



DIGITAL ECONOMY DIAGNOSTIC CHAD



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ACRONYM LIST

3G	Third generation technology
4G	Fourth generation technology
5G	Fifth generation technology
ADETIC	<i>Agence de Développement des Technologies de l'Information et de la Communication</i> (ICT Development Agency)
A4AI	Alliance for Affordable Internet
AFD	<i>Agence Française de Développement</i> (French Development Agency)
AfDB	African Development Bank
AFP	Acute Flaccid Paralysis
ANATS	<i>Agence Nationale Des Titres Sécurisés</i> (National Secure ID Agency)
ANSICE	<i>Agence Nationale de Sécurité Informatique et de Certification Electronique</i> (National Agency for Computer Security and Electronic Certification)
APICED	<i>Agence pour la Promotion des Initiatives Communautaires en Education</i> (Agency for the Promotion of Community Initiatives in Education)
APIs	Application Programming Interfaces
ARCEP	<i>Autorité de Régulation des Communications Électroniques et des Postes</i> (Regulatory Authority for Electronic Communications and Post)
ARV	Anti-Retro Viral
ASYCUDA	Automated System for Customs Data
AVR	Audio Visual Royalty
B2B	Business-to-business
B2C	Business-to-customer
BEAC	Bank of the Central African States
BTS	Radio base station
CAPEX	Capital Expenditure
CAR	Central African Republic
CEMAC	Central African Economic and Monetary Community (CEMAC)
CERT	Computer Emergency Response Team
CFA	<i>Communauté Financière d'Afrique</i> (Africa Financial Community)
CIMA	<i>Conférence Inter africaine des Marchés d'Assurance</i> (Inter-African Conference on Insurance Market)
CIP	<i>Centre des Incidents de Paiement</i> (Payment Incident Center)
CMT	<i>Conseil Militaire de Transition</i> (Transitional Military Council)
CNPS	<i>Caisse Nationale de Prévoyance Sociale du Tchad</i> (National Social Security Fund)
COBAC	Banking Commission for Central Africa
CONFEMEN	<i>Conférence des Ministères de l'Education des Etats et Gouvernements de la Francophonie</i> (Conference of the Ministers of Education of French Speaking Countries)
CR	Civil Registration
DE4A	Digital Economy for Africa
DFS	Digital Financial Services
DHIS2	District Health Information Software 2
ECCAS	Economic Community of Central African States
EDGI	e-Government Development Index
EdTech	Educational Technologies
EEPCI	Esso Exploration and Production Chad Inc
EGDI	e-Government Development Index

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ENASTIC	<i>Ecole Nationale Supérieure des Technologies de l'Information et de la Communication</i> (National School of ICT)
ESO	Entrepreneurship Support Organization
FATF	Financial Action Task Force
FATF	Financial Action Task Force
FCV	Fragility, Conflict, and Violence
FDI	Foreign Direct Investment
Fintech	Financial Technology
FNDS	<i>Fonds National de Developpement de la Statistique</i> (National Statistics Development Fund)
FSUCE	Fonds du service Universel des Communications Electroniques (Universal Service Financing Fund)
FTP	File Transfer Protocol
G2B	Government-to-Business
G2G	Government-to-Government
G2P	Government-to-Person
GB	Gigabyet
GBV	Gender-based Violence
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GEI	Global Entrepreneurship Index
GHG	Greenhouse gas
GIF	General Interoperability Framework
GIMAC	<i>Groupement Interbancaire Monétique de l'Afrique Centrale</i> (Interbank Banking Group of Central Africa)
GNI	Gross National Income
GoC	Government of Chad
GSMA	Global System for Mobile Communications Association
HTTP	Hypertext Transfer Protocom
ICAO	International Civil Aviation Organization
ICT	Information Communication Technology
IDA	International Development Association
IDPs	Internally Displaced Persons
IFC	International Finance Corporation
iHRIS	i-Human Resource Information System
INSEED	<i>Institut National de la statistique, des Etudes Economiques et Démographiques</i> (National Institute for Statistics, Economic and Demographic Studies)
ISP	Internet Service Provider
IT	Information Technology
ITU	International Telecommunication Union
IXP	Internet Exchange Point
KYC	Know-Your-Customer
M&E	Monitoring and Evaluation
MATD	<i>Ministère de l'Administration du territoire et de la Décentralisation</i> (Ministry of Territorial Administration and Decentralization)
MB	Megabyte
MDAs	Ministries, Departments and Agencies
MFD	Maximizing Finance for Development
MFIs	Microfinance institutions
MIDAS	migration Information and Data Analysis System
MIS	Management of Information Systems

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MoF	<i>Ministère des Finances et du Budget</i> (Ministry of Finance and Budget)
MOOC	Massive Open Online Courses
MPEN	<i>Ministère des Postes et de l'Economie Numérique</i> (Ministry of Posts and Digital Economy)
MSMEs	Micro, Small and Medium Entreprises
NDC	National Data Center
NGO	Non-governmental organization
NICI	National Information and Communications Infrastructure
NNI	<i>Numéro National d'Identification</i> (National Identification Number)
NREN	National Research and Education Network
ONPT	<i>Office National des Postes et Télécommunications</i> (National Office of Posts and Telecommunications of Chad)
OPEX	Operational Expenditure
OTRT	<i>Office Tchadien de Régulation des Télécommunications</i> (Chadian telecommunications regulatory office)
P2G	Person-to-Government
P2P	Person-to-Person
PAEET	Projet d'Accroissement d'Accès à l'Energie au Tchad (Chad Energy Access Scale Up Project)
PAPIRET	<i>Plan d'Actions Prioritaires d'Innovation et de Réforme de l'Economie Numérique au Tchad</i> (Priority Action Plan for Innovation and Reform of the Digital Economy in Chad)
PASEC	<i>Programme d'Analyse des Systèmes Educatifs de la CONFEMEN</i> (Education Systems Analysis Program of CONFEMEN)
PKI	Public Key Infrastructure
PPP	public-private partnership
PSDNP	<i>Plan Stratégique de Développement du Numérique et des Postes</i> (Strategic Plan for the Development of Digital and Post)
RapID	Rapid Identification
RCI	Rwandan Cooperation Initiative
RNBP	<i>Registre National Biométrique des Populations</i> (National Biometric Register of Populations)
SDG	Sustainable Development Goal
SDYEP	Skills Development for Youth Employability Project
SEZ	Special Economic Zones
SIGASPE	Integrated Administrative and Salary Management System for State Personnel
SIGFIP	Integrated Public Finance Management System
SIGPTS	Integrated Population Management and Secure ID System
SIM	Subscriber Identity Module
SME	Small and Medium-sized Enterprise
SMP	Significant Market Power
SNE	<i>Société Nationale d'Electricité</i> (National Power Company)
SOE	State-owned Enterprise
SSA	Sub-Saharan Africa
STEM	Science, Technology, Engineering, and Mathematics
STEM	Science, Technology, Engineering, and Mathematics
STPE	<i>Société Tchadienne des Postes et de l'Epargne</i> (Chadian Post and Savings Company)
TchadREN	Chad Research and Education Network
TIT	<i>Télécommunication Internationale du Tchad</i> (International Telecommunications Company of Chad)
TVET	Technical Vocational Education and Training
UMAC	<i>Union Monétaire de l'Afrique Centrale</i> (Central African Monetary Union)
UNCTAD	United Nations Conference on Trade and Development
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific and Cultural Organization

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UNICEF	United Nations Children's Fund
USD	United States Dollars
USSD	Unstructured Supplementary Service Data
VLP	Virtual Landing Point
WACREN	West and Central African Education and Research Network
WaSH	Water, Sanitation, and Hygiene
WB	World Bank
WBG	World Bank Group
WEF	World Economic Forum
WiMax	Worldwide Interoperability for Microwave Access
XAF	Central African CFA Franc

EXECUTIVE SUMMARY

Leveraging the digital economy can be transformational for Sub-Saharan African (SSA) countries. Rapid digital transformation is reshaping the global economy, driving financing inclusion, closing information asymmetry gaps between buyers and sellers, and changing the way economies of scale are achieved. According to research from Google and IFC (2020), Africa's internet economy is poised to reach US\$180 billion by 2025 (compared to US\$115 billion in 2020),¹ accounting for 5.2 percent of the continent's GDP. COVID-19 has accelerated the digital transformation, as many countries leveraged digital technologies to ensure business and education continuity, prevent service interruptions, and cope with social distancing. Country-level policies and interventions have facilitated digital connectivity and the deployment of digital platforms to help citizens, governments, and businesses handle the pandemic.

However, many SSA countries still lack the requisite enabling environment to capture a larger fraction of the global digital economy or benefit from its gains. In many, although certainly not all, parts of the continent, access to and affordability of broadband internet remain low; for that matter, even access to electricity is low, preventing Africans from being able to go online. Most public services remain offline, and many Africans lack digital identity or mobile wallets to take advantage of digital financial or other services. Digital skills and literacy remain weak. Finally, although venture capital investment on the continent continues to grow significantly—a total of 633 African tech startups raised a combined and a record US\$3 billion over the course of 2022 in Africa²—structural constraints prevent businesses from taking greater advantage of the digital economy. Of the 716 financial technology (fintech) companies currently operating in SSA, only 5 percent have scaled.

To address this, the World Bank Group (WBG) has committed, through its [Digital Economy for Africa \(DE4A\) Initiative](#)³, to undertake country-level digital economy diagnostics across the continent. These Digital Economy Country Assessments take stock of challenges and opportunities across five foundational pillars (digital infrastructure, digital public platforms, Digital Financial Services (DFS), digital businesses, and digital skills) and propose specific, actionable, and prioritized recommendations to support countries develop vibrant, safe, and inclusive digital economies. The resulting synthetic country reports highlight key policy reforms and investments needed for African countries to achieve their digital transformation ambitions while mitigating the risks of growing digitization. These reports have contributed to structuring policy dialogue among the authorities, the WBG, the private sector, and other relevant actors to catalyze action toward the implementation and achievement of digital economy goals. They also directly inform WBG country strategy documents as well as downstream engagements.

The WBG has undertaken this digital economy diagnostic for Chad. Based on desk research, virtual and in-person interviews with a wide range of public, private sector, and non-governmental stakeholders, the diagnostic focuses on the five foundational pillars of the digital economy (digital infrastructure, digital public platforms, digital financial services, digital businesses, digital skills). This report analyzes the constraints identified under each pillar and puts forward actionable, short-term recommendations for improving performance. Recommendations are further detailed based on prioritization and sequencing in the report's annex. Overall, the report aims to inform the national dialogue, and the next steps for Chad's digital transformation, a policy plan in which the Government of Chad (GoC) has expressed keen interest.

¹ Google and IFC, 2020. e-Economy Africa 2020 - Africa's \$180 Billion Internet Economy Future. Available at : https://www.ifc.org/wps/wcm/connect/publications_ext_content/ifc_external_publication_site/publications_listing_page/google-e-economy

² Disrupt Africa, 2023, African Tech Startups Funding Report 2022, Available at: <https://disrupt-africa.com/funding-report/>

³ The Digital Economy for Africa (DE4A) Initiative. Available at: <https://www.worldbank.org/en/programs/all-africa-digital-transformation>

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CHAD: LEVERAGING THE OPPORTUNITIES OF THE DIGITAL ECONOMY TO CHART A NEW PATH TOWARD SHARED PROSPERITY, REDUCED FRAGILITY, AND GREATER RESILIENCE

The growth of the digital economy would open up many much-needed opportunities for Chad and could also be leveraged to address drivers of fragility. It can create jobs for Chad's growing young population, and provide opportunities to expand public service coverage in a challenging geographical and security context. Digital Financial Services (DFS) are an opportunity to ensure digital inclusion and address the financial needs of the rural poor, many of whom depend on subsistence agriculture for their livelihoods, given the challenges of traditional brick-and-mortar approaches. Similarly, harnessing digital channels for service delivery offers the opportunity to expand access to public services in hard-to-reach areas through innovative and inclusive solutions, starting with Government-to-Person (G2P) payments, and can help improve the efficiency, transparency, and accountability of public service delivery. For example, social protection systems can be made more responsive to shocks (climatic and otherwise), thereby building resilience. Digital technologies also offer vast opportunities to improve service delivery in key sectors, such as health and education through telemedicine and e-learning. In particular, digital technology can be a tool to help bridge the vast educational gap and could play a central role in strengthening the education system. Furthermore, digital skills training and the expansion of digital services in rural areas – with focus on the inclusion of youth, women, and vulnerable groups – can help reduce perceptions of inequality and exclusion and create the conditions for inclusive economic development. Finally, digital tools can offer opportunities to incentivize participation by providing platforms and channels through which citizens can provide feedback on their concerns.

Against this backdrop, Chad's digital economy ecosystem appears to still be in its infancy, and the country should seek to reinforce and improve its preparedness to digital transformation. While the GoC had articulated a vision for the National Information and Communication Infrastructure (NICI) (2007-2027) and a digital transformation plan that came to an end recently (*Plan Tchad Numérique 2017-2021*), significant challenges are to be tackled in operationalizing this vision. The implementation of this vision has been hampered by lack of close leadership, mandates overlapping, and limited inter-ministerial coordination on digital transformation initiatives. Further, Chad's landlocked geography, dispersed population, political instability, and conflict create significant structural barriers to digital transformation across the territory. As a result, Chad ranks extremely low compared to the rest of the world, including regional peers, on measures of connectivity, e-government, network readiness, and digital skills. Limited progress has been made to achieve the country's goals in internet penetration and digital services implementation. Therefore, a large portion of Chad's population remains excluded from the digital transformation due to these significant digital divides. Such challenges require innovative responses and sustained engagement from both public and private sectors. The following section details key findings by pillar, as well as cross-cutting issues.

DIGITAL INFRASTRUCTURE

The GoC has taken steps toward adopting institutional, legal and regulatory framework to support the development of ICT/telecommunications sector. However, the sectoral regulator lacks the independence and the capacity to fully enforce the regulations and fulfill its mission. Liberalized in 1998, the Chadian telecommunications sector does not offer an environment conducive to investment in digital infrastructure and provision of innovative digital services. The impact of the strengthened regulatory and institutional framework on the overall performance of the Chadian digital sector remains limited because ARCEP does not have the necessary independence to effectively regulate the sector. Indeed, in 2020, Chad scores relatively low (of 61) compared to other Sahelian countries (Mali, Burkina Faso and Niger) at ICT regulatory overall score, and results in partial liberalization and privatization of the sector and across the regulatory layers are still minimal.

Despite recent GoC efforts to expand digital connectivity leveraging on a liberalized telecoms/broadband market, the Chadian sector experiences significant gaps in access to quality digital connectivity and use of

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digital services. Only 48 percent of the Chadian population has access to 3G and 22% to 4G mobile networks (ITU, 2021)⁴ compared to 65 percent and 46 percent in Mali (ITU, 2021)⁵ and 96 percent and 65 percent in Ivory Coast (ITU, 2021)⁶. Yet Chad has significant potential to take advantage of existing digital infrastructures already deployed and leverage their use efficiently. For this to happen, strong political will and commitment from all stakeholders of the sector are needed to enable Chad to fully reap the benefit of the current digital infrastructure and improve broadband penetration.

Last mile digital infrastructure is not spatially distributed in adequation with the economic potentialities of the regions. Some regions, which are relatively densely populated, experience a gap in the provision of digital connectivity and access. For example, Oriental Lagone (with a population of 1.082.404 representing 7.1 percent of the Chadian population) and Est Mayo-Kebbi (with a population of 1.067.875 representing 7 percent of the Chadian population) which are respectively the second and third regions in terms of population, after the capital region N'Djamena (with a population of 1.454.671 representing 9.6 percent of Chadian population), have respectively 5.8 percent and 4 percent of the deployed telecom pylons compared to 18 percent for N'Djamena region. The disparities in the availability of digital connectivity and access seem to be concentrated in the south regions, at the border of Cameroon and Central African Republic (CAR).

The high cost of deploying and operating mobile radio base stations (BTS), the relatively high price of wholesale Internet bandwidth, and low purchasing power of the population are all factors that make broadband services unaffordable for average Chadians. Despite the price drop of 1GB internet package from 12,000 to 1,200 XAF between 2017 and 2019,⁷ it is still considered high compared to similar countries. In 2022, the average price of 1GB in Chad was US\$5.10, representing 9.56 percent of the monthly Gross National Income (GNI) per capita compared to US\$3.83 (5.54 percent) in Burkina Faso, US\$2.76 (4.04 percent) in Mali, US\$1.85 (3.76 percent) in Niger and US\$3.06 (1.52) percent in Ivory Coast.⁸

DIGITAL PUBLIC PLATFORMS

The digital public platforms ecosystem is still nascent in Chad. Most of the digital platforms deployed by the GoC aim to digitize government back-office systems or core government functions, such as public financial management. Those digital back-office systems have been or are developed in siloed approach, and through different funding sources, which limits interoperability, efficiency, and sustainability; it also prevents them from effectively exchanging data and providing integrated services across sectors. There remains a long way from achieving the vision of a government-wide platform relying on a solid interoperability framework that can move from vertical structures to a networked and collaborative organization with reliable and transparent data exchanged across the different systems. There is also no end user-facing – government-to-business (G2B) and government-to-person (G2P) – digital services in place. Consequently, Chad still ranks low in global e-government at 189th out of 193 countries on the 2022 United Nations E-Government Development Index.⁹

The GoC lacks the building blocks to underpin the delivery of digital public services. Most government offices lack basic access to broadband internet, as well as the ability to exchange data through a secure network. Data is hosted by individual Ministries, Departments and Agencies (MDAs) rather than using a shared infrastructure that could help bring down costs, enhance information security and automate administrative processes. Existing digital government systems are not developed based on common technical and security

⁴ https://www.itu.int/en/ITU-D/Statistics/Documents/DDD/ddd_TCD.pdf

⁵ https://www.itu.int/en/ITU-D/Statistics/Documents/DDD/ddd_MLI.pdf

⁶ https://www.itu.int/en/ITU-D/Statistics/Documents/DDD/ddd_CIV.pdf

⁷ ARCEP, 2020

⁸ 2022 Average price of 1GB (<https://www.cable.co.uk/mobiles/worldwide-data-pricing/>); 2021 GNI per capita (<https://data.worldbank.org/indicator/NY.GNP.PCAP.CD>)

⁹ United Nations Department of Economic and Social Affairs (UNESA), 2022. E-Government Survey 2022: Digital Government in the Decade of Action for Sustainable Development. Available at: <https://desapublications.un.org/sites/default/files/publications/2022-09/Web%20version%20E-Government%202022.pdf>

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standards and guidelines. The issues of lack of whole-of-government approach for public sector modernization reforms, low usage of existing platforms, no change management for digitization, and deficiencies in digital skills among public servants have altogether contribute to a digital landscape wherein digital public platforms are limited in number and developed in silos. In addition, Chad's digital transformation requires secure ways for people to prove their identity in person and online, or digitally authenticate a transaction that are trusted by government and private sector providers. However, such capability is currently lacking, and existing legal ID systems require additional reforms to serve as a foundation for digital service delivery.

A strong commitment from the GoC is needed to reinvigorate efforts to foster an enabling environment for building digital government through a well-articulated vision and sequenced strategic action plans (as part of the new Digital Chad strategy). Modernizing and scaling up the delivery of public services and enabling greater access via digital technologies and platforms will require whole-of-government coordination. It also needs to accelerate the development of national shared frameworks for data governance, protection privacy, cybersecurity, and system interoperability. For the short-term, it is necessary to plan investments in shared solutions for secure exchanging public and private data, facilitating interoperability, and identifying and authenticating users of digital systems. In support of public sector modernization reforms and the effective implementation of digital public platforms, GoC will need to strengthen the public sector's capacity with a greater number of skilled digital/IT specialists. Finally, GoC should start to identify "quick-wins" such as government services in high demand among citizens, and automate the processes with digital technologies to create a demonstration effect, and generate greater need for digitalization.

Digital Financial Services: Chad has one of the lowest financial inclusion levels at the regional and continental levels, with limited access to and use of financial services amongst Chadians. Account ownership in formal financial institutions in Chad has been on the rise over the past decades yet remains comparatively low. In 2017,¹⁰ the share of Chadian with an account at a formal financial institution stood at about 9 percent, well below compared to the SSA average (32.8 percent), CAR (14 percent), Cameroon and Democratic Republic of Congo (over 20 percent).¹¹ Formal savings and borrowing in Chad have been declining over the past decade and hit the lowest rank in the CEMAC region and globally. Recently, mobile money emerged as an accessible and affordable alternative financial service and outpaced the banking and microfinance sectors in account ownership and usage. The number of account holders has significantly increased which can be explained by amplified reliance on Digital Financial Services (DFS) in Chad during the pandemic and other global crises as vulnerable individuals had to receive digital remittances from neighboring countries (such as Cameroon). In addition, the gender and urban/rural gap in account ownership was also less pronounced in 2017.

However, the uptake of DFS is hampered by several key barriers at infrastructure, regulatory and policy stance, and market level at the regional and national levels. For instance, while there is a law on payment services, there is a lack of clear legal category for fintech companies as a specific category of providers. Also, there is no agent banking regulation which hampers service delivery in rural areas. Policy wise, while a National Financial Inclusion Strategy was approved in Chad in 2016, there is as of now a lack of regional financial inclusion strategy which support the development of DRS in CEMAC. More, access to USSD channel is not liberalized. Finally, the lack of appropriate identification procedures, lack of regulations on alternative financing platforms such as crowdfunding, online fundraising etc. and an incomplete consumer protection and electronic transactions frameworks for DFS are additional factors that limit the development of DFS.

Digital Businesses: Chad is a country with a strong culture of trade and commerce; however most micro, small, and medium enterprises (MSMEs) remain informal, young and active primarily in traditional sectors where digital uptake is in its infancy. Overall, Chad's digital business ecosystem remains embryonic. This is evidenced by the limited World Bank data to perform meaningful regional benchmarks on the digital business ecosystem

¹⁰ Global Findex 2021 exercise did not report data from Chad.

¹¹ World Bank, 2017. The Global Findex Database 2017: Measuring Financial Inclusion and Fintech Revolution. Available at: <https://openknowledge.worldbank.org/handle/10986/29510>

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and the absence of Chad on several global indexes that track countries performance on entrepreneurship and on innovation activities. Moreover, a very limited number digital start-ups have managed to carve out innovative solutions to address local needs. While a limited number of entrepreneurship support organizations such as Wenaklabs and Chad Innovation Hub are looking to catalyze digital innovation in the country, the growth of Chad's digital business ecosystem is contingent on laying the enabling environment foundations which are necessary for businesses and citizens to cope with pandemics, economic downturns and persistent political instability.

The adoption of digital technologies in the private sector offers several opportunities for Chad's formal and informal firms (in particular, MSMEs) to spur economic growth. The expansion and affordability of broadband connectivity are expected to create many job opportunities. Furthermore, the affordability of broadband connectivity can accelerate the adoption and the use of digital technologies by businesses to revamp their core operations, improve productivity, adopt new business models, expand customer reach, as well as enhance the delivery of goods and services. As highlighted in the WB 2021 Africa Pulse Report¹², employment and labor productivity have been shown to be higher in firms that use smartphones, digital transaction technologies, and digital management solutions.

Yet, several constraints hamper digital entrepreneurship. Key constraints to the growth and expansion of digital businesses include the weak business regulatory environment, the absence of an enabling investment climate, the lack of a framework tailored to startups, as well as limited broadband connectivity, limited access to finance, low adoption of DFS, and weak digital skills. These constraints impact Chad's performance at the bottom of the list of 141 countries on the World Economic Forum (WEF) 2019 Global Competitiveness Index¹³ (GCI) with an overall GCI score of 35.1 compared to the global median of 87 and the SSA regional median hovering around 45. Moreover, Chad is not included in global entrepreneurship and innovation indexes, which signals a lack of activity and data. In response to these challenges, GoC could address more swiftly the most important bottlenecks faced by MSMEs and digital businesses, particularly by identifying key measures and fiscal incentives to stimulate not only the digitalization of MSMEs, but also the emergence of a digital innovation ecosystem. More research is needed to consider the targeted and prioritized improvements that would address the above constraints hampering digital entrepreneurship and impeding economic diversification and social inclusion.

Digital Skills: Although a digitally skilled workforce is a key component of any strategies for digital transformation strategy, Chad exhibits an acute scarcity in digital skills. The GoC has no policy or strategy dedicated to digital skills development in secondary education, nor are digital skills part of the national education curriculum. Education availability, accessibility, and quality remain inequitable and is frequently disrupted due to state and border fragility, conflict, and violence. The Technical Vocational Education and Training (TVET) system is fragmented, uncoordinated, has poor infrastructure, and does not integrate digital skills. There is low tertiary educational attainment and a limited number of highly skilled professionals in digital sector. This has resulted in education and training institutions adopting siloed approaches in rolling out digital skills programs and Chadians gaining digital skills through experience, in higher education, and/or in specialty programs. Subsequently, the private sector, non-profit organizations and development partners play a significant role ranging from curriculum development, reskilling/upskilling programs, identifying qualification frameworks, accreditations, and partnerships for tertiary institutions in Chadian digital skills development. International Organization for Migration (IOM) has piloted a digital literacy program¹⁴ in Northern Chad whereas Udacity online learning marketplace has been available to those Chadian youth seeking to advance their digital skills.

¹² Zeufack, Albert G.; Calderon, Cesar; Kambou, Gerard; Kubota, Megumi; Korman, Vijdan; Cantu Canales, Catalina; Aviomoh, Henry E.. 2021. Africa's Pulse, No. 23, April 2021 : An Analysis of Issues Shaping Africa's Economic Future. World Bank, Washington, DC. Available at: <https://openknowledge.worldbank.org/handle/10986/35342>

¹³ World Economic Forum, 2019. The Global Competitiveness Report 2019. Available at: https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

¹⁴ <https://storyteller.iom.int/stories/better-future-how-upskilling-brings-hope-youth-northern-chad>

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As the economy is resource intensive with weak digital transformation and innovation, the demand for digital skills remains limited. However, the demand is set to rapidly increase considering the large youth population and potential growth in population, urbanization, mobile internet use, and the GoC's policy interest, direction, and willingness to invest in digital skills. To accelerate Chad's digital skills development, Chad requires a coordinated approach for addressing challenges from state fragility, governance, human development, and economic development. Immediate policy actions should also address current fragility, resource, and infrastructure challenges. An integration of the GoC's vision for the digital economy with current context, stakeholders, evidence, and readiness will result in feasible, effective, and coordinated programs that work.

CROSS-CUTTING DIMENSIONS

Several cross-cutting dimensions have been identified throughout the analysis. Addressing these dimensions would strengthen Chad's ability to navigate and address the challenges identified under the five pillars.

Reinforcing the enabling environment for digital economy. Anchoring reforms and investments in developing the principal elements and pillars of the digital economy on solid "analog" foundations (legal, regulatory, and institutional) will be crucial for success and sustainability. Developing a common vision for digital transformation and improving strategic institutional oversight and coordination will be essential given the new national Digital Transformation Strategy (2020-2030). At the institutional level, the digital economy sector is characterized by a complex governance fabric, in which the multiplicity and instability of decision centers, as well as the lack of clarity over the roles and responsibilities of various institutions, result in initiatives that lack a shared vision, strategic steering or day-to-day advancement. Many of the key objectives, set by strategies and policies, lag in implementation, including enhancing access to broadband and boosting the use of ICT to increase efficiencies across all socioeconomic sectors, and improved digital literacy. This points to an underlying issue, related to overambitious strategy design and/or weak political buy-in. It also signals the need for a more effective institutional coordination with the resources adequate to support implementation. Additionally, there is a need to close existing regulatory gaps and update the legal frameworks to create and implement an environment that preserves individuals' fundamental rights (freedom of expression and privacy as well as digital rights such as access, use and create digital media, access and use of digital technologies), ensures secure digital transactions, and safeguards against all illegal acts of digital use.

Closing the usage gap and supporting wider digital adoption and inclusion. One of the key priorities for Chad is to ensure digital inclusion. This will require a multi-pronged approach that addresses affordability and quality of services, skills barriers, perceived value of digital technologies to stimulate demand and encourage adoption by the public. The development of digital literacy and skills will be necessary for citizens to interact safely and benefit from digital environment, e-commerce solutions, and e-government services. It will also contribute to the development of a digitally skilled workforce to drive productivity, innovation, and growth. In addition, practical use cases and communications are essential to encourage widespread adoption. This could involve designing and implementing digital public services that would significantly impact citizens livelihood, economic productivity, and have a demonstration effect generating widespread interest in digitalization.

Bridging the gender gap. Women lag behind in adopting digital skills, accessing economic opportunities, digital connectivity, and using digital services platforms and services. This digital divide exacerbates inequalities and hinders the ability to contribute to the economy. It is recommended that a strategic gender lens be applied to all digital inclusion efforts and projects be monitored for their gender inclusion performance to enhance the impact. Critical areas include strengthening the capacity of business support organizations in supporting women and the entrepreneurial value chain. Additionally, priority actions for the GoC in the short term include developing tailored and gender inclusive digital skills training programs with prioritization for young girls and women and ensuring their access to digital connectivity and tools.

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Stimulating private sector participation and partnerships: The GoC should seek to leverage the private sector investment to expand broadband network rollout, building local business capacity through public private partnership projects, and deploying user-centric platforms and business-friendly ecosystems across the digital economy. Public private partnerships will also be essential for skills development as the digital transformation of the Chadian economy takes hold and accelerates. To achieve this, the GoC needs to provide an enabling environment that provides visibility and confidence to private investors, as well as ensuring predictability and sustainability for long-term partnerships to encourage investments. There should also be more coordination between the public and private sectors to determine the collaboration to achieve the strategic objectives.



Strengthening regional integration: Chad's geographical location and comparatively small market highlight the need for integration into the regional market through accessing to the regional private investments, regional digital infrastructure, and value chains. Many challenges remain, such as extending the availability of broadband networks beyond regional capitals and across borders in a context of enhanced security, updating regulations to implement the Central African Economic and Monetary Community (CEMAC) and Economic Community of Central African States (ECCAS) electronic communications frameworks, and improving the enabling environment for DFS, digital payments, cybersecurity, and personal data protection, while leveraging other digital entrepreneurial ecosystems in neighboring economies to promote access to additional incubation/acceleration support as well as access to finance and markets.

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RECOMMENDATIONS

The report includes more detailed recommendations across the five pillars of a vibrant, safe and inclusive digital economy based on the analysis of key strengths and weaknesses of each foundational pillar of the Chadian digital economy. Recommendations are divided into ‘quick wins’ and ‘high priority’. The quick wins include actions with immediate tangible results that can be implemented during the political transition within the next 10 to 18 months, while high priority recommendations are critical actions that could be adopted within two to three years, i.e., after the political transition. It should be noted, however, that the space for reform during the political transition is likely to be limited as interim authorities have other priorities and the country is under sanctions. Table 1 summarizes these recommendations across the five pillars and for the cross-cutting theme of policy and institutions. Detailed recommendations are included in each chapter and summarized in Annex 2.

Table 1. Prioritized Recommendations with proposed responsible institution




	POLICY AND INSTITUTIONS	RESPONSIBLE INSTITUTION
Quick-win	<ul style="list-style-type: none"> Adopt the “Chad Digital” strategy Horizon 2030, with a clear roadmap and/or action plan and monitoring and evaluation (M&E) framework 	<ul style="list-style-type: none"> Ministry of Telecommunications and Digital Economy (MPEN)
High priority	<ul style="list-style-type: none"> Establish a strategic inter-ministerial coordination mechanism for digital transformation Update the key legal and regulatory frameworks to promote trust and security in data transactions 	<ul style="list-style-type: none"> Presidency MPEN and ARCEP
	DIGITAL INFRASTRUCTURE	RESPONSIBLE INSTITUTION
Quick-win	<ul style="list-style-type: none"> Publish, upon approval, operators' interconnection catalogs. The interconnection catalogs of the operators Sudachad, Airtel Chad and Moov Africa Chad for the year 2023 could be put online on the ARCEP website (see for example¹⁵). Conduct a market analysis to (i) define the relevant markets for electronic communications, (ii) identify the operators having significant market power (SMP) in these relevant markets, (iii) define the obligations applicable to operators having SMP and (iv) support the regulator to enforce the regulation. The results of this study should be materialized by a decision defining the relevant markets (see for example¹⁶). and another decision listing the operators having SMP on the said relevant markets (see for example¹⁷). Address the difficulties related to interconnection with Cameroon, through the settlement of the dispute between Camtel and Sotel Tchad and the development of an interconnection agreement between the two operators in accordance with regulations and international best practices. 	<ul style="list-style-type: none"> ARCEP ARCEP MPEN
High priority	<ul style="list-style-type: none"> Continue and complete the process of restructuring Sotel Tchad to revitalize the sector. Better manage the Universal Service Fund (USF) and use it and/or other public funds to incentivize operators invest in uncovered areas (either because the area is not economically profitable in the short term, or the area is facing insecurity challenges). To this end, approaches such as reverse auction mechanism (implemented e.g. in Ivory Coast, Benin or Niger) to expand coverage and pre-purchase of broadband capacity mechanism (implemented e.g. in Ghana and in Tanzania) could be considered. Design a management model for the infrastructure currently being put in place (IXP, Data Center and new fiber optic lines) and unify the management of State-owned first and middle mile digital infrastructure. 	<ul style="list-style-type: none"> MPEN ADETIC MPEN
	DIGITAL PUBLIC PLATFORMS	RESPONSIBLE INSTITUTION

¹⁵ <https://www.acep.ne/index.php/interconnexion/1327-catalogues-d-interconnexion-et-ou-d-acces-des-operateurs-de-communications-electroniques-pour-la-periode-2022-2023>

¹⁶ <https://www.acep.ne/uploads/documents/DecisionN000017.pdf>

¹⁷ <https://www.acep.ne/uploads/documents/DECISION0001-25JAN2023.pdf>

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Quick-win	<ul style="list-style-type: none"> Develop a 5-year national roadmap for the digitalization of public services backed by an effective institutional framework built on a “whole-of-government” approach. Design and implement a first set of digital government services, which should rapidly create interest in using digital services (e-registration, single online portal for all public service information or frequently asked questions, first pilot transactional services, etc.). 	<ul style="list-style-type: none"> Prime Minister’s Office and MPEN MPEN
High priority	<ul style="list-style-type: none"> Strengthen the policy and normative frameworks and their application for digital safeguards, digital data infrastructure and integrated digital public service delivery. Upgrade the digital capabilities of public administrations to leverage digital public platforms and be drivers of change for modernized public services delivery Strengthen the administration’s back and middle-office to build the foundations for the front-facing digital services delivery 	<ul style="list-style-type: none"> MPEN, Ministry of Finance, ANSICE and ANATS ADETIC and ENASTIC ADETIC, and ANSICE
	DIGITAL FINANCIAL SERVICES	RESPONSIBLE INSTITUTION
Quick-win	<ul style="list-style-type: none"> Update the 2017-2030 National Financial Inclusion Strategy and set up effective institutional arrangements as well as a monitoring and evaluation framework to pilot advancements. Align the consumer protection framework to DFS. 	<ul style="list-style-type: none"> Prime Minister’s Office and MoF Ministry of Commerce and Industry
High priority	<ul style="list-style-type: none"> Enhance the financial management systems to support the shift of G2P payments to digital. A mapping of G2P payment streams should be completed as well as technical feasibility study, once these two steps are completed, the GoC could enable automated access to digitized Government data platforms. Modernize the regional regulatory framework to unlock the uptake of DFS. There is a need for BEAC to develop a new framework conducive for fintech entities, banking agents in the MFIs, banking industries, as well as for digital onboarding of customers through simplified permanent Customer Due Diligence (CDD) procedure. Accelerate the full deployment of the SWITCH to ensure interoperability of transactions. When fully operational, the interoperable and interbank payment network will allow full interoperability of digital payments, international transactions including remittances, payments at point-of-sales (POS), mobile money, and online transactions. Boost the access to digital credit by adopting a new decree that (i) allows the regional credit bureau to collect consumer prepaid and post-paid utility data; and (ii) allows alternate credit scoring methodologies to boost micro lending based on big data. 	<ul style="list-style-type: none"> MoF BEAC BEAC BEAC
	DIGITAL BUSINESS	RESPONSIBLE INSTITUTION
Quick Win	<ul style="list-style-type: none"> Define a digital entrepreneurship strategy and an effective public private dialogue mechanism to strengthen partnerships and promote investments especially among MSMEs and startups. Launch a digital skills development plan in partnership with the private sector to reskill and upskill the current workforce and to prepare the future generation in both the formal and the informal markets 	<ul style="list-style-type: none"> MPEN MPEN
High Priority	<ul style="list-style-type: none"> Strengthen the development of the digital innovation ecosystem through entrepreneurship support organizations (ESOs to accompany entrepreneurs locally and across the diaspora. Provide female entrepreneurs increased assistance through entrepreneurship support programs that consider women’s specific needs and challenges. Initiate appropriate financing mechanisms to unlock startups and MSMEs growth potential in the digital economy. Increase the participation of MSMEs in public projects and across national value chains of key sectors to support a virtuous cycle of sustainable and inclusive growth over the course of the digital transformation of the economy. 	<ul style="list-style-type: none"> MPEN MPEN MPEN MPEN
	DIGITAL SKILLS	RESPONSIBLE INSTITUTION
Quick Win	<ul style="list-style-type: none"> Develop stand-alone policy, strategy, and framework that guide implementation of education and training programs for digital skills development at all levels. 	<ul style="list-style-type: none"> MPEN, Ministry of Higher Education and Ministry of National Education

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	<ul style="list-style-type: none"> ▪ Review TVET policies and programs and integrate digital skills components to augment current and future TVET programming. ▪ Implement and operationalize TchadREN through collaboration with the private sector and regional countries. 	<ul style="list-style-type: none"> ▪ Ministry of Vocation Training ▪ ADETIC
High Priority	<ul style="list-style-type: none"> ▪ Invest in and incentivize for improvement in basic education with focus on foundational literacy, numeracy, and integration of digital skills in formal and informal learning settings. ▪ Implement an e-learning system to meet access, quality, and equity challenges. ▪ Integrate gender, rural, and social inclusion in all digital skills training programs. ▪ Upgrade the training and employment data collection capabilities and engage private sector for data provision and advisory. 	<ul style="list-style-type: none"> ▪ Ministry of National Education ▪ Ministry of National Education ▪ MPEN ▪ MPEN

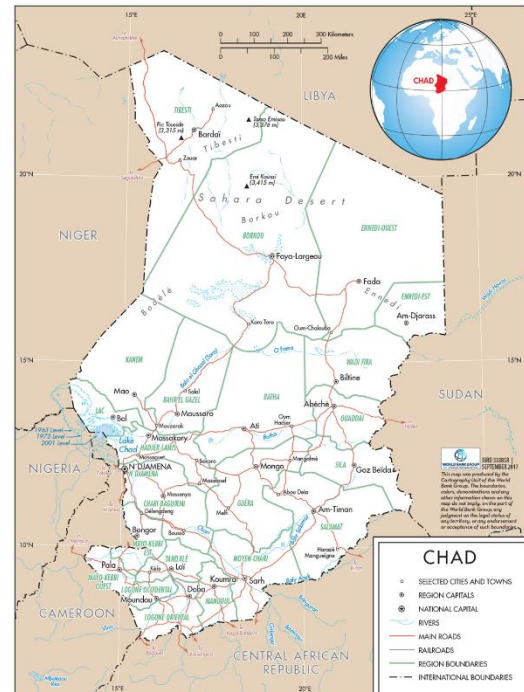
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INTRODUCTION

Table 2. Chad at a Glance¹⁸

Population (2021)	16.9M
Income group	Low-income
GDP, current US\$ (2021)	11.4Mds
GDP per capita, current US\$ (2021)	672.8
Population density (2020)	13 per km ²
Rural population (2020)	76%
International poverty rate (\$1.9) (2021)	33.2
Lower middle-income poverty rate (\$3.2) (2021)	66.4
Upper middle-income poverty rate (\$5.5) (2021)	87.9
Gini Index	37.5
School enrollment (2019), primary (% gross)	89.2
Life expectancy at birth (2020), years	54.2
Literacy rate (2016)	31
Total GHG Emissions (mtCO2e)	118.2

Map 1. Chad



BACKGROUND ON CHAD

Chad faces multiple structural and economic constraints that hinder its socio-economic development. A landlocked territory in the Sahel region with a population of 16.9 million inhabitants, the country's large size, low population density, and high rurality level present severe challenges to providing adequate infrastructure and public services to the population (i.e., social protection, health, education, agricultural extension). Approximately half a million are refugees and asylum seekers,¹⁹ and Chad is experiencing demographic pressure (9.6 out of 10) and a rollback of development due to COVID-19. A relatively high birth rate of 5.65 births per woman also exacerbates food insecurity, malnutrition, and limited access to quality healthcare and Water, Sanitation, and Hygiene (WaSH) services.²⁰ With a GDP per capita of US\$ 696 as of 2021,²¹ Chad is among the 10 poorest countries in the world. Moreover, human capital gaps are amplified by high fertility rate and gender disparities. While human capital outcomes are generally poor, girls' Human Capital Index scores are particularly low. Human capital suffers from infrastructure deficits, including in the energy, transport, and digital sectors. Its economy is undiversified and vulnerable to commodity price fluctuations, with agriculture, forestry, and fishing rents representing 46 percent of GDP while natural resources represent 21 percent of GDP.²²

¹⁸ World Bank Development Indicators (WDI) and Worldometers, Macro Poverty Outlook, and official data.

¹⁹ HIAS, 2022. HIAS in Chad. Available at <https://www.hias.org/where/chad>

²⁰ Fund for Peace, 2021. Fragile States Index Annual Report 2021. Available at <https://fragilestatesindex.org/2021/05/20/fragile-states-index-2021-annual-report/>

²¹ World Bank, 2020. GDP Per Capita Data (current US\$). Available at https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?name_desc=false

²² World Bank, 2022. World Development Indicators. Available at: <https://data.worldbank.org/indicator/NY.GDP.TOTL.RT.ZS?locations=TD>
<https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=TD>

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Since early 2020, Chad has been subjected to two substantial shocks. COVID-19 threw Chad's economy back into recession. In April 2021, a rebel incursion led to the death of President Idriss Déby, closing a long chapter of political stability. In a break from the constitution, a Transitional Military Council (*Conseil Militaire de Transition* (CMT)) was established with a mandate to hold elections within 18 months; however, a lack of clarity in the selection of participants is likely to mean that the process will be contested, leading to further delay and pushing the transition beyond its original deadline of October 2022. Chad's economy, institutions, and citizens have been affected by these shocks due to longer-term structural challenges, including protracted insecurity, over-dependence on oil, and sub-optimal government intervention. Such legacy of unresolved internal and cross-regional conflicts, as well as rising tensions all pose a risk of conflict escalation in the country.

Chad's economy is highly dependent on oil and oil prices, making it susceptible to economic shocks. In 2021, GDP contracted by 1.2 percent (or 4.2 percent per capita) for the second consecutive year of recession due to temporary suspension of oil production, socio-political insecurity, and liquidity constraints. This situation likely increased extreme poverty by 2 percentage points. The extreme poverty rate is expected to increase to 38 percent in 2022 due to negative growth GDP per capita²³, pushing 6.4 million people into poverty. Growing food and general insecurity, climatic shocks, and continued dependency on volatile oil revenues heighten the risks of further economic recession to the already fragile recovery during such sensitive political transition. Due to regional and national fragility, Chad's public oil revenue mostly covers security spending, except during periods of high oil revenue and relatively stable political periods. Public oil revenues significantly outstripped security spending in only three of the nine years between 2013-2021, even with suspected underreporting, corresponding to periods of high oil prices.

