ITU-FCDO Roundtable and Technical Workshop
Theme: Building capabilities for sustainable and inclusive digital transformation in Nigeria
Date: 23-24 August 2022, 10:00-17:00 West Africa Time
Place: Transcorp Hilton Hotel, Federal Capital Territory, Abuja
Website: http://itu.int/go/2022-roundtable-nigeria

Summary record

1. Overview

The ITU-FCDO roundtable and technical workshop on the theme **"Building capabilities for sustainable and inclusive digital transformation in Nigeria"** was held on 23-24 August 2022 in Abuja, Nigeria. The event, which welcomed close to 140 participants, was organized by the International Telecommunication Union (ITU) and the Nigerian Communications Commission (NCC), supported by the Federal Ministry of Communications and Digital Economy, in the context of the ITU and United Kingdom's Foreign, Commonwealth and Development Office (FCDO) partnership in Nigeria. Through high-level panel discussions and technical co-creation sessions, under the broader framework for digital transformation interventions which considers Access, Adoption and Value Creation, the participants elaborated on policy and regulatory levers for the enabling environment, alongside operational and business models to enhance access and accelerate digital transformation in Nigeria

Moreover, the event afforded stakeholders an opportunity to reflect upon Nigeria's digital transformation journey, challenges and opportunities, as well as share insights into ITU-FCDO DAP partnership in Nigeria which centers around developing policy and regulatory framework for digital inclusion, exploration sustainable business models for digital connectivity schools and communities, partnership for investment in digital inclusion and development of digital skills for jobs, especially for young people.

The discussions at the roundtable and technical workshop were organized around three sub-themes; business models and enabling environment for meaningful and affordable digital connectivity, development of digital skills and complimentary capabilities, and forward-looking approaches, policies and regulations to keep pace with the evolution of technologies and innovations that power digital transformation in Nigeria.

The first day of the event was organized in form of a high-level roundtable with panel sessions around the aforementioned sub-themes while the second day provided an opportunity for deep-dive sessions around collaborative solutions for digital connectivity in schools and communities, approaches to leveraging digital technologies for value creation with examples drawn from digitally-enabled services as well as channels of opportunities for strengthening digital skills development to realize the gains of the digital economy through entrepreneurship and jobs.

The discussions at the event deepened understanding of the challenges of expanding last mile connectivity to un-served and underserved communities and approaches to promoting opportunities for digital expansion and value creation. The expert led high-level discussions

and the bottom-up deep-dive sessions yielded policy guidance that could serve as an input into framing and driving digital policy and strategies. Evidence-based and people-centered approaches to policy and programs have significance for shaping Nigeria's digital transformation paths, with profound impact on leveraging digital technologies for economic and social good.

2. Participation

The roundtable brought together close to 140 participants from diverse groups in Nigeria's digital ecosystem. Stakeholders were drawn from local and international organizations including, Federal Ministry of Communications and Digital Economy, Nigerian Communications Commission and Universal Service Provision Fund (USPF), Federal Ministry of Education, Central Bank of Nigeria, National Bureau of Statistics, ITU, FCDO, Digital Access Partners (DAP) partners, Nigerian Communications Satellite Ltd (NigComSat), representatives of State Governments, mobile network operators (MNOs), Internet service providers (ISPs), co-location service providers (CSPs)/telecommunication infrastructure companies, digital skills training providers and academia, as well as non-governmental organizations, including community network organizations.

The diversity of participants at the event provided a unique opportunity for robust stakeholder co-creation through peer learning and sharing of lessons around the sub-themes of the event. The breadth of participation at the event afforded a platform to consolidate the progress of ITU-FCDO DAP project to date and build partnership for future explorations to advance digital connectivity in schools and communities, improve digital skills and socioeconomic opportunities as well as pooling investment in sustainable and inclusive digital development in Nigeria.

3. High-level pace setting for discussions on building capabilities for sustainable and inclusive digital transformation

The Honourable Minister of Communications and Digital Economy, Professor Isa Pantami, set the stage for the event with a welcome note highlighting activities under National Digital Economy Policy and Strategy (NDEPS) and Nigerian National Broadband Plan (NNBP), and links between these national instruments and activities that the ITU-FCDO roundtable and technical workshop were set to explore. He noted that the theme of the event 'Building capabilities for sustainable and inclusive digital transformation in Nigeria' aligned with the pillars NDEPS and NNBP. His speech emphasized the importance of digital infrastructure, which he stated that the Federal Government of Nigeria had declared critical national infrastructure. He pointed out that access to the Internet was no longer considered as luxury but a necessity for all Nigerians. His address highlighted the importance of partnerships in developing capabilities for digital transformation in Nigeria.

He pointed out that that the country had made significant progress in reducing the cost of broadband service by ensuring that Nigeria has one of the lowest prices for 1GB in the world at around 1USD per GB. He stated that the relevance of partnership building was evident in the collaboration between the Federal Ministry of Communications and Digital Economy and its agencies, ITU and FCDO. The critical importance of partnership in realizing the ambitious goals of digital connectivity driven by affordable broadband was summed up in the Minister's submission that the Federal Government understands that enormous private sector support as well as support from international entities are essential to achieve the goals of connecting the unconnected and improve Internet service quality required to drive Nigeria's digital economy.

