



DIGITAL ECONOMY DIAGNOSTIC GABON



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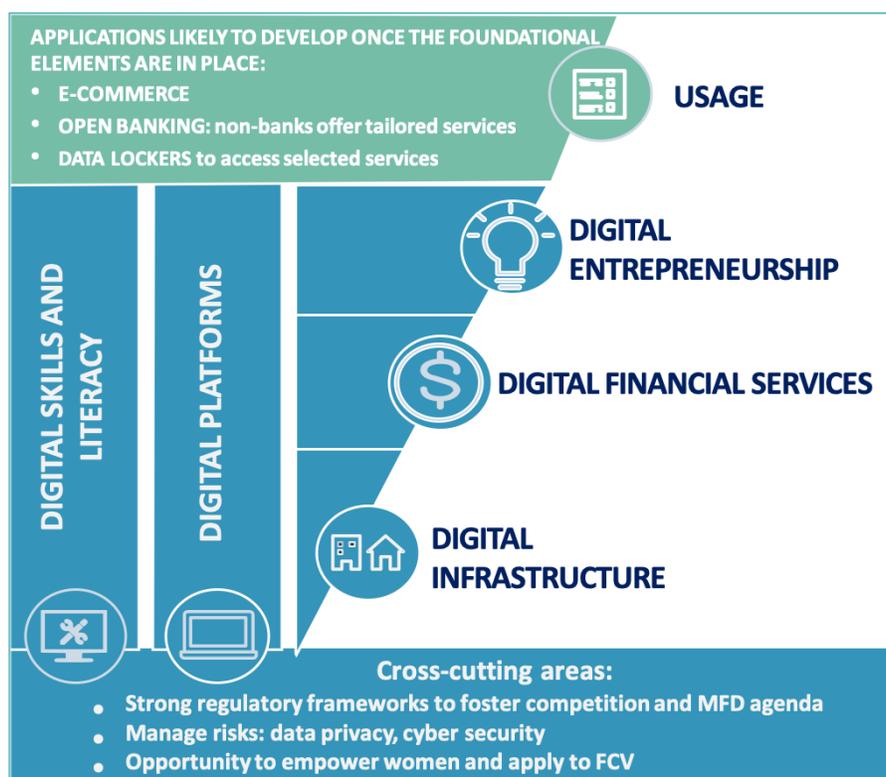
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ABOUT DE4A

This assessment of Gabon’s digital economy was launched as part of the World Bank Group’s (WBG) Digital Economy for Africa (DE4A) Initiative,¹ which sets out a standardized methodology focused on five key foundations. The assessment maps the strengths and weaknesses that characterize the national digital economy ecosystem (Figure 1) and identifies challenges and opportunities for future growth.

Figure 1. Five key foundations of the digital economy ecosystem



The digital transformation is re-shaping our global economy, permeating every sector and aspect of daily life—changing the way we learn, work, trade, socialize, and access public and private services and information. In 2016, the global digital economy was worth about US\$11.5 trillion, equivalent to 15.5 percent of the world’s overall gross domestic product (GDP). It is expected to reach 25 percent in less than a decade, quickly outpacing the growth of the overall economy. However, countries such as Gabon still only capture a fraction of this growth and need to strategically invest in the foundational elements of their digital economy to keep pace.

Universal adoption and effective application of digital technology are expected to characterize future economies, shaping their ability to succeed in the global marketplace and offering a better quality of life for their citizens. Disruptive technologies are already altering traditional business models and pathways to development, yielding significant efficiency, productivity gains, and increased convenience, as well as supporting better access to services for consumers. Well-functioning digital economies thus may offer the potential to achieve faster economic growth, offer innovative products and services, and create more job opportunities. The disruptive technologies coming onto the market also carry risks that need to be managed and mitigated, such as job losses in industries affected by structural change and automation. Assessing where strategic investments and interventions need to be made is a critical first

¹ Additional DE4A country diagnostics being prepared include Rwanda, Kenya, Ghana, Nigeria, Madagascar, Mozambique, and the Seychelles.

step to enabling digital economy growth.

The framework that shapes the assessment looks at five foundational elements of the digital economy:

- *Digital infrastructure.* The availability of affordable and quality Internet, which is instrumental to bringing more people and businesses online.
- *Digital platforms.* The presence and use of digital platforms that can support greater digital exchange, transactions, and access to public services online.
- *Digital financial services.* The ability to pay, save, borrow, and invest through digital means, which is key to increasing financial inclusion and the e-commerce market.
- *Digital entrepreneurship.* The presence of an ecosystem that supports entrepreneurs, startups, and bigger companies to generate new products and services that leverage new technologies and business models, which is critical to widen and deepen digital economic transformation.
- *Digital skills.* The development of a tech-savvy workforce, with both the basic and advanced digital skills to support increased technology adoption and innovation and enable investments in high value-added services.

This report is part of WBG support to the Digital Economy Moonshot for Africa, a new and vast initiative in partnership with the African Union that calls for every African individual, business, and government to be digitally enabled by 2030. The Moonshot relies on first undertaking a diagnostic of the digital economy of select African countries and more precisely its five foundational elements. The DE4A diagnostic tool provides an integrated framework for assessing the enabling environment and level of development of the digital economy in an African country.

This report aims to highlight opportunities to further develop Gabon’s digital economy with a special focus on policies that can bridge the digital divide. As discussed in the Systematic Country Diagnostic, the legacy of exclusion presents unique challenges in Gabon, and this is true also in the digital space. Based on quantitative and qualitative assessments, and a series of more in-depth background papers on four of the DE4A’s five pillars (digital infrastructure, digital skills, digital entrepreneurship, and digital financial services), the diagnostic findings provide recommendations that inform country targets and decisions on priority areas for development, proposing a mix of possible policy reforms and interventions.

ACKNOWLEDGEMENTS

The methodology used for this assessment relied on in-country fact-finding missions, interviews and questionnaires, desk research, regional and global benchmarking, and consultations with stakeholders. In-country fact-finding missions were undertaken in March–April 2019 in preparation for this diagnostic. In addition to desk research conducted, missions were also conducted in April–June 2019 to allow for broad stakeholder consultation with the government and the private sector, and finally presented to the authorities through a multi-stakeholders workshop in November 2019. The analysis presented in this paper also draws on regional and global benchmarking, based on standardized indicators that form part of the DE4A diagnostic methodology. The analysis also draws on government statistics and data shared by the private sector.

This report was researched and prepared by a team from the WBG, including Shiho Nagaki (Sr. Public Sector Specialist), Milaine Rossanaly (Sr. Private Sector Specialist), Natalia Agapitova (Sr. Economist), Eric Jean Lauer (Consultant), Arleen Seed (e-government), Christopher Tullis (e-ID), Celestin Adjalou Niamien (IFMIS), Vladimir Calderon and El Hadji Dialigué BA (digital taxation), Daniel Roberge (land management) and Dominic Hazen (e-health). The report also benefited from the valuable feedback and thoughtful comments provided by the following colleagues: Manuel Vargas (Practice Manager, Governance), Marc Lixi (Sr. Digital Development Specialist), Elena Gasol (Sr. Private Sector Specialist), Kimberly Johns (Sr. Public Sector Specialist), Wale Ayeni (Sr. Investment Officer) and Xavier Decoster (Digital Development Consultant), and numerous colleagues who reviewed the background papers. Moreover, the report also benefitted from feedback received from WBG internal peer reviewers, who kindly reviewed this report. Comprehensive national stakeholder consultations were undertaken in preparing and finalizing the document.

The team would like to express their sincere gratitude to the Ministry of Digital Economy, Ministry of Economy, Ministry of Budget, Ministry of Interior, Ministry of Public Service, Ministry of Housing and Corporation, Ministry of Health, Ministry of Basic Education, ANINF, ANUTTTC, CNAMGS.

The Gabon DE4A Diagnostic commissioned several background papers and builds on recent WBG country work, and these benefitted from the inputs of many stakeholders. Further to the public stakeholders mentioned, the team wishes to express its thanks to the numerous public and private stakeholders that contributed their time and effort to the elaboration of this report and the associated background papers, among which: Gabon Telecom, Airtel Gabon, GVA Gabon, and Axione Gabon.

ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
ANINF	<i>Agence Nationale des Infrastructures Numériques et des Fréquences</i> (National Agency for Digital Infrastructure and Frequencies)
ARCEP	<i>Autorité de régulation des Communications Electroniques et des Postes</i> (National Sectoral Regulatory Authority)
ATM	Automated Teller Machine
BEAC	Bank of the Central African States
CEMAC	Economic and Monetary Community of Central Africa
CAR	Central African Republic
CDN	Content Delivery Network
COBAC	Banking Commission for Central Africa
CSP	<i>Centre de Spécialisation Professionnelle de Port-Gentil</i>
DE4A	Digital Economy for Africa
DFS	Digital Financial Services
EMIS	Education Management Information System
FTTB	Fiber-to-the-Building
FTTH	Fiber-to-the-Home
GDP	Gross Domestic Product
G2B	Government-to-Business platforms
G2G	Government-to-Government platforms
G2C	Government-to-Citizens platforms
GNI	Gross National Income
GSMA	<i>Groupe Spéciale Mobile Association</i>
ICT	Information, Communication and Technology
IDI	ICT Development Index
IT	Information Technology
ISP	Internet Service Provider
IXP	Internet Exchange Point
MFI	Microfinance Institution
MNO	Mobile Network Operator
NIP	National Provider Identification Number
NIPA	Korea National IT industry and Promotion Agency
OQSF	Observatory of Financial Services
PE	Private Equity
PKI	Public Key Infrastructure
POGS	<i>Plan Opérationnel Gabon des Services</i>
PSGE	<i>Plan stratégique pour le Gabon émergent</i>
SME	Small- and Medium-size Enterprise
SPIN	<i>Société de Patrimoine des Infrastructures Numériques</i> (National Digital Infrastructure Company)
SSA	Sub Saharan Africa
STEM	Science, Math, Engineering, and Technology
TRB	Telecommunications Regulatory Board
TVET	Technical and Vocational Education and Training
VC	Venture Capital
WBG	World Bank Group

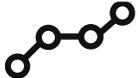
EXECUTIVE SUMMARY

OVERVIEW OF EACH PILLAR'S PERFORMANCE

Gabon has a leading place within developing countries (especially Africa), ranking 6th in Sub Saharan Africa in the 2017 ICT Development Index (IDI) of the International Telecommunications Union (ITU), showing a remarkable performance in terms of digital infrastructure, and strong assets in terms of digital platforms and digital banking capabilities that have yet to fulfill their transformative potential.

The government aims to make Gabon a center of excellence of services with high added-value and a pioneer of the digital revolution by 2025, having established strong infrastructural foundations that made digital serviced widely accessible throughout the country and relatively affordable. The government has implemented about 20 percent of the e-government master plan and introduced several innovative e-services. Despite these efforts, Gabon’s ranking on the e-government scale that measures 193 countries has remained relatively low and stagnant over the past 15 years. Gabon has witnessed rapid growth in banking assets, lending, and deposits, as well as in penetration and financial inclusion indicators. Access to financial services in Gabon is experiencing an upward curve, but still needs deeper financial inclusion. Compared to its peers, Gabon has the highest usage of digital payments; Gabon, Ghana, Namibia, and Zimbabwe collectively demonstrate that mobile money is now a success story for the whole region.

Yet, the country lags behind on other pillars of the digital economy, with an expanding but still nascent digital entrepreneurship ecosystem, and modest digital skills levels. Digital entrepreneurship is expanding in Gabon, but it is starting from a low base and needs to gain significant momentum to become a visible player in the economy. Gabon’s entrepreneurship ecosystem compares well to other Sub Saharan Africa countries, but venture capital and private equity firms have performed below global and regional averages so far; the overall business environment is difficult in Gabon and constrains both digital entrepreneurship and the creation of local markets for digital products and services. On the skills side, Gabon’s level of spending on education is far below the average of both Sub Saharan Africa and peer countries. The low quality of education means that Gabonese youth do not have foundational skills for the labor market and post-secondary studies. At the tertiary level, most students enroll in the general stream and follow a literary curriculum, and few students study science and engineering. Despite efforts to achieve sustainable development objectives by 2025, training provision at the national scale continues to suffer important gaps.

Pillar	Overall performance	Key indicators			
		Indicator	Source and date	Gabon	SSA average
 Digital infrastructure		Penetration of 3G/4G (%)	ARCEP and GSMA 2020	94%	74%
		% of population covered by 3G mobile network (%)	GSMA 2019a	68%	70%
		Average monthly retail price of mobile broadband as % of GNI	ITU and GSMA 2019b	2.09%	1.4%



Digital platforms



Indicator	Source and date	Gabon	SSA average
Digital Adoption Index – government cluster	WB 2016	0.31	0.39
E-Participation Index	UN 2016	0.22	0.25
Open Data Inventory Score	Open Data Watch 2019	Score 16/100	ranks 41 out of 43



Digital financial services



Indicator	Source and date	Gabon	SSA average
Adults with access to a transaction account (%)	Findex 2017	58.6%	42.6%
Mobile money access rate (%)	IMF financial access survey 2017 and GSMA 2018	43.6%	45.6%
Adults who saved at a formal institution (%)	Findex 2017	13.5%	26.9%



Digital entrepreneurship



Indicator	Source and date	Gabon	SSA average
Venture capital availability	The Global Competitiveness Report 2019	1.9/7 ranks 136/141	n/a
Attitudes towards entrepreneurial risk	The Global Competitiveness Report 2019	2.6/7 ranks 140/141	n/a
Entrepreneurship Index Ranking	Global Entrepreneurship and Development Institute 2018	79 out of 137	n/a



Digital skills



Indicator	Source and date	Gabon	SSA average
Number of formal higher education programs in the country specifically focused on Information, Communication and Technology (ICT)/digital skills/computer programming	MinSupReS	3	n/a
Skills readiness index	The Global Information Technology Report 2016	3.5 (116 out of 139)	n/a

ASSESSMENT OF EACH PILLAR'S STRENGTHS, WEAKNESSES, ROADBLOCKS, AND OPPORTUNITIES

Gabon can boast a strong performance in terms of digital infrastructure and digital financial services compared to peers, and solid underpinnings on the digital platforms and digital entrepreneurship pillars. The mobile telephony and Internet markets in Gabon are mature compared to peer countries, driven by the explosion of 3G and 4G mobile broadband services in particular. On the international connectivity front, Gabon gets two direct accesses to international submarine cables, SAT-3 and ACE, while for the national connectivity, a 1,030 kilometer fiber-optic backbone now operates between Libreville and Franceville through a public-private partnership (and an additional 500 kilometer extension is being operationalized to interconnect Gabon with Cameroon, Congo, and Equatorial Guinea). Concerning the digital banking pillar, the central bank has adopted an enabling environment for the provision of Digital Financial Services (DFS). Almost 60 percent of adults have an account at a formal institution, which is the highest level in the Central African Economic and Monetary Community (CEMAC) region. Also, Gabon uses technology to actively develop e-services, such as e-health, e-education, e-Visa, and land management. These transformational systems could change drastically the management of public services. Finally, digital startups are particularly active in the service sectors, such as e-delivery and e-commerce. Internet-related services, such as web design and digital marketing agencies, are growing fast to help startups and established traditional companies embrace a digital approach.

The growth potential of the digital economy in Gabon is particularly constrained in the digital entrepreneurship and digital skills pillars. The government has an array of training programs that could help support the growth of digital entrepreneurship, but the basic needs of businesses in terms of digital skills still need to be addressed. More generally, the lack of foundational skills in basic education and lack of STEM trainings undermine the adoption of digital culture among learners from school. There is a gap between e-skills produced by the national education system and those required by the current and future labor market. There are currently no national programs in schools to develop skills in e-commerce or the advanced use of digital technology, with the exception of specialized courses where access remains limited. In addition, the digital entrepreneurship community remains disconnected and lacks voice and formal representation. Interestingly, while financial inclusion has massively benefited from the emergence of mobile banking, access to finance remains a major constraint to entrepreneurship, and targeted investments in digital companies are still scarce as local investors lack the capacity to understand and assess the credit-worthiness of digital ventures. Furthermore, the low wages of teachers at all levels hinders the education quality and the development of digital skills.