The country underperforms on most living condition dimensions, and poverty incidence, which is associated with a low human capital endowment. Chad ranks 187th out of the 189 countries on the UN's Human Development Index for 2020. The country's poor live predominantly in rural areas and are mainly farmers who depend on low-productivity agricultural production systems. The majority of the urban poor are workers in the informal sector, engaged in activities with low productivity. Chad has a young population, growing at 3 percent per year. However, youth unemployment is a significant challenge, as the number of young people entering the job market each year increased from 140,000 to nearly 210,000 between 2012-2020.²⁴

RATIONALE FOR DEVELOPING A DIGITAL ECONOMY IN CHAD

Leveraging the digital economy can be transformational for SSA countries. Rapid digital transformation is reshaping the global economy, driving financing inclusion, closing information asymmetry gaps between buyers and sellers, and changing the way economies of scale are achieved. Africa's internet economy is poised to reach US\$ 180 billion by 2025 (up from US\$ 115 billion in 2020), accounting for 5.2 percent of the continent's GDP.²⁵ Broadband deployment in developing countries can boost economic growth (see Box 1).²⁶ There is increasing evidence of the positive impact of access to the internet and mobile technologies in SSA on growth,²⁷ jobs,²⁸ innovation,²⁹ firm productivity,³⁰ agricultural productivity,³¹ and, critically, household

²³ World Bank, 2022. SSA Macro Poverty Outlook, Country-by-country analysis and projections for the developing world. Available at: <https://openknowledge.worldbank.org/handle/10986/37346>

²⁴ Agence Française de Développement, 2022. Facilitating access to education and employment. Available at: <https://www.afd.fr/en/page-region-pays/chad#:~:text=The%20number%20of%20young%20people,to%20nearly%2010%20000%20in%202020.>

²⁵ Google and IFC. 2020. "e-Economy Africa 2020: Africa's \$180 billion Internet economy future". Available at: https://www.ifc.org/wps/wcm/connect/publications_ext_content/ifc_external_publication_site/publications_listing_page/google-e-economy

²⁶ World Bank, 2016. World Development Report: The Digital Dividend. Available at: <https://www.worldbank.org/en/publication/wdr2016>

²⁷ Katz and Callorda, 2019.

²⁸ Hjort and Poulsen, 2019.

²⁹ Georges, Mensah, and Traore, 2021.

³⁰ Karim Abreha et al., 2021.

³¹ Ordu, Cooley, and Goh, 2021.

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consumption levels.³² These “digital dividends” can include (i) greater inclusion stemming from an expansion of the information base, (ii) greater efficiency due to lower information costs, and (iii) greater innovation as information goods help bring transaction costs down toward zero.³³

The growth of the digital economy also has the potential to address fragility issues. The World Bank’s (WB) Strategy for Fragility, Conflict and Violence 2020–2025 highlights the powerful impact of digital technologies and platforms in fragile settings, such as Mali, as they strengthen local and national public services, promote private investment, and help civil society build community networks. As connectivity plays a significant role in reducing socio-economic exclusion and polarization, it becomes necessary to develop an enabling inclusive environment to enhance digital connectivity and digital public platforms’ growth and ensure equitable benefits for vulnerable groups. Indeed, this could considerably help the country’s efforts to address many of its fragility drivers, including corruption, inequality, and youth marginalization. Digital development can also help increase the resilience of the state, services, and financial systems in the face of a worsening security situation.

Box 1. Impact on growth of increased mobile broadband penetration

A study from International Telecommunication Union (ITU)³⁴ focused specifically on SSA measured the impact of broadband, digital transformation, and policy and regulatory frameworks on growth in the continent. It analyzed the economic contribution of broadband and digitization between 2010-2017 in 34 countries in the SSA, including Chad, and identified several levers that have direct or indirect impacts on growth for African countries:

- ❖ **Mobile broadband has a significant impact on GDP growth in Africa**
 - An increase of 10 percent in mobile broadband penetration yields an increase in 2.5 percent in GDP per capita.
- ❖ **Affordability remains a key enabler for the adoption of the mobile broadband technology in Africa:**
 - 10 percent drop in prices will boost adoption by more than 3.1 percent.
 - Increasing average disposable income (proxied by GDP per capita) by 10 percent yields 2.1 percent more fixed broadband adoption.

When applied to Chad, increasing unique mobile broadband penetration by 34 points (from 16 to 50 percent) would increase GDP by 8.5 percent, which is equivalent to about US\$ 969 million in additional GDP.³⁵

COVID-19 has accelerated digital transformation worldwide, as many countries leveraged digital technologies to ensure business and education continuity, prevent service interruptions, and cope with social distancing. Country-level policies and interventions have facilitated digital connectivity and the deployment of digital platforms to help citizens, governments, and businesses cope with the pandemic. Following the economic shock stemming from COVID-19, one-third of firms increased or started to use the internet, social media, and digital platforms for business purposes.³⁶

COVID-19 has highlighted the need for accelerating digital adoption to boost resilience in Chad. While digital technologies offer businesses, governments, and individuals the opportunity to ensure continuity, prevent service disruptions, and provide means to cope with social distancing, Chad is yet to leverage digitally enabled solutions at scale. For instance, shifting social transfers from cash to digital payments to adhere to social distancing guidelines proved difficult to be implemented in Chad, given a lack of payment structures and mobile money accounts among program beneficiaries. Similarly, the delivery of information and accompanying measures (usually done in person) was suspended and then shifted to delivery through community radio. Likewise, during the pandemic, Chad had to close about 15,000 schools, affecting more than 3 million³⁷ students aged between 3-17 to disrupt schooling. The crisis has shown that the lack of affordable and reliable connectivity hampered many from accessing distance learning, exposing the digital divide between the

³² Bahia et al., 2020.

³³ World Bank Group, 2016.

³⁴ ITU, 2019. Economic contribution of broadband, digitization and ICT regulation - Econometric modelling for Africa. Available at: <http://handle.itu.int/11.1002/pub/8136517c-en>

³⁵ Based on the GDP estimated at 11.4 billion in 2021.

³⁶ World Bank, 2022. Business Pulse Survey. Available at: <https://www.worldbank.org/en/data/interactive/2021/01/19/covid-19-business-pulse-survey-dashboard>

³⁷ UNICEF, 2021. Chad – Accelerating school reopening in Chad using an integrated approach. | UNICEF Chad

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connected and unconnected. Moving forward, prioritizing measures to increase digital adoption across the government, private sector, and general public will help boost Chad's resilience to potential health and/or climate crises.

THE WORLD BANK’S DIGITAL ECONOMY FOR AFRICA INITIATIVE

This diagnostic of Chad’s digital economy is part of the WBG’s Digital Economy for Africa (DE4A) initiative,³⁸ stemming from the WBG’s recognition that the digital economy can help accelerate the achievement of the Sustainable Development Goals (SDGs) and the WBG’s twin goals. Through the DE4A, which supports the operationalization of the African Union’s Digital Transformation Strategy for Africa (2020-2030)³⁹, the WBG has committed to undertaking country-level digital economy diagnostics in the continent to take stock of challenges and opportunities across the five foundational pillars of the digital economy and propose specific, actionable, and prioritized recommendations to support countries developing vibrant, safe, and inclusive digital economies. The resulting synthetic country reports highlight key policy reforms and investments needed for African countries to achieve their digital transformation ambitions while mitigating the risks of growing digitization. These reports have contributed to structured dialogue between authorities, the WBG, development partners, the private sector, and non-state actors around concentrating efforts, catalyzing action, and enabling progress toward implementation and achievement of digital economy objectives. They have also directly informed WB systematic country diagnostics and country partnership frameworks, as well as downstream engagements.

This diagnostic is based on a widely tested methodology focused around the five foundational building-blocks of a vibrant, inclusive, and safe digital economy. These pillars are briefly described below (Table 3). The report includes a chapter for each of the pillars of the digital economy – digital infrastructure, digital public platforms, DFS, digital businesses, and digital skills – and examines the strengths, weaknesses, and areas for improvement in each of these dimensions. In addition, areas of interest have been highlighted between chapters – fragility and digital, gender and digital, regional integration, and climate change and digital. Finally, the last chapter of conclusion reflects on the cross-cutting issues that have been identified by the analysis and which, if addressed, will improve Chad's ability to cope with the various constraints of the digital economy.

Table 3. Digital Economy Foundational Pillars

Pillar	Definition
Digital Infrastructure	Provides the way for people, businesses, and governments to get online and link with local and global digital services, thereby connecting them to the global digital economy
Digital Public Platforms	Offer public products and services through digital channels for all aspects of life, allowing for access to public services and support increased efficiency of core government operations
Digital Financial Services	Allow individuals and businesses to conduct transactions—such as paying, saving, borrowing, and investing—electronically or online, thereby expanding financial inclusion
Digital Businesses	Enable the creation of a digital economic ecosystem and allow traditional “offline” businesses to adopt new technologies and business models
Digital Skills	Enhance the adoption and use of digital products and services, as economies require a digitally savvy workforce to build digital economies and competitive markets

The diagnostic is based on interviews with senior policymakers and technical experts in key government agencies and Ministries. Additional interviews were also conducted with private sector actors, such as mobile operators and Internet Service Providers (ISPs), as well as with non-governmental organizations (NGO) and development partners. These interviews were complemented by a review of existing literature and data sources (Global System for Mobile Communications Association (GSMA), ITU, TeleGeography, Alliance for Affordable Internet (A4AI), etc.), as well as a study of policy documents, laws and regulations, and a background of recommendations and international experiences from various developing countries that have

³⁸ World Bank, 2022. The Digital Economy for Africa Initiative. Available at: <https://www.worldbank.org/en/programs/all-africa-digital-transformation>.
³⁹ <https://au.int/en/documents/20200518/digital-transformation-strategy-africa-2020-2030>

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successfully implemented digital transformation initiatives. Due to the health crisis, all interviews were held virtually, which made the search for information more complex. In addition, data gaps are a significant limitation that must be acknowledged. Some statistical data may be outdated, with some dating back to 2019, 2018, or even 2016, as some international indicators have not been updated since then, resulting in persisting data accuracy issues. Additional statistical surveys would be welcome in Chad to address these issues. However, for the purpose of this report, the statistics have been triangulated with more qualitative information, so the team has no doubt about the validity of the issues and trends highlighted in this report.

POLICY AND INSTITUTIONAL CONTEXT OF DIGITAL TRANSFORMATION

Digital transformation has been presented in Chad's development plans as means to unleash the country's potential for growth and societal transformation but remained largely aspirational. With technical support from the United Nations Economic Commission for Africa (UNECA), the GoC adopted the National Plan for Information and Communication Infrastructure (NICI) in 2009 to guide its actions through a program over a twenty-year period (2007 - 2027). This policy document was built around the following vision: "ICT will enable Chad, within a twenty-year horizon, to better develop its human, economic and cultural resources, to reduce inequalities between citizens, and to contribute to the establishment of a climate of peace, justice, and democracy". Ten years after the national plan adoption, the ICT Development Agency (*Agence de Développement des Technologies de l'Information et de la Communication – ADETIC*) developed a National ICT Development Strategy (*Plan Tchad Numérique 2017-2021*) in November 2017, which aims to translate the national development plan "Vision 2030" into concrete actions. The main priority areas were to develop: (i) an ecosystem conducive to the growth of the digital sector; (ii) electronic communication infrastructure; (iii) digital transformation of public administration; (iv) services, applications, and national content; (v) dissemination of ICT for the fight against poverty and social exclusion. The Strategy was decomposed into 15 programs and 62 projects for an estimated budget of 390 billion XAF (\$US 625 million). However, the strategy package lacked a clear and actionable roadmap, financing, and governance arrangements to become effective. In 2020, the Ministry of Post and Digital Economy (*Ministère des Postes et de l'Economie Numérique – MPEN*), elaborated a new Strategic Plan for the Development of Digital and Post for 2020-2030 to "accelerate Chad's digital transformation" and position this country as a "crossroad for ICT in Africa". The plan's general foci are modernizing infrastructure, integrating digital technologies into growth sectors, and creating jobs. Additionally, it sets six global objectives, covering 30 programs with 79 projects and 277 sub-projects:⁴⁰

- i. Make the digital economy a growth engine (increasing the ICT sector's contribution to GDP to 10 percent);
- ii. Promote digital entrepreneurship (forming 1,000 innovative digital startups);
- iii. Facilitate the integration of ICT in the administration and all socio-economic sectors (contributing to reduce poverty by 50 percent);
- iv. Promote ICT adoption by citizens and businesses (with 80% of the population having open and secure access to ICT);
- v. Introduce institutional reforms to the Chadian Post and Savings Company (*Société Tchadienne des Postes et de l'Épargne – STPE*) and the Telecommunications Operator Sotel Tchad (transform the two to fully operational and profitable entities);
- vi. Contribute to African digital economy (in goods and services) with a participation up to 2 percent of exchanges in Africa).

Over the past two decades, the GoC has established an array of dedicated agencies and initiatives to advance the country's digital transformation:

⁴⁰ CEMAC Eco Finance, n.d. Chad outlines 9 strategic axes for 2030 ICT revolution. Available at: <https://cemac-eco.finance/chad-outlines-9-strategic-axes-for-2030-ict-revolution/>

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- **The Ministry of Posts and Digital Economy (MPEN)** was established in May 2021, expanded its mandate from telecommunications and posts to the broader digital sector, and is the apex body for overseeing the digital sector. The Ministry prepares and implements the national strategy and policies in the ICT and postal sectors.
- **Regulatory Authority for Electronic Communications and Post (Autorité de Régulation des Communications Électroniques et des Postes - ARCEP)** is the main regulatory body established in 2014 (previously *Office Tchadien de Régulation des Télécommunications (OTRT)*). ARCEP is the implementing arm of the Ministry, providing the MPEN with opinions and proposals concerning the adaptation of the legal framework relating to activities in ICT and postal services. ARCEP has exclusive competence to regulate, control, and monitor the operators' activities and services providers in ICT and postal sectors.
- **The Information and Communication Technologies Development Agency (Agence de Développement des Technologies de l'Information et de la Communication – ADETIC)** was established in 2014 by Law N°012/PR/2014. The Agency is mandated to implement the national digital agenda as well as initiatives promoting ICT (including data driven solutions, digital skills training, an administrative intranet, platform development, and e-services).
- **National Agency for Computer Security and Electronic Certification (Agence Nationale de Sécurité Informatique et de Certification Electronique - ANSICE)**. Established by Law N°006/PR/2015 in 2015, ANSICE operates under the Presidency. It is the national authority in charge of regulating cybersecurity in Chadian cyberspace. More specifically, ANSICE is mandated to ensure Chad's critical infrastructure cybersecurity, coordinate the fight against cybercrime at the national level, personal data protection and freedom in cyberspace, and secure electronic transactions throughout the national territory.

Despite the relevant Ministries, Departments, and Agencies (MDAs) active engagement in supporting the country's digital transformation, the efforts have been slow to adopt due to the lack of a holistic and integrative national digital development strategy. The Chadian public administrations continue to promote and implement digital initiatives with no whole-of-government approach to digital transformation. A lack of a well-established and integrative national digital strategy also limits MDAs' coordination, resulting in overlapping reinforce and of mandates and siloed approaches' proliferation with weak impact on digital transformation.

LEGAL AND REGULATORY FRAMEWORK

The GoC has taken steps toward adopting the required legal and regulatory framework supporting digital transformation, establishing trust in digital initiatives, and improving data protection. Overall, the texts are well drafted and in line with international standards:

- **Electronic Communications** – The legal and regulatory framework is relatively conducive to establishing a competitive ICT market. In particular, (i) Law N°013/PR/2014 sets the regulatory framework for electronic communications and postal activities in Chad, on the basis, among others, of non-discriminatory treatment of operators, their contribution to the universal service development, and the protection of consumers and the environment; and (ii) Law N°014/PR/2014, determines the terms and conditions for the establishment and operationalization of electronic communications infrastructure and networks, as well as the provision of electronic communications services, mainly through the creation of an appropriate legal framework, and the development of competition in the sector. However, there are limitations in roaming services, mobile number portability, and operationalization of the universal service. In this regard, a multi-party commission (public and private) has been set up in 2021 to overcome the limitations observed, revising Law 14/PR/2014 on electronic communications.
- **Electronic Transactions** – There is a comprehensive law on electronic transactions (Law No. 008/PR /2015), which includes the recognition of the e-signature and specification of secure devices for

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creating e-signature. Other decrees were promulgated in this respect, such as (i) Decree No. 078/PR/2019, which sets the terms and conditions for cryptographic service provision and means, and (ii) Decree No. 079/PR/2019, which sets the terms and conditions of authorizing e-certification. ANSICE is in charge of developing and implementing the e-certification policy in Chad, issuing authorizations and accreditations related to digital trust services, and ensuring the security of electronic administration and commerce.

Data Protection – The law is close to the EU’s General Data Protection Regulation, with the exception of the right to data portability, which is not expressly provided for in the Chadian law. The Constitution of Chad provides the legal framework for privacy protection in Article 49: “*The privacy of correspondence and communications is guaranteed by law*”. This provision is also reflected in Law N°007/PR/2015, which aims to regulate the collection, processing, transmission, storage, and use of personal data by enforcing rights to be informed, access (including a copy of personal data), erasure (in compliance with legal texts in force), and object or opt-out of processing personal data, albeit on legitimate grounds. Law N°006/PR/2015 established ANSICE and mandates the agency to protect personal data and manage of e-transactions in Chad. ANSICE is responsible for ensuring compliance, on the national territory, with the provisions of the Act. As such, it has the power to sanction any violation of the Act. It is a step toward protecting personal data and promoting users’ digital rights. However, certain boundaries remain unclear, such as the independent oversight of the supervisory authority, grounds for processing non-sensitive yet still personal data with no authorization, or the definition of individual’s and/or public’s legitimate interest in requesting personal data.

- **Civil Registration and Identification** - Chad has made several strides to revitalize their legal and regulatory environment pertaining to civil registration and identification more broadly, but implementation of laws is still in progress and would require strong political alignment. Further efforts are needed to enhance robustness of laws while ensuring practical applicability. Chad is marked by a period of transition which directly affects identity management as the country moves to a new structure to govern civil registration and identification. Operations are moving from a decentralized to partially centralized structure. Burgeoning from the 2020 law on identity management (*Ordonnance No 002/PR/2020 portant organisation de l'état civil*) that spearheaded Chad’s reforms, there are still bottlenecks in terms of implementation. Particularly, the division of responsibilities and reporting structure between local governments/Ministry of Territorial Administration and Decentralization (MATD) and the National Secure ID Agency (*Agence Nationale Des Titres Sécurisés – ANATS*) is unclear.
- **Cybersecurity and Cybercrime** – Law N°009/PR/2015 elaborates the legal framework for cybersecurity and the fight against cybercrime, while Decree N°076/PR/2019 sets the terms and conditions for the mandatory security audit of electronic communications networks and information systems. At the institutional level, ANSICE has as missions to: (i) design and implement policies combatting cybercrime; (ii) regulate and oversee the national information systems security and communication networks. It coordinates national cyber security actions to ensure the security of government systems and critical state infrastructure. But in practice, there are no tools or technological infrastructure (e.g. Computer Emergency Response Team (CERT)) to ensure the monitoring of the digital landscape or to manage security breaches in key public information systems, therefore it undermines the effective application of the laws.
- **Consumer Protection** - Consumer protection is covered by Law N°005/PR/2015, which applies to all consumer transactions relating to the production, supply, distribution, sale, exchange of goods, services, and technologies. It also covers, to a certain extent, the digital realm by (i) providing consumers with appropriate and transparent information on the goods and services they buy or use, (ii) ensuring the conformity of goods and services and consumer safety per the required standards,

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and (iii) determining penalty criteria and procedures in the event of an infraction. These rights, added to others guaranteed by Law N°14/RP/2014 relating to electronic communications and Law N°9/RP/2015 on cybercrime, are ignored by consumers due to a lack of awareness. Additionally, the rights to information and redress harm are not well respected by operators, while the right to choose is still limited, and mobile number portability has not been implemented yet.⁴¹

- **Intellectual Property** – Intellectual property rights (IPR) are covered by Law N°005/PR/2003, protecting the authors’ rights in all intellectual works, regardless of gender, form of expression, merit, or destination, without any prior formality. However, the legal framework remains weak in Chad due to its lack of judicial independence, political stability, the rule of law, and control of corruption. As of 2022, Chad’s IPRI score⁴² decreased by 0.25 to 3.74 percent, placing it 25th in Africa and 121st in the world.

To make these laws effective, it is essential to complete the digital regulatory framework. Legal and regulatory gaps remain in critical areas such as e-commerce, data privacy breaches, identification of the critical infrastructures to protect from cyber incidents, security of electronic transactions, interoperability, and open data, that can ensure digital transactions are to be legally recognized and done in a secure and protected manner. Without proper legal and regulatory framework and increasing volume of data exchanged through secured online transactions, government, citizens, and businesses cannot leverage completely digital transformation benefits, and are more exposed and more vulnerable to security breaches.

RECOMMENDATIONS

R1 [High priority]. Adopt the new “Chad Digital Strategy Horizon 2030”. The new strategy should be adopted because of an inclusive process to ensure wider buy-in, maximize the strategy’s impact, and guarantee successful implementation. Adoption process should convene MDAs, industry players, civil societies, and development partners. This will ensure that the strategy incorporates government priorities, private sector, and CSOs needs. By engaging development partners, GoC can ensure that key initiatives are adequately financed and implemented. Finally, the strategy should provide a clear roadmap for implementation and monitoring and evaluation (M&E) framework to ensure that the key priorities are effectively mapped out, roles and responsibilities for key actions clearly defined, and progress tracked using measurable metrics and milestones, holding the key stakeholders accountable.

R2 [High priority]. Establish a strategic inter-ministerial coordination mechanism for digital transformation. Based on successful international practices (see box 2), an inter-ministerial committee should follow an organizational model composed of representatives from the public sector (ministers and leaders of agencies), the private sector, and civil societies to provide high-level coordination of the implementation of the new digital transformation strategy and political orientation. Such a committee should advise on the best institutional framework for the long-term digital economy development, lead the digital transformation strategy, and provide oversight of technical sub-committees for its implementation and drawing lessons along the way. An inclusive committee with a clear mandate would at least, in the short-term, contribute to strengthened digital governance and increased potential for better strategy design and implementation.

R3 [High priority]. Update the key legal and regulatory frameworks to promote trust and security in data transactions. As the digital economy develops further in Chad, it is imperative to create and implement a legal and regulatory environment that avoids, or at least limits harm arising from the data misuse, including

⁴¹ MPEN, 2019. *Droits et Obligations des Clients des Opérateurs des Télécoms Ouverts au Public*. Available at: <https://www.enastic.td/wp-content/uploads/2019/07/Pr%C3%A9sentation-ADC-Droits-et-Obligations-Postes-et-Tic-Tchad.pptDAY-1.pptx>

⁴² Property Rights Alliance, 2022. International Property Rights Index: Chad. Available at: <https://www.internationalpropertyrightsindex.org/country/chad>

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infringements on data privacy and data exchange. In this perspective, the focus should be put on the reinforcement of : (i) the harmonization of standards for the protection of personal data across the Chadian administration, (ii) the accountable processing of data, particularly personal data, by the public bodies, or on their behalf, (iii) the transfer of personal data to a third party, provided that the Chadian administration ensures the third party application of appropriate personal data protection, and (iv) the balance and consistency between data privacy and right to information, particularly the aspects related to open data access.

Box 2. Best practices for establishing an effective institutional framework for digital transformation

International best practices suggest that there are two main approaches for supporting effective leadership on the digital agenda:

1. **Entrusting leadership to a supra-ministerial entity.** In most cases leadership is conferred to the highest political office through the introduction of an agency that reports directly to the President's or Prime Minister's Office. This model is currently being employed by Brazil, Chile, South Korea, Estonia, Luxemburg, Mexico, and Slovakia. This model helps ensure high-level leadership and supports centralized strategic coordination. Several variations of this approach exist depending on the degree of involvement of other ministers.
2. **Strategic coordination is ensured by a lead ministry.** This model is currently being employed by Belgium, the People's Republic of China, Japan, Poland, Portugal, Slovenia and Rwanda. Here too, there are several variants depending on the nature of the ministry in charge of this coordination: exclusively in charge of digital, having other areas of responsibility, or sharing its prerogatives with several other ministries.

The choice of the best configuration depends on national specificities in terms of institutions, administrative organization, administrative culture or public capacity, inter alia.

Source: OECD (2019). *Going Digital: Shaping Policies, Improving Lives*. OECD Publishing, Paris.

CHAPTER 1

DIGITAL INFRASTRUCTURE

Key messages:

- ❖ Chadian digital sector is nascent and experiences significant gaps in access to quality digital connectivity, especially in the rural areas.
- ❖ Broadband services are unaffordable for average Chadians due to the high cost of deploying and operating last mile infrastructure, the relatively high price of wholesale Internet bandwidth, and the low purchasing power of the Chadian population.
- ❖ Chad has enormous potential to take advantage of its existing and future digital infrastructures. But, for this to happen, strong political will and commitment from all public and private stakeholders are needed.

1.1 IMPORTANCE OF DIGITAL INFRASTRUCTURE

Digital Infrastructure encompasses all the network elements that contribute to the provision of digital services. These elements can be broken down into three parts that constitute the broadband value chain: the *First Mile*, the *Middle Mile*, and the *Last Mile*. In addition to these segments, it is often agreed upon to have a fourth part named the '*Invisible Mile*' relative to the institutional, legal, and regulatory environment conducive to efficient deployment of Digital Infrastructure. **The *First Mile*, where the internet enters a country**, ensures access to the worldwide internet network (through the submarine cable systems, landing stations, cross-border terrestrial cables, international gateways, satellite dishes, cross border microwave, etc.). **The *Middle Mile*, where the internet passes through the country**, is referred to as the national backbone and intercity networks, meshes metropolitan networks across cities, internet exchange points, and local data centers. **The *Last Mile*, where the internet reaches the end-users**, can be a wireless (2G, 3G, 4G, 5G, WiMAX) or fixed (in copper pair or fiber optic) access network, connecting the end-user to the Digital Services Providers. **The *Invisible Mile*, consisting of the requirements for effective and sustainable deployment and operation of digital infrastructure**, covers all aspects relative to institutional arrangements, scarce resources (e.g., radio spectrum, subscriber numbers, IP addresses), management, laws, and regulations (such as infrastructure sharing, technology neutrality, off-grid energy production, taxation, etc.). This chapter's findings are structured along these four *Miles* of the Digital Infrastructure.

Universally available, affordable, and accessible digital connectivity accelerates inclusive and sustainable economic growth. The impact of increased broadband uptake on economic growth, poverty reduction, and employment is widely documented. For instance, an ITU 2020 study for Africa shows that a 10 percent increase in broadband penetration is correlated to a 2.5 percent growth in GDP per capita.⁴³ Digital connectivity allows end-users to obtain information (on the price of the products and services of their interest), buy and sell products and services online, and work and maintain social activities without having to commute. This results in increased opportunities for youth, community development, and gender equality. When value chains, public services, and social activities started to shut down during COVID-19, digital solutions enabled

⁴³ ITU, 2019. Economic contribution of broadband, digitization and ICT regulation - Econometric modelling for Africa. Available at: <http://handle.itu.int/11.1002/pub/8136517c-en>

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countries to ensure the continuity of vital economic and social activities through digital means, despite the global economic recession. Many countries leveraged digital connectivity and platforms amid the pandemic by substituting online learning for conventional education to ensure learning continuity during school closure. Despite the GoC's effort response by adopting flexible education programming and distance learning alternatives, take-up of online learning amongst students was low over the 7 months of school closure. This is partly due to limited mobile broadband coverage with a 48 percent penetration rate and only 10.4 percent of the population using the internet.⁴⁴

Promoting competition to leverage private investment in digital infrastructure and effectively using public funds can help close gaps in accessing digital services. In many low- and middle-income countries, telecom operators have been unable to bring digital connectivity to rural and insecure areas, leaving millions of people without access to digital services. Africa alone needs at least half a million new kilometers of fiber network (costing anywhere from US\$ 15,000 to US\$ 30,000 per km) to deliver an adequate 4G network.⁴⁵ Large investments are needed in the digital infrastructure value chain, which requires an enabling environment to encourage private sector participation. For this to happen, competition between service providers on an equal playing field with a good regulatory environment will be crucial. This will bring down the retail prices, improve the quality of service, and provide adequate commercial returns to operators.⁴⁶ However Targeted public policies will play a key role in ensuring universal access, particularly in the underserved, rural, and conflict-affected areas where private operators have little to no commercial incentive without any public interventions.

In Fragile, Conflict, and Violence affected (FCV) situations like Chad, digital technologies, when wisely and peacefully used, can support transitions from fragility to stability. During conflicts, digital connectivity can support monitoring and information gathering and provide early warning and response systems to prevent violent conflicts and save lives. In the aftermath of conflict digital solutions can support mitigation measures and strategies, help government and donors coordinate and monitor relief activities, and facilitate relief efforts. However, several challenges affecting network quality, persist in expanding digital connectivity in FCV contexts, particularly disturbance in infrastructure deployment and maintenance in conflict areas. Domestic security challenges added to regional conflicts continuously subjected Chad to destabilizing security threats and risks.

1.2 DIAGNOSTIC FINDINGS: CURRENT STATE OF DIGITAL INFRASTRUCTURE

1.2.1 Access to Electricity

Reliable access to electricity is a prerequisite in deploying digital infrastructures and rolling out digital services, yet largely scarce and limited to urban cities in Chad. Despite significant fossil fuel resources and abundant sunshine, Chad has one of the lowest electricity access rates in the world (11 percent compared to SSA average of 48 percent).⁴⁷ Basic access to adequate and affordable energy is not equally distributed across the country, reflected in the significant disparities in electricity access between urban and rural areas (20 versus less than 2 percent).⁴⁸ The national power grid is composed of independent city-based systems. Outside the capital N'Djamena and secondary cities, there is no grid electrification, leaving most rural areas with no electricity. In locations without a power grid, those who can afford high-priced diesel generators have access

⁴⁴ ITU, 2021. Connectivity in the least developed countries: Status report 2021. Available at: <https://www.itu.int/hub/publication/d-ldc-ictldc-2021-2021>

⁴⁵ World Bank & World Economic Forum, 2016.

⁴⁶ World Bank, 2022. Digitalization and Development. Development Committee Meeting April 2022. Available at: https://www.devcommittee.org/sites/dc/files/download/Documents/2022-04/Final%20on%20Digitalization_DC2022-0002.pdf

⁴⁷ National Electricity Emergency Plan (NEEP), 2022.

⁴⁸ World Bank, 2022. World Development Indicators. Available at: <https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=TD>

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to electricity. The rest of the population still lives without electricity and resorts to traditional means (i.e., candles, kerosene lamps). Recharging mobile devices is a consistent challenge, as citizens often commute to local community centers with a power source, if any.

Box 3. Addressing Energy Constraints in Chad: Recent Actions

In March 2022, the WB approved the Chad Energy Access Scale Up Project (Projet d'Acroissement d'Accès à l'Energie au Tchad – PAAET) in the amount of US\$ 295 million as a grant from the International Development Association (IDA) to help Chad expand its energy coverage. The project aims to increase access to electricity and provide clean cooking solutions by expanding the main power grid and mini-grids, standalone solar systems, deployment of improved stoves, and natural resource management. It will expand electricity access in the capital city, N'Djamena, and 12 other secondary cities in which the National Power Company (*Société Nationale d'Electricité* – SNE), operates mini-grids and provide electricity services in additional secondary cities and villages, including those located near refugee camps. Public and private investments will strengthen the country's electricity generation, storage, and distribution capacity. As a result, more than six million people are expected to benefit from electricity services, including 400,000 refugees and 740,000 people from host communities. The project will also provide access to electricity for approximately 850 medical centers and 700 schools, mainly in rural areas, including 150 medical centers and 200 schools for refugees and host communities.

1.2.2 First mile: International connectivity

As a land-locked country, Chad has no direct access to submarine cable systems and heavily depends on neighboring countries for its international connectivity. GoC has been carrying out number of projects to develop a national fiber optic network linked to sub-marine cable systems through Cameroon and Sudan:

- **Southern Backbone Link (N'Djamena – M'Béré), managed by Sotel Tchad.** In 2009, GoC deployed a fiber optic link between N'Djamena and M'Béré (via Kagpal), located at the border between Chad and Cameroon, to interconnect to the SAT-3 international submarine fiber optic cable through the fiber optic network deployed by Esso Exploration and Production Chad Inc (EEPCI) for Chadian oil export and the Cameroonian fiber optic network operated by their incumbent operator Camtel. At the time of writing, the Southern backbone, which is the subject of an upgrade project, is not currently used for international connectivity, but only used for domestic transmission.
- **Western Backbone Links (N'Djamena – Kousseri).** There are two (2) fiber optic links between N'Djamena and Kousseri (Cameroon). **One is operated by Chadian incumbent operator Sotel Tchad and the other by a Chadian-Sudanese company, Sudachad.** This backbone connects Chad to Cameroon's fiber optic backbone (managed by Camtel), which connects to the SAT-3 submarine cable system through Douala (Cameroon) landing station.
- **Eastern Backbone Link (N'Djamena – Adré), managed by Sudachad.** In 2014, the GoC decided to mobilize the revenues generated from the renewal of operator licenses to finance the construction of a fiber optic link to Sudan. In 2018, a 1,142 km long fiber optic link between N'Djamena and Adré (on the Sudanese border) was commissioned, allowing Chad a second international gateway through Sudan (Sudatel's fiber optic backbone) via the Port Sudan landing station to the East on the edge of the Red Sea.

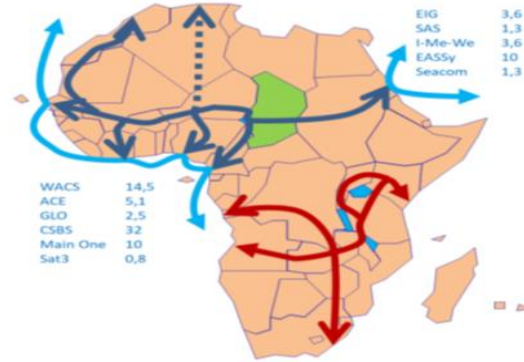
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Figure 1. Chad Fiber Optic International connectivity



Source: ARCEP, 2020 ⁴⁹

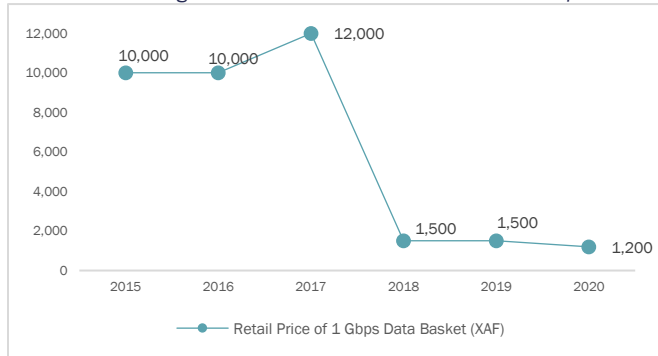
Figure 2. Map of potential Chad transit flows (submarine cables and related capacities in Tbps)



Source: Assistance mission report to the DUE in Chad and the MPEN for the implementation of a PPP for the management of optical infrastructures in Chad

The arrival on the first mile segment of Sudachad, an infrastructure operator, established under a public-private partnership (PPP), as a result of direct negotiations which led to the following distribution of the company's shareholding: 10 percent for the GoC, 45 percent for Senimar (a Sudanese engineering company) and 45 percent for Aldjemia (a Chadian private partner), brought a considerable drop in the wholesale and retail prices of Internet services and substantially increased Internet speed. Granted in 2018 the concession to manage, operate, and maintain the GoC's fiber assets for 20 years, Sudachad currently holds more than 80% of the international bandwidth wholesale market share while Sotel Tchad, the State-owned incumbent global operator has less than 5% of the wholesale market share and the remaining business being shared by foreign and satellite operators such as Camtel, Gilat and SES.⁵⁰

Sudachad's Figure 3. Evolution of the Retail Price of 1 Gbps Data Basket (XAF)



open access to international connectivity increased the competition between its international providers Camtel and Sudatel (offering connectivity in Cameroon and Sudan), and helped the operator offer lower wholesale prices to local mobile operators (Table 4). In addition to its publicly available catalog, in which the Megabit per second costs 55 USD per month, Sudachad has signed a three-year agreement with Airtel Tchad to offer the mobile operator megabit per second at 17.5 USD in the first year (2022), 15 USD in the second year (2023) and 12 USD in the third year (2024), provided Airtel Tchad buys at least 20 gigabits per second of international capacity with Sudachad. These

⁴⁹ Green indicates the FO links in service, red indicates ongoing Fiber Optic projects, blue indicates long-term FO projects, and black indicates Chad borders. Available at: <https://drive.google.com/file/d/1DIhmY1YDv1-zcIKIA8rpP92OjGpEnpq/view>

⁵⁰ Information provided by Sudachad.

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cost-oriented wholesale prices positively impacted mobile operators' Data Services Baskets prices (Figure 3). On the other hand, the increase in international bandwidth has resulted in an increase in the average throughput per user (Figure 4).

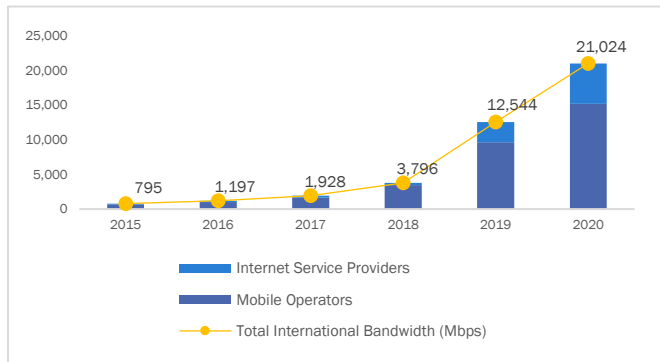


Figure 3: Evolution of the Retail Price of 1 Gbps Data Basket (XAF) from 2015 to 2020. The price shows a general downward trend, starting at 10,000 XAF in 2015 and ending at 1,200 XAF in 2020.

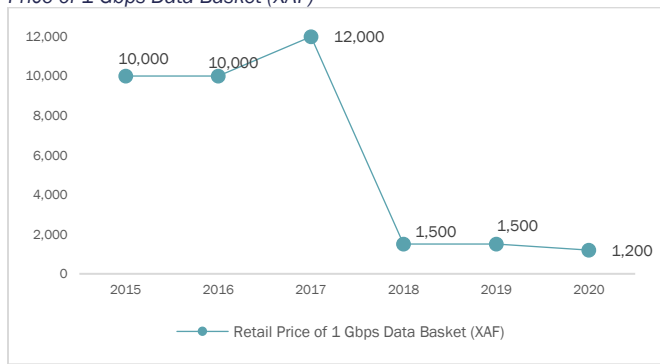


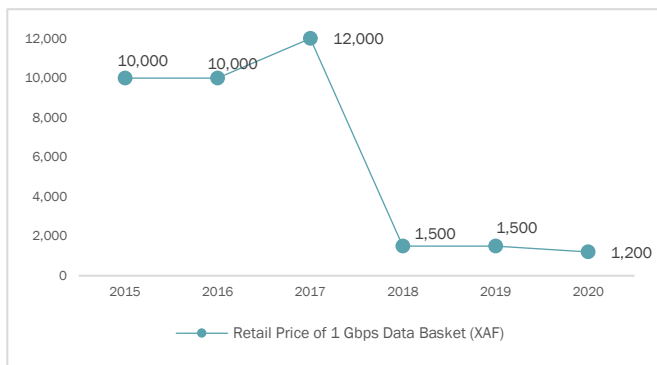
Table 4. Sudachad Interconnection Catalog: International Connectivity Service⁵¹

No	Capacity	Monthly costs (US\$)	Duration of the contract
1	STM-1	8,592.06	one year
2	STM-4	25,776.18	one year
3	STM-16	94,512.66	one year
4	STM-64	274,945.77	one year

⁵¹ ARCEP Chad 2020 annual report.

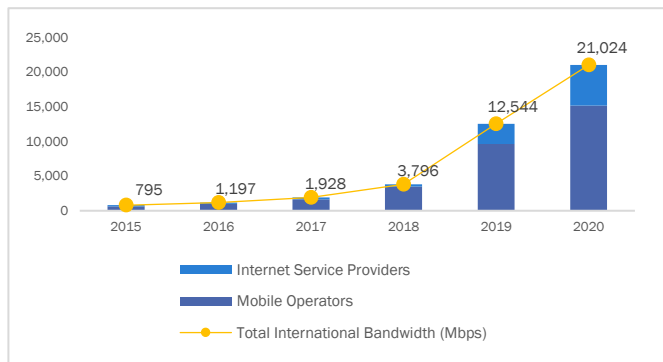
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Figure 3. Evolution of the Retail Price of 1 Gbps Data Basket (XAF)



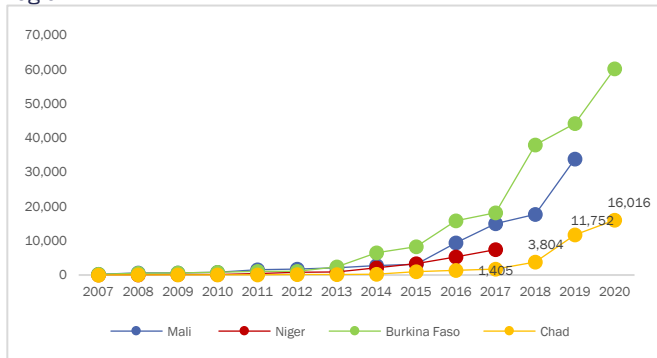
Source: ARCEP, 2020

Figure 4. Evolution of the international Internet bandwidth (Mbps)



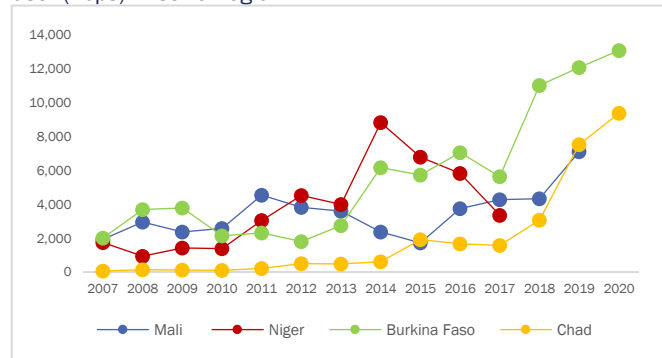
Despite the progress observed in terms of international connectivity, Chad appears to be less efficient than peer countries in the Sahel region. Indeed, the megabit per second is publicly sold (Sudatchad's interconnection catalog) at USD 55 per month (even if a preferential rate of USD 17.5 per month has been conceded to Airtel Chad, with the condition of purchasing at least 20 gigabits per second of capacity for 3 years) against USD 27.5 in Niger. Also, Chad's International bandwidth per Internet user, currently less than 10 Kbit/s used per Internet user, is the lowest of the Sahel region (Figure 5. and Figure 6). In the coming years, the additional international gateway through Niger, under Trans-Sahara Optical Fiber Backbone (DTS) project⁵² funded by a grant from the European Union managed by AfDB, may contribute to decrease international connectivity wholesale price and increase the available and used international bandwidths.