The Executive Vice Chairman (EVC) of NCC, Prof. Umar Danbatta, First Secretary and Head of Prosperity Fund (FCDO), Mr Kris Camponi, and ITU Regional Director for Africa, Mrs Anne-Rachel Inné also shared their remarks. Prof. Danbatta noted that NCC had implemented policies and programmes to bridge the digital divide as evident in the reduction of unconnected clusters to 114, from more than 200 in less than 10 years. He highlighted efforts and progress in digital skills development, for example, the Advanced Digital Appreciation Programme for Tertiary Institutions (ADAPTI) that aims to bridge the digital divide existing in academia through the provision of computers and related ICT facilities to equip lecturers and students with digital skills required for the changing world of work.

Mr Kris Camponi positioned the FCDO Digital Access Programme (DAP) in the context of Nigeria's digital development. DAP was framed to align with Nigeria's national development and sustainable development goals. His address further highlighted the relevance of partnership in developing capabilities for Nigeria's digital transformation. DAP in Nigeria is an initiative and opportunity to consolidate the longstanding relationship between Nigeria and the United Kingdom.

Mrs Anne-Rachel Inné emphasized the importance of access, adoption and value creation in developing and implementing digital development programmes, ensuring that digital transformation integrates the dimensions of people, data and technology at its very core. Local content development exemplified with language, content delivery, affordability and collaborative solutions are key to driving digital development, ensuring that no one is left behind in Nigeria.

Prior to going to the high-level panel sessions, Dr Christine Sund, Senior Advisor, ITU Regional Office for Africa on behalf of the partners provided an overview of the ITU-FCDO Digital Access Programme (DAP) partnership and project in Nigeria. The partnership seeks to support the ongoing efforts and transformative undertakings of the Government and key stakeholders in Nigeria's digital economy and society. The first phase of the ITU-FCDO partnership in Nigeria, from 2021 to December 2022 focuses on four key pillars: **1.** Regulatory analysis, framework and tool development to support digital inclusion objectives in Nigeria; **2.** Promoting sustainable models to expand connectivity in underserved communities, with a focus on schools as possible beacons for connectivity in the communities; **3.** Promoting a more conducive environment for (private and public) investment in digital inclusion, and **4.** Advancing digital skills for decent jobs, especially for young people, with partners present at the roundtable, among others.

4. <u>Panel session 1</u>: **Business models and enabling environment for meaningful and affordable digital connectivity**

The discussion in the first panel was centred around the role of infrastructure, business models and policy in enabling access to digital connectivity in schools and communities. Ensuring universal access through the expansion of affordable Internet to unserved and underserved areas was at core of the discussion.

The following panelists led discussion in the session, moderated by Mr Fola Odufuwa, Consultant, Association for Progressive Communications (APC):

- Engr. Usman Aliyu, Head, Wireless Networks, Nigerian Communications Commission (NCC)
- Dr Lasisi Lawal, Senior Research Fellow, Acting General Manager, Technical Services, NigComSat

- Ms Cindy Whouter, Innovation Manager, UNICEF Nigeria
- Mr Abdul-Malik Ahmed, Senior Manager, Analytics, Market Development, and Fixed Broadband, MTN

The panelists agreed that regulatory constraints such as high tax regimes and unfavourable foreign exchange rates contribute to the high cost of providing mobile and broadband services in Nigeria. The panelists cited the issue of right of way (ROW) and multiple permits to prove the point.

Nigeria has the yet to explore variety of available technological solutions to provide meaningful and affordable connectivity to schools and communities. To illustrate this point, panelists emphasized that Nigeria relied on mobile technology for at least 90% of digital infrastructure and ancillary services. This practice limits the potential to reach the one hundred and twenty million Nigerians who are offline as of 2022. The panelists were unanimous that the best practice for providing affordable connectivity in Nigeria would require exploration of technology mix that integrates satellite, fiber, microwave and similar solutions. This way the country will improve performance in digital connectivity expansion and cost reduction in reaching un-served and underserved areas with appropriate technologies, ensuring that no one is left behind.

As pointed out by one of the panelists, a cordial working relationship between mobile service operators, Internet service providers (ISPs) and co-location service providers (CSPs) is critical to pooling resources to expand infrastructure to schools and communities in remote areas. This corroborates the thought that partnership for digital connectivity requires emphasis on rural areas and young people who can drive the rate of technology uptake and transition from learning in schools to earning in the economy, which in turn contributes to social and economic prosperity.

5. **Panel session 2: Development of digital skills and complementary capabilities in Nigeria's digital economy**

Building on technological access for adoption requires developing skills and related resources to leverage digital infrastructure. The discussion around digital skills development elaborated the challenges of Nigeria's current curriculum and its role in digital skills and human capital development.

Ms Vanessa Lerato Phala, Country Director, ILO Country Office for Nigeria, Ghana, Liberia and Sierra Leone gave an opening message highlighting relevant activities of ILO and partners, including an ongoing joint exploration with ITU and African Union in the theme of digital skills and decent jobs for African youth. Her address set the stage for discussion in this panel session.

The following panelists explored the state and directions of digital skills and complementary capabilities building in Nigeria's digital economy in the session moderated by Mr Corell Dino, Employment and Migration Officer, International Labour Organization (ILO) :

- Professor Mohammed Ajiya, President, Digital Bridge Institute (DBI)
- Mr Mohmmed Mahmud, Technical Advisor to the Minister, Federal Ministry of Education
- Mr Michael Onyeka Ezeadichie, Co-Founder, Haelsoft
- Dr Olumide Taiwo, Executive Director, Helpman Development Institute, Consultant for ITU and ILO on digital skills demand and supply assessment in Nigeria
- Ms Oladiwura Oladepo, Co-Founder and Executive Director, Tech4Dev

The panelists emphasized the gap in integrating digital skills into Nigeria curriculum across levels of education as well as retraining of workers. The discussion emphasized the role of young people in building capabilities for digital skills, jobs and entrepreneurship in the digital economy.