Major opportunities are to be found in the digital infrastructure and platforms pillars, thanks to the country's existing assets to serve as a regional hub for connectivity and the potential of digitalization of public services, as well as in the digital skills pillar, that could generate substantial benefits to the development of digitally-related jobs and the private sector overall. Gabon will soon exploit three trans-border interconnections with the Congo, Cameroon, and Equatorial Guinea, which will enable traffic exchanges between these countries and allow Gabon to resell international capacity to its neighbors. The authorities are also maturing a project to invest in a modern national datacenter to support the development of digital services and leverage mutualized opportunities. In parallel, Gabon is reviewing its standards and protocols to ensure that international standards for telecommunications and computing are upwardly compatible and take advantage of newer technologies. Government strategy entails creating a foundational Identification system and assigning a unique identifier to each citizen and resident of Gabon. Most significant among the back-end systems are improvements in public financial management (PFM) across all levels of government and the digitization of the public administration, such as land management and citizen engagement. In terms of digital skills, three public higher education institutions are oriented toward advanced training in digital skills, and Gabon can produce annually about 500 graduates specialized in computer science. Most private schools offer business and management

trainings with digital components, but much more can be done to addresses skills mismatches in the private sector of the economy.

The table² below summarizes and provides a qualitative assessment of the relative strengths, weaknesses and opportunities within each of the five pillars of the digital economy.

Pillar	Key strengths	Key weaknesses and roadblocks	Opportunities
 <p>Digital infrastructure</p>	<ul style="list-style-type: none"> • Mature mobile telephony market • Fast-growing internet market driven by 3G/4G • Two accesses to international submarine cables • Countrywide fiber optic network 	<ul style="list-style-type: none"> • Stagnating mobile telephony prices • Mobile quality of service not fully satisfactory • High prices for international access • Lack of policies and regulatory instruments 	<ul style="list-style-type: none"> • Three trans-border interconnections with Congo, Cameroon, and Equatorial Guinea • Project to invest in a national datacenter to support digital services • Universal Service Fund (USF) to help increase mobile penetration in rural areas
 <p>Digital platforms</p>	<ul style="list-style-type: none"> • Uses technology to develop e-services • Ongoing transformational systems initiatives could change public services 	<ul style="list-style-type: none"> • Lack of a clear institutional framework • Cybersecurity lacks an institution to establish standards • Challenges to maintain and upgrade existing systems 	<ul style="list-style-type: none"> • Standards and protocols are under review • Assignment of unique citizen identifier • Back-end systems improvements for land management system and tax
 <p>Digital financial services</p>	<ul style="list-style-type: none"> • Enabling environment supporting the provision of services • Texts adopted at regional level for mobile money • 60 percent of adults have a bank account 	<ul style="list-style-type: none"> • Absence of financial inclusion strategy • Limited interoperability • Weak credit infrastructure hampers access to finance 	<ul style="list-style-type: none"> • National platform for payment interoperability • Mobile money service an attractive solution to bill payments
 <p>Digital entrepreneurship</p>	<ul style="list-style-type: none"> • Expanding entrepreneurship ecosystem • Active digital startups, especially in the service sector • Internet-related services growing fast • Private actors engaging more in digital ecosystem 	<ul style="list-style-type: none"> • Disconnected entrepreneurship community • Access to finance a constraint • Targeted investments in digital companies still scarce • Investors lack capacity to understand and assess credit-worthiness of digital ventures. 	<ul style="list-style-type: none"> • Active incubators based on collaboration between local and international actors • Various actors actively invest in the local digital ecosystem • Legislations to improve competitiveness are pending government approval

² Legend: GREEN: Strong strengths/Limited weaknesses/Strong opportunities; GRAY: Medium strengths/Moderate weaknesses/Medium opportunities; YELLOW: Low strengths/Substantial weaknesses/Low opportunities.

Pillar	Key strengths	Key weaknesses and roadblocks	Opportunities
 <p>Digital skills</p>	<ul style="list-style-type: none"> • <i>Plan Opérationnel Gabon des Services</i> aims to revise Gabonese education system with emphasis on digital technology • Creation of digital classrooms in a few secondary schools in Libreville • Labor market initiatives to encourage and place digital talent in the workplace 	<ul style="list-style-type: none"> • Lack of foundational skills in basic education and lack of Science, Math, Engineering, and Technology (STEM) training • Gap between skills and labor market needs • Absence of a reliable Education Management Information System (EMIS) • No national program to develop skills 	<ul style="list-style-type: none"> • Digital trainings offered by three public higher education institutions and most private schools • Entrepreneurial ecosystem promotes e-business skills • Various private-led digital training programs

SUMMARY OF HIGH-PRIORITY RECOMMENDATIONS

This assessment led to the formulation of 34 recommendations covering the five pillars of the digital economy, with different time horizons (short, medium and long term) and different priority levels (high, medium and low). The topics covered include policy and regulatory framework, resource management and coordination, digital inclusion, governance, regional dimension, services, ecosystem and capacity building. The table below summarizes only the high-priority recommendations, while all recommendations are described in detail in Section 5 of this document.

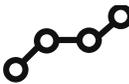
Topics	Pillar	Recommendation	Horizon
Policy and regulatory framework	Infrastructure	Adopt the four key draft laws on electronic communications, electronic transactions, cyber security, and the protection of personal data	Short-term
	Platform	Create foundational law for digitization of administration and online procedures of public services to support the implementation of the e-government strategy and online services Revise the civil code for e-ID	Short-term
	Financial	Design and adopt a national financial inclusion strategy	Short-term
	Skills	Develop a digital skills framework as a foundation for the digital skills strategy	Medium-term
		Increase public spending on education	Short-term
Resource management and coordination	Financial	Support effective implementation of interoperability	Medium to long-term
Digital inclusion	Infrastructure	Improve governance process of the USF to reassure operators that they will not be crowded out, and that collection and use of contributions are transparent	Short- to medium-term
Governance	Platform	Update legislation to clarify the roles and responsibilities of government stakeholders	Short-term

		Institute a more coherent approach for e-government implementation	Short- to medium-term
		Create a clear institutional mechanism to ensure convening power and coordination within the government and draw a clear roadmap	Short- to medium-term
Regional dimension	Financial	Support the BEAC to improve mobile money regulation	Medium-term
Services	Platform	Reinforce cyber security environment and regulate prevention measures	Medium-term
Ecosystem	Entrepreneurship	Improve the capital investment culture and address accessibility of capital for early-stage enterprises and open up alternate funding channels	Short- to medium-term
	Skills	Align the development of digital skills with labor market needs	Short- to medium-term
		Expand the application of strategic partnerships between industry and universities	Short- to medium-term
Capacity building	Skills	Partner with the private and non-profit sectors to find educational materials that would fill existing gaps and align the program content with labor market needs	Short- to medium-term

Facing the COVID-19 crisis, Gabon has the privilege to be able to rely on largely affordable and reliable Internet; pursuing actively its digital agenda will increase the country’s ability to respond to and recover from this crisis. Each pillar has a role to play in this response. For instance, affordable and reliable internet is the lifeblood of the economy during this pandemic. As countries impose extreme social distancing measures, closing the digital divide is therefore of paramount importance to ensure economic interactions continue happening, and better prepare countries for future crises. In addition, ensuring the continuity of public services to safeguard the welfare of populations is key as the country needs to rely on digital technologies as the “new normal” for work, schooling, and government services. Finally, powering FinTech is a one way to support the most impacted businesses and communities, as economies are increasingly relying on fintech to stay afloat, and demand for services such as mobile payments, food delivery, and e-commerce shopping will grow exponentially.

1. DIGITAL ECONOMY OVERALL PERFORMANCE

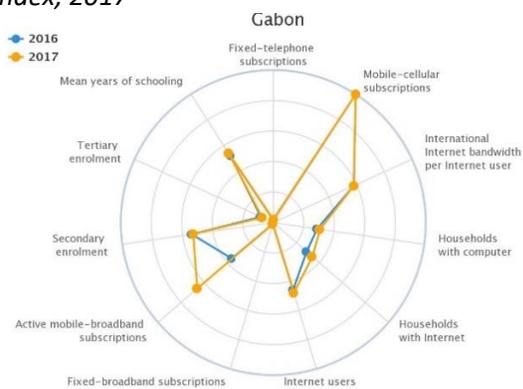
Summary of each pillar's overall performance

 <p>Digital infrastructure</p>	<p>Gabon has a leading place within developing countries (especially Africa), ranking 6th in Sub Saharan Africa in the 2017 ICT Development Index (IDI) of the International Telecommunications Union (ITU). Yet, the country lags well behind more advanced economies.</p>	<p>STRONG</p>
 <p>Digital platforms</p>	<p>The government aims to make Gabon a center of excellence of services with high added-value and a pioneer of the digital revolution by 2025. The government has implemented about 20 percent of the e-government master plan and introduced several e-services. Despite these efforts, Gabon's ranking on the e-government scale that measures 193 countries has remained relatively low and stagnant over the past 15 years.</p>	<p>MEDIUM</p>
 <p>Digital financial services</p>	<p>Gabon has witnessed rapid growth in banking assets, lending, and deposits, as well as in penetration and financial inclusion indicators. Access to financial services in Gabon is experiencing an upward curve, but still needs deeper financial inclusion. Compared to its peers, Gabon has the highest usage of digital payments. Gabon, Ghana, Namibia, and Zimbabwe collectively demonstrate that mobile money is now a success story for the whole region.</p>	<p>MEDIUM</p>
 <p>Digital entrepreneurship</p>	<p>Digital entrepreneurship is expanding in Gabon, but it is starting from a low base and needs to gain significant momentum to become a visible player in the economy. Gabon's entrepreneurship ecosystem compares well to other Sub Saharan Africa countries. Venture capital and private equity firms have performed below global and regional averages so far. However, the overall business environment is difficult in Gabon and constrains both digital entrepreneurship and the creation of local markets for digital products and services.</p>	<p>MEDIUM</p>
 <p>Digital skills</p>	<p>Gabon's level of spending on education is far below the average of both Sub Saharan Africa and peer countries. The low quality of education means that Gabonese youth do not have foundational skills for the labor market and post-secondary studies. At the tertiary level, most students enroll in the general stream and follow a literary curriculum, and few students study science and engineering. Despite efforts to achieve sustainable development objectives by 2025, training provision at the national scale has several gaps.</p>	<p>LOW</p>

1.1 DIGITAL INFRASTRUCTURE

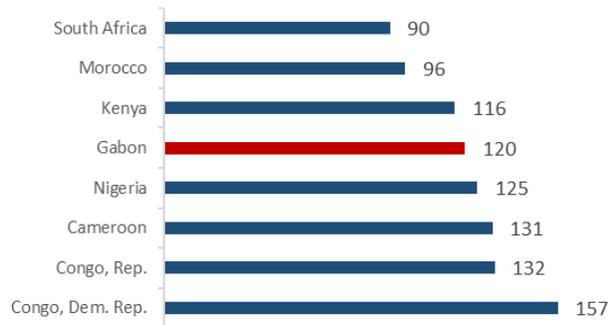
Looking at international rankings of the country performance on digital infrastructure, Gabon appears to have a leading place within developing countries (especially Africa), yet lags well behind more advanced economies. According to the 2017 IDI of the ITU, Gabon ranked only 114 of 176 countries worldwide, but was ranked 6th in Sub Saharan Africa (after Mauritius, Seychelles, South Africa, Cape Verde, and Botswana),³ up from 118 in 2016. Gabon’s score highlights a strong development in the mobile telephony and broadband segments and a good performance in terms of skills (secondary enrollment), internet usage, and international access (Figure 2). On the other hand, Gabon’s score was relatively weak in terms of fixed telephony and broadband segments and penetration of computers and internet in households. According to the mobile connectivity index of the Global System for Mobile Communication Association (GSMA), Gabon ranked 120 of 150 countries in 2017, behind Kenya (116) and South Africa (90), but just ahead of Nigeria (125) and Cameroon (131) (Figure 3).

Figure 2. Gabon’s ITU ICT Sector Development Index, 2017



Source: ITU 2017.

Figure 3. GSMA Mobile Connectivity Index, 2017 (selected countries ranking)



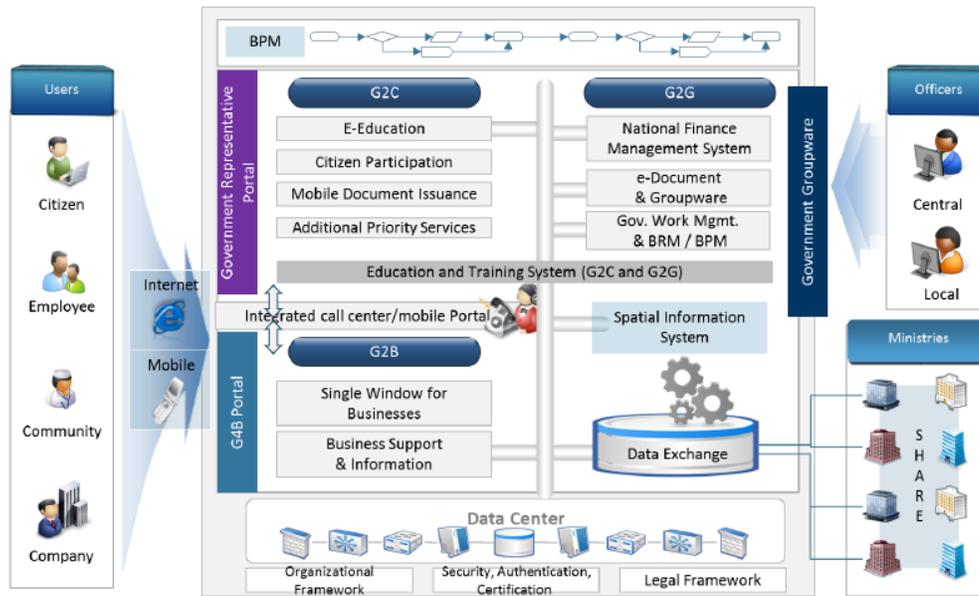
Source: GSMA.

1.2 DIGITAL PLATFORMS

The government aims to make Gabon a center of excellence of services with high added-value and a pioneer of the digital revolution by 2025. The government adopted the 2017–2019 economic recovery plan (ERC) in May 2017, with a focus on the promotion of innovative solutions in public service delivery and with an ambition for a digital revolution. The ERC emphasizes strengthening the competitiveness and development of the ICT and digital industry as one of the engines of growth and diversification of the economy. Building on Gabon’s strategic plan (*Plan stratégique pour le Gabon émergent* or PSGE) and ERC, the government developed the strategy for modernization of public services by enhancing its digitization to improve efficiency and effectiveness in public administration and service delivery (Figure 4). Gabon’s digital strategy will be the catalyst which underpins this growth.

³ This composite index combines 11 indicators to monitor and compare developments in ICT. The three-stage model measures the country’s ICT readiness, intensity, and impact. The model correlates directly to the enabling environment for a growing digital economy.

Figure 4. Conceptual Future Model for Digital Gabon

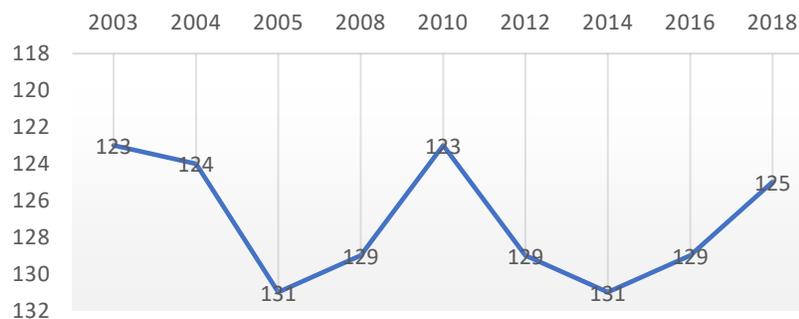


Source: NIPA study.