Figure 5. Benchmark of International Bandwidth (Mbps) in Sahel region



Source: TeleGeography, 2021

Figure 6. Benchmark of International Bandwidth per Internet user (kbps) in Sahel region



⁵² The Trans-Sahara Optical Fiber Backbone Project aims to achieve the interconnection between Niger, Algeria, Nigeria, and Chad through the total of 1,510 km of fiber optic cables. The project intends complete the missing links in Niger and Chad by building 503 km of fiber optic network on Chadian territory between Massaguet and Daboua on the Niger border via Massakory, N'gouri, Mao and Rigrig. The project is expected to be operational in 2023. AfDB, 2022. Multinational – Trans-Sahara Fibre Backbone Project. Available at: <https://projectsportal.afdb.org/dataportal/VProject/show/P-Z1-GB0-Q24>

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Table 5. Key first mile challenges

First mile indicator	Indicator family	Value	Challenge	Potential remedy
Direct access to a submarine cable	Access & Reliability	No Access	Reduction of the additional costs relative to using neighboring coastal countries' backbones to access submarine cables.	Implement regional and continental regulations on conditions for access of hinterland countries to submarine cable landing stations
Number of existing independent fiber optic international exits	Availability & Affordability	2	Increasing independent routes to improve the reliability of the international connectivity and lower the wholesale prices	Build additional international gateways
Conditions of access to the upcoming international fiber optic infrastructure	Competition	Not defined	Management of the upcoming international fiber optic infrastructure	Unify the management of GoC fiber optic infrastructure
First mile SMP regulation	Competition	Partially regulated	Approval and publication by the regulator of international interconnexion catalogs and establishment of convention between operators in accordance with the approved catalogs	Incentivize the regulator to publish online on its website operators' interconnection catalogs and conventions, upon approval.
International bandwidth per Internet user (kbit/s)	Usage	9.4 ⁵³	With less than 10 kbit/s per Internet user, Chad needs to provide large band experience to its population	Build additional international gateways and upgrade existing ones

1.2.3 Middle mile: National Backbone and Supporting Infrastructure

Despite its expansion in recent years, the national fiber optic backbone remains insufficient for a country of the size of Chad. Composed of three routes (Western, Southern, and Eastern), Chad's optical fiber backbone is almost entirely owned by the GoC and is managed by Sotel Tchad and Sudachad. The backbone mainly links localities in the Southern and Eastern regions to the capital N'Djamena (Table 6), leaving the Western and Northern areas underserved. In addition to the existing link, two (2) middle mile infrastructure projects are currently underway:

- the 180 million USD Electronic Communications Infrastructure Modernization Project (PMICE), financed by EXIMBANK which aims to build 1,200 kilometers of optical fiber, a Data Center and its national backup as well as 200 cell phone sites for the modernization of Sotel Tchad and;
- the 30 million euros Trans-Saharan Dorsal project (DTS), financed by the European Union and managed by the AfDB which provides for the construction of 550 kilometers of optical fiber between Massaget (Chad) and N'Guiguimi (Niger).

However, other routes will still be needed – particularly towards Libya (to the North) and the Central African Republic (CAR) (to the South) – for Chad to achieve universal connectivity.

⁵³ ITU & TeleGeography data, 2020. Available at: https://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2021/December/InternationalBandwidthInMbits_2007-2020.xlsx

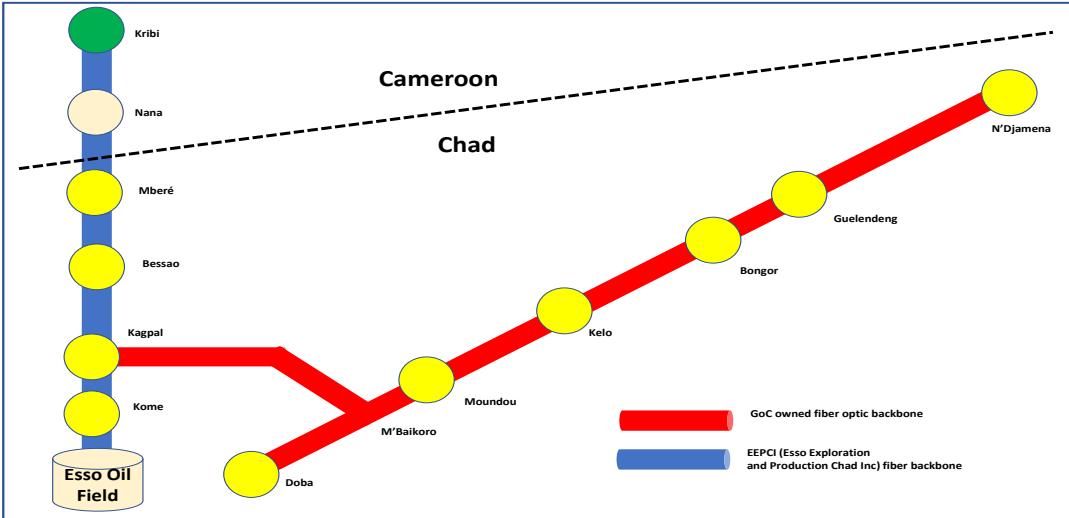
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Table 6. Key National Fiber Optic Infrastructures

Backbone	Length	Landing country	Completion	Capacity	Management	Status	Financing
N'Djamena-Mberé	870km	Cameroon	2011	1 STM16 (2.5 Gbps)	Sotel Tchad	In service	GoC
N'Djamena-Kousseri (old)	30 km	Cameroon	Before 2014	Fast Ethernet (100 Mbps)	Sotel Tchad	In service	Sotel
N'Djamena-Adré	1,142 km	Sudan	2019	24-pair cable	Sudachad	In service	GoC
N'Djamena-Kousseri (new)	30 km	Cameroon	After 2018	24-pair cable	Sudachad	In service	Sudachad
Daboua-N'Djamena	503km	Niger	2023	N/A	To be defined	Planned	AfDB, EU, GoC, and GoNiger
Doba-Sarh-Amtiman-Abéché	1,200 km	To be defined	To be defined	To be defined	To be defined	Planned	EXIMBANK

The Southern Backbone link (N'Djamena-M'Béré), the first national fiber optic backbone commissioned for Chad in 2011 is now only used for domestic transmission and no longer ensures its international exit function. The 610 km long N'Djamena-Kagpal section was financed by the GoC and connects the capital N'Djamena to the localities of Guelendeng (162 km), Bongor (79 km), Kelo (129 km), Moundou (105 km), M'Baikoro (20 km) and Kagpal (39 km) with a slip road linking M'Baikoro to Doba (76 km). The Southern Backbone is currently subject of an upgrade project.

Figure 7. South Backbone Link (N'Djamena-M'Béré)



Source: Status of fiber networks and interconnections perspective of the countries of the Economic Community of Central African States (ECCAS)

The Eastern backbone (N'Djamena – Adré) helped mobile operators and Internet Service Providers (ISPs) to address the lack of accessibility and affordability of national and international broadband connectivity. The Est backbone is managed by Sudachad and serves as Chad’s main broadband infrastructure. Its interconnection catalog (Table 7) is approved annually by ARCEP and provides operators and ISPs with domestic and international connectivity.

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Table 7. Sudatchad Interconnection Catalog: Domestic Capacity

Nº	Capacity	Cost per km per month (US\$)
1	STM-1	3,567
2	STM-4	10,701
3	STM-16	39,237
4	STM-64	114,231
5	1 Gb	16,2693
6	2.5 Gb	39,237
7	5 Gb	70,731
8	10 Gb	114,231

Source: ARCEP, 2020

Chad has currently a National Data Center (NDC) under construction by Huawei in the framework of the EXIMBAK financed PMICE and an Internet Exchange Point (IXP) being implemented by the Agency for the Development of Information and Communication Technologies (ADETIC). Fourteen (14) Internet Service Providers are already physically connected to ADETIC's IXP which is expected to be operational by early 2023. When Chad NDC and IXP will be operational, they will contribute to reaching the country's digital sovereignty and help optimize the use of international connectivity by allowing MDAs and private sector actors to host platforms and store data locally. However, while it is clear that the IXP will be managed by ADETIC, the business model for the NDC is not yet defined.

Table 8. Key middle mile Challenges

Middle mile indicator	Indicator family	Value	Challenge	Potential remedy
Number of Fiber Optic backbone (mm per million inhabitants)	Access & Reliability	128 ⁵⁴	Expansion of the national backbone so that 100% of the population is within 25km reach of a fiber optic node.	Extend the fiber optic network to the West and North and mesh the national network to have backups on important sections
Cost of 1 STM 16 Domestic Transmission Service (per km per Month)	Availability & Affordability	US\$ 114,231	Having a competitive domestic market for broadband transmission.	Assign, for example, the management of the West backbone (towards Niger Border) under construction, to an operator other than Sudachad
Number of operational IXP	Usage	0	Commission the ADETIC IXP and have the ISP and operators using it.	Define a sustainable infrastructure management model in light with international best practices
Number of operational NDC	Usage	0	Complete the construction of the Data Center, make it comply with the standard requirements of a Tier 3 Data Center and convince the actors of the digital ecosystem to store their data there.	Define a sustainable infrastructure management model in light with international best practices

1.2.4 Last mile: Access network and market structure

In Chad, as in many developing countries, internet services are mainly accessed through wireless networks. This may be due to: (i) relatively high cost of deploying fixed broadband infrastructures, (ii) relatively vast and

⁵⁴ Based on the total length of "In service" and "Partially out of service" Backbones.

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geographically hard-to-reach areas, (iii) low population density (13 inhabitants per km² of land area),⁵⁵ and (iv) lack of enabling legal and regulatory framework. The next sections take stock of the Chadian broadband market and sector competition and evaluate how it impacts access, affordability, quality, and use of broadband services.

Competition & Market Structure

The Chadian broadband market is globally uncompetitive despite the relatively large number of players. In terms of subscribers, there is a near duopoly between Moov Africa (with 52.6 percent of subscribers) and Airtel (with 47 percent). The other players Salam (Sotel mobile), Sotel fixed and ISPs have respectively 0.2%, 0.1% and 0.049%. When it comes to the sector revenue, 48 percent is held by Moov Africa and 44 percent by Airtel⁵⁶. Chad’s broadband market, 99 percent of which is dominated by the mobile segment, is one of the least developed in the world and compares poorly to other similar countries in the Africa region. There are currently three operators providing mobile broadband services in Chad: (i) Sotel, the state-owned incumbent operator (also fixed line incumbent operator), (ii) Moov Africa Chad (owned by Maroc Telecom), and (iii) Airtel Chad (owned by Bharti Airtel). As for fixed broadband market, Sotel has historically been the main provider of fixed internet services in Chad, until three other ISPs (Prestabist, AlbideyNet, and Sahel Tele Internet) as well as several newcomers entered the market.⁵⁷ In addition, Sudachad, a wholesale infrastructure operator under a Public Private Partnership (PPP), operates the GoC’s fiber assets on an open access basis. Considering the difficulties encountered by Sotel Tchad in its interconnection with Cameroon, mobile operators and ISPs rely primarily on Sudatchad for their international connectivity, making Sudatchad's infrastructure essential to Chad's broadband connectivity and giving the operator significant market power. Indeed, Sudatchad offers advantageous rates to some stakeholders (operators which are large customers of broadband capacity) compared to ISPs, in violation of the non-discrimination principles to which it is bound, preventing FAI from , having much leeway to extend their networks.

Broadband Access and Usage

Less than half of the population has access to broadband connectivity, and only 3 percent of the inhabitants have broadband subscriptions.⁵⁸ Of the 8,702,545 users of electronic communications services in Chad, 99.85 percent are mobile subscribers, and only 16 percent of them use mobile Internet (including 2G, which does not offer broadband connectivity). The two private operators, Moov Africa and Airtel, are the main providers of mobile broadband services, accounting for 49 and 45 percent of the turnover. However, both operators invest too little in expanding their networks probably because the undeserved areas are not economically viable and there is no incentive to venture into them. In 2019, Airtel's investments amounted to XAF 16 billion (26.2 percent of its turnover), while Moov Africa invested XAF 4.9 billion (5.6 percent of its turnover). In 2020, the total number of Base Station Transceivers was 1,472 (5.8 percent increase compared to 2019), and the total number of radio sites was 1,410 (6.2 percent increase compared to 2019).⁵⁹ Despite this last-mile connectivity expansion, 3G and 4G network coverage objectives are still not met by the operators, as shown by the coverage and quality of service control carried out by ARCEP in 2020 (Table 9 **Error! Reference source not found.**).

Table 9. 3G & 4G Radio Coverage Control (July – September 2020)

3G Radio Coverage			4G Radio Coverage		
Indoor Coverage	N'Djamena	Average of other cities	Indoor Coverage	N'Djamena	Average of other cities
Objective	70.00%	70.00%	Objective	70.00%	70.00%

⁵⁵ World Bank, 2022. World Development Indicators. Available at: <https://data.worldbank.org/indicator/EN.POP.DNST?locations=TD>

⁵⁶ ARCEP, 2020. Annual Report. Available at: <https://drive.google.com/file/d/1DIhmY1YDv1-zclKIA8rpP920jGpEnpq/view>

⁵⁷ Which includes Inet Telecom Group, Digital Com, Global Tel, Miracle Telecom and Amanet.

⁵⁸ ITU, 2020. World Telecommunication/ICT Indicators Database. Available at: <https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/Digital-Development.aspx>

⁵⁹ ARCEP, 2020. Annual Report. Available at: <https://drive.google.com/file/d/1DIhmY1YDv1-zclKIA8rpP920jGpEnpq/view>

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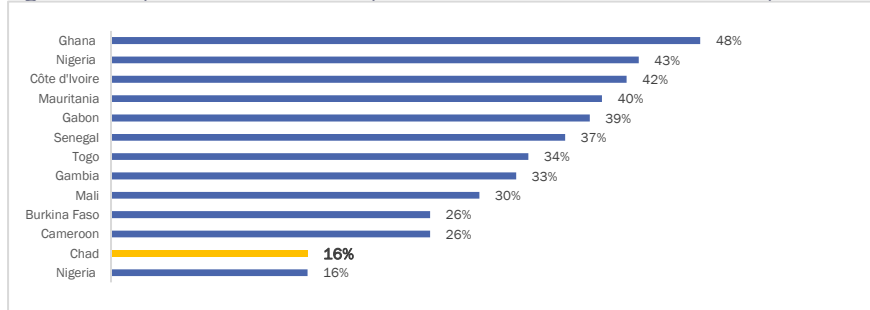
Airtel Chad	24.88%	17.90%
Moov Africa Chad	26.15%	63.10%
Incar Coverage	N'Djamena	Average of other cities
Objective	80.00%	80.00%
Airtel Chad	51.20%	49.90%
Moov Africa Chad	63.40%	80.90%
Outdoor Coverage	N'Djamena	Average of other cities
Objective	90.00%	90.00%
Airtel Chad	81.49%	72.96%
Moov Africa Chad	86.00%	94.72%

Airtel Chad	6.14%	1.58%
Moov Africa Chad	2.36%	0.61%
Incar Coverage	N'Djamena	Average of other cities
Objective	80.00%	80.00%
Airtel Chad	21.79%	1.20%
Moov Africa Chad	16.01%	6.22%
Outdoor Coverage	N'Djamena	Average of other cities
Objective	90.00%	90.00%
Airtel Chad	51.57%	42.78%
Moov Africa Chad	44.82%	22.90%

Source: ARCEP, 2020. Annual Report

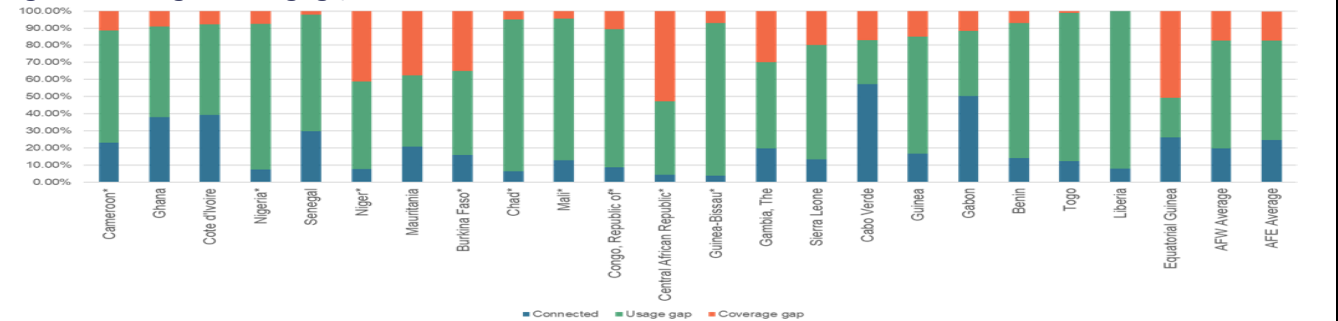
Compared to its peer sub-Saharan countries, Chad is lagging in terms of internet penetration rate and usage (Figure 8 & Figure 9).

Figure 8. Unique mobile broadband penetration for Chad and selected comparators.



Source: GSMA, 2021

Figure 9. Coverage and usage gaps in Africa.



Source: World Development Report 2021

Affordability and Quality

The high cost of deploying and operating radio stations, relatively high price of wholesale Internet bandwidth, and low purchasing power are all factors that make broadband services unaffordable for average Chadians. Even though the price of the 1GB internet package dropped from 12,000 to 1,200 XAF between 2017 and 2019⁶⁰, the average cost of the 1 GB Mobile Data is still high in Chad compared to other countries in West and Central Africa (Error! Reference source not found.). It represents 9.51 percent of the monthly GNI per capita compared to 5.53 percent in Burkina Faso, 4.06 percent in Mali and 3.76 percent in Niger.

⁶⁰ ARCEP, 2020. Annual Report. Available at: <https://drive.google.com/file/d/1DIhmY1YDv1-zclKIA8rpP920jGpEnnpq-/view>

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Table 10: AFFORDABILITY OF 1 GB MOBILE DATA IN WEST AND CENTRAL AFRICA

Pays	Average Price of 1GB of Mobile Data as percentage of GNI per capita in 2022	Average Price of 1GB of Mobile Data in US dollars in 2022	Monthly GNI per capita in US dollar in 2021
Central African Republic	22.32%	\$8.93	\$40.00
Togo	16.17%	\$12.94	\$80.00
Chad	9.57%	\$5.10	\$53.33
Gambia	7.46%	\$4.60	\$61.67
Burkina Faso	5.53%	\$3.83	\$69.17
Liberia	5.02%	\$2.63	\$52.50
Mali	4.03%	\$2.76	\$68.33
Niger	3.76%	\$1.85	\$49.17
Sierra Leone	3.03%	\$1.26	\$41.67
Guinea-Bissau	2.42%	\$1.53	\$63.33
Equatorial Guinea	2.23%	\$9.57	\$429.17
Guinea	2.04%	\$1.74	\$85.00
Benin	2.02%	\$2.27	\$112.50
Cabo Verde	1.62%	\$4.30	\$265.83
Côte d'Ivoire	1.52%	\$3.06	\$201.67
Senegal	1.17%	\$1.53	\$130.83
Cameroon	1.16%	\$1.53	\$132.50
Gabon	0.74%	\$3.95	\$536.67
Congo	0.63%	\$1.03	\$164.17
Nigeria	0.41%	\$0.71	\$173.33
Ghana	0.32%	\$0.61	\$190.00

Source : 2022 Average price of 1GB (<https://www.cable.co.uk/mobiles/worldwide-data-pricing/>) and 2021 GNI per capita (<https://data.worldbank.org/indicator/NY.GNP.PCAP.CD>)

Where mobile data services are available, quality is generally acceptable. In 2020, a Quality-of-Service control was carried out by ARCEP, in which the mobile data service was assessed on three main aspects: (i) file transfer using File Transfer Protocol (FTP), (ii) web browsing using Hypertext Transfer Protocol (HTTP), and (iii) online video streaming (Table 11.11). Except for Data Connection Drop Rate for FTP service (which should be less than 5 percent) and Data Connection Attempt Failure Rate for HTTP service (which should be less than 2 percent), operators met the targets of all other Key Performance Indicators.

Table 11. Mobile data Quality-of-Service (August 2020)

File Transfer Protocol (FTP)				HyperText Transfer Protocol (HTTP)			
N'Djamena	Objective	Airtel	Moov Africa	N'Djamena	Objective	Airtel	Moov Africa
Data Connection Attempt Failure Rate	<= 2%	0%	0%	Data Connection Attempt Failure Rate	< = 2%	0.19%	0%
Data Connection Drop Rate	<= 5%	38.89%	39.27%	Average Time to connect to server	< = 6 s	0.016 s	0.025 s
Uplink Average Throughput	>= 512 Kb/s	4.46 Mb/s	3.52 Mb/s	Rate of data connections established	> = 95%	99.81%	100%
Downlink Average Throughput	>= 512 Kb/s	13.06 Mb/s	8.58 Mb/s	Average of other cities	Objective	Airtel	Moov Africa
Uplink Large Band Rate (throughput > 512)	Not set	93.33%	96.05%	Data Connection Attempt Failure Rate	< = 2%	2.63%	0%
Downlink Large Band Rate (throughput > 512)	Not set	100%	100%	Average Time to connect to server	< = 6 s	0.020 s	0.013 s
Average of other cities	Objective	Airtel	Moov Africa	Rate of data connections established	> = 95%	97.37%	100%
Data Connection Attempt Failure Rate	<= 2%	4.02%	0.69%	Streaming			
Data Connection Drop Rate	<= 5%	0.00%	2.08%	N'Djamena	Objective	Airtel	Moov Africa
Uplink Average Throughput	>= 512 Kb/s	4.36 Mb/s	2.78 Mb/s	Average video access time	< = 10 s	7.48 s	7.022 s
Downlink Average Throughput	>= 512 Kb/s	11.77 Mb/s	7.66 Mb/s	Average of other cities	Objective	Airtel	Moov Africa
Uplink Large Band Rate (throughput > 512)	Not set	100%	87.22%	Average video access time	< = 10 s	1.76 s	7.013 s
Downlink Large Band Rate (throughput > 512)	Not set	100%	81.67%				

Source: ARCEP, 2020

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Table 12 Key Last Mile Challenges

Last Mile Indicator	Indicator Family	Value	Challenge	Potential Remedy
Large Bandwidth Coverage (3G and above)	Access & Reliability	48%	Expansion of broadband coverage in rural and insecure areas	Incentivize mobile operators to invest in areas that are not economically viable in the short term, using the Universal Service Fund (USF) or government subsidies
Mobile broadband basket as a percentage of GNI p.c.	Availability & Affordability	17.6%	Establishment of a competitive wholesale market and reduction of the cost of acquiring digital handsets	Introduce new players in the first- and middle-miles connectivity markets and reduce taxation of digital handsets
Percentage of Individuals using the Internet	Usage	10% ⁶¹	Closing the gap between service availability and usage	Improve the digital literacy rate of populations, offer them digital content adapted to their needs and guarantee them an environment of trust regarding the security of their transactions and the protection of their personal data.

Source: ITU digital Development 2020 Dashboard

1.2.5 Invisible mile: Sector Policies and regulations

The telecommunications sector was liberalized in 1998, yet many Chadians still encounter barriers, often at the invisible mile, in taking full advantage of digital transformation. This can stem from an array of gaps in the institutional, legal, and regulatory environment, sectoral actors' engagement, or structural problems that call for government intervention. The following will identify such barriers that may exist in the Chadian digital economy.

Sector governance & regulation

In Chad, the digital sector is governed by MPEN with its implementing authorities and agencies, such as ARCEP and ADETIC. By Law N° 14/PR/2014, electronic communications activities are subject to one of the following three types of regimes: (i) authorization, (ii) declaration, and (iii) free exercise. As for the authorization regime, there are four forms: (i) concession for a period of 20 years, by the Decree of Council of Ministers, (ii) license for a period of 10 years, by ministerial order after consulting with ARCEP, (iii) general authorization for a maximum period of 5 years, by ARCEP decision, and (iv) approval (for the activity of infrastructure installer, terminal equipment, test laboratories, and equipment measurements).

Limited impact of ARCEP as an arbitrator between consumers, operators, and GoC. Decree N° 1606/PR/PM/MPNTIC/2014 specifies that ARPCE is governed by 'two organs which are the regulatory council administered by 7 members: (i) The President appointed by decree on the proposal of the supervising Minister, (ii) the Minister in charge of Public Security, (iii) the Minister in charge of Finance, (iv) the Minister in charge of Trade, (v) the Minister in charge of Higher Education, (vi) the Minister Secretary General of the GoC and (vii) the Adviser of the President in charge of ICT and the Directorate-General. However, the impact of such regulatory and institutional framework on the overall performance of the Chadian digital sector remains limited because ARCEP does not have the necessary independence to effectively regulate the sector. Indeed, in 2020,

⁶¹ ITU, 2020. World Telecommunication/ICT Indicators Database. Available at: <https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/Digital-Development.aspx>

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Chad scores relatively low (of 61) compared to other Sahelian countries at ICT regulatory overall score (Table 13), and according to ITU, ARCEP's environment is at the second generation (out of 5) with partial liberalization and privatization in the sector and across the regulatory layers.⁶²

Table 13. ICT Regulatory Overall Score (2020)

Country	Regulation Generation	Overall Score
Kenya	G4	91
Rwanda	G4	87
Nigeria	G4	86
Senegal	G4	85
Burkina Faso	G3	84
Mali	G3	78
Niger	G3	78
Chad	G2	61

Source: ITU, 2020. ICT Regulatory Tracker

Table 14. Key Policies, Regulations, and Legislations related to ICT/Digital Infrastructure

Year	Policy and Legislations	Type	Reference
1998	Law relating to telecommunications which creates the Chadian telecommunications regulatory office (<i>Office Tchadien de Régulation des Télécommunications – OTRT</i>) and the Telecommunications Operator (<i>Sotel Tchad</i>)	Law	N° 009/PR/98
2007	National Development Plan Communication Infrastructure and information	Strategic Plan	NICI plan 2007 – 2027
2014	Law establishing ADETIC	Law	N° 12/PR/2014
2014	Law regulating electronic communications and postal activities	Law	N° 13/PR/2014
2014	Law on electronic communications	Law	N° 14/PR/2014
2014	Decree on the organization and functioning of ADETIC	Decree	N° 1605/PR/PM/MPNTIC/2014
2014	Decree on the organization and functioning of the ARCEP	Decree	N° 1606/PR/PM/MPNTIC/2014
2015	Law establishing ANSICE	Law	N° 006/PR/2015
2015	Law on Personal Data Protection	Law	N° 007/PR/2015
2015	Law on Electronic Transactions	Law	N° 008/PR/2015
2015	Law on Cybersecurity and the Fight Against Cybercrime	Law	N° 009/PR/2015
2015	Decree determining and setting the fees and amounts of royalties on electronic communications	Decree	N° 2372
2016	Decree determining the use of the Universal Electronic Communications Service Fund	Decree	N° 0098/PR/PM/MPNTIC/2016
2017	National Digital Development Strategy in Chad	Strategic Plan	Chad Digital Plan 2017 – 2021
2019	Priority Action Plan for Innovation and Reform of the Digital Economy in Chad (<i>Plan d'Actions Prioritaires d'Innovation et de Réforme de l'Economie Numérique au Tchad – PAPIRET</i>)	Actions Plan	PAPIRET 2019 – 2020
2020	Strategic Plan of Digital and Posts Development	Strategic Plan	PSDNP 2020 – 2030

Source: ARCEP & PSDNP

Spectrum Management

ARCEP has all the latitude to manage the frequency spectrum. Law on electronic communications entrusts ARCEP with the management, planning, and control of the frequency spectrum, as well as the right to pose conditions and issue authorizations for the use of frequencies. When necessary, ARCEP may subject the authorization through a competitive bidding procedure.⁶³ The authorizations issued for the assignment of

⁶² ITU, 2020. ICT Regulatory Tracker – Chad. Available at: <https://app.gen5.digital/tracker/country-cards/Chad>

⁶³ Article 46, Law N° 014/PRN/2014

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frequencies increase the fees⁶⁴, and unless waived by ARCEP, the authorizations to use radio frequencies are strictly personal and non-transferable.⁶⁵

Significant Market Power (SMP) Regulation

The principle of regulating market players with Significant Market Power (SMP) exists in Chadian law on electronic communications but this regulation is not effective. The Article 61, Law N°014/PRN/2014 states that: "ARCEP may decide to regulate the prices of an operator or supplier of electronic communications services to compensate for the absence, insufficiency of competing offers, or the existence of a significant difference between the prices of the service(s) and their reference cost. The purpose of the tariff framework is to:

- orient the tariffs towards the cost price;
- eliminate cross-subsidies between distinct services."

Prior to applying the tariffs, the operators are required submit them first to ARCEP for no-objection, which may oppose on the basis of justifiable economic, technical and/or accounting arguments.⁶⁶

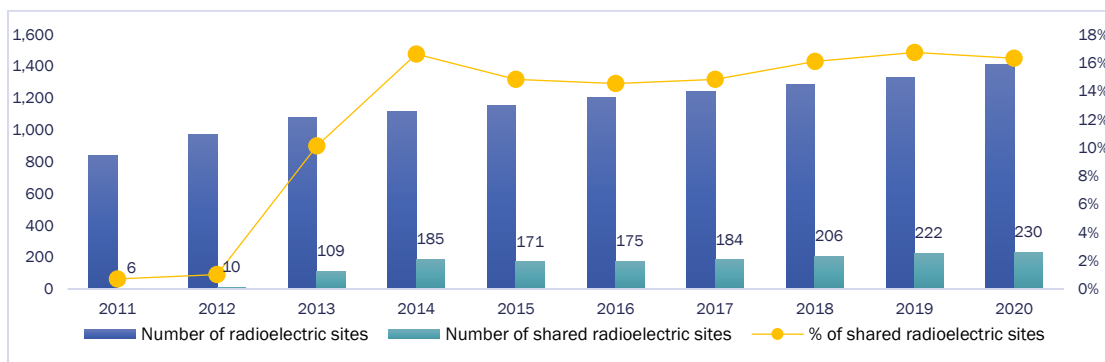
The analysis of relevant markets and the determination of operators having SMP on these markets has not yet been carried out in Chad, despite the possibilities offered by Article 61 of Law 14/PR/2014 and the SMP hold by Sudachad on international connectivity wholesale market (80 percent of the market share).

However, following an audit of the costs of voice and SMS services carried out by ARCEP, the regulator decided in 2019 to regulate the tariffs for these services for all operators without distinction. Thus, by Decision No. 078/ARCEP/DG/DCI/2019 of April 19, 2019, ARCEP has asked mobile and fixed-line operators to apply termination rates of 25 FCFA for voice and 5 FCFA for SMS for the year 2019. This framework has been maintained for 2020 and 2021.

Infrastructure Sharing

Infrastructure sharing between operators of electronic communications networks open to the public is an obligation in Chad.⁶⁷ Operators formulate infrastructure sharing catalogs subject to conditions of fairness, non-discrimination, and equal access and approved by ARCEP. When two operators agree to share infrastructures, they must establish an agreement subject to ARCEP visa before publishing the agreement in the legal notices.⁶⁸ In addition, ARCEP can compel an operator or supplier to share its infrastructure and/or public or private property with other operators or suppliers.⁶⁹ In practice, shared infrastructures are transport capacities on the fiber optic backbone and the radio sites.

Figure 10. Last Mile Infrastructure Sharing (2011-2020)



⁶⁴ Article 48, Law N° 014/PRN/2014

⁶⁵ Article 49, Law N° 014/PRN/2014

⁶⁶ Article 68, Law N° 014/PRN/2014

⁶⁷ Article 106, Law N° 014/PRN/2014

⁶⁸ Article 108, Law N° 014/PRN/2014

⁶⁹ Article 10, Law N° 014/PRN/2014

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Source: ARCEP, 2018, 2019, 2020. Observatories

State Owned Assets

The GoC has assets in Sotel Tchad and Sudatchad, the two main players in the ICT market. Sudachad manages the Southern and Eastern national fiber optic backbones on a concession. As for Sotel Tchad, the incumbent operator was established in 1998 as a result of the merger of the International Telecommunications Company of Chad (Télécommunications internationales du Tchad – TIT) and the telecom branch of the National Office of Posts and Telecommunications of Chad (Office National des Postes et Télécommunications – ONPT). Sotel Tchad is wholly owned by GoC but is currently undergoing a diagnostic study that will lead to its restructuring. The GoC has announced its willingness to open up to 60 percent of the company’s capital to private shareholders.⁷⁰ The GoC intends to withdraw from the management of Sotel Tchad and Sudachad while maintaining a certain stake in their capital to benefit from the spin-offs of the expected performance of the private management.

Universal Service

The Universal Service Fund of electronic communications is clearly defined in Law on electronic communications; however, the practical implementation remains challenging. In Chad, the universal electronic communications service covers a broad spectrum, including the traditional voice service, high-speed Internet, emergency services, and other special measures. In addition, these services can be updated every three years by a Decree.⁷¹ ARCEP and ADETIC play a critical role in implementing the Universal Service Financing Fund (*Fonds du service Universel des Communications Electroniques* – FSUCE), primarily financed by mobile operators and other license holders, contributing up to 3.5 percent of their annual turnover. ARCEP is required to help identify and assess universal service needs, while ADETIC is mandated to implement and manage the FSUCE. To date, the implementation of FSUCE is not effective, apart from the pilot project of three rural telecentres. The GoC has increased transparency requiring ADETIC to publish its financial statements, which is effective since 2016.

In 2020, 68 radioelectric sites have been declared as “Universal Service Sites” which should be exempt from the tower tax. MPEN set up a technical Commission to take stock of the existing services sites based on their annual turnover, investment (CAPEX) and operating (OPEX) costs. The Commission concluded that 68 of 137 sites (including 40 sites owned by Airtel and 28 by Moov Africa) are non-profitable and should be considered as Universal Service Sites.⁷²

Sector taxation

Despite the recent removal of many taxes, Chad’s tax burden on the digital sector remains high and volatile. The finance law frequently changes the sector taxation concerning the various contributions levied on operators based on their turnover. Until 2016, more than 20 taxes and contributions were collected in the ICT sector. In 2017, an “excise duty” of 18 percent was introduced to replace five old taxes: (i) National Statistics Development Fund of 1 XAF per call, (ii) Audio Visual Royalty (AVR) of 10 XAF on the first call of the day, (iii) Anti-Retro Viral (ARV) (1 percent of turnover on scratch cards), (iv) Subscriber Identity Module (SIM) tax of 1,000 XAF on each SIM card purchased, and (v) Tax on postpaid invoices (10 percent of the amount of the postpaid invoice). In 2021, the “excise duty” remains in force and applies to mobile telephone operators’ annual turnover, except for Fixed, Wireline, and Internet communications and e-money transfers. In January

⁷⁰ Agence Afrique, 2020. *Sotel-Tchad ouvre son capital à hauteur de 60%*. Available at: <https://www.agenceafrique.com/26677-sotel-tchad-ouvre-son-capital-a-hauteur-de-60.html>

⁷¹ Article 90, Law N° 014/PRN/2014

⁷² ARCEP, 2020. Observatory Report

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2020, the international calls tax was reduced from 50 to 20 XAF and further abolished from CEMAC and G5-Sahel countries in 2021. In addition, the materials and equipment used for producing and promoting renewable energies are exempt from custom duties and taxes, except for the African Union Tax (Community integration and contribution tax). Finally, the universal service sites are exempt from taxes as of 2021.

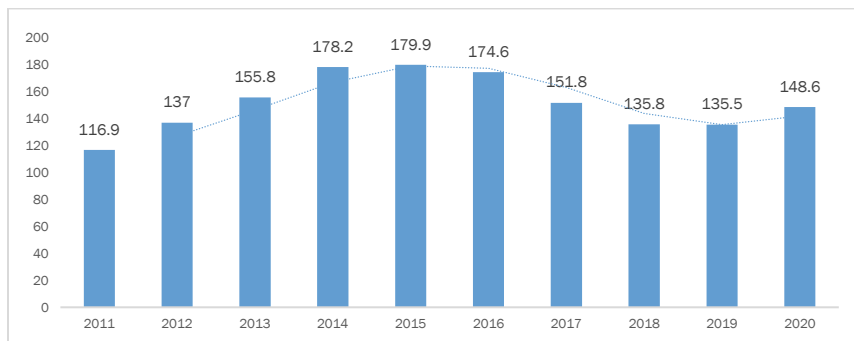
The tax policy relating to the ICT sector negatively impacts the service price, operators' turnover, investment capabilities, and service quality. The affordability for internet services in Chad is among the poorest in the continent. In addition to the relatively low purchasing power of the Chadian population, ICT sector tax policy (summarized in the table below), has a delayed impact on operators' turnover, resulting in low capacity and incentive to invest in network extension and to improve the service quality. Network congestion creates supply and demand mismatch, which leads to quality-of-service issues, particularly in urban areas. Ultimately, this negatively affects all actors in the market. Due to the deterioration of the service quality and unaffordability, the end users' consumption will relatively decrease and negatively affect the operators' turnover, which has been decreasing between 2015 and 2019 (Figure 11). Consequently, GoC's fiscal revenue linked to the operators' turnover would also decrease over time.

Table 15. Fees paid by operators (2014-2020)

Percentage of Turnover	2014	2015	2016	2017	2018	2019	2020
ARCEP	3.5	3.5	3.5	1.5	2.5	3.5	3.0
ADETIC	3.5	3.5	3.5	1.5	1.5	2.5	3.0
ENASTIC	n/a	n/a	n/a	n/a	0.6	1.0	1.0
ANSICE	n/a	n/a	n/a	n/a	0.4	1.0	1.0
Treasury / Budget Offices	n/a	n/a	n/a	4.0	4.0	1.0	1.0
Total fees paid by operators	7.0	7.0	7.0	7.0	9.0	9.0	9.0

Source: ARCEP, 2020

Figure 11. Turnover of ICT sector in Chad 2011-2020 (XAF)



Source: ARCEP, 2020. Annual Report

Table 16. Key Invisible Mile Challenges

Invisible mile Indicator	Indicator Family	Value	Challenge	Potential Remedy
Evolution of the regulatory environment	Sector Governance	G2	Upgrading to 3 rd or 4 th generation regulation	Reposition ARCEP as an independent regulator and appoint board persons other than members of the GoC, nominated for their technical, economic, or legal skills.

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Invisible mile Indicator	Indicator Family	Value	Challenge	Potential Remedy
Technology neutral spectrum	Spectrum Management	No	Affordable access and efficient usage of frequency spectrum	Institute technological neutrality and consider the economic potential of the country when setting the costs related to the use of frequencies.
Relevant markets definition and SMP regulation on these markets	SMP	NO	Willingness and capacity of the regulator to enforce SMP regulation	Provide to the regulator a technical assistance to conduct a market analysis to (i) define the relevant markets for electronic communications, (ii) identify the operators having significant market power (SMP) in these relevant markets, (iii) define the obligations applicable to operators having SMP and (iv) support the regulator to enforce the regulation.
Type of shared infrastructures and sharing rate	Infrastructure Sharing	Radioelectric sites (16 percent in 2020)	Extension of infrastructure sharing to fiber optic links both within Digital sector and across sectors	Incentize the GoC to revisit the legal and regulatory framework to promote infrastructure sharing across sector
Market segments in which the State has assets	State Owned Assets	Fixed and mobile ICT services open to the public and rental of national and international transmission capacity	Minimizing State participation in the capital of companies operating in the ICT sector	Restructure and privatize Sotel-Tchad
Management of the Universal Service Fund	Universal Service	Inefficient	Effective and efficient use of Universal Service Fund	Audit of the management of the Universal Service Fund and definition of a new management framework in line with international best practices
Fiscal pressure to ICT sector	Sector Taxation	At least 27 percent	Rationalization of the specific tax pressure on the sector	Take stock of the global best practices and remove taxes hindering consumption

1.3 RECOMMENDATIONS

Strong political will and commitment from all stakeholders (public and private) are needed, to enable Chad to take full advantage of its digital economy potential. The GoC should also make sure that the Chadian international connectivity market will not move from a public monopoly situation (formerly with Sotel) to a private one (with Sudachad), with effective regulatory oversight.

The GoC should continue and reinforce its efforts to ensure access to universal, affordable, and high-quality broadband connectivity through Maximizing Finance for Development (MFD) approach. The supply of broadband infrastructure is a necessary precondition to expanding connectivity. It requires efficient strategies promoting network deployment as well as appropriate and sustainable connectivity solutions in underserved areas. Global best practices suggest that digital coverage should be provided primarily by private actors. Meanwhile, GoC should support the private sector’s effort by creating an enabling regulatory environment and

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incentivizing investments under the MFD⁷³ approach to encourage greater private sector investment in areas with persistent market failures, and where demand-side barriers (i.e., affordability and accessibility) are key constraints in digital adoption. In the case of FCV context, ensuring the security of digital infrastructure would also be crucial. Therefore, on the supply side, investments must incorporate initiatives encouraging greater demand for digital adoption and reliable connectivity. This will, in turn, create more incentives for private sector actors to expand the network further and stimulate more productive and advanced use of digital solutions. Finally, a combination of reforms and interventions are most needed to improve the accessibility of digital technologies for citizens, particularly underserved, isolated, vulnerable populations in rural areas. The following recommendations aim to: (i) create an enabling environment for private sector investment to expand broadband connectivity and (ii) address demand-side barriers to digital adoption.

1.3.1 Intervention area A: Creating an enabling environment for private investment to expand large band connectivity and access to all

R1.1 [Quick win]. Publish, upon approval, operators' interconnection catalogs. The interconnection catalogs of the operators Sudachad, Airtel Chad and Moov Africa Chad for the year 2023 could be put online on the ARCEP website (see for example⁷⁴).

R1.2 [Quick win]. Conduct a market analysis to (i) define the relevant markets for electronic communications, (ii) identify the operators having significant market power (SMP) in these relevant markets, (iii) define the obligations applicable to operators having SMP and (iv) support the regulator to enforce the SMP regulation. The results of this study should be materialized by a decision defining the relevant markets (see for example⁷⁵) and another decision listing the operators having SMP on the said relevant markets (see for example⁷⁶).

R1.3 [Quick win]. Address the difficulties related to interconnection with Cameroon, through the settlement of the dispute between Camtel and Sotel Chad and the development of an interconnection agreement between the two operators in accordance with regulations and international best practices.

R1.4 [High priority]. Better manage the Universal Service Fund (USF) and use it and/or other public funds to incentivize operators invest in the areas that are considered insecure or not economically profitable. To this end, innovative approaches such as reverse auction (experimented in Niger⁷⁷ and Ivory Coast⁷⁸) to expand coverage and pre-purchase of broadband capacity mechanism (implemented e.g. in Ghana and in Tanzania⁷⁹) could be considered.

R1.3 [High priority]. Continue and complete the process of restructuring of Sotel Tchad to revitalize the sector.

R1.4 [High priority]. Design a management model for the infrastructure currently being put in place (IXP, Data Center and new fiber optic lines) and unify the management of State-owned first and middle mile digital infrastructure.

⁷³ Maximizing Finance for Development (MFD) is the World Bank Group's approach to systematically leverage all sources of finance, expertise, and solutions to support developing countries' sustainable growth. In embracing the Sustainable Development Goals (SDGs), countries' resource needs surpass their own budgets and available donor funding. Meeting the SDGs demands that we find solutions to crowd in all possible sources of finance, innovation, and expertise to meet this challenge. The WBG institutions—IBRD, IDA, IFC, and MIGA—work in concert to help countries transform sectors to reduce poverty and inequality and support growth. We do this by improving the enabling environment, developing regulatory conditions, building capacity, putting in place standards, financing a first mover or innovator, and reducing risks.