The panelists pointed out that a combination of skills and information resources matters for jobs and entrepreneurship. The importance of digital skills augmented with job market information for realizing the gains of the digital economy drew insights from the ITU-ILO Digital Skills Supply and Demand Assessment in Nigeria, which found that apart from skill gap, which ranges from basic, intermediate to advanced skills, lack of information is one of the major challenges that deprive young people of opportunities for job and entrepreneurial activity. The discussion highlighted the relevance of Digital Bridge Institute (DBI) in providing capacity development support to close the digital human capital gap in Nigeria. However, DBI, an ITU Centre of Excellence, in Nigeria would require partnership with international and local digital skills service providers and development partners to contribute significantly to developing and financing capacity building initiatives in the areas of skilling, up-skilling and re-skilling for the changing world of work.

Developing digital skills has the potential to position Nigeria, especially young people, for talent export and increased earnings in the global knowledge economy without the need to leave the shores of the country. One of the panelists cited micro-work platforms as a form talent export and source of earnings for Nigeria considering the opportunities to work it provides. Initiatives designed to address skills gap must clearly identify and target girls and women as currently being pursued by the Government through relevant policies and programmes and supported by FCDO, ITU and partners through the DAP project.

6. **Panel session 3**: Forward-looking approaches, polices and regulation to keep pace with the fast evolution of technologies and innovations that power digital transformation

This sub-theme focuses on digital technologies and innovations in fast-paced sectors such as ICT and finance. The following speakers led discussion in this panel session moderated by Dr Mohammed Suleh-Yusuf, Principal Manager, Legal and Regulatory Services, Nigerian Communications Commission (NCC):

- Dr Austin Nwaulune, Director, Digital Economy, NCC
- Dr Paul Oluikpe, Head, Financial Inclusion, Central Bank of Nigeria
- Ms Nihinlola Fafore, Public Relations and Communications Expert, Huawei Technologies Nigeria
- Mr Adewolu Adene, Government Affairs Manager, Google
- Mr Kamal Tamawa, Director, Public Policy, GSMA
- Mr Michael Famoroti, Co-Founder and Head of Intelligence, Stears

The panel session emphasized the speed of technological innovations and the need to continue to align and realign Nigeria's digital development policies, strategies and regulations to broader socioeconomic development objectives such as the Sustainable Development Doals (SDGs). Integration of digital policies and regulations with broader economic goals requires regulatory convergence. This means that the various regulatory agencies would need to further harmonize their mandates and approaches, and work towards common goals. The panelists assessed the current state of collaboration between sector regulators in Nigeria in the face of evolving digital ecosystem. It was pointed out that NCC had made effort to coordinate sectoral regulation with sister regulators, with specific reference to the Central Bank of Nigeria.

While the panelists differed in some ways and to an extent in the progress Nigeria had recorded on its path to regulatory convergence, they were unanimous that there was room for improvement in ensuring that regulators coordinate with one another to synchronize regulatory mandates and processes as well engage in peer learning that advances regulations to promote an innovation-friendly environment.

7. Summary and reflections on panel discussions towards building capabilities for sustainable and inclusive digital transformation in Nigeria

This session sums up the discussions in the panel sessions with the view to capturing the recurring themes and next steps of building capabilities for sustainable and inclusive digital transformation in Nigeria. The session, which was moderated by Mr Idongesit Udoh, Digital Access Programme Adviser and Country Lead, British High Commission in Nigeria, had the following discussants, who reflected on the key points of the panel sessions:

- Dr Ibiso Kingsley-George, Principal Manager, Digital Economy, Nigerian Communications Commission (NCC)
- Mr Dino Corell, Employment and Migration Officer, International Labour Organization (ILO)
- Mr Joel Ogunsola, Director of Development, Tech4Dev
- Ms Sophiyat Sadiq, Youth Envoy, Generation Connect Youth Group for Africa (virtual)

The session summarized:

- Digital infrastructure is critical to the take-off and advancement of the digital economy. It is the foundation upon which activities can be organized and opportunities exploited.
- Digital skills are important to identifying and exploiting opportunities in the digital economy. However, initiatives for digital skills development and opportunities creation must consider the information gaps among the target groups, such as young people. Skills and information gaps are important and mutually reinforcing.
- Sustainable and inclusive digital transformation means leaving no one behind, which in turn requires putting people at the core of the digital economy. This means addressing the recurring challenge of affordable access and use of technologies, development and promotion of local content in digital service delivery as well as enabling environment for co-created innovative solutions.
- Coordinated policies and regulations matter for laying out and moderating the path of digital development.

8. Deep dive sessions

The second day provided an opportunity for deep-dive sessions around collaborative solutions for digital connectivity in schools and communities, approaches to leveraging digital technologies for value creation with examples drawn from digitally-enabled services as well as channels of opportunities for strengthening digital skills development to realize the gains of the digital economy through entrepreneurship and jobs.

