New Africa-Europe Digital Economy Partnership

Accelerating the Achievement of the Sustainable Development Goals

#AfricaEuropeAlliance

European Commission

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EXECUTIVE SUMMARY

Home to the youngest population in the world, Africa is progressing rapidly in digital adoption. Over the past ten years, the continent has recorded the highest growth globally in Internet access, moving from 2.1% in 2005 to 24.4% in 2018[1]. The progress is not only visible in Internet connectivity but also in mobile-cellular telephone subscriptions and in households with a computer, and the trend is affecting the economy as a whole. GSMA reported that the "mobile economy" accounted for 6.7% of the overall GDP in Africa in 2016, representing US$ 153 billion. This is forecasted to reach 7.6% (US$ 214 billion) of the overall African GDP by 2020. Technology-related productivity gains in crucial sectors (i.e. financial services, education, health, retail, agriculture, and government) in Africa are predicted to reach between US$ 148bn and US$ 318bn by 2025.[2]

The digital economy in Africa provides not only opportunities for increased job creation and data for actionable insights, but also the basis for recognisisng human rights, accelerating access to quality basic services, improving transparency and accountability of governments, and enhancing democracy. eServices can improve all areas of public and basic service delivery. eHealth can increase access and the quality of care through telemedicine and hospital information management systems; eEducation and eLearning can support the establishment of collective digital educational resources, and virtual reality can increase access of youths in remote areas to quality VET; smallholder agriculture can benefit from market information and early warning systems, and governance can be improved through the use of digital civic registries, civic tech, etc.

Africa has the opportunity to harness the digital economy as a driver of sustainable and inclusive growth and innovation to achieve the sustainable development goals through ICTs—but if it fails to harness these opportunities, its economies risk isolation, stagnation and an increasing digital divide. With adequate investment in connectivity, suitable reforms, support to policy dialogue and technical assistance; Africa may be able to accelerate growth models, allowing the digital economy to influence all sectors of the economy and society. The result may be newfound inclusiveness, sustainability, growth and poverty reduction.

Africa's leadership has a stated ambition to create a Single Digital market in the continent. African governments have committed to accelerate sustainable socio-economic development on the continent by adopting the African Union Agenda 2063 and the African Continental Free Trade Area (AfCFTA), while substantial harmonisation work is taking place at the level of the majority of RECs. In addition, initiatives such as the Smart Africa Alliance[3] are bringing new additional African-made solutions in boosting the digital economy in the continent.

In the European Union, the Digital Single Market is creating a space of competitiveness and innovation and a common market for more than 500 million people. It is based on a comprehensive set of policies, programmes and regulations designed to remove national barriers, promote connectivity, digital skills, research, innovation and entrepreneurship. It includes measures to support digital trade and eCommerce and the interoperability of eGovernment services. At the same time, it addresses the challenges of the protection of citizen's rights, including their right to privacy.

The aim of both Africa and the EU is to cooperate in order to better connect the two markets and acceleration of the achievement of the Sustainable Development Goals based on a digital partnership based on a shared vision and common principles.

In his State of the Union speech in September 2018,[4] EU Commission President Juncker proposed a new Africa-Europe Alliance for Sustainable Investment and Jobs, seeking to drive forward intercontinental cooperation on an equal footing.

The alliance's long-term aim is to create a comprehensive continent-to-continent free trade agreement between

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1 ITU World Telecommunication / ICT Indicators database. Website.

2 Manyika, J. et al. (2013) Lions go digital: The Internet's transformative potential in Africa. McKinsey Global Institute. Website.

3 Smart Africa Alliance overview. Website.

4 European Commission (2018) State of the Union 2018: Towards a new 'Africa - Europe Alliance' to deepen economic relations and boost investment and jobs and Communication on a new Africa – Europe Alliance for Sustainable Investment and Jobs. 12.9.2018 COM (2018) 643.

Africa and the EU, building on the AfCFTA. Among the specific actions triggered by the Alliance, four thematic task forces were set up on digital solutions, energy, transport and agriculture.

The purpose of the Digital Economy Task Force (DETF) is to guide the EU and AU when prioritising actions for cooperation. With this aim, this Task Force provides a platform of partnership for the private sector, donors, international organisations, financial institutions and civil society based on a shared understanding of how an already evolving African digital transformation can achieve cross-border integration, accelerate sustainable development and bring benefits to all citizens.

Over the last 6 months, the EU-AU DETF has worked in developing a shared vision, a set of common agreed principles and a list of policy recommendations and actions focusing on four main objectives.

A shared vision

The parties of the DETF share a long-term vision of an inclusive digital economy and society in which every citizen—notably women and young people—has the opportunity to participate in the digital world. Due attention is given to the challenges of job displacement, disinformation, protection of both privacy and human rights. A more harmonised set of policies, rules and legislation at the regional and continental level lead to increased investment, while workers and consumers' rights are protected. eGovernment services are interoperable and accessible regardless of the country of origin; digital entrepreneurs are able to set up businesses with ease at low administrative costs and data. Digital goods, services and physical products associated with intra-African digital trade circulate freely across borders.

A multi stakeholder partnership based on common principles

Achieving the above vision requires concerted political support, the involvement of governments and the mobilisation of the private sector, civil society, academia and international organisations that have a clear interest in creating prosperity on the continent. Such a partnership must be grounded on common principles:

1. African leadership
2. Human-centred approach
3. Digital-by-default services
4. Build on the existing institutional framework
5. Free flow of data
6. Mutual benefit between Africa and Europe
7. A transparent, predictable and stable regulatory environment
8. Political leadership based on respect for democracy and human rights
9. Improved stakeholder coordination
10. Climate sustainability
11. Inclusive and sustainable development

Recommendations:

1. Accelerating the achievement of universal access to affordable broadband

- *Boost investment in telecom infrastructure from the local access to networks to an interconnected continent and developing financial instruments that are tailored for the investment specificity of each infrastructure project through partnerships between investors, government, financial institutions and international donors.*
- *Promote a favourable regulatory environment for competitive and harmonised regional markets in the field of connectivity.*
- *Connect rural Africa through new business models and partnerships.*
- *Promote measures that increase affordability of broadband and technology to citizens and protect them from cyber threats.*

2. Guaranteeing essential skills for all, in education and Vocational Education and Training (VET), to enable citizens to thrive in the digital age.

- *Work towards developing partnerships through a multi-stakeholder African Alliance for Digital Skills and Jobs, which involves African and European partners, to engage in policy dialogue and raise awareness among policymakers to develop digital-by-default policies and to harmonise efforts at the continental, regional and national level, based on a thorough assessment of market opportunities.*
- *Mainstream digital skills and responsible online behaviour among all citizens to enable them to be active and successful participants in the digital society and raise awareness of risks in terms of digital rights, online safety and security.*
- *Promote digital and transversal skills in schools and other educational institutions, by reviewing education curricula in accordance with the evolving needs and trends in the digital economy and society.*

- *Facilitate digital skills development across all sectors of the economy that use technology with a specific focus on governments, administrations, service providers and civil society through the provision of digital and transversal skills to those entering or already engaged in the labour market, including ICT professionals and digital entrepreneurs.*

3. Improving the business environment and facilitating access to finance and business support services to boost digitally enabled entrepreneurship.

- *Establish and strengthen partnerships between African and European partners, as well as among African regional actors, to harmonise efforts related to digital entrepreneurship at the continental, regional and national level.*
- *Adapt the local regulatory framework to the Digital Economy at all levels throughout the value chain, to ensure flexibility and ease of doing business to digital enterprises of all sizes, MSMEs, start-ups and social enterprises.*
- *Contribute to the creation of an enabling ecosystem that addresses all interrelated barriers and needs and improve advisory services to stimulate digital entrepreneurship for digital enterprises, including MSMEs, start-ups and social enterprises.*
- *Facilitate access to finance and funding mechanisms for digital enterprises of all sizes, MSMEs, start-ups and social enterprises, at all levels.*

4. Accelerating the adoption of eServices and the further development of the digital economy for achieving the Sustainable Development Goals (SDGs).

- *Make a priority in deploying the essential enabling building blocks of eGovernance services like eID, digitalising and interconnecting public registries, cashless government and open data for innovation; with the goal of enabling the Digital Economy while assuring more inclusive societies, where access to basic rights and services is ensured.*
- *Integrate the provision of eServices, developed by both the public and private sector, with adequate legal acts and regulation at all levels, ensuring that data needed to provide eServices for the community is openly available while fully respecting data protection rights.*
- *Encourage intra-African integration in digital trade to achieve wider participation by enterprises in national, regional and international e-commerce, especially cross-border, as an enabler for unprecedented market opportunities for all.*
- *Encourage action towards achieving interoperability and provide even further benefits to citizens and businesses, building on success stories in the African continent on the development and uptake of digital financial services.*

Crosscutting recommendations:

☞ ***In line with the principle that sets humans at the centre of the digital economy and society,*** focus should be given to equipping African people with the necessary skills for the digital age, in order to enable them to take full benefit of the opportunities provided by the digital economy.

☞ ***Create coordination structures*** building on the existing structures at national, regional and continental level. The structures should involve all relevant policy makers (digital, finance, infrastructure, education, health, agriculture, etc.), financing institutions, donors, investors, the private sector (including start-ups representatives), civil society and academia; and they must ensure cross-sectorial dialogue on policy development, coordination of investments, identification of technical assistance and capacity building needs, and harmonisation of rules at regional and continental level.

☞ ***Develop digital economy related policies and regulation*** in areas such as telecom, data economy, data protection and privacy, start-up laws, eCommerce and eGovernment; and *prepare bankable projects* for investors with the support of Technical Assistance and Capacity Building programmes.

☞ ***Ensure synergies*** *of the many initiatives under implementation* on issues such as mapping of infrastructure, population density, regulatory frameworks and other data gathering, seeking to scale up and increase their impact.

Introduction

The rise of digital technologies offers the opportunity to unlock new pathways to rapid economic growth, promote economic mobility, stimulate innovation, create jobs and accelerate equal access to quality public services. This, coupled with the convergence of multiple technologies and the emergence of global platforms, is disrupting the existing socio-economic models, and in the increasingly digital and data-driven economy, new rules are required to generate trust, protect data and Intellectual Property Rights (IPRs), and ensure security across the entire value chain.

As digital technologies expand access to global markets, creating network economies and bridging distances in a cost-effective way, they deliver enormous productivity gains and increase access to basic services, earning potential to improve quality of life. Only in 2016, the global digital economy was already worth US$ 11.5 trillion—or 15.5% of global GDP—, and it is expected to reach 25% in less than a decade, far outpacing the growth of the analogue economy.[5]

However, one must also bear in mind that these figures only represent the formal economy; while across Africa, the informal economy can amount to an additional 40% on top of the formal economy, estimated at US$ 880 billion.[6]

Fully aware of the need to create human-centered policies adapted to the local context—and for the achievement of the SDGs in particular—the African Union has a stated ambition to create a Single Digital market on the continent. In the spirit of partnership, the European Union (EU) stands ready to share its experience in integrating previously fragmented markets.

In the EU, the Digital Single Market is creating a space of competitiveness and innovation and a common market for more than 500 million people. It is based on a comprehensive set of policies, programmes and regulations designed to remove national barriers, promote connectivity, digital skills, research, innovation and entrepreneurship. It includes measures to support digital trade and eCommerce and the interoperability of eGovernment services. At the same time, it addresses the challenges of the protection of citizen's rights, including their right to privacy.

In Africa, much work towards policy harmonisation for the digital economy is already underway, and more is in progress at the national level, in regional cooperation such as the regional economic communities (RECs), and at the pan-African level coordinated by the African Union. For instance, the COMESA Regional Economic block in Africa is currently working towards the digital economic Integration. In this light, the block's theme for the years of 2018 and 2019 has been declared as "COMESA: Towards Digital Economic Integration".

COMESA is currently implementing the Digital Free Trade Area (DFTA) concept, which empowers traders to perform cross-border trade using ICT as a tool to minimise physical barriers, and provides them with the necessary digital tools for the enhancement of internal and global trade.

The DFTA concept comprises three trusts, namely: eTrade , eLegislation and eLogistics. Projects under these trusts are underway, and a COMESA online market is now being implemented in all COMESA's 21 Member States under the eTrade trust, enabling duty-free and quota-free trade within the region.

Furthermore, all 15 countries in the ECOWAS region are implementing a substantial number of digitalisation programmes based on jointly agreed policies, while other regions of the continent continue to define similar strategies and adapt their legislation to the digital age.

In addition, several countries in Africa are currently increasing investment towards the expansion of digital of the continent (i.e. Burkina Faso has invested more than US$180m in its 7,000 Km fibre backbone[7]).

The aim of both Africa and the EU is to cooperate in order to better connect the two market.

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[5] Huawei and Oxford Economics (2017) Digital Spillover: Measuring the true impact of the Digital Economy. Website.

[6] Medina, L. et al. (2017) IMF Working Paper: The Informal Economy in Sub-Saharan Africa: Size and Determinants. Working Paper No. 17/156.

[7] Adepoju, P. (2017) Construction begins on Burkina Faso's US$180m fibre optic backbone. ITWeb Africa.

Africa in transformation

Home to the youngest population in the world, the African continent has great potential to profit from a digital transformation, which could provide jobs to the millions of youth who continue to enter the workforce each year. The private sector is the primary engine for job creation, accounting for an estimated 90% of all jobs in the developing world.[8] Unlocking digital entrepreneurship is therefore vital. However, the public sector must also play an essential role as both a key enabler and user of digital technology, as well as the policymaker of the new economy also by supporting the existing legislation to be digital compliant.

The digital economy in Africa provides not only opportunities for increased job creation and data for actionable insights, but also the basis for recognisisng human rights, accelerating access to quality basic services, improving transparency and accountability of governments, and enhancing democracy. eServices can improve all areas of public and basic service delivery. eHealth can increase access and the quality of care through telemedicine and hospital information management systems; eEducation and eLearning can support the establishment of collective digital educational resources, and virtual reality can increase access of youths in remote areas to quality VET; smallholder agriculture can benefit from market information and early warning systems, and governance can be improved through the use of digital civic registries, civic tech, etc.

Africa has the opportunity to harness the digital economy as a driver of sustainable and inclusive growth and innovation to achieve the sustainable development goals through ICTs—but if it fails to harness these opportunities, its economies risk isolation, stagnation and an increasing digital divide. With adequate investment in connectivity, suitable reforms, support to policy dialogue and technical assistance; Africa may be able to accelerate growth models, allowing the digital economy to influence all sectors of the economy and society. The result may be newfound inclusiveness, sustainability, growth and poverty reduction.

Accelerating connectivity in Africa requires governments, the private sector and development actors to set an ambitious, inclusive and sustainable vision. To ensure that the digital economy accelerates the achievement of the Sustainable Development Goals (SDGs), civil society has to be a key partner in carrying out this vision. Engagement of civil society organisations (CSOs) and representatives will ensure that the benefits of the digital economy are human-centered, increase access to basic services and contribute to transparency, to real accountability.

Africa is progressing rapidly in digital adoption. Over the past ten years, the continent has recorded the highest growth globally in Internet access, moving from 2.1% in 2005 to 24.4% in 2018.[9] The progress is not only visible in Internet connectivity but also in mobile-cellular telephone subscriptions and in households with a computer, and the trend is affecting the economy as a whole. GSMA reported that the "mobile economy" accounted for 6.7% of the overall GDP in Africa in 2016, representing US$ 153 billion. This is forecasted to reach 7.6% (US$ 214 billion) of the overall African GDP by 2020. This progress is also evident in digital financial servicesu, as Africa has become the reference for the eMoney revolution starting with M-Pesa in Kenya.

While a consensus on how to define and measure the impact of the digital economy is only slowly emerging, its share in global and African GDP will continue to grow in the coming years, likely outpacing the growth of the overall economy.[10] Technology-related productivity gains in crucial sectors (i.e. financial services, education, health, retail, agriculture, and government) in Africa are predicted to reach between US$ 148bn and US$ 318bn by 2025.[11]

African governments have committed to accelerate sustainable socio-economic development on the continent by adopting the African Union Agenda 2063 and the African Continental Free Trade Area (AfCFTA), while substantial harmonisation work is taking place in majority of the RECs. In addition, initiatives such as the Smart Africa Alliance[12] are bringing new additional

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8 World Bank (2012) World Development Report 2013: Jobs. Washington DC: World Bank.