The government has implemented about 20 percent of the e-government master plan and introduced several e-services. The overarching goals of the e-government strategy are twofold: to create a digital revolution and to provide value-added services. Gabon has taken many steps to achieve these two goals, and should be considered as further advanced than the nascent e-government level. Gabon is developing shared services, digital identity, and digital financial management and has advanced to the growth level by developing increased examples of digital government and e-commerce, although it has made less important inroads into Open Data. Further development into advanced platforms includes plans for mobile apps, Artificial Intelligence (AI) applications and software-enabled platforms, all of which are part of Gabon’s master strategy for development. To date, the Government has implemented 20 percent of the master plan and introduced several e-services.

Despite these efforts, Gabon’s ranking on the e-government scale measuring 193 countries has remained relatively low and stagnant over the past 15 years (Figure 5). Although Gabon performs slightly better the average for Sub Saharan Countries (Figure 6), Gabon’s e-government development rank is 125 of 193 countries, which is similar to the situation in Kenya, whose ranking is 122.

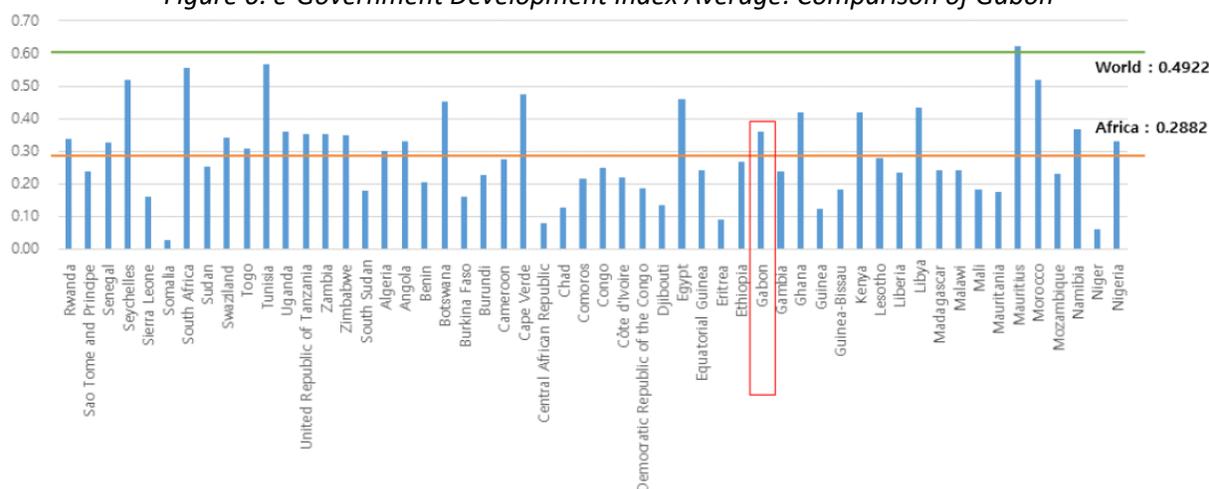
Figure 5. e-Government⁴ Rank of Gabon (out of 193 countries)



Source: Knoema.com.

⁴ The United Nations eGovernment ranking (EGDI) is based on a comprehensive survey of the online presence of all 193 United Nations Member States, which assesses national websites and how e-government policies and strategies are applied in general and in specific sectors for delivery of essential services. The assessment rates the e-government performance of countries relative to one another as opposed to being an absolute measurement.

Figure 6. e-Government Development Index Average: Comparison of Gabon



Source: UNPACS E-Government Survey 2016.

1.3 DIGITAL FINANCIAL SERVICES

Gabon has witnessed rapid growth in banking assets, lending, and deposits, as well as in penetration and financial inclusion indicators. The Gabon financial landscape includes eight banks, 14 MFIs, and the Post. Three major money transfer operators in the market essentially offer over-the-counter services. As a member of CEMAC (Economic and Monetary Community of Central Africa), Gabon's financial sector is governed by the Bank of the Central African States (BEAC) and by the banking supervisor—Banking Commission for Central Africa (COBAC). Gabon's economy highly depends on the government's budget.

Access to financial services in Gabon is experiencing an upward curve, but still needs deeper financial inclusion. In 2017, it was estimated that 58.6 percent of the population has access to financial services, up from 33 percent in 2014 and higher than the average on the continent, which is 43 percent. Since banks are highly concentrated in the urban centers of Libreville, Port-Gentil, and Franceville, traditional financial institutions have not been able to reach low-income customers, especially in the most remote areas. Opening a bank account requires a somewhat tedious identification process that is not within the reach of the majority. As a result, traditional banking services, which already have a certain cost structure (such as fixed costs and commissions), are inaccessible for the most vulnerable populations. Therefore, the development of DFS is essential for deeper financial inclusion in Gabon.

Compared to its peers, Gabon has the highest usage of digital payments. In terms of usage, more than 50 percent of adults made or received a digital payment in 2017, only 17.3 percent paid a utility bill digitally and about the same proportion proceeded to online payments. Furthermore, less than 10 percent said they used their debit or credit card to make a purchase, which shows that one of the reasons is merchant payments are under-developed. As for remittances, surprisingly, more people use an account (36.9 percent) to transfer money than use cash (9.3 percent), which shows some adoption of digital means of payments.

Gabon, Ghana, Namibia, and Zimbabwe collectively demonstrate that mobile money is now a success story for the whole region. The banking network is as important with 255 access points (ATMs and branches) for 100,000 adults. In 2018, mobile money transactions in Gabon reached US\$1.5 billion with more than 120 million transactions of which the highest share goes to payments and then cash out at branches. A good share (25 percent) is also used for airtime top-ups.

1.4 DIGITAL ENTREPRENEURSHIP

Digital entrepreneurship is expanding in Gabon, but it is starting from a low base and needs to gain significant momentum to become a visible player in the economy. The digital ecosystem is still nascent in Gabon and very concentrated. According to the SING SA data, 185 SMEs are registered and categorized annually in the category of ICT in Gabon, but there are only 20–30 active tech startups across the country. Most of the digital entrepreneurs operate from Libreville.

Gabon’s entrepreneurship ecosystem compares well to other Sub Saharan Africa countries. On the Global Entrepreneurship Index, it stood at 79 of 137 in 2018, compared to Tanzania at 115, Ethiopia at 110, and Ghana at 93. It is mainly composed of:

- Startups in services, such as marketing and digital communication (website, graphics, communication strategy), e-commerce, delivery services (retail and food delivery) through WhatsApp, and software integrators.
- Support and education structures, among which the most well-known are the African Computer Science Institute (*Institut Africain de l’Informatique* - IAI), Digital Business School, Information and Communication Technology National Institute (*Institut National des Technologies de l’Information et de la Communication* - INPTIC), Ogoué Lab (supported by simplon.co), Gabonese Digital Incubator Company (*Société d’Incubation Numérique du Gabon* - SING SA), IML, American Spaces, and yearly entrepreneurship contests, such as Total’s “start upper of the year.”
- Public institutions that provide the regulatory framework and finance key ICT infrastructures. This effort was led by the Ministry of Communication, Digital Economy and Postal Services (MCENP) in Gabon with the ANINF.

Venture capital and private equity firms (VC/PE) have performed below global and regional average so far. According to the World Economic Forum Global Competitiveness Index, access to venture capital in Gabon has been limited. New initiatives, such as Okoumé Capital (<http://okoume.howgabon.com/>), are expanding their activities and could be connected to larger domestic institutional investors, such as pension funds and insurance companies, to expand their impact.

However, the overall business environment is difficult in Gabon and constrains both digital entrepreneurship and the creation of local markets for digital products and services. Gabon ranked 169 of 190 countries in the 2019 Doing Business Index. Key challenges for businesses include the poor quality of the institutional framework, lack of governance and accountability (notably through the lack of commercial justice and enforcement of property rights), and the dominance of powerful business groups mainly operating in the resource sector that result in low competition. Development strategies are too broad and lack prioritization, sequencing, and alignment with budget constraints. Limited data and statistical evidence to guide the planning and targeting of policies hampered their effectiveness and prevented proper assessment, monitoring, and evaluation of the strategies under implementation.

1.5 DIGITAL SKILLS

Gabon’s level of spending on education, far below the average of both Sub Saharan Africa and peer countries, hampers adequate investment in digital skills. From 2010 to 2014, Sub Saharan Africa countries spent an average of 4.3 percent of their GDP on education,⁵ compared to 3 percent in Gabon. Gabon also spends far less of its public sector budget on education than most Sub Saharan Africa and peer countries. The lack of investment in human capital development constrains economic progress.

⁵ UNESCO database (2010–2014).

The Gabon Operational Plan for Services (POGS),⁶ as the foundation of Gabon’s digital economy, aims to transform Gabonese human capital by revising the country’s education system and introducing digital technology into school and academic training. The vision is to make Gabon, by 2025, a center of excellence for high value-added services and a pioneer of digital revolution.

The POGS contributes to the strategic objective of modernizing infrastructures and harmoniously developing the national territory. The government launched the e-education project in 2011 with the support of ANINF to create digital classrooms in a few secondary schools in Libreville. With this new pedagogical approach, the government aims to: (1) interconnect schools with line ministries through applications developed and managed by private providers; (2) digitally manage classroom courses and promote the creation of local and interactive training content; and (3) integrate digital literacy from secondary school onwards to train students with basic digital skills in line with the needs of the labor market.

The latest available data indicates that the country has a low secondary education completion rate. The low quality of education means that Gabonese youth do not have foundational skills for the labor market and post-secondary studies. The WEF *Global Competitiveness Report 2016–2017* ranks Gabon 116 out of 138 countries in terms of educational quality and 121 in terms of higher education and training, which is below the performance of all reference countries.

At the tertiary level, most students enroll in the general stream and follow a literary program, and few study science and engineering. The technical path has given promising results in terms of employability at the end of the cycle but remains largely underused. In 2017, less than 1 percent of all students are enrolled in this pathway, and only 20 percent of those enrolled follow a promising path. The limited skills of teaching staff and the lack of training hamper the performance of the school system and the employability of people, who must adapt to an increasingly digital and connected world.

Some concrete actions have already been taken to support the government's initiatives in its digital development strategy. Examples include a connected multimedia room for each primary school, high school, and college completed at public and private primary schools⁷ and 16 out of 90 high schools and colleges. As part of the governance and management of the education system, 106 schools are already connected to X-Gest and in the process of setting up an Education Management Information System (EMIS).

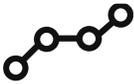
Despite efforts to achieve sustainable development objectives by 2025, training provision at the national scale has several gaps. The majority of the schools still need to be connected to benefit from access to the Internet. The analysis of the strategic plan also reveals much uncertainty about the objectives to be measured by 2025. Several targets are not quantified, which is a problem when assessing certain performance indicators at a given date.

⁶ The overall strategy, set out in 2016.

⁷ 773 public schools and 623 private schools according to the UNESCO International Bureau of Education in 2008; recent figures are not available.

2. KEY STRENGTHS OF DIGITAL ECONOMY

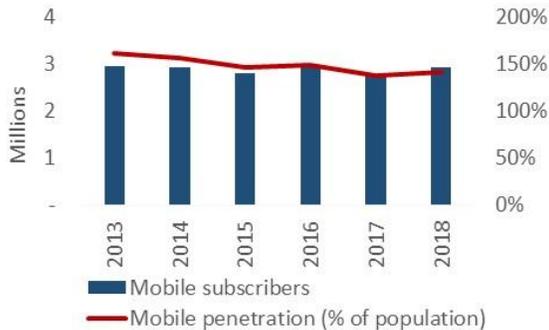
Summary of each pillar's strength

 <p>Digital infrastructure</p>	<p>The mobile telephony market in Gabon is mature compared to peer countries. The internet market is growing fast, driven by the explosion of 3G and 4G mobile broadband services. Gabon gets two direct accesses to international submarine cables, SAT-3 and ACE. A 1,030 kilometer fiber-optic backbone now operates between Libreville and Franceville through a public-private partnership, and an additional 500 kilometer extension is underway to interconnect Gabon with Cameroon, Congo, and Equatorial Guinea.</p>	<p>STRONG</p>
 <p>Digital platforms</p>	<p>Gabon uses technology to develop e-services, such as e-health, e-education, e-Visa, and land management. These transformational systems could change managing public services. For example, e-health, supported by the World Bank, aims to improve the timeliness and availability of information to support health service delivery and management. E-education, through X-Gest, provides a comprehensive school management system, including management of academic events, curriculum, facilities, teachers, and students with biometric ID.</p>	<p>MEDIUM</p>
 <p>Digital financial services</p>	<p>The central bank has adopted an enabling environment for the provision of DFS. The Central African Economic and Monetary Community (CEMAC) has adopted various texts constituting the regulation governing mobile money at the regional level. Almost 60 percent of adults have an account at a formal institution, which is the highest level in the CEMAC region. Ongoing reform by the monetary authorities of CEMAC aims to upgrade the regional payment infrastructure, building on the 2003 initial payment system regulation.</p>	<p>STRONG</p>
 <p>Digital entrepreneurship</p>	<p>Digital startups are particularly active in the service sectors, such as e-delivery and e-commerce. Internet-related services, such as web design and digital marketing agencies, are growing fast to help startups and established traditional companies embrace a digital approach. Private actors are starting to engage more in the digital ecosystem.</p>	<p>MEDIUM</p>
 <p>Digital skills</p>	<p>The government launched the e-education project in 2011, with the support of ANINF, to create digital classrooms in a few secondary schools in Libreville. Part of Gabon's e-education initiative, the X-Gest program, focuses on improving the quality of education. Both projects are incomplete and still ongoing. The Ministry of ICT and the World Bank launched labor market initiatives to encourage and place digital talent in the workplace.</p>	<p>LOW</p>

2.1 DIGITAL INFRASTRUCTURE

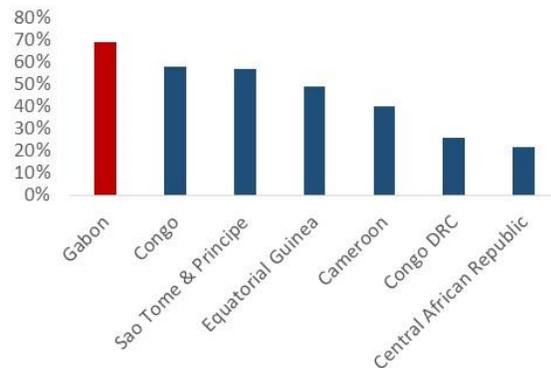
The mobile telephony market in Gabon is mature compared to peer countries, with ~140 percent service penetration (mobile telephony subscriptions) as of 2018,⁸ a rate that translates into about 69 percent of the population (individual mobile telephony users). There were more than 2.9 million telephony subscriptions at the end of 2018, quasi-exclusively prepaid (98.8 percent),⁹ for a population estimated at about two million people.¹⁰ The high penetration rate of mobile telephony can be explained by the strong multi-SIM effect,¹¹ as it is estimated that Gabonese own on average 2.3 SIMs per unique subscriber.¹² Discarding the multi-SIM effect, the penetration rate in terms of unique subscribers was about 69 percent at the end of 2018, which puts Gabon as a leader in central Africa by a large margin.