Dr Austin Nwaulune, Director, Digital Economy, NCC opened the second day by highlighting the discussions conducted on the first day, and agenda for the deep-dive sessions. Dr Christine Sund followed with a presentation of tools and outputs of the ITU-FCDO DAP project in Nigeria in which the progress made and planned explorations were highlighted.

The deep-dive sessions were organized around three sub-themes:

- Deep-dive 1 – Co-creating solution for digital connectivity: *Access*
- Deep-dive 2 – Leveraging emerging channels of digital skills development and opportunities: *Adoption*
- Deep-dive 3 – Lessons learned from selected cases of digitally-enabled service delivery: *Value creation*

8.1. <u>Deep dive 1</u>: Deep dive into co-creating sustainable solutions for digital connectivity in communities

The brainstorming in the session followed a presentation by Mr Ihar Shchetko, Giga Project Officer, ITU, on digital/complementary infrastructure mapping and connectivity business model explorations in Nigeria. The brainstorming was organized in two streams: 1) Infrastructure and technologies for meaningful and affordable digital connectivity, and 2) Enabling environment to keep pace with technological innovations.

These two dimensions were treated under digital access. For consistency of discussions across deep-dive sessions and dimensions, the brainstorming was framed around challenges, opportunities and guidance. Under the infrastructure and technology for meaningful and affordable digital connectivity dimension two items were discussed: infrastructure and technology, and operational and business models.

Stakeholders highlighted the challenges and opportunities of the component allocated to them for discussion and made recommendations for addressing the challenges on the basis of available opportunities and solutions. The recurring challenges under infrastructure and technology include high foreign exchange rates, right of way and permit costs, for example multiple taxation. Stakeholders identified deficiencies in complementary infrastructure particularly electricity, vandalization of telecommunications equipment and insecurity as some the key challenges of expanding digital infrastructure to remote communities. Participants in the brainstorming session identified increasing penetration of mobile phones and the Internet as key drivers of demand, which could in turn improve the expansion of infrastructure in core and remote areas in Nigeria.

Stakeholders were of the view that local government mobilization to reduce destruction of telecommunication equipment and ICT sector regulator's coordination with the Central Bank of Nigeria to ease foreign exchange condition for telecommunication-related trade would support investment in digital infrastructure expansion in Nigeria.

Key items identified as limiting factors for operating and business models include lack of community earning power that means disincentive for businesses to expand to unserved and underserved areas as well as insecurity that discourages deployment of technologies and approaches that derive from new business models in remote and high-risk communities. Unfavourable permit and multiple taxes as well as import challenges, for example, associated with difficulty in foreign exchange were consistently identified as hindrances to deploying new operating and sustainable business models across Nigerian communities,

The participants identified opportunities in the rising technology adoption, enhancement of the quality of connectivity devices, including smart phones and readiness of businesses to invest in market expansion. Inclusive financing and augmentation of purchasing power of communities through subsidies and related incentives were identified as potential solutions to the challenges of implementing new operating and business models especially in remote communities. Participants identified consolidation of infrastructure model, conditional tax

waiver and favourable permits process for project targeted at underserved and unserved communities as the key solutions to the challenges of deploying new digital connectivity business models in schools and communities.

Insecurity, regulatory inconsistencies and multiple taxes were key challenges cited in the context of enabling environment and regulation for technological investment to keep pace with digital transformation. However, stakeholders identified an opportunity in new businesses springing up to leverage the increasing adoption of digital technology in the country. To address the challenges in regulatory inconsistencies and duplication which squeeze businesses such as MNOs, ISPs and CSPs, stakeholders identified harmonization of digital regulatory frameworks, data sharing, and inter-organizational and cross-sectoral coordination as well as strengthening of security to attract investment as potential solutions.

8.2. Deep-dive 2: Deep dive into Leveraging emerging channels of digital skills development and opportunities

Dr Olumide Taiwo, Executive Director, Helpman Development Institute and Consultant ITU-ILO Digital Skills Supply and Demand Assessment in Nigeria presented the report of the ITU-ILO study. The presentation was a summary of findings and recommendations of the report that explores digital skills gaps and ways to strengthen capacity development efforts that place young people and enterprises at the core of realizing opportunities in Nigeria's digital economy. His presentation afforded an opportunity to consult stakeholders on the output of the ITU-ILO report and served as a reference for the group discussion where applicable.

The deep dive session that relates to technology and adoption was held around the sub-theme of digital skills required to explore technological opportunities. In addition to mismatch in digital skills and jobs, which results in frictional unemployment, one of the major challenges identified was information gaps. This derives from not knowing what is required in the evolving labour market and digital entrepreneurial activities. There is lack of awareness about available open platforms for digital skills and jobs. The problem has less to do with information unavailability than knowing where and how to access and use available information. Available information exists in pieces and calls for integration of information resources to provide guidance to persons, especially the youth, who strive for jobs, start-ups and professional growth opportunities in the digital economy.

Digital access and skills development interact. The connections between technological components emerged in the brainstorming. The participants identified poor access to digital infrastructure as a limitation in developing digital skills considering that infrastructure is required for information search, processing, learning and sharing in the digital economy. Digital skills improve overtime as users interact with digital infrastructure through learning by doing, using and interacting. The combined impact of digital infrastructure and skills are mutually reinforcing in unserved and underserved communities, where absence of access or limited access means being cut off from information resources and opportunities to learn. Little to no access and adoption mean that opportunity for incremental improvements through learning by doing, using and interacting is constrained or never exists.