9 ITU World Telecommunication / ICT Indicators database. Website.

10 The Bureau of Economic Analysis of the United States Department of Commerce estimates the share of the digital economy to be 6.5 per cent in 2016 for the United States, and predicts that from 2006 to 2016, the digital economy grew at an average annual rate of 5.6 per cent, outpacing overall U.S. economic growth of 1.5 per cent per year. Website.

11 Manyika, J. et al. (2013) Lions go digital: The Internet's transformative potential in Africa. McKinsey Global Institute.Website.

12 Smart Africa Alliance overview. Website.

African-made solutions in boosting the digital economy in the continent.

In this vein, the conclusions of the first AfriSTI Forum held in Marrakesh in April 2019 affirmed the potential of science, technology and innovation as a key means of implementation of the United Nations SDGs and the African Union Agenda 2063. The Forum established that Africa's development challenges should be a trigger for innovation, and that the technologies to achieve the SDGs are being produced in Africa and should be explored. Furthermore, African policy makers agreed that inadequate infrastructure, including research infrastructure, was hampering the potential of digital solutions to achieve the SDGs. This inadequacy confers advantages to some and can deepen inequalities.[13]

The SDGs reflect a global consensus on the importance of connectivity and include a specific indicator on ensuring universal and affordable access to the internet[14]. Beyond this specific target on connectivity, digital inclusion is a key enabler of the other SDGs and as such, is a critical tool to accelerate the achievement of other goals.

Interestingly, countries with high levels of mobile connectivity have made the most progress in meeting their commitments to the UN Sustainable Development Goals[15].

However, accelerating the digital economy in Africa also comes with several challenges.

Digitalisation and technological innovation will inevitably have consequences for the environment and the ability to reach the related SDGs. Significant opportunities exist to use digital transformation to facilitate the attainment of the environmental and climate goals (e.g. by better monitoring the environment, increasing the transparency of the environmental footprint, optimising the value chain and decentralising or bottom up approaches), which all will also contribute to strengthening democracies). However, this will also entail risks such as the increasing resource and energy demand, as well as the social divide. Hence, digital transformation needs a strong governance (public and private at all levels) to ensure that it supports the achievement of all sustainability goals.

Data and digital tools are emerging that provide new possibilities for tracing materials throughout the value chain and channelling environmental information to consumers, empowering them at the same time. Digital systems help integrate information across multiple lifecycles and various stakeholder in the value chain.

Circular approaches will involve connecting people, products and systems, and digital technologies can make this happen with great efficiency, creating significant new sources of value for citizens and economies whilst also creating new challenges for regulators and policy makers.

Digital technologies will increase the resource efficiency of assets and processes, but the extent to which they will propel the development of circular business models and reduce environmental impacts will depend on the policy framework. The challenge will be to apply technologies in a systemic way that captures circular value and ensures sustainability, and to keep a total life-cycle perspective in finding solutions for both energy efficiency, the digital single market and the circular economy agendas while maintaining consumer trust and empowerment and furthering the public interest.

Furthermore, there are wide disparities in technological development between countries, with some coming close to a 90% Internet coverage while others remain as low as less than the 15%. The disparities are also evident within countries, with high connectivity penetration in urban areas as opposed to the low levels in rural, unserved and underserved areas.

The majority of citizens in Africa are lacking government-issued identification means, locking them out of access to critical public services, financial inclusion, and markets. Digital start-ups struggle to scale-up, and traditional businesses are only slowly adopting digital technologies and platforms to boost productivity and sales. Furthermore, not all governments recognise the priority to invest strategically and systematically in platforms, skills, entrepreneurship, opportunities of digitalisation for

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[13] Conclusions of the AfriSTI Forum 2019. Website.

[14] SDG No. 9.C: "Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020"

[15] GSMA (2018) Mobile Industry Impact Report: SDGs. Website.

equal access to basic services, and the development of digital infrastructure for all.

To become tomorrow's innovators, entrepreneurs and leaders, Africa's population—and particularly its women and young people—need to gain access to technology and markets, and acquire the digital skills that will allow them to thrive in an increasingly digitised global economy. Governments need to find quicker and more effective means to deliver inclusive, sustainable, cost-effective and quality services; as well as to interact with their citizens. More work needs to be done to promote ICT services within Africa and enable affordable and fast services[16], and businesses need to use digital-centred models to connect with the hundreds of millions of customers currently out of reach due to geography or income.

The Digital Economy Task Force

In his State of the Union speech dated September 2018, [17] EU Commission President Juncker proposed a new Africa-Europe Alliance for Sustainable Investment and Jobs, seeking to drive forward intercontinental cooperation on an equal footing. This proposal was well received by the African Union as both, the European Union and the African Union, are aiming for a partnership for mutual benefit.

The alliance's long-term aim is to create a comprehensive continent-to-continent free trade agreement between Africa and the EU, building on the AfCFTA. Among the specific actions triggered by the Alliance, four thematic task forces were set up on digital solutions, energy, transport and agriculture.

The purpose of the Digital Economy Task Force (DETF) is to guide the EU and AU when prioritising actions for cooperation. With this aim, this Task Force provides a platform of partnership for the private sector, donors, international organisations, financial institutions and civil society based on a shared understanding of how an already evolving African digital transformation can achieve cross-border integration, accelerate sustainable development and bring benefits to all citizens.

For this purpose, the European Commission and the African Union Commission called upon 20 African and EU decision makers and representatives of international organisations, the private sector, the international financial sector and civil society to share their expertise in drafting this report. The task force is presided by EU Vice President Andrus Ansip, EU Commissioner Mariya Gabriel, EU Commissioner Neven Mimica and AU Commissioner Amani Abou-Zeid. Two co-chairs have coordinated its work: Ms Ursula Owusu-Ekuful, Minister of Communications of Ghana, and Mr Pierre Guislain, Vice-President of the African Development Bank.

The Task Force held its first meeting in Vienna on 18 December 2018, where the principles for collaboration were established. During the following six months, the DETF drew up policy recommendations and a concrete set of actions that can be taken forward by African countries, the EU, international organisations, financing institutions, donors and private stakeholders. Building on the work of the sixth EU-Africa Business Forum in Abidjan in November of 2017, the Task Force has set four main goals:

i. Accelerating the achievement of universal access to affordable broadband.
ii. Guaranteeing essential skills for all, in education and Vocational Education and Training (VET), to enable citizens to thrive in the digital age.
iii. Improving the business environment and facilitating access to finance and business support services to boost digitally enabled entrepreneurship.
iv. Accelerating the adoption of eServices and the further development of the digital economy for achieving the SDGs.

The report builds upon a vast literature on best practices, policy and market analyses, and draws on the EU's

[16] i.e. Cloud hosting services

[17] European Commission (2018) State of the Union 2018: Towards a new 'Africa - Europe Alliance' to deepen economic relations and boost investment and jobs and Communication on a new Africa – Europe Alliance for Sustainable Investment and Jobs. 12.9.2018 COM (2018) 643.

"Digital for Development" (D4D) policy[18] and the aspirations of African Union Agenda 2063[19] —both of which establish the core elements of digital transformation as a way of delivering the SDGs. It complements the work carried out by other organisations and cooperation frameworks active in the area of digitalisation,[20] and defines the way forward for donor coordination and Public-Private Partnerships (PPPs) to act jointly and coherently to implement the proposed actions.

Shared vision of a digital economy

The parties of the DETF share a long-term vision of an inclusive digital economy and society in which every citizen—notably women and young people—has the opportunity to participate in the digital world. Due attention is given to the challenges of job displacement, disinformation, protection of both privacy and human rights. A more harmonised set of policies, rules and legislation at the regional and continental level lead to increased investment, while workers and consumers' rights are protected. eGovernment services are interoperable and accessible regardless of the country of origin, digital entrepreneurs are able to set up businesses with ease at low administrative costs and data. Digital goods, services and physical products associated with intra-African digital trade circulate freely across borders.

Such an ambitious vision requires concerted political support already emerging on the continent, the involvement of governments, and the mobilisation of the private sector, civil society, academia and international organisations that have a clear interest in creating prosperity in the continent.

With this vision in mind, the work of the DETF has been guided by the following main principles:

1. The digital economy process is African-owned and African-led, emerging from local, national, regional and continental capacity.
2. With humans at the centre of the digital economy and society, accelerating the digital economy should also tackle the existing—and otherwise growing—digital divide in many countries, paying special attention to the inclusion of all genders, unserved and underserved population, persons with disabilities (PwD), refugees and displaced people. All measures should be based on the principle of "leave no one behind" by ensuring that access to affordable broadband connectivity, digital skills and eServices is inclusive and does not reinforce or sustains existing inequalities.
3. Digital transformation is a forward-looking agenda that should aim to substantially contribute to achieving the SDGs. In many fields, the African continent has a 'no-legacy' starting point, and this allows leapfrogging development in all areas of life. The digital-by-default principle should be applied when setting up or reforming public or private services where feasible.
4. The integration process and regulatory convergence aiming at the continental single digital market should build on the existing institutional framework of the RECs and the pan-African cooperation within the African Union and the Smart Africa Alliance. The AfCFTA should be the vehicle for digital markets integration, especially for eCommerce. Both continents aim to establish collaboration of both digital markets to boost digital economy.
5. Free flow of data between economies and across political borders should be a key element in the development of an efficient digital economy in the African continent, as well as in creating a strong link with the EU's Digital Single Market—all within the privacy frameworks of Malabo convention and GDPR. Furthermore, data localisation requirements should not hinder the competitiveness of national, regional

[18] The EU Digital for Development policy. Website.
[19] Agenda 2063: The Africa We Want. Website.
[20] Including, but not limited to: World Bank Group, International Trade Centre (ITC), International Telecommunications Union (ITU), Regional Economic Communities (REC) in Africa, Smart Africa, GSMA, I4Policy, AI41.

and continental economies or undermine domestic economic diversification.

6. The digitalisation partnership between Africa and Europe is based on mutual benefits. The EU and the international community will accompany with the necessary support, especially by sharing experiences with the digital economy and by supporting the implementation of nationally, regionally and continentally defined action plans.
7. The private sector and investors should be at the forefront of the partnership supported by a transparent, predictable and stable regulatory environment; with particular attention to the needs of the MSMEs and start-ups. In line with this principle, skills, knowledge, resources and philanthropy of African diaspora in Europe as bridge builders should be harnessed.
8. Strong political leadership based on respect for the principles of democracy and human rights should be the basis for the development of digital integration. Digital tools and services will be built only while assuring the adequate level of citizen protection from abuse, limitations to freedom of speech and access to online resources and networks; as well as the strengthening of their digital skills to invoke their rights. Clearly defined policy objectives should ensure the best practice principles of technology neutrality, proportionality and predictability underpin all regulatory activity.
9. Recognising the vast number of initiatives aimed at assuring universal access to broadband, digital skills, boosting entrepreneurship and the data economy, the proposed recommendations and actions aim to create synergies, avoid duplication of work and improve donor coordination. Therefore, all means of digital collaboration will be utilised to implement to most effective and efficient way of cooperation.
10. International commitments and present challenges related to climate change and natural resources must be taken into account in order to ensure that the digital economy in Africa will contribute to sustainable and inclusive development.
11. Development partners should strengthen efforts by supporting policy dialogue, building capacities of civil society and providing technical assistance to accelerate digitalisation policies; and ensure that digitalisation opportunities are harnessed to accelerate the achievement of inclusive, sustainable development.

Cross-cutting recommendations for accelerating the development of the digital economy in Africa

- ☞ ***In line with the principle that sets humans at the centre of the digital economy and society,*** *focus should be given to equipping African people with the necessary skills for the digital age, in order to enable them to take full benefit of the opportunities provided by the digital economy.*
- ☞ ***Create coordination structures*** *building on the existing structures at national, regional and continental level. The structures should involve all relevant policy makers (digital, finance, infrastructure, education, health, agriculture, etc.), financing institutions, donors, investors, the private sector (including start-ups representatives), civil society and academia; and they must ensure cross-sectorial dialogue on policy development, coordination of investments, identification of technical assistance and capacity building needs, and harmonisation of rules at regional and continental level.*
- ☞ ***Develop digital economy related policies and regulation*** *in areas such as telecom, data economy, data protection and privacy, start-up laws, eCommerce and eGovernment; and prepare bankable projects for investors with the support of Technical Assistance and Capacity Building programmes.*
- ☞ ***Ensure synergies*** *of the many initiatives under implementation on issues such as mapping of infrastructure, population density, regulatory frameworks and other data gathering, seeking to scale up and increase their impact.*

Accelerating the achievement of universal access to affordable broadband.

Africa is already benefiting enormously from the digital economy and society. Traditional economic sectors are adopting new growth models with rising mobile phone penetration, enhanced broadband Internet access, and a growing use of eMoney across the continent.

This unleashes new opportunities for people, businesses and governments. The deployment of network infrastructure is accelerating, and the number and capacity of undersea cables that provide Africa's international connectivity have increased sharply in recent years, as have national and transnational terrestrial backbones. The construction of high-speed, fibre optic networks is accelerating as well, bringing down the price for connectivity to a seventh of what it was in some states.

Satellite transmission remains important for Africa, with satellite bandwidth covering every square kilometre of Africa and providing connectivity beyond the reach of terrestrial transmission networks. By June 2018 there were still 724 million people living beyond a 10-km range, 469 million beyond a 25-km range, and 244 million beyond a 50-km range of an operational fibre optic network node.[21]

The interlinkages between infrastructure and development are also well established, facilitating poverty alleviation, equality, growth and specific development outcomes such as job creation, market access, health and education.[22]

But despite the advances in infrastructure, Internet adoption in Africa is still low. The reasons for this issue include lack of affordability, digital literacy and skills; language barriers, low access to reliable sources of electricity, and a lack of affordable devices.

The lack of affordability stems from the supply side on the one hand, where the high taxation, high costs of spectrum, highly patented technologies and lack of market competition make deployment very expensive, especially in hard-to-reach areas.

The DETF aims to address key challenges facing digital connectivity in Africa by looking at three main issues:

- Investment needs in the African connectivity infrastructure — While investment in Internet connectivity has risen at a steady pace over the past years, funds remain insufficient to ensure universal access to affordable broadband connectivity, as operators find difficulties in accessing financing from local commercial banks. A multi-stakeholder partnership involving all operators in a country, governments, local regulators, and international partners is necessary to define joint connectivity solutions, along with joint public-private financing. Moreover, in most of the projects in rural areas, access to electricity will have to be tackled and included in the joint projects.
- Affordability and access to networks, with a focus on unserved and underserved areas and populations — Internet remains out of reach for many Africans. Large parts of the continent's population remain excluded from the benefits of Internet access and therefore remain marginalised when compared to the sectors of the population that are part of the digital economy. In total, nearly 300 million Africans live more than 50 km from a fibre or cable broadband connection, and substantial disparities exist between rural areas—where nearly 60% of the population lives—and the urban regions, between communities that are more or less well-off, more or less educated, as well as between men and women .
- Fragmentation and lack of effectiveness of the regulatory framework and their implementation — The wholesale markets in Africa are generally underdeveloped, while high taxation rates and VSATs license fees of telecom services and equipment and costly spectrum licencing regimes discourage private investment and competition. On a broader perspective, regional harmonisation of telecommunication regulation and digital policies has been an essential aim for over a decade—but is still a work in progress with significant regional differences. At the continental level, harmonisation is missing despite the policy guidelines provided through the Reference Framework for the Harmonization of Telecommunications/ICT Policies and Regulations in Africa, adopted by the African Union in June 2008.

[21] Hamilton Research (2017) Africa Bandwidth Maps. Website.

[22] Straub S. (2008) Infrastructure and Growth in Developing Countries: Recent Advances and Research Challenges. World Bank Policy Research Working Paper No 4460.