Figure 7. Evolution of mobile telephony subscribers and penetration rate as percentage of the population



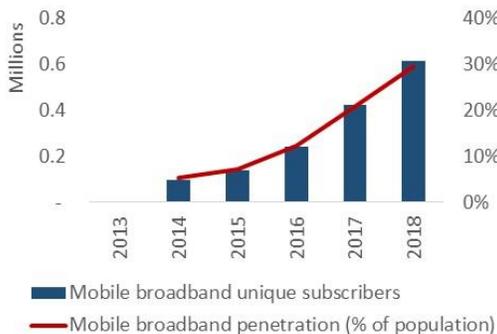
Source: ARCEP; TeleGeography.

Figure 8. Central Africa telephony unique subscribers as percentage of the population, 2018



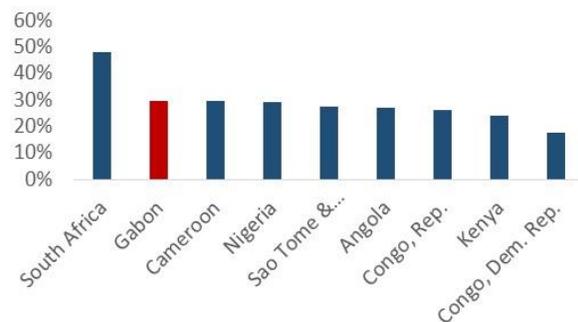
Source: GSMA 2017.

Figure 9. Evolution of number of unique mobile broadband subscribers (3G and 4G)



Source: GSMA.

Figure 10. Mobile broadband unique subscribers as percentage of the population, 2018



Source: GSMA.

The internet market is growing fast in Gabon, driven by the explosion of 3G and 4G mobile broadband services, reaching more than 1.9 million mobile broadband subscribers as of December 2018.¹³ Broadband services are mostly provided by mobile telecommunications operators using 3G and 4G technologies, since fixed technologies (DSL, cable) remain underdeveloped. While traditional fixed

⁸ As of December 2018, the penetration of mobile telephony estimated by ARCEP is about 162 percent, due to different population estimates.

⁹ ARCEP 2018, Observatoire des marchés: 4eme trimestre 2018, Marché de la Téléphonie Mobile au Gabon.

¹⁰ World Bank indicators.

¹¹ The multi-SIM effect describes people with multiple SIM cards who benefit from an on-network rate (better rates when calling users of the same network).

¹² GSMA.

¹³ ARCEP 2018, Observatoire des marchés: 4eme trimestre 2018, Marché de la Téléphonie Mobile au Gabon.

broadband technologies are unlikely to take off due to a poor “copper line” legacy infrastructure on which to develop, advanced technologies, such as fiber-to-the-home (FTTH) and fiber-to-the-building (FTTB), are now the development focus. Competition is driving retail prices down and quality of services up (broadband speeds), yet the uptake of fixed broadband internet remains limited.

Gabon has two direct accesses to international submarine cables, SAT-3 and ACE, operated respectively by Gabon Télécom and Axione. This dual access has increased competition (and thus decreased whole prices), improved quality of service, and added resilience through physical redundancy. ACE has increased the international capacity in Gabon by almost 70 percent. In terms of pricing, the international bandwidth of ACE is sold by Axione on an open-access, transparent, and non-discriminatory basis to all telecom operators, with prices that decreased between 40 percent and 80 percent over three years, depending on the type of service. In addition, Axione and Gabon Télécom signed an agreement to switch their traffic in case of failure of one submarine cable for fully redundant international access.

A 1,030 kilometer fiber-optic backbone now operates between Libreville and Franceville through the public-private partnership established between SPIN and Axione, and an additional 500 kilometer extension is underway to interconnect Gabon with Cameroon, Congo, and Equatorial Guinea. Commercialization of this network only started in February 2019 and is expected to bring high-quality Internet along this network, allowing operators to dramatically reduce their operating costs.

Internet usage has steadily increased, and Gabon appears as a regional leader. World Bank statistics suggest that the percentage of individuals using the Internet increased from 38 percent in 2014 to 50 percent in 2017. These figures put Gabon in the first position in central Africa and in a strong position in Sub Saharan Africa.

2.2 DIGITAL PLATFORMS

Gabon’s digital economy potential is vast, and digital platforms are key to building the foundations for a digital economy. The PSGE aims at building a competitive, resilient, and inclusive economy. It focuses on the key sectors that correspond to the country’s comparative advantages, such as agriculture, forestry, tourism, and ICT, and on developing national capacity in the sectors.

Gabon uses technology to develop e-services, such as e-health, e-education, e-Visa, and land management. These transformational systems could fundamentally change managing public services.

- **e-health**, supported by the Bank, aims to improve the timeliness and availability of information to support health service delivery and management, which should help improve Gabon’s human development outcomes. The National Health Information System will lead to improved accountability and work productivity for health professionals, in terms of reducing the administrative burden and minimizing administrative and medical errors. It will significantly change the way health workers deliver care, especially in rural areas where clinicians will have easier access to relevant specialists in urban areas. Electronic medical records and e-prescribing, together with clinical decision support capability, should allow clinical staff to improve diagnosis and treatment and reduce medical and prescribing mistakes, decreasing unnecessary hospitalization and the financial burden. The quality of data available to inform decision-making would improve, since much of it would be collected in real time as part of the clinical encounter.
- **e-education**, through X-Gest, provides a comprehensive school management system that includes management of academic events, curriculum, facilities, teachers, and students with biometric ID. It can transform not only school management for the ministry and teachers but also the relationships with parents, since they can monitor through a smartphone app real-time information on school attendance and education scores. The tool has been introduced in 92 secondary schools and is expanding to the rest of the secondary schools and primary schools.

2.3 DIGITAL FINANCIAL SERVICES

CEMAC monetary authorities aim to upgrade the regional payment infrastructure by building on the initial payment system regulation of 2003 (regulation n° 02/03/CEMAC/UMAC/CM of 28 March 2003 on payment systems and instruments). The initial modernization of payment systems of 1999 aimed to strengthen financial intermediation, deepen the financial sector, improve the monetary policy framework, and accelerate the process of sub-regional economic integration. In this context, the BEAC devised a regional payment system across the following axes:

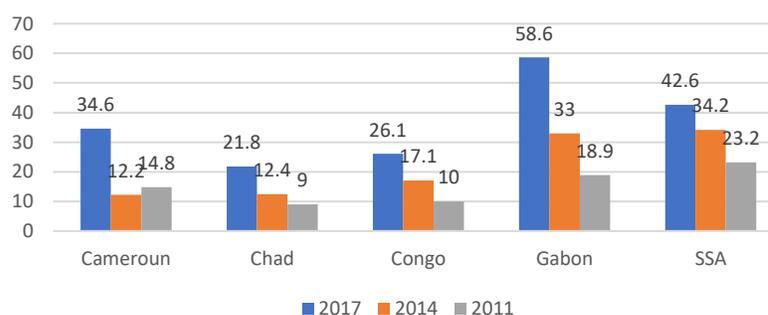
- The system of transaction exchange and settlement of systemically important transactions with the establishment of a real-time gross settlement system, known as the automated large-value system (SYGMA).
- The system of mass exchange and settlement with the establishment of a net mass payment system, referred to as the clearing system in Central Africa (SYSTAC).
- The regional retail payment system (SMI), a component entrusted to an external structure, known as the banking interbank group in Central Africa (GIMAC).
- The establishment of a system for the prevention and centralization of payment incidents (CIP).

The central bank has adopted an enabling environment for the provision of DFS. In Gabon, as in other CEMAC member countries, access to DFS is supported by a regulatory framework established by the BEAC. Both the payment system law and e-money regulation aim to provide conditions under which non-bank entities can provide financial services to the unbanked and underbanked.

CEMAC has adopted various texts at the regional level that constitute the regulation governing mobile money. This regulatory scheme, of which Regulation No 01/11/CEMAC/UMAC/CM of 18 September 2011 constitutes the basis, covers various e-money providers, including mobile telephony, Internet payments, and prepaid cards. The texts grant credit institutions the exclusivity of issuing e-money. In other words, any DFS provider must partner with a bank to operate. The partner bank acts as a guarantor to cover all of the money in circulation. For example, the BGFI Bank holds the Airtel money license.

Adults with a financial account. Almost 60 percent of adults have an account at a formal institution, which is the highest level in the CEMAC region (Figure 11).

Figure 11. Percentage of adults with access to a transaction account



Source: Global Index.

2.4 DIGITAL ENTREPRENEURSHIP

Digital startups are particularly active in the service sectors, such as e-delivery and e-commerce. In the food industry, restaurants are embracing e-delivery, a solution that fits with the lifestyle of young professionals between 18 and 40 years old. In retail, e-commerce is growing because of the lack of offline options. The limited physical retail offerings in Libreville and the high cost of living make it attractive to shop online. Consequently, the logistics sector is booming to help e-commerce and restaurants fulfill their orders. It also overcomes the lack of trust toward local postal services.

Internet-related services, such as web design and digital marketing agencies, are growing fast to help startups and established traditional companies embrace a digital approach. The Ogooué Lab center offers trainings on website creation and digital marketing. Media agencies in Libreville¹⁴ offer website building, web marketing, community management, mobile app creation, and search engine optimization. Global Mind Consulting founder Seynabou Dia is involved in the Women In Africa network and was elected entrepreneur of the year in 2018.¹⁵ SlenhTech is a web marketing and communication agency founded by Laurain Essono Ngoua,¹⁶ who later built Tikkeo, an event promotion and online ticketing platform that won the prestigious *Prix de l'excellence du Président de la République Gabonaise Catégorie CAN2017*. The Internet-related services landscape also includes freelancers, such as Jasmine Mabe,¹⁷ a website and strategy designer who is responsible for the Facebook group "Amazons of the web," where she helps more than 400 women take charge of digital tools to develop their business.

The expanding use of e-money offers expansion opportunities for digital ventures. Although Gabon has one of the highest banking penetrations in central Africa, the use of e-money (for example, Airtel Money and PayPal) has grown rapidly. Various segments of the population use these technologies to send or receive money or to pay utility bills.

Private actors are engaging more in the digital ecosystem. For example, G-Lab is a private incubator that offers rental space to entrepreneurs and aims to promote the ecosystem by bringing International Digital Entrepreneurship Week to Gabon.¹⁸ G-Lab has plans to expand into offering training, networking, and funding opportunities to digital entrepreneurs. Another private accelerator is Entreprenarium Gabon, a branch of the Entreprenarium Foundation,¹⁹ which has implemented several training programs. Forerunner is the only incubator from Gabon that has a pan-African reach. It offers acceleration, training, and funding programs for youth and women. It is financed by private donors and the revenues generated by consulting and project management activities.

2.5 DIGITAL SKILLS

The government launched the e-education project in 2011, with the support of ANINF, to create digital classrooms in a few secondary schools in Libreville. Sixteen have already been built as part of the e-education project and 106 are under construction (27 of which are at a very advanced level). With this new pedagogical approach, the government aims to: (1) interconnect schools with line ministries through applications developed and managed by private providers; (2) digitally manage classroom courses and promote the creation of local and interactive training content; and (3) integrate the use of digital literacy from secondary school onwards. This would allow for students to be trained with basic digital skills in line with the needs of the labor market.

¹⁴ See <https://www.sortlist.com/fr/marketing/gabon-ga>.

¹⁵ See <http://globalmind-gabon.com/femme-entrepreneur-seul-dordre-oser/>.

¹⁶ See <http://slenhtech-corp.com/>.

¹⁷ See <https://virtualcrew.fr/>.

¹⁸ See <http://glab.jobs-conseil.com/>.

¹⁹ See www.entreprenarium.org/.

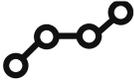
Part of Gabon's e-education initiative, the X-Gest program, focuses on improving the quality of education service delivery. X-Gest (1) enables the establishment of an integrated information and management system for school life; (2) facilitates collaboration and communication between schools, parents, and teachers; and (3) streamlines administrative procedures, file tracking, and the creation of dashboards for real-time information. This program requires the training of civil servants to manage a database of 23,000 teachers with the technical assistance of ANINF via the Administrative Training Center (Cafimb). The objective is to meet the training needs of civil servants in Microsoft Office tools.

Most private schools offer business and management training with digital components, which require a computer to access. Private institutions use professionals who do not all have academic qualifications for a large part of their teaching. They are encouraged to teach classes in a practical way using modern digital tools. This allows students to improve the quality of their basic digital skills and the integration of digital uses into the workspace, such as sending e-mails, entering documents, and automating calculations. This aligns with one of the priority objectives of the Gabonese government, which is to professionalize 70 percent of sectors by improving the employment performance of graduates of secondary education, Technical and Vocational Education and Training (TVET), and higher education.

The Ministry of ICT and the World Bank launched labor market initiatives to encourage and place digital talent in the workplace. This initiative includes the master classes organized by SING and e-Gabon, and the opening of a training center dedicated to ICT in the Nkok economic district through the Skills Development and Employability Project.

3. KEY WEAKNESSES/ROADBLOCKS OF DIGITAL ECONOMY

Summary of each pillar's weaknesses and roadblocks

 <p>Digital infrastructure</p>	<p>Mobile telephony retail prices have stagnated in the past years, while over-the-top services are progressively eroding revenues per user. The quality of service provided by mobile operators is not fully satisfactory. The price levels for international access remains high compared to international benchmarks and are not compatible with mass adoptions of high-speed broadband Internet in the country. Gabon's ability to be globally competitive and fully benefit from digital technologies still lacks policies and regulatory instruments to ensure that every Gabonese is connected.</p>	<p>MODERATE</p>
 <p>Digital platforms</p>	<p>The lack of a clear institutional framework is the main issue for a successful implementation of the e-government strategy. Gabon requires the foundational law for the digitization of administration and online procedures of public services to support implementation of the e-government strategy. The current cyber security environment is missing an institution with the formal legal mandate to establish standards and regulate prevention measures. Government institutions face serious challenges in the current operations and investment for maintaining and upgrading the existing system due to the lack of financial and human resources.</p>	<p>MODERATE</p>
 <p>Digital financial services</p>	<p>The absence of a national and regional financial inclusion strategy, along with other lacking regulations and systems, limit DFS development in Gabon. There is limited interoperability of DFS despite the presence of the GIMAC. Weak credit infrastructure hampers access to finance.</p>	<p>MODERATE</p>
 <p>Digital entrepreneurship</p>	<p>The government has an array of training programs, but the basic needs of businesses in terms of digital skills still need to be addressed. The digital entrepreneurship community remains disconnected and lacks voice and formal representation. While financial inclusion has massively benefited from the emergence of mobile banking, access to finance remains a major constraint to entrepreneurship. Targeted investments in digital companies are still scarce. Local investors lack the capacity to understand and assess the credit-worthiness of digital ventures.</p>	<p>SUBSTANTIAL</p>
 <p>Digital skills</p>	<p>Lack of foundational skills in basic education and lack of STEM training undermine the adoption of digital culture among learners from school. There is a gap between e-skills produced by the national education system and those required by the current and future labor market. In the absence of a reliable EMIS, the government is having difficulties in deploying and improving the availability of basic tools for digital curriculum integration. There are</p>	<p>SUBSTANTIAL</p>

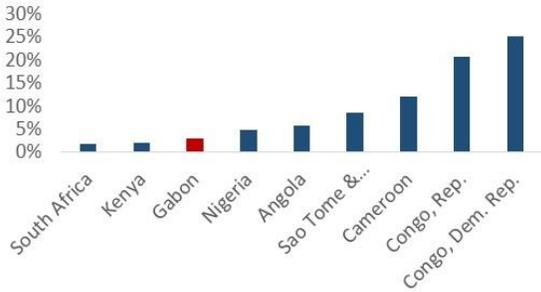
	currently no national programs in schools to develop skills in e-commerce or the advanced use of digital technology, with the exception of specialized courses where access remains limited.	
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3.1 DIGITAL INFRASTRUCTURE

Mobile telephony retail prices have stagnated for the past five years, while over-the-top services progressively erode the revenues per user. Using a price basket methodology compared to population income, mobile telephony services appear affordable in Gabon compared to other peer countries, representing about 1 percent of average monthly gross income per capita in Gabon as of 2017, compared to 4 percent in Kenya and 2 percent in Nigeria. However, according to ARCEP, retail prices of telephony have been flat since 2015, which tends to suggest a limited competitive intensity in this market segment.