Opportunities identified for skills development, entrepreneurship and jobs include strong interest among the private sector players, Government and development partners in digital skills which is evident in the commitment of resources and availability of capacity building programs that can be scaled. The participants identified exploration of multiple channels to reach young people with information about opportunities for digital jobs and business

development . Policies and programs in this domain require partnership with training providers, digital entrepreneurs, telecommunication companies and broader sectoral players to support young people through advice on labor market needs, training and connection to opportunities.

8.3. Deep-dive 3: Lessons learned from selected cases of digitally-enabled service delivery

Mrs Hauwa Buba Wakili, Assistant Director, Digital Economy at NCC, presented case studies of digitally-enabled government services and practices that set the pace for group engagement in this session.

Advances in digital technologies have the potential for improving quality of life when economic and social value is created to enhance living condition in society. Accordingly, this dimension of the brainstorming considered value creation as a mechanism for realizing the goal of digital transformation in Nigeria. The deep-dive discussion was held around use cases of digitally-enabled services to improve service delivery and increase opportunities for citizens. Two use cases were explored in digital finance, specifically fintech, and e-commerce. These two components were considered for their fast adoption in Nigeria's digital ecosystem and potential for promotion of uptake across socioeconomic categories.

The key challenges identified in the penetration of fintech include low broadband penetration which limits access to information on fintech and relevant platforms, trust gap which discourages trade on the platforms and risk of money laundering as well as cyber security and financial illiteracy. The participants identified the ease of opening USSD accounts which are often free, remittances and increasing penetration of smart phones as major opportunities for growing and consolidating fintech solution in Nigeria. This way fintech could serve as a vehicle for sustainable and inclusive growth and development. Participants submitted that solution to the challenges of fintech would require easing regulation to promote fintech and other platform businesses, sensitization of local communities to promote confidence in fintech platforms as well as digital protection measure to ensure data privacy, security and resource recovery in case of unlawful loss. Other ways to improve fintech include attraction of foreign direct investment, promotion of local production of smart phone to drive demand in fintech and investment in capacity building.

8.4. Technical workshop wrap up and closing

Representatives from the deep-dive sessions shared highlights from the collective brainstorming and co-creation sessions for consideration in the takeaways from the event. On this note and with some concluding remarks the technical workshop and overall event was closed.

Annex 1 shares a summary of event key insights and takeaways that can serve to further the building of capabilities for sustainable and inclusive digital transformation in Nigeria.

Opening of the ITU-FCDO roundtable and technical workshop in Abuja, Nigeria on 23 August 2022 (from the left): ITU Regional Director for Africa, Anne-Rachel Inné; Executive Vice Chairman/Chief Executive, Nigerian Communications Commission, Prof. Umar Garba Danbatta; Minister of Communications and Digital Economy, Prof. Isa Ali Ibrahim Pantami and First Secretary, Head of Prosperity, Foreign, Commonwealth and Development Office (FCDO), United Kingdom, Kris Camponi

Event group photo at the opening of the ITU-FCDO roundtable and technical workshop on 23 August 2022

Annex 1: Summary of key insights and takeaways

Building capabilities for sustainable and inclusive digital transformation in Nigeria

Reaching the unconnected, unserved and underserved communities requires expansion of digital infrastructure for access at an affordable price. Expansion of digital infrastructure to schools and communities across Nigeria, especially remote areas, means integration of available technologies. While mobile technology continues to record increasing adoption, a mix of technological solutions is required to ensure inclusive, affordable, and sustainable digital connectivity across the country.

- **Promoting available and affordable technologies for sustainable and inclusive digital connectivity requires a technology mix model**

A combination of available and affordable digital solutions requires building capacity and incentivizing deployment of fiber, microwave and satellite technologies, among other solutions. This way digital access and connectivity expansion can leverage the strengths of terrestrial and satellite digital solutions, which can be adapted to different topographies, depending on context-specific challenges and opportunities.

The path to sustainable technology mix model will require support in form of harmonized licencing and infrastructure sharing to reduce cost as well as opening the telecommunication market space to promote new and innovative satellite companies while supporting existing ones to consolidate their presence, considering the current dominant of mobile technology in Nigeria.

- **Embedding sustainability in expansion of digital and complementary infrastructures**

Sustainable digital access, adoption and value creation means integrating digital infrastructure with complimentary infrastructures such as electricity, transport and shared community facilities/spaces to ensure that digital infrastructure deployment co-evolves with broader community development. Sustainable operating and business models require converting constraints to opportunities through the integration of digital infrastructure with alternative energy solutions such as solar power, which can augment existing power sources as appropriate. Under this condition, digitalization of public facilities such as schools co-evolves with green energy solutions in providing complementary infrastructures required to drive/use digital solutions in communities. In doing so, schools and host communities in underserved areas may interact such that the former can act as a node for connecting communities to the internet and ICT-enabled services. Beyond access, sustainability requires leveraging digital connectivity for value creation to enrich community knowledge base, create opportunities for empowerment and drive socioeconomic prosperity.

- **Building partnership that works for sustainable and inclusive digital connectivity**

Deployment of a mix of digital technologies and creation of an enabling environment for inclusive digital transformation requires partnership building across board. Effective collaboration and infrastructure sharing among digital infrastructure and service providers will in turn improve efficiency, lower cost and translate to capacity to reach unserved and underserved communities.

Enabling environment for sustainable and inclusive digital transformation points to partnership that works on the government – business axis as well as collaboration with communities and local/international development partners. Effective partnerships require policies and regulations that promote collaborative innovation and knowledge sharing.