1.1 Defining the problem

- *Investment needs in the African connectivity infrastructure*

While Africa' has witnessed a digital revolution in the recent years, and the number of connected individuals in Africa has significantly increased (330 Million mobile Internet users in Q4 2018 compared to 17 million Internet users in 2005)[23]; Internet users continue to represent only a 24.4% of the continent's population.[24]

According to the data of ITU on the deployment of optical fibre and backbone transmission networks, connectivity capacity varies strongly by location, with Africa primarily connected at its periphery with international connectivity infrastructure (i.e. submarine cables)[25]. In the meantime, countries in the centre of the continent continue to suffer from a deficit of cross-border, backhaul and local access to networks backbone connectivity.

Thus, inequalities between States are significant. Landlocked countries suffer more from a lack of connectivity than more advanced coastal countries in the north, south and west.

The national backbone infrastructure and the international Internet connectivity are the two critical building blocks to drive access to broadband further, as the growth of broadband subscriptions has to go hand in hand with the growth of national backbone capacities and international Internet bandwidth.[26]

However, connectivity issues extend beyond the large sections of the population offline, and those who still make it online are faced with connectivity options that are much lower in quality when compared to other regions.

Mobile Internet users in Africa experience the most prolonged delays in Internet speed—particularly when compared to Europe,[27] and the overall quality and stability of Internet connections in Africa are generally inferior to those found in the rest of the world. The continent has the lowest international connectivity in the globe, with half the bandwidth of Asia and the Pacific and 20 times less than that in Europe.[28] The slowest median download speeds were found in African countries (0.82 Mbps), followed by Latin America and the Caribbean (1.16 Mbps), and a vast gap was identified between low and middle-income countries (LMICs) and countries in North America (where median download speeds were 4.76 Mbps) and Europe (7.06 Mbps).[29]

According to the Alliance for Affordable Internet (A4AI), significant investments will be required to achieve universal access to broadband connectivity, totalling up to approximately US$112 billion, including about US$20 billion in satellite investment costs in the most remote rural areas, as well as about US$18 billion to provide digital skills to all Africans.[30] The World Bank is leading the "Digital Mooshot for Africa" initiative and has committed US$ 25 billion to the required investment, which is expected to motivate additional investment resources from multilateral development banks, continued investment from the private sector and investments by the governments in Africa.

However, in order to reach African citizens in unserved and underserved areas and populations, a mix of technologies, public engagement and new business models[31] are also required.

The latter may include support and incentives for community networks, or rural service providers using a number of optimal technology solutions[32].

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23 GSMA (2019) The Mobile Economy. Website.

24 ITU (2018) World Telecommunication/ICT Indicators database.

25 ITU (2019) Broadband Maps. Website.

26 Idem.

27 Idem.

28 ITU (2016) ICT Facts and Figures. Website. See also: GSMA Mobile Connectivity Index. Website.

29 Woodhouse, T., and Thakur, D. (2018) Improving Mobile Broadband Quality of Service in Low- and Middle-Income Countries. Washington DC: Web Foundation.

30 Alliance for Affordable Internet & Xalam Analytics (2019) Modelling Investment Requirements to Achieve the Digital Moonshoot for Africa 2021 & 2030 Connectivity Targets. Prepared for the World Bank. Preliminary Observations of March May 2019.

31 Examples of new business models can be consulted at the Guide to High-Speed Broadband Investment.

32 See examples at Alliance for Affordable Internet (2018) 2018 Affordability Report. Website.

For example, connecting public libraries—as well as other public buildings—and offering WiFi and dedicated terminals would allow people to get online and access technology regardless of their resources. Given high prices for data in many countries relative to incomes, as well as distrust about the value of what is online, a free public option can be a vital stepping-stone towards 'private' access.

Overall, solutions shall address connectivity issues spanning across the international, backhaul and local level:

i. *International connectivity:* Countries in Africa are progressively linked to undersea Internet cables or cross-border terrestrial fibre links (particularly for land-locked countries), while satellite transmission (including the latest generation of Ka-band satellites) remains extremely important for Africa due to its coverage of areas out of reach.[33] Increasing the number of international connections per country will increase competition and bring down prices, accelerating the transition to a functional digital economy.
ii. *Backhaul:* Once connected to high-speed Internet at the border, countries in Africa require backbones to carry Internet traffic from the edge to urban and rural centres. Furthermore, backhaul or metro networks are necessary for connectivity to extend further. Internet Exchange Points (IXPs) can also help to reduce costs by decreasing the use of international circuits and improve latency. SES estimates that about 30% of the rural population will never be reachable with a fibre backbone. Hence, a mix of technologies (mobile, satellite, microwave and emergent technologies) should be considered to provide reliable, quickly deployable and cost-efficient infrastructure connectivity to adapt to the conditions required to reach backhaul connectivity.
iii. *Local Access Networks:* Once high-speed connectivity arrives at a population centre via international and backhaul connectivity, telecom operators may use it to provide digital content and services (such as wireline and wireless access) to people, businesses, and governments.

- *Affordability and access to networks, with a focus on unserved and underserved areas and populations*

Traffic congestion, unstable reception, limited coverage, slow Internet speeds and power outages constitute some of the main reasons why people do not connect, although they may very well have access to the Internet.

From a gender perspective, mobile is the primary means of Internet access for women in LMICs[34]. However, social norms and disparities between men and women in terms of education and income influence women's access to and use of mobile technology, and often contribute to women experiencing these barriers more acutely than men.

Furthermore, traditional telecommunications business models fail in the field of rural Internet access, as technologies used for higher population density areas are not adequate and high capital expenditure makes the risks related to investment very high.

In rural, remote areas with sparse and spread-out population, a viable business case for private actors to

[33] Hamilton Research (2017) Africa Bandwidth Maps. Website.

[34] According to a study by Worldreader and Opera, Kenyan women spend more time on the Internet compared to their male counterparts. Women notably use the Internet for health, education, economy, and public service information topics more than men do. About half of female respondents said that they spend over KES 1,000 to buy mobile data plan, while only a third of the male respondents are doing so. Increased competition will drive prices down and increase consumers' purchasing power, primarily benefitting women.

invest in connectivity on their own is often lacking. Coverage in these areas cannot be achieved by a single operator and has to be tackled with solutions including — but not limited to — extensive network sharing models between operators and new business models (that regulatory frameworks should allow) and by an appropriate use of universal service financing mechanisms, including universal service funds.

Covering this population in a commercially sustainable way requires taking actions to change the business case of connectivity in these areas. Accurately mapping the existing coverage and population distribution with accurate georeferenced data will allow better targeting of investments by operators.

Thus, expanding coverage is more of an economic challenge than a technical one, as areas without coverage are typically rural locations with low population densities, low per capita income levels, and less developed or non-existent infrastructure. This results in lower disposable income and revenue expectations (up to ten times less than in the urban equivalent, and usually around three times lower average revenue per user), presenting a significant obstacle to extending the reach of commercially sustainable infrastructure.

- *Fragmentation and lack of effectiveness of the regulatory framework and its implementation*

A forward-facing digital policy that encourages private investment requires clear and impartial ground rules over the medium and long-term, creating an equal playing field for all actors. Any distortion in the level of competition must be avoided, including existing monopolies in infrastructure, backbone networks and the management of international traffic.

According to the GSMA, countries with a higher level of taxation are generally those with relatively low levels of mobile Internet connectivity as a result of the impact on prices—and therefore on the population's opportunities to access mobile services.[35] For example, surtaxes on incoming mobile traffic—a widespread practice in many African countries—penalise users, operators, and local economies alike. The World Bank noted that in countries that have loosened their regulatory frameworks, prices for international calls have decreased between 31% and 90%, and consequently, international call volumes have increased between 32% and 104%.[36]

In 2015, mobile operators returned an average of 35% of their revenue in the form of taxes and regulatory fees in the 12 countries in Sub Saharan Africa for which data was available.[37] In 2010, taxes and fees paid by mobile operators represented 4.1% of total revenues for governments of all African countries,[38] and a 7% of the total revenues in Sub-Saharan Africa between 2000 and 2015.[39]

In the meantime, satellite-receiving antennas are still subject to licensing and customs fees that double the costs of the equipment in African countries and prevents in many cases the deployment of large quantities of them. This is hampering the deployment of cost-efficient solutions, including in disaster relief situations.[40]

At the regional level, the integration of markets could create economies of scale, increase competition, and highly reduce the overall price of a broadband subscription; serving as the first step in the creation of a Single Digital Market on the African continent. Network operators and investors, doing business under a harmonized set of rules, could decrease their operation cost and invest more in infrastructure deployment. Functional and sustainable Free Roaming Areas can

35 GSMA Intelligence (2017) Taxing mobile connectivity in Sub-Saharan Africa. Website.

36 World Bank (2016) Breaking down barriers. Washington DC: The World Bank Group, and: GSMA (2012) Gateway Liberalisation: Stimulating Economic Growth. Website.

37 Rogers, M. and Pedros X. (2017) Taxing mobile connectivity in Sub-Saharan Africa. London: GSMA,

38 GSMA (2011) African Mobile Observatory. Website.

39 According to Bearing Point, in sub-Saharan Africa, the mobile phone sector had $71 billion in tax revenue between 2000 and 2012, or 7% of sub-Saharan Africa's total tax revenue.

40 Smart Sustainable Development Model Advisory Board (2018) Tools for rapid ICT Emergency Responses and Sustainable Development. Geneva: International Telecommunication Union.

become a reality in the RECs, a first building block for towards pan-African digital integration. Further government intervention, for instance, in the form of public-private partnerships (PPPs), where appropriate and necessary, may be used to attract private sector participation, and expedite development of Internet infrastructure.

To unleash the digital potential of the continent, the government's primary role is to create the enabling environment for boosting the digital economy, and the conditions that allow the private sector to take the lead in developing infrastructure and offering high-quality Internet services when there is a market case.[41]

1.2 Policy recommendations and proposed actions

Boost investment in telecom infrastructure from the local access to networks to an interconnected continent, and develop financial instruments that are tailored for the investment specificity of each infrastructure project through partnerships between investors, government, financial institutions and international donors.

- Support the creation of structured policy dialogue, based on reliable data and country-owned assessments on digital connectivity at the national, regional and continental level involving all relevant stakeholders and promoting a whole-of-government approach to investments in order to facilitate digital economy across sectors.
- Leverage local skills and expertise and assure the necessary technical assistance for feasibility studies, development and implementation of bankable projects.
- Build on and scale up existing initiatives to map the infrastructure needs of the African continent, including the population density by bringing together and scaling up already existing initiatives. Provide a priority list for investments in building the missing links, taking into account all connectivity technologies and services.
- Create innovative financial instruments for infrastructure deployment in Africa with a focus on underserved areas, such as a dedicated telecom infrastructure fund, the use of blended grants and guarantee schemes to provide tailor-made solutions on a case-by-case basis. The new instruments should be sufficient to assure that countries have a minimum of two international connections in order to ensure redundancy and competition on the market, and support new business models for areas that are not commercially viable using public support.

Promote a favourable regulatory environment for competitive and harmonised regional markets in the field of connectivity.

- Strengthen the capacity of policymakers and regulators to implement harmonised telecom rules at the regional and continental level.
- Foster transparent, predictable, pro-investment and pro-innovation regulatory frameworks that:

a) Ensure that spectrum allocations prioritise connectivity objectives and overarching development goals rather than maximising short-term government revenues, and enable the development of community networks to provide service for regions and people who would otherwise be at risk of exclusion or under-service.

b) Accelerate the release of spectrum to drive coverage and guarantee affordability, and develop national spectrum roadmaps to provide certainty and predictability to investors.

c) Promote spectrum licences that are of sufficient duration and provide operators with commercial,

[41] This is the main objective of the Policy and Regulation Initiative for Digital Africa (PRIDA), launched by the European Commission in partnership with the International Telecommunications Union (ITU) and the African Union Commission (AUC). The initiative aims at fostering universally accessible and affordable broadband across the continent to unlock future benefits of Internet-based services. Its specific objective is to create a more harmonised and enabling legal and regulatory framework for the use of Information and Communication Technology (ICT) for social and economic development, with an emphasis on boosting the spectrum market across Africa.

operational and technological flexibility to make the most efficient use of the spectrum available.

c) Encourage Governments and regulators to further support efforts to expand network coverage, by offering open and non-discriminatory access to critical infrastructures such as state-owned public infrastructures such as public buildings, roads, railways and utility service ducts. Active and passive infrastructure sharing should be allowed under primary legislation and encouraged by regulators.

d) Funds collected under the universal service funds (USFs) should be primarily dedicated to rural coverage purposes, and the stimulation of further demand in such areas[42].

d) Reduce overall uncertainty and unpredictability in the tax system and focus general taxation on profits rather than revenues and introduce direct incentives for rural area investment such as import duty exemptions on mobile equipment.

e) e) Reduce regulatory barriers for the deployment of digital infrastructure (such as satellite services high licence fees for each installation and encourage following best practices such as in Nigeria, South Africa and Kenya).

f) Are people-centred and enshrine and assure the protection of end user's rights, including data protection and privacy.

Connect unserved and underserved areas through new business models and partnerships.

- Create financial instruments with the involvement of national governments designed to support new business models such as community-based networks, the use of a mix of technologies, the reduction of deployment and operation costs, energy/mini-grid solutions to power local networks, and light and less energy consuming network infrastructures.
- Use the universal financing mechanisms dedicated to the development of the digital economy as a guarantee scheme for investments in rural areas by the private sector.
- Use innovative spectrum licensing and management policies that can create incentives for investment in low populated areas.
- Develop detailed principles and guidelines on how to bring connectivity to rural areas.

Promote measures that increase affordability of broadband and technology to citizens and protect them from cyber threats.

- Implement initiatives to help reduce the price of devices and services for consumers (i.e. Collaborate with financial institutions and local savings groups to provide risk capital for handset loans for low-income people at lower interest rates).
- Adopt appropriate policy and regulation in areas such as taxation to promote the affordability of Internet (i.e. review sector-specific taxes that may exacerbate the cost barrier to mobile ownership and use and satellite receivers' deployment).
- Review the licenses schemes for satellite receivers to reflect administrative costs and issue blanket licences.[43]

[42] Studies conducted by ITU and the GSMA show that, across the world, more than half of the sums collected for USFs were never utilized, while over a third of the funds were not able to distribute any of the levies collected. The reports also highlighted that, when administered ineffectively, USFs can be counterproductive by effectively taxing communications customers, and therefore raising the affordability barrier.

[43] Blanket Licensing: Traditionally, most governments have required each VSAT terminal to be licensed; this was in addition to requiring a network operator's license. However, there is increasing interest in so-called "blanket licensing." With this approach, certain classes

- Develop appropriate legal and policy frameworks that help to protect and **safeguard digital infrastructure and data from cyber threats**, and provide a safe and secure online experience to all users.
- Adopt **a policy for the frequency spectrum harmonisation** for a new generation of networks such as 5G to guarantee the economy of scale to bring services and products price down affordable to everybody.
- **Prioritise connections to public buildings** such as libraries and schools as nodes in local networks and as venues where individuals can experience the Internet in a welcoming and neutral environment, and make a better use of **the opportunities offered by the African National Research and Education Networks (NRENs).**[44]

of VSATs are configured based upon technical criteria that eliminate the risk of unreasonable interference. Thus, a single blanket license can be issued covering an unlimited number of VSAT terminals. See Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive).

[44] Dedicated networks providing affordable high-speed network connectivity, applications, services to research, and education institutions.

Guaranteeing essential skills for all, in education and Vocational Education and Training (VET), to enable citizens to thrive in the digital age.

The advent of digitalisation has transformed the definition of literacy. Along with skills allowing individuals to both use digital devices and create digital solutions to local development challenges, a whole set of transversal competencies proves necessary, especially for women and young people entering the labour market. These entail digital literacy, e-business skills and 21st century skills, including critical thinking, problem-solving, creativity, innovation. The skills that individuals need to thrive in the digital age are here identified across three layers, each spanning a spectrum from basic to advanced and including or combining different types of complementary skills. Across all areas, a particular focus on bridging the digital divide affecting women, persons with disabilities and marginalized groups will be specifically taken into consideration.