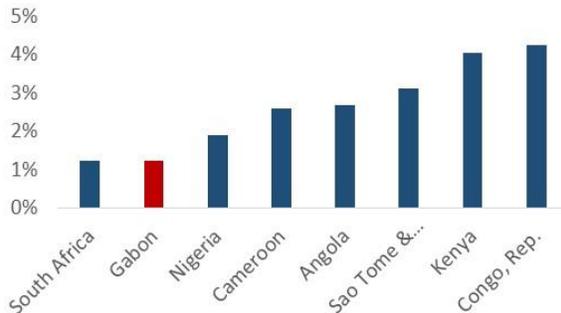
While mobile internet prices appear affordable, low-income individuals remain excluded from this service, at least from a “comfortable” usage. Mobile broadband services appear relatively expensive in absolute terms yet affordable when compared to the gross national income (GNI), representing about 2 percent of average monthly gross income per capita in Gabon as of 2017, in line with South Africa and cheaper than Nigeria (2.5 percent) and Kenya (4 percent). The evolution of average revenue per user for mobile broadband services suggests that consumption is not driven by unit price but by overall spending. More price decreases seem therefore necessary to increase the usage of existing users and increase penetration.

Figure 1. Selected countries’ mobile telephony basket price as percent GNI per capita, 2017



Source: ITU.

Figure 2. Selected countries’ mobile broadband basket price, prepaid handset-based (500MB) as percent GNI per capita, 2017



Source: ITU.

According to ARCEP assessments, the quality of service provided by mobile operators is not fully satisfactory, with a large proportion of technical commitments not respected by market players. More concerning is that the quality of service appears to be deteriorating related to the quality of telephony (coverage and quality of communication), especially in rural areas. Following an audit performed in the third quarter of 2018, the regulator mentioned that it would consider imposing sanctions on the two operators (after having issued formal notices), should they fail to improve these indicators. Sanctions could include financial penalties, suspension, reduction of the duration, or even withdrawal of the operating license or authorization.

The price levels for international access remain high compared to international benchmarks and are not compatible with mass adoption of high-speed broadband Internet in the country. Benchmarks of wholesale international prices suggest that Gabon remains high compared to peer countries.

The national digital infrastructure has been limited until recently, with most of the national infrastructure relying on microwave links deployed by Gabon Télécom and Airtel Gabon and the submarine link between Libreville and Port-Gentil. Today, Axione operates the only significant national fiber optic backbone, reselling capacity on a submarine backbone between Libreville and Port-Gentil that was established together with the arrival of the ACE cable. While connection prices have decreased by about 40 percent between 2015 and 2018, most operators still consider prices too high and prevent further development of high-speed broadband services in Port-Gentil.

Infrastructure sharing is neither implemented between mobile operators themselves nor between mobile operators and players in other sectors, with the exception of GVA and SEEEG. Infrastructure sharing refers to telecommunications operators sharing one another's network infrastructure, or at least some elements of it, such as wireless masts or cable ducts. This represents a missed opportunity to lower the costs of deployment and maintenance. Only GVA mutualizes its network rollout with the power infrastructure, sharing the pole to deploy its fiber optic.

The government's fiber network (Réseau de l'Administration Gabonaise - RAG) may be underutilized since utilization by third-party operators is not implemented. The government has made commendable efforts to address infrastructure gaps through investment in RAG, which interconnects public institutions in all nine districts of the country. This network could complement private investment in some districts that lack general connectivity. However, there is currently no regulatory guideline for access by private operators to the infrastructure. RAG is also managed by the ANINF, which is primarily a policy and implementation agency and may not have the capacity to manage such extensive infrastructure.

Despite this progress, Gabon's ability to be globally competitive and fully benefit from digital technologies still lacks policies and regulatory instruments that ensure that every Gabonese is digitally connected. Access and coverage data confirm the existence of significant black spots, especially outside of the main cities. Even though the country's per capita income is almost quadruple that of most African countries, close to a third of the population lives below the poverty line and are likely unable to meet the global affordability target of 1GB of data for 2 percent of national monthly income set by the Alliance for Affordable Internet.

Several key legislations that could improve the competitiveness of the sector and help Gabon fully achieve its ambition to become a sub-regional hub are still pending government approval. These include four draft laws on electronic communications, electronic transactions, cyber security, and protection of personal data.

3.2 DIGITAL PLATFORMS

To reach the level of digitalization required by the e-government strategy, several changes need to be made, including: updated legislation to clarify the roles and responsibilities of government stakeholders; a full trust framework, including relevant standards and procedures for issuing and using certificates; and more human resources and technical capacity to allow the public key infrastructure (PKI) to operate at scale. PKI provides a secure means of encrypting and signing digital messages that underpins all modern digital economies. PKI is essential to securing secure documents, such as ID cards, as well as communications, such as personal data shared. To establish trust in a country's PKI, a clear legal and regulatory framework is required that clarifies institutional arrangements for managing the PKI and lays out rules and procedures governing how digital certificates are implemented. In Gabon, some initial investments in PKI were made and are used for specific cases, such as passports.

The lack of a clear institutional framework within the government is the main issue for implementation of the e-government strategy. The Ministry of Communication and Digital Economy is the highest body

supervising the ICT, e-government, and digital economy. This Ministry is Under the ministry, several agencies and institutions are responsible for various aspects of the ICT sector. While the top two tiers are primarily responsible for managing and supervising the overall regulatory framework, much of the implementation for Gabon's digital strategy is executed by agencies under ARCEP and ANINF. Given that digital economy development is a key agenda in the overall development strategy, leadership for the implementation of the e-government strategy and collaboration within the government are essential. Currently, there is no formal institutional mechanism to oversee, lead, and coordinate the implementation of the strategy. The government is encouraged to determine exactly which policy makers should decide on e-government investments that are congruent with national development strategy and goals and reflect these institutional arrangements in relevant legislation.

Gabon requires the foundational law for the digitization of administration and online procedures for public services to support implementation of the e-government strategy. The personal data protection law was approved and enacted in 2011 and followed by amendments in 2013 to cover issues related to newer technologies such as biometrics. However, the regulatory framework has not been developed to safeguard personal data adequately. Moreover, for certain areas of activity, mostly concerning new technologies, institutional governance arrangements have yet to be fully clarified in law. National public key infrastructure, cyber security arrangements, and the foundational ID system are all critical enablers of e-government and the ICT sector in general, which will require further legislation to enable investments.

The government needs to coordinate and balance its ICT-enabled transformation with other more traditional means of governing and delivering services across all the ministries, departments, and agencies. Many ministries already have systems and processes that are either not ICT-enabled or have been created on platforms that may not be compatible with the proposed common enterprise architecture. Over the years, these "legacy systems" deploy practices that have become entrenched in the culture of government service; however, they may no longer serve Gabon's forward-looking e-government strategy. While it is in the overall interest for the government to take a "whole-of-government" approach to its e-government development, this dichotomy must be reconciled with the need to empower agencies and ministries to articulate their service priorities, implement their ICT-enabled service transformations, and integrate ICT with their sector strategies. Thus, ANINF and the Digital Economy Unit need to work together with the line ministries to achieve modern, client-centered public services that span agencies and ministries. Specific incentives and institutional frameworks must be established to encourage collaboration rather than competition.

The current cyber security environment lacks an institution (or institutions) with the formal legal mandate to establish standards and regulate prevention measures taken by users of e-government as well as to coordinate threat detection and response activities at a national level. Once formally designated, investments should be made in this or these institutions to ensure that they are effectively able to execute their regulatory and operational roles at a national level.

The ID landscape in Gabon currently includes multiple independent ID systems linked to specific functions. Of these functional ID systems, the two with the highest coverage are the social registry (CNAM-GS) and the electoral roll (IBOGA), which contain approximately 1 million and 700,000 records respectively. Key weaknesses of the current ID landscape include a lack of a unique identifier common to all databases, incomplete coverage of the population, duplication of investments across multiple systems, lack of secure data exchange mechanisms between ID systems and authorized users, and in the case of the CNAM-GS, weak systems in place to protect against duplicate registrations.²⁰

²⁰ While the electoral roll includes an automated biometric system to detect duplicate records (ABIS), the CNAM-GS has no such system in place. Thus, it is likely that the CNAM-GS database contains some duplicates.

The General Directorate of Tax manages two systems for tax administration: (1) LIIR, the back-end tax administration system, and (2) e-T@x, the tax filing system for taxpayers who are registered with a tax registration number. The LIIR covers the functionalities of taxpayer registration, declarations, refunds, management of tax arrears, and tax payments. However, the system appears to have some flaws: statistics and reports cannot be automatically produced and have no key functions, such as a risk assessment module or link with third-party agencies other than the department of treasury to confirm the payments. The technology used is already obsolete. The e-T@x project was launched in 2011 with the law authorizing online tax declaration procedure and went live in 2013. Currently, approximately 50 percent of big enterprises and 20 percent of small- to medium-size enterprises declare tax through e-T@x online.

DGI and DGDDI face serious challenges in the current operations and investment for maintaining and upgrading the existing system due to the lack of financial and human resources. Interface between the central system and systems at the regional level has not been ensured, nor has it been between the DGI and DGDDI. Political will and leadership are essential to develop the strategic reform vision with an integrated approach, implement the project that requires major changes in the workflow and relationship with taxpayers, and bring in necessary financial and staff resources.

Despite efforts for its development, there is a scope to improve its efficiency and transparency for sound public financial management (PFM). VECTIS was originally designed to cover the full budget execution process from the commitment to payment at both central and regional levels as well as the budget preparation phase. However, it is only operational at the central level due to budget constraints and lack of network at regional levels. Also, in-house capacities to manage VECTIS are limited. The lack of in-house capacities increases operational risks and leads to system dysfunctions.

3.3 DIGITAL FINANCIAL SERVICES

The absence of a national and regional financial inclusion strategy limits DFS development in Gabon. Unlike several countries in Sub Saharan Africa, Gabon does not have a national financial inclusion strategy despite recent progress in terms of financial inclusion, particularly with the introduction of mobile money service by mobile operators. Having a clear financial inclusion strategy or roadmap can help define priority areas to tackle based on a preliminary diagnostic on access to finance.

Other lacking regulations and systems also have an impact on DFS development:

- *Fintech startups suffer from the lack of a clear legal category.* The new law on payment services and the current banking law do not address Fintech as a specific category of providers.
- *Mandating interoperability is seen as a weakness of the regulatory framework.* This law has the potential to disrupt the DFS market since it mandates all payment service providers to channel their transactions to the regional switch and ensure that all of their transactions are interoperable with the existing payment infrastructure.
- *E-money issuance is restricted to banks.* As a result, telecom operators must offer financial services only in association with a bank. In addition, the regulator recently put a ban on telecom operators offering remittance services to countries outside the CEMAC region. All of these restrictions put limits on the growth and scaling-up of e-money services.
- *No clear laws govern agent banking.* Service delivery in rural areas is hampered by regulation and technical limitations of Mobile Network Operator (MNO) availability. Technical limitations of the availability of MNO services in rural areas have been reported, leading to continued preference for over-the-counter providers and credit unions.
- *Know Your Customer requirements are unfavorable.* There are no provisions for tiered Know Your Customer for low value accounts. Anti-money laundering regulation requires presentation of identification at account opening. However, 33 percent of the population do not hold any form of

ID and cannot access formal financial services.

- *There is a low level of digitization in government payments.* Gabon stands better than average with 10.3 percent of adults receiving government payments, but this could be improved given the potential represented by civil servants, students, and retirees. The digital transformation of the Gabonese administration will significantly reduce operating cost and limit the capacity for fraud and corruption. These issues are crucial in Gabon, with an annual increase of payroll expenses of nearly 15 percent since 2011, and in a context of distrust with regard to public officials.
- *The financial consumer protection framework on DFS lacks guidelines aimed at protecting customers' funds.* E-money is regulated by the 2011 Emoney Directive but fails to require customers' funds to be safeguarded in at least one escrow account. Furthermore, it is silent on the various possible usages of customers' funds, which exposes them to risky investments. In addition, the regulation is not clear on interest payments and interest sharing, nor does it mention the reimbursement, claim support, and fees disclosure. In addition to create online trust, overall consumer protection (beyond financial) is needed

Despite the presence of the GIMAC, there is limited interoperability of DFS. The GIMAC has 56 members, including 52 banks and four MFIs across the six CEMAC countries. It was created to ensure interoperability and interbanking in the financial sector. The various payment points are only interoperable through the card payment network whether the transactions are processed via the regional label (GIMAC) or international (Visa and MasterCard). BEAC has taken steps to establish full interoperability through the GIMAC platform. It also aims to enhance mobile interoperability within the region and across borders. There is a large, untapped market for full digital payment interoperability.

Weak credit infrastructure hampers access to finance. Domestic credit to the private sector is low at 15 percent of GDP in the Central African Republic and Cameroon, 14 percent in Gabon, 11 percent in the Democratic Republic of Congo, and 6 percent in Chad. According to business surveys, access to finance is identified as a major constraint by firms operating in the region. The value of the collateral needed for a loan is very high. For example, it represents 256 percent of the loan amount in Cameroon and 233 percent in the Central African Republic. This is the result of multiple factors, including asymmetric information and weak collateral and insolvency frameworks. The majority of individuals and businesses in the region do not have a credit history. According to Doing Business data, none of the countries in the region has an operational private credit bureau. The coverage of the Regional Public Credit Registry remains limited. In addition, the guarantee frameworks are underdeveloped and no CEMAC member country has a securities guarantee registry. Insolvency frameworks are ineffective because of the court system's limited capacity.

3.4 DIGITAL ENTREPRENEURSHIP

The digital entrepreneurship community remains disconnected and lacks voice and formal representation. Open Data communities are emerging via the Open Street Map community, and numerous events are regularly hosted, such as cafés numériques, Digital Thursdays, Digital Meetups, and Lbv Dev meetups. However, a well-structured tech companies' federation is yet to be developed.

While financial inclusion has massively benefited from the emergence of mobile banking, access to finance remains a major constraint to entrepreneurship. The core issue lies in the domestic capital and credit market with individuals and SMEs unable to secure financing for their economic activity. Domestic credit provided to the private sector attained 10.4 percent of GDP in 2017, down from 13.6 percent of GDP in 2016.²¹ It is well below the levels of Sub Saharan Africa, where credit to private sector accounts for

²¹ World Development Indicators 2018. The last available year is 2017, except for Sub Saharan Africa for which it is 2016. The figure includes credit provided by any kind of financial establishment, including, but not limited to, banks.

45.4 percent of GDP in 2016, while it reaches 130.1 percent of GDP for upper middle-income countries in 2017. SMEs face lower access to finance than in Gabon's peer groups because banks prioritize credit to large and safer corporations. Banks cite absence of a credit reporting system and lack of company information and guarantees as underlying reasons for low credit supply and high lending rates. Most SMEs have difficulties obtaining credit given the limited role of MFIs and banks with short-term liquidity that they cannot use for long-term credit.

Targeted investments in digital companies are still scarce. No investment funds or business angel investors are formally registered in Gabon, and financial institutions remain extremely cautious when it comes to financing digital projects, especially at an early stage. To finance their project, most entrepreneurs rely on their own funds, family, and friends, and grants awarded in international competitions. A limited number of Gabonese companies has reached a growth stage that would give them access to commercial loans or equity capital. Deloitte noted in a 2018 report²² that a generation of Gabonese entrepreneurs are considering going abroad or have already left to develop their projects.