Enabling environment means easing of tax burdens, especially eliminating multiple and high tax regimes, fast-track of approval processes that limit the capacity of service providers and partners to expand digital connectivity that can benefit lagging regions and communities.

Reaching underserved and unserved communities with new technologies and driving the knowledge economy through connecting to broadband and power sources will require consolidation of ongoing joint explorations among local and international partners including the Federal Ministry of Communications and Digital Economy, NCC, network operators, ISPs, CSPs and development partners, such as the ITU and UNICEF.

Key takeaways: **Access**

- Insufficient backhaul capacity limits the expansion of digital infrastructure to locations outside Lagos (the Southwestern region). Addressing the backhaul question will entail increasing the capacity to deploy wireless technologies required to support demand for backhaul, and targeting other regional hubs or cities to serve as backhaul nodes to aid digital infrastructure expansion to smaller cities, towns and villages across the country.
- Satellite technologies can augment mobile networks that currently dominate the Nigerian telecommunication service landscape in expanding infrastructure and connectivity to remote communities.
- Multiple taxes drive high costs of connectivity and Internet-based services. This is in addition to the cost of complementary infrastructure such as electricity, which telecommunication companies cover to power base stations and operations. High custom duty on telecommunication imports and competing taxes on mobile network operators (MNOs), internet service providers (ISPs) and co-location service providers (CSPs) at national and state levels contribute significantly to the cost burden of telecommunication companies, and by extension, the price of telecommunication services. Harmonization of right of way, especially between federal and state governments is necessary to reduce the burden.
- Infrastructure sharing practices can help minimize the cost of telecommunication service expansion among operators and providers as they reduce the need to duplicate the deployment of equipment, human resources and payment of permits.
- Unfavorable foreign exchange regimes constrain telecommunication-related transactions between Nigerian telecommunication operators/providers and international trade partners. Coordination between the ICT and banking sector regulators is required to make foreign currency access available to telecommunication-related trade, with incentives to contribute to promoting expansion of infrastructure to unconnected and underserved communities.
- Digital infrastructure expansion suffers not only from unease of doing business that is attributed to formal institutions highlighted above, but also widespread cases of vandalization of telecommunication equipment in communities. Stakeholder awareness campaign, especially in collaboration with community heads and cultural groups, can help reduce the spate of vandalization that hurts expansion of last mile connectivity to remote communities.

- **Minding the gaps in digital skills, complementary capabilities and opportunities in the digital economy**

Scanning landscape for trends in digital skills and market opportunities is important for developing curriculum and human capital in the new economy. Curriculum review serves to incorporate changes in the labor market and business environment to address skill-job mismatch. Curriculum review and update provides a reference for relevant training and retraining of people in the changing world of work. However, skills per se are insufficient to realize the gains of the digital economy.

Beyond skills information resources are critical for linking people to learning and job opportunities in the digital economy, this means that skilling, up-skilling and re-skilling should be conducted alongside information resource system development. Development, integration and sharing of information resources are vital to linking young people to opportunities in the digital economy. As social media platforms are key channels for reaching young people, online presence of young Nigerians presents an opportunity for sharing information and effective communication for behaviour change towards realizing the opportunities in the digital economy. In doing so, efforts aimed to close skills gap in Nigeria must identify and place girls and women at the core to balance historical inequality that has been reproduced in digital skills acquisition and access to opportunities.

Appropriate market linking programs entail not only skills and information about jobs and entrepreneurship but also promotion of linkages with tested and reliable employers and mentors. Integrating the ideas about market scanning, digital skills (re)development and market orientation aligns with framework of interaction between people, data and technology that generate meaningful impact in the digital economy.

Key takeaways: **Adoption**

- Basic and intermediate skills are in high demand. The current state of Nigeria's curriculum does not capture the skills need in the changing world of work.
- Partnerships required in addressing digital skills gaps, combining formal education channels and digital skills training providers. Leveraging such partnerships entails the engagement of local and international networks in developing capacity for digital skills in Nigeria.
- The platform economy provides opportunity for Nigeria to export talent and earn foreign currencies without migration and brain drain.
- Information about skills development sources and market opportunities is key to developing skills and creating jobs for young people in Nigeria.
- Available information resources need to be integrated, packaged and delivered to young people.
- Social media is a powerful tool to reach young people with information about skills and job opportunities.
- Digital skills policies and programmes should target girls and women to address the gender digital divide in the current distribution of skills and opportunities in Nigeria.

- **Effective coordination to align policies and regulations with trends in technologies and innovations**

Fast-paced technologies, innovations and emergence of new digital business models call for cross-sectorial coordination and learning for effective governance. Inter-regional/ international coordination is equally important as digital technologies and innovations drive

borderless business models and platform-based transactions. Cross-sectoral and inter-regional coordination provides scope for peer learning, resource pooling and complementarity of policies and regulations. This way, waste through duplication and inefficiency is reduced as sector regulators collaborate and synchronize processes.

Cross-sectoral regulation and coordination should prioritize innovation – friendly measures to ensure that regulatory mandates, drives and practices do not stifle the development and diffusion of new, affordable and safe technologies. Coordination among regulators could help eliminate multiple tax regimes and prolonged clearance processes. An example in this context is cross sectorial coordination between NCC, Central Bank of Nigeria, and Nigeria Port Authority to ease foreign exchange burdens and high excise duty on telecommunication-related imports. Regulatory objectives and goals must be clearly aligned with the broader goals of Nigeria's social and economic prosperity, including UN Sustainable Development Goals' national targets.