- Digital skills for all – Much can be done through providing foundational skills including literacy, second language learning and basic digital skills to enable citizens to actively participate and succeed in the digital society. People are thus not only enabled to use their mobiles, tablets or computers, but also become critically aware of what the Internet offers in terms of knowledge and services, as well as of digital hygiene, digital rights and risks in terms of online safety and security. Thanks to these skills, people are also positioned as producers of digital local content and not only as consumers of digital goods, which is essential for catalysing entrepreneurship across the continent.
- 21st Century Skills in education – Students need to be provided with the right competencies, mainly through formal education, through integrating digital and 21st-century skills in education curricula. This can be supported through the use of digital technologies in education, such as virtual reality, digital innovation hubs and tech labs set up in schools. By developing a thorough understanding of digital technologies from an early age, while acquiring skills such as critical thinking, problem solving and creativity, young people become able to grasp opportunities of the digital economy, including those related to their future employment. In this regard, the development of enabling policies for ICT in education, as well as the systematic provision of relevant training for teachers, is essential.
- Skills for ICT professionals, digital entrepreneurs and public institutions – It proves necessary to build a skilled workforce through the provision of digital and entrepreneurial skills to future or current professionals across all sectors that use technology, including TVET programmes. Initiatives targeting workers should focus on digital skills that are relevant to and sought after by the specific sector of competence (i.e. health, e-commerce, finance) and avoid skilling for the void.

  High-level technical skills, such as programming languages and data analytics, as well as knowledge of network and infrastructure architecture, including installation and maintenance, need to be available to students and professionals across all sectors, in line with rapidly changing market needs. Dedicated initiatives have already been implemented by partners, with the private sector playing a leading role in up-skilling professionals in the field. Higher-level educational institutions are also crucial in mainstreaming digital skills for ICT students and professionals.

  Rather than a focus on concrete technical skills to implement digitals tools and solutions, the specificity of digital entrepreneurs lies in understanding and recognizing the benefit of digital technologies for innovation. Specific soft and technical skills related to bookkeeping, inventories, invoicing, trade, platform-to-business (P2B) and business-to-business (B2B), need to be provided to business owners, to ensure digital enterprises can be run efficiently through digital platforms. They need to be assisted in identifying market opportunities.

  Along with private sector employees, professionals in the public sector need to be upskilled so they can lead the digital transformation of public institutions and services.

2.1 Defining the problem

Closing the usage gap

Multiple demand side obstacles prevent citizens from using mobile internet services. Often, these obstacles are bigger and more prevalent in low and middle-income markets, and past research has shown that the key issues are not only accessibility and affordability, but also lack of fundamental digital skills, relevant local content, safety and security.

In this regard, a large scale consumer survey commissioned by the GSMA in 2018 showed that literacy and skills were identified as the greatest barrier to mobile internet use overall for men and women alike in Africa.[45]

Impact of digital technology on society and challenges for skills development

Lack of capacity and relevant skills to exploit the potential of technological devices and web tools has been identified as one of the main barriers to Internet uptake in developing countries. The digital divide in access and skills particularly affects vulnerable users, including those from rural and low-income communities, disabled and marginalized people, as well as women. While the gender gap has narrowed in most regions since 2013, it has widened in Africa. Here, women are 25% less likely than men to use the Internet.[46] At the same time, if technology holds a promise to empower vulnerable communities, there is even more potential in the developing world, where a lower starting point provides for more significant potential achievements. To take full advantage of opportunities offered by the digital economy at all levels, adopting a people-centric approach and helping citizens familiarize with digital tools is crucial. At the same time, there is a need to lower usage barriers related to costs and literacy, as well as to address stereotypes and gender inequalities hindering individual access to technology. In parallel, policy-makers require continuous skills development, training and awareness raising, to keep up with changes in the digital economy and society and take relevant policy decisions.

While a significant coverage gap still prevents many from accessing the Internet and online services in Africa, the reach of mobile networks, together with satellite and Wi-Fi, has dramatically expanded in recent years, with mobile remaining the infrastructure with the most coverage in Africa. There is a strong need for interventions promoting skills development – both from a technical and cognitive viewpoint – and digital inclusion for all to help cover the usage gap. Awareness-raising activities in targeted measures plays a key role in favouring access to technology. Promoting a conscious use of technological tools among citizens, including mobile phones, empowers them to manage their resources better and to access knowledge relevant to their everyday life. While this is fundamental for their full integration in modern society, it also allows citizens to be aware of digital hygiene, the risks and dangers entailed by navigating the web, including the dangers of cybercrime. The skills needed to thrive in the digital age are not merely related to the use of technological tools. Technical skills need to be complemented by other competencies, including, for instance, financial literacy on digital financial services (i.e. payments, remittances, credit, savings and insurance), which boosts financial inclusion within digital economies.

Growing Young Population and Unemployment

Africa has one of the youngest and fastest-growing populations in the world. By 2045, the population aged 15 to 24 will double to 400 million.[47] According to the United Nations, young people under 15 years old made up 41 % of the total African population in 2017. An estimated 15 to 20 million increasingly well-educated young people are expected to join the African workforce every year for the next three decades.[48] This causes concerns relating to the availability of suitable employment, which affects Africa as a whole. Across most of Sub-Saharan Africa, the lack of productive opportunities for youth and adults alike resulted in 247 million people engaged in vulnerable employment in 2016, reaching around 68% of employed population. While growth in the working-age population will likely lead to a marginal decrease in the rate of vulnerable employment over the next two years, the number of people in vulnerable forms of work is expected to rise by 14.6 million.[49] From 2030, Sub-Saharan Africa is

[45] GSMA (2019) The Mobile Gender Gap Report 2019. Website.

[46] ITU (2017) ICT Facts and Figures. Website.

[47] African Development Bank Group (2018) African Economic Outlook - Education & Skills Mismatch. Website.

[48] World Economic Forum (2017) Executive Briefing: The future of jobs and Skills in Africa. Geneva: World Economic Forum.

[49] International Labour Organization (2017) World Employment Social Outlook. Geneva: ILO

expected to annually introduce more new job seekers than the rest of the world combined.[50]

At the same time, as one of the fastest-growing industries in Africa, digital technology is challenging and revolutionising the employment landscape. It has been generating a high demand for qualified, local workforce, not only in the ICT industry, but also across all sectors that could benefit from digital transformation including in terms of cost-effectiveness, inclusive access and reach, as well as growth.
Continuous advancements in technology correspond to an ever-changing labour market. In line with current trends, new jobs will continue to be created, many jobs will be transformed, and others will be lost. Digitalisation is leading to an increasing demand for professionals who can blend digital and Science, Technology, Engineering, Arts and Mathematics (STEAM) skills with traditional subject expertise, such as digital-mechanical engineers and business operations data analysts, who are able to combine in-depth knowledge of their industry with skills for the latest analytical tools, to allow a quick adaptation to innovative business strategies.

Opportunities and challenges posed by new technologies will further influence investment decisions and automation may erode labour-cost advantages of low-income countries and lead to reshoring of production. There will also be qualitative effects. Significant first-mover advantages in Artificial Intelligence (AI) run the risk of aggravating the income gap not only within but also between countries,[51] while the emergence of digital-platform-based work will have an impact on working conditions and rights.

Quality Education and Education Curricula

Access to quality educational resources and systems in Africa remains a challenge. Students do not seem to be acquiring the marketable skills necessary to thrive in a fast-changing labour market and courses may be poorly matched with labour market opportunities. While enrolment in primary and secondary education has substantially been improving, there are still severe challenges that hinder access to quality education, with high percentages of school leavers missing even basic literacy and numeracy skills. The educational foundation for further learning is therefore weak. Evidence shows that higher education levels imply more exposure to technology, which in turn increases the ability to adapt more quickly to new technologies. In many countries, educational institutions are the first point of affordable access for many users.[52] Only a very small minority of students leaves school with basic coding skills. Access to higher education for the relevant age group remains at 5%, the lowest regional average in the world, just one-fifth of the global average of about 25%.[53] This leads to high rates of migration of talent for those in pursuit of training and research opportunities out of Africa.

Even with mostly improved curricula, African educational systems fail to cover the need for digital and transversal skills and therefore need to collaborate with other actors, mostly from the private sector, to meet market demand. Schools and other educational institutions in Africa have limited network connection and access to technology. Often, even where equipment is in place, teachers are not trained on how to use and educate children on technology, which drastically limits their learning opportunities. A focus on digital-oriented teacher development programmes results in students using ICT devices not only to develop elementary skills, such as typewriting and basic web research, but also to grow an ability to use computers or smartphones as self-teaching tools and further develop cognitive skills.

In the African context, eLearning is becoming increasingly popular and improving access to education for the rural population. For instance, Massive Online Open Courses (MOOCs) are online courses at the higher education level, which are often free and have been successfully aiming for large-scale and open participation. In order to reap the benefits of online courses, education providers, together with authorities, should be encouraged to discuss how MOOCs could be incorporated into formal education curricula, with official credit given to positive completion of a MOOC. Teachers can also benefit from MOOCs or other online resources for their own professional development and to keep their knowledge up to date with current trends, in line with lifelong learning principles. On the other hand, focus should also be given to developing offline resources and platforms, to ensure that also disconnected communities in remote areas can benefit from innovative approaches.

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50 World Economic Forum (2017) Executive Briefing: The future of jobs and Skills in Africa. Geneva: World Economic Forum.

51 Ernst, E. et al. (2018) The economics of AI: Implications for the future of work. Geneva: ILO.

52 Hargittai, E. (2002). Second-Level Digital Divide: Differences in People's Online Skills. Website.

53 Chuks, J. (2017). Challenges and prospects of Africa's higher education. Global Partnership for Education. Website.

Building a Qualified Workforce

Considering demographic factors and the digital divide in Africa, dedicated programmes including education curricula and Vocational Education and Training (VET) enable learners to acquire specific skills to develop as professionals in the digital economy. Digital, e-business and 21st Century skills are essential to digital entrepreneurship, digital transformation, and even successful conceptualisation and implementation of digitisation projects in both the private and public sectors.

While large companies are more active in offering training to up-skill their workforce, MSMEs tend to lag behind. In Africa, MSMEs provide 80% of jobs and represent 90% of all companies.[54] Because of their weight in the African economy, there is a strong need to foster their inclusion in activities and programmes that aim at improving skills among workers.

Employers across Africa identify skills gaps as a significant constraint to their ability to compete in the global With the rapid development of technologies, an agile relationship between public and private actors is essential to ensure that public training corresponds to the actual needs and opportunities in the labour market. By building on the technical and financial capacity of the private sector and the quality brokering capacities of public actors, partnerships provide an added value for replicating good practices, adapting them to specific local contexts. Hence a strong need to share experiences that have already been successfully implemented by partners in Africa and Europe to replicate positive outcomes on a wider scale.

Local authorities and civil society play a crucial role in ensuring that learning opportunities do not remain limited to private sector employees, but that they are accessible to a broad audience, regardless of their age or status. They also guarantee that educational content is relevant to the local context, in the spirit of ownership and effectiveness. In this context, it is fundamental to ensure that policies and programmes investing in digitalisation target the whole population.

Addressing the digital divide in all its forms means taking into account several crosscutting issues, including gender, economy. These include 41% of firms in Tanzania and 30% in Kenya, while companies in other countries appear to feel less pressure, namely 9% in South Africa and 6% in Nigeria. However, this pattern may worsen in the future.[55]

When it comes to up-skilling training activities, private companies deliver intermediate and advanced skills to cover their own need for ICT professionals. They are also active in delivering Corporate Social Responsibility projects focusing on training, which are often specifically dedicated to youth, refugees, people with disabilities and women. Through VET, governments help address market failures focusing on foundational knowledge and skills, with the private sector mostly covering training in proprietary technologies. Collaboration and dialogue between private sector representatives and VET providers are needed for joint market analysis and to ensure young people can obtain relevant work experience.

The Role of Public-Private Partnerships in Addressing the Digital Divide

disability, diversity and inclusion. Adopting strategies that focus on bridging the gender digital divide is necessary for African countries to have a successful digital future. While ensuring widespread Internet and technology penetration, policies focusing on skills should respond to the different barriers faced by anyone, regardless of their social and economic status and whether they live in urban or rural areas. For quality content to reach as many as possible, curricula and materials need to be tailored according to the local context and delivered in local languages, where relevant. Beyond formal education and training opportunities, it is important to take into account solutions which can reach and provide free resources for skills development to everyone, including adults and children in schools without access to broadband or equipment. A notable example is constituted by libraries, which hold the potential to benefit adults throughout their lives, as well as to complement schools. Libraries can also be important venues for informal and non-formal learning, as well as undirected access to and use of information.

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[54] Sultan, T. (2019) Here's why smaller companies make the most valuable partners. World Economic Forum. Website.

[55] Hall, M. (2017) Close Skills Gaps to Prepare Africa's Workforce for Tomorrow's Jobs. World Economic Forum. Website.

2.3 Policy recommendations and Proposed Actions

Work towards developing partnerships through a multi-stakeholder African Alliance for Digital Skills and Jobs, which involves African and European partners, to engage in policy dialogue and raise awareness among policymakers to develop digital-by-default policies and to harmonise efforts at the continental, regional and national level, based on a thorough assessment of market opportunities.

- Engage public stakeholders, private companies, international organisations and donors, universities and NGOs, set up clear Key Performance Indicators (KPIs) and a dedicated expert group to (i.) deliver expertise on market needs and review, co-create education curricula at all levels and establish new VET programmes focusing on digital skills; (ii.) promote exposure of students and teachers to work-based learning; (iii.) engage with network operators and equipment producers, both on a pan-African and regional level.
- Support knowledge transfer, exchange programmes between innovation hubs and research centres, and incentivizing mentorship or role model programmes.
- Establish a capacity development programme to support African policymakers, regulators and other public sector representatives in taking digital-by-default decisions on digital and transversal skills development, including on AI and its human rights and ethical implications and exchanging knowledge of new connecting technologies (i.e. satellite, Wi-Fi, LTE 5G). This should be done in dialogue and collaboration with the private sector, ultimately contributing to creating a favourable business environment.
- Develop forecasting tools to analyse the existing skills base and evolving needs in the labour market and create a nationally-coordinated multi-stakeholder mapping of relevant initiatives implemented in Africa to facilitate identification and scaling-up of best practices.
- Develop dedicated funding mechanisms for digital and transversal skills development training, and adopt supporting instruments to make training at all levels more inclusive and affordable on the basis of good practices and an understanding of the local context (i.e. voucher schemes for ICT training for unemployed and citizens in need of IT training offering full or partial coverage of training fees by governments).
- Set up incentive mechanisms and develop a regional qualification framework for African institutions to become centres of excellence delivering training on ICT in line with market needs and based on knowledge sharing between European and African partners.
- Design policies through a human-centric and holistic approach that take into account the local context and relevant crosscutting issues at all stages of policy design and implementation. A specific focus on women, people living in remote areas, disadvantaged and marginalized communities, including refugees, disabled people and unemployed people, is encouraged through a dialogue that involves these targeted groups.
- Provide support for capacity building of policy makers to allow them to identify opportunities for the digital economy at large, and e-services more specifically, and provide demand-driven technical assistance for the implementation of nationally identified action plans and projects to accelerate the digital economy.
- Provide support for capacity building of policy makers and law enforcement to strengthen cyber security.
- Provide support to civil society for digital rights awareness and debates to strengthen their role as key actors in the digital economy.

Mainstream digital skills and responsible online behaviour among all citizens to enable them to be active and successful participants in the digital society and raise awareness of risks in terms of digital rights, online safety and security.

- Build multi-stakeholder public-private partnerships to provide training on responsible online behaviour and digital hygiene, with a focus on the use of mobile phones, i.e. via local networks of agents of relevant telecom companies.
- Ensure that online services that are relevant to the everyday life of citizens (i.e. eGovernment, eLearning, eAgriculture etc.) are tailored to different levels of literacy, including financial literacy and digital skills, ensuring recognition in national and sector strategies.

- Invest in education initiatives that increase mobile digital literacy and confidence for men and women across all levels of education, income and familiarity with mobile and the internet; and work with trusted local networks to deliver digital skills training, for example in partnership with a mobile operator.
- Scale-up training programmes on digital financial literacy, including those on remittances targeting migrants and refugees.
- Integrate libraries and other life-long learning venues into digital skills strategies, supporting their engagement with adults and children outside of schools, and draw on their existing expertise in information literacy skills.

Promote digital and transversal skills in schools and other educational institutions, by reviewing education curricula in accordance with the evolving needs and trends in the digital economy and society.