Local investors lack the capacity to understand and assess the credit-worthiness of digital ventures. Consultations with digital entrepreneurs indicated that rejections of funding requests stem from the poor understanding of digital businesses by financial institutions that are used to large corporate clients.

The government has had mixed results on initiatives related to entrepreneurs. For instance, the government and Samsung committed to build more than 2,000 digital towns throughout the country. The first pilot was conducted between 2014 and 2018 to revolutionize health and education services in rural areas via telemedicine and digital schools. Samsung's Digital Villages have also been installed in the Democratic Republic of Congo, Ghana, Nigeria, Tanzania, South Africa, and Sudan. A Samsung Digital Village comprises a Solar Power Generator, Solar-Powered Internet School, Health Centre, Tele-Medical Centre, and Administration Centre. In addition, telecoms operators Airtel and Gabon Telecom provide connectivity. Consultations with stakeholders reveal that the first pilot was a shell project and was canceled due to lack of funding and coordination with the local private sector. Other government initiatives include incubators.

3.5 DIGITAL SKILLS

Poor educational performance limits the expansion of digital skills. Limited numbers of children attending preschool, high repetition throughout the cycles, high dropout rates, overcrowded classrooms, and high insecurity are not a conducive environment to quality learning. Foundational skills such as literacy, numeracy, and socio-emotional skills are essential prerequisites for the acquisition of even the most rudimentary digital skills. As a result, many Gabonese youth cannot take full advantage of the digital economy.

The lack of foundational skills in basic education and the lack of STEM training undermine adoption of digital culture among learners from school. There is a lack of STEM training due to a shortage of mathematics teachers in secondary education. The average pupil-teacher ratio in primary education is above 60:1, which indicates a general shortage of teachers in public and private schools. This situation does not favor the adoption of digital literacy among learners at school.

The lack of appropriate materials and educational content has been identified as an obstacle to the use of ICT tools and basic digital skills training envisaged in the new curriculum framework. Again, if students

²² Rapport sur l'incubateur numérique de Libreville, Fiche 2 - Analyse de l'écosystème du numérique, NUMA & Deloitte, February 2017

and educators do not have the tools and materials needed, the quality and success of digital skills training may be compromised. Due to low availability of the Internet in the administration, in public schools, or training centers, connections are only available in some central buildings. Some agents finance their own Internet access by purchasing data keys from operators; most do not have access.

There is a gap between the e-skills produced by the national education system and those required by the current and future labor market. The gap is mainly due to a lack of information on the digital skills supply and demand as well as skill needs, for each competency area and level of digital skills. The mismatch between supply and demand has led to an increase in training programs, which have not been well coordinated. The public training in basic digital skills is mainly supported by ANINF, the Ministry of National Education, and Office Nationale de l'Emploi. They have launched a series of introductory training programs for youth in the basic use of digital technology.

In the absence of a reliable EMIS, the government is having difficulties deploying and improving the availability of basic tools for digital curriculum integration. The lack of statistical data is an important constraint to the efficient management of the country's education system. Without a reliable EMIS, adequate tools to measure and monitor learning and labor market outcomes, and efficient mechanisms to share information with schools, education authorities are unable to monitor progress and make informed decisions on policy reforms. The lack of a coordinated EMIS is a major obstacle to the effective integration of digital projects in Gabon's education system. EMIS, as well as school maps, could provide a more comprehensive view of the education sector's needs. Both are necessary to support data for decision-making and target populations that could benefit from basic digital skills education.

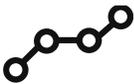
There are currently no national programs in schools to develop skills in e-commerce or the advanced use of digital technology, with the exception of specialized courses where access remains limited. Fifty-three youth received training in web and mobile application development (40 percent) and as IT support assistants (25 percent). This is an accelerated certification course organized by the Ministry of Vocational Training that lasted four months, which was accessed on smartphones and tablets.

The low availability of STEM disciplines, including IT, will continue to limit the availability of a skilled digital workforce; especially a workforce with advanced digital skills. Given that training its youth in STEM is in Gabon's interest, it appears that the country is ill-prepared for the future world of work induced by the fourth industrial revolution. As a result, young Gabonese of working age who have graduated risk being harmed by the country's digital transformation.

The government has an array of training programs, but the basic needs of businesses in terms of digital skills still need to be addressed and initiatives to provide digital skills training for women are fragmented. There is a mismatch between labor market supply and demand. People with certain digital skills, such as experienced software developers, are not available in Gabon. A majority of existing programs target the needs of existing companies and not the needs of digital startups. In spite of the positive orientations, according to the EIU Digital Inclusion index 2020, "the government does not have an active strategy to promote Internet access and e-inclusion for females, and there is a gender gap in Internet access over 10% (...) The government of Gabon does not have an action plan to provide digital skills training for women. Initiatives to provide digital skills training for women are fragmented and not led by the government. In 2018, the group "Connected Women of Gabon" and the National Agency of Digital Infrastructure and Frequencies (ANINF) organized an awareness campaign on the dangers of Internet use and cybersecurity. It aimed to educate around one hundred young women on Internet use while making them aware of its risks. (...) The government of Gabon does not have a policy that encourages women and girls to study STEM. (...) Girls are underrepresented in STEM subjects and there is no evidence of any government policies to address this."

4. KEY OPPORTUNITIES OF DIGITAL ECONOMY

Summary of each pillar's opportunities

 <p>Digital infrastructure</p>	<p>Gabon will soon exploit three trans-border interconnections with the Congo, Cameroon, and Equatorial Guinea, which will enable traffic exchanges between these countries and allow Gabon to resell international capacity to its neighbors. Increase of traffic would permit the Gabon Internet Exchange Point (IXP) to reach unexploited potential. The authorities are maturing a project to invest in a modern national datacenter to support the development of digital services and leverage mutualized opportunities. Population coverage by mobile infrastructure is quite extensive in Gabon, yet a USF could further increase mobile penetration in rural areas.</p>	<p>STRONG</p>
 <p>Digital platforms</p>	<p>Gabon is reviewing its standards and protocols to ensure that international standards for telecommunications and computing are upwardly compatible and take advantage of newer technologies. Government strategy entails creating a foundational ID system and assigning a unique identifier to each citizen and resident of Gabon. Most significant among the back-end systems are improvements in PFM across all levels of government and digitization of its public administration, notably for a land management system and citizen engagement mechanisms.</p>	<p>STRONG</p>
 <p>Digital financial services</p>	<p>The Gabonese government has engaged in implementing a national platform for payment interoperability with the support of the regional switch (GIMAC). Leveraging mobile money usage launched in 2012 in partnership with BGFIBank, the Airtel money service is now one of the most attractive solutions to bill payments.</p>	<p>LOW</p>
 <p>Digital entrepreneurship</p>	<p>Government strategy encourages the adoption of a series of policies to promote and support both local digital entrepreneurs and foreign investors. Active digital incubators based on collaboration between local and international actors could spearhead the growth of digital startups. Various actors invest in the local digital ecosystem, including digital incubators and training programs for youth, which could lead to digital skills development. Several key legislations that could improve the competitiveness of the sector and help Gabon to fully achieve its ambition to become a sub-regional hub are in the process of government.</p>	<p>MEDIUM</p>
 <p>Digital skills</p>	<p>Three public higher education institutions are oriented toward advanced training in digital skills. Annually, Gabon can produce about 500 graduates specialized in computer science. Most private schools offer business and management trainings with digital components. The Gabonese entrepreneurial ecosystem plays a key role in promoting e-business skills through a network of technology centers and incubators; it promotes exchanges with the best commercial and digital skills through informal training around different digital events. The private sector of the economy addresses skills mismatches through various programs.</p>	<p>STRONG</p>

4.1 DIGITAL INFRASTRUCTURE

Gabon will soon exploit three transborder interconnections with the Congo, Cameroon, and Equatorial Guinea, which will enable traffic exchanges between these countries and allow Gabon to resell international capacity to these neighbors. These additional interconnections will increase the number of potential customers of international access (that is, national operators in these three countries). In particular, if Axione resells capacity internationally, the volume effect will enable Axione to reduce its tariffs. Since tariffs are applied on a non-discriminatory basis, all operators of Gabon would thus benefit from these reductions. As of May 2019, the physical interconnection with Congo is operational but not yet commercialized, pending the approval by the national regulators on both sides of the border. The physical interconnections with Cameroon and Equatorial Guinea are expected to be operational in September 2020, and Memorandum of Understandings between these countries need to be signed to define the interconnexion rules.

An IXP is operational in Gabon, with sizable traffic exchanged but large unexploited potential. An IXP is a physical infrastructure through which ISPs and content delivery networks exchange national internet traffic between their networks. The Gabonese IXP, called GabIXP, was inaugurated in December 2014 and selected in July 2015 by the African Union to become the first of two regional IXPs for Central Africa. GabIXP is managed by an association gathering the main sectoral stakeholders and has several connected members. Currently, the traffic exchanged at the IXP is relatively low compared to the region.

The authorities are maturing a project to invest in a modern national datacenter to support the development of digital services and leverage mutualization opportunities. Today, large entities in the digital space and beyond each operate its own datacenter for its own needs: Gabon Télécom, Airtel Gabon, ANINF, corporates such as BICIG and SEEG, and so on. Such investment in the form of a public-private partnership would be meaningful in terms of cost efficiencies and technical expertise and become a stepping stone for the development of e-government services and the digital economy overall.

Population coverage by mobile infrastructure is quite extensive in Gabon (about 89 percent of the population covered by mobile telephony and 68 percent mobile broadband in 2018),²³ yet large geographic areas remain totally uncovered (about 25 percent of the country were covered by mobile telephony and less than 20 percent mobile broadband in 2018). This satisfactory coverage is facilitated by the highly urbanized population, but geographic coverage remains quite partial. Vast rural areas remain completely uncovered. Mobile broadband 3G and 4G population coverage trails behind, with about 68 percent of the population covered in 2018, and a geographic coverage estimated at less than 20 percent. Acknowledging these coverage gaps and the lack of economic rationale for private operators to invest in remote and sparsely populated areas, the regulator has started to implement USF projects.

4.2 DIGITAL PLATFORMS

Gabon is reviewing its standards and protocols to ensure that international standards for telecommunications and computing are upwardly compatible and take advantage of newer technologies. This requires an advanced technology- and vendor-neutral approach that embraces open standards, market-based competition, and innovation, and ensures that Gabon takes advantage of tested secure protocols and procedures for digital development. The legal basis for this work has been undertaken and focuses on ensuring that: (1) all processes must be adjusted and standardized before conversion to digital format and (2) access to networks, data, applications, and other digital interfaces should be carried out in the confines of a secure system. As part of the e-health component of the eGabon

²³ GSMA.

project, work has been undertaken on the legal and regulatory framework necessary for enabling a national digital health system and on the standards needed to facilitate an interoperable system.

Government strategy entails creating a foundational ID system and assigning a unique identifier to each citizen and resident of Gabon. This system would be based initially on legacy data migrated from existing functional ID databases, including the electoral and social registries, with supplemental registration efforts required to bring it to full coverage of the eligible population. The combined system would be open to citizens and non-citizens, assigning them a unique identifier (NIP) that would remain unchanged throughout the person's lifetime. The uniqueness of each record would be assured through de-duplication based on an automated biometric matching system housed within the foundational ID system. Interoperability with functional ID systems and service providers would allow the uniqueness of these databases to be ensured using the foundational ID. This interoperability would also make digital ID authentication and secure data sharing possible, both of which would increase the effectiveness of service delivery. Over time, the database of NIPs would interoperate with the digitized civil registry database, ensuring that each NIP links to a birth record. Links to the civil registration system would also be critical to ensure that the population has sufficient access to registration points where they can obtain a NIP and also ensure that NIPs can be generated at birth.

Most significant among the back-end systems are improvements in PFM across all levels of government and digitization of its public administration. As part of the modernization of the PFM framework, Gabon introduced the program budgeting approach in 2010 that went into effect in 2015 with the inclusion of CEMAC PFM Directives into the new PFM Act. The implementation of reform required a sound IFMIS to reflect the critical organizational and managerial changes that introduced new budget management stakeholders and merged the budget, financial control, and public contracts departments into the General Directorate of Budget and Public Finance.

The importance of creating a land management system cannot be understated: without knowing who owns what and where, neither proper land management nor urban planning is possible. Additionally, land disputes cause increased pressure on overworked court systems. This land information should be made available through the establishment of a cadaster, in connection with a land register (conservation foncière). Together they constitute an infrastructure of sustainable development, providing the foundation of the three pillars of sustainable development: social, economic, and environmental.

Some informal citizen feedback mechanisms exist, but this area needs to improve the most. Any existing e-services have either no citizen feedback and grievance redress mechanisms, or if they do exist, they are mostly dysfunctional. The government is yet to develop a citizen-centric approach in a coherent and coordinated manner to provide faster, user-friendly, and efficient services for users, request feedback from citizens, and provide them information, which will form the basis of an Open Data instrument.

4.3 DIGITAL FINANCIAL SERVICES

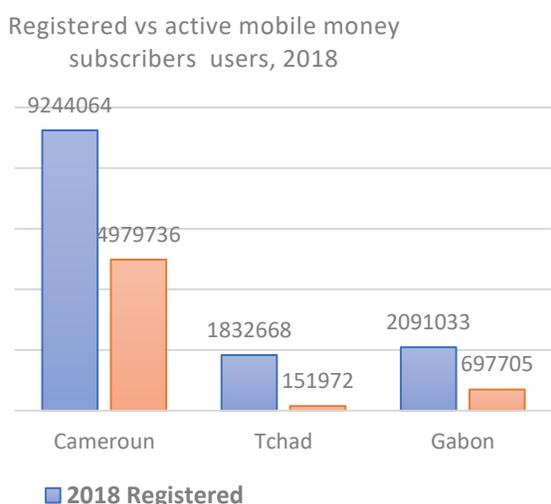
The Gabonese government has engaged in implementing a national platform for payment interoperability with the support of the regional switch (GIMAC). GIMAC was created to ensure interoperability and inter-banking transactions in the financial sector. The objective is to allow transactions between any digital device to be interoperable (mobile wallets, online accounts, bank and prepaid cards, and so on). It also aims to enhance mobile-to-mobile interoperability within the region and across borders.

Launched in 2012 in partnership with BGFIBank, the Airtel money service is now one of the most attractive solutions to bill payments. According to a study carried out by the French economic service in Central Africa, Airtel money made sales of pre-paid electricity units of nearly 2 billion FCFA per month in

2016, that is, 24 billion francs for the 2016 financial year. Airtel achieved this exceptional performance thanks to its network of 800,000 subscribers and 900 partners spread across the country, which makes it today the leader of mobile finance operators in Gabon. The subscribers can make transactions by phone due to services such as transfer of money, payments, withdrawal of money, banking services, consultation of accounts and invoices, and the purchase of various credits.

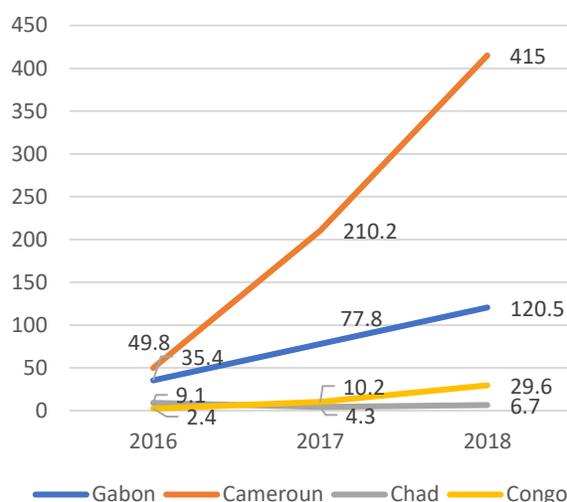
For several companies, especially the banking sector, the Airtel money option has densified their activity while fluidizing the inflow in the agencies. This is particularly the case for Ecobank, where Airtel money has launched balance checking services, transactions, and money transfers from the Ecobank account to their Airtel money account. At BGFI bank subscribers can now make withdrawals without a card in all BGFI distributors, or contactless payments, thanks to NFC technology. The success of its new mobile financial services has naturally inspired its main competitor Gabon Telecom/Moov, which recently launched a similar application through Mobicash and Flooz.