Key takeaways: **Cross-cutting areas**

- The dynamic nature of digital transformation has resulted in borderless digital regulation. Global trends and COVID-19 have demonstrated the need for cross-sectoral collaboration to understand and address novel challenges that transcend countries and sectors. Accordingly, there is a need for collaboration between governments across countries and regions as well as converged regulation between government agencies in a country that impact digital growth
- Nigeria has developed and implemented policies that have created an enabling environment for the growth of digital transformation. Examples of national polices include the Nigerian Digital Economy Policy and Strategy (NDEPS) and Nigerian National Broadband Plan (NNBP), which are progressive.
- While sector-specific policies and regulations are progressive, Nigeria's performance is lower when cross-sectoral aspects are considered. There is a need to increase efforts towards coordinated approach, which the NCC has adopted in developing regulations and policies.
- Apart from harmonizing regulatory mandates, coordination and cooperation between regulators should prioritize efforts to promote and sustain value creation to leverage the gains of the digital economy. Opportunities are being created in form of digital platform-enabled business models and cross-border trade, including the participation of small-scale businesses, but sustaining the initiatives requires innovation-friendly policy and regulatory support to scale impact.

Annex 2: List of participants

	First name	Surname	Organization
1.	Isa	Pantami	Federal Ministry of Communications and Digital Economy
2.	Engr. Joseph	Anagonye	Federal Ministry of Communications and Digital Economy
3.	Tiza	Shaakaa	Federal Ministry of Labour and Employment
4.	Patrick	Okeke	Federal Ministry of Youth and Sports
5.	Mohammad	Mahmud	Federal Ministry of Education
6.	Baba Gana	Alkali	Federal Ministry of Industry, Trade and Investment
7.	Alhaji	Umaru	Federal Ministry of Science, Technology and Innovation
8.	Paul	Oluikpe	Central Bank of Nigeria
9.	Kachy	Etolue	Rural Electrification Agency
10.	Biyi	Fafunmi	National Bureau of Statistics
11.	Engr Salisu	Kaka	National Information Technology Development Agency (NITDA)
12.	Fanimokun	Ayo	National Information Technology Development Agency (NITDA)
13.	Usman	Maaruf	National Information Technology Development Agency (NITDA)
14.	Umar	Danbatta	Nigerian Communications Commission (NCC)
15.	Austin	Nwaulune	Nigerian Communications Commission (NCC)
16.	Olubunmi	Bamijoko	Nigerian Communications Commission (NCC)
17.	Mohammed	Suleh-Yusuf	Nigerian Communications Commission (NCC)
18.	Ibiso	Kingsley-George	Nigerian Communications Commission (NCC)
19.	Kings	Adeyemi	Nigerian Communications Commission (NCC)
20.	Sanusi	Bawa	Nigerian Communications Commission (NCC)
21.	Yaya	Wali Mukhtar	Nigerian Communications Commission (NCC)
22.	Olutosin	Oduneye	Nigerian Communications Commission (NCC)
23.	Atinuke	Okpalaoka	Nigerian Communications Commission (NCC)
24.	Usman	Aliyu	Nigerian Communications Commission (NCC)
25.	Hadiza	Baba-shehu	Nigerian Communications Commission (NCC)
26.	Mohammed Lawan	Ahmed	Nigerian Communications Commission (NCC)
27.	Hauwa	Buba Wakili	Nigerian Communications Commission (NCC)
28.	Musa	Daibu	Nigerian Communications Commission (NCC)
29.	Babatunde	Akpeji	Nigerian Communications Commission (NCC)
30.	Ahmed	Amate	Nigerian Communications Commission (NCC)
31.	Ismailia	Nalado	Nigerian Communications Commission (NCC)
32.	Omoniyi	Ibietan	Nigerian Communications Commission (NCC)
33.	Omotalo	Mohammed	Nigerian Communications Commission (NCC)
34.	Emeshili	Joseph	Nigerian Communications Commission (NCC)
35.	Nwokoro	Emilia	Nigerian Communications Commission (NCC)