- Review education curricula according to current needs and trends in the digital society, economy and labour market, with a focus on STEAM and a combination of digital, 21st century and e-business skills, across all areas of learning.
- Promote gender-inclusive education frameworks and policies and boost relevant education opportunities and digital skills development for women and girls in STEAM-subjects to narrow the gender digital divide.
- Encourage diversity and inclusion in STEAM education.
- Provide schools and other educational institutions with technology equipment and, where possible, broadband Internet connection. More advanced equipment will need to be provided by companies in work-based learning systems. In parallel, ensure that teachers access digital training and promote the development of train-the-teachers programmes, both for their own professional development and for educating students on the use of technology to help create a scale-up and multiplier effect.
- Promote technology-supported learning, including creating and scaling-up eLearning platforms, which offer instant access, and use open educational resources. Ensure that innovative digital knowledge products and learning opportunities reach people from diverse educational, social backgrounds and regions, also by ensuring all platforms have mobile versions. To enhance access, the creation of specific offline functionalities targeted to those living in disconnected remote areas is encouraged.
- Support the establishment and scale-up of online higher-level education institutions, with curricula that combine STEAM with transversal skills. Support the development of learning communities active within online platforms, to promote peer-to-peer learning and exchange of best practices, as a model including a mix of blended learning to enhance completion rates.
- Scale-up projects and programmes that apply an intersectional approach to promote institutional networking and support quality higher education in Africa, tailoring policies and actions to the needs of regional and national labour market.

Facilitate digital skills development across all sectors of the economy that use technology with a specific focus on governments, administrations, service providers and civil society through the provision of digital and transversal skills to those entering or already engaged in the labour market, including ICT professionals and digital entrepreneurs.

- Create a skills-related policy environment that keeps up with digital entrepreneurship and ensures a business environment where trained professionals are linked with relevant business opportunities, which serves as a platform to propagate lifelong learning in the rapidly changing digital landscape.
- Ensure that training initiatives targeting existing and future workers across all sectors, including ICT professionals, encourage computational thinking, 21st century skills and provide advanced digital skills.
- Promote learning opportunities delivered by public and private partners for workers across all sectors, including VET, on-the-job training and rapid-skill-training as well as knowledge sharing and mentoring within national and regional innovation hubs.
- Design training programmes on digital and transversal skills specifically targeting MSMEs and start-ups within innovation hubs, at the national and regional level.
- Create a system of fiscal incentives for companies offering basic, functional or advanced digital skills training.
- Develop targeted learning opportunities to enhance skills among African web content developers.
- Promote the enhancement of digital skills through advanced in-company training and on-the-job training, after education and capacity building.

- Incentivize local and international companies to hire and train young African inexperienced human resources for local jobs or in the context of circular migration.
- Stimulate governments to use more local IT-resources and train them on the job, using international expertise to deliver on-the-job training;
- Adjust the international tender processes to include the possibility to make more use of locally trained/educated people.
- Stimulate national diaspora reintegration and provide targeted on-the-job training.

Improving the business environment and facilitating access to finance and business support services to boost digitally enabled entrepreneurship.

Digital entrepreneurship can be an engine for the development of Africa in the 21st century, and the development of successful enterprises is inevitably intertwined with digital skills. Digitalisation has the potential to bolster the local economy in an inclusive manner, allowing individuals to work from remote areas and giving employment to those who lack traditional job opportunities, including persons with disabilities, marginalized groups and rural communities. Digital entrepreneurship also plays a vital role in promoting gender equality, bridging the digital divide and improving the inclusion of women for economic and social growth.

Digital entrepreneurship can be described as the creation of market and opportunity-driven initiatives that are enabled or deeply impacted by digital technologies and tools, including the Internet, mobile applications, social media, cloud computing, and AI.[56]

Key challenges faced by digital entrepreneurs in Africa mainly revolve around three issues, which can be addressed through joint efforts of stakeholders within the Task Force and beyond.

- Regulatory and administrative barriers and gaps – Ensuring flexibility and adaptability of regulators is one of the most critical success factors for a thriving digital economy. Given the speed at which technology is being developed, scaled and adopted, the needs for a complementing legal and regulatory framework, along with information availability, have become crucial in enabling the success at the country-level and the internationalisation of digital entrepreneurs. The critical need lies in simplifying bureaucracy, enhancing stability and transparency. Working at the continental level is fundamental to reduce foreign exchange and other transaction fees to spur digital and financial inclusion, with streamlined and relevant anti-money laundering measures.

- Capacity building support for the digital start-up eco-system at the policy, funding and skills level – These gaps can be addressed though identifying and responding to capacity building needs of digital entrepreneurs in areas including access to markets, regulations, legal requirements, IPRs, access to finance, as well as from a technical skills perspective. Digital entrepreneurs who provide services need support and technical assistance to develop their capacities to create, design and deliver their own products and services.

  Furthermore, start-ups need coaching, mentoring and technical support to turn their innovative ideas into a profitable business guided by a sound business model. Entrepreneurship-supporting structures, including incubators, accelerators and technology hubs, and the services they provide for start-ups are crucial to ensure that these start-ups harness their full potential to find markets, accelerate and grow.

  This includes addressing gaps in creative and technical skills (user-centred design thinking, UX design, data analytics, etc.), and at the business level (marketing, business mentoring, risk management, accounting, etc.) There is a need to attract African business owners to invest heavily in the sectors by raising awareness, including through the creation of local, African-owned business angel networks and by increasing the integration of digital African ecosystems at regional and international level.[57] deplou

  Therefore, universal methods and standards are needed to enable the growth of the start-up eco-system, linking technical support with access to finance.

- Incentives and an enabling environment for digital and financial inclusion – The solution lies in addressing insufficient access to finance to the digitally connected yet untapped and unbanked populations, as well as the large informal entrepreneurial sectors. This includes enhancing access to information, creating platforms where entrepreneurs can seek funding resources for their growth, as well as improving financial products and services tailored to the specific needs of start-ups in the digital economy. Mobile connectivity has become an enabler for banks and telecom providers to reach out to previously unbanked customers with low-cost, accessible services. The initial steps towards incorporating the untapped segment are primarily policy-driven, where the ease of account opening and

[56] Nambisan, S. (2016) Digital Entrepreneurship: Toward a Digital Technology Perspective of Entrepreneurship. Entrepreneurship Theory and Practice 41, no. 6.

[57] i.e. by promoting parnerships between incubators, technology hubs and start-ups.

overall mobile and e-service adoption is consistently promoted. There is a need to design appropriate incentives that align with national, regional and African mandates for service providers (digital entrepreneurs), regulators (central banks) and consumers. Regulatory frameworks should facilitate market entry of innovative, technology-driven financial service providers, which include, inter alia, mobile network operators, peer-to-peer lenders, payment banks. At the same time, they need to address the risks of digital financial services, including over-indebtedness and data privacy.

3.1 Defining the problem

Economic context and opportunities

Throughout the last few years, African economies have been resilient and gaining momentum. Real output growth was estimated to have increased by 3.6% in 2017 and expected to accelerate to 4.1% in 2018 and 2019.[58] To create more jobs, there is a need for structural transformation. Economic diversification is key to solving problems in the challenging demographic structure of Africa. Entrepreneurship plays a crucial role in net job creation, inclusive economic growth and poverty reduction. A growing number of entrepreneurship and technology hubs boosts the entrepreneurial energies of the continent. Digital entrepreneurship has been growing steadily in African urban centres, with services and products that are "mobile by default", and often aim to streamline value chains, in particular through digital commerce. In a context of low offer of formal employment, digital entrepreneurship provides new livelihood opportunities with low initial investment costs, in countries where few employment opportunities are available. They can thus have an indirect effect as role models on the wider economy and support the digital transformation of traditional sectors through the innovation they market.

Mobile technology provides a versatile, low-cost platform of opportunities for entrepreneurs. The mobile tech sector has become an essential contributor to the Sub-Saharan African economies. The mobile ecosystem directly or indirectly supported almost 3 million jobs in 2017. In addition to the impact on the economy and labour market, the mobile sector also makes a substantial contribution to the funding of the public sector, with almost USD 14 billion raised in 2017, taking into account general taxation as well as sector-specific levies on the consumption of mobile services.[59]

According to the McKinsey Global Institute, in the last five years, private consumption in Africa was the fastest growing of any region except for emerging Asia, despite the notable economic slowdown of 2014-2015. Over the same period, the continent outperformed GDP growth of both Central and Eastern Europe and Latin America, by 2.3%and 2.5% respectively.[60] The private sector has the potential to become a driver of economic development and job creation but faces significant constraints on access to finance, with financial ecosystems remaining dominated by banks.

Regulatory Frameworks and Policies

Developing a nurturing ecosystem at all levels increases the success of digital enterprises. From policies to specific support programmes, there are many components that influence the success or failure of digital entrepreneurs. Failure at any point may result in a less successful ecosystem that is not able to support the creation of innovations and their market entry.[61] In order to fulfill the need for a more coherent and less complex regulatory framework, several challenges need to be addressed. Barriers include complicated administrative processes, as well as high taxes and transaction costs. In addition, a comprehensive approach to IPR protection is missing. This prevents small firms from formalising their businesses, accessing public tenders and achieving scale through regional expansion.

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58 African Development Bank (2018) African Economic Outlook 2018. Website.

59 GSMA Intelligence (2018) The Mobile Economy: Sub-Saharan Africa 2018. Website.

60 Bughin, J. et al. (2016) Lions on the Move II: Realizing the Potential of Africa`s Economies. McKinsey Global Institute. Website.

61 ITU (2017) Bridging the Digital Divide: A Toolkit for Strengthening ICT Centric Ecosystems. Website.

Besides human resources, the assets on which most start-ups rely are immaterial, ranging from innovative ideas and concepts to methods and approaches that innovation managers develop, scale and bring to the market. These intangible assets must be protected by adequate frameworks. Therefore, public support to encourage and facilitate patenting and other processes related to intellectual property constitute a national interest.

MSMEs are fundamental drivers of the economy, yet many lack access to finance to trade and grow. There is a need to identify what advancements technological innovations offer to help MSMEs gain access to lending facilities and how these can be supported with appropriate regulation and government backing. Regulatory environments need to allow for market entry and growth of a diversity of providers, including those with business models that target MSMEs. Finally, data protection and cybersecurity are key in ensuring digital services are reliable and trusted. This stresses the need to set up a strategy to speed up the ratification and the entry into force of the Malabo Convention across the Continent.[62]

On the other hand, progress has been made in increasing the ease of doing business in several countries. With four economies — Côte d'Ivoire, Kenya, Rwanda and Togo —, Sub-Saharan Africa is the most represented region in the World Bank Doing Business 2019 list of 10 top improvers. Mauritius and Rwanda are among the top thirty countries at the global level. Four countries – Kenya, Malawi, Rwanda and Zambia – are ranked among the global top ten countries in the Getting Credit ranking, while Rwanda scores second best when it comes to Registering Property.[63] This evidence ensures that there is ground for sharing knowledge, experiences and lessons learned and that best practices can be replicated within the Continent.

Funding and Access to Finance

Digital entrepreneurs in Africa often lack access to funding to set up and grow their activities. On the one hand, this is because of the perceived and real risks related to investing in digital entrepreneurs, while the reluctancy of many local financial institutions is often explained by their limited experience with innovative technology and business models. These obstacles can be tackled by providing accurate data and guarantees. Lack of updated information and marketing skills also concur in preventing entrepreneurs from accessing public funding opportunities available and to network with early-stage venture capital firms. On the investor side, limited awareness or unconscious bias towards digital market potential in Africa often hinders their willingness to respond to needs for capital, from pre-seed to seed stages. Even when digital enterprises have been created and successfully established in the market, lack of tailored regulation and policies results in high transaction costs and taxes.

Given the desire and potential of African tech entrepreneurs to thrive in the global economy, the availability of adequate financing vehicles, both in the public and private sector, will prove essential to make them thrive not only in the local market but also to give them the means to expand and find new markets. Tools like crowdfunding, angel investments, private equity and venture capital are still at an embryonic stage in many parts of the world including Africa, both in terms of availability and regulation. The amount of funding specifically available to start-ups is increasing but remains insufficient. According to analysis from 2019, the amount of funding allocated to African start-ups located across the 54 countries of the continent in 2018 was between USD 0.5 billion and USD 1.1 billion, around 5-6 times less than the funding received by start-ups in India for the same year, with the size of Indian population being comparable to Africa.[64]

The need for sources of funding other than bank loans is strong. According to the D4D Coalition,[65] there is a lack of opportunities to connect between African high-growth companies and venture capital funds, angel investment and crowdfunding. There is a strong need to invest in small investment tickets, together with training on soft and business skills, for those who cannot benefit from funding instruments targeting large-sized enterprises. Choices of investors are based on their risk perception, which influences the adaptation of their pricing, especially when it comes to long-term funding. Based on

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62 See full text of the African Union Convention on Cyber Security and Personal Data Protection.

63 World Bank (2019) Doing Business 2019: Training for Reform. Washington DC: World Bank Group.

64 Partech Partners (2019) 2018 was a Monumental Year for African Tech Start-ups, with US$ 1.163 Billion raised in equity funding, a 108 per cent YoY Growth. Website.

65 The D4D Coalition consists of six European digital companies (Ericsson, Nokia, Orange, Philips, SAP, SES) and two development agencies (GIZ and Enabel, supported by the governments of Germany and Belgium).

successful exponential growth of the impact investing sector beyond the micro-finance industry, i.e. mobile telephony, eMoney, distributed energy and remote Internet access, which came to embrace the leapfrogging effects of technology across services like fintech, cleantech, healthtech, agtech and edtech, new models of blended finance impact funds were made accessible to rural population. These catalyse capital to address financing gaps and invest in start-ups in Africa, reaching the most remote locations. There is overall not enough depth in the market to ensure exits for funds with a limited time horizon, and funds that lack a quality start-ups pipeline.

Knowledge Sharing for Market Visibility

Finance and marketing are the two interconnected pillars on which entrepreneurs rely for growth. Tech hubs are currently the main actors providing specialized business support in Africa. According to GSMA, from 2016 to 2018, the number of active tech hubs across Africa has grown over 50% — from 312 in 2016 to 442 in early 2018.[66] Despite the encouraging numbers, only a small number of these hubs are effectively supporting the build-up of sound potential investment opportunities. This is partly due to the abovementioned lack of adequate supply of venture capital, but also to difficulties faced by active tech hubs in building sustainable monetisation models. This often results in innovation hub managers financing their start-up support activities through a mix of revenue models, including consulting to corporates and office space rental for co-working. Such constraints pose severe limits to their ability to expand and get the most out of their activities, while they are able to manage their limited resources efficiently, thanks to their excellent knowledge of the local market.

Following the World Bank study on African technology hubs,[67] mapping the tech ecosystem in the continent has become pivotal to keep track of the ever-increasing role innovation and entrepreneurship play in African economies. Tech hubs today are efficient vehicles not only to attract capital and expertise but also to lead the debate around technology and progress. Therefore, incubators, accelerators, and innovation centres need to be strengthened and connected with other networks of excellence. Knowledge-sharing initiatives with European hubs, as well as connections within Africa and with other emerging markets are key in facilitating networking and compensate for the lack of management expertise. Regional collaboration and linkages can be taken advantage of to create a value chain of innovation, where specific countries play a hotbed role for ideation, while others would benefit from scaling-up processes.

Market Accessibility and Information Availability and Quality

Within the context of digital entrepreneurship and financial inclusion, there is a lack of the infrastructure to consistently and accurately inform people on the availability of products and services, as well as to give service providers insights into consumer needs. Besides data, a focus on user-centred design thinking and innovative business models are key in understanding needs on the consumer side. It is essential that service providers, including banks, have the means to collect and access nuanced information that would help them quantify the risks and costs involved in serving their potential clients, especially for those in the untapped segment. Anonymised and aggregated credit information, whether behavioural-based or gathered through other methods, are vital to being able to serve the unbanked most beneficially. Effective policy and rulemaking by regulators require reliable sources to inform them regarding all aspects of market dynamics. There is a lack of promotion of open banking services, which act as enablers for digital entrepreneurs, by giving them the best access to relevant tools and information.