Figure 3 Active users in selected CEMAC countries



Source: BEAC.

Figure 4 Volume of mobile money transactions in selected CEMAC countries



Source: BEAC.

4.4 DIGITAL ENTREPRENEURSHIP

Digital entrepreneurship has the potential to become a significant contributor to GDP and job creation thanks to public investments in ICT infrastructure and support to the digital economy. Digital entrepreneurs include: (1) new (digital startups) and mature (digital scale-ups) firms that have digital technologies at the core of their business model, that is, they develop and/or transform the digital technology to deliver new and/or improved products and/or services to their customers; and (2) digitally enabled businesses that use digital technologies (for example, social, mobile, analytics and cloud solutions) to improve business operations, sharpen business intelligence, and engage with customers and stakeholders through new (digital) channels (for example, creative industries such as music, media and video production).

Government strategy encourages the adoption of a series of policies to promote and support both local digital entrepreneurs and foreign investors. The PSGE entrepreneurship pillar recommends: (1) improving the business environment and eliminating entrepreneurship constraints, which includes significant reforms of business and investment legislations; (2) promoting entrepreneurship, including the development of incubator and education programs; and (3) developing public procurement business opportunities for SMEs and startups. More specifically, Action 130 highlights the potential outcome of

incubators programs and the necessity to spread the use of the Internet and ICT, including in schools, to foster the development of digital products and services that can generate employment. Action 130 also stresses the need to develop innovative business models and new growth-generating platforms and services.

Collaboration between local and international actors has created opportunities for most digital incubators. For example, the SING SA is the result of a joint venture between the *Société du Patrimoine and infrastructures* (SPIN), Vivendi Africa Group (Canal +), International Bank of International Trade of Gabon (BICIG), SOLSI, and INFRACOM. SING SA was created to enable established private sector actors to support the development of an ecosystem of innovative startups in Gabon’s digital economy, through the creation, management, and development of specialized incubators in the digital economy. Another example of international collaboration is Ogooué Lab, which has a digital incubator, supports a network of digital entrepreneurs, and has a training center for software developers and digital entrepreneurs.

Various actors invest in the local digital ecosystem, including digital incubators and training programs for youth. The Libreville ecosystem has coworking spaces (G-Lab, Ogooué Labs), pre-incubation programs (JA Gabon), initiatives in the field of training or digital awareness (NGO Act), and an academic network on the digital professions, the African Institute of Informatics (IAI). There are also multiple competitions, such as “Graines de Managers” of the Caisse des Dépôts et Consignations, the “Grand Prix de l’Excellence” by JA Gabon, or Youth Mobile of UNESCO.

Several key legislations that could improve the competitiveness of the sector and help Gabon fully achieve its ambition to become a sub-regional hub are pending government approval. These include the following four key draft laws, which were approved by the Council of Ministers but challenged in the Constitutional Court:

1. Draft law on electronic communications to clarify and strengthen, among other things, the provisions for infrastructure sharing, interconnection, access to networks, Spectrum Management, Universal Service, and so on.²⁴
2. Draft law on electronic transactions to include inter alia, provisions for a more competitive ICT sector, and more secured electronic transactions.²⁵
3. Draft law on cyber security to protect Critical Information infrastructure (CII), systems, data, and capabilities, based on international best practices.²⁶
4. Draft law on the protection of personal data.²⁷

4.5 DIGITAL SKILLS

The “Digital Gabon” component of the PSGE has planned the deployment of an ICT plan divided into three components to be deployed over a period of five years. The goal is to connect all schools to the WiMAX network to equip all primary schools, colleges, and high schools with a multimedia room that can hold about 20 students per computer or two hours per student per week. This multimedia room must be connected to the Internet by the network of the Gabonese administration. Similarly, Internet access in public universities is being supported by a major project consisting of supplying one computer per student and teacher to make the Internet a teaching tool used daily.

Three public higher education institutions are oriented toward advanced training in digital skills: Institut Supérieur de Technologie, Institut National de la Poste et des Technologies de l’Information et de la

²⁴ Loi Réglementation des Communications électroniques.

²⁵ Loi Réglementation des Transactions électroniques.

²⁶ Loi Réglementation de la Cybersécurité.

²⁷ Loi Réglementation des données à caractère personnel.

Communication, and l'Institut technologique d'Owendo. These institutions enroll about 1,414 students. Annually, Gabon can produce about 500 graduates specialized in computer science.

Several informal education programs co-managed by the private sector and government identified the need for digital skills to address the mismatch between youth and adult skills and the labor market. The Gabonese entrepreneurial ecosystem plays a key role in promoting e-business skills through a network of technology centers and incubators, including Ogooue LABS, G-Lab, JLD, Green Tech, and others. They promote exchanges with the best commercial and digital skills through informal training around different digital events. The low cost of Internet connectivity has greatly contributed to widening access. Better access has allowed the sharing of initiatives and skills in knowledge exchange groups, which has increased the level of the public's digital knowledge.

The private sector of the economy addresses skills mismatches through various internal programs. For example, the telecommunications company Airtel, in collaboration with UNESCO, had a program called "Train My Generation" for more than 5,000 young people to familiarize themselves with computers. Other public and parastatal institutions, such as the Société d'incubation Numérique du Gabon (SING), JA Gabon, the Ministry of Social Inclusion, and the Chamber of Commerce run various training programs. However, there is not a comprehensive, coordinated strategy to meet the current and future needs of the labor market in terms of basic digital skills.

Most private schools offer business and management training with digital components, which require a computer to access. Teachers are encouraged to teach classes in a practical way using modern digital tools. This allows students to improve the quality of their basic digital skills and the integration of digital uses into the workplace. This is in line with one of the priority objectives of the Gabonese government, which is to professionalize 70 percent of sectors by improving the employment performance of graduates of secondary education, Technical and Vocational Education and Training (TVET), and higher education. The unemployment rate is about 24 percent for secondary school graduates and 27 percent for TVET graduates, suggesting a mismatch of available skills and a relatively high demand for skilled workers.

Centre de Spécialisation Professionnelle de Port-Gentil (CSP) is the result of a partnership between Total Gabon and the Gabonese Republic represented by the Ministry of Petroleum and Hydrocarbons, the Ministry of National Education, and the ministry in charge of vocational training. CSP's mission is to facilitate the professional integration of young graduates holding a Technician's Certificate by giving them additional training in the use of 3D modeling, programmable logic controller programming, and electronic maintenance software. Every year, 40 young technicians return to the professional world thanks to a team of qualified and experienced trainers.

After the expansion of the fiber optic network, internet service in Gabon has become reliable and not expensive, and private training operators are taking the lead in training for e-business. Gabon's dynamic entrepreneurial ecosystem plays a key role in promoting e-business skills through a network of technology centers and incubators such as SING, L'Incubateur Multisectoriel de Libreville, Ogooue Labs, JA Gabon, and G-LAB. They promote exchanges between those with advanced business and digital skills. In 2018, Ogooue Labs launched a free e-business training for 44 people over 7 months with the support of the French Embassy in Gabon and its partner Simplon (a training company).²⁸

Since 2017, the Digital Business School, the first such company in Gabon, has trained about 30 youth per year exclusively in the digital professions. The Digital Business School has positioned itself as a general e-business school. Its goal is to develop versatile profiles that integrate technical, creative, and

²⁸ See <https://simplon.co/>.

marketing skills. The presence of some actors of higher education that offer masters in e-business, such as the African University of Management since 2019, should also be mentioned.

The Ministry of ICT and the World Bank have launched a series of labor market initiatives to encourage and place digital talent in the workplace. This initiative includes the master classes organized by SING, e-Gabon, and the forthcoming opening in the Nkok economic district of a training center dedicated to ICT through the Skills Development and Employability Project.

Gabon is member of the West and Central African Research and Education Network (WACREN) and has been starting to implement its National Research and Education Network (NREN) through the GabonREN. However, the GabonREN is still not fully operational. Establishing an NREN is critical to providing sustainable and affordable access to broadband connectivity to Gabonese universities, research, and other tertiary education institutions, but also to TVET institutes and Teacher Training Schools. The NREN is also mandated to link to international research and education networks, in addition to the regional WACREN, and to facilitate access to the education and research resources of all members as well as to global resources. To be sustainable, the NREN can offer enhanced services to its members, including capacity building in campus networks design and operations and cyber security, and so on. The government could support recognition of the NREN through ICT or education laws to strengthen its role and through waivers of operator license fees, for example.

5. RECOMMENDATIONS

PRIORITIZED RECOMMENDATIONS BY TOPIC AND PILLAR

Topic	Pillar	Objectives	Priority	Horizon
Policy and regulatory framework	Infrastructure	1. Adopt the four key draft laws on electronic communications, electronic transactions, cyber security, and the protection of personal data	High	Short-term
		2. Provide infrastructure sharing, regulatory procedures and guidelines, and incentives for access to drive the costs of infrastructure down	Medium	Medium-term
	Platform	3. Create a foundational law for digitization of administration and online procedures for public services to support the implementation of the e-government strategy and online services, and revise the civil code for e-ID	High	Short-term
		4. Use a GovTech approach to advance digital development	Low	Short-term
	Financial	5. Design and adopt a national financial inclusion strategy	High	Short-term
		6. Support establishing a consumer protection framework	Medium	Medium-term
	Entrepreneurship	7. Tailor government taxation norms and procurement policies to support the entrepreneurship community	Medium	Medium-term
	Skills	8. Develop a digital skills framework as a foundation for the digital skills strategy	High	Medium-term
		9. Increase public spending on education	High	Short-term

- 1. Adopt the four key draft laws on electronic communications, electronic transactions, cyber security, and the protection of personal data.** Their adoption could close some legal and regulatory loopholes that constrain competition and effective use of digital infrastructure. It would also ensure the security of networks and personal data, and stimulate investment in critical infrastructure.
- 2. Provide infrastructure sharing, regulatory procedures and guidelines, and incentives for access to drive the costs of infrastructure down,** particularly in rural and underserved areas. The existing decree that highlights the modalities for sharing infrastructure has been ineffective. Operators appear to be developing parallel infrastructure along similar routes. This can be expensive for investors, and ultimately customers; the cost of site acquisition and civil works can account for about 40 percent of total investment costs. Several countries in Africa, including Ghana, Uganda, Kenya, and Nigeria are driving infrastructure costs down by sharing infrastructure, particularly in rural and underserved areas.
- 3. Create a foundational law for digitization of administration and online procedures of public services to support the implementation of the e-government strategy and online services, and revise the civil**

code for e-ID. Protection of personal data and security of government systems and platforms should be prioritized in legal reforms given the huge threats to privacy and information security.

4. **Use a GovTech approach to advance digital development.** Gabon can consider using a GovTech approach to public sector reform alongside the application of holistic technological solutions. The approach has the following core elements: (1) reducing poverty by delivering more efficient public services; (2) improving the efficiency and quality of public services through interoperability, innovation, and smarter data-based policy and delivery; (3) improving public sector responsiveness and performance by enhancing citizen participation, transparency, and accountability; and (4) developing public open data platforms to facilitate the emergence of innovation to generalize disruptive technologies and provide foundations for private sector-led growth (World Bank 2018). To this end, existing platforms, such as IFMIS, or e-services, such as e-T@x, warrant a comprehensive assessment before further investment. Platforms relevant to the mitigation to and recovery from the COVID-19 crisis should be identified quickly and prioritized. The needs of people with disabilities should be fully incorporated in the approach, to ensure higher inclusiveness.
5. **Design and adopt a national financial inclusion strategy.** To increase access to transaction accounts, Gabon will need to set a clear vision and objective by a specific year. Part of the current IPF operation to the central bank aims to support the design of a regional financial inclusion strategy for CEMAC, however, national challenges will have to be addressed in the scope of a national strategy. This could start with a finscope study or a Making Access Possible study to unveil challenges in access to finance and recommend a clear action plan for the government. Such support can be led by the Bank.
6. **Support establishing a consumer protection framework.** It is recommended that the government establish an observatory of financial services (OQSF)²⁹ whose role will be to act as a mediator between financial service providers and consumers but also ensure that price transparency rules are followed. The OQSF mandate would also include digital innovation, with the support of the WBG. In addition, this will create online trust, overall consumer protection (beyond financial).
7. **Tailor government taxation norms and procurement policies to support the entrepreneurship community.** There are several ways of adjusting existing policies to support the entrepreneurship ecosystem; one way can be tax holidays for the first year that a company is in operation or until the company crosses a certain threshold of profitability. Tax exemptions for startups in particular sectors or for early-stage enterprises can be another. Instituting a separate parallel mechanism for registration and dissolution of businesses for entrepreneurs can be beneficial. In addition, procuring advanced technology services from local entrepreneurs as part of public procurement can help transform digital programs.
8. **Develop a digital skills framework as a foundation for the digital skills strategy.** To create a sound foundation for the development of a digital skills strategy, it is important to develop a digital skills framework that reflects the reality and aspirations of the digital economy and society. A consolidated strategic policy framework would include measures to monitor implementation progress. Premised on internationally recognized frameworks such as the EU's DigComp and UNESCO-UIS's Digital Literacy Global Framework, the digital skills framework would clearly define and describe each of the digital skills levels that correspond to the current and anticipated demand for these skills.
9. **Increase public spending on education.** More funding could have a positive impact on the country's education outcomes if well managed. In addition, the lack of statistical data constrains the efficient management of the country's education system. Without a reliable EMIS, adequate tools to measure and monitor learning and labor market outcomes, and efficient mechanisms to share information with schools, education authorities are unable to monitor progress and make informed decisions on reforms. In addition long term capacity development in digital skills may require that the education sector provide the right incentives to retain the teachers, including a fair remuneration and adequate teaching conditions.

²⁹ Observatoire de la qualité des services financiers.

Topic	Pillar	Objectives	Priority	Horizon
Resource management and coordination	Infrastructure	10. Release the harmonized bands in the 700MHz spectrum and allocate in a transparent and fair manner to improve mobile broadband offerings for 4G	Medium	Medium-to long-term
	Financial	11. Support effective implementation of interoperability	High	Medium-to long-term

10. **Release the harmonized bands in the 700MHz spectrum and allocate in a transparent and fair manner to improve mobile broadband offerings for 4G.** There is also opportunity for the regulator to adopt a differentiated spectrum and licensing allocation process for rural broadband service providers, but given the lack of potential demand in these areas, this may be unnecessary. Finally, opportunities exist in the longer term to use innovative spectrum bands (unlicensed) and new technologies to accommodate growing demand. Transparent allocation and auction of the remaining digital dividend spectrum could be an opportunity for the country to improve competitiveness and investment in the sector.
11. **Support effective implementation of interoperability.** The GIMAC will need support in rolling out the process. This project could be run in three main components: (1) improve and adapt the infrastructure of the GIMAC; (2) improve and adapt the regulatory framework; and (3) obtain stakeholder engagement.

Topic	Pillar	Objectives	Priority	Horizon
Digital Inclusion	Infrastructure	12. Improve the governance process of the USF to reassure operators that they will not be crowded out and that collection and use of contributions is transparent	High	Short- to medium-term
	Platform	13. Use a more citizen-centric approach in the implementation of e-government strategy	Medium	Medium-to long-term
	Financial	14. Strengthen financial transparency and create a financial reporting strategy	Medium	Short-term

12. **Improve the governance process of the USF to reassure operators that they will not be crowded out and that collection and use of contributions will be transparent.** The regulator could also consider adopting clear and transparent processes to incentivize operators through fund fee reductions or exemptions in exchange for increased rural coverage obligations. This reform would subsidize efficient network rollout in remote, poor, and sparsely populated areas.
13. **Use a more citizen-centric approach in the implementation of e-government strategy.** Gabon can learn from other countries' innovative approaches to bring the current vision to the next level. A more citizen-centric approach would improve government accountability, provide faster, more efficient, and user-friendly services, and rationalize administrative processes. This would help improve the business environment and decrease administrative cost, ultimately enhancing the overall governance environment.
14. **Strengthen financial transparency and create a financial reporting strategy** to include a regional credit registry, regional balance sheet database, credit information bureaus, and the strict application of the requirement for financial institutions to publish their financial statements.