⁷⁴ <https://www.arcep.mr/index.php/interconnexion/1327-catalogues-d-interconnexion-et-ou-d-acces-des-operateurs-de-communications-electroniques-pour-la-periode-2022-2023>

⁷⁵ <https://www.arcep.ne/uploads/documents/DecisionN000017.pdf>

⁷⁶ <https://www.arcep.ne/uploads/documents/DECISION0001-25JAN2023.pdf>

⁷⁷ <https://projects.worldbank.org/en/projects-operations/project-detail/P167543>

⁷⁸ <https://projects.worldbank.org/en/projects-operations/project-detail/P160418>

⁷⁹ <https://projects.worldbank.org/en/projects-operations/project-detail/P160766>

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R1.5 [Medium term]: Improve the legal and regulatory framework and strengthen sector governance to increase competition, incentivize private investment, and lower entry barriers. This includes, in particular:

- i. Repositioning ARCEP as an independent regulatory body, and appointing its board members apart from the Government, on the basis of adequate technical, economic, or legal skills;
- ii. Defining and regularly updating relevant markets and significant market Power (SMP) regulation on these markets;
- iii. Enacting technological neutrality and considering the country economic potential when setting the costs related to the frequencies use; and
- iv. Promoting infrastructure pooling and sharing across sectors to reduce service delivery CAPEX and OPEX. For example, synergies can be created with the energy sector by spatially targeting opportunities for joint deployment of electrical transmission lines and fiber links and ultimately digital access points for the population and businesses in both urban and rural areas.

R1.6 [Medium term]. Conduct a feasibility study to identify commercially viable PPP models to further stimulate private sector investment to close the broadband infrastructure gap in lagging areas. This can result in a pre-purchase of broadband capacity based on aggregated demand of selected public institutions (schools, hospitals, community centers, etc.).

R1.7 [Long term]: Streamline sector taxation to stimulate the market and make services affordable by reducing, for example, fees paid by license holders to ARCEP and ADETIC from 3 to 2 percent of the turnover.

1.3.2 Intervention area B: Addressing demand-side barriers to digital services usage

R2.1 [Medium term]: Remove taxation or subsidize 3G+ compatible devices for low-income households or target groups to improve digital adoption. Other market-based approaches (such as low- or zero-interest loans for handset purchases, pay-as-you-go financing model) can be explored.

R2.2 [Medium term]: Incentivize operators to define and commercialize ‘social price’ and low-consumption data basket, allowing citizens to adopt basic use of broadband services (such as e-commerce and public digital services)

R2.3 [Medium term]: Implement a balanced tax system conducive to the development of the digital economy, by balancing fair contribution of the digital sector to the State's fiscal resources with the cross-sectoral impact of ICT on the overall economy. This can result, for example, by granting population a discount on the fees of public services performed online.

R2.4 [Medium term]: Provide rural communities with public digital centers with access to digital skills training programs and public digital services at an acceptable cost. The Digital Center⁸⁰ as experimented in Niger Smart Villages Project can be an example.

R2.5 [Long term]: Increase digital capacity of the education sector to turn the demographic dividend into a digital dividend:

- i. Provide free broadband connectivity to schools and universities;
- ii. Design and operate mobile digital classrooms which can be used to move around refugee camps or nomadic settlements.
- iii. Provide customized tablets to selected teachers to develop and carry out digital training programs

⁸⁰ Projet Villages Intelligents pour la Croissance Rurale et l'Inclusion Numérique, n.d. Available at: <https://www.pvi.ne/>

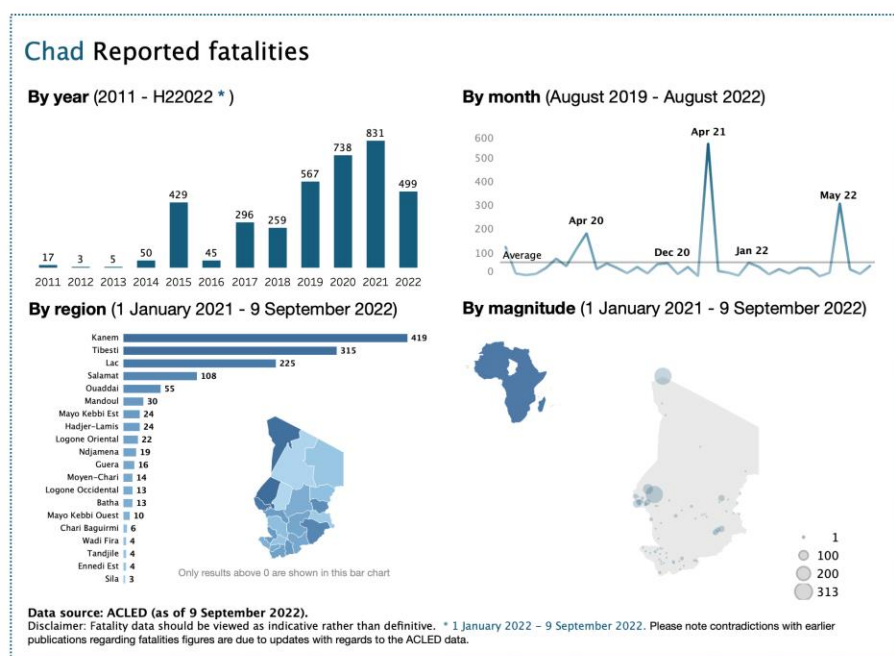
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The development of the other pillars of the digital economy will be critical to fostering the adoption and productive use of digital technologies to gain the critical mass of internet subscribers, build a vibrant digital ecosystem, and kickstart digital transformation, as is further described in the rest of the report. Related recommendations, such as developing a local content ecosystem, forming digital businesses to deploy relevant digital services, incentivizing more complex use cases for connectivity, encouraging digital finance, incorporating digital skills into formal education, and accelerating digital entrepreneurship initiatives, will also be crucial to boosting usage.

FOCUS 1: FRAGILITY & DIGITAL

Chad is a fragile country, reflected in its ranking as one of the most fragile countries in the world in 2022.⁸¹ Conflict and violence have risen sharply since 2015, with 2021 being the deadliest year on record (Figure 12). The nature and causes of conflict vary by region. Boko Haram attacks primarily affect the Lake Chad area. Violence in Tibesti is linked to center-periphery tensions, particularly around gold exploitation. Intercommunal hostilities in the south-eastern provinces are due to competition over natural resources fueled by climate change. Chronic instability along the borders and intra-communal violence have resulted in forced displacements and refugee inflows. Chad is the world's fifth largest refugee receiving country in relative terms, with about 600,000 refugees and 440,000 Internally Displaced Persons (IDPs).⁸²

Figure 12. Fragility- Reported Fatalities in Chad (2011-2022)



The quality of public services in Chad has been deteriorating since 2015. Basic service delivery is limited, costly, and challenged by vast and hard-to-reach geographical areas and dispersed populations. GoC effectiveness is constrained by high staff turnover and limited public administration capacity, which hinders policy consistency, insufficient regulation, a concentration of resources and decision-making, harnessing oil revenues for productive purposes, and resilience to shocks. These governance challenges underpin inequitable resource distribution and social exclusion, limit economic diversification, and stoke conflict.

Low investment in infrastructure has led to inadequate access to basic services. Chad's infrastructure deficit in energy, mobility, and digital connectivity impedes private sector investment. Energy is the most significant binding constraint to Chad's growth. The landlocked geography, vast land area, and uneven distribution of

⁸¹ Fund for Peace, 2022. Fragile States Index. Available at: <https://fragilestatesindex.org/country-data/>. Chad ranked 9th out of 179 countries in 2022 on the Fund for Peace's Fragile States Index.

⁸² UNHCR Refugee Data Finder for years until 2021. UNHCR planning figures (COMPASS) otherwise. Available at: <https://reporting.unhcr.org/chad>

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economic activities make digital connectivity critical in linking consumer markets to production zones. Road transport suffers from higher costs and poor accessibility, particularly in rural areas, hampering development and access to health and education. As for trade, Chad primarily depends on regional transport corridors (e.g., N'Djamena-Douala Corridor) for its outlets to the sea. Digital connectivity remains limited, with significant gaps in access to affordable and reliable services.

Digital transformation can be used to tackle drivers of fragility. One key fragility driver identified in Chad is the high perception of inequality, marginalization, and exclusion from resources and opportunities for large parts of the population. Digital skills training, expansion of DFS in rural areas, and other interventions to foster digital inclusion — focusing on integrating youth,⁸³ women, and other vulnerable groups — can help equitably develop human capital, foster social inclusion, and create the conditions for inclusive development. Another fragility driver is the perceptions of stark regional disparities in public service delivery and distrust in public institutions. Digital technologies offer innovative solutions to deliver critical services more inclusively (e.g., through telemedicine and online learning) and can help improve the government's effectiveness, transparency, and accountability. They can also help bring critical services closer to citizens through decentralization and help restore trust, which is central to rebuilding the social contract. Finally, in response to a lack of inclusiveness in political life, digital tools can offer opportunities to support citizen engagement by providing digital platforms and channels through which citizens can provide feedback on their concerns to those in power.

Digital tools and platforms can support Chad's transition from fragility to stability.⁸⁴ They support monitoring and information gathering, enable early warning systems to prevent violent conflict, coordinate and monitor government and donor activities, facilitate relief efforts, carry out information campaigns that challenge prevailing conflict narratives, and encourage national integration. In addition, they can help sustain conflict transformation by enhancing communication channels (as has been done with the *Info-Share platform* in Sri Lanka) which supports creating "shared spaces" in public and private media to help cross the ethnic and political divides in the country. More broadly, digital connectivity and tools can act as a catalyst for reducing poverty and promoting inclusive economic and social development by growing and integrating economies and connecting at-risk populations, making the propagation or return to violence less likely.

Digital tools are also critical to help build Chad's resilience. Considering a large number of poor, conflict- and displacement-affected populations, advancing social protection would play a critical role through digital technologies to strengthen the Social Protection programs. Digital tools, such as mobile payments, can help make social protection systems more agile and shock-responsive, increasing household resilience against crisis and protecting household well-being after a shock. Likewise, mobile money is a suitable option for reducing cash transport (particularly relevant in conflict-affected regions) and receiving remittances as a coping mechanism in case of shocks. Somalia is a good example of mobile money playing a critical role in a fragile context to increase financial inclusion and build greater resilience to shocks. The humanitarian response to the 2016/17 drought in Somalia predominantly used mobile money in cash transfer to the most affected population, channeling key resources and income and supporting critical purchases, thereby helping people to be less acutely affected by the drought.⁸⁵

However, introducing digital solutions in Chad also entails significant implementation challenges. As noted in the Digital Infrastructure Chapter, network security issues create substantial risks to digital infrastructure, with frequent physical destruction of equipment and infrastructure, particularly in conflict-affected areas. Cutting off communications enables extremist groups to carry out raids undetected, distort the economy, and limit citizens' ability to contact, receive or transfer money. Operators and ISPs must recruit private security

⁸³ Young people are often excluded from the benefits of the country's resources in the form of employment or improved basic services. Due to the lack of connections and access to credit and technical know-how, youth have little hope of forging an entrepreneurial path. They may become vulnerable to recruitment into criminal gangs, extremist groups, or operations in the illicit economy.

⁸⁴ United Nations and World Bank, 2018. *Pathways for Peace: Inclusive Approaches to Preventing Violent Conflict*. Available at: <https://openknowledge.worldbank.org/handle/10986/28337>

⁸⁵ World Bank, 2019. Mobile Money Ecosystem Survey in Somalia.

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companies or work with the army providing security for critical infrastructure sites. Thus, a proactive national approach to deploying digital infrastructure in fragile and conflict-affected areas must be developed to (i) mitigate the risks and decrease operational challenges in deploying and maintaining digital infrastructures, and (ii) identify resilient digital solutions that could be used in volatile environments, such as satellites. Similarly, public entities, operators with critical infrastructure, and other digitally enabled businesses and organizations are subject to various cyber threats, which can cause significant disruptions to service delivery and interrupt business operations. Chad needs to establish relevant context-specific security and regulatory measures to cope with potential threats and protect its digital assets.

Moreover, digital technologies in Chad may create new fragility risks which must be mitigated. As Chad contends with low social cohesion, political and economic instability, and a frayed social contract between citizens and the government, the introduction and uptake of digital solutions may have inevitable ramifications that increase vulnerability and exacerbate crises. *Firstly*, uneven access to and capacity for digital connectivity can aggravate existing social inequalities or create new ones. The Geneva Declaration of Principles and Plan of Action acknowledged the risk of a growing 'digital divide' between those who can and cannot use digital technologies, which could create a new class of "digital poor", exacerbate inequalities and social divides, and increase tensions in local communities. *Second*, gender-based power relations may challenge women's access to and use of digital technologies. This has provoked a backlash in some settings, including in ways that increase women and girls' insecurity and subordination.⁸⁶ *Third*, social media can also fuel tensions or conflict, as it can create echo chambers that further polarize groups, spread fear-and shock-inducing information regardless of its credibility, which may drive perceptions of threat and related pre-emptive intergroup violence, and reinforce biases. The speed with which digital platforms disseminate content further elevates the potential impact of these communications, especially in fragile contexts. For instance, in Myanmar, Facebook was used to spread hate speech and misinformation/disinformation about the Rohingyas – an ethnic minority group that faced institutionalized discrimination – contributing to violent sectarian tensions. In addition, studies show that the availability of cell phone coverage significantly and substantially increases the probability of violent conflict in Africa.⁸⁷

The promotion of digital technologies in Chad needs to navigate the complexity of fragility, conflict, and violence dynamics to reap the full benefits of digitalization and mitigate the associated risks appropriately. Digital interventions in Chad should consider how to best serve the vulnerable populations and reduce inequalities between groups in underserved areas. This can be done by: (i) ensuring the needs and voices of vulnerable people are heard through inclusive participation and community engagement in the design of interventions, (ii) taking personal, dispositional, generational, and cultural variables into account, which influence vulnerable populations' participation and contributes to a better digital inclusion scheme; (iii) balancing more or less advanced digital modes with face-to-face service delivery (e.g., blended learning environments for EdTech, digital services with alternative channels such as USSD, Interactive Voice Response,) to ensure inclusion for socially disadvantaged groups with limited digital skills; and (iv) designing digital inclusion scheme that specifically address the needs of low-income and marginalized groups. Lastly, there is also a need to monitor opportunities for citizen engagement through digital tools in fragile environments to ensure that these tools do not become vehicles advocating for conflict.

⁸⁶ Herbert, 2017. Digital development and the digital gender gap. K4D Helpdesk Report. Brighton, UK: Institute of Development Studies. Available at: <https://gsdrc.org/publications/digital-development-and-the-digital-gender-gap/>

⁸⁷ Pierskalla, J., & Hollenbach, F., 2013. Technology and Collective Action: The Effect of Cell Phone Coverage on Political Violence in Africa. *American Political Science Review*, 107(2), 207-224. Available at: <https://www.cambridge.org/core/journals/american-political-science-review/article/technology-and-collective-action-the-effect-of-cell-phone-coverage-on-political-violence-in-africa/E81CFF7B9CB576D612E6D3ECDAF493C4>

CHAPTER 2

DIGITAL PUBLIC PLATFORMS

Key messages:

- ❖ Chad lacks many of the building blocks needed to implement a whole-of-government approach to develop its first generation of digital public services. Such deficiencies hugely contribute to fragmentation of efforts in digital government projects and achievements.
- ❖ Many digital initiatives in the Chadian public administration support only core back-end administrative systems, as opposed to front-facing digital services delivery.
- ❖ Many digital initiatives in the Chadian public administration have so far been implemented at sectoral level, by individual ministries, leading to limited use of shared systems, integrated services, and common standards.
- ❖ Chad lacks many enablers needed to develop digital public platforms. These include an enabling strategic and regulatory environment, as well as foundational blocks as affordable connectivity, interoperability, data governance, cybersecurity, digital skills among public agents, data quality and data privacy regulations.

2.1 IMPORTANCE OF DIGITAL PUBLIC PLATFORMS

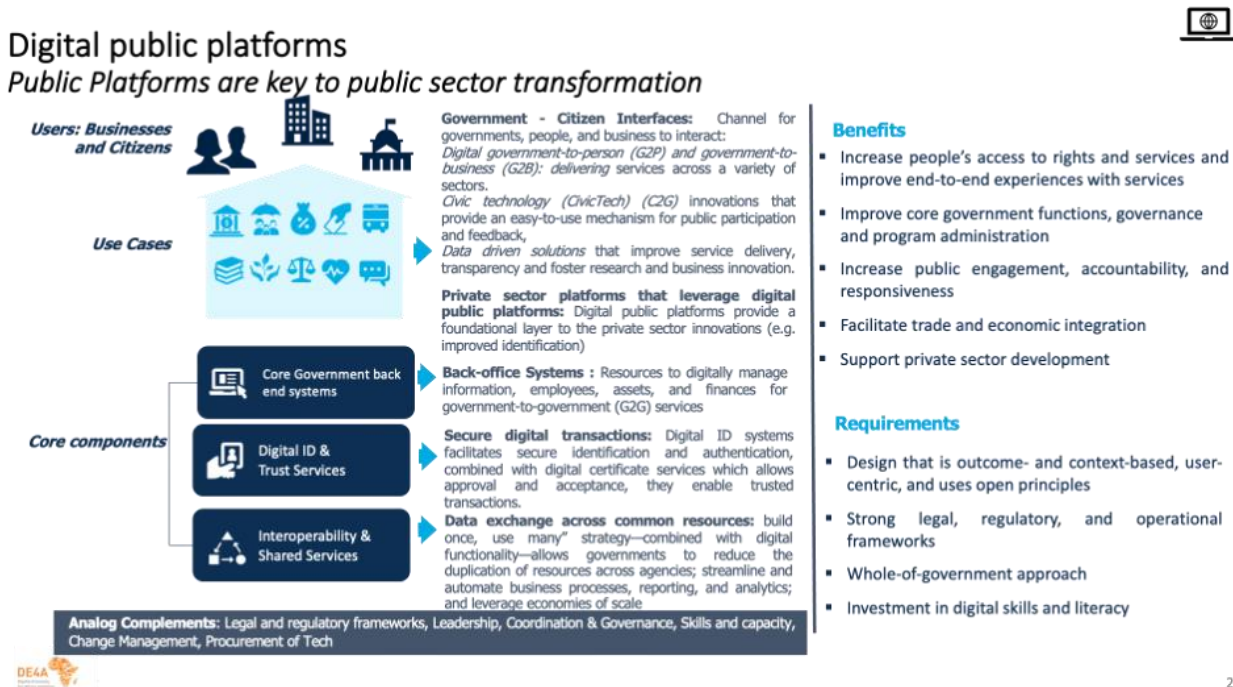
This chapter covers digital public platforms offered by the GoC and public institutions that have the potential to transform the way the public sector provides its services and interacts with people, businesses, and civil society. Digital platforms developed for the public sector can modernize administrations' functioning, connect people and things, and facilitate digital transactions (Figure 13). By following a “whole-of-government” approach⁸⁸ and building on interoperable systems, digital public platforms can leverage shared digital services (such as government-to-government (G2G), government-to-people (G2P), government-to-business (G2B), etc.) that has the potential to revolutionize governments' internal processes. These platforms heavily depend on ID systems, trust in services, secured data exchange, and shared repositories to increase transparency, reduce leakage and fraud, and ensure intended beneficiaries' or suppliers' access to relevant public services.

Implementing digital public platforms in Chad can significantly improve the efficiency of public services. The introduction of digital systems and greater automation across the government can diminish the risks of corruption by increasing transparency and accountability. It may also enable more effective oversight by civil society and other institutions by facilitating the process and progress monitoring. Access to digital government services can also make transactions with the government more convenient for citizens and residents. At the same time, it is important to ensure that less digital savvy populations are not left behind. Countries with more widespread provision of digital public services tend to score better in terms of measures of corruption perceptions and government effectiveness. However, specific digitalization reforms on different types of corruption would still need to be established.

⁸⁸ A whole-of-government approach (also referred to GovTech) often features in country digital transformation plans and is linked to various structural and organizational factors. Adopting a whole-of-government approach can be a significant driver for the public sector to realize the government's digital transformation ambitions. Challenges in adopting the approach, such as cost inefficiencies and system duplication, may stem from a lack of investment in coordination among the key agencies (including MoF, MENT, and central offices, such as the Cabinet, Prime Minister, and Presidential offices).

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Figure 13. Role of the public digital platform pillar in the digital economy at the national and regional level



2.2 DIAGNOSTIC FINDINGS: CURRENT STATE OF DIGITAL PUBLIC PLATFORMS

2.2.1 Policy underpinnings, strategies and institutional framework

The lack of whole-of-government approach in digital government development hinders the digital transformation and modernization of the public sector in Chad. The GoC promotes and implements digital transformation initiatives without whole-of-government approach to digital transformation or following a master plan for digitalization, resulting in poor MDAs’ coordination, and proliferation of siloed approaches. Specialized agencies and authorities (such as ANSICE and ADETIC) face numerous challenges in carrying out their missions of integrator and cooperating with the other MDAs. Indeed, these agencies have limited capacity and relatively new stature compared to other MDAs (such as the Ministry of Finance and Budget (MoF)) having more capacity to carry out their own initiatives in developing digital platforms and infrastructures for their own use. Although Chad is making strides towards rolling out its digital vision through its new digital transformation strategy (2020-2030), a whole-of-government approach is necessary to bring together various public constituencies, simplify governance architecture and strengthen strategic oversight for the digitalization initiatives within the public sector.

Currently, the public sector digitalization and digital governance of the public sector are hampered by budgetary and institutional growth constraints:

- MPEN is responsible for designing and supervising a specific digital government strategy in line with the overall national Digital Transformation agenda in Chad. Hence, MPEN is supposed to establish ICT project governance tools that support coherent digital project design, monitoring and evaluation across the public sector in line with the government’s objectives, avoid duplication of efforts, and promote the efficiency of ICT investments and accountability of actions. According to the last Finance Law (2023), the MPEN is the ministry receiving one of the lowest domestic annual budget supports for its functioning and operations (excluding investments) among all existing 31 Ministries, equivalent to

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US\$ 1,750,000, This year, the MPEN can unlock about US\$713,000 from domestic financing, and \$18m from external financing for investments.

- ADETIC under the supervision of MPEN is mandated to implement the national digital agenda as well as digital government initiatives to help the government reap the benefits of economies of scale for basic ICT infrastructure and services (including digital services and platforms design and delivery, digital skills training in cooperation with ENASTIC, provision of ICT shared services and e-Government collaborative tools such as intranet). However, in practice, the agency is only so far, a service provider for interconnecting MDAs and building digital centers. ADETIC relies on MPEN financial allocated resources, and de facto they have limited investment and operations budget supports to meet the growing demand for servicing the MDAs with e-Gov solutions.
- Established by Law N°006/PR/2015, ANSICE is a regulatory power under the *Presidence* for cybersecurity, data protection and certification, including when it comes to set “secure/privacy by design” standards for the use of digital public platforms and data. The fact that the regulatory power for all these critical mandates is contained into one single agency could represent a risk to the independence of oversight for data protection. In addition, it is unclear what public institution should develop a strategy for a data-driven public sector, i.e. providing simple guidance for a robust management of government data and information to improve standardization, use, flow and sharing of public sector data within and across levels of government to better meet the needs of citizens.

Overall, the current framework does not seem to advance great independence from the political cycle and could be a hindrance to continuity and integration of digital initiatives. Although, the institutional design for trust services through ANSICE and ANATS (under the Ministry of public security and immigration) offers operational autonomy, it is unclear what is the political support and commitment, as well as the expected coordination and accountability mechanisms with the other digital sector agencies (ADETIC, ARCEP, ENASTIC) under the supervision of the MPEN. It is unclear what is the equilibrium of regulatory powers and the roles of digital service providers.

As a result of this, Chad is left with a dismal 189th ranking on the 2022 UN e-Government Development Index (EDGI). Chad’s composite score is well behind SSA leaders (i.e., Mauritius, Ghana) and most of its peers (i.e., Togo, Senegal). Chad is banded into the Group D of the GovTech Maturity Index (2021), indicating a low-level focus on GovTech as minimal efforts have been made in implementing digital systems within the public sector (Table 17), whereas ADETIC is making noticeable progress in interconnecting MDAs, such as rolling out the eGov network, and providing basic connectivity. In addition, GoC’s capacity for effective and digitized statistics management has declined from 65.5 to 54.4 between 2015 and 2020⁸⁹, but cybersecurity capabilities have shown some improvements, now ranking Chad 95th out of 182 globally and 14th out of 43 in Africa with a maturity score of 40.44% of the maturity criteria being met. Even if the global indices show a significant progress of Chad in their ranking, the state of maturity in cybersecurity remains embryonic in reality.

Table 17. Current State of Digital Public Platforms

Core Indicators: Digital Platforms	Current Status		Previous Status		Benchmark (latest ranking available)			
	Year	Rank	Year	Rank	Ghana	Senegal	Togo	Mauritius
E-Government – ranking (and score) in global survey (United Nations, 2022)	2022	189 (0.189)	2020	189 (0.1557)	106 (0.5824)	143 (0.4479)	151 (0.4231)	75 (0.7201)
Global Security Index – ranking (and score) (ITU, 2020)	2020	95 (40.44)	2018	147 (9.8)	43 (86.89)	100 (35.85)	105 (33.19)	17 (96.89)

⁸⁹ World Bank, 2022. World Development Indicators. Statistical Capacity core (Overall Average) (scale 0-1000)— Chad. WB’s Statistical Capacity Score. Available at: <https://data.worldbank.org/indicator/IQ.SCI.OVRL?locations=TD>. The Statistical Capacity Score can be considered a proxy for the implementation capacity of e-government and open data projects.

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E-participation – ranking (and score) in global survey (United Nations, 2020)	2022	168 (0.2619)	2020	177 (0.1461)	82 (0.6310)	126 (0.4405)	106 (0.5119)	80 (0.6429)
Corruption Perceptions Index (Transparency International, 2021)	2021	164 (20/100)	2018	165 (19/100)	73 (43/100)	70 (44/100)	128 (30/100)	49 (54/100)
GovTech Maturity Index ⁹⁰ (World Bank, 2021)	2021	Group D (Low: minimal focus on GovTech)	NA	NA	Group B (High: significant focus on GovTech)	Group C (Medium: some focus on GovTech)	Group C (Medium: some focus on GovTech)	Group B (High: significant focus on GovTech)

2.2.2 Identification & Trust Services

While Chad has introduced reforms to improve the foundational identity management systems, there remains significant gaps in inclusivity, robustness, and capacity to be leveraged for more effective service delivery. Chad manages two separate foundational ID systems for civil registration and the national ID card. The civil registration system is managed by local governments under the supervision of the Ministry of Territorial Administration and Decentralization (MATD) and is mainly paper based with no consolidated database at central level. Consequently, its coverage is persistently low, as only 26 percent of new births were registered between 2012 and 2022 compared to the SSA average of 41 percent.⁹¹ Digitalization of civil registration services and centralized civil registry are currently underway since 2021 as part of the civil registration strategy roadmap, with the National Secure ID Agency (*Agence Nationale Des Titres Sécurisés – ANATS*) as the main implementing agency. Through this initiative, ANATS intends to improve the accessibility of registration centers by consolidating existing systems (i.e., health, education and veterinary services) to serve the nomadic communities and children at school without ID more efficiently. Currently, some civil registration officers in six hospitals use a mobile application called TASDJIL developed by ANATS, which solves the problem of administrative processing, archiving, and slow issuance of birth certificate. The ANATS office receives the declaration in its system, and verify the information from the primary caregivers, and then assigns a NNI and issues electronically a birth certificate within 5 to 15 mins. However, such efforts are nascent and would require significant investments to deploy, scale up, and maintain.

In 2020, Chad introduced an integrated identity management system (SIGPTS) managed by ANATS to generate and manage the unique national identification number (*Numéro National d'Identification – NNI*), and secure ID such as national ID card, passport, and other immigration documents. ANATS' vision is to implement an integrated system for the management of all population's secure documents (national ID card, passport, driver's license, vehicle registration document, etc.), starting the cycle with the registration of births and the attribution of the NNI sourced from the National Biometric Register of Populations (*Registre National Biométrique des Populations – RNB*), which ensures each NNI's uniqueness, integrity, and data protection. The national ID card coverage in Chad remains low as only 5-6 percent of the Chadians (over 12 years) possess national ID cards.⁹² The reasons for such low ID coverage can be explained by several key barriers. First, the accessibility of registration points was limited, but registration centers are being established in provinces, and mobile enrollment mechanisms are being piloted and have proven successful. Second, the RNB and the National ID card enrollment processes needed to be better streamlined. Third, the capabilities of SIGPTS

⁹⁰ The GovTech Maturity Index: The State of Public Sector Digital Transformation, was published in September 2021. It examines the progress of public sector digital transformation in 198 economies. Using 48 key indicators to measure digital transformation across four key areas – core government systems; public service delivery; citizen engagement; and GovTech enablers – each country is banded into one of four categories based on its average score, from A (GovTech leaders) to D (minimal focus on GovTech).

⁹¹ UNICEF, 2022. Birth Registration – 1 in 4 children under the age of 5 do not officially exist. Available at: <https://data.unicef.org/topic/child-protection/birth-registration/>

⁹² ANATS 2023 SIGPTS database – data retrieved in May 31, 2023.

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(which is provided by IDEMIA)⁹³ were not fully exploited as several functionalities (e.g., APIs, mobile authentication) remained inactive. Although those barriers seem to be recently addressed, improving system performance, enhancing security and privacy controls, and ensuring adequate capacity for data hosting/storage for the large volume of data would be essential for SIGPTS. Additionally, knowledge transfer for system maintenance and capacity building to enable in-house training development are needed to ensure its operational sustainability.

There is a high demand for digital authentication services to mitigate identity fraud in sectors such as civil service, banking, land administration, telecommunications and insurance; however, these services are currently not operationalized. The National ID card has a contactless electronic chip, which stores the cardholder's biometric data (i.e., fingerprints) and allows for 1:1 matching for authentication through appropriate software and scanning devices. Similarly, the RNBP, which stores the biographic and biometric data of cardholders is available for identity verification by using the NNI as first entry data through a mobile application that ANATS developed. However, the use of the solution for digitally enabled ID verification based on the NNI is not yet rolled out in other institutions. No promotion of their authentication service has been done by ANATS, and hence no private operations of services are aware of such data integration solution exists, which could be extremely relevant to interconnect with other information systems (e.g. social, financial and any digital services).

Public Key Infrastructure (PKI) at the national level for public administration use is yet to be established but use of digital certification occurs at the sectoral level. ANSICE spearheads the GoC's effort to adopt a national PKI across the relevant MDAs and stakeholders. The implementation of a national PKI is one of the government's priority projects. ANSICE will establish Chad's national certification authority and equip itself with the necessary infrastructure to manage certificate applications and their life cycle. A detailed feasibility study has been conducted based on various trust service scenarios. The analysis showed that the need for trust services is obvious and even urgent for some services, namely the visible electronic seal for the security of administrative documents, and the electronic signature for the security of transactions. In addition, the possibility of integrating the existing ANATS PKI for only ID documents into a global architecture is considered, but it will depend greatly on the technical specifications of this PKI (HSM model, algorithms used, architecture, etc.) and on a thorough study of the technology and the certification policy.

2.2.3 Core Government Back-Office Systems (G2G)

Digital government initiatives in Chad have mainly focused on developing core government back-office systems with limited digital capabilities. For instance, despite the absence of national and sectoral IT master plans, the MoF has undergone promising initiatives in digitizing its core government back-office systems. Several ministries (e.g., MoF⁹⁴, Ministry of Civil Service (MoCS), Ministry of Education, Ministry of Health, Ministry of Public Security, Ministry of Justice) established dedicated IT units consisting of five (5) to ten (10) IT specialists, and a handful of data scientists. From an organizational standpoint, these IT departments can be backed by the network of focal points deployed by ADETIC. However, there is no established framework for a concerted and synergized digitalization of the Chadian administration, which causes disparities in back-office management practices (nomenclature, configuration, backup, maintenance, purchase, etc.). From a technical point of view, only certain components of the MoF back-office systems appear to have reached a viable development level. Other ministries (except MoF, MoCS, MoH, MoJ, and ADETIC) do not have digital specialists to carry out digital development projects and/or computer maintenance tasks. In general, there are no intra-governmental collaborative online platforms for internal communication across the MDAs. In the

⁹³ IDEMIA is a multinational IT company headquartered in Courbevoie, France. It provides identity-related IT and security services, including biometric identification products, softwares, cryptography, data analytics, and smart devices to private sectors and governments.

⁹⁴ Within the Ministry of Finance, there are three distinct IT units: Centre Informatique (core team for the entire ministries) and separate satellite IT units at the customs and fiscal administration).

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meantime, most public administration employees use open-source platforms (e.g., Zoom for videoconferencing, WhatsApp for group messaging), while some MDAs use internal mail servers for document sharing and archiving.

MoF is spearheading digital government through an array of public financial management systems, yet several areas of development persist (Box 4). The MoF is a forerunner in the deployment of digital solutions, from which other MDAs could leverage their lessons learned which could play a key role in developing other government information systems. For instance, an integrated public financial management system (SIGFiP) was developed by the MoF's IT unit with support from the Rwandan Cooperation Initiative (RCI) to replace its fragmented systems and improve the efficiency and transparency of the Ministry and its deconcentrated entities. However, the system is only operational at the budget and payroll levels. The government is developing new modules and intends to integrate SIGFiP with other planned digital public platforms. On the revenue mobilization side, the MoF collaborates with the RCI as well to digitize its tax administration and prepare the deployment of a P2G digital platform (e-Tax), followed by its integration with banking systems, mobile operators, and tax systems. Meanwhile, an ongoing WB-funded Digitalization of Revenue Administrations and COVID-19 Response Project (with an envelope of US\$ 35 million) continues its efforts to improve performance, processes, and transparency in customs administration. The results of these programs will be evidenced by the increase in tax and customs revenues as a proportion of non-oil GDP, reduced time to clear customs, electronic tax filings, production of financial reports from an integrated accounting, and management of information systems. Furthermore, the MoF has embarked on several projects to develop digital applications (e.g., information on prices in the Chadian market, general tax, e-solde, etc.). However, none of them are people-centric by design.

At the sectoral level, other initiatives for digital systems development are taking place, but at excessive costs, with no harmonized common practices, standards, or norms in place. There are a handful of partially digitalized management of information systems (MIS) for human resources management (e.g., SIGASPE, iHRIS) and district health information systems. However, technology standards and terms of reference are not harmonized, making the MIS incompatible with other government systems. The maintenance cost of SIGPIS is exceptionally high in the context of Chad. As recurrent costs, its expenses amount to more than eighty million (80,000,000) XAF (US\$ 130,000), notwithstanding the costs of acquisition, maintenance, and fuel in the groups to face the untimely cuts of electric current by the SNE. Moreover, the GoC does not own its systems source code, impacting its ability to conduct maintenance, system upgrade, or contract services. For instance, ANATS has an active three (3) year maintenance contract for the equipment, software, and provision of materials for two billion nine hundred million (2,900,000,000) XAF (US\$ 4,8 million). As there are no policies or regulations applied to IT procurement and terms of reference, individual MDAs select and manage vendor contracts without following common standards and practices (see Table 18 for considerations).

Box 4. List of some of the existing G2G digital systems

- **SIGFiP**, the integrated Public Finance Management System, was implemented in 2021 to secure and maintain traceability and transparency in the execution of expenditure and revenue. SIGFiP is an open-source system developed by MoF, the Rwandan cooperation, and supported by AFRITAC and other partners. SIGFiP was deployed in less than one year to all relevant institutions through several channels (e.g., website, multi-platform), with enforced security and user experience. This comprehensive system incorporates payroll, budget preparation, and execution modules (the 2021 fiscal year budget was prepared on the SIGFiP). Further system enhancements are pending regarding preparing the reform for the program budget and the expenditure accounting chain (i.e., commitment, liquidation, accounting phase).
- **SIGASPE**, the Integrated Administrative and Salary Management System for State Personnel is an electronic management tool launched in 2012 by the GoC for staff management and civil servants' payroll. SIGASPE was co-

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managed by the MoF and the Ministry of Civil Service. Due to the deployment of the SIGFiP, SIGASPE is expected to cease once the migration to SIGFiP is completed.

- **e-Tax**, is a system deployed by the Directorate General of Taxes and the MoF, which aims to modernize, simplify, and streamline the Chadian tax system in accordance with community and international standards. The first phase of its development required US\$ 4.5 million to complete. The second phase is currently being budgeted to implement additional modules, including digital invoicing, to reduce delays in Value-Added Tax refunds. The registration module has been deployed as an open module to any taxpayer, while the declaration and payment modules' testing is scheduled for the end of October 2022. Several challenges remain for the e-Tax system, including (i) the absence of NIP (tax number) making difficult revenue mobilization, (ii) the collection process through a server integrating the Central Bank, Public Treasury and Banks (iii) limited digital connectivity for users in the provinces and at the hosting level, where all activities are supported by the server of the General Directorate of Taxes. MoF has the ambition to set up a larger, and more secure data center to cover the entire flow of financial transactions (e.g., administrative rights, paid services). In this regard, such initiative would be useful to integrate the Ministry's systems into a single platform.
- **ASYCUDA World** is a web-based automated system for customs data, enabling paperless declaration processing through scanned or electronic documents. The system is currently in progress and has faced significant delays in migrating from the previous customs control system (ASYCUDA++) to ASYCUDA World. In addition, delays have been noticed in deploying the system in selected customs offices at the central and local levels. Finally, the system is expected to interconnect with the e-Tax system.
- **SIGPTS** is an Integrated System for the Management of Populations and Secure ID, launched in 2020 by the ANATS. The system allows citizens' enrollment to the RNBP, which captures biometric data and assigns unique NNI. SIGPTS could also include functions to verify an individual's identity by processing fingerprints or palm prints (which can be leveraged in criminal investigations). In addition, various modules have been integrated into the system to produce civil status documents (e.g., birth, marriage, and death certificates), identity cards, passports, resident cards, registration certificates (gray cards), driver's licenses, and visas.
- **MIDAS** is a Migration Information and Data Analysis System, developed by the International Organization for Migration (IOM) and deployed by the Ministry of Public Security and Immigration.⁹⁵ The system is installed at 7 border crossing posts, allowing the collection, processing, and storage of travel and migration information for identification, authentication, data collection and analysis.

Table 19. Summary of the key attributes of digital system acquisition approaches⁹⁶

SaaS (Software as a service)	COTS (Commercial off-the-shelf)	Custom Built
Attribute 1: Quality		
<ul style="list-style-type: none"> ● System based on a tested and used digital platform. 		<ul style="list-style-type: none"> ● Software is owned by the government.
<ul style="list-style-type: none"> ● Vendor has know-how on analyzing, configuring, and rolling out digital system. 		<ul style="list-style-type: none"> ● Software is built for purpose.
<ul style="list-style-type: none"> ● Mature product as a foundation for a system that can be maintained virtually. 		<ul style="list-style-type: none"> ● System development know-how would be accumulated.
<ul style="list-style-type: none"> ● Lower risk of technology obsolescence. 		<ul style="list-style-type: none"> ● Government may have difficulties in retaining IT experts as the private sector can offer more competitive salaries.
<ul style="list-style-type: none"> ● System may impose functional constraints as it is already pre-built. 		<ul style="list-style-type: none"> ● The possibility of risks to the success of system development. ● Lack of proven skills (offset by including foreign specialists).
<ul style="list-style-type: none"> ● System may adopt standards incompatible with existing government systems and/or infrastructure. 		<ul style="list-style-type: none"> ● Potential of fragmented developments between agencies unless carefully managed by the steering committee.

⁹⁵ TchadInfos, 2022. *L'OIM offre au ministère de la Sécurité publique et de l'Immigration deux postes mobiles de gestion des frontières*. Available at: <https://tchadinfos.com/politique/loim-offre-au-ministere-de-la-securite-publique-et-de-limmigration-deux-postes-mobiles-de-gestion-des-frontieres/>

⁹⁶ Based on the forthcoming background paper by the World Bank "Adoption of eGP in Africa", which is applicable to any digital system acquisition.

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<ul style="list-style-type: none"> ● Risk of lock-in by module vendors, mitigated by simplicity and serviceability of module. 	<ul style="list-style-type: none"> ● Moderate risk of lock-in by local developers, mitigated by systems portability.
Attribute 2: Time	
<ul style="list-style-type: none"> ● Core system functions are already available in the vendor's digital platform. 	<ul style="list-style-type: none"> ● Time required for the development of from-scratch implementation can be expected to be more than for a COTS-based system.
<ul style="list-style-type: none"> ● Vendor may require more time than in-house staff to understand the country-specific requirements. 	<ul style="list-style-type: none"> ● If government has proven internal ICT capacity, analysis, development, and rollout of the system can be achieved in reasonable time; otherwise, excessive time may be required.
Attribute 3: Cost	
<ul style="list-style-type: none"> ● Economies of scale created by a shared service often make it a very cost-effective choice. ● Purchase would only be for the functionality for which there is capacity to utilize. ● Low initial implementation costs. ● Low-risk system development and maintenance costs. ● At the end of the contractual term with the vendor, process for contracting and migrating to a new digital system may be costly. 	<ul style="list-style-type: none"> ● Maintenance/evolution of the system will be cost efficient as all required expertise related to the system architecture already exist.
<ul style="list-style-type: none"> ● Government will be contractually bound to the vendor and system, if a clear financial arrangement is not defined right from the start, maintenance/evolution cost may be large. 	<ul style="list-style-type: none"> ● Government may need to accommodate special financial arrangements for retaining experts for the development and maintenance/support of the system.
Attribute 4: Security and Access	
<ul style="list-style-type: none"> ● Solution must be hosted in vendor's IT environment often is located abroad, which may violate security or data privacy laws and regulations. 	<ul style="list-style-type: none"> ● Solution can be hosted on-premises or in domestic cloud to control access and conform to national data privacy laws.

Box 5. Spotlight on Health sector – new health information system and e-health initiative

Despite salient constraints in terms of Information and Communication Technology (ICT) infrastructure and low digital competencies, the Government of Chad, in collaboration with development partners, has successfully piloted digital solutions in the health sector. These include mobile applications to standardize supervision visits for the immunization program, digital tools to improve the diagnostic of maternal and child health diseases in refugee camps, and tools to improve the governance and accountability of health policymaking by strengthening the voice of communities. Further, the Ministry of Public Health and National Solidarity (MoH) is in the process of rolling out DHIS2 in all hospitals in the country.

In July 2021, the MoH implemented a health sector digitalization project – District Health Information Software 2 (DHIS2) –with the financial support of the Global Fund and GAVI Alliance. It is a free and open-source health management data platform used by multiple relevant entities within the Ministry. To date, more than 80 percent of the districts are equipped with IT devices to accommodate the system's deployment to the deconcentrated level. DHIS2 should allow an efficient flow of health data at all levels. However, the project faces various challenges in ensuring sustainable funding for digital connectivity, energy, maintenance, and investment inputs, in addition to the health workers' ownership and effective use of the system.

The MoH has the ambition to implement a national digital health program. First digital health / telemedicine pilot programs date almost a decade ago when the systems were first deployed in the large hospitals in N'Djamena and some district hospitals. However, very few of them have been successful and sustainable. In recent years, many overseas digital start-ups are showing interest in tapping into Chad's health sector. For instance, in 2016, the eHealth Africa launched the Auto-Visual AFP Detection and Reporting (AVADAR) – an SMS-based software application designed to improve the quality and sensitivity of Acute Flaccid Paralysis (AFP) surveillance by health workers and key informants within hospital facilities and local communities. In the wake of COVID-19, a pilot telehealth program has been carried out at the Good Samaritan University Hospital in N'Djamena (through the technical support of a foreign company) to implement teleconsultation systems, scale up, and interconnect 23 hospitals in Chad. In addition, it also plans to integrate a virtual second opinion module for Chadian doctors (which will be provided by Spanish professors, who will also coach them in certain medical practices). However, Chad will have difficulty leveraging this opportunity as there is a high risk of unsustainability and low appropriation by the local healthcare providers. In addition, such initiatives would require well-prepared building blocks such as digital infrastructure (including a solid data infrastructure, data centers, and cloud solutions), advanced digital tools, and the adoption of relevant digital skills acquired by healthcare providers and patients – where the country lags behind.