Several examples of collaboration between large corporations and start-ups can be found on the continent. Often these involve mobile operators and banks, which are among the largest corporations across most African markets. These collaborations can drive significant synergies and really allow start-ups to scale. However, they are still not as frequent and organic as the ecosystem needs.[68]

Additional Challenges Affecting Digital Entrepreneurship

Additional challenges that limit the success of digital entrepreneurship in Africa are related to the impact of online services, including e-commerce among the public. These include limited connectivity, lack of awareness and skills, unreliable electric supply, as well as lack of security and mistrust towards online services, which are easily mistaken for scams. Online shopping in Africa is also

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66 Bayen, M. (2018) Africa: A Look at the 442 Active Tech Hubs of the Continent. GSMA. Website.

67 World Bank (2016) Map of Tech Hubs in Africa. Website.

68 Ajadi, S. et al. (2017) Building Synergies: How Mobile Operators and Start-ups Can Partner for Impact in Emerging Markets. GSMA. Website.

affected by limited access to banking systems and unreliable postal services, which make it less affordable and popular among potential customers, especially in rural areas.

In line with all other priorities discussed in this report, fostering entrepreneurship requires addressing the digital divide, especially concerning gender and differences between rural and urban areas. Digital entrepreneurship is also a proven key enabler for people with disabilities. All vulnerable groups of society need to be specifically targeted in policies and programmes targeting digitally enabled entrepreneurship, keeping in mind that their twofold role of clients and entrepreneurs needs to be empowered. Creating a programmatic approach that allows individuals to self-select and take advantage of a career option that did not exist before can be supremely valuable, not only for individual professional development but also to develop an inclusive society. While there is still enormous room for improvement to achieve inclusion in business - also based on the wide range of different national needs - there are initiatives that can be scaled up across Africa with the right partnerships between public and private partners, along with civil society. These range from targeted training to specific support programmes, which should interlink technical support and access to finance via African-owned methods and approaches.

3.2 Policy Recommendations and Proposed Actions

Establish and strengthen partnerships between African and European partners, as well as among African regional actors, to harmonise efforts related to digital entrepreneurship at the continental, regional and national level.

- Embed digital entrepreneurship in regional and national policies and enable structured policy dialogue between public and private partners to inform policymakers about the most pressing actions to be made in creating a favourable environment for digital entrepreneurship, with a focus on building on regional and national partnerships. This includes envisioning a comprehensive approach for the ecosystem, which takes into account creative and business skills, access to finance, mentoring, entrepreneurship support and skills, simplified and stable regulatory environment.
- Provide capacity-building support to the African Union Commission and the Regional Economic Communities in integrating markets and promote legislation on registration, ease of doing business and mobile payments integration across borders for digital entrepreneurs. Additionally, exchange on successful methods and approaches should be furthered to develop African-owned practices interlinking technical support to access to finance throughout the whole start-up development-cycle.
- Provide capacity-building support for national governments in setting up national start-up strategies and start-up laws in terms of both legislation framing, benchmarking and enforcement. Invest in research for start-up acts. This should be based on a multi-stakeholder, bottom-up approach and taking entrepreneurs' point of view into the legislation process.
- Apply open source consultation tools and methodologies for policy co-creation.
- Fund regional and sub-regional knowledge-sharing, training and technical meetings, addressing the needs of the digital ecosystems and create open educational resources.
- Validate and certify innovation hubs and entrepreneurship incubators with a focus on expertise in the digital economy, ensuring targeted support, i.e. in terms of specific design-thinking and digital infrastructure in the hubs.
- Create an EU-Africa Start-up Initiative aiming at supporting knowledge sharing between African start-ups and the EU market to increase market-access.
- Establish a network of European and African innovation hubs for knowledge sharing whereby African hubs can share experiences with European hubs in policy reform processes, and support relevant co-created policy processes in Europe.

Adapt the local regulatory framework to the Digital Economy at all levels throughout the value chain, to ensure flexibility and ease of doing business to digital enterprises of all sizes, MSMEs, start-ups and social enterprises.

- Support the development of national and sectoral digital transformation strategies, which will create demand and allow scaling up of digital initiatives.
- Co-design regulations with the private sector to cover new business areas, including Fintech, and set up a coherent open-source software policy to help open up the markets. To ensure inclusion and a human-rights-

based approach, close collaboration with civil society and multi-stakeholder dialogue involving the government, administrations and service providers, as well as citizens, are required. Strengthen, raise awareness and facilitate the protection of IPRs.

- Drive governments to take an active approach and invest in Research & Development, with a focus on innovation and start-ups and encourage governments to co-invest into start-ups to de-risk and leverage private investment.
- Digitalise services that relate to running a business – including for taxes, permits and licences – and review protective measures preventing new market entrants, as well as non-tariff barriers on the cross-border exchange, ultimately enhancing access and simplifying procedures.
- Reform public procurement regulations to promote open public procurement policies, increasing transparency and accountability while applying start-up-friendly policies, allowing companies with no track record and insufficient turnover and references to access a number of deals through innovative procurement for innovation (hackathon, reverse business pitches, and ideal competition, BPI etc.)

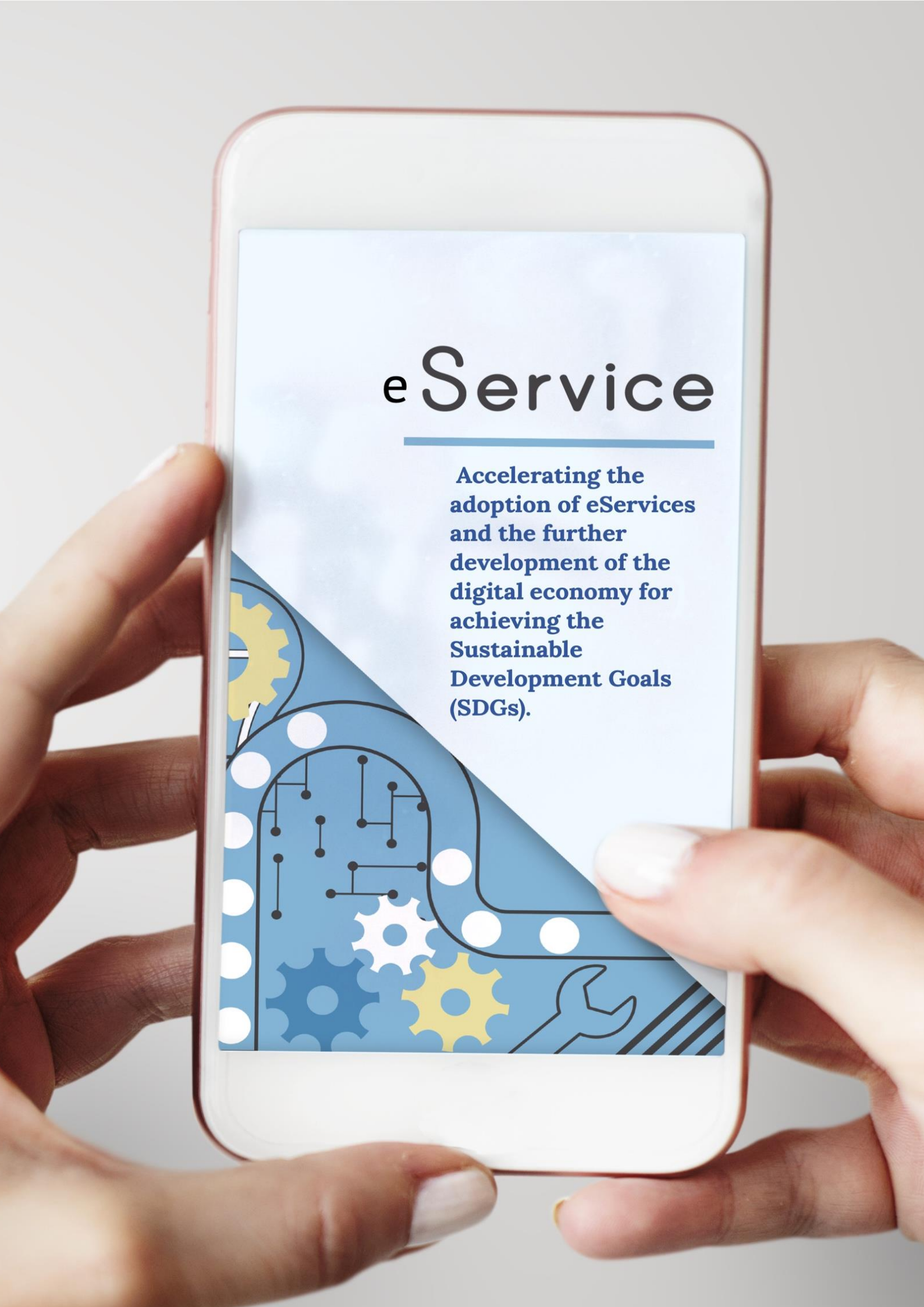
Contribute to the creation of an enabling ecosystem that addresses all interrelated barriers and needs and improve advisory services to stimulate digital entrepreneurship for digital enterprises, including MSMEs, start-ups and social enterprises.

- Customize support to digital entrepreneurs, support networking for more peer mentorship services. Regionally, seek for successful serial entrepreneurs and "star geeks".
- Develop a holistic continental mapping of ecosystems, building on existing initiatives, to identify and support the scaling-up of innovative models and financing platforms, accompanied by relevant soft and business skills training for digital entrepreneurs and to inform investors on existing relevant opportunities. This includes crowdfunding, innovative fintech tools, mobile banking. Holistic mapping of the ecosystems to identify promising models that can be scaled up in Africa.
- Promote the availability of quality information, accuracy and accessibility to market actors, to increase awareness of existing solutions and opportunities among digital entrepreneurs and the public.
- Promote open data policies that can ensure the mandate and sustainability of data exchange platforms or initiatives to enable new local business models, while ensuring data protection and cyber resilience to protect citizens from misuse of data and businesses from cybercrime.
- Encourage governments to entrust national start-ups and social enterprises with public projects by adopting their cost-efficient solutions to address local issues (agriculture, health, administration).
- Segment and group countries by the maturity level of their innovation ecosystem and define four or five thematic business clusters as centres of excellence, in the context of the EU-Africa Start-up Initiative to be created *(proposed action under recommendation on partnerships).*
- Support African digital entrepreneurs to network and showcase their products outside Africa – i.e. in trade fairs.
- Encourage cooperation with start-up advocacies to further improve market and regulatory reforms through multi-stakeholder dialogue.
- Train, advise, coach and mentor the entrepreneurs through blended learning.

Facilitate access to finance and funding mechanisms for digital enterprises of all sizes, MSMEs, start-ups and social enterprises, at all levels.

- Ensure adequate market information sharing for potential investors, to allow an adequate overview of opportunities and challenges in African markets.
- Facilitate access to funding for start-ups by local ecosystems (hubs) and development partners, building and supporting country-level angel investor networks in partnership with continental networks and educating and attracting international venture capital firms to invest into African tech.
- Develop incentives and an enabling environment for digital and financial inclusion.
- Enable small-scale funding mechanisms for MSMEs, through local funding capacities and Multilateral Development Banks.

- Promote funds to de-risk early stage investment through a mix of public and private funds.
- Provide budget support to offset immediate fiscal losses of reductions in payroll taxes for employing youth and tax holidays for new firms to boost youth employment and new firm sustainability.
- Support microfinance organizations and other financial service providers, including fintech and financial cooperatives, and provide assistance to improve Credit Bureau programmes in Africa, tying them to lending platforms.


eService
Accelerating the adoption of eServices and the further development of the digital economy for achieving the Sustainable Development Goals (SDGs).

Digitalisation and ICT have brought the world closer together through a wide range of changes in how people, government and businesses interact. Both public and private services are rapidly migrating from traditional operation models to digitally enabled services, tagged 'eServices'. Such services are commonly referred to as the provision of diverse services via the Internet, but other connectivity options can be used.

Depending on the specificity of the service, appropriate applications, tools, or instruments are designed to ensure that the relationship between the provider and the beneficiary is transparent and trustworthy.

A digital services infrastructure should entail those services that are a prerequisite for a digital economy (i.e. fintech and digital financial services, and enabling eGovernance services such as identity services, marketplaces, open data platforms, business relevant government services) and those that permit a better governmental service delivery (i.e. healthcare, education). Such infrastructure can enable the uptake of the digital economy by both digital entrepreneurs, as well as digitally enabled entrepreneurs and digitally enabled employees.

Currently, eServices' take up is affecting the majority of economic and social areas, while the main use cases are apparent in financial services, government, agriculture, education, health, smart cities, smart villages, energy solutions and commerce. In recent years, these services have grown and are still evolving at the same pace as digitalisation. They have changed the way the world does business or provides services and are visible in every segment of society. However, the lack of relevant content in local languages constitutes one of the main reasons why people do not connect, although they may very well have access to the Internet.

In the eServices domain, the DETF addresses three areas where the foundational basis of the digital economy and society is laid out. They have proved to be crucial globally, but also relate to distinct opportunities and challenges in the African context in particular:

- eGovernance services — the government's role in providing and enabling eServices of any kind, leading by example and providing the legal and regulatory frameworks with a particular focus on the data economy.
- eCommerce as the bloodstream of digital economy at the national, cross-border and continental levels.
- Digital Financial Services as the means to achieve greater financial inclusion.

4.1. Defining the problem

4.1.1 eGovernance

In Africa, the main issues that hamper the further development of the digital economy in general and eServices in particular are the lack of an enabling environment entailing harmonised national, regional and continental digitalisation policies, various enabling eGovernance Services (building blocks), and legal and regulatory frameworks for the support of data policies and regulations, as well as a consistent cybersecurity framework.

Digitalisation Policies

eGovernance offers opportunities to take full advantage of the digital economy and enhance the contribution of connectivity to development. The implementation of an eGovernance plan leads to an overall improvement in the quality of services provided to citizens and businesses, increases and facilitates access, enhances transparency, ensures better access to information and widens work opportunities. Overall, it raises the citizen's trust towards the government and creates an inclusive, entrepreneurial environment.

For the practical deployment of an enabling eGovernance services infrastructure in a country, region or continent; the political commitment, local ICT ecosystem and funding available will determine the most suitable approach.

Coordination across institutions is essential and eGovernance should be guided by a coordinated approach and strategy that identifies the responsibilities of the various ministries, accompanied by measures to increase institutional capacity.

Regulatory Frameworks

Any legislation and regulation should enable innovation and remain technology neutral, instead of addressing the nature of transactions and the sensitivity of data. Policies must guarantee that any collected information would serve only legitimate purposes and ensure the right to privacy in line with well-recognised practices in the field, citizen's expectations and human rights. Individuals should be held as the owners of their personal data and should have an opportunity to control how their personal data are used and by whom.

Personal data protection goes hand in hand with all EGS (especially with digital IDs, registries and Open Data Positioning). Data protection legislation needs to be accompanied by a strong system of implementation and enforcement.

Electronic systems need to be secure by design, and each country should have appropriate legislation and organisational capacity for baseline security, incident and crisis management, and capacity for fighting cybercrimes. A strong eGovernment system has to include an equally strong network and information system security solutions and practices. It is essential to raise awareness on cybersecurity, invest in cybersecurity infrastructure and protection, and to adopt measures necessary for the prevention, detection and investigation of cybercrimes.

Enabling eGovernance services (building blocks)

To harvest the full potential of the digital economy, several basic Enabling eGovernment Services (EGS) must be in place, including:

- Legally binding digital ID and eSignature
- Different registries (i.e. land use registry, citizen / civil registry, business registry[69]
- Provisioning of Open Data

The above EGS constitute building blocks for eServices that, once implemented, can have a catalysing ripple effect across the governance and the economy of a country and a region. A number of countries including Nigeria, Cape Verde, and Mauritius are implementing or have started processes to deploy services.

Due to its small legacy footprint, the African continent has the opportunity to create interoperable building blocks based on common standards from the start, avoiding a fragmented eServices environment.

Legally binding digital ID and eSignature

A legally binding digital ID and eSignature is a key prerequisite for most legally binding interactions between individuals on the web. It should be available for the use of services both in the public and private sector. The connection between digital identity with physical identity should be regulated and protected by the law.

