could save USD 33 billion per year by 2040, which could be allocated to other areas where needed (AfDB, 2013b).

Digital infrastructure can unlock Africa's economic potential

EMnet participants highlighted that digital infrastructure can improve firms' productivity and enhance Africa's comparative advantage in global production networks. Growing connectivity and rapid expansion of digital technologies, such as digital financial services, e-government, cloud computing solutions and e-commerce platforms, generate numerous opportunities for businesses and provide life-changing experiences for individuals. For example, digital finance not only enhances productivity and efficiency by saving costs and time, but it also facilitates innovation (Riley, 2018). An example is M-TIBA, a mobile health wallet launched by CarePay, a financial technology company and payments administrator, in partnership with Safaricom, PharmAccess Foundation and UAP Insurance. This digital platform in Kenya enables people to save, send, receive and pay money for medical treatment. While patients benefit from easy access to personal healthcare, health providers receive faster payment and insurance companies have lower administration costs (CarePay, n.d.).

Public and private institutions consider cloud computing an important cost-saving instrument as well as a means to enhance efficiency and output (OECD, 2014b). The Kalangala Oil Palm Growers Trust (KOPGT), which administers government loans to Ugandan farmers, has adopted the cloud software application SAP Rural Sourcing Management to help them grow their business. This platform helps smallholder farmers enhance food production, by connecting them to the local markets, estimate their payment more accurately, by checking the global price for palm oil, and better communicate with buyers about the quantity and delivery of products (Meyerhoff, 2018).

There is a shortage of digitally skilled workforce

Firms stressed the importance to develop a skilled workforce to accompany the digital transformation. This is even more relevant in a context where digitalisation puts traditional manufacturing jobs at risk. In Ethiopia, for example, 85% of jobs are in sectors susceptible to automation. In countries such as Angola, Mauritius, Nigeria, Seychelles and South Africa, more than half of current jobs are also at high risk of computerisation (AUC/OECD, 2018). National education systems need to adapt to the new job requirements emerging in the digital era. Attempts to put in place policies enhancing ICT skills have already been made in some African countries such as Botswana, Rwanda, Uganda and Zambia (Banga and Willem te Velde, 2018).

Many companies are also doing their part and have announced initiatives to support digital skills development. IBM, for example, announced a USD 70 million initiative to provide free digital skills training to 25 million African youth over five years (IBM, 2017). Uber is also helping its drivers and passengers improve their digital and financial literacy in partnership with a local financial services group (Uber, n.d.).

E-government services can better support businesses

Digital strategies can ensure greater transparency, openness and inclusiveness of government processes and operations (OECD, 2014c). Firms that participated in the EMnet meeting agreed that digital government services can play a critical role in unlocking Africa's economic potential. For example, e-government has great potential to deliver more efficient and higher-quality public services. The government of Mauritius, for instance, has identified e-government as a key initiative to provide an effective delivery of public services on a 24/7 basis to citizens and to the business community (National Computer Board, n.d.). The average clearance time for goods in the country decreased from 4 hours to just 15 minutes for non-litigious declarations after the launch of the online portal National Single Window (UN/CEFACT, 2016). South Africa is another example of a country that has made great advancements in e-government. The South African e-procurement system allows open and transparent bidding on government tenders, and the e-filing initiative facilitates the electronic submission of tax returns and payments by taxpayers and tax practitioners (Mutula and Mostert, 2010). At the continental level, governments have recognised that taking advantage of the opportunities of the African CFTA requires the development of a robust digital ID and payments system (UNECA, 2018b).

CONCLUSION

Africa finds itself at a crossroads. It has the opportunity to use its demographic and economic momentum to realise sustainable and inclusive growth. At a time when African governments have signed the African CFTA agreement, infrastructure development is a critical engine for Africa's growth and integration. Electrification using its vast renewable resources, both at national and regional levels, can support sustainable growth, thus enabling African countries to retain control of their natural resources and their energy destiny. Through data sharing, innovation, and transfer of expertise and technology, the private sector provides an important contribution to the development of infrastructure in the continent. EMnet meeting participants agreed that the private sector plays a significant role in upgrading the transportation network, supporting the acceleration of renewable energy in the energy mix, and promoting the digitalisation process.

Countries must focus on attracting more private investment by improving investment policy frameworks, increasing public sector capacity to deal with large infrastructure projects, and further developing financial markets. Opening a dialogue on quality infrastructure between the public and the private sector, sometimes in partnership with international financial institutions or multilateral development banks in order to bridge financing gaps, can ensure that new investments in infrastructure are socially and economically sustainable. New approaches with increased local investment, better risk mitigation and an enabling regulatory framework can help. Finally, governments should further prioritise efforts related to the governance and regulation of infrastructure projects in order to increase efficiency and transparency.

Notes

- ¹ Emerging Asia refers to the ASEAN-10 which includes, Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam, India and the People's Republic of China.
- ² Gigawatt is a unit of power equal to one billion (10⁹) watts.
- ³ Huawei Technologies training centres are established in Angola, the Democratic Republic of the Congo, Egypt, Kenya, Morocco, Nigeria and South Africa.
- ⁴ Siemens Gamesa has built projects in Algeria, Egypt, Kenya, Mauritania, Mauritius, Morocco, South Africa and Tunisia.
- ⁵ Megawatt is a unit of power equal to one million watts, especially as a measure of the output of a power station.

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