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2.2.4 ICT skills in the public sector

The GoC faces a shortage of digitally skilled personnel to implement and manage digital government initiatives. Only 32 percent of government employees have received office automation training.⁹⁷ As of today, trainings are only organized on an ad hoc basis whenever a platform (e.g., SIGFiP) is deployed, with the support from external partners. Critical digital skills in data science, IT project management, and IT governance remain extremely scarce in public entities. Most of the existing IT talents (i.e., network administrators and system managers) lie in the MoF, ADETIC, and ANATS. When IT engineers intervene to execute routine maintenance or to resolve incidents, they are highly dependent on the technical solution operators – which is a growing concern for the GoC as it leaves the digital public services dependent on external actors, in a vendor lock-in situation and vulnerable to system and data breaches. Due to the limited specialized skills adoption in the civil service, locally trained IT specialists/engineers (mainly men) are often hired below their grade (compared to the ones trained abroad) and often migrate from the public to the private sector for higher wages. On the other hand, the Chadian administration significantly lacks adequate national digital skills training programs. Few universities and public institutes (such as the National School of ICT (*Ecole Nationale Supérieure des Technologies de l'Information et de la Communication* – ENASTIC)) offer specialized and certified programs in ICT but not active yet in training civil servants (see the Digital Skills chapter).

2.2.5 Digital Service Delivery (G2B and G2P)

The GoC's online presence is limited, characterized by sparse information available online. In 2020, ADETIC implemented an information dissemination framework across 20 MDAs' websites.⁹⁸ Only a handful of MDAs provides up-to-date information and contents (i.e., key documents, decrees, news) on their official websites. In most cases, essential practical information gaps persist across the MDAs, particularly regarding their operating hours, administrative procedures and service processes, and the required forms to fill. Developing the government's online presence and supporting the online dissemination of useful information (e.g., where and how to access public services) are typically considered as first steps in most digital government maturity models.

The number of Government-to-Business (G2B) and Government-to-Person (G2P) services is limited, with almost no transactional and front-facing digital public services offered to date. Only three people-oriented, G2P, digital public services have been identified in Chad: (i) two e-learning platforms (EduTchad and Tchad-Educatic) both launched in 2021 as a response to COVID-19 (see Digital Skills chapter); and (ii) a digital platform developed to facilitate access to the National Social Security Fund (*Caisse Nationale de Prévoyance Sociale du Tchad* – CNPS).⁹⁹ In addition, in response to COVID-19, the GoC has also launched a short-term G2P-like service that issues a health pass with a QR code to register vaccination records and send reminders for the following vaccine schedules. In sum, the digitalization of citizen-oriented public services is limited in Chad, whereas priorities are given to digitizing criminal records, nationality certificates and deploying P2G platforms (such as e-Tax).

2.2.6 Civic tech and transparency

The GoC currently offers a few platforms supporting online citizen engagement, yet constrained by weak data governance (access to information, open data), technical capacity, and dedicated policies. Donor-funded projects have been known to use mobile services for grievance mechanisms in Chad, while the GoC deployed

⁹⁷ Chad Digital Plan, 2017-2021

⁹⁸ Tachad, 2020. *Tchad/Technologie: Vingt sites web désormais disponible pour les institutions étatiques*. Available at: <https://www.tachad.com/tchad-technologie-vingt-sites-web-desormais-disponibles-pour-les-institutions-etatiques>

⁹⁹ The National Social Security Fund (CNPS) has embarked on a project to digitalize its services to be closer to employers and policyholders by facilitating access to the various services requested. They are currently assessing the possibility of offering a digital payment service for employers to pay salaries via mobile money or by Visa / Mastercard bank cards.

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no equivalent services. Instead, some line Ministries (i.e., MoF, health, education, Secretariat General, and the President's Office) mainly leverage social media platforms or USSD technology in their citizen engagement and information dissemination. However, the impact remains limited, as reflected in the country's low performance in e-participation index of 0.31 in 2022 – compared to Senegal (0.34), Togo (0.38), Mauritius (0.42), Ghana (0.45)¹⁰⁰ - indicating that Chad lags behind compared to most of its regional peers regarding citizen participation. In the past, the National Institute for Statistics, Economic and Demographic Studies (*Institut National de la statistiques, des Etudes Economiques et Démographiques* – INSEED) attempted to build a one-stop-shop open data portal but did not pursue to see the deployment of the portal. To date, the INSEED's website and the “*observatoire.td*” serve as the main portals, with basic socio-economic, demographic, and high-level key sector statistics (including public finance data). However, both portals lack the availability of timely and up-to-date data, indicating the need for mechanisms for periodicity of reporting, and process automation. Finally, due to the absence of dedicated legislation to support “Open Access to Government Information”, open data initiative is not supported by any public policy or mandated agency.

2.2.7 Interoperability, shared systems and digital ID

The GoC made efforts to improve the efficiency and interoperability of information systems (particularly between the civil registration and identity management systems), but many key building blocks are missing. The GoC acknowledges the importance of system interoperability for efficient public administration. As such, the GoC adopted the National Strategic Plan for the Improvement of Civil Registration in Chad¹⁰¹ in 2017 to establish system interoperability across the various civil registration actors (including the Ministries of the Interior, Health, and Justice). Since early 2023, the civil registration system is now integrated into the national identification system. The SIGPTS (which produces NNI) is interoperable, sustainable, and scalable to other sectors (e.g., health, education, and land administration). In rural areas, now that interoperability is implemented at central level between the Civil Registry and ID services, if digitally enabled enrollment solutions are scale up, it can result in a considerable increase in the birth registration rate from both sedentary and nomadic groups. It will also optimize the public expenses, by pooling the efforts and resources in developing identification, certification, and authentication of individuals. In addition to the lack of policy orientations, the absence of legal and regulatory frameworks, the lack of regulations applied to IT purchases and technology choices – which would standardize and facilitate secure data exchange between government information systems – hinder the progress towards interoperability between the MDAs. For instance, the current information system (SIGASPE) used by the Ministry of Civil Service (MoCS) is designed to be interoperable with multi-departments. Yet it only rolled out within the MoCS and the MoF. Finally, technical interoperability challenges also exist between mobile operators and the government, particularly at the level of registration and e-transaction requiring both identity verification (KYC requirement), which could hinder the development of G2P or G2B mobile payment systems.

2.2.8 Data management, and hosting

Multiple siloed initiatives have been identified in data management and hosting practices. There is no national data governance policy in Chad to support the future establishment the National Data Center (NDC) for public data hosting. The MPEN and ADETIC (with support from the Chinese Cooperation via EXIMBANK) are building a NDC with a back-up center as a hosting solution for government data, which would facilitate access to relevant data currently hosted individually by MDAs (such as ANATS).¹⁰² Nevertheless, there are still no data governance or infrastructure governance models devolved to the future NDC nor government body mandated

¹⁰⁰ United Nations, 2022. UN E-Government Knowledgebase – 2022 E-Participation Index. Available at: <https://publicadministration.un.org/egovkb/Data-Center>

¹⁰¹ Republic of Chad, UE, UNICEF, UNHCR, 2017. National Strategic Plan for improving Civil Registration in Chad.

¹⁰² ANATS has a data management policy, in terms of data management capacity provided by a biometric matcher, of protection through a cryptological infrastructure, of transfer as data encrypted to the central site, and their back-up at the secondary central site.

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to oversee its management. Such limitations and potential delays may impact the development of other MDAs' digital data infrastructure, which have abandoned their own projects to implement data centers for the benefit of the NDC project. Meanwhile, MDAs (e.g., MoH for the DHIS2, ANSICE for national PKI in the future) turn to private hosting solutions, which are mostly data centers established by private mobile operators (i.e., Moov-Africa) or build their own colocation by pooling initiatives and funds (i.e., MoF and MoCS).

2.2.9 *Data protection and cybersecurity*

Although data protection and cybersecurity legal frameworks are well defined in the laws, there is significant effort expected for their regulations and effective operationalization to protect government IT infrastructure and software deployed by ADETIC and individual MDAs (for interconnection, government intranet and messaging system, ad hoc ICT equipment, data servers, digital applications and information systems, etc.), and that they meet acceptable data security governance standards. MDAs operate outside the frameworks and tend to build their own structure and policies to govern the security of their information systems and protect the public data. Risk identification and management are not integrated into daily practices and are not formalized. The overall level of protection of information systems against cyber security threats in the public institutions is fairly low or non-existent. Several information security governance functions and processes are not clearly defined and implemented. All the MDAs are waiting for the implementation of a national CERT to provide security alerts and propose responses to cyber-attacks that are currently rising in the public administration. To fill this void, a National Cybersecurity Strategy is almost finalized and received support from the International Telecommunications Union, and several feasibility studies are available to strengthen cybersecurity (notably for the establishments of a CERT, a Security Operations Center (SOC), a national PKI project, elaboration of national frameworks, capacity-building programs as well as the identification of critical digital infrastructures and systems and vulnerabilities).

2.2.10 *Constraints to digital public platforms development*

Significant constraints hampering a harmonious digital transformation within the public sector at all levels (central and deconcentrated) are:

- **Technical:** including (i) low availability and weak capacity of infrastructures needed for the use of digital technologies (weak digital infrastructure in the provinces, multiple electricity outages, absence of government interconnection networks, absence of metropolitan network for public agencies at the central level, absence of IXPs), (ii) most data being in analog form and hard to consolidate for digitization, and (iii) high exposure to cyber privacy and security issues due to a low maturity of IT security regulations and capacities to effectively respond to the cyber incident;
- **Human capital:** including (i) lack of actions to meet the demand for digitally skilled talent to develop and maintain the government systems and platforms, leading to significant shortages of adequate IT units in MDAs; (ii) structural deficiencies in the digital training program delivery, in terms of local faculties/institutes ensuring the provision of advanced training programs, qualified trainers and teachers; (iii) a large number of public sector employees with little to no intermediate to advanced digital skills to utilize digital technologies, tools, and systems in a professional setting.
- **Financial:** (i) public investments and resources allocated to MDAs are rarely dedicated to digitalization initiatives due to a shortage of public finances and other domains to prioritize (e.g., health, education, water and sanitation, security), (ii) high costs of acquiring digital technologies, leading to de-prioritization, whereas digitalization could offer significant operational cost saving and high investment return, (iii) unsustainable financial plans established before, during, or after investments.
- **Cultural:** (i) resistance to change management among government employees, due to the lack of management and leadership required to counter the reluctance and adapt, (ii) digital illiteracy and lack of confidence/interest using digital tools and services.

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2.3 RECOMMENDATIONS

While there are multiple reasons why the maturity of digital public platforms in Chad is low, critical constraints appear to be linked to the gaps in the current enabling environment and the digital foundations (capabilities, shared infrastructure and technology platforms, change management), which the priority policy recommendations below seek to address.

R2.1 [Quick-win]. Develop a 5-year national roadmap for the digitalization of public services backed by an effective institutional framework built on a “whole-of-government” approach. This includes in particular: (i) anchoring the strategy as part of the public administration reforms; (ii) implementing cross-cutting action plans with robust monitoring and evaluation mechanisms while aiming at building a modernized public service administration centered around the user’s need (i.e., civil servants, citizens, businesses, and partners); and (iii) establishing an institutional framework for effective governance of this strategy through (a) the appointment of a governance structure with a strong leadership and the degree of political empowerment needed to ensure the achievement of whole-of-government objectives (see Box 7 for an example of eGovernment success), (b) harmonizing all digitalization initiatives led by the government, and bring relevant MDAs, private sector actors, and the civil societies together in the preparation of the strategy and identification of use cases. This unified approach will help GoC to avoid siloed structures and applications and develop digital governance more towards interoperable and modular systems – leveraging common services and infrastructure. It eliminates duplication, creates a shared vision, and ensures effective strategic coordination.

R2.2 [High priority]. Strengthen the policy and normative frameworks and their application for digital safeguards (e.g. data protection and privacy), digital data infrastructure and integrated digital public service delivery. Priority should be given to: (i) define clear institutional mandates to effectively implement the applicable legal and regulatory framework, and set effective institutions and authorities with sustained public annual budgets and capacities; (ii) ensuring and accelerating information system interoperability, in particular, by implementing a common interoperability framework (set of norms, standards, regulations, governance, and institutional arrangements, governing the access to and share of information among public entities) that will move the public administration to a horizontal, networked, and collaborative organization with reliable, transparent data exchange between systems; (iii) developing data governance to lay down protocols and standards for how government institutions should process, secure, store, and share public and private data within the larger government ecosystem, including addressing the aspects of safeguarding complete independence of oversight for personal data protection vs. cybersecurity/fight against cybercriminality (see Box 6), open access to government data as well as governance and management of the future NDC, optimization of local data infrastructure (considering cloud computing use to improve efficiency and reduce costs of data storage in the future); (iv) strengthening cybersecurity frameworks to develop integrated and secure digital public services and platforms; and (v) establishing a national PKI and associated regulations before rushing the offering digital trust services (including digital authentication, e-certification and digital signature) while considering solutions that can be owned by the government but can be managed through PPP). In addition, it is also critical to strengthen the foundational legal identification system in parallel through reforms to modernize and facilitate access to trusted ID-related services, shared civil registries, and ID card obtention which to some point will facilitate the access to and the use of the digital public services, as well as the “once-only” principle.

Box 6. Alignment with Art. 52 General Data Protection Regulation on interdependence of data protection supervisory authority

The laws N°007/PR/2015 on personal data protection and N°006/PR/2015 on the creation of ANSICE do not provision the independence of the supervisory authority regulating data protection within the ANSICE against cybersecurity and fight against cybercriminality. Therefore, the following establishment rules for the independence of supervisory authority should be applied:

1. The supervisory authority shall act with complete independence in performing its tasks and exercising its powers in accordance with a specific regulation (through an ordinance for instance).

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2. The member or members of the supervisory authority shall, in the performance of their tasks and exercise of their powers in accordance with a Regulation, remain free from external influence, whether direct or indirect, and shall neither seek nor take instructions from anybody.
3. Member or members of the supervisory authority shall refrain from any action incompatible with their duties and shall not, during their term of office, engage in any incompatible occupation, whether gainful or not.
4. Government of Chad shall ensure that the supervisory authority is provided with the human, technical and financial resources, premises and infrastructure necessary for the effective performance of its tasks and exercise of its powers, including those to be carried out in the context of mutual assistance, cooperation and participation in the Board.
5. Government of Chad shall ensure that the supervisory authority chooses and has its own staff which shall be subject to the exclusive direction of the member or members of the supervisory authority concerned.
6. Government of Chad shall ensure that each supervisory authority is subject to financial control which does not affect its independence and that it has separate, public annual budgets, which may be part of the overall state or national budget.

R2.3 [High priority]. Upgrade the digital capabilities of public administrations to leverage digital public platforms and be drivers of change for modernized public services delivery through inter alia: (i) strengthening and upscaling the IT teams and units across the MDAs; (ii) readapting the texts of the Public Service to value the profession of computer scientist; (iii) building multidisciplinary teams for user-centered design; (iv) implementing on-the-job or upskilling training programs, focusing on targeted digital skills development among specific digital platforms' users, technicians, and/or administrators; and (v) carrying out awareness-raising programs, communication, and change management activities across the public administrations. Investments in digital skills development and innovation in the public sector are crucial to (i) support the transition towards a data-driven culture, (ii) build highly qualified local talent to meet challenges induced by the development of a digital government, and (iii) continue to ensure digital systems' implementation and improvements across the government.

R2.4 [High priority]. Strengthen the administration's back and middle-office to build the foundations for the front-facing digital services delivery. This entails an IT master plan for (i) the development and provision of high-performance hardware and software, broadband connectivity, and interconnection across various administrative entities, (ii) the implementation of a common robust IT security across the MDAs for building sustainable, "secure-by-design" and "privacy-by-design" government systems, and (iii) the implementation of an effective and efficient IT management and maintenance system (i.e., pooling resources, joint purchasing agreements, strengthening contracts of SaaS and COTS-based systems based on robust open-source policy). The set-up and implementation of the NDC with the aim of hosting all the critical government data and platforms over time makes sense. In this process it is important to consider using a hybrid cloud model¹⁰³ to ensure cloud-based functionalities and higher-level data security at much lower costs. It is important that GoC put in place mechanisms to regularly monitor and evaluate the level of usage or the quality of service of its digital back-office/middle-office systems, and conduct change management activities.

R2.5 [Quick-Win]. Design and implement a first set of digital government services, which should rapidly create interest in using digital services. Offering services online and simplifying forms (guiding how to complete them) can significantly boost user engagement and satisfaction. In the short term, a single online portal could be the starting point for unifying the government's online presence, centralizing all public service information and frequently asked questions, sharing useful information via smartphones and mobile applications, and progressively integrating transactional digital government services. The GoC can prioritize digitizing and reengineering critical and frequently requested public services.

¹⁰³ The hybrid cloud is a combination of an internal private Government cloud with public cloud solutions offered by external providers of commercial cloud services, such as Amazon Web Service, Microsoft Azure, Google Cloud Platform, IMB Cloud, etc. (or eligible internal cloud providers, if such exist). Following private sector examples, governments around the world are adopting the Hybrid Cloud model to store, process and interact with protected, extremely sensitive, or regulated data on a Private Government Cloud, while continuing to leverage cloud-based functionalities and resources from Public Cloud services. The Hybrid Cloud does not refer to a single cloud with public and private features, but rather represents a technological symbiosis of the two approaches, aimed to create a reliable, easily available, and protected virtual environment, which can be scaled up quickly and flexibly at the government's demand at a much lower cost.

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Box 7. Spotlight on E-Government Success of Singapore

Singapore is widely considered as one of the global leaders on e-Government implementation. In Singapore, the Government Technology Agency is responsible for the implementation of national digital government strategies and services using a whole-of-government approach. In 2014, Singapore launched the Smart Nation initiative, of which digital government is an integral part. The Smart Nation website presents the details of strategic national projects, including Core Operations Development Environment and eXchange (CODEX), National Digital Identity (NDI), Smart Nation Sensor Platform, e-Payments, etc. In 2018, the Government Data Office was established, and the Digital Government Blueprint was developed to better leverage data, harness new technologies, and drive broader efforts to build a digital economy and digital society. The city-state has a one-stop-shop government portal (Gov.sg) that provides access to specialized portals for e-services, open data, e-participation, and public procurement. The government has also created digital platforms for citizens to plan and monitor their social security savings or report issues with government services. Singapore is using predictive systems and services in health sector, tax administration, business registry, smart city applications and more. Another example of leveraging advanced technologies is Open Certs, which is a blockchain based platform offering an easy and reliable way to issue and validate academic certificates that are tamper-resistant.

FOCUS 2: GENDER & DIGITAL

Chad is characterized by profound gender inequalities, including access to education, healthcare services, economic opportunities, financial services, and political participation for women and girls. Chad ranks 148th out of 156 countries on the 2021 Global Gender Gap Index, with a significantly low rank in educational attainment (155th). Through formal education, boys attain higher literacy rates (31.3 percent versus 14 percent for females).¹⁰⁴ Chad has the largest gap in secondary education, with only 12.3 percent of girls (versus 25.4 percent of boys) enrolled in secondary school. Higher education participation hits the lowest rates in Chad, with women's tertiary enrolment as low as 1.5 percent (versus 5 percent for men).¹⁰⁵ Consequently, women participate in the labor market at a lower rate than men (64.4 versus 77 percent),¹⁰⁶ and participation in business and entrepreneurship activities is also under-represented. This can be explained by women's constraints related to mobility rights, marital inequality, laws affecting women's work-life balance (particularly after having children), starting and running a business, access to credit (5 percent of women have an account at a financial institution)¹⁰⁷, and owning a property and/or inheritance.¹⁰⁸ In addition, women's exposure to gender-based violence (GBV) is prevalent, while their participation in decision-making in public and private spheres is limited. Almost 75 percent of women agree with at least one of five reasons for domestic violence. One-third of women report experiencing physical or sexual abuse, and 10 percent of girls (aged 0-14 years) went through female genital mutilation (FGM), despite being outlawed.

Digital tools offer considerable opportunities to reduce gender inequalities. Ensuring basic digital literacy and skills for women and girls is critical in reducing gaps in human endowment, in addition to EdTech improving learning outcomes for girls. Digital technologies can act as a pathway to economic opportunities through better-paying positions with career-building opportunities, flexible schedules, and online work schedules to overcome challenges by increasing women's participation in the digital economy. Finally, digital technologies enable greater inclusion (e.g., digital financial inclusion) by helping female entrepreneurs (including those running MSMEs) start and grow their businesses and tap into a new market.

Women are largely left out of the digital economy and fail to receive digital dividends. Women overrepresent amongst the poorest and the most vulnerable population and face severe demand-side barriers in participating in the digital economy. For instance, access to and use of digital services are prohibitively costly for women (particularly those living in rural areas) due to their lower socio-economic positions compared to men. In addition, cultural and ethnic norms, unequal gender roles, biases, and stereotypes often dissuade women from accessing the internet and gaining digital literacy. Following are the critical digital gender gaps identified (inexhaustive) with recommendations on how to reduce these gaps.

Gap in broadband access: Chad has a high gender disparity in Internet use. Only 0.7 percent of women (versus 6.7 percent of men) report using the internet regularly.¹⁰⁹ Measures to boost women's access to broadband include: (i) promoting affordability of internet use through policy/market reforms to achieve lower retail data and device prices (see Chapter on Digital Infrastructure); (ii) developing outreach and communication activities targeted at women on the benefits of digital adoption; (iii) expanding free Wi-Fi access points, particularly in remote and rural communities; and (iv) ensuring flexible opening hours of locations/services for women and availability of female intermediaries/staff.

¹⁰⁴ World Economic Forum, 2021. Global Gender Gap Report. Available at: https://www3.weforum.org/docs/WEF_GGGR_2021.pdf

¹⁰⁵ World Economic Forum, 2021. Global Gender Gap Report. Available at: https://www3.weforum.org/docs/WEF_GGGR_2021.pdf

¹⁰⁶ International Labour Organization, 2020. ILO Indicators 2020 figures.

¹⁰⁷ World Bank, 2017. ID4D Global Findex 2017.

¹⁰⁸ WB, 2022. Women Business and the Law Report. Available at: <https://openknowledge.worldbank.org/handle/10986/36945>

¹⁰⁹ INSEED-UNICEF, 2020. MICS6-Tchad, 2019, Final Report. Available at: https://mics.unicef.org/news_entries/186/JUST-RELEASED:CHAD-2019-DATASETS-AND-SURVEY-FINDINGS

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Gap in digital literacy and skills: Countries with high levels of gender inequality (such as Chad) also have the largest gender differences in digital skills acquisition.¹¹⁰ Providing digital skills training accelerates digital literacy and skills adoption among women, increases access to mobile Internet, and boosts women's empowerment, according to a GSMA study.¹¹¹ As for Chad, gender and inequalities and poverty level significantly influence years of schooling and digital skills acquisition. Measures to increase digital skills adoption among women include: (i) organizing digital literacy training programs tailored to women, girls, and female trainers, with relevant and practical content/curricula in a safe environment by incorporating anti-discrimination and anti-sexual harassment measures; (ii) leveraging NGOs, 'women in technology' networks, and associations – such as “*Action pour l'Education et la Promotion de la Femme au Tchad*” or “*Femme et TIC du Tchad*” – to ensure trust and eliminate social and cultural barriers; and (iii) promoting training opportunities for women through awareness campaigns.

Gap in the usage of digital financial services: Several constraints limit women's access to DFS, which include sociodemographic and cultural factors contributing to women's lower income per capita, limited eligibility financing, and lower participation in training and initiatives in financial education. In addition, providers tend to fail to target women, as there is a limited adaptation of DFS tailored to the needs of female customers, on top of not generating gender-disaggregated data and lacking efforts to strengthen women's capacities in financial education. This insufficiency leads to higher levels of inequality and exclusion. Measures to boost the usage of digital financial services by women include: (i) building awareness and benefits of DFS through digital skills and financial literacy programs, e.g., for social payments recipients; (ii) conveniently locating DFS points (particularly for cash-in cash-out networks) close to where women live and work (e.g., post offices, local administrations, community centers); (iii) capacity building for GoC and other service providers to adopt know your customer (KYC) approach (and/or risk-based customer due diligence) to ensure more flexibility for women in opening mobile money or bank accounts (particularly those without ID); (iv) ensuring that a large proportion of digital social payments are directly made to women and girls; and (v) implementing codes of conduct for mobile money providers to enhance women's safety and security.

Gap in participation in the ICT sector/digital businesses: Chad is characterized by women's low enrollment in Science, Technology, Engineering, and Mathematics (STEM) fields and ICT degree programs among women, which further hinders their participation in the digital economy. The lack of professional training and tailored support compounds undereducated women's opportunities to acquire the necessary skills to move to high-value-generating activities, including digital businesses. In response, a handful of tech hubs and start-up accelerators are rolling out targeted technical training programs (such as coding classes) in N'Djamena. Measures to boost women's participation in the digital economy include: (i) providing tailored counseling services and peer-to-peer learning events targeted to women interested in pursuing ICT and/or STEM careers and acquiring digital skills (at intermediate and advanced levels); (ii) developing training programs designed specifically for women-led MSMEs and female entrepreneurs looking into digitally enabled business solutions; (iii) training female mentors and advisors to inspire and empower female entrepreneurs; (iii) targeting specific digital reskilling and upskilling programs and activities targeted to women and young girls; and (iv) providing women with certified digital skills training programs to boost their employment opportunities.

Financial and economic inclusion is low among women in Chad. 15 percent of women (versus 23 percent for men) aged 15 and over reported having accounts in 2017. Only 5 percent of women (versus 13 percent of men) aged 15 and over had access to formal financial services. 2 percent of women over the age of 15 had a mortgage compared to 4 percent for men. 2 percent of women owned credit cards versus 4 four percent for men, and 14 percent of women reported making or receiving digital payments during the year, compared to

¹¹⁰ ITU, 2018. Measuring the Information Society Report. Available at: <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/misr2018.aspx>

¹¹¹ GSMA, 2015. Accelerating Digital Literacy: Empowering women to use the mobile internet Report. Available at:

<https://www.gsma.com/mobilefordevelopment/resources/accelerating-digital-literacy-empowering-women-to-use-the-mobile-internet-2/>

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25 percent of men.¹¹² In addition, women perform poorly in labor market participation, with only 46 percent (versus 70 percent for men).¹¹³ In addition, there are several obstacles for women engaging in economic activity and public administration (such as going to court, building a credit file, and finding a job).

There are growing risks of online gender-based violence that need to be mitigated. These risks include cyberbullying and harassing, cyberstalking, non-consensual dissemination of intimate images, among others. Early evidence suggests that this form of violence may reinforce gender inequalities by emotionally harming the victims of cyber violence, preventing women from logging on, or causing them to disconnect, discouraging their online participation. Similarly, it can undermine the positive employment effects of digital transformation by increasing the likelihood that women will forgo or leave digital jobs.¹¹⁴ To mitigate these risks, GoC needs to: (i) raise awareness of the cyber harassment risks and online GBV, (ii) provide guidance on how to identify, avoid, report, and cope with online GBV and cyber harassment targeted to both women and men, (ii) facilitate legislative reform to criminalize harmful and toxic online behaviors, and (iii) integrate gender aspects related to digitally enabled GBV into the broader cybercrime and private data protection policies and related legal frameworks.

¹¹² World Bank, 2017. The Global Findex Database 2017: Measuring Financial Inclusion and Fintech Revolution. Available at: <https://openknowledge.worldbank.org/handle/10986/29510>

¹¹³ World Bank, 2021. World Development Indicators. Labor force participation rate (percentage of male & female participation ages 15+, Modelled ILO estimate). — Chad. Available at: <https://data.worldbank.org/indicator/SL.TLF.CACT.MA.ZS?locations=TD>

¹¹⁴ Solutions for Youth Employment (S4YE) & World Bank, 2022. Online Violence Against Young Female Workers: Risks, Threads and Mitigation Strategies - Knowledge Brief Series Issue 19. Available at: https://www.s4ye.org/sites/default/files/2022-04/Online%20Violence%20Against%20Young%20Female%20Workers%20_March%202022_0.pdf

CHAPTER 3

DIGITAL FINANCIAL SERVICES

Key messages:

- ❖ KM1: Chad has the lowest financial inclusion level in Africa and worldwide.
- ❖ KM2: The usage of DFS is low. In 2021, there were only 176,798 active mobile money accounts, with limited withdrawals and deposits. Chad is one of the few countries where mobile money contracted have decreased in 2020 due to illegal use of phone credit units for P2P transfers, with agents acting as a relay point. Several financial regulations restrict the issuance of e-money for microfinance institutions
- ❖ KM3: Financial service costs are high and affect the development of DFS.
- ❖ KM4: Share of government payments paid in cash is highly elevated.
- ❖ KM5: Recourse to formal savings and borrowing is still scarce and regulations do not yet allow digital credit.
- ❖ KM6: Interoperability between digital payment instruments is lacking in the region, as they are not accessible to microfinance institutions (MFIs), e-money institutions (EMIs), and Fintechs.

3.1 IMPORTANCE OF DIGITAL FINANCIAL SERVICES

Access to affordable financial services is critical for poverty reduction and economic growth. Countries with more developed financial systems have higher economic growth, more poverty reduction, and lower income inequality. Access to and use of basic financial services can increase incomes, resilience, and improve livelihood of the poor.

Considerable progress has been made in financial inclusion worldwide in the past decade, stemming from increased use of DFS. The percentage of adults owning a transaction account increased from 51 to 76 percent between 2011 and 2021 worldwide.¹¹⁵ By 2021, 74 percent of adults met this basic threshold of financial inclusion. Yet 1.4 billion¹¹⁶ adults remain financially excluded, with half the unbanked living in seven developing economies: Bangladesh, China, India, Indonesia, Mexico, Nigeria, and Pakistan. Women, youth, and the poor continue to make up a disproportionately large share of the unbanked population. Globally, gaps in gender, age, and income have not narrowed since 2011, though progress has been made in some countries.

DFS are driven by mobile money, which has achieved an impressive scale in SSA. In 2017, more than 20 percent of adults in SSA reported using a mobile money product in the previous year. As of 2021, more two thirds of Uganda, Tanzania and Kenya's population is mobile users, while Côte d'Ivoire, Ghana, and Tanzania reach more than 80 percent¹¹⁷. The proliferation of mobile money is one element of a broader trend toward digitalizing the financial sector. Digital payments are increasingly replacing cash or branch-based transactions. Globally, 64 percent of adults worldwide reported having or receiving at least one digital payment in the past year (an increase from 44 percent in 2011) via mobile phone, payment card, or online payment.¹¹⁸ While Global Findex 2021 does not report data for Chad, interviews report that the pandemic has amplified reliance

¹¹⁵ World Bank, 2021. The Global Findex Database 2021: Financial Inclusion, Digital Payments; and Resilience in the Age of COVID-19. Washington DC. Available at: <https://openknowledge.worldbank.org/handle/10986/37578>

¹¹⁶ World Bank Data 2021

¹¹⁷ World Bank, 2021. The Global Findex Database 2021: Financial Inclusion, Digital Payments; and Resilience in the Age of COVID-19. Washington DC. Available at: <https://openknowledge.worldbank.org/handle/10986/37578>

¹¹⁸ World Bank, 2021. The Global Findex Database 2021: Financial Inclusion, Digital Payments; and Resilience in the Age of COVID-19. Washington DC. Available at: <https://openknowledge.worldbank.org/handle/10986/37578>

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on DFS in Chad as vulnerable individuals had to receive digital remittances from neighboring countries (such as Cameroon).

Mobile money has proven to be a viable alternative to formal financial services in FCV countries, where achieving financial inclusion is a significant challenge. As of 2019, more than half of the 42 fragile states have mobile money services with close to 47 mobile money agents on average for every commercial bank branch, providing the population with an alternative way to access finance.¹¹⁹

DFS are widely recognized as an enabler for the digital economy. E-commerce markets require accessible, reliable, and efficient digital payment channels to conduct transactions. Digital entrepreneurs and tech start-ups benefit from DFS (including online crowdfunding and peer-to-peer lending platforms) by financing firm growth and improving productivity. In addition, e-Government initiatives often rely on digitally enabled G2P, P2G, G2B, and B2G payments.

The Bali Fintech Agenda, launched in October 2018 by the WB and the IMF, proposes a framework on high-level fintech¹²⁰ issues countries should consider in their policy discussions. Beyond policy matters, innovative infrastructure models are posing issues, particularly in SSA, where 45 percent of adults are still excluded from financial services in 2021¹²¹.

DFS are an efficient means for Maximizing Finance for Development (MFD) in ICT and payment infrastructures. DFS can contribute to the MFD's criteria for market failure, general interest, synergy with WB and other donors' projects, and limitation of public funds to the minimum. The development of DFS requires the identification of regulatory and legal bottlenecks, private sector investment challenges, and actionable policy recommendations. By promoting integrated solutions for payment systems at national and/or regional levels, DFS (i) optimize public funds, (ii) reduce the costs of siloed public and private investments, and (iii) provide essential public good to citizens regardless of their income levels. In addition, DFS can also leverage different WBG and other donors' initiatives, particularly in financial inclusion, infrastructures, agribusiness, governance, and social protection. Finally, DFS (including mobile money) increasingly contributes to GDP growth, as IMF financial access survey shows the value of mobile-money transactions skyrocketed in most developing countries in the past ten years.

COVID-19 has highlighted the role of digital technologies in increasing productivity and upskilling the workforce in African countries. Well-targeted fiscal and monetary measures have been put in place by many governments amid the pandemic, ensuring increased access to payments and other essential financial services and supporting the financial resilience of individuals and businesses. Meanwhile, central banks and policymakers adopted timely and decisive actions to reduce the risk of prolonged economic effects. In addition, the pandemic has shown the need for digital connectivity to replace physical interactions between consumers and providers. In this context, DFS can be a critical enabler of the digital economy, promoting digital inclusion and productivity through a broad range of financial products and services (e.g., payments, transfers, savings, credit, insurance, securities, financial planning, and account statements) delivered via digital tools, including payment cards, online platforms, or mobile phones.¹²² DFS can provide individuals and households (particularly those with no access to traditional services) with convenient, affordable, and alternative channels to receive payments, pay for services and buy utilities, and save and borrow. In addition, firms can leverage DFS to transact with their customers and suppliers more efficiently, building credit histories, and seeking financing, thereby deepening the prospects for an enlarged e-commerce ecosystem. Governments can use

¹¹⁹ IMF, 2019. Mobile Money Note 2019.

¹²⁰ The WB defines Fintech as digital technologies that have the potential to transform the provision of financial services spurring the development of new (or modify existing) business models, applications, processes, and products. In practice, "fintech" broadly denotes the ongoing wave of new DFS. Examples of these technologies include web, mobile, cloud services, machine learning, Digital ID, and Application Programming Interfaces (APIs).

¹²¹ World Bank, 2021. The Global Findex Database 2021: Financial Inclusion, Digital Payments; and Resilience in the Age of COVID-19. Washington DC. Available at: <https://openknowledge.worldbank.org/handle/10986/37578>

¹²² Alliance for Financial Inclusion, n.d. Digital Financial Services Working Group. Available at: [https://www.afi-global.org/working-groups/dfs/#:~:text=Digital%20financial%20services%20\(DFS\)%20comprises,also%20includes%20mobile%20financial%20services.](https://www.afi-global.org/working-groups/dfs/#:~:text=Digital%20financial%20services%20(DFS)%20comprises,also%20includes%20mobile%20financial%20services.)

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DFS to increase efficiency and accountability in various payment streams, such as the disbursement of social transfers and tax payments. In addition, countries across the globe have enacted emergency measures leveraging DFS, which can be classified into four broad categories: (i) P2P transaction fee cuts, (ii) increased balance and transaction limits, (iii) simplified KYC requirements, and (iv) simplified transaction processes.

The importance of DFS in Chad

Financial exclusion in Chad is translated across several gaps and informality. Most financial transactions in Chad are settled outside of the formal financial system. In 2017, according to Global Findex, 38 percent of Chadians report having borrowed a certain amount of money over the past year; however, only 4 percent reported having done so from a formal financial institution. A similar pattern for borrowing is also observed in neighboring countries such as Mali and Niger. Insufficient funds are the most cited reason for not having an account, followed by lack of documentation, cost, and distance to financial institutions, mistrust in financial institutions, and religious reasons. A 2017-2030 national financial inclusion strategy was approved in 2016 but limited reforms have been implemented so far.

At the regional level, the development of DFS is strategic for several key organizations. The African Union's Digital Transformation Strategy for Africa (2020-2030)¹²³ underlines that DFS are a critical enabler of the digital economy and is committed to (i) reaching universal access to DSF and (ii) establishing African-wide payment infrastructure by 2030. In 2016, the GoC adopted the National Financial Inclusion Strategy 2017-2030 (NFIS), which highlights the development of DFS (including digital-driven products), and lays the ground for developing an appropriate institutional, legal, social, and economic-financial environment. NFIS aims to facilitate sustainable access to diversified, innovative, qualitative, and affordable financial products and services for a growing population (particularly those financially and economically excluded and vulnerable groups, including women, youth, rural population, and informal sector actors).

Along with five other nations in the region, Chad is a member of CEMAC. Chad's financial sector is governed by the Bank of the Central African States (BEAC) and the Banking Commission for Central Africa (COBAC). COBAC, chaired by the Governor of the BEAC, supervises credit institutions (including microfinance) and has the regulatory (such as drafting prudential regulations and instructions) and jurisdictional power to sanction institutions in breach. Licensing is processed by COBAC but is subject to the MoF's judgment. Other regional and national regulatory bodies include: (i) ARCEP mandated to regulate and supervise mobile operators to issue mobile money at the national level,¹²⁴ (ii) the Financial Market Surveillance Commission (*Commission de Surveillance du Marché Financier de l'Afrique Centrale* – COSUMAF) for financial market institutions and intermediaries, and (iii) the Inter-African Conference on Insurance Market (*Conférence Interafricaine des Marchés d'Assurance* – CIMA) for the insurance sector.

3.2 DIAGNOSTIC FINDINGS: CURRENT STATE OF DIGITAL FINANCIAL SERVICES

3.2.1 DFS Landscape in Chad

Chad's DFS ecosystem is at a very early stage compared to CEMAC countries. DFS are provided by banks in partnership with telecom operators. Chad has one of the lowest financial inclusion levels at the regional and global levels, with limited access to and use of financial services amongst Chadians. Account ownership in formal financial institutions in Chad has been on the rise over the past decades yet remains comparatively low in a regional and global context. In 2017, the share of Chadian with an account at a formal financial institution

¹²³ African Union, 2019. Digital Transformation Agenda Strategy for Africa (2020-2030). Available at: <https://au.int/en/documents/20200518/digital-transformation-strategy-africa-2020-2030>

¹²⁴ Law N° 013/PR/2014. Available at: <https://www.africa-laws.org/Chad/Commercial%20law/Loi%20N%C2%B0%202014%20portant%20r%C3%A9gulation%20des%20communications%20C3%A9lectroniques%20et%20des%20activit%C3%A9s%20postales.pdf>

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stood at about 9 percent, well below compared to the SSA average (32.8 percent), CAR (14 percent), Cameroon and Democratic Republic of Congo (over 20 percent).¹²⁵ Formal savings and borrowing in Chad have been declining over the past decade and hit the lowest rank in the CEMAC region and globally.

The Chadian financial sector is small, concentrated, and dominated by the banking sector. There are 9 commercial banks, accounting for more than 95 percent of total financial sector assets. The microfinance sector is limited, accounting for about 3 percent of the assets (122 entities) of the financial system. The rest of the financial system includes 2 mobile money providers (Airtel & Moov Africa) and 3 insurance companies (Star Vie, Non Vie, and SCOMA), accounting for less than 2 percent of total financial sector assets.

Mobile money emerged as an accessible and affordable alternative financial service and outpaced the banking and microfinance sectors in account ownership and usage. The number of account holders has almost doubled from 7 to 15.2¹²⁶ percent between 2014 and 2017. In addition, the gender and urban/rural gap in account ownership was also less pronounced in 2017 Table 20 (Table 20).

Table 20. Key DFS indicators

Indicator (% age 15+)	Chad	SSA average
Account ownership	21.6	42.6
Financial institution account	8.8	32.8
Mobile money account	15.2	20.9
Gender gap in account ownership	8.0	5.7
Made or received digital payments in the past year	19.4	34.4
Used a mobile phone or the internet to access an account	64.1	20.8

Source: World bank, 2017. Global Findex.

However, Chad's mobile money activity has decreased in 2020 and lagging behind other CEMAC countries. Chad's banking rate is estimated at 7 percent (CEMAC, 13.3 percent), the overall banking rate (including mobile money) is estimated at 15 percent (versus 31 percent in CEMAC) in 2019,¹²⁷ and e-money market activities dropped to 19 percent in 2020.¹²⁸ This is due to phone credit units for P2P transfers, with agents acting as a relay point with fees up to 10 percent. In response, e-money distributors adjusted their remuneration on the distribution network to 3 percent fees and developed dedicated agent networks. GoC also acted with a 5 percent tax on all transactions between two phone credit resellers. Finally, money transfers via travel agencies and P2P transfers are also highly developed in Chad for remittances.

Chad accounts for 2 out of the 15 mobile money deployments in the CEMAC area with approximately 177 thousand mobile money accounts. The three commercial banks¹²⁹ licensed to issue e-money have partnerships with Airtel and Moov Africa. As per COBAC regulations, the capital requirement for e-money licensing for payment institutions is 500 million XAF (roughly US\$ 760,000). As of 2021, there are no payment institutions registered in the country. Chad ranks 4th (after Cameroon, the Republic of Congo, and Gabon) in terms of number of e-money accounts in the CEMAC area. However, it is the only CEMAC country with a steady decline in mobile money accounts, recording a 20 percent drop between 2019 and 2020.¹³⁰ In 2020, Chad registered 176,798 active mobile money accounts (**Error! Reference source not found.**) for transactions estimated at 26 billion XAF (US\$ 39.5 million).¹³¹

¹²⁵ World Bank, 2017. The Global Findex Database 2017: Measuring Financial Inclusion and Fintech Revolution. Available at: <https://openknowledge.worldbank.org/handle/10986/29510>

¹²⁶ World Bank, 2017. The Global Findex Database 2017: Measuring Financial Inclusion and Fintech Revolution. Available at: <https://openknowledge.worldbank.org/handle/10986/29510>

¹²⁷ BEAC, 2021. Not publicly available.

¹²⁸ CEMAC, 2020. Not publicly available.

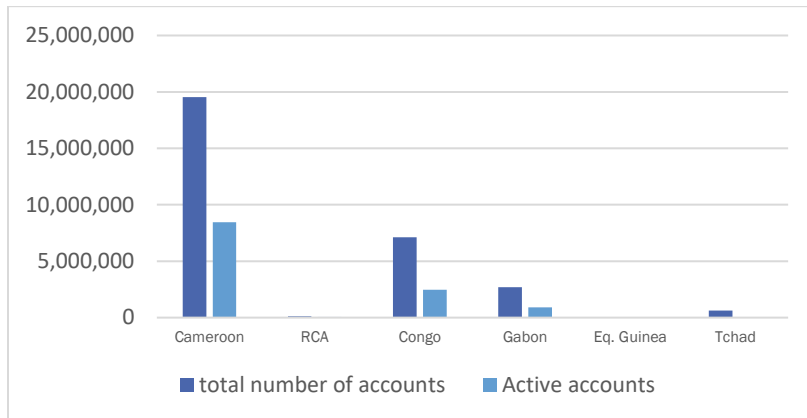
¹²⁹ EcoBank, United Bank of Africa, and OraBank

¹³⁰ BEAC, 2020. Annual report

¹³¹ CEMAC, Chad 2020 data.