In this sense, every citizen should have a unique number that is used through all public administration servces as a unique identifier, while the related eSignature should be not only equal to handwritten signature in value, but compulsory to accept by the recipient of the document tand interoperable with other signature schemes in place.

The opportunity for value creation through digital ID is growing as technology improves, implementation costs decline, and access to smartphones and the Internet increases. The foundational digital infrastructure that supports digital ID grows in reach and drops in cost every day. Nearly a quarter-billion new users came online for the first time in 2017. Africa is experiencing the fastest growth in Internet usage, with a 20% increase each year. From 2008 to 2016, the price of a smartphone fell by 30% in Asia, about 25% in Latin America and the Caribbean, and about 20% in Africa[70]. Improved technology can facilitate increased and more secure storage and sharing of data. For example, near-field communication, a set of protocols that permits two electronic devices to transfer information when close together, allows contactless sharing and could be integrated with a digital ID.

An eID scheme should be based on internationally recognised standards and solutions, which become essential for the interoperability of national eID schemes (i.e. to ensure that people and businesses can use their own national eID to access digital services in other countries). The eID should allow citizens to identify themselves safely in an online environment, to give legally binding digital signatures and use eServices. Any legislation and regulation should enable innovation and

[69] In addition, integrated cross-border customs clearing is covered under the eCommerce section.

[70] Karlsson, M. et al. (2017) Accelerating affordable smartphone ownership in emerging markets. GSMA. Website.

remain technology neutral, instead of addressing the nature of transactions and the sensitivity of data.

Such digital identity is best designed as a government-backed eID based on a unique personal identifier, biometrics, or somehow linked to a person's physical document in order to avoid identity theft, fraud, mistaken identity. Such a solution does not necessarily have to be a smart card, but can also be delivered through alternative solutions such as mobile applications.

With its regulation on electronic identification and trust services for electronic transactions in the internal market (eIDAS),[71] the EU can provide an example of how eServices such as eID can be interconnected across border in a secure and trusted manner.

The EU eIDAS Regulation:

- Ensures that people and businesses can use their own national electronic identification schemes (eIDs) to access public services in other EU Member States where eID are available.
- Creates a European internal market for Trust Services and Electronic identification (eTS)—namely electronic signatures, electronic seals, time stamp, electronic delivery service and website authentication—by ensuring that they will work across borders and have the same legal status as traditional paper based processes. Only by providing certainty on the legal validity of all these services, businesses and citizens will use the digital interactions as their natural way of interaction.

Linking Up Different Registries

Digitalisation should take place as a part of structural measures to support the modernization of registries and identification systems. In order to improve the their integrity, effectiveness, and completeness, both technical functioning of the system and its lawful implementation needs to be guaranteed. Specific registers or databases and core government processes such as customs clearing can deliver a strong impetus to realising the full potential of the digital economy, as they provide a trusted single source of data. Their interoperability is also vital in order to reduce red tape for citizens and businesses. In particular, the "once-only" principle should apply in all cases, making it compulsory for the custodian to share data with others.

Such registers and databases can be deployed centrally or in a decentralised manner, according to the respective administration structure in the country. Only the deployment solution should satisfy two criteria: a) it should be interoperable, and b) it should have data protection measures in place.

As it stands today, interoperability and stability of these systems remain a challenge. Thus, the next stage will require data exchange between registries and databases (i.e. data exchange platform). Respective standards are already in use in some countries in the EU, and are easily transferable to African countries when applicable.

Provisioning of Open Data

A digital economy is, by definition, a data-driven economy. In this context, Open Data becomes an important element, reinforcing the idea that some data, especially data generated by government, should be freely available to everyone to use and republish as they wish without restrictions from copyright, patents or other mechanisms of control. Such data should be collected in "data lakes" and made available in an anonymized manner for public use, compliant to data protection and data security regulation. [72]

Direct Service Delivery to Constituents

Digital technologies have revolutionized the way governments provide public services and interact with citizens and businesses. The use of ICT creates great opportunities for governments in Sub-Saharan Africa to increase access to services (both in terms of reach and in lowering the barriers), and provide greater quality of services in a more effective way. In addition, digital technologies have the potential to achieve greater transparency and accountability, as well as to enhance democracy.

Overall, two types of public services can be strengthened by the digital economy:

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[71] Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC

[72] i.e. Data.gov, Data.gov.uk and Data.gov.in.

- Administrative services as services delivered by public administrators and often related to vital events, procedures or administrative decisions (i.e. granting permits or concessions);
- Social services as public services that aim to improve the welfare and well-being of the public through public service provisioning or PPPs (i.e. basic education, VET, health services, public sanitation, water, energy, etc.).

Administrative services such as taxation, the granting of permits and the processes to register and provide access to other civic data (i.e. university diplomas) are eServices that concern the use of ICTs for interaction between governments and business, citizens or other government instances. The implementation of administrative services through digital technologies will require governments to implement reforms, put in place enabling regulatory frameworks, and adopt the use of legally binding digital identities to ensure that administrative services can be fully provided online or through other connectivity means.

eServices as digitally enabled services can also enhance public and basic social services such as health services, education, sanitation, water or energy through the use of digital technologies. This often relates to more complex relationships and interaction where data is collected from the "client" (i.e. patient) by the frontline service provider (i.e. doctor), and shared with the government organization in charge (i.e. ministry of health). Other examples of digitally enabled services are pay-as-you-drink water services, medical records systems to enhance hospital and patient management, mobile health care delivery monitoring, assisted clinical decision support to health professionals, eMoney transfers for subscriptions to health, eLearning platforms, use of virtual reality for VET, low-cost generic monitoring systems for off-grid solar systems, etc.

Using digital technologies on the supply side of service delivery can be a powerful enabler to enhance quality through digital management systems; including more transparent resource mobilization, financial and asset management, remote access to high-level expertise and resources.

On the demand side, empowering users of social services through digital technologies and connectivity can also lead to increased citizen engagement, collective intelligence (i.e. producing quality-training materials collectively), and stronger accountability. Complex understanding and support to eServices has enormous potential for improved efficiency and reactivity, the reduction of corruption, the strengthening of inclusion and access, and the assurance quality service delivery. However, digital tools cannot replace the necessary institutional reforms and serve as the means to improve good governance.

4.1.2. eCommerce

eCommerce will unfold its full potential once markets achieve a significant size. In many parts of Africa, this entails regional market integration, as domestic markets will not be of sufficient size for all goods. At the same time, eCommerce will also trade physical goods mainly, and these goods will need to be shipped across borders.

eCommerce and digital trade are gaining traction on the African continent as a solution to increase access to goods that are not usually available locally, and to improve competition on markets. Furthermore, eCommerce is creating new marketplaces, giving a number of MSMEs access to larger and more competitive markets, and thereby attracting new investments, creating jobs and accelerating growth.

However, digital trade on the African continent is also facing many challenges, including the need for further development of the postal address systems in combination with a lack of identity proof systems and access to internationally operable payment methods (i.e. credit card)—which complicates secure delivery.

Despite the increasing demand, the underdeveloped infrastructure makes it difficult and expensive to deliver parcels. Another significant barrier is the lack of alignment in African e-commerce regulation, which increases the price of operations and makes it difficult to stimulate regional or continental cross-border digital trade. Furthermore, lack of confidence in online channels has led to a tendency to pay cash on delivery, further adding costs and slowing the take up of e-commerce by consumers.

The World Bank's "Doing Business" report records the time and cost associated with the logistical process of

exporting and importing good, measuring the time and cost (excluding tariffs) associated with three sets of procedures—documentary compliance, border compliance and domestic transport—within the overall process of exporting or importing a shipment of goods. In Sub-Sahara Africa, both the time and cost of trade across borders were the highest in the world in the latest edition of the report. To foster eCommerce and to harvest regional markets, trade across borders in general and customs clearing in particular need to be improved and integrated.

From a wider perspective, digital trade is also rapidly transforming the world's economy, disrupting old business models and replacing them with new ones, shaping the future of labour and transforming industrialisation. However, this raises new concerns and challenges, making it difficult for governments to keep up with appropriate regulatory and policy frameworks both at the national and regional levels. Consequently, Africa's share of total merchandise exports in the world was only 3.5% compared to a 36.7% share for Europe, a 29.7% share for Asia and a 17.3% share for North America. Intra-African trade has risen from just 10% of the region's total exports in 1995 to 17.7% in 2014. However, this is still much less than intra-European exports (68.5%), intra-Asian exports (52.3%), intraNorth American exports (50.2%) and intra-South and Central American exports (25.8%); Africa exports less to African countries than it does to Europe, which receives 36.2% of all African exports, and to Asia, which receives 27.3% of African exports[73].

In 2017, there were an estimated 21 million online shoppers in Africa, with an annual surge of 18% since 2014 as compared with the world average of 12%. EMoney continues to rise, and Africa boasts the largest share of adults with eMoney accounts in the world. However, there is still room for improvement, and close to half (45.6%) of all registered eMoney accounts are focused on Sub Saharan Africa. Innovations are emerging in different stages of the eCommerce lifecycle, from payment aggregators and cross-border platforms to drone delivery[74].

The extent to which people and businesses in Africa participate in eCommerce varies considerably within and between countries. Three countries (Nigeria, South Africa and Kenya) account for almost half of them. UNCTAD estimates that the B2C e-commerce market in Africa was worth about US$ 5.7 billion in 2017, which corresponds to less than 0.5% of GDP, far below the world average of over 4%.

According to the 2018 version of UNCTAD's B2C E-commerce Index, the African region lags the rest of the world in terms of e-commerce readiness. Mauritius, ranking 55th globally, is the highest ranked African country, while nine of the ten least prepared countries are in Africa.

Although African countries have made significant progress over the past few years to enhance their eCommerce readiness, persistent gaps remain, and countries are at different stages of eCommerce development. Broadband infrastructure, Internet penetration and affordability, trust, trade logistics, fragmentation of markets and payment systems, lack of basic literacy and eSkills, and lower demand for non-food and luxury products remain the major challenges.

Internet penetration,currently at 24,4%, remains low compared to the rest of the world's average of 60%[75]. In some countries, less than 10% of the population use the Internet, and large segments of the population remain unbanked or lack a postal address. Internet data cost remains very high and out of reach for most people, and when available, the poor quality of connectivity makes too difficult and time consuming for people to adopt online shopping.

The development of African eCommerce is also hampered by a lack of trade logistics. Digitalising the basic information infrastructure for postal and logistical services in countries will be a good basis for accelerating eCommerce on the continent[76]. With relatively poor geographical home address structure in place, it is difficult for parcels to be delivered at the right place at the right time. This is a major issue as most countries work with post office boxes and not with a postal address system, and while solutions could be envisioned, this would require establishing a harmonised system underpinned by national spatial data infrastructure policies and strategies.

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[73] African Union and United Nations Economic and Social Council (2016) Status of African Integration: "The Implications of Agenda 2063 and Agenda 2030 on African Integration". Addis Adaba.

[74] UNCTAD(2019) NAIROBI MANIFESTO on the Digital Economy and Inclusive Development in Africa. Website.

[75] ITU (2018) World Telecommunication/ICT Indicators database.

[76] Which can also come as part of the Enabling eGovernance Infrastructure, especially complementary to the Land (Use) Registries

In this context, the introduction of new logistics will also play a vital role. Not only drone delivery but also the digitally enabled combination of ride sharing, ride-hailing and car rental with goods delivery will improve in-country logistics, and especially short to medium distance logistics.

There are also significant variations in the readiness of governments in terms of skills and data to adopt and enforce relevant policies, laws and regulations to harness eCommerce and digital economy for development. Other challenges include taxation, cross-border trade challenges, digital and physical infrastructure, and digital skills.

In addition to the above challenges, there are also several risks associated with eCommerce, including the possibility of job losses through automation, market concentration leading to reduced competition and monopoly reduction of retail activities, government revenue loss due to the companies' ability to circumvent financial regulations, and the potential inability of African companies to compete with increased availability of foreign goods.

However, the World Development Report 2019 suggests that fears that automation will take away jobs may be unfounded, and instead, technology is bringing new opportunities: firms can grow more rapidly thanks to the digital economy, which blurs their boundaries and challenges traditional production patterns; and the rise of the platform economy means that technological effects will reach people faster than ever before.

In addition to the challenges and risks that exist at the national level, regional and continental issues are likely to hinder the development of cross-border eCommerce across Africa. Whilst a number of regional and continental legal frameworks have been established to address some of the eCommerce related issues such as cybersecurity, personal data protection and the harmonisation of cyber legislation in Africa; and a number of countries have started regional collaboration in some areas of eCommerce, there is presently no comprehensive African eCommerce policy, strategy or governance regime. Certain issues deserve careful consideration, in particular in the context of boosting intra-African trade through the recently launched AfCFTA.

Facilitating cross border payments is a central element in assuring harmonisation of eCommerce markets. In this regard, the East African Payment Systems (EAPS) and the regional payment and settlement systems that govern cross border payments in the COMESA region set examples of regional frameworks.

Boosting the development of its own data economy, Africa will develop its own data market in order to extract value from the data value chain for African economic growth. Such a market will interconnect on regional and pan-African levels, and collaborate with the European digital market to leverage data for economic growth on both continents. Therefore, joint approaches and standards are needed to foster the data-driven economy, but also to ensure data privacy and cyber security. In this sense, the EU offers to share its experiences with the GDPR, frameworks on AI, as well as the Expert Group on Business-to-Government Data Sharing.

Africa needs unity in setting eCommerce rules through a more global perspective. In January 2019, 76 WTO Members (including the EU, US, China and Russia and several African countries) began re-negotiating the WTO's trade-related eCommerce rulebook to update it to the technological reality of today and make it fit for current requirements in digital trade, so far with limited African involvement. However, a more coherent engagement in these negotiations is necessary for Africa's voice to be heard when new international rules on eCommerce are established.

Success in eCommerce demands rigour in basic business processes that are mastered by very few small and medium African companies. For instance, formalisation of product specifications and techniques of product inventory management are widely missing. Small firms in Africa function largely on an informal basis: they produce products in an artisanal fashion and change specifications often, and manage inventory loosely. eCommerce creates great demands of such MSMEs, but they need to formalise their operations and also master aspects of marketing and customer service, which are new or very different from their common practice.
One of the most significant obstacles that will need to be tackled is the lack of access to financing, given that it stands as a poignant issue for the majority of MSMEs in Africa that has affected the sustainability of many enterprises beyond issues of formalization and entry for MSMEs.

But MSMEs are not the only group in need of having their capacities upgraded for eCommerce. Public sector institutions also need to be supported in addressing the many implications of a shift to digital transactions, where a key element would be the digitization of government payments in a bid to enhance efficiency and to curb leakages in the system.

4.1.3. Digital Financial Services as the means to achieve greater financial inclusion

In the recent years, Africa has witnessed impressive gains in the development of digital financial services (DFS) for financial inclusion. This reflects the work done within individual countries by digital financial services providers and their platforms, start-ups (in various sectors like energy, agriculture, education, health, etc.) service providers, regulators, NGOs and other enablers.

However, large pockets of financial exclusion persist: two billion people worldwide lack access to basic transaction accounts to safely send, receive, and store funds. This exclusion limits personal economic potential, and participation in the digital economy.

Digital financial services are one of the main enablers of the digital economy in Africa, providing a solution to the low bank services penetration. Such services can be leveraged to provide insurance, savings, remittances, payments and credit solutions for greater financial inclusion, and Africa is a global leader in mobile payments. In this scheme, fintech can be leveraged on a business-to-business basis to improve innovation, efficiency and growth of incumbent financial institutions (for example, through the development of new mobile banking apps or credit scoring methodologies).

However, Sub-Saharan Africa is the only region where the share of adults with a eMoney account exceeds 10%, though the majority of adults still lack a transaction account[77].
70% of jurisdictions in Sub-Saharan Africa report having a regulatory framework for non-bank eMoney issuers (including mobile network operators), and financial consumer protection frameworks are often lacking—for example, most jurisdictions in Sub-Saharan Africa do not restrict or prohibit unfair business practices such as discrimination, or limiting the liability of a financial service provider in a customer agreement.[78]

But the market is fragmented and services are often not interoperable, neither inside the countries nor cross-border. Furthermore, related to the development and uptake of digital financial services is the issue of remittances, since Africa diaspora in the EU does not benefit from the eMoney revolution back home due to the lack of interoperability.