36.	Anohu	Chika	Nigerian Communications Commission (NCC)
37.	Obinna	Ndu	Nigerian Communications Commission (NCC)
38.	Akpam	Ezekiel	Nigerian Communications Commission (NCC)
39.	Jide	Omgolorin	Nigerian Communications Commission (NCC)
40.	Caroline	Fatunaji	Nigerian Broadcasting Commission
41.	Salisu	Yakubu	Katsina State Ministry of Science and Technology
42.	Hajiya Adama	Suleiman	Yobe State Government
43.	Osayu	Ogboghodo	Rural Electrification Agency
44.	Mohammed	Ajiya	Digital Bridge Institute (DBI)
45.	Kris	Camponi	FCDO, United Kingdom
46.	Idongesit	Udoh	FCDO, United Kingdom
47.	Oyinkansola	Akintola Bello	FCDO, United Kingdom
48.	Martha	Bostock	FCDO, United Kingdom
49.	Adamu	Maitland	FCDO, United Kingdom
50.	Laraba	Alabi	FCDO, United Kingdom
51.	Anne-Rachel	Inné	International Telecommunication Union (ITU)
52.	Christine	Sund	International Telecommunication Union (ITU)
53.	Chuks	Otioma	International Telecommunication Union (ITU)
54.	Samantha	O'Riordan	International Telecommunication Union (ITU) (virtual)
55.	Ali Drissa	Badiel	International Telecommunication Union (ITU) (virtual)
56.	Kagwiria	Ngkonge	International Telecommunication Union (ITU) (virtual)
57.	Ihar	Shchetko	International Telecommunication Union (ITU) (virtual)
58.	Er	Oguzhan	International Telecommunication Union (ITU) (virtual)
59.	Cindy	McWhorter	UNICEF
60.	Kolawole Kayode	Ladejobi	UNICEF
61.	Vanessa Lerato	Phala	International Labour Organization (ILO)
62.	Dino	Correl	International Labour Organization (ILO)
63.	Aliyu	Aboki	West African Telecommunications Regulators Assembly (WATRA)
64.	Sele	Pokima	West African Telecommunications Regulators Assembly (WATRA)
65.	Ida	Mboob	World Bank
66.	Aliaksandra	Tyhrytskaya	World Bank
67.	Fola	Odufuwa	Association for Progressive Communications (APC)
68.	Josephine	Miliza	Association of Progressive Communications (APC) (virtual)
69.	Yunusa	Ya'u	Centre for Information Technology and Development (CITAD)
70.	Muhammad Bello	Yahaya	Centre for Information Technology and Development (CITAD)
71.	Harira	Wakili	Centre for Information Technology and Development (CITAD)
72.	Usman	Isah	Centre for Information Technology and Development (CITAD)
73.	Diwura	Oladepo	Tech4Dev

74.	Joel	Ogunsunla	Tech4Dev
75.	Michael	Famoroti	Stears
76.	Stephannie	Adinde	Stears
77.	Gideon	Olarenwaju	Areai
78.	Charles	Falajiki	Areai
79.	Ejikeme	Onyeaso	IHS Towers
80.	Akinwande	Mark-Obaba	IHS Towers
81.	Asmau Aims	Smaila	IHS Towers
82.	Damian	Udeh	IHS Towers
83.	Vremudia	OgheneRuemu	American Tower Corporation
84.	Kenneth	Uzim	American Tower Corporation
85.	Joseph	Myapurgi	American Tower Corporation
86.	Auwalu	Salisu	Galaxy Backbone Ltd
87.	Engr Ikechukwu	Nnaman	Association of Telecommunications Companies of Nigeria (ATCON)
88.	Ajibola	Olude	Association of Telecommunications Companies of Nigeria (ATCON)
89.	Gbolahan	Awonuga	Association of Licensed Telecoms Operators of Nigeria (ALTON)
90.	Henrietta	Ighomrore	Nigerian Bulk Electricity Trading Plc
91.	Lasisi Salami	Lawal	Nigerian Communications Satellite Ltd (NigComSat)
92.	Hauwa	Lawal	Nigerian Communications Satellite Ltd (NigComSat)
93.	Adamu	Tandama	National Office of Technology Acquisition and Promotion (NOTAP)
94.	Michael Onyeka	Ezeadichie	Haelsoft
95.	Kamal	Tamawa	GSMA
96.	Abdul - Malik	Ahmed	MTN Nigeria
97.	Anas	Galadima	MTN Nigeria
98.	Fibi	Muhammad	9Mobile
99.	Kabiru	Lawal	9Mobile
100.	Babatunde	Laniyan	9Mobile
101.	Nihinlola	Fafore	Huawei
102.	Kola	Fayemi	Smile Communications Limited
103.	Adewolu	Adene	Google
104.	Ngozi	Madueke-Dozie	Google
105.	Ben	Onyibe	Support Systems
106.	Grace	Okoh	Support Systems
107.	Eleye	Ewere	Support Systems
108.	Ibrahim Yahaya	Dikko	Hitel Consult
109.	Justice Awal	Obaje	Eemediba Ltd
110.	Precious	Ebere	DO Grassroots Forum and Citizen Empowerment Foundation
111.	Ayeni	Ekundayo	NegotiumPlus Services
112.	Leo	Opama	FMCDE

113.	Ade	Obwojoba	Nerdz Factory
114.	Aluwa	Ahmed	HMEDE
115.	Moody	NG	FMITI
116.	Sirajo	Aliyu	EMITI
117.	Adebayo	Adeyemi	FMSTI
118.	Nkechi	Isaac	Science Nigeria
119.	Nkechi	Onyedikaugozee	The Guardian
120.	Emmanuel	Elebeke	Vanguard
121.	Mulid	Sirajo Aliyu	NCS
122.	Osusuyi	Dirisu	PLC
123.	Lanre	Ogundipo	Nerdz Factory
124.	Osasu	Edebor	Nerdz Factory
125.	Chucks	Obidlegwu	FMCDE
126.	Tori	Adegbano	Tech Expert
127.	Olumide	Taiwo	Helpman Development Institute
128.	Tolulope	Awolaja	Helpman Development Institute
129.	Jonathan	Pinifolo	Consultant with ITU (virtual
130.	John	Jailoso	Consultant with ITU (virtual)
131.	Chipiliro	Chingwengwe	Consultant with ITU (virtual)
132.	Martha	Suarez	Dynamic Spectrum Alliance (DSA)(virtual)
133.	Sophiyat	Sadiq	Generation Connect Youth Group for Africa – Nigeria (virtual)
134.	Nurudeen	Sani	ITAS Community Network