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Figure 14. Number of payment accounts in the CEMAC countries (2020)



Source: BEAC, 2020. Annual Report

The usage of DFS in Chad is limited. Airtime top-up and cash-out are the most prominent transactions accounting for 18 and 60 percent of Chad’s transaction value, respectively.¹³² Basic services (i.e., cash-in cash outs, P2P transfers, safe money keeping, and airtime purchases) are available and increasingly.¹³³ While 95 percent of merchant payments are still made in cash, available data show that there has been growth in utility bill payments.¹³⁴ In 2017, while 19 percent of the adult population made or received a digital payment, only 10 percent (it was 7 percent in 2014) paid a utility bill digitally and the same proportion proceeded to digital payments online. However, in 2017, only 3 percent adults had saved at a formal financial institution (compared to 7 percent in 2011 and 5 percent in 2014) while 15 percent declared having saved though an informal group or club (compared to 12 percent in 2014)¹³⁵. Borrowing from friends or family is also more popular than borrowing from a financial institution: 28 percent versus 4 percent.

Access to mobile money has increased. Mobile wallets offer great opportunities for financial inclusion and alternatives to traditional banks, notably in Chad that is a large country. Chad has 12,000 mobile money access points¹³⁶. Mobile money provides unbanked populations with access to an array of financial services. Use of mobile money is increasing as the number of registered mobile money agents outnumber the ATMs (Figure 15). However, like other countries in the region, this access features a geographic characteristic with urban areas having higher access than rural areas.

¹³² 2020 BEAC report. Not publicly available.

¹³³ First-generation DFS products include basic cash-in, cash-out, person-to-person transfers, bill and utility payments, airtime top-ups, and bulk payments. Second-generation products include digital credit, savings and insurance, merchant payments, international remittances, and bank-to-wallet services.

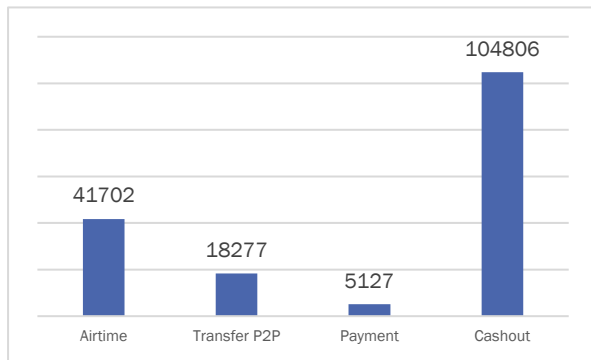
¹³⁴ BEAC, 2020. Not publicly available.

¹³⁵ Source: Findex 2017

¹³⁶ IMF Financial Access data base (data 2022)

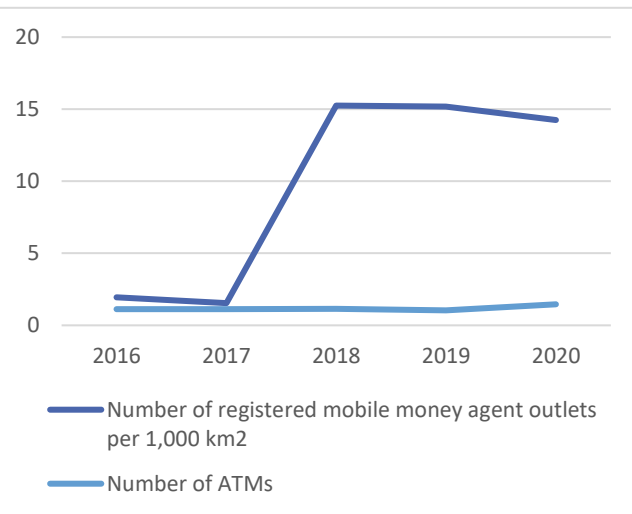
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Figure 15. Average value of transactions in CEMAC, (2020)



Source: BEAC, 2020

Figure 16. Number of ATMs per 100 thousand adults (2021)



Source: IMF, 2021

3.2.2 DFS and government payments

The share of government payments paid in cash is elevated. Only 0.1 percent of adults receive government payments in digital form.¹³⁷ No government-wide directives or standards requiring the digitization of G2P payments exist, resulting in siloed approaches to digitizing payment systems by certain administrations (such as the Treasury and the Tax department). Consequently, the impact has been minimal due to the absence of a whole-of-government approach, systematically integrating and digitizing government payments systems. The Treasury is connected to the regional payment system infrastructures SYSTAC and SYGMA¹³⁸ but not the Interbank Banking Group of Central Africa (*Groupement Interbancaire Monétaire de l'Afrique Centrale–GIMAC*¹³⁹). In addition, 90 percent of government employees receive salaries in cash, according to the Treasury. As part of the WB-funded Education Sector Reform Project Phase 2, some civil servants (e.g., community teachers) receive salaries through mobile money outside the main cities in remote areas. Yet, they still opt for bank transfers – despite the lost opportunity costs – as account statement is unavailable to access on their mobile phones.

Digitalizing cash-based interventions and social safety net payments have been developed in an ad-hoc manner. The WB-funded Education Sector Reform Project and the Productive Social Nets Project¹⁴⁰ have been successful (Box 8). E-currency distributors have been involved in the project (via prepaid cards that are locally used restricted cards for payments of salaries and some welfare benefits), but no fintech has been integrated yet. In other countries (i.e., Nigeria, Ghana) governments leveraged fintech to reach citizens and businesses quickly and securely with emergency cash transfers and financial assistance. They allow people to transfer

¹³⁷ World Bank, 2017. The Global Findex Database 2017: Measuring Financial Inclusion and Fintech Revolution. Available at: <https://openknowledge.worldbank.org/handle/10986/29510>

¹³⁸ The Central African Teleclearing System (SYSTAC), is composed of a set of devices allowing the cashing of checks issued to the Treasury and domestic and regional payment operations of an amount lower than CFA F 100 million (USD 200,000). The second tool, the Automated Large Value Transfer System (SYGMA), is a time-based settlement system for domestic and international transactions through transfer orders and monetary transactions of more than 100 million CFA francs.

¹³⁹ Regulation n° 01/20/CEMAC/UMAC/COBAC of July 13, 2020, on the protection of consumers of banking products and services with the help of the World Bank.

¹⁴⁰ World Bank, 2016. Chad Safety Nets Project (P156479) – Project Appraisal Document. Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/221251471265217930/chad-safety-nets-project>. The project transferred regular cash to 6,200 household beneficiaries. Women in households received payments of US\$ 25 equivalent, payable every two months for two years. The impact evaluation showed that these transfers resulted in an increase in consumption by at least 47 percent.

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funds - including cross-border remittances - and pay bills from their homes, or in a market or store, with limited physical contact.

Box 8. Education Sector Reform Project in remunerating community teachers

Under the WB-funded Education Sector Reform Project¹⁴¹, the community teachers in rural areas were hired by the GoC to compensate for the absence of teachers. Payment is made every 3 months via Airtel Money. By the end of 2021, about 1.2 billion F XAF (U\$ 1.8 million) have been paid to 7,000 community teachers. The main challenges that the project faced were: (i) a reluctance of the Agency for the Promotion of Community Initiatives in Education (*Agence pour la Promotion des Initiatives Communautaires en Education – APICED*) in reimbursing community teachers and making payments in cash; (ii) corruptive behaviors by village chiefs and ticket collectors; (iii) high leakage, with payments being made at 70 percent; (iv) cash flow issues at points of service; and (v) duplicated identification of community teachers and accounts. The documents required to open a mobile money account were passport, driver's license, or national ID. However, 70 percent of the beneficiaries did not have the required documents at the time of the project launch, and temporary accounts were opened (accounts with a limit of 100,000 XAF).

3.2.3 DFS Enabling environment in Chad

A) DFS policy framework

At the regional level

Since 2016, CEMAC has adopted an array of regulations at the regional level to regulate mobile money. The Issuance and management of e-money are governed by Regulation N° 03/16/CEMAC/UMAC/CM and N° 04/18/CEMAC/UMAC/CM/COBAC. The latter sets the conditions for issuing e-money and lays out the roles of relevant authorities and "payment service providers" (e.g., credit institutions, microfinance institutions, and payment institutions) authorized to provide payment services in CEMAC. The "payment institutions" category is subject to the same regulations as financial institutions and specific provisions defined in COBAC Regulation N° 2019/02 on standards applied to establishing payment institutions. This regulation elaborates payment institutions' roles and responsibilities to enable telecommunication operators to set up dedicated subsidiaries and split their telecommunications activities from financial activities. In addition, it also serves as a regulatory framework for new players (primarily fintech companies).

Table 21: Main regional laws applied to DFS

CEMAC regulation N01/11 (September 2011)	The regulation lays down the conditions for issuing digital money in the CEMAC member states
Regulation N 01/GR (October 2011)	The rule defines the roles of the Banking Commission of Central Africa (COBAC) and the Central Bank in the supervision of digital money payment systems
Regulation N° 03/16/CEMAC/UMAC/CM (December 2016)	The rule allows the connection of CEMAC credit institutions to the GIMAC regional payment platform
Regulation N 01/GR de la BEAC (August 2018)	It establishes full interoperability between all Payment Services Providers and payment systems in the CEMAC region.
Regulation 04/18/CEMAC/UMAC/CM/COBAC	It establishes the supervision and oversight of payment services in the CEMAC member states

Source: Author's research

¹⁴² World Bank, 2018. BEAC Strengthening the Capacity of Regional Financial Institutions in the CEMAC region. Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/321341524231758456/africa-strengthening-the-capacity-of-regional-financial-institutions-in-the-cemac-region-project>

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There is a premise for a consumer protection regulatory framework at the regional level. With the WB's assistance, in 2021, BEAC drafted Regulation N° 01/20/CEMAC/UMAC/COBAC on protecting consumers of banking products and services, and is planned to allow service providers, and consumers to understand the risks and benefits associated with financial products, thereby improving their decision-making ability. DFS customers in Chad have low levels of education, particularly for mobile money. As a result, any introduction of a consumer protection regulatory framework shall emphasize raising awareness and introducing redress options.

B) Financial infrastructure

The regional payment infrastructure has modernized in recent years in CEMAC, due to increased mobile phone penetration rate. BEAC manages the regional payment infrastructure through a real-time gross settlement system (SYGMA), mass payment clearance (SYSTAS), payment incident center (*Centre des Incidents de Paiement* – CIP), and the regional switch (GIMAC). The regional payment systems are undergoing a critical transition from infrastructure deployment to widespread adoption and usage of electronic payment instruments and services. An ongoing WB project¹⁴² supports the creation of an integrated, cost-effective platform that would allow current systems enhancement and integration of SWIFT solutions. In addition, the project is financing the purchase of SCOPE software, a modern tool to track transactions in foreign currencies.

System interoperability is limited between the digital financial instruments despite the regional switch platform, GIMAC. As of October 2022, GIMAC had 79 members, including 49 banks, 7 Microfinance institutions (MFIs), 10 mobile operators, 3 aggregators, 5 Treasuries, and 5 partners across the CEMAC countries. GIMAC is the regional card scheme expected to make various interoperable payment points regardless of the transaction type (regionally processed, made by Visa or Mastercard). However, there is no effective interoperability of digital transactions in GIMAC, which also limits mobile payment interoperability within the region and across borders. The BEAC has taken initial steps in establishing full interoperability through GIMAC platform, considering untapped digital payments perspectives, especially in rural areas.

3.2.4 Challenges for DFS uptake in Chad

The uptake of DFS is hampered by several key barriers at infrastructure, regulatory and policy stance, and market level.

3.2.4.1 Legal, Policy and Regulatory Constraints

Regional challenges

The lack of DFS-specific regulatory framework and authorization guidelines hinders ecosystem growth. Institutionally, no laws require mobile operators to open their APIs, as is often the case in other CEMAC countries. With open APIs, an array of innovative solutions could be introduced to the market. These innovations in DFS include agency banking, crypto-assets, interface sharing (API)¹⁴³, aggregation and crowdfunding platforms, QR code-based technologies, Central Bank Issued digital currency, and cybersecurity. Putting in place the right policies and regulations to support the emergence and use of fintech was key to advancing financial inclusion and access to finance for fintechs in countries such as Mexico, South Africa, and Nigeria. Only one fintech has been identified in Chad. At the moment, Fintechs do not fit into the current

¹⁴² World Bank, 2018. BEAC Strengthening the Capacity of Regional Financial Institutions in the CEMAC region. Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/321341524231758456/africa-strengthening-the-capacity-of-regional-financial-institutions-in-the-cemac-region-project>
<https://projects.worldbank.org/en/projects-operations/project-detail/P161368>

¹⁴³ USSD interfaces have been Liberalized.

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categorization of financial service provider, nor is it considered as a mobile money operator, microfinance institution, banking intermediary, or financial institution. As a result, it operates on the margins of regulation or is forced to seek partnerships that are often unsuccessful. Finally, the conditions required to obtain financial service provider licenses are not adapted to most fintech start-ups.

The current regional legislative and regulatory framework authorizes banks, microfinance institutions, and payment institutions to provide a credit of up to 100,000 XAF to mobile money holders, subject to specific conditions. However, this regulation would need further clarification, as many DFS ecosystem actors (particularly e-money distributors) consider it more as a balance advance than digital credit.

Fintechs are not able to offer any credit as BEAC limits the products and services provision to banks and MFIs. Allowing fintech to offer credit (even nano credit) is considered too risky in Chad. Mobile operators have no choice but to partner with a bank or MFI if they want to offer any loan. Experiences from other countries, such as Kenya and Tanzania, show that fintech – when coupled with digital credit – increases the resilience of the most vulnerable populations such as youth, women, and farmers.

Currently, MFIs regional regulation prevent partnerships with fintechs. By regulation, ancillary operations of MFIs must not represent more than 20 percent of operating income (i.e., MFI cannot earn more than 20 percent of their profits from activities other than microfinance services, thus limiting their possibility of getting involved in the distribution of digital payments).¹⁴⁴ This measure discourages partnerships between MFIs, payment service providers, or fintech. It is reinforced by the prohibition of MFIs issuing e-money (subject to license), reducing their role in digital finance. One of the main obstacles is the prohibitive cost of opening branches instead of contracting independent agents. Unlike e-money issuers, MFIs cannot hire third-party agents or issue payment cards to their customers without prior approval from the regulator – a significant burden to the distribution of card-based and mobile wallet-based digital financial services, albeit a potential niche for fintech. In addition, MFIs tend to be less risk-averse than traditional lending institutions and accept broader collateral than banks, which have stricter prudential requirements. Finally, only a few MFIs expanded their business in size and geography.

Non-banking actors, including fintech, cannot participate in the CEMAC clearing and settlement systems. Regulation N°04/18/CEMAC/UMAC/COBAC on payment services in CEMAC allows non-bank structures to offer payment services to users. However, access to payment infrastructures for transaction clearing and settlement still requires a banking license. Furthermore, fintech companies cannot participate in existing clearing and settlement systems in the UMAC.

Access to the USSD channel is not liberalized, hindering the development of the fintech ecosystem in Chad. It is almost impossible to obtain a USSD access code for fintech companies due to (i) unclear access procedures with mobile operators, resulting in unlimited time in granting a code, and (ii) operators conduct a thorough analysis based on compliance with a specific set of specifications for anti-fraud and cybersecurity protection. Access to USSD would allow fintech companies to offer services and reach end-users at low-cost. USSD has proven effective in several countries (e.g., Kenya, Ghana) where the cost of a session can be as low as 1.7 XAF to as high as 5.8 XAF. At the time of writing, the BEAC did not issue any regulatory framework on using USSD in the financial system, as in Nigeria. In addition, there is no Memorandum of Understanding between the Central Bank and ARCEP to legislate these cross-cutting issues.

E-signature and certification are not widely used in the banking and financial sector. While the national telecom regulatory authorities in the CEMAC zone have issued legislation on e-signature and certification but not Chad. However, BEAC has not issued a guideline on the accreditation, evaluation, and qualification

¹⁴⁴ Article 10, Regulation N°01/02/CEMAC/UMAC/COBAC

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procedure for electronic certification. To date, electronic certification service providers operating in the banking and financial sector in the CEMAC zone are not subject to any BEAC accreditation.

Financial exclusion is due to the lack of appropriate identification procedures. Identification is a prerequisite for financial inclusion for citizens, particularly those at substantial risk of exclusion. While the identification of financial system actors is defined by the regulations, the customer and payment service providers' identifications (including fintech) are not explicitly addressed. Regulation N°04/18 (Article 38) briefly mentions the identification procedure; however, further elaboration is still needed. Through, more — particularly those who do not own identity cards and/or are currently excluded from traditional financial systems — will be able to use an array of financial services and other essential public services and initiatives (i.e., social safety net, social protection, disaster, and conflict relief programs) at large. Finally, adapted KYC should also be defined to include these populations, as proven effective in Nigeria and Kenya.

Non-banking actors, including fintech, cannot participate in the CEMAC clearing and settlement systems. Regulation N°04/18/CEMAC/UMAC/COBAC on payment services in CEMAC allows non-bank structures to offer payment services to users. However, access to payment infrastructures for transaction clearing and settlement still requires a banking license. Furthermore, fintech companies cannot participate in existing clearing and settlement systems in the UMAC.

In addition, the development of alternative financing platforms is also hampered by the lack of regulation in CEMAC. Without specific regulations for equity crowdfunding, online fundraising can be considered a public offering, subject to burdensome regulations. Also, fintechs can only access international platforms, provided they have a good network.

Finally, the regional AML/CFT (Anti-Money Laundering – Combating Financial Terrorism) framework does not consider the Financial Action Task Force (FATF) e-Know Your Client (e-KYC) recommendations for financial inclusion, such as the provisions for remote enrollment (e-KYC). However, the framework specifies that financial institutions are held responsible for carrying out operations and provisions. In details, the regulation N°01/16/CEMAC/UMAC/CM on the modalities of application by financial institutions of the harmonized law relating to AML/CFT specifies the provisions to be implemented by financial institutions relating to all operations carried out under their responsibility. This instruction is important and timely regarding the terrorism problems experienced by several countries in the CEMAC countries, including Chad.

3.2.4.2 Institutional constraints

National level

The National Financial Inclusion Strategy (2017-2030) was adopted in 2016 but needs to be updated considering the recent payment innovations. The MoF has been leading the national financial inclusion strategy since 2016. Due to political instability, the establishment of working groups mandated to implement the strategy has been severely delayed. In addition, it is worth noting that there is no regional financial inclusion strategy with a sharp vision of BEAC to increase access to transaction accounts. Through WB-funded Investment Project Financing operation¹⁴⁵, BEAC is designing a regional financial inclusion strategy.

Chad needs to put in place a system to mitigate the risks related to fintech, in addition to the regional consumer protection framework. In recent years, the development of DFS has also instigated additional risks, such as mobile application-related fraud, biometric ID fraud, crypto-related frauds, algorithmic biases, and

¹⁴⁵ World Bank, 2018. Africa - Strengthening the Capacity of Regional Financial Institutions in the CEMAC Region Project. Project Appraisal Document. Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/321341524231758456/africa-strengthening-the-capacity-of-regional-financial-institutions-in-the-cemac-region-project>

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unauthorized push payment scams. Some of these risks are directly created by unscrupulous providers that, even if few, can cause significant harm to customers, particularly the vulnerable populations and the local market.

Regional level

The development of e-commerce, in which many fintechs are operating, is hindered by the payment system model, in CEMAC. To manage their payments, they are forced to establish partnerships with banking institutions, which comes with excessive costs. It would be essential to take effective and practical measures to encourage fintechs to leverage mobile money or QR code-based solutions in offering online payment.

3.2.4.3 *Product and market level constraints*

National level

High fees and transaction costs in opening mobile money account further limit digital adoption. While only 3 percent of Chadian population (people over 12) possesses a national ID card, getting an ID card is complex and involves fees of up to 20,000 XAF (US\$ 30).¹⁴⁶ Transaction costs are still expensive for the population, particularly for the poor. In January 2020, in its Covid 19 emergency plan, the Monetary Policy Committee supported the initiative to prompt payment service providers to lower the costs of e-money transactions and digital payments in the CEMAC, while BEAC encourages the population to use digital payments.¹⁴⁷ Several banks and mobile operators made some transactions free of charge, including money transfers and payments of water and electricity bills. However, service prices were restored in June 2020.

3.2.4.4 *Infrastructure constraints*

National level

The GoC could strengthen its effort in digitizing payments to increase financial inclusion and mobilize internal resources. Several challenges are hindering the digitalization efforts across the administrations, such as the instability of the digital infrastructures, lack of capacity of agents, and limited financial education among the population.

Regional level

The interoperability of payment systems does not include new payment instruments and is ineffective in Chad. The QR code is an instrument that can be used to bypass the USSD code issue and ease digital payments to merchants. Several countries (Ghana, for instance) implemented an interoperable QR code system. However, such payment instruments are not supported by BEAC's interoperability system. Even though Instruction N°001/GR/2018 authorizes the interoperability of payment systems and instruments in CEMAC, its effectiveness is slow in Chad.

The credit market is underdeveloped. The regional credit reporting system suffers from several weaknesses which impact the quality and availability of information about borrower behavior. The BEAC has a credit registry (*Centrale des Risques*), but its effectiveness is hampered by the considerable delay in updating the information collected from the banks. Furthermore, the credit registry does not collect credit from MFIs, which account for many loans. Plans to establish a balance sheet center (*Centrale des Bilans*) and a payment delinquency center (*Centrale des Incidents de Paiement*) are yet to materialize. BEAC has recently established

¹⁴⁶ Mission interviews, January 2022.

¹⁴⁷ BEAC, 2020. Not publicly available

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a regulatory framework for credit information bureaus, elaborating the conditions to exercise, control, and supervise the activities of credit information bureaus in the CEMAC.¹⁴⁸ It lays the foundations for the exploitation of information on customer transactions and ensures the processing of financial information that can promote the development of digital finance by promoting second-generation digital financial services such as digital credit. Finally, the guarantees frameworks are underdeveloped and there is a lack of an efficient and reliable collateral registry. Insolvency frameworks are proven to be ineffective due to the court system's limited capacity.

3.3 RECOMMENDATIONS

Chad DFS state of play and challenges could be addressed through the policy reforms disaggregated in the 3 key areas below:

- National level

R3.1 [High Priority] Enhance the financial management systems to support shift of G2P payments to digital. A mapping of G2P payment streams should be completed as well as technical feasibility study, once these two steps are completed, the GoC could enable automated access to digitized Government data platforms. In particular, whereas G2P payments are seen as the primary means to promote financial inclusion, government collections or P2G payments can also be leveraged for increasing usage of DFS. Chad could leverage on payments for public transport, bills to public utilities, and certain Government services.

R3.2 [Quick Win] Update the 2017-2030 National Financial Inclusion Strategy and set up effective institutional arrangements. There is a need to review the NFIS and accelerate the implementation of the recommendations. It is recommended to review the monitoring and evaluation framework to pilot advancements. More effective institutional arrangements should be developed (now, the strategy is being implemented by a unit of MoF that lacks expertise and funding). Efforts should be intensified to gather international donors and stakeholders to coordinate initiatives to implement financial inclusion projects.

R3.4 [Long Term] Develop a national financial literacy strategy. Designing effective financial education programs should include at minimum four core competencies in the programs: (i) knowledge of digital financial products and services, (ii) awareness of digital financial risks (e.g., online fraud, digital footprint, overborrowing), (iii) digital financial risk control (securing PIN, account and other personal information; avoid spam, phishing, etc.), and (iv) knowledge of consumer rights and redress procedures. These programs should be made available to a broad range of audiences through various delivery channels, including digital and non-digital.

- Regional level

R3.5 [High Priority] Modernize the regional regulatory framework to unlock the uptake of DFS. There is a need for BEAC to develop a new framework conducive for fintech entities, banking agents in the MFIs, banking industries, as well as for digital onboarding of customers through simplified permanent Customer Due Diligence (CDD) procedure. This framework should also clarify roles and responsibilities of providers in the interoperability stance. Also, adopting comprehensive legal measures for personal data protection and privacy will enable DFS providers to expose and use APIs, while adopting legal measures to enable Open banking.

¹⁴⁸ Regulation N° 03/18/CEMAC/UMAC/CM

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Box 9. International experience on regulatory frameworks for DFS

Establish more comprehensive regulatory framework for DFS providers

Regulators and policymakers are encouraging the establishment of new open infrastructure or are reviewing and changing the access criteria for critical financial infrastructure. For example, Peoples' Bank of China is allowing non-bank credit providers to access its credit registry. In other cases, regulators require operators of financial infrastructure to open access to non-banks. Reserve Bank of India required access to payment infrastructure for non-bank e-money issuers. In some cases, new open infrastructures are being created which would be open for all DFS players – for example, in Pakistan and Sierra Leone

Align the consumer protection framework to DFS

For example, in 2016, the Competition Authority of Kenya issued rules requiring providers to disclose all applicable charges for mobile money services before consumers complete a transaction. At the time, most providers were only providing this information after transactions were completed. Furthermore, some regulators have required explicit warnings about product risks and responsibilities and have slowed the “one-click” process by adding intermediate steps to mitigate the risks of aggressive marketing. Product suitability rules are also being adapted to apply to DFS, particularly for digital credit. For example, some countries have required mandatory credit bureau checks, validation of credit models and validation of debt-servicing capacity. Good practices have also been established regarding provider liability for agent behavior and security of funds for e-money accounts.

R3.6 [High Priority] Accelerate the full deployment of the SWITCH to ensure interoperability of transactions.

For DFS to thrive, it is essential to ensure the payment system optimal functioning and interoperability setup. When fully operational, the interoperable and interbank payment network will allow full interoperability of digital payments, international transactions including remittances, payments at point-of-sales (POS), mobile money, and online transactions. Holders of cards issued will be able to execute transactions at all ATMs and POS displaying the system's logo.

R3.7 [High Priority] Boost the access to digital credit by adopting a new decree that (i) allows the regional credit bureau to collect consumer prepaid and post-paid utility data; and (ii) allows alternate credit scoring methodologies to boost micro lending based on big data. This will help break down the information asymmetries that restrict access to finance for creditworthy borrowers and prevent uptake of basic financial products by individuals unable to meet stringent CDD requirements. Not only can technology improve the efficiency and scope of traditional credit reporting systems (for example, facilitating real-time credit decisions), but recent technologies– including fintechs like P2P lenders - can increasingly leverage a range of alternative digital data to assess creditworthiness or use an e-invoice or e-commerce transaction data to offer uncollateralized finance to MSMEs and individuals. Mobile phone transaction histories, e-commerce patterns, social media data, utility payments, and other types of information can be fed into credit scoring models to create more accurate assessments for a larger pool of loan applicants than previously possible, including those consumers with limited credit histories.

R3.8 [Quick win] Align the consumer protection framework to DFS. Regional policymakers have begun adapting rules to ensure clear and timely disclosure by standardizing total-cost metrics for mobile money products and remittances, requiring pricing information to be provided before transactions are undertaken, and adapting disclosure for mobile phone screens. In the longer term, launch a feasibility study for the best design to mitigate financial risks to consumers. Different models in the region have been tested (such as the creation of national consumer protection agency or else to monitor the quality of financial services, to provide financial education, to offer mediation etc.).

FOCUS 3: REGIONAL INTEGRATION

A regional approach supporting the long-term goal of a single digital market can be a win-win solution for all CEMAC countries. The six CEMAC countries¹⁴⁹ represent a total population of about 57 million people (of which 27 percent are under 15 years of age) in a territory of 3 million km² (the size of India). Central Africa is characterized by rapid urbanization (particularly in the Republic of Congo and Gabon) and characterized by climate volatility (such as flash floods and desertification), poor critical infrastructure, hunger and malnutrition, recurrent conflicts and insecurity, and limited economic opportunities, particularly for young women and men. In this context, digital connectivity and technologies can serve as catalysts for reducing extreme poverty and promoting inclusive growth. To achieve this, improving digital connectivity at national and regional levels and increasing the adoption of practical digital skills would be prerequisites.

Chad has much to gain from expanding digital regional integration. Chad's telecommunications sector's poor performance is linked to the country's geographical and economic isolation. The landlocked situation has an impact on the data price, which remains high due to the additional costs of crossing the neighboring countries' backbones to reach the submarine cable systems. Moreover, as neighboring are also poor performers in the digital sector, Chad does not benefit from any knock-on effect for the sector development and is more dependent on the benefits of regional integration. Overall, Chad's geographical location and small domestic market highlight the need for regional and international integration to support external growth, benefit from the regional market through private investment and interregional infrastructures and integrate into regional value chains.

Furthermore, financial market integration will play a key role in helping CEMAC countries attain financial inclusion goals and provide financial support to the vulnerable population affected by COVID-19. The BEAC, through its regional payment system (GIMAC), aims to implement a regional interbank electronic system for electronic withdrawals and payments to extend the reach of financial services. There are three ways to ensure regional financial integration: (i) creating a payment scheme through the provision of payment applications and the specification of use for financial instruments, (ii) switching to ensure interoperability for all market players, and (iii) leveraging processes that bring the financial sector mechanism together (i.e., dematerialization, user security, and flow centralization). However, market players in many countries (including Chad) are yet to connect to this regional payment system. Financial service providers are yet to take full advantage of this system to scale up financial solutions, while consumers frequently face restrictions in using the products and services. Finally, countries can reap the full benefits of an interconnected payment system through policy and regulatory harmonization.¹⁵⁰

Regional integration will require Chad and its neighboring countries to take proactive steps and collaborate. For Chad, this would begin with ensuring full harmonization of its electronic communications framework aligned with CEMAC and ECCAS. Strengthening regional integration would also require boosting business productivity, providing seamless digital payment services, developing human capital, and increasing revenues through cross-border trade. Many challenges would also remain, such as securing and extending the availability of national broadband networks outside the capital cities and updating regulations to improve enabling environment for financial services, digital payments, cybersecurity, data protection and privacy, regional expansion of digital businesses, and tax implications.

¹⁴⁹ Cameroon, CAR, Chad, the Republic of Congo, Equatorial Guinea, and Gabon.

¹⁵⁰ World Bank, 2020. Supporting Africa's Recovery and Transformation: Regional Integration and Cooperation Assistance Strategy Update for the Period FY21–23.

CHAPTER 4

DIGITAL BUSINESSES

Key messages:

- ❖ KM1: Chad's digital ecosystem remains nascent without the building blocks of enabling environment. Strong private and public partnerships would enable Chadian digital businesses to unlock employment opportunities for the fast-growing youth population and contribute to increasing competitiveness in key productive sectors. Chadian digital businesses have the potential to further ensure social, financial, and digital inclusion, particularly for vulnerable populations.
- ❖ KM2: It is essential to aim at increased regional integration to (i) enhance the country's overall competitiveness among ECCAS countries and (ii) boost its exports by extending the digital market opportunities to local businesses.
- ❖ KM3: Chad lags behind in FinTech and E-Commerce compared to the SSA and ECCAS countries, indicating that far-reaching reforms are needed to unlock its FinTech and e-Commerce potential. Effective reforms are required to address various constraints in ensuring digital access, affordability, cybersecurity, and readiness of key traditional sectors.
- ❖ KM4: Weak digital literacy and digital skills are intertwined with demand and supply side obstacles. Public and private sector stakeholders agree that the gaps must be consistently addressed (i) to boost digital adoption by the general population and (ii) fully capture the growth opportunities associated with the digital transformation across productive sectors.

4.1 IMPORTANCE OF DIGITAL BUSINESSES

Digital businesses¹⁵¹ represent a unique opportunity for African economies to nurture and scale MSMEs and entrepreneurship ecosystems, increase efficiency, generate more and better jobs, foster economic integration, and promote the inclusion of vulnerable populations. Fostering economic growth through frictionless economies and leveraging digital solutions in business models are essential pillars of any strategy geared towards generating new (and better) jobs, increasing productivity growth, and improving living standards. Digital businesses serve as a critical foundation to enable traditional businesses (both large and MSMEs) to adopt new digitally enabled business models and solutions, creating positive spill-over effects in the rest of the economy. Before COVID-19, early adopters of digital technologies in the SSA region were likely to have higher productivity levels, output, profits, employment, and wages. More specifically, employment and labor productivity have been higher in firms that use smartphones, digital transaction technologies (such as mobile money to pay suppliers and receive customer payments), and digital management solutions (accounting and inventory control/point-of-sale software).¹⁵² Overall, digital businesses offer employment opportunities for Chad's fast-growing population and can contribute to key economic sectors such as agriculture (e.g., monitoring crops and soil quality) and logistics (e.g., Business-to-customer (B2C) rideshare

¹⁵¹ For the purpose of this report, digital businesses are comprised of two main categories: (i) digital start-ups (early-stage ventures that create new/innovative digital solutions or business models as part of their core products and/or services) and (ii) established digital firms (platform-based and data-driven firms that have passed the initial start-up stage and acquired suppliers, contractors, and consumers).

¹⁵² World Bank, 2021, Africa Pulse. Covid-19 and the Future of Work in Africa: Emerging Trends in Digital Technology Adoption. Available at: <https://www.worldbank.org/en/region/afr/publication/africas-pulse>

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and Business-to-business (B2B) delivery services from production areas to consumer centers), as highlighted in Chad's Private Sector Diagnostic.¹⁵³

Digitization offers unique opportunities for unlocking the potential for growth for Chadian MSMEs. MSMEs make up 90 percent of the private sector and 50 percent of jobs in the SSA.¹⁵⁴ Digital transformation offers an opportunity for Chadian MSMEs¹⁵⁵ to use technology to improve productivity by optimizing core operations, creating new business models, adding value to customer experience, and trading goods and services globally.¹⁵⁶ Both the Chad 2017-2021 Digital Plan and the 2020-2030 Development Plan underscore the importance of the creation of an ecosystem favorable to the development of the digital sector (legal and institutional framework, human capital, digital security, creation of ICT start-ups); to raise the share of the sector in the national economy at a rate between 6 and 8.¹⁵⁷

4.2 DIAGNOSTIC FINDINGS: CURRENT STATE OF DIGITAL BUSINESSES

Chad's digital business ecosystem is at a nascent stage but has recently demonstrated an encouraging growth potential. Chad's private sector operates in one of the most challenging business environments. The formal sector is dominated by a few large (primarily foreign-owned) companies, while small and informal businesses abound. Given its size and fragility, Chad's ecosystem is relatively small compared to aspirational peers (i.e., Ivory Coast, Ghana, Senegal, Rwanda, and Kenya). Despite the government support (at an average of 1 percent), Chad (along with Cabo Verde, Djibouti, Eswatini, and Mauritania) is able to establish only a very limited number of tech hubs in comparison to Nigeria (85), Cameroon (18), Senegal (15), and Mali (14) (Map 2).¹⁵⁸

¹⁵³ World Bank & IFC, 2022, Country Private Sector Diagnostic, Creating Markets in Chad – Playing to its strengths.

¹⁵⁴ Centre for Strategic and International Studies, 2021. Supporting Small and Medium Enterprises in Sub-Saharan Africa through Blended Finance. Available at: <https://www.csis.org/analysis/supporting-small-and-medium-enterprises-sub-saharan-africa-through-blended-finance>

¹⁵⁵ UNCTAD 2022 Outcome Report, eCommerce Week. Data and Digitalization for Development Available at: https://unctad.org/system/files/information-document/eWeek-2022-Outcome-Report-FINAL_1.pdf

¹⁵⁶ Deloitte, 2019. Reimagining the Role of Technology; by Kark, K., Briggs, B., and Tweardy, J. Available at:

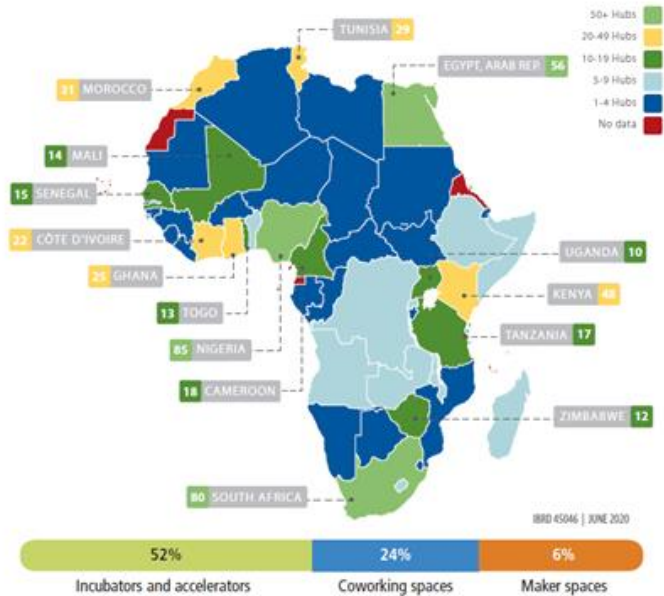
<https://www2.deloitte.com/us/en/insights/focus/cio-insider-business-insights/reimagin-ing-role-of-technology-business-strategies.html>

¹⁵⁷ Chad 2020-2030 Development Plan

¹⁵⁸ GSMA and Briter Bridges, 2019. 618 Active Tech Hubs in Africa. Available at: <https://briterbridges.com/618-active-tech-hubs>

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Map 2. Growth of Africa’s Tech Hubs Landscape, 2019



Source: Guiliani and Ajadi 2019. GSMA and Briter Bridges.

Chad’s digital ecosystem development has accelerated in recent years, with demand-driven local digital firms. Despite many hurdles, promising digital startups addressing local needs are entering the Chadian market. Most Chadian digital businesses and startups (i.e., MossoSouk, Soukabir, and Livrado) focus on business-to-customer (B2C) products and services in retail and commerce, media, advertising, and fintech. Digital businesses and entrepreneurs are increasingly relying on local and regional support organizations (Table 22) – some of which are collaborating closely with international partners – where these digital businesses seek (i) leadership mentoring and digital skills training programs and (ii) networking and partnership opportunities. Some entrepreneurship support organizations (ESOs), such as Wenaklabs and Chad Innovation Hub have been engaging with talented youth to develop an innovation ecosystem and culture. Other ESOs such as the Professional Integration Training Platform (PIT), have been more focused ont female-led digital businesses. These ESOs tend to engage their respective audience through learning events, technical and financial support, exhibitions, fairs, digital contexts, study tours, and capacity building seminars.

Table 22. Key organizations supporting digital business in Chad

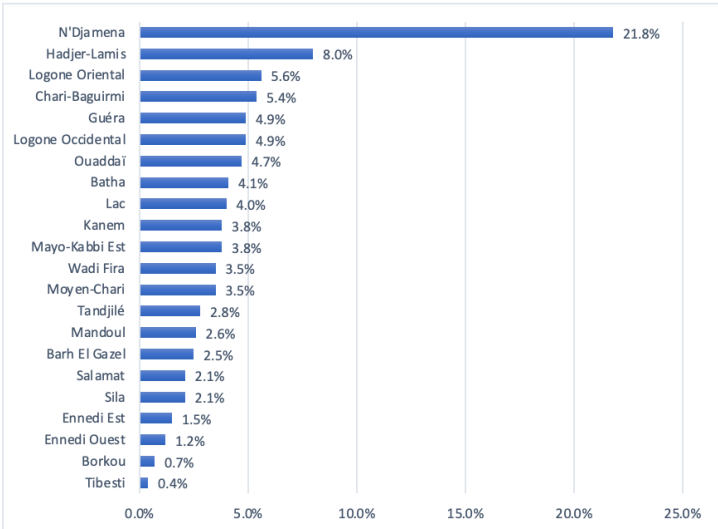
Category	Organizations
ESOs	Technidev, Wenaklabs, Chad Innovation Hub, the House of Small Business, the Professional Integration Training Platform (FIP)
Professional Associations	General Confederation of SMEs (<i>Confédération Générale des Petites et Moyens Entrepris – CGPME</i>), the Network of Young Entrepreneurs for Development and Leadership in Chad, BET AL NADJAH
Local Universities and African eLearning Platforms	University of Adam Barka d'Abéché, Universit of N'Djamena, University of Doba, National School of Administration, OkpaBac, Samaskull, Meltwater Entrepreneurial School of Technology among others.
Telecommunications Services Providers	Soudachad, Airtel (Groupe Bharti), Tigo (Maroc Télécoms) and Sotel
Internet Services Providers	REINDOS Technologies, SAO Net, PrestaBist, Albidey Net, AGBS, HTCE, Ilnet Télécoms, Miracle Télécoms, Focon-Net Télécoms, Global Tech, Manano Tel, T-Rex Net, Sotel.

Digital businesses in Chad are highly concentrated in urban areas. Broadband connectivity is underdeveloped in inland towns due to a lack of infrastructure expansion. As a result, digital entrepreneurship is developed

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primarily around urban areas with broadband access, particularly in N'Djamena with 21.8% of existing digital infrastructure, followed by Hadjer-Lamis (8.0%) and Logone Oriental (5.6%), Chari-Baguimi (5.4%) , and other urban centers to a very limited extent (Figure 17). Expanding businesses and building a customer base in rural areas is particularly challenging for digital businesses due to limited broadband access (resulting in low adoption, affordability, and demand) and persistent electrical infrastructure constraints. These limitations also have a negative impact on digital product and service adoption with related disparities per regions across the country.

Figure 17. Distribution of BTS by region (2018)



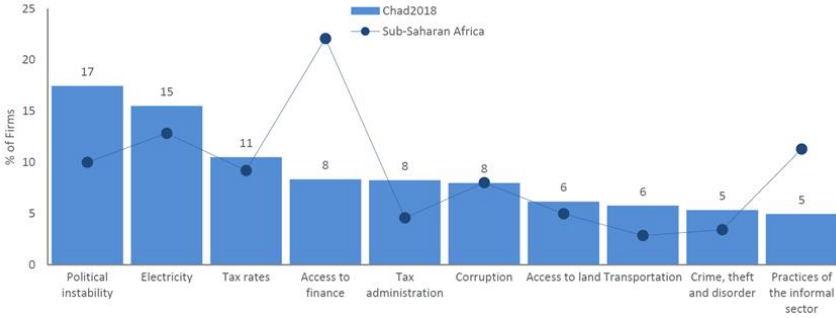
Source: Strategic ICT Development Plan 2020 –2030

Taxation, access to finance, insecurity, social and political instability, weak investment environment, and macroeconomic shocks result in the country’s low attractiveness to foreign direct investments. Limited critical infrastructure and reliable energy are the most significant challenges for Chadian digital businesses. The country has one of the lowest electricity access rates in the world. Only 11 percent of the population had access to electricity (versus the SSA average of 48 percent), with significant disparities between urban (20 percent) and rural (2 percent) areas.¹⁵⁹ Enterprise Survey 2018 highlights political instability, electricity and tax rates as the top three major constraints for businesses in Chad. (Figure 18) Taxation and public policy remain cumbersome for digital businesses, requiring a deposit of 20 million XAF to start a business. Furthermore, limited access to finance for early-stage firms continues to be a significant roadblock to growth and scale-up, particularly those offering innovative business models. Decrease in remittances – which often serves as another source of funds – further impacts the local business growth. In addition, low digital literacy, digital skills, and awareness are significant constraints on the supply and demand of digital products and services. Finally, the low adoption of DFS and the absence of payment gateways stifle opportunities for online transactions.

Figure 18. Top Ten Business Environment Constraints in Chad (2018)

¹⁵⁹ National Electricity Emergency Plan (NEEP), 2022.

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Source: World Bank Group, 2018. Enterprise Surveys in Chad

Despite the challenges in establishing and operating digital business in Chad, several promising digital start-ups carved out innovative solutions addressing local needs. During COVID-19, young companies, shopkeepers, and individuals leveraged digital solutions in developing solutions for business transactions, product delivery, online training, and audio-based social media interactions mainly targeting illiterate populations and persons with disabilities (Box 10). Some offer innovative solutions in the health sector. Dam Box, an online platform, provides information and awareness support to local blood banks, which contributes to increasing their bloodstock, meeting the growing demands, and reducing the mortality rate.