Topics	Pillar	Objectives	Priority	Horizon
Governance/ coordination	Infrastructure	15. Ensure the efficient use of the public administration network (RAG) and contribute to its maintenance, upgrade, and extension	Medium	Short- to medium-term
	Platform	16. Institute a more coherent approach for e-government implementation	High	Short- to medium-term
		17. Update legislation to clarify the roles and responsibilities of government stakeholders	High	Short-term
		18. Create a clear institutional mechanism to ensure convening power and coordination within the government and draw a clear roadmap	High	Short- to medium-term

15. **Ensure the efficient use of the public administration network (RAG) and contribute to its maintenance, upgrade, and extension.** The viability of this strategic public infrastructure, and its effective use to improve access, depends on the government’s ability to ensure the network is operated as a business. This would involve an assessment of the current management model, which places the operation of this extensive infrastructure under a public institution. In light of Gabon’s experience with Technology Neutral Licenses, the government could consider a partnership with a new private operator for a Technology Neutral Wholesale-only license that could focus largely on underserved communities. The new partnership would need to commit to open and non-discriminatory access to all operators.
16. **Institute a more coherent approach for e-government implementation.** A major challenge is the lack of a coherent, strategic, and coordinated approach with strong leadership to ensure harmonized and efficient implementation and investment. The investment amounts to approximately US\$50 million, but it has been fragmented and yet to produce more tangible results and transformational changes in operation of public administration and provision of public services. Government systems have mostly no interoperability or robust security. Platforms particularly relevant for the mitigation of (and recovery from) the COVID-19 crisis could be prioritized.
17. **Update legislation to clarify the roles and responsibilities of government stakeholders.** A full trust framework, including relevant standards and procedures for issuing and using certificates, and more human resources and technical capacity would allow the PKI to operate at scale.
18. **Create a clear institutional mechanism to ensure convening power and coordination within the government and draw a clear roadmap.** The mechanism can be placed at the highest level of authority, supported by the Ministry of Digital Economy with a leading role in implementation, and to share the vision within the government.

Topics	Pillar	Objectives	Priority	Horizon
Regional	Infrastructure	19. Leverage Gabon’s direct access to submarine cables and improve the connectivity of neighboring countries	Medium	Short- to medium-term
	Financial	20. Support the BEAC to improve mobile money regulation	High	Medium-term

19. **Leverage Gabon’s direct access to submarine cables and improve the connectivity of neighboring countries** to operate three trans-border interconnections with the Congo, Cameroon, and Equatorial Guinea. This will help improve the quality of services for online content and services locally and

potentially regionally and can contribute to positioning Gabon as a digital hub regionally. Three trans-border interconnections with the Congo, Cameroon, and Equatorial Guinea would enable traffic exchanges between these countries and allow Gabon to resell international capacity. Growing the IXP to reach its full potential would help improve the quality of services for online content and services locally and potentially regionally. This element is key for the success of e-government services.

20. **Support the BEAC to improve mobile money regulation.** Under the ongoing IPF, the Bank and the BEAC have launched a competitive bidding process to retain a firm that will proceed to in-depth review of the payment regulation, including the latest draft on payment institutions. The legal framework should address, among others, specific usage of customers’ funds. It is recommended that the BEAC requires that the funds not be placed in risky assets but rather liquid ones. The regulation should also forbid payment of interest on e-money accounts and clarify the possibility of sharing profits with e-money account holders. Disclosures on funds reimbursement, transparency of fees, and customer claim support numbers should also be provided by e-money issuers in the contract agreement with the consumer.

Topics	Pillar	Objectives	Priority	Horizon
Services	Infrastructure	21. Improve the quality of service for the delivery of digital content and online services	Medium-High	Medium-term
	Platform	22. Reinforce the cyber security environment and regulate prevention measures	High	Medium-term
	Financial	23. Support bill payment aggregation and fintech development	Medium	Short- to medium-term
		24. Support national credit bureau implementation, via the IFC	Low	Medium-term

21. **Improve the quality of service for the delivery of digital content and online services.** Growing the IXP to reach its full potential will help improve the quality of online content and services locally and potentially regionally. This element is key for the success of e-government services and can contribute to the positioning of Gabon as a digital hub regionally. Such initiative is also particularly relevant in the ongoing COVID-19 crisis, in which government and business continuity relies more and more on virtual interactions.
22. **Reinforce the cyber security environment and regulate prevention measures.** One weakness of the current cyber security environment is a lack of an institution with the formal legal mandate to establish standards and regulate prevention measures taken by users of e-government as well as to coordinate threat detection and response activities at a national level. Once formally designated, investments should be made in this or these institutions to ensure that they are effectively able to execute their regulatory and operational roles at a national level.
23. **Support for bill payment aggregation and fintech development.** To reduce fragmentation of the bill payment process as is the case in Gabon, IFC could work with utility companies to create a common aggregator that will help facilitate bill processing, improve speed, and reduce cost. In Gabon about 30 percent of mobile money is used toward bill payment.
24. **Support national credit bureau implementation, via the IFC.** The absence of a national credit bureau hampers the proper evaluation of creditors and potential credit, hence there is low availability of funds being channeled to the private sector. The current support to the regional credit registry could be revised to include national antennas to evolve in a national credit bureau. In this respect, alternative scoring methods could also feed into the credit database to enhance access to credit.

Topics	Pillar	Objectives	Priority	Horizon
Ecosystem	Entrepreneurship	25. Improve the capital investment culture, address the accessibility of capital for early-stage enterprises, and open up alternate funding channels	High	Short- to medium-term
		26. Incentivize institutional investors to invest in the public and private equity market	Medium	Medium-term
		27. Collect data on digital entrepreneurs and technology-enabled firms and conduct a technology adoption survey to systematically assess the firm-level barriers to adoption of digital technologies	Low	Medium-term
	Skills	28. Align the development of digital skills with labor market needs	High	Short- to medium-term
		29. Expand the application of strategic partnerships between industry and universities	High	Short- to medium-term
		30. Conduct a more detailed labor market review and statistical collection exercise to support alignment between the supply and demand for digital skills	Low	Medium-term

25. **Improve the capital investment culture.** According to the Global Competitiveness Report that ranks venture capital availability in countries on a scale of 1–7, 1 being extremely difficult and 7 being extremely easy, venture capital availability in Gabon has decreased in the last two years from 2.26 to 2.19.³⁰ This indicates that funding availability has not improved through the venture funding route and few other instruments exist to support early-stage enterprises. Consultations revealed how entrepreneurs often depend on personal networks of friends and families to finance early stages of their businesses. Start-ups can be leveraged in developing or deploying innovative services, in response to the COVID-19 crisis (e.g. health monitoring systems, virtual tools for businesses and citizens, etc.).
26. **Incentivize institutional investors to invest in public and private equity markets.** Institutional funds, such as pension funds, are an important source of capital for venture capital, private equity, and public equity markets globally and their role could be expanded in Gabon. In addition, overwhelming evidence indicates that diversifying institutional investment (both in terms of sectors and geography) is important to protect portfolios across economic cycles. The government of Gabon should review successful international experiences to identify options for diversifying investments and lowering the risks of investing in Gabon’s digital ventures.
27. **Collect data on digital entrepreneurs and technology-enabled firms and conduct a technology adoption survey to systematically assess the firm-level barriers to adoption of digital technologies.** This assessment will provide a basis for need-based development of government policies and programs and evidence for consultations with ecosystem stakeholders. This information will be a public good that allows digital entrepreneurs to better understand the needs and constraints of their potential clients in internal markets and develop customized products for different client segments. It can also inform the design of programs of ecosystem enablers.
28. **Align the development of digital skills with labor market needs and the growing use of digital tools (accelerating with the COVID-19 crisis).** A legislative and regulatory framework could be created that redefines the roles of teachers and trainers by integrating the daily use of digital tools related to education and training into their activities, missions, and obligations. At the same time, the legal

³⁰ WEF Global Competitiveness Report 2016-2017.

framework for the creation of digital content for education should be improved to guarantee the intellectual property rights of creations or works. Funding can be an obstacle to this integration; therefore, other measures could include easy access to computer tools through state-guaranteed funding mechanisms or private partners to encourage teachers and learners.

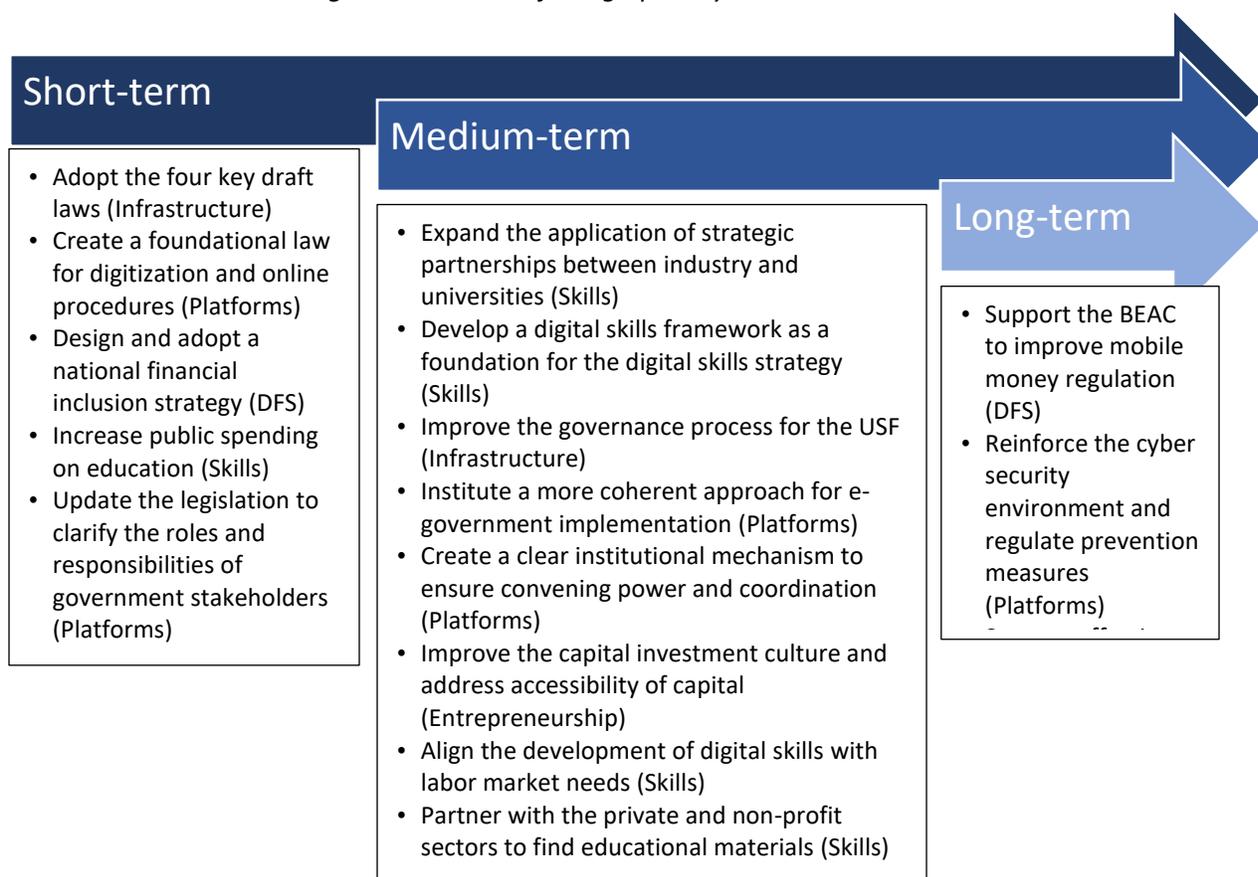
29. **Expand the application of strategic partnerships between industry and universities** to support the development of a curriculum better tailored to the needs of the labor market and the challenges employers face in recruiting staff with the required skills. These partnerships should also seek to broaden opportunities for learning digital skills through internships and other on-the-job training.
30. **Conduct a more detailed labor market review and statistical collection exercise to support alignment between the supply and demand for digital skills.** Government could indicate its support for a training of trainers policy by defining the policy mission, objectives, and means—particularly the recruitment of teaching staff and the conditions of employment (remuneration, career path, and so on). Training institutions in technological specialties should provide high-quality facilities for students, including multimedia centers, permanent Internet access, and specialized laboratories. The government should encourage the organization of training of trainers and continuing training workshops. The same support should be given for the opportunity to take courses and receive certificates. A synchronized response that identifies labor market needs, analyzes the national digital skills gap, and coordinates strategies for skills development from basic to advanced skills would optimize yields of efforts and resources. To plan effectively and build sufficient capacity, concrete data is required pertaining to the national digital skills gap in terms of current and envisaged skills demand and supply. Future activities could include a systematic national digital skills gap analysis, a comprehensive digital skills development strategy, and identification of resource mechanisms. The COVID-19 crisis is generating strong constraints in terms of supply chains, customers interactions, staff management, etc. – businesses need staff with digital capabilities to further adopt digital technologies and adapt to this new environment.

Topics	Pillar	Objectives	Priority	Horizon
Capacity Building	Entrepreneurship	31. Expand and scale programs to address the skill gap through strategic policy-level initiatives	Medium	Short- to medium-term
	Skills	32. Partner with the private and non-profit sectors to find educational materials that would fill existing gaps and align the program content with labor market needs	High	Short- to medium-term
		33. Explore options to increase the introduction of STEM and enrollment in related disciplines	Medium	Short- to medium-term
		34. Encourage access to scientific and technical information, including documentary databases and training in documentary research	Low	Medium-term

31. **Expand and scale programs to address the skill gap through strategic policy-level initiatives.** Building on these initiatives, areas for strategic policy focus could include: (1) digitization of university curricula to include courses in entrepreneurship, STEM, and basic digital literacy programs; (2) integration of university education with professional mentorship programs, embedded skills training, internships, shadow programs, and technology labs in collaboration with the private sector to allow for bridging the skill gap; and (3) greater focus on imparting soft skills in primary and secondary educational institutes, and/or at the university level.

32. **Partner with the private and non-profit sectors to find educational materials that would fill existing gaps and align the program content with labor market needs.** It is efficient to rely on these actors through wider application of strategic and systematic partnerships with industry and nonprofit organizations.³¹ There are examples of successful partnerships between industry and academia. For example, the French-language digital campus is a location for the university's Francophonie agency near one of the member or partner universities. The digital campus promotes ICT in the service of education.
33. **Explore other options to increase the introduction of STEM and enrollment in related disciplines.** The goal is to expand the pool of STEM graduates in the future. Support for STEM enrollment could include the production and creation of open and distance learning and MOOCs. Other support activities could include the production and dissemination of scientific resources (electronic publishing and open archives), the production of open educational resources, and digitization of document collections.
34. **Encourage access to scientific and technical information, including documentary databases and training in documentary research.** The provision of training and meeting rooms equipped with videoconference or web conference facilities would allow attendance to scientific conferences, courses, or seminars. WiMAX technology provided by the government could be integrated into educational institutions to allow access to high-speed wireless Internet and encourage users to communicate with each other for free.

Figure 17. Timeline for high-priority activities



³¹ This partnership could primarily involve ANINF, which has already connected the majority of public buildings and also has an operational local network that can be used to promote the sharing of educational resources in the context of learning.

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