Box 10. Start-up use case: An innovative local social application - MossoSouk

Founded in 2015, MossoSouk (Chadian Arabic for “trade market”) is the first Chadian online shop for merchants, shopkeepers, and individuals to sell products through the platform. While building the platform, the team faced several challenges ranging from political and economic instability to a lack of digital culture and intermittent Internet access. The team spent two years surveying local markets in N’Djamena and raising awareness and benefits of the platform among traders. As a result, more than 120 individuals and businesses have subscribed to the platform, showcasing how digital solutions can cultivate business growth. In addition, the company also provided digital entrepreneurship training courses for young Chadians looking into starting innovative, demand-driven, digital businesses as part of Chad’s “Generation ABCD” (AnyBodyCanDream) venture, funded by UNICEF, which seeks to promote innovation and pro-active citizenship among youth.¹⁶⁰ Finally, in September 2017, the company won the Digital Innovation Prize, a national award worth US\$ 18,000.

The following section considers some of the critical constraints to digital businesses in Chad, including the regulatory and institutional environment, access to finance, support structures, and human capital.

4.2.1 Policy underpinnings

Specific digital business and entrepreneurship frameworks have yet to be considered. The main national ICT development policies defined and implemented strategies and action plans focused on the overall sector. However, Chadian entrepreneurs (including digital) continue to face a weak business regulatory environment, particularly high cost of starting a business and taxation. Consequently, Chad consistently ranks among the lowest performing countries in the Global Competitiveness Index (even ranked the last in 2019).¹⁶¹

¹⁶⁰ Thomson Reuters Foundation, 2017. Young Chadians develop digital cures for social, and economic ills. Available at: <https://www.reuters.com/article/us-chad-tech-youth-idUSKBN1CL16B>

¹⁶¹ World Economic Forum, 2019. The Global Competitiveness Report 2019. Available at: https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

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Lack of effective dialogue leads to inappropriate policies, hampering private sector development and public-private partnership. This engenders further setbacks to MSMEs and startups vulnerable to inappropriate tax policy or external shocks than large firms. Consequently, digital entrepreneurs primarily operate informally to subsist and avoid the associated costs (registration, taxes, etc.) that become prohibitive when intending to operate in the formal market.

Access to Finance

Funding channels tailored to MSMEs and digital entrepreneurs' needs are limited. In Chad, 1919the ratio of domestic credit to the private sector as a percentage of GDP in 2021 was about 9.3 percent compared to the SSA average of 38 percent of GDP.¹⁶² In addition, private credit for MSME financing remains limited, and credit constraints are particularly acute for micro-firms and female entrepreneurs. In addition to cross-cutting constraints (i.e., identification issues, formalization, absence of adequate regulatory framework) limitations in primary financing vehicles prevail.

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The primary financing vehicles are credit guarantees, direct lending, equity participation, grants, and subsidies. For early-stage digital entrepreneurs, collateral requirements and high-interest rates posed by local banks hinder the opportunities for direct lending. This is even more pronounced among women entrepreneurs, who traditionally have limited access to collateral (such as land titles). To date, there are no supporting mechanisms (including grants and credit guarantees) elaborated by the GoC for early-stage firms and startups. Concessional debt and equity would allow start-ups to grow beyond the pilot stage and prepare for private financing. In this context, international partners (including AfDB, AFD, European Union, and WBG) are engaged through donor-supported funds and programs, which alleviate the financing constraints in the ecosystem. Furthermore, there is a growing need to support youth and women in digital entrepreneurship, as it is proven essential in many neighboring countries. In October 2022, Mali identified and financed 1,223 businesses through the Youth Business Creation Support fund (*Fonds d'appui à la création d'entreprise par les jeunes – FACEJ*) funded by the Danish Embassy. There is also an increasing need to develop the digital entrepreneurship ecosystem in Chad as several neighboring countries establish digital hubs, incubators, and partnerships across the region. For instance, Burkina Faso established 2 incubators (KeoLID and Sira), incubated 84 projects (including 26 in rural areas), and trained 1,732 individuals with fundamental digital entrepreneurship skills under the WB-supported eBurkina project.¹⁶³

4.2.2 Support System and Culture

In Chad, the digital entrepreneurship ecosystem mainly comprises two types of businesses: traditional ICT service providers and digital startups and young firms. Traditional ICT service providers offer standard ICT services (i.e., hardware, software, IT services) in local and regional markets. Startups and young firms develop innovative products and services (or a combination of the two). A few ICT service providers are equipped with highly qualified teams of professionals as founding partners, who often gained professional experience abroad and funded the company by personal savings, award, or a service contract with a large corporation, government entity, or an international development organization.

Despite the country's strong culture in trade and commerce, entrepreneurial skills remain weak among MSMEs due to constraints of the enabling business environment. It's only in recent years that entrepreneurship is beginning to be integrated into school and university curricula. Many young Chadians have no professional experiences other than the ones they create on their own as entrepreneurs. They also

¹⁶² World Bank, 2022. World Development Indicator. Ratio of domestic credit to the private sector as a percentage of GDP. Available at: <https://data.worldbank.org/indicator/FS.AST.PRVT.GD.ZS?locations=TD-ZG>

¹⁶³ World Bank, 2016. Burkina Faso – e-Burkina Project. Project Appraisal Document. Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/297631484073715323/burkina-faso-eburkina-project>

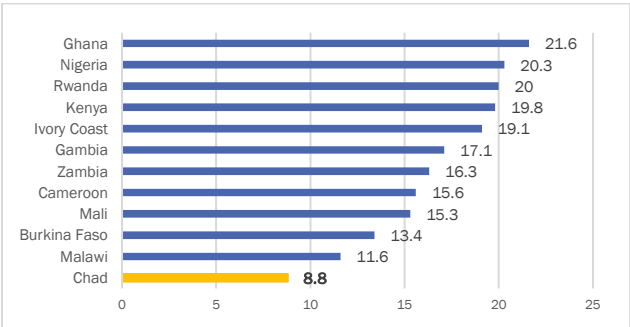
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endeavor to look for more entrepreneurial pathways to subsist as public service recruitment declined over the years, and limited public resources due to numerous economic hurdles (e.g., oil price drop, health crisis, current inflationary trend). Various initiatives (such as Youth Entrepreneurship Fund and innovation training seminars)^{164, 165} have been developed by government agencies, donors, and civil society to encourage entrepreneurship through training, workshops, and grant credit (up to 70 percent guaranteed by the GoC), among others. In addition, Higher education programs, public and private institutes (e.g., ENASTIC, University of HEC-Tchad) are beginning to integrate entrepreneurship and innovation modules into the curricula in recent years. However, Chad lacks national digital entrepreneurship policies that would support the enabling environment through (grant programs, private investment, angel financing etc.) needed by local Chadian startups and the rapidly rising young population seeking employment.¹⁶⁶ Given all the structural uncertainty and the limited market size, most entrepreneurs prefer to mitigate risks by focusing on proven digital business models in traditional activities such as agribusiness and retail. The large-scale digital solution is yet to be developed in Chad as this would require network effects only possible in the context of a mature enabling environment or a regional market.

As per business training and support in Chad, the unavailability of appropriately skilled talent is a major constraint in the digital ecosystem. Hiring qualified employees is a constraint for startups. In addition, having a highly qualified management team is the single most unique characteristic identified across African startups making commercial progress.¹⁶⁷ In this sense, the Chadian startup founders also face capacity constraints, as potential investors pay particular attention to the management team’s competency when deciding whether to invest.

In 2019, Chad ranked last out of 137 economies in the Global Entrepreneurship Index¹⁶⁸ (GEI), a perception-based ranking of entrepreneurship ecosystems (Figure 20). Across the 14 GEI sub-scores – including start-up skills, risk acceptance, internationalization, human capital, and product innovation – Chad has many foundations to build a favorable environment for entrepreneurship to keep up with other peer and aspirational countries. There is a need to strengthen the entrepreneurial culture in the education systems to boost entrepreneurial mindsets such as risk-taking, continuous learning, innovative thinking, and action-taking.

Figure 20. Global Entrepreneurship Index, Chad and selected peer and aspirational countries (2019)



Source: GEI, 2019

¹⁶⁴ Ministry of Finance and budget, 2020. Lancement officiel du fonds pour l’entrepreneuriat des jeunes. Available at: <https://www.finances.gouv.td/index.php/component/k2/item/601-lancement-officiel-du-fonds-pour-l-entrepreneuriat-des-jeunes>

¹⁶⁵ <https://chadinnovation.org/chad-innovation-summit-3/>

¹⁶⁶ The National Directorate for Employment Promotion (Office National pour la Promotion de l’Emploi (ONAPE)). ONAPE is in charge of promoting employment and private initiative, encouraging the socio-professional integration of young people, assessing labor needs and adjusting training adapted to employment, updating labor statistics and authorizing the employment of nationals and foreigners.

¹⁶⁷ World Bank, 2018. Enterprise Survey, Chad 2018

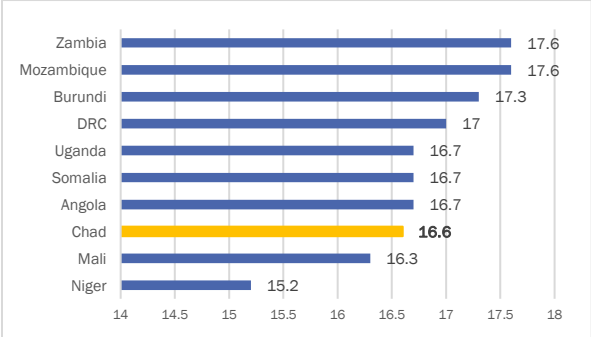
¹⁶⁸ GEDI & GEN 2019. Global Entrepreneurship Index, The Global Entrepreneurship and Development Institute

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4.2.3 Human Capital

Youth unemployment is becoming a significant issue that GoC needs to address through effective planning and investment structures, modernizing the key productive sectors, and accelerating sector-wide digital transformation. It is estimated that as many as 75,000 graduates (including in STEM) seek employment several years after completing their programs.¹⁶⁹ This trend will likely persist without effective measures to meet the demands of growing young workforce, as reflected in the country’s median age of 16.6 (Figure 21). Finally, Chad’s ranks second lowest (at 0.39) out of 191 countries in Human Development Index.¹⁷⁰

Figure 21. Median age of Chad and comparative countries



Source: United Nations World Population Prospects, 2019

Limited digital literacy and skills also contribute to the demand and supply side obstacles for digital businesses. As access to digital connectivity expands, most policymakers, private sector actors, and digital entrepreneurs highlight that targeted digital skills development efforts must be strengthened to (i) alleviate the gap in demand and supply of local ICT professionals, (ii) address the digital entrepreneurship skills gaps, and (iii) leverage digital literacy and skills adoption to build digital culture and practical adoption of digital solutions.

4.2.4 Markets

Adoption of new technologies among businesses in Chad lags behind most of the comparable peers (i.e., Mali, Burkina Faso, and Malawi) in addition to the increasing gap between its aspirational peers (i.e., Ivory Coast and Rwanda), as reflected in its firm-level technology absorption value (Figure 22).¹⁷¹ In addition, more granular and timely data is needed to evaluate and monitor the country’s efforts in both short and long term.

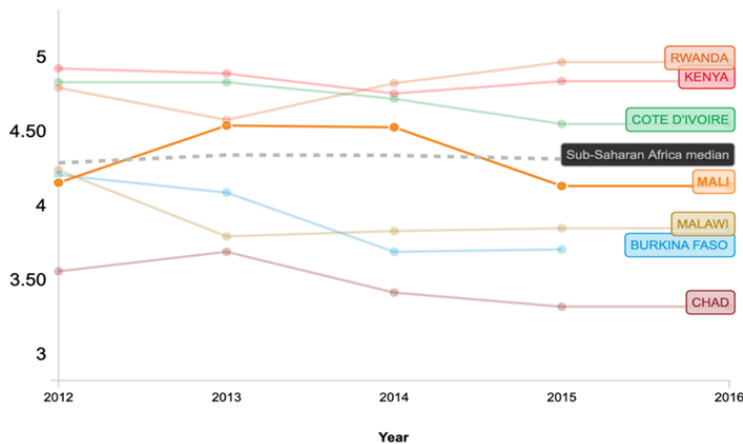
¹⁶⁹ Reuters, 2021. The real threat to Chad’s military rulers: unemployed youth. Available at: <https://www.reuters.com/world/africa/real-threat-chads-military-rulers-unemployed-youth-2021-04-30/>

¹⁷⁰ UNDP, 2022. 2021/22 Human Development Report. Available at: <https://report.hdr.undp.org/intro>

¹⁷¹ World Economic Forum, 2016. Global Information Technology Report. Available at: <https://www.weforum.org/reports/the-global-information-technology-report-2016/>

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Figure 22. Firm Level Technology Absorption Index 2016, Chad and Selected Peers



Source: World Economic Forum, 2016. Firm-Level Technology Absorption Index 1-7 (7=Best)

Chadian digital businesses need to position themselves with competitive offerings that could be integrated into regional and international value chains. Given the small market size and the potential of its diaspora, targeting the regional markets can be an important avenue for Chadian digital businesses to compete and grow. As businesses enter the regional private investment and value chains, they can emphasize certain key hurdles that the GoC needs to address and enhance the country's domestic and regional competitiveness. Leveraging its diaspora and recent development in innovative startups, Chad could also target regional markets by expanding to neighboring markets by removing the main obstacles impeding digital businesses.

The affordability of broadband connectivity, the lack of operational payment gateway systems and the logistical challenges are the main roadblocks for local digital businesses to grow their businesses to national and international markets. These challenges also make it difficult to maintain delivery costs low when operating between and beyond urban areas.

4.2.5 Rise of FinTech and E-commerce

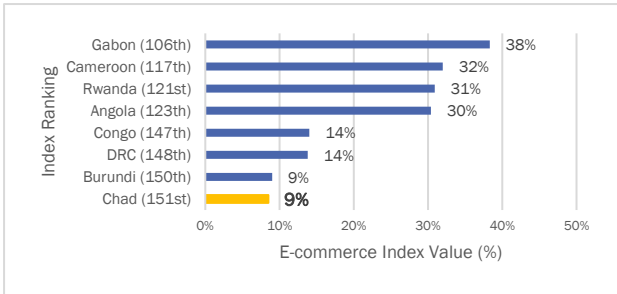
Far-reaching reforms are needed to unlock FinTech in Chad. Similar to other nascent ecosystems, the major challenge remains the enabling environment for their development not only for specific use cases, but also over the course of the digital transformation of the economy. The small and concentrated Chadian banking sector (three out of nine commercial banks hold two thirds of total assets)¹⁷² has resulted in less competition, under-developed financial services, and limited financial inclusion. As a result, the development of disruptive technologies, private sector engagement, and poverty alleviation is constrained. By leveraging digital solutions, Chad's fintech ecosystem can increase the quality and reach of financial services and build new customer segments, particularly in remote rural areas. In the context of a financial inclusion strategy, the GoC can address the key policy, technology, and user adoption, which is a prerequisite for creating enabling environment for the fintech ecosystem and increasing competition among financial service providers. As a result, the most vulnerable populations would be ensured with financial inclusion, social protection, education, and health services. Once the building blocks of enabling environment are established, fintech can continue to digitally transform key productive sectors. As discussed in the DFS chapter, Fintech can stimulate growth across the digital economy by providing accessible and affordable alternative financial service for citizens.

¹⁷² Association Professionnelle des Etablissements de Credit (APEC) of Chad, 2019. Newsletter (refer to CPSD Chad Access to Finance overview p. 54)

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A comprehensive framework is needed to enable e-commerce in Chad. The country ranks among the poor performers (151st out of 152) on the UNCTAD e-Commerce index ¹⁷³ due to numerous constraints, including high costs across strategic levers and provision in transportation, telecommunications, and digital payment. In addition, the absence of a consumer protection framework for DFS and limited usage of e-signature and certification resulted in a low proportion of Internet shoppers (23 percent of Internet users) in the region as of 2017 (Table 23). E-commerce is yet to emerge despite the increasing demand in the context of a wide-geographic coverage and security challenges in Chad. Most of the trade and commerce primarily use fax, email, and phone as means of communication. In addition, social media buyers and sellers mainly rely on social media platforms (i.e., Meta and LinkedIn) to connect while the transaction is executed in person. As of January 2022, there were 572.6 thousand social media users in Chad, and the use of social media platforms reached 21.8 percent between 2020 and 2021 ¹⁷⁴ – twice the growth rate of the internet usage rate (10.4 percent).

Figure 23. e-Commerce Index 2020, Chad and selected ECCAS peer countries



Source: UNCTAD, 2020. B2C E-commerce Index

Table 23. Internet shoppers as a share of Internet users and of population, 2019

Economy	Share of Internet users (%)	Share of population (%)
Mali	14	2.6
Ghana	15	4.2
Rwanda	9	1.0
Ivory Coast	12	3.2
Senegal	10	2.6
Burkina Faso	9	1.6
Malawi	13	2.3
Chad	23	1.7

Source: UNCTAD, 2020. B2C E-Commerce Index

¹⁷³ UNCTAD, 2020. The UNCTAD B2C e-Commerce Index 2020 – Spotlight on Latin America and the Caribbean. Available at: https://unctad.org/system/files/official-document/tn_unctad_ict4d17_en.pdf

¹⁷⁴ DataReportal. Digital 2022: Chad. Available at: <https://datareportal.com/reports/digital-2022-chad>

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4.3 RECOMMENDATIONS

Chad can accelerate digital transformation across productive sectors of the economy by improving the enabling environment of digital businesses and startups and fostering regional integration to improve access to wider market for Chadian firms. Startups are the base of the pyramid from which high-growth firms¹⁷⁵ emerge; they are not necessarily technology-based but tend to represent 20 percent of the private sector yet produce 80 percent of the output. These powerful engines create jobs, increase productivity, and generate positive spillovers for other businesses across the value chain. The following recommendations are based on the four main strategic areas of policymaking¹⁷⁶ on creating enabling environment for the emergence of next-generation entrepreneurs, followed by extensive consultations with relevant MDAs and the private sector counterparts, investors, entrepreneurs, and other ecosystem actors:

- i. Improving the enabling environment for digital businesses, particularly startups.
- ii. Enacting policies that foster skills development and support the overall ecosystem.
- iii. Introducing early-stage financing and supporting start-up capital development.
- iv. Creating digital market opportunities.

Improving the enabling environment for digital businesses, particularly startups

R4.1 [Quick Win]. Develop a national digital entrepreneurship strategy and an effective public-private dialogue mechanism to strengthen partnerships, address key enabling policies, and promote national and foreign direct investments – that would support and sustain the development of MSMEs and startup ecosystems across productive sectors. Lack of effective dialogue is leading to inappropriate policies which hampers private sector development. Startups suffer from inappropriate tax policy which discourages developing business in the digital sector, instead of promoting digital entrepreneurship and business growth.

R4.2 [High Priority]. Launch a business registration program to better qualify new and existing startups and digital businesses to the development of the innovation ecosystem more effectively. As part of this program, an online platform reinforcing a holistic view of the startup ecosystem through a real-time and data-oriented dashboard would help map and evaluate the ecosystem evolution to better assess the bottlenecks Chadian businesses are experiencing in the early stage and in the growth phase. Moreover, it would offer more granular and real-time data to permit more targeted policy measures, business support mechanisms, investment pipeline visibility for continuous private sector development, and continued advisory and mentoring program activities. Finally, it would inform the entire entrepreneurship ecosystem and raise awareness of the importance of market and financial diagnostics relative to emerging digital startups and businesses.

R4.3 [Long Term]. Strengthen the enforcement of the Consumer Protection Act and the Intellectual Property Rights Act. In addition to developing specific regulations in the domain of e-signature, e-transactions, and e-payments, GoC could also strengthen the enforcement of the Consumer Protection Act and the Intellectual Property Rights Act, in which online consumer protection provisions are missing. The UNCTAD e-Trade Readiness Assessment for Chad (2020) and the UNCTAD e-Commerce and Law Reform program¹⁷⁷ could assist in building the necessary institutional capacity.

Enacting policies that foster skills development and support the overall ecosystem

¹⁷⁵ Grover Goswami, Arti; Medvedev, Denis; Olafsen, Ellen., 2019. High-Growth Firms-: Facts, Fiction, and Policy Options for Emerging Economies. Washington, DC: World Bank. Available at: <https://openknowledge.worldbank.org/handle/10986/30800>

¹⁷⁶ IFC, n.d. Creating Markets for Start-Ups in Africa. Available at:

https://www.ifc.org/wps/wcm/connect/news_ext_content/ifc_external_corporate_site/news+and+events/news/cm-stories/cm-africa-startups

¹⁷⁷ UNCTAD, n.d. eCommerce and Law Reform Program. Available at: <https://unctad.org/topic/e-commerce-and-digital-economy/e-commerce-law-reform>

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R4.4 [Quick Win]. Strengthen the development of the digital innovation ecosystem through Entrepreneurship Support Organizations (ESOs) to equip local and diaspora digital entrepreneurs with targeted technical and leadership skills. More broadly, a digital skills development plan would need to consider the full spectrum of digital skills ranging from literacy to advanced and specialized skills across productive sectors. Moreover, support for digital entrepreneurship should be integrated into the digital skills development plan to boost effective collaboration between B2B, B2G, public and private stakeholders. The private sector actors – particularly digital entrepreneurs, startups, businesses, and firms – must play a pivotal role in (i) addressing gaps in digital skills, (ii) sustaining a vibrant digital entrepreneurship ecosystem, and (iii) leveraging proven models with the potential to scale up and offer best practices and lessons to other providers willing to make inroads in digital space.

R4.5 [High Priority]. Develop targeted support programs and increase assistance to female entrepreneurs, focusing on addressing women’s specific needs and challenges to reduce gender inequalities. Women face numerous challenges related to restricted mobility, low account ownership, limited financial inclusion, restrictive social norms, and gender stereotypes in the country. Both women-only and all-gender networking programs support business and competency-building skills. However, all-gender networking programs tend to be male dominated, which can be discouraging for female entrepreneurs. Gender-inclusive digital entrepreneurship support programs and initiatives would serve as important gateways to progress toward gender parity in both the public and private sectors. In addition, it’s essential to create an enabling environment and provide targeted support for women in digital (such as women-exclusive network building, mentorship, technical, and leadership training programs) across the ESOs, professional associations, and other intermediaries. Such programs shall showcase female role models and examples of career pathways taken by women leaders in the digital sector and provide knowledge-sharing and mentorship opportunities to attract more women and young girls to the sector.

Introducing early-stage financing and supporting start-up capital development

R4.6 [High Priority]. Strengthen the capacity of existing ESOs and increase the number of ESOs including in secondary cities and newly connected remote areas to provide services tailored to support MSMEs, local ventures, and diaspora (as well as their partnership with large private firms). GoC could consider financing initiatives that foster digital adoption. As part of such initiatives, GoC and private partners can establish an online platform to facilitate linkages between digital ecosystem stakeholders. Other use cases can be focused on the digital transformation of key sectors (e.g., mining, agriculture), incentivizing public-private partnerships, and increasing MSMEs’ digital adoption and participation in the digital economy.

R4.7 [Long Term]. Ensure a holistic approach for large pipeline of competitive digital entrepreneurs and startups. GoC should actively engage with the growing angel investor, private equities, and venture capitals in the region to improve their capacity and ability to invest and foster a better match between the investors and digital entrepreneurs, particularly those graduating from ESOs. There is a growing demand for grants and investment for early-stage digital startups and firms – particularly those graduating from ESOs – as access to finance is becoming a challenge with only a limited pipeline available by a few venture capital firms and angel investors. In addition, many startups and entrepreneurs require further support to be investment ready. A investment readiness program across the ESOs targeted at early-stage digital businesses would be crucial in ensuring business continuity and growth. It can prepare businesses for growth-stage by providing tailored training, mentoring, and other advisory services. The program will also increase cooperation between all public and private stakeholders and builds large pipelines of highly qualified entrepreneurs and startups for early and growth-stage investors.

Creating Digital Markets

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R4.8 [High Priority]. Increase participation of MSMEs in public projects and national value chains. Private sector actors highlight the major hurdles to the participation of small businesses in public tenders and national value chains. As the nation's top ICT purchase, GoC should foster competitive procurement to support MSMEs' participation in the bidding of public projects. By incentivizing competitive partnerships between large and small firms (including women-owned businesses), MSMEs' participation can be increased, and they can have a chance to develop their capacity and competency to eventually tackle the regional market. In addition, it would encourage State-Owned Enterprise to support MSMEs' participation as one of their procurement best practices.

R4.9 [Long Term]. Promote increased regional market integration and facilitate the competitiveness of Chadian digital firms to capitalize on regional market opportunities. A good starting point would be conducting a comprehensive comparative analysis of the existing digital firms in the country. Based on its findings, GoC could consider creating targeted programs, incentives, and support mechanisms to build a cluster of firms in each market category. In regard to implementing a functional payment gateway, GoC should consider enabling a cross-border e-commerce value chain facilitated by an appropriate regulatory framework. Implementing efficient transport and logistics systems would require (i) removing regulatory barriers to access cross-border capacity and (ii) spearheading cross-border regional cooperation, and (iii) adopting national reforms for cross-border Special Economic Zones (SEZs). Finally, as Chadian digital businesses scale up, they must offer competitive products and services that could lead them to regional and international markets.

FOCUS 4: CLIMATE CHANGE & DIGITAL

Chad is the third most vulnerable country in the world to climate change. Chad ranks 182nd out of 182 countries on the Notre Dame Global Adaptation Index 2020, indicating high vulnerability and low readiness to combat the effects of climate change.¹⁷⁸ Climate change is leading to desertification, reduction in agricultural and pastoral areas, degradation of forests, soil, and natural habitats, a loss of biodiversity, reductions in the level of water tables, and the silting of oases in Chad. It is modifying agriculture seasons, disturbing the biological cycles of crops, reducing cereal crop production, and extending the time and space necessary for transhumance. The impacts of natural disasters are further amplified as Chad lacks adequate domestic financial resources to adapt and mitigate.

Digital transformation can play a key role in Chad's climate change adaptation and mitigation efforts as a cross-cutting enabler across all sectors:

- **How can digital technologies be leveraged for climate change adaptation?** Relevant policies and measures could include modelling adaptation scenarios for future climate change, adopting disaster risk management, and deploying early warning systems. The lack of digital connectivity in large areas of country means that the GoC cannot swiftly and effectively provide the necessary disaster relief assistance in the event of drought, flooding, or other natural disasters. Furthermore, Chad lacks the capacity to generate climate-smart agricultural technologies and practices. Poor broadband connectivity is one of the main barriers to the adoption of smart agricultural applications. In this regard, universal access to the internet has the potential to stimulate digital transformation in all sectors, including innovative and effective responses to climate shocks. Overall, economy-wide digital transformation will also be a key factor in improving Chad's resilience and adaptation through improved and uninterrupted access to basic services and public assistance in case of emergencies. In addition, improved data hosting practices could decrease the risk of data loss in the context of extreme events such as floods and landslides.
- **How can digital technologies be leveraged for climate change mitigation?** This can be achieved in all sectors and verticals of GoC, such as smart agriculture (e.g., through precision farming), smart transport, and improved energy efficiency. In addition, digital technologies can help reduce carbon emissions. Currently, service users in Chad often must commute (often at long distance) to access or use public services. Most services are not digitized, requiring physical presence and transport to service access points at some point in the process. Many government records and systems are paper-based, resulting in significant use of associated resources and human errors. Digitized processes can thus help reduce Greenhouse Gas (GHG) emissions, including by reducing the need to travel to deliver or access services.

Policies and measures should specifically consider the climate change resilience and greening of digital infrastructure, including through the adoption of best available technologies. Safeguarding digital infrastructure is crucial for infrastructure resilience, as rain and flood risks have a significant impact on the quality and availability of fiber optic cables and IT facilities. Such deficiencies can lead to network and service outages that leave communities disconnected, resulting in the loss of valuable government data if infrastructure is not built and managed properly. In the event of extreme rainfall and flooding, telecommunications infrastructure such as underground fiber optic cables could be severely affected. Other risks include but not limited to: flooding of buildings that house server rooms, duct and silt damage, scoured

¹⁷⁸ Notre Dame Environmental Change Initiative (ND-GAIN), 2021. Country Index, Vulnerability and Readiness. Available at: <https://gain-new.crc.nd.edu/country/chad>.

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cables and damaged foundations, cable heave from uprooted trees from flooding. Appropriate measures to mitigate these risks would consist of (i) enforcing redundancy by design for digital infrastructures; (ii) building capacity for emergency response planning and preparedness, notably by integrating climate data and risk analysis with respect to digital infrastructure planning and deployment; and (iii) developing new green and resilient digital infrastructure policy and regulatory guidelines to ensure the robustness of the infrastructure (e.g., investments in flood barriers, cooling systems, re-routed in the event of damage caused by extreme weather conditions). It is also recommended to promote the setting-up of energy efficient telecommunications networks in line with best practice — for instance, utilizing energy-efficient technologies when extending network infrastructure as well as energy-efficient data management and hosting systems.

CHAPTER 5

DIGITAL SKILLS

Key messages:

- **The adoption of digital skills remains critically low while training programs are generally limited to nonexistent, with limited pathways to participation in the digital economy.** Increased school participation has not necessarily resulted in improved education quality in terms of numeracy and literacy skills – the building blocks for developing digital skills. Consequently, Chad faces a challenging pathway to boost digital skills adoption.
- **Chad lacks a qualified workforce to meet the local and regional labor market demand due to low education attainment and digital skills acquisition.** As a result, employers do not necessarily view local talents to be adequately skilled and resort to recruiting from neighboring markets. In addition, digital businesses face various challenges in increasing investment and expanding their products and services due to the lack of enabling environment (i.e., limited infrastructure and a series of fragility hurdles), which would create employment opportunities.
- **Tertiary education and private sector actors are playing a key role in responding to the digital skills gap through targeted basic and specialized training programs.** These programs include undergraduate and post-graduate programs in the STEM field, donor-funded skills development initiatives, and ESOs. These initiatives and programs must be strengthened to address Chad’s digital skills supply and demand gap.
- **Boosting the adoption of digital skills will be crucial to meet the country’s development objectives.** Due to low supply and demand for the digitally skilled labor market and the public to incentivize digital culture, Chad cannot reap the full benefit of the digital economy. Targeted and coordinated efforts across all productive sectors will be crucial for Chad to accelerate digital skills development.

5.1 IMPORTANCE OF DIGITAL SKILLS

A digitally competent workforce is essential to productivity, innovation, and growth, as well as digitally literate citizens who can safely interact and benefit from social media platforms, e-commerce, and digital services. Before COVID-19, the digital economy represented an estimated 22.5 percent of the global economy.¹⁷⁹ The demand for digital skills at all levels is expected to grow in Africa, as nearly 65 percent of job holders recruited at African companies reported requiring basic digital skills.¹⁸⁰ Studies show that the pandemic accelerated global digitization by at least seven years,¹⁸¹ and economies expect a rise in digitized services and a shift to remote work.¹⁸² The adoption of digital solutions and digital skills at all levels plays a significant role in the FCV context¹⁸³ as digital technologies are increasingly used for information dissemination, awareness-raising campaigns, data collection and analysis, identification, essential public service delivery, e-commerce,

¹⁷⁹ Knickrehm, M., Berthon, B., & Daugherty, P. (2016). Digital disruption: The growth multiplier. Accenture Strategy. <https://www.anupartha.com/wp-content/uploads/2016/01/Accenture-Strategy-Digital-Disruption-Growth-Multiplier.pdf>

¹⁸⁰ IFC, 2019. Digital Skills Sub-Saharan Africa: Spotlight on Ghana. Available at: https://www.ifc.org/wps/wcm/connect/ed6362b3-aa34-42ac-ae9f-c739904951b1/Digital+Skills_Final_WEB_5-7-19.pdf?MOD=AJPERES

¹⁸¹ McKinsey & Company, 2020. How COVID-19 has pushed companies over the technology tipping point and transformed business forever. Available at: <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/how-covid-19-has-pushed-companies-over-the-technology-tipping-point-and-transformed-business-forever>

¹⁸² World Economic Forum, 2020. The Future of Jobs Report. Available at: http://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf

¹⁸³ Peace Direct, n.d. Digital Pathways for Peace – Insights and Lessons from a Global Online Consultation. <https://www.peacedirect.org/wp-content/uploads/2020/08/PD-LVP-Tech-Report.pdf>

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education, and governance. In addition, citizens need basic digital skills to access remittances and various social protection programs such as cash transfers.¹⁸⁴

Demand for digital skills in the SSA outstrips supply. Shortages in digital skills are likely to be pronounced across sectors, creating a sense of urgency to strengthen the human capital base by improving the digital capabilities of children, youth, and adults to reap the full benefits of digitalization, strengthen local businesses and economy, and foster regional and international integration. The supply and demand gap will further widen if not addressed as digital transformation initiatives in the government, the agricultural, manufacturing, and services sectors become prevalent.¹⁸⁵

A holistic notion of digital skills represents the capacity to access, manage, integrate, communicate, evaluate, and create information safely and appropriately.^{186,187} Digital skills are not limited to an individual's ability to use ICT devices and access to electronic information. Based on frameworks from the WB, the United Nations Educational, Scientific, and Cultural Organization (UNESCO), and the European Commission, the digital skills spectrum can be presented as skill levels ranging from basic, intermediate, advanced, and highly specialized across seven core domains (Figure 24). These proficiency levels depend on the type of problems one can solve, the degree of independence in dealing with specific tasks, and the strategic approach to solving problems (Box 11). To be digitally skilled means to have confident and critical use of ICT for retrieval, assessment, storage, production, presentation, exchange of information, and participation in collaborative networks online.¹⁸⁸ Overall, digital skills can help bridge the digital divide, bringing more people online and empowering individuals to become self-directed, community-focused, and resilient lifelong learners. A digitally skilled individual is likewise critical to creating the consumer base for emerging digital products and services.

¹⁸⁴ World Bank, 2020. World Bank Group Strategy for Fragility, Conflict, and Violence 2020–2025. Available at: <https://documents1.worldbank.org/curated/en/844591582815510521/pdf/World-Bank-Group-Strategy-for-Fragility-Conflict-and-Violence-2020-2025.pdf>

¹⁸⁵ IFC, 2019. Digital Skills in Sub-Saharan Africa — Spotlight on Ghana. Available at: https://www.ifc.org/wps/wcm/connect/ed6362b3-aa34-42ac-ae9f-c739904951b1/Digital+Skills_Final_WEB_5-7-19.pdf?MOD=AJPERES&CVID=mGkaj-s

¹⁸⁶ Law, N., D. Woo, J. de la Torre, G. Wong, 2018. A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4. 2, Information Paper No. 51. Montreal: UNESCO Institute for Statistics.

¹⁸⁷ Carretero, Stephanie, Riina Vuorikari, Yves Punie, 2017. The Digital Competence Framework for Citizens. Publications Office of the European Union. Available at: <https://publications.jrc.ec.europa.eu/repository/handle/JRC106281>

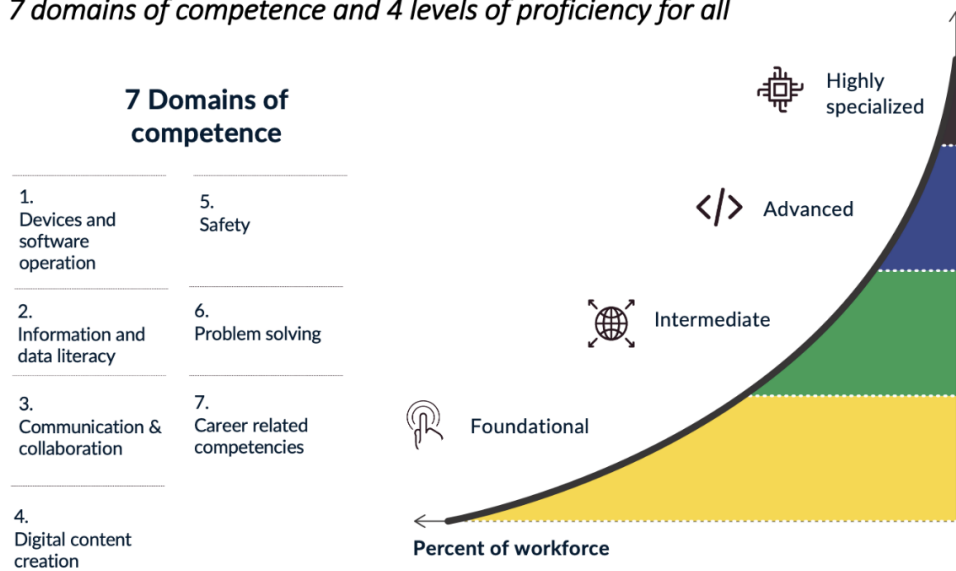
¹⁸⁸ IGI Global, 2008. An Ethical Perspective on ICT in the Context of the Other. In Handbook of Research on Digital Information Technologies: Innovations, Methods, and Ethical Issues, pp. 506-521. <https://www.igi-global.com/dictionary/information-communication-technology-ict-competence/7585>

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Figure 24. Digital Skills Spectrum

Digital skills

7 domains of competence and 4 levels of proficiency for all



Based on the UNESCO Digital Literacy Global Framework and EU DigComp 2.1

Source: Bashir and Miyamoto, 2020

Box 1.1. Digital Skills Pyramid

Digital skills represent an individual's ability to use their knowledge, skills, and attitudes to access new or existing information and communication technologies. With such skills, a digitally skilled individual can (i) analyze, select, and critically evaluate digital information, and (ii) develop a collaborative knowledge base while engaging in organizational practices.¹⁸⁹ Digital skills exist on a spectrum and can be presented as skill levels increasing from basic (i.e., mobile, and smart phone use) to highly specialized (i.e., idea, product, or service generation), and competencies gained from formal and informal learning environments.¹⁹⁰ Within the digital skills spectrum, there are users, specialists and practitioners, and e-business skills:

- i. User skills refer to basic skills that enable safe use of digital devices, platform, and applications (e.g., email, search engines, word processing, and spreadsheets). Basic skills are core skills and part of a broader framework of 21st century skills (which include reading comprehension, writing and numeracy skills and the ability to solve problems and adapt). In a digitally focused economy, all adults should have basic user skills for access to services and as a digital consumer.
- ii. Specialist and practitioner skills are intermediate and advanced ICT users who complete tasks with guidance and well-defined routine and nonroutine tasks independently. They also refer to intrinsically driven professionals who design, develop (program), and maintain digital tools and manage ICT systems. These skill sets are essential for acquiring, maintaining, and distributing digital offerings.
- iii. E-business skills are advanced and highly specialized skills that encompass more multifaceted digital and entrepreneurial skills, including abilities to ingeniously apply and contribute to the creation of new business models, processes, products, and services and resolve complex problems. These skills are essential for innovation and expanding the digital economy.¹⁹¹

¹⁸⁹ EU, 2017. The Digital Competence Framework for Citizens. DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use. Available at: <https://publications.jrc.ec.europa.eu/repository/handle/JRC106281>

¹⁹⁰ OECD, n.d. The Future of Education and Skills 2030. Available at: <https://www.oecd.org/education/2030-project/>

¹⁹¹ van Welsum, D., & Lanvin, B. (2012). Technology leadership skills: vision report, prepared for the European Commission. <http://eucases.eu/fileadmin/eSkillsVision/documents/VISION%20Final%20Report.pdf>

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5.2 DIAGNOSTIC FINDINGS: CURRENT STATE OF DIGITAL SKILLS

Chad is characterized by an acute scarcity of digital skills due to poor quality and limited opportunities for digital learning. The country faces a challenging pathway to cultivating its population's digital skills. Policies and government efforts must target developing a digitally skilled workforce and incentivize digital entrepreneurship.¹⁹² This means focusing on foundational literacy, numeracy skills, and digital literacy to digitally access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately.^{193,194}

5.2.1 Policy Underpinnings

There is no stand-alone digital skills development strategy, policy, or framework in Chad. However, GoC recognizes digital skills as a means of “ending unemployment and expanding entrepreneurship in the knowledge and traditional sectors.”¹⁹⁵ In the new Strategic Plan for the Development of Digital and Post for 2020-2030, the MPEN set objectives for (i) developing human capital by boosting research and development, (ii) promoting the creation and supply of local content and applications, (iii) enhancing cybersecurity for digital trust, and (iv) building inclusive digital access to goods and services. There is a concerted effort to rehabilitate, strengthen, modernize, and align Technical Vocational Education and Training (TVET) to labor market needs and policy objectives, as reflected in the National Development Plan (NDP) (2017-2021)¹⁹⁶ and donor-funded projects such as Skills Development for Youth Employability Project (SDYEP).¹⁹⁷ In addition, increasing the adoption of digital literacy and skills amongst the citizens is a primary directive of the GoC, targeting technical, industrial, secondary, and tertiary institutions. Yet, essential building blocks for acquiring digital skills are still missing, and digital skills acquisition amongst the public remains low to reach development objectives of leveraging the digital economy for growth.

The Ministry of Higher Education, Research and Innovation formulated a national plan for ICT development in higher education in 2018¹⁹⁸ with objectives to (i) improve ICT infrastructure within formal education, (ii) train students and teachers to apply new technologies in teaching and learning, (iii) provide students and teachers with access to educational software, (iv) improve the Internet access for students and teachers to make full use of educational resources and conduct online and distance learning (v) establish online management platform in higher education institutions to improve management efficiency, and (vi) develop Massive Open Online Courses (MOOC) Centre in Chad's higher education institutions. However, due to the absence of its ratification, action plan, and funding, the plan is yet to be adopted. Considering higher education's role in providing workforce and transferable digital skills, it is imperative to support such efforts through appropriate funding to cultivate digital skill adoption through formalization and standardization across higher education.

¹⁹² James, Jeffrey, 2019. Confronting the Scarcity of Digital Skills in Developing Countries. *Development Policy Review*. 39. 10.1111/dpr.12479.

¹⁹³ UNESCO Institute for Statistics, 2018. A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4. 2, Information Paper No. 51. Montreal.

¹⁹⁴ European Union, 2017. The Digital Competence Framework for Citizens.

¹⁹⁵ African Telecommunications Union, 2021. Digital Skills Development Tops Agenda as ICT Ministers in Africa Meet to Commemorate African Telecoms/ICT Day. <https://www.atuuafrica.com/2021/12/07/digital-skills-development-tops-agenda-as-ict-ministers-in-africa-meet-to-commemorate-african-telecoms-ict-day/>

¹⁹⁶ The Republic of Chad, 2017. Plan National de Développement 2017-2021. — *Ensemble, œuvrons pour un Tchad toujours fort, solidaire et prospère*. The strategic framework for the education sector has the following objectives: (i) universal foundational literacy and numeracy; (ii) increased school attendance in standardized and high-quality curricula; (iii) improvements in technical and vocational education curricula; and (iv) improvements in quality of higher education as well as research and development.

¹⁹⁷ World Bank, 2019. Chad — Skills Development for Youth Employability Project. Project Appraisal Document. Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/895611561428070563/chad-skills-development-for-youth-employability-project>. The project seeks to improve access to skills technical and vocational training (including digital skills), meaningful employment, and strengthen the technical and vocational education and training sector.

¹⁹⁸ UNESCO International Centre for Higher Education Innovation, 2018. 2018 Seminar on ICT in Higher Education Management for Chad. Improving ICT Competency to Promote Higher Education Development. Available at: <https://www.ichei.org/Uploads/2019/01/2018-Seminar-on-ICT-in-Higher-Education-Management-for-Chad.pdf>.

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5.2.2 Digital Skills Supply

The Chadian education system covers the full education pipeline but still falls short on the equity, access, and quality metrics. Chad's education system has primary, secondary, upper-secondary, TVET, and higher education institutions, which include certificate, undergraduate, and graduate programs (Table 24). Formal education is free of charge until the age of 14 (grade 9). However, schools are subsidized, with parents paying school fees and teacher salaries. With cost being a barrier to entry for many, parents delay their children's start of school or forego schooling. Truancy is more likely to occur in rural areas and particularly among girls. In Chad, the early marriage rate stands at 67 percent as of 2020, which leads to early childbearing and school dropout for girls.¹⁹⁹ Consequently, secondary education enrolment rates are higher among male students - exemplified by Chad's secondary school enrolment gender parity index of 53 girls to every 1 boy.²⁰⁰ This results in gender gaps in school enrolment and completion, poverty, and substantial untapped human capital.

Table 24. Chadian Education System

Education	School/Level	Age	Years	Enrolment	Completion	Description
Primary	Primary School	6	6	73.2 net 89.2 gross	40.56 F 33.6 M 47.4	1st level: <i>Cours Préparatoire 1</i> (CP1) 2nd level: <i>Cours Préparatoire 2</i> (CP2) 3rd level: <i>Cours Elémentaire 1</i> (CE1) 4th level: <i>Cours Elémentaire 2</i> (CE2) 5th level: <i>Cours Moyen 1</i> (CM1) 6th level: <i>Cours Moyen 2</i> (CM2) Certificate/Diploma awarded: <i>Certificat d'Etudes Elémentaire et Primaire Tchadien</i> (CEPE)
Secondary	Secondary School	12-16	4	18.9 net 20.6 gross	15 F 9.9 M 20.2	Lycées and collèges d'Enseignement Généraux (CEG) Lycées include a lower division (premier cycle) with 4 levels and a higher division (second cycle) with 3 levels. CEG's only have four levels. Certificate/Diploma awarded: <i>Baccalaureat de l'Enseignement Supérieur</i>
		16-19	3	Female 13.3 net 14.3 gross		
	TVET (Commercial/Industrial Technical School)	16-19	3	Male 25.4 net 26.8 gross		Institutions only have a higher division (<i>second to terminal</i>). Graduates can receive a technical and vocational training diploma, technical training diploma, or professional training diploma depending on school and pathway
Post-secondary	Technical School		2			<i>Brevet de Technicien Supérieur</i> (Certificate)
Tertiary	I Cycle		4	1.3 (gross)		<i>Licence</i> (Bachelor)
	II Cycle		1-2	Female 1.5		<i>Maîtrise</i> (Master)
	III Cycle		3	Male 5		Doctorate (PhD)

Source: Scholaro, n.d. Education system in Chad²⁰¹

Chadian learning achievements remain below their peers. Chad's human capital index on future worker productivity stood at 30 percent, with average expected years of schooling at 5.3 (4.4 female, 6.2 male) and learning adjusted years of school at 2.8 years (2.3 Female, 3.4 Male), all below the SSA average.²⁰² As of 2019, 94 percent of 10-year-olds are unable to read and comprehend age-appropriate text, while 92 percent do not achieve proficiency by grade 6.²⁰³ Moreover, compared to aspirational countries within the Education Systems Analysis Program of CONFEMEN (*Programme d'Analyse des Systèmes Educatifs de la CONFEMEN — PASEC*), Chad's adult literacy rate is 22.3 percent, youth literacy rate is 30.8 percent, and 37 percent of youth are not enrolled in formal education, training, or employed. As a result, Chad ranks in the bottom three of its structural peers (Benin, Guinea, Mali, and Niger) and well below its top peer country (such as Burkina Faso) in

¹⁹⁹ Bray-Collins, Elinor, Nalini Andrade, and Catherine Wanjiru, 2022. Gender and TVET in Africa: A Review of the Literature on Gender Issues in Africa's TVET Sector." *Futures of Education, Culture and Nature-Learning to Become 1*: 151-171. Available at: <https://aspjee.org/sites/default/files/2022-09/FECUN%2B%282022-1%29%2C%2BGender%2Band%2BTVET%2Bin%2BAfrica%2C%2BElinor%2BBray-Collins%2Bet%2Bal.pdf>

²⁰⁰ World Bank, n.d. World Development Indicators. Secondary School Enrollment, GPI, Chad, Available at: <https://data.worldbank.org/indicator/SE.ENR.SECO.FM.ZS?locations=TD>

²⁰¹ Scholaro, n.d. Education System in Chad. Available at: <https://www.scholaro.com/pro/Countries/Chad/Education-System>.

²⁰² Scholaro, n.d. Education System in Chad. Available at: <https://www.scholaro.com/pro/Countries/Chad/Education-System>.

²⁰³ World Bank, 2022. Chad Learning Poverty Brief. Available at: <https://documents1.worldbank.org/curated/en/099158507212230683/pdf/IDU04f233f870822404b210a29607fa8f0de6eb8.pdf>.

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the percentage of minimum proficiency level among students. Finally, the pandemic further resulted in over 3 million children experiencing school disruption, with only 32 percent being able to continue learning through distance learning (i.e., via radio, mobile phone, or television).²⁰⁴

Table 25. Human Capital Index, Chad and selected countries, 2020

2020	Human Capital Index ²⁰⁵	Expected Years of School by 18	Harmonized Test Scores [300 – 625]	Learning Adjusted Years	Learning Poverty Index (%) ²⁰⁶	PASEC (%)
Chad	0.30	5.3	333	2.8	94	92.2 M, 92.6 F
Structural Peers						
Benin	0.40	9.2	384	5.7	56	
Guine	0.37	7	408	4.6	83	78.1 M, 77.4 F
Mali	0.32	5.2	307	2.6	90	
Niger	0.32	5.5	305	2.7	90	86.9 M, 84.1 F
Aspirational Peers						
Burkina Faso	0.38	7	404	4.5	74	67.4 M, 66.7 F
Ivory Coast	0.38	8.1	373	4.8	83	79 M, 76.2 F
Ghana	0.44	12.1	307	6		
Kenya	0.55	11.6	455	8.5		
Senegal	0.42	7.3	412	4.8	69	61.8 M, 56.5 F
SSA average	0.40	8.3	374	5.0	87	

Source: World Bank, 2020 & 2022.

Chad's TVET programs are an essential, practical, and direct way to gain employable skills but structural challenges remain. The Chadian TVET landscape includes two industrial technical high schools, 4 industrial technical secondary schools, 21 high schools specialized in commerce, and 18 apprenticeship and training centers for short-term training programs.²⁰⁷ Most training centers are established in urban cities, leaving rural communities behind, particularly those at high risk of being digitally excluded (such as girls representing only 5 percent of TVET students).²⁰⁸ With no direct link to employment statistics or employers' needs, TVET graduates obtain training diplomas that do not match labor force needs. For TVET institutions, capacity remains critically low, as most technical schools and colleges struggle to operate with little to no critical infrastructures (such as electricity), adequate equipment, sustainable funding, and hands-on applications to maintain continuity. Finally, few centers focus on agriculture – a sector that employs over 75 percent of the workforce²⁰⁹ and accounts for 54 percent of the GDP.²¹⁰

GoC put forward various initiatives to address educational system's access, quality, and capacity challenges. As a response to school lockdown amid COVID-19, MPEN and the Ministry of National Education and Civil Promotion launched e-learning platforms, EduTchad and Tchad-Educatic, containing online courses, pedagogic materials, and toolbox from elementary to secondary level to ensure continuous learning. In 2021, ADETIC launched sixth additional multimedia community center in Salamat region as part of the new Strategic Plan for the Development of Digital and Post (2020-2030).²¹¹ In addition, the GoC intends to address the

²⁰⁴ UNICEF, 2021. Education & COVID-19 Case Study: Chad – Accelerating school reopening in Chad using an integrated approach. Available at: <https://www.unicef.org/chad/media/1586/file/Accelerating%20school%20reopening%20in%20Chad%20using%20an%20integrated%20approach..pdf>

²⁰⁵ World Bank, 2020. The Human Capital Index 2020 Update: Human Capital in the Time of COVID-19. World Bank, Washington, DC. Available at: <https://openknowledge.worldbank.org/handle/10986/34432>

²⁰⁶ World Bank, 2022. Chad Learning Poverty Brief. Available at: <https://www.worldbank.org/en/topic/education/brief/country-learning-poverty-briefs>. Accessed October 2022.

²⁰⁷ World Bank, 2019. Chad – Skills Development for Youth Employability Project. Project Appraisal Document. Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/895611561428070563/chad-skills-development-for-youth-employability-project>.

²⁰⁸ World Bank, 2020. The Human Capital Index 2020 Update: Human Capital in the Time of COVID-19. World Bank, Washington, DC. Available at: <https://openknowledge.worldbank.org/handle/10986/34432>

²⁰⁹ International Labour Organization, 2021. ILOSTAT database. Available at: <https://ilostat.ilo.org/data/>

²¹⁰ World bank, 2022. World Development Indicators. Agriculture, forestry, and finishing, value added (% of GDP) – Chad. Available at: <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=TD>

²¹¹ Resilient Digital Africa, 2021. Chad – Multimedia centers are growing all over the country. Available at: <https://resilient.digital-africa.co/en/blog/2021/01/11/chad-multimedia-centers-are-growing-all-over-the-country/>

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emerging demand for digital skills and technology across TVET and higher education institutions. In 2019, the GoC proposed an array of digitalization efforts in the education system, such as (i) developing online and open-access knowledge-sharing repositories, (ii) adopting integrated management of information systems for higher education, (iii) developing digital platforms for online learning and pedagogy, (iv) rolling out “train-the-trainers” program to improve technical and operational capacities among the TVET institutions, (v) developing critical infrastructure networks (i.e., electricity, fiber optic networks, and intranets), (vi) applying tax-exemption for IT equipment, and (viii) establishing new training centers, particularly in the rural areas.²¹² In this context, GoC initiated several programs in the formal education system, including (i) expanding the national fiber optic backbone, (ii) launching Community Multimedia Centers, and (iii) building the capacity of the ENASTIC to build advanced digital skills among the teachers, trainers, and specialist. However, the context of fragility and conflict obstructs and hinders sustained results, as projects (such as WB-funded SDYEP)²¹³ face implementation challenges in their TVET expansion and modernization efforts.

Box 12. ICT Survey Results of Urban High School Students and Teachers

In 2017, 300 high school students and 104 teachers from 28 institutions were surveyed by researchers at the University of N'Djamena,²¹⁴ to take stock of the pedagogic use of ICT among the participants. The self-reported results showed that students are interested in gaining digital skills while teachers are open to leverage digital solutions in pedagogy. However, 15 percent of students gained digital skills through school and very few reported digital skills beyond basic / user level. Thus, TVET and computer training centers serve as the main providers of training programs for students to obtain digital skills beyond basic level. The main findings of the survey as follows:

- 42.9 percent of schools do not have electricity in the classroom
- 72 percent of teachers knew some digital skill (of which 64% percent obtained skills through training centers and 37 percent through tertiary education)
- 63 percent of teachers acquired digital skills by the time they graduated from their programs
- 49 percent of students knew how to use an digital tool (of which 15 percent learned from school, 32 percent learned outside of classroom, 2.3 percent self-taught)
- All teachers and 90 percent of students used phones
- 42.8 percent of students and 70.2 percent of teachers used a computer (of which 21.15 percent for academic purpose)
- 9 percent of students do not have a course where computer tools are used
- 80 percent of students and 75 percent of teachers did not know about programming
- 82.67 percent of students and 93.07 percent of teachers have interest in integrating ICT in pedagogy

Chad's higher education institutions in STEM are the main providers of advanced digital skills. Chad has over 10 universities, 6 colleges, and 4 higher education schools.²¹⁵ However, the gross enrolment of tertiary education stands at 3.25 percent (SSA average 9.46).²¹⁶ The leading STEM institutions are the University of N'Djamena, the Institute of Science and Technology of Abéché, the Polytechnic University of Mongo, the ENASTIC, and five more colleges. These institutions offer undergraduate, graduate, and doctoral programs in computer science (covering Pascal and JAVA programming languages), telecommunications, multimedia, ICT management, engineering, and mathematics. In addition, ENASTIC conducts scientific and applied research, promotes scientific dissemination, and prepares its students for career pathways in local digital firms through an internship program.²¹⁷ As the country strives toward modernizing the higher education system, leveraging regional or international platforms, initiatives, and networks will be essential for Chad to strengthen the collaboration between educational and research institutes. In this regard, the GoC is developing a National

²¹² World bank, 2019. 5th PASET Forum: Destination Digital Africa: Preparing our Youth for the Future. Available at: <https://www.worldbank.org/en/events/2019/04/22/5th-paset-forum>

²¹³ World Bank, 2019. Chad Skills Development for Youth Employability Project. Project Appraisal Document. Available at: <https://projects.worldbank.org/en/projects-operations/project-detail/P164297?lang=en>

²¹⁴ MBAIOSSOUM Bery Leouro, Mahamat Atteib Doutoum, Dionlar Lang, 2018. Smart Education in Chad. *International Journal of Computer Trends and Technology* 55, no. 1 (2018): 17-21. Available at: <https://www.ijcttjournal.org/2018/Volume55/number-1/IJCTT-V55P104.pdf>.

²¹⁵ UNESCO International Centre for Higher Education Innovation, 2018. 2018 Seminar on ICT in Higher Education Management for Chad. Improving ICT Competency to Promote Higher Education Development. Available at: <https://www.ichei.org/Uploads/2019/01/2018-Seminar-on-ICT-in-Higher-Education-Management-for-Chad.pdf>.

²¹⁶ World Bank, 2022. World Development Indicators. School enrollment, tertiary (% gross) — Chad. Available at: <https://data.worldbank.org/indicator/SE.TER.ENRR?locations=TD>

²¹⁷ The ENASTIC has 50 courses, 115 students, 24 instructors, and partners with 9 private companies. Each program offers a 10-week internship program to (i) develop tech incubators and digital start-ups, (ii) train students according to market needs, (iii) promote hands-on training structures, (iv) promote student recruitment, and (v) create an alumni network.

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Research and Education Network (NREN), TchadREN, which will be a member of the West and Central African Education and Research Network (WACREN). Once operational, TchadREN will provide connectivity services, scientific resources, and collaboration support for research and development for academic institutions and relevant MDAs. Finally, the GoC also proposes activity-based structures for identifying needs and performance metrics, implementation, and monitoring and evaluation.

Box 13. Tech4Tchad Project

Funded by the French Embassy in Chad, the Tech4Tchad project²¹⁸ was approved in the amount of €800,000 (520 million XAF) to provide skills development training programs targeted at Chadian youth and women in ICT to support employment, digital entrepreneurship, and digital innovation and reduce the intermediate/advanced digital skills gap. It also advocates for policies and improving business environment conducive to digital enterprises and will establish a digital database for research and development in environmental geosciences.²¹⁹

The project will be implemented between 2021 and 2023 by Simplon.co (an African association based in Dakar, Senegal) and Make Sense (a non-profit organization) in partnership with local Chadian actors, WenakLabs, Chad Innovation, The University of N'Djamena, and the Institute for Research and Development. It aims to engage 500 people and 50 organizations through the “Tech4Good” movement in partnership with 25 actors from the scientific community. It also enables an array of mentorship programs in collaboration with 20 corporations and Non-Governmental Organizations (NGOs).

Throughout the project implementation, Tech4Tchad will offer certified training programs in digital management, database development, web design, online HTML & CSS3, and skills development such as digital collaboration. It also organizes digital hackathons and professional networking events.²²⁰ In addition, Tech4Tchad aims to share lessons learned to build a Tech4Tchad Community scaling up the project coverage and aligning the application of digital solutions for national priorities.

Chadians gain digital skills through informal means and the daily use of smartphones. 52.2 percent of the population has smartphones (of which 39.5 percent have 3G), up to 19 percent have used the internet in the last three months,²²¹ and 3.4 percent are active on social media through smartphones.²²² However, the cost of mobile internet remains high as the price of 2GB of data-only mobile broadband basket represents 24.1 percent of GNI per capita.²²³ In addition, 15.2 percent have mobile money accounts, 13.4 percent used online banking to access their accounts, 19.4 percent have sent or received digital payments, and 2.5 percent have completed online commercial transactions.²²⁴ Despite such active use of smartphones for daily life, it is still expensive to use digital tools and gain digital skills for Most Chadians. In 2019, less than 1 percent of women reported having any digital skills, while only 3.4 percent of men reported having at least one out of nine digital skills measured by the Multiple Indicator Cluster Survey (MICS) by UNICEF (Table 26).²²⁵

Table 26. ICT Usage in Chad

Demographic	Use computer in last 3 months	Owns a mobile phone	Use mobile phone once a week in last 3 months	Use the internet in last 3 months	Used the internet once a week in last 3 months
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²¹⁸ Embassy of France in Chad, 2021. *Annonce d'un FSPI numérique «TECH4TCHAD»* Available at: <https://td.ambafrance.org/Annonce-d-un-FSPI-numerique-TECH4TCHAD>

2021 Activity Report. Makesense. <https://france.makesense.org/wp-content/uploads/sites/6/2022/06/activity-report-makesense-2021.pdf>. Accessed October 2022.

²¹⁹ L'Institut de recherche pour le développement, n.d. *Grâce aux avancées de Tech4Sahel, une nouvelle initiative a vu le jour au Tchad sous le nom de Tech4Tchad*. Available at: <https://www.ird.fr/tech4tchad-un-nouvel-horizon-pour-un-developpement-du-sahel>.

²²⁰ Tech4Tchad, n.d. Available at: <https://tech4tchad.org/>

²²¹ DataReportal, 2022. Digital 2022: Chad. Available at: <https://datareportal.com/reports/digital-2022-chad>

²²² Internet World Stats. n.d. Chad. Available at: <https://www.internetworldstats.com/africa.htm>

²²³ ITU, 2020. ICT Price Baskets. Available at: <https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/IPB.aspx>

²²⁴ The Little Data Book on Financial Inclusion 2018 - <https://openknowledge.worldbank.org/bitstream/handle/10986/29654/LDB-FinInclusion2018.pdf>. Accessed February 2022.

²²⁵ UNESCO & the National Institute Statistics, Economic and Demographic Studies, 2021. MICS Survey Republic of Chad. Available at: https://mics.unicef.org/news_entries/186/JUST-RELEASED-CHAD-2019-DATASETS-AND-SURVEY-FINDINGS

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Men	4.1%	70.7%	64.9%	6.7%	4.2%
Women	1.1%	31.8%	32.6%	0.7%	0.4%
Boys (15-19 age)	1.4%	47.8%	44.1%	4.6%	2.4%
Girls (15-19 age)	1.3%	21.3%	24.6%	0.9%	0.6%

Source, UNESCO, 2021. MICS Survey

Educators express challenges in retaining digitally skilled teachers and trainers due to the conflict and fragility, as local talents routinely emigrate for better economic and social opportunities. In 2022, Chad ranks 13rd in the Human Flight and Brain Drain Index, indicating high displacement with disproportionate economic and development impact.²²⁶ As a result, Chad remains at the start of its digital journey primarily due to its talent scarcity, ranking last in digital readiness (141st out of 141 countries)²²⁷ and network readiness (130th out of 130 countries).²²⁸

Box 14. Education Sector Reform Project in retaining community teachers

The WB-funded Education Sector Reform Project²²⁹, the community teachers in rural areas were hired by the GoC to compensate for the absence of teachers. The project is led by the Agency for the Promotion of Community Initiatives in Education (*Agence pour la Promotion des Initiatives Communautaires en Education – APICED*) in coordination with the Ministry of National Education and Civic Promotion (*Ministère de l'Education Nationale et de la Promotion Civique – MENPC*), the community teachers' payment platform mitigates issues of sparse and/or high-risk traditional banking mechanisms and payment errors. The platform also improves transparency, efficiency, and data collection for performance management and evaluation, and boosts the retention of teachers. The project exemplifies the advantages of digital technologies to meet immediate governance needs while also incentivizing use of digital applications, particularly in rural areas. It strengthens the digital skills of community teachers and can be leveraged for pedagogic information dissemination and training.

5.2.3 Digital Skills Demand

Demand for digital skills is driven by the digitalization of key productive sectors and the ICT industry, yet relatively few jobs requiring digital skills are being created. Chad's oil production, value-added manufacturing, trade, and public services (i.e., health, education) exhibit opportunities for digitalization. However, without adequate digital infrastructure and the shortage of digitally skilled local talent, it will be challenging for Chad and the neighboring countries to reap the full benefit of the digital economy. In addition, the private sector's investment in building human capacity remains limited to incentivize the development of digital skills training programs, job creation, and product consumption.

5.3 RECOMMENDATIONS

To accelerate Chad's digital skills development, the GoC needs to adopt a coordinated approach to addressing challenges stemming from state fragility, human development, and local content development. Nonetheless, immediate policy measures can be taken to improve digital skills adoption in Chad. In addition, these measures are customized to address fragility, resource, and infrastructure challenges.

²²⁶ The Global Economy, 2022. Human Flight and Brain Drain – Country Rankings. Available at: https://www.theglobaleconomy.com/rankings/human_flight_brain_drain_index/.

²²⁷ Cisco, 2019. Digital Readiness Index 2019 - Chad. Available at: https://www.cisco.com/c/m/en_us/about/corporate-social-responsibility/research-resources/digital-readiness-index.html#/country/TCD.

²²⁸ Portulans Institute, 2021. Network Readiness Index 2021 – Chad. Available at: <https://networkreadinessindex.org/country/chad/>

²²⁹ World Bank, 2016. Education Sector Reform Project Phase 2. Project Appraisal Document. Available at: <https://documents1.worldbank.org/curated/en/939181503667960554/pdf/Chad-Project-Paper-2-06062017.pdf>

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R5.1 [Quick Win] Develop stand-alone policy, strategy, and framework that guide implementation of education and training programs for digital skills development at all levels. These policy measures should (i) be extensively consulted and co-created between the GoC, private sector actors, and educational institutes; (ii) address experiential learning in formal and informal settings at all levels (foundational, intermediate, advanced, and highly specialized); (iii) and streamline coordination (e.g., between relevant MDAs and implementing agencies), financing, and implementation.

R5.2 [Quick Win] Review TVET policies and programs and integrate digital skills components to augment current and future TVET programming. The GoC should elaborate on training and resource requirements for foundational and intermediate digital skills, and coordinate with ICT and growth industry on certification needs. A review of existing digital skills training programs and use of industry-responsive prompts can standardize learning services, identify gaps, and spur creative, industry relevant solutions to close service gaps. All programs should be revised through a digital skills attainment and inclusion lens.

R5.3 [Quick Win] Implement and operationalize TchadREN through collaboration with the private sector and regional countries. TchadREN can be a private (social) enterprise analogous to NgRen²³⁰ (Nigerian NREN), creating an operational system with a digital platform. This platform should integrate digital learning, knowledge repository, and sharing, and pedagogy. Its operations should also comprise of agreements with mobile operators for accessible digital devices, and trainings for students, teachers, trainers, and administrators to fully leverage digital solutions. TchadREN should be implemented as part of the West and Central African Education and Research Network – WACREN.

R5.4 [High Priority] Invest in and incentivize for improvement in basic education with focus on foundational literacy, numeracy, and integration of digital skills in formal and informal learning settings. These may include investment in teacher pedagogical and digital skills development, standards, performance metrics, awards, tracking, and accountability measures; and learning infrastructure. In TVET institutions, competency in and teaching of digital skills may be incorporated into all relevant specializations. In community training settings, digital skills may be prioritized for infrastructure investment and support. These efforts should be led by educators and incorporate evidence-based, responsive pedagogy. It is imperative that solutions are customized to meet Chad's fragility and resources challenges. This means not only optimizing its current resources with improved coordination but also reflecting and specific to student lived experiences and covering both rural and urban systems. Efforts should also include school-industry partnerships for technical and technological capacity and skills relevancy. Results should accelerate student learning in and readiness for employment, including those utilizing digital skills.

R5.5. [High Priority] Implement an e-learning system to meet access, quality, and equity challenges. Initial efforts have been in digitalizing the learning format in Chad as a response to COVID-19 (i.e., EduTchad, Tchad-Educatic). Such efforts must be strengthened and expanded to ensure sector-wide digital transformation. The first step in this process would be the performance and effectiveness evaluation of existing e-learning platforms, followed by feasibility for sector-wide implementation. Second would be improving existing curricula to be more accessible for teachers and students, regardless of geographical and socio-economic context. Finally, quality assurance, sustainability, and continuous maintenance will play an essential for in ensuring platform efficiency. The e-learning system should include inputs from stakeholders such as educators, students, e-learning experts, and government to meet pedagogical and accountability requirements.

R5.6 [High Priority] Integrate gender, rural, and social inclusion in all digital skills training programs. To close the gender and urban/rural gap, Chad can deploy stand-alone and targeted training programs and can mainstream gender and rural inclusion activities. Both types of programming require (i) group-responsive activities, outputs, objectives, and outcomes; (ii) group-specific indicators that account for gender

²³⁰ Coulibaly, Yahaya. NREN Implementation in the WACREN Zone: A Comparative Study of Mali and Nigeria RENs. WACREN Conference, 2019. https://indico.wacren.net/event/71/contributions/501/attachments/411/508/2_NREN_implementation-WACREN.pdf. Accessed February 2022.

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representation and participation; and (iii) group-responsive evaluations on experience and impact and systems most likely responsible for observed differences and/or inequalities. For example, trainings may focus on ICT applications in industries where women actively participate, institute nation-wide, equitably dispersed training courses targeted at girls to encourage their enrollment in TVET, and allow for girls-only courses to offset unwelcoming TVET environments.

R5.7 [High Priority] Upgrade the training and employment data collection capabilities and engage private sector for data provision and advisory. To proactively prepare Chadians for the labor market, GoC must draw analysis and forecast the supply, demand, and skill requirements of the labor market. GoC can collect workforce data and tap into industry advice on skills alignment and assistance with citizen digital skill attainment (i.e., community and inhouse training). Gaining timely insight on and alignment of workforce supply and demand, especially for the digital economy, should strengthen the feasibility and reliability of strategies and interventions.

FOCUS 5 : DIGITAL & PwDs

Women with disabilities are even further excluded and have lower employment rates than women without disabilities and men with disabilities.²³¹ The latest Multiple Indicator Cluster Survey (MICS6-Chad, 2019) conducted by INSEED with support from UNICEF estimates that People with Disabilities represent 5,8% of the 18-49 years old female population, and 3% of the 18-49 years old male population in Chad, but this rate could be higher. Persons across different types of disabilities have lower earnings and are most likely to be in low-skilled, part-time, and informal job settings with subminimum wages. While many persons with disabilities turn to entrepreneurship and self-employment, they face challenges in access to professional guidance and inputs, finance, markets, and networks. Barriers commonly arise out of discriminatory regulations, policy and resource allocation, social stigma and prejudice, low educational participation, and obstacles to moving around their own communities and city spaces. This exclusion of persons with disabilities from the labor market has an economic cost, which is estimated to be between 3 and 7 % of annual global GDP.

For persons with disabilities, an accessible digital economy is a significant enabler to accessing the labor market. Conversely, an inaccessible digital economy can present additional barriers to labor force participation further exacerbating their economic marginalization. Persons with disabilities globally are less likely to have access to the hardware and corresponding digital skills to participate. For example, a study by GSMA found that in Kenya and Bangladesh, a mobile phone ownership gap of at least 10% exists in country between persons with and without disabilities; and amongst mobile phones owned by persons with disabilities, there is a significant gap in smartphone ownership. Amongst individuals surveyed, over 70% owned a basic or feature phone (not a smartphone). For those that do have access to the hardware and broadband, often apps and web content are inaccessible.

While the digital economy is rapidly expanding, universal accessibility within digital infrastructure is not uniformly implemented or reinforced. Persons with disabilities face barriers to digital connectivity and access to assistive technology, partially due to the cycle of disability and poverty, combined with the disproportionate overrepresentation of persons with disabilities living in low and middle-income countries. The important thing to note is that standardized solutions exist for digital inclusion and accessibility and can be incorporated into project design and implementation (see box 15 for information on global standards).

Box 16. Digital Accessibility Standards and Guidelines

Digital accessibility includes accessible infrastructure, websites and web applications, ICT products and services, and non-web information and communication technologies such as non-web documents and software. Commonly recommended references and standards for accessibility in various sectors are as follows:

Accessible Infrastructure

[ISO 21542:2011 \(Building construction – Accessibility and usability of the build environment\)](#): This is the international reference, that can be integrated with other standards if needed. National ones have to be considered, but also standards from other countries when they seem relevant. For example:

[The British building regulations for access to and use of buildings](#)

[The ADA standards for accessible design](#)

[The Dubai Universal Design Code](#)

Accessible Websites and web apps

[Web Content Accessibility Guidelines \(WCAG\) 2.1 \(w3.org\)](#): This is the international reference, that can be integrated with other standards if needed. National ones have to be considered, but also standards from other countries when they seem relevant. For example:

²³¹ United Nations. (2018). Realization of the Sustainable Development Goals by, for and with persons with disabilities. UN Flagship Report on Disability and Development 2018. <https://www.un.org/development/desa/disabilities/publication-disability-sdgs.html>

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[Référentiel général d'amélioration de l'accessibilité \(RGAA Version 4.1\), France \(2021\)](#): applying the WCAG 2.1 to French norms for digital accessibility

Accessible ICT products and services
[EN 301 549 V2.1.2 \(European standard for accessibility requirements for ICT products and services\)](#). This is an accessibility standard that covers all ICT (Information and Communication Technology) including many digital products such as cell phones, printers, ATMs, electronic documents, software, web content and more. These standards are harmonized with the WCAG and cover more aspects not web-related.

Accessible Non-web information and communication technologies, specifically non-web documents and software.
[Guidance on Applying WCAG 2.0 to Non-Web Information and Communications Technologies \(WCAG2ICT\) \(w3.org\)](#)
[EN 301 549 V2.1.2 \(European standard for accessibility requirements for ICT products and services\)](#). Chapter 10

However these guidelines are not particular easy to use, especially for what concerns accessibility recommendations for commonly used files (Word, PowerPoint, Excel, etc.). More [user-friendly guidance for accessible files can be found on Microsoft's website](#), for example.

Source: World Bank Technical Note on Accessibility (available in September, 2021)

Furthermore, solutions already exist to ensure digital economic ecosystems are inclusive and accessible for women and men with disabilities. Analysis and support for policy reforms and investments that facilitate ICT accessibility. This can include policy reforms to incorporate accessibility requirements and standards within digital technology services and products and regulations to promote accessibility through licensing conditions.²³² Universal Service and Universal Access funds can be used to promote accessible digital services, particularly in rural and remote communities. Resources such as the [ITU and G3ict model policy framework](#) can support governments in developing policies to ensure the accessibility of TV/video programming, electronic equipment, mobile telephony, and web content.²³³

Table 27: Examples of Disability Inclusion in the Digital Economy

Mainstreaming	Disability Specific
Invite persons with disabilities to all consultations, to co-design inclusive projects.	Collect data on the specific barriers that persons with disabilities face to accessing the digital economy.
Invest in digital services & platforms that follow universal design standards and web content accessibility guidelines.	Invest in the development and procurement of assistive technology for accommodation supports to digital infrastructure e.g. screen reading technology and/or screen magnifiers, braille keyboards, etc.
Mandate accessibility within procurement guidelines for digital infrastructure and tools: hardware, software, etc.	Carry out accessibility audits and modify workspaces and buildings (e.g. IT centers, internet cafes, etc.) for accessibility.
Ensure skill building opportunities, e.g. TVET, courses on building digital skills, are accessible and inclusive.	Designing digital platforms with and for persons with disabilities.

²³² WDR 2016 background paper

²³³ G3ict and ITU (2014). <https://g3ict.org/publication/model-ict-accessibility-policy-report>.

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CONCLUSION

The development of the digital economy represents an opportunity for Chad to address its fragility and build resilience while driving inclusive growth. Digital technologies and tools can improve public service delivery, connect citizens, accelerate private sector development, and restore trust in the state. Increased digital adoption can also contribute to Chad's resilience to future pandemics or shocks, as it would allow economic exchanges to continue in a context of restricted circulation (through e-commerce and digital payments), business continuity, and essential services continuity (e.g., through distance learning, e-health, and digital safety net payments). GoC recognizes the importance of digital technologies and aspires to accelerate its efforts to digitalize public services and economic sectors.

The diagnostic shows that the digital economy potential is unfulfilled in Chad. GoC has taken the initial steps to advance digital transformation, including the development of digital infrastructure, the digitalization of public services delivery, and core government functions. However, several challenges remain to fully exploit the full potential of digital technologies, innovation, inclusive growth, and poverty reduction. The nascent state of Chad's digital economy is reflected in low broadband penetration and digital adoption, significant digital divides, and the absence of a comprehensive and consistent digital strategy. Given the poverty and unemployment challenges, Chad must focus on inclusion and participation in digital development.



Moving forward, Chad needs to invest in the building blocks of "digital" to harness the power of digital technologies and build an inclusive digital economy, combining supply and demand side interventions based on a coordinated, holistic approach. To harness digital sources of growth and unlock digital dividends, Chad needs a combination of supply-side policy interventions and investments to support affordable and reliable broadband connectivity and digital public services. It also needs demand-side interventions and skills-building programs to stimulate the productive use of digital solutions by individuals and businesses. It should be noted that isolated investments in individual pillars of the digital economy may not have the desired impact. In this vein, improved digital connectivity can significantly boost economic opportunities and inclusive growth, when complemented with digital skills and literacy development, access to digital financial services, and targeted support for digital entrepreneurs. Finally, the ability of governments to develop platforms such as digital identity systems and to leverage technology to improve efficiency and service delivery is critical in many of these areas.

The critical reforms to unlock digital transformation in Chad are presented below (See Annex 2 for full list of recommendations):

Table 28. Prioritized Recommendations

	POLICY AND INSTITUTIONS	RESPONSIBLE INSTITUTION
Quick-win	<ul style="list-style-type: none"> Adopt the “Chad Digital” strategy Horizon 2030, with a clear roadmap and/or action plan and monitoring and evaluation (M&E) framework 	<ul style="list-style-type: none"> Ministry of Telecommunications and Digital Economy (MPEN)
High priority	<ul style="list-style-type: none"> Establish a strategic inter-ministerial coordination mechanism for digital transformation Update the key legal and regulatory frameworks to promote trust and security in data transactions 	<ul style="list-style-type: none"> Presidency MPEN and ARCEP
	DIGITAL INFRASTRUCTURE	RESPONSIBLE INSTITUTION
Quick-win	<ul style="list-style-type: none"> Publish, upon approval, operators' interconnection catalogs. The interconnection catalogs of the operators Sudachad, Airtel Chad and Moov 	<ul style="list-style-type: none"> ARCEP

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	<p>Africa Chad for the year 2023 could be put online on the ARCEP website (see for example²³⁴).</p> <ul style="list-style-type: none"> Conduct a market analysis to (i) define the relevant markets for electronic communications, (ii) identify the operators having significant market power (SMP) in these relevant markets, (iii) define the obligations applicable to operators having SMP and (iv) support the regulator to enforce the regulation. The results of this study should be materialized by a decision defining the relevant markets (see for example²³⁵). and another decision listing the operators having SMP on the said relevant markets (see for example²³⁶). Address the difficulties related to interconnection with Cameroon, through the settlement of the dispute between Camtel and Sotel Tchad and the development of an interconnection agreement between the two operators in accordance with regulations and international best practices. 	<ul style="list-style-type: none"> ARCEP MPEN
High priority	<ul style="list-style-type: none"> Continue and complete the process of restructuring Sotel Tchad to revitalize the sector. Incentivize operators to define and commercialize at an “affordable price” a low-consumption data basket to allow the poorest populations to make basic productive usage of broadband services such as access to public digital platforms. Design a management model for the infrastructure currently being put in place (IXP, Data Center and new fiber optic lines) and unify the management of State-owned first and middle mile digital infrastructure. Better manage the Universal Service Fund (USF) and use it and/or other public funds to incentivize operators invest in uncovered areas (either because the area is not economically profitable in the short term, or the area is facing insecurity challenges). To this end, approaches such as reverse auction mechanism (implemented e.g. in Ivory Coast, Benin or Niger) to expand coverage and pre-purchase of broadband capacity mechanism (implemented e.g. in Ghana and in Tanzania) could be considered. 	<ul style="list-style-type: none"> MPEN ARCEP MPEN ADETIC
	DIGITAL PUBLIC PLATFORMS	RESPONSIBLE INSTITUTION
Quick-win	<ul style="list-style-type: none"> Develop a 5-year national roadmap for the digitalization of public services backed by an effective institutional framework built on a “whole-of-government” approach. Design and implement a first set of digital government services, which should rapidly create interest in using digital services (e-registration, single online portal for all public service information or frequently asked questions, first pilot transactional services, etc.). 	<ul style="list-style-type: none"> Prime Minister’s Office and MPEN MPEN
High priority	<ul style="list-style-type: none"> Strengthen the policy and normative frameworks and their application for digital safeguards, digital data infrastructure and integrated digital public service delivery. Upgrade the digital capabilities of public administrations to leverage digital public platforms and be drivers of change for modernized public services delivery Strengthen the administration’s back and middle-office to build the foundations for the front-facing digital services delivery 	<ul style="list-style-type: none"> MPEN, Ministry of Finance, ANSICE and ANATS ADETIC and ENASTIC ADETIC, and ANSICE
	DIGITAL FINANCIAL SERVICES	RESPONSIBLE INSTITUTION
Quick-win	<ul style="list-style-type: none"> Update the 2017-2030 National Financial Inclusion Strategy and set up effective institutional arrangements as well as a monitoring and evaluation framework to pilot advancements. Align the consumer protection framework to DFS. 	<ul style="list-style-type: none"> Prime Minister’s Office and MoF Ministry of Commerce and Industry
High priority	<ul style="list-style-type: none"> Enhance the financial management systems to support the shift of G2P payments to digital. A mapping of G2P payment streams should be completed 	<ul style="list-style-type: none"> MoF

²³⁴ <https://www.are.mr/index.php/interconnexion/1327-catalogues-d-interconnexion-et-ou-d-acces-des-operateurs-de-communications-electroniques-pour-la-periode-2022-2023>

²³⁵ <https://www.arcep.ne/uploads/documents/DecisionN000017.pdf>

²³⁶ <https://www.arcep.ne/uploads/documents/DECISION0001-25JAN2023.pdf>

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	<p>as well as technical feasibility study, once these two steps are completed, the GoC could enable automated access to digitized Government data platforms.</p> <ul style="list-style-type: none"> Modernize the regional regulatory framework to unlock the uptake of DFS. There is a need for BEAC to develop a new framework conducive for fintech entities, banking agents in the MFIs, banking industries, as well as for digital onboarding of customers through simplified permanent Customer Due Diligence (CDD) procedure. Accelerate the full deployment of the SWITCH to ensure interoperability of transactions. When fully operational, the interoperable and interbank payment network will allow full interoperability of digital payments, international transactions including remittances, payments at point-of-sales (POS), mobile money, and online transactions. Boost the access to digital credit by adopting a new decree that (i) allows the regional credit bureau to collect consumer prepaid and post-paid utility data; and (ii) allows alternate credit scoring methodologies to boost micro lending based on big data. 	<ul style="list-style-type: none"> BEAC BEAC BEAC
	DIGITAL BUSINESS	RESPONSIBLE INSTITUTION
Quick Win	<ul style="list-style-type: none"> Define a digital entrepreneurship strategy and an effective public private dialogue mechanism to strengthen partnerships and promote investments especially among MSMEs and startups. Launch a digital skills development plan in partnership with the private sector to reskill and upskill the current workforce and to prepare the future generation in both the formal and the informal markets 	<ul style="list-style-type: none"> MPEN MPEN
High Priority	<ul style="list-style-type: none"> Strengthen the development of the digital innovation ecosystem through entrepreneurship support organizations (ESOs to accompany entrepreneurs locally and across the diaspora. Provide female entrepreneurs increased assistance through entrepreneurship support programs that consider women's specific needs and challenges. Initiate appropriate financing mechanisms to unlock startups and MSMEs growth potential in the digital economy. Increase the participation of MSMEs in public projects and across national value chains of key sectors to support a virtuous cycle of sustainable and inclusive growth over the course of the digital transformation of the economy. 	<ul style="list-style-type: none"> MPEN MPEN MPEN MPEN
	DIGITAL SKILLS	RESPONSIBLE INSTITUTION
Quick Win	<ul style="list-style-type: none"> Develop stand-alone policy, strategy, and framework that guide implementation of education and training programs for digital skills development at all levels. Review TVET policies and programs and integrate digital skills components to augment current and future TVET programming. Implement and operationalize TchadREN through collaboration with the private sector and regional countries. 	<ul style="list-style-type: none"> MPEN, Ministry of Higher Education and Ministry of National Education Ministry of Vocation Training ADETIC
High Priority	<ul style="list-style-type: none"> Invest in and incentivize for improvement in basic education with focus on foundational literacy, numeracy, and integration of digital skills in formal and informal learning settings. Implement an e-learning system to meet access, quality, and equity challenges. Integrate gender, rural, and social inclusion in all digital skills training programs. Upgrade the training and employment data collection capabilities and engage private sector for data provision and advisory. 	<ul style="list-style-type: none"> Ministry of National Education Ministry of National Education MPEN MPEN

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ANNEXES

Annex 1: DE4A High-Level Scorecard Indicators

GOAL	INDICATOR	DE4A Interim target (2021)	DE4A FINAL Target (2030)	Findings for Chad
DIGITAL INFRASTRUCTURE				
Increase access to broadband Internet	“Unique” mobile-broadband subscriptions per 100 inhabitants (by IDA, FCV)	32	67	16 (2021)
Increase quality of broadband Internet	Average Mobile Broadband download speed (Mbit/s) (by IDA, FCV)	3Mbps	10Mbps	2.25Mbs (2021)
Increase affordability of broadband Internet	Mobile broadband basket (prepaid, 500MB) price per month (% of a country’s average monthly GNI per capita) (by IDA, FCV)	6	2	42.42 (2020)
DIGITAL PUBLIC PLATFORMS				
Increase availability and adoption of secured and interoperable digital platforms for public services	Digital Adoption Index (DAI) (Government cluster) (by IDA, FCV)	0.45	0.80	0.23 (2020)
Increase ID coverage for adults	Percent of the 15+ population with an officially recognized identity credential (a “foundational” ID)	70	100	37.3 (2017)
DIGITAL FINANCIAL SERVICES				
Increase access to digital financial services	Percent of adults with access to a transaction account (by gender, income group, education level, urban/rural; and by IDA, FCV)	50	90	21.8 (2017)
Increase usage of digital financial services	Percent of adults who made a digital retail payment in the past year (by gender, income group, education level, urban/rural; and by IDA, FCV)	50	90	27 (2017)
DIGITAL BUSINESS				
Number of investment-ready digital solution firms operating in the country	Number of investment ready digital solution providing firms operating in the country including those receiving funds from pre-seed/seed (grants, angel etc), VC, PE, Mezzanine financing, debt financing and other capitalization (non-equity assistance, corporate round) and have not reached exit stage (M&A, IPO)	240	600	23 (2021)
Number of platform-based or data-driven firms operating in the country	Number of domestic or international firms, start-ups or mature firms as long as they are platform-based or using data as a key input to create value	90	220	3 (2021)
DIGITAL SKILLS				
Increase Internet connectivity in education institutions	Percent of lower-secondary schools with access to internet for pedagogical purposes (by urban/rural; and by IDA, FCV)	55	100	No data available
Increase availability of digitally competent workforce	Proportion of youth and adults with advanced digital skills* (by gender, urban/rural; and by IDA, FCV)	3%	6%	No data available
* Note: Number of depositors with commercial banks per 1000 adults, IMF financial access survey, 2019				
**Made or received digital payments in the past year (% age 15+), Global Findex, 2017				
***Note: Data comes from UIS’s SDG Indicator 3.3.1. (http://data.uis.unesco.org/). “Proportion of youth and adults with advanced digital skills” is proxied using the “proportion of youth and adults who have written a computer program using a specialized programming language”. This measure was used in ITN’s Measuring the Information Society Report (2018).				

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Annex 2: Digital Economy Recommendations

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