Pioneering initiatives have been taken by mobile operators to defragment the market. In Madagascar, mobile financial services are interoperable on a national level. Domestic interoperability for real-time payments is steadily gaining traction across East Africa. In 2014, eMoney providers in Tanzania came together to develop a scheme for multilateral interoperability. In 2017, banks in Kenya launched the real-time money transfer service PesaLink, and mobile network operators (MNOs) in Uganda launched a scheme in their own market. Kenya's new MNO-led scheme adds to a growing list.[79]

In addition, according to Findex data published by Genesis Analytics,[80] financial inclusion for both genders increased between 2011 and 2014.

However, the gap between them increased from 6% in 2011 to 9% in 2014, suggesting that men benefited more from financial service innovation than women did. As a result, 70% of women were financially excluded compared to 61% of men.

Fintech solutions can potentially contribute to closing the gender gap in financial inclusion by tackling some of the barriers that women face. For example, digital financial service solutions are often more flexible than traditional banking services (i.e. providing closer proximity, lower transaction fees, and simpler loan application processes) and are therefore better able to account for and meet women's individual needs.

Throughout Africa, many women organize themselves in savings groups in order to informally gain access to financial services such as loans.

Digital financial services present an opportunity to build on these existing practices and enhance them with technologies and services that will allow access to credit, savings accounts, and other financial products to all.[81]

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77 World Bank (2018) The Global Findex Database 2017. Website.

78 World Bank (2017) Global Financial Inclusion and Consumer Protection (FICP) Survey, 2017 report. Washington DC: World Bank Group.

79 Cook, W. (2018) East African Interoperability: Dispatches from the Home of M-Pesa. Blog Series: Interoperability and Digital Financial Services. CGAP. Website.

80 I DRC and the Mastercard Lab for Financial Inclusion (2018) Exploring fintech solutions for women. Scoping paper. Genesis Analytics. Website.

81 Ibid.

4.2. Policy Recommendations and Proposed Actions

Make a priority in deploying the essential enabling building blocks of eGovernance services like eID, digitalising and interconnecting public registries, cashless government and open data for innovation; with the goal of enabling the Digital Economy while assuring more inclusive societies, where access to basic rights and services is ensured. Integrate the provision of eServices, developed by both the public and private sector, with adequate legal acts and regulation at all levels, ensuring that data needed to provide eServices for the community is openly available while fully respecting data protection rights.

- Implement Enabling eGovernance Services based on internationally recognised standards. Allow regional and continental integration of public eServices through common standards and open standard software tools. Develop Reference Solutions, corresponding framework IT-architectures and Reference Models for related legal requirements and implementation on a regional or continental basis to harvest synergies and ensure interoperability. Those can be developed, for example for eID, Customs Interoperability, or Registers of different kinds. Use the EU eIDAS regulation as a reference model in creating common standards.
- African countries should start with the creation of coordinating bodies, such as an e-Government National Coordinator office on the political level and respective ministerial structures on a technical level.
- Allow relevant organisations in a country or region to reuse core registers and information systems from other organisations in a secure data exchange environment, enabling the different information systems and registers to communicate, share data and work together, implementing the once-only principle.
- Seek regional or continental inter-government agreements to exchange and re-use the Intellectual Property regarding eGovernance solutions, respecting the IP of third parties.
- Establish electronic government registers or digitalise existing ones, starting with an electronic population registry, eBusiness register and Land Use register. Reference is made to the proposed action regarding reference frameworks.
- Introduce a digital-by-default approach for governmental Service Delivery while at the same time following a multi-channel approach.
- Promote digital innovations designed locally by empowering all relevant local actors (governments, start-ups, research, private sector) and support the establishment of local digital innovation centres serving as a co-creation and innovation hub for digital solutions of tomorrow and as a first entry point for foreign investors. Close cooperation and interoperability between locally developed solutions and Commercial of the Shelf (COTS) software are desired to avoid unnecessary cost and to provide locally developed solutions with established regional and global sales channels via cooperation with COTS.
- Create funding mechanism(s) for eServices pilot and reference framework projects. Such projects should focus on a certain policy area, such as education, healthcare, the court system, different registers and information systems, tax and customs etc. on a regional, national or continental level, etc.
- Ensure universal application of privacy, data protection and data security by design principle in the development of eServices, using the EU GDPR as a model, where relevant.
- The commercial rights of the use of personal data of Africans should stay in Africa or provide a fair commercial share to Africa.

Share best practices and advisory support (i.e. through technical assistance) for developing comprehensive national digitalisation strategies with a specific focus on addressing the digital divide, achieved through multi-stakeholder dialogue to identify priority needs and agree on strategic objectives, in line with the local contexts.

- National and regional multi-stakeholder dialogues should inform sectoral strategic policies and digital economy action plans to identify priority needs and actions
- Establish and provide funding for regional training programmes and academies. Already existing EU programmes, such as TAIEX[82] and Twinning[83] can serve as examples. Programmes should cover both e-governance and cybersecurity, involve

[82] See Technical Assistance and Information Exchange instrument of the European Commission

[83] EU instrument for institutional cooperation between Public Administrations of EU Member States and of beneficiary or partner countries

participants from all levels, from leaders to experts, and include both technical assistance as well as support for designing policy and regulatory measures.

- Establish an African Digital Economy Trust Fund (ADETF), which will focus on provided grant resources to countries and institutions to support the strengthening of the legal and regulatory framework and reforms, and to assist the preparation of some projects.
- Set up scholarship schemes for e-governance, ICT and cyber security study programmes aimed at supporting the development of skills and expertise.
- Support projects related to civic tech and digital democracy in order to increase the accountability of governments.
- Develop a Pan-Africa Charter on Ethical AI as a benchmark to utilize the opportunities of AI.
- Update the requirements of the African Union Convention on Cyber Security and Personal Data Protection and extending the coverage of the Budapest Convention on Cybercrime.
- Develop regional programmes to tackle cybercrime and strengthen the cyber resilience of both public and private entities

Encourage intra-African integration in digital trade to achieve wider participation by enterprises in national, regional and international eCommerce (especially cross-border) as an enabler for unprecedented market opportunities for all.

- Reduce barriers to cross-border digital trade and market access by supporting African efforts to establish a continental digital single market under the Continental Free Trade Agreement that aim at removing legal and technical barriers to trade, drawing on EU's experience with its Digital Single Market.
- Develop an enabling regulatory framework for e-commerce at the pan-African level, including common rules for consumer protection.
- Include elements on e-commerce in the digital skills training programmes targeted at African MSMEs.
- Provide technical assistance for developing and improving the regulatory environment for financial and payment services.
- Provide loan and equity financing to local e-commerce champions.
- Analyse issues relating to parcel delivery and propose solutions based on regional cooperation.
- Develop training/outreach campaigns are needed to increase awareness and trust. Educating African consumers about the benefits of online shopping and some basic safety rules will be a key factor driving consumer adoption.
- Support programmes promoting eMoney adoption, especially in rural & peril-urban areas.
- Support local logistical entrepreneurship and eco-system initiatives that tackle the issue of lack of physical addresses.
- Allow regional and continental integration of African data markets through open standards, while taking into account that security and regular upgrading of these tools must be guaranteed. Facilitating data cooperation between both continents building upon the EU Expert Group on Business-to-Government Data Sharing. Facilitating growth of data economy by developing joint standard between both continents building upon the EU Expert Group on Business-to-Government Data Sharing, experiences on data protection, as well as AI, from both continents.

Encourage action towards achieving interoperability and provide further benefits to citizens and businesses, building on success stories in the African continent on the development and uptake of digital financial services.

- The development of national and regional forums to foster public and private dialogue around DF policy and regulation. The continuous evolution and innovation in the sector require continuous dialogue between the government and the private sector to develop the right enabling environment for the private sector to develop the right services that will be used by the unbanked population.
- Better use of data for beter decision-making around policy and regulation. Data driven decision-making implies systematic collection and assessment of market data (both supply and demand) to inform regulation and guide policy priorities. In addition to

the system itself, policymakers and regulators require clear measurement frameworks and the technical capacity to monitor data.

- Ensure national and regional interoperability projects for eMoney and other DFS solutions.
- Create a supportive regulatory environment that allows the linking of different fintech solutions (and if possible, conventional banking services, to target the market of remittance payments and to further include the unbanked and increase their access to financial services). However, this should be done in a balanced way, seeking to avoid shocks in the market (i.e. in Uganda, requiring a sim-card to be registered with identity proof disrupted cash transfers to refugees).
- Enabling market entry of innovative, technology-driven financial service providers and solutions.
- Implementing risk-based approaches to AML/CFT through tiered customer due diligence requirements, and establishment of eKYC registries.
- Enabling the use of low-cost delivery channels, including retail agents.
- Digitizing government-to-person payments
- Strengthening financial consumer protections, including with respect to disclosure/transparency, responsible lending, data privacy, and dispute resolution.
- Strengthening collaborative regulatory whole of government approaches to enable the provision and use of digital financial services for digital financial inclusion.
- Establishing technology-forward national financial inclusion strategies.
- Encourage the creation of a single African payments area to bolster cross-border trade and transfers, leveraging on trade as a catalyst for digitalisation.

ANNEX I. Repository of existing practices

Goal I. Accelerating the achievement of universal access to affordable broadband.

Policy harmonisation in the ECOWAS region

Setting an example of policy harmonisation, all 15 countries in the Economic Community of West African States (ECOWAS) region have collaborated on jointly agreed strategies and policies since the early 2000s.

On connectivity, ECOWAS' priority is the development of a reliable and modern regional Telecoms broadband infrastructure, including the INTELCOM II programme, alternative broadband infrastructures and sub marine cables, as well as the establishment of single liberalised telecoms market.

As a result, eleven coastal Member States have already been connected to submarine cables with at least one landing station, while the three landlocked countries in the region (Burkina Faso, Mali and Niger) have at least two access routes to the submarine cables.

Affordable devices: The Sanza Phone

Seeking to democratise access to Internet in Africa, Orange launched Sanza: a phone with voice recognition at US$ 20 that helps customers optimise their budget.

Launched in partnership with KaiOS Technologies and UNISOC, the phone has the simplicity of a feature phone with a long-lasting battery life up to 5 days; but also 3G+, Torch, Wi-Fi and Bluetooth.

Thanks to the Google Assistant, Sanza also helps overcome language and literacy challenges, as customers can access information and applications on the device easily, just with their voice, and without having to type.

The Google Assistant understands multiple French and English accents, with more languages to come later in 2019. Furthermore, the phone menu is available in Arabic, Swahili, Portuguese, English and French.

Access to broadband: Project Isizwe

Project Isizwe is a non-profit organisation created to bring further connectivity to South Africans by smoothing the deployment of free Wi-Fi for communal spaces in low income communities. The organisation's aim is to provide a base for impoverished communities to have free Internet access to use online educational facilities, facilitating free learning for those that cannot afford the cost of other forms of education.

Independent, reliable and stable communication and network infrastructure policies: The example of Burkina Faso

In June 2017, SES Networks announced its selection to lead a project aimed at extending high-speed communications infrastructure throughout Burkina Faso.

The company will be providing the full end-to-end solution, including wireless terrestrial communication and integration with the available optical fibre backbone, to connect 881 sites for eGovernment, eEducation and eHealth across Burkina Faso. In order to enhance connectivity in the landlocked country, SES Networks will be using high throughput, low latency satellite capacity via its Medium Earth Orbit (MEO) fleet, and will provide managed service and maintenance support from Luxembourg, and through a local presence in Burkina Faso.

The solution is designed for the Support Programme of the Reinforcement of Communication Infrastructures (PARICOM) and supports the Burkina Faso eGovernance policy through a Luxembourg development cooperation project. This project is part of the Indicative Cooperation Programme established for the period 2017-2021 between Luxembourg and Burkina Faso. It aims to improve the quality, reliability and accessibility of IT and communication infrastructure throughout the country.

Following the implementation by SES Networks, Burkina Faso will own a high-speed, flexible and reliable

telecommunications network for essential government needs, strengthened through satellite technology and additional wireless terrestrial coverage. The terrestrial wireless part of this network will be operated by Burkina Faso's National Agency for Promotion of Information and Communication Technology (ANPTIC).

Enabling policy environments: Policy and Regulation Initiative for Digital Africa (PRIDA) programme

The Policy and Regulation Initiative for Digital Africa (PRIDA) is a joint initiative of the AU, the EU and ITU to enable the African continent to reap the benefits of digitalization by addressing various dimensions of broadband demand and supply, and to build the capacities of AU Member States in the Internet Governance space. Its specific objective is to create a more harmonised legal and regulatory framework for the use of ICT for social and economic development, with an emphasis on boosting the spectrum market across Africa.

To complement the initiatives focusing on the infrastructure component, PRIDA focuses on the creation of an enabling environment to orient private operators towards the best solutions for the system's long-term cost-effectiveness, quality and sustainability; and to prepare an environment supportive of Internet-based services.

Such development of broadband and its related services goes hand in hand with cybersecurity; whereas a protective framework is especially important for critical infrastructure such as transport, electricity and water networks; as installing confidence in end-users positively impacts the uptake of ICT services as well as the broader digitalisation of government functions.

Goal II. Guaranteeing essential skills for all, in education and Vocational Education and Training (VET), to enable citizens to thrive in the digital age.

The African Development Bank's Coding for Employment Programme

The African Development Bank's Coding for Employment aims to nurture the next generation of digitally enabled African youth. The Coding for Employment programme ultimately aims to provide a proven blueprint to running successful digital trainings to policymakers to guide national skills and youth employment agenda. The demand for ICT skills among the youth is extremely high as evidenced by the enrolment numbers for the programme. For instance, one centres of excellence in Northern Nigeria received over 15,000 applications for just 100 available spots. This high demand necessitates a wide scale response at national level and the Bank seeks to use results and learning from the Coding for Employment programme to engage in policy dialogues across the continent towards increasing digital and ICT skills training and provide a critical mass of professionals for the fourth industrial revolution.

The programme's three main objectives over the next decade are to: 1) equip 130 centres of excellence with ICT infrastructure, 2) train young people in demand driven ICT skills and entrepreneurship and 3) provide graduates with linkages to the ICT ecosystem for internships and job opportunities. Five countries (Nigeria, Kenya, Rwanda, Senegal and Cote d'Ivoire) have been chosen to pilot the programme for 2 years with the aim of scaling the proven programme to the rest of Africa. Through rigorous feasibility studies, partner universities and technical vocational training centres (TVET) in the five countries have been selected as centres of excellence for the programme. Specifically, each centre of excellence is expected to train at least 1,800 young people which will contribute to the wider programme objective of training 234,000 youth and creating 9 million jobs over the next decade.

To ensure that technical and soft skills trainings are relevant and world class, the AFDB has collaborated with Microsoft, Facebook, Safaricom and other global tech giants who will deliver various levels of training.

Since the programme's inception in September 2018, it has trained 150 trainers and over 1360 youth. The programme also launched all female cohorts of 200 girls in two centres of excellence in Nigeria and conducted ICT awareness campaign for over 200 women in Rwanda as a strategy to address the gender digital divide and attract more women and girls to the ICT field.

African Centres for Digital Transformation

The African Centres for Digital Transformation, funded by German Federal Ministry for Economic Cooperation and Development, are physical and virtual hubs, with the goal of promoting digital transformation. The centres facilitate technical knowhow as well as (academic) IT- and entrepreneurial knowledge under one roof. At the same time, they support African governments and their digital change-makers in establishing structures and capacities for the development, implementation and dissemination of digital solutions following the digital principles mentioned above.

These centres implementing five principles of the Smart Africa Manifesto (namely Principles #1, #3, #4, #5) and are developed in close cooperation with the Smart Africa Secretariat. The first centre was opened in 2018 in Rwanda, centres in Tunisia, Ghana and Senegal will follow in 2019 – five others are planned.

The Youth Mobile initiative

UNESCO's YouthMobile initiative leverages computer science education and the widespread availability of mobile phones to empower students. Through the initiative, youth are introduced to coding as both a resource to solve local issues and as a tool to develop complex learning skills.

Students are encouraged to develop, promote and eventually sell mobile applications as a key to ensure sustainable development. YouthMobile is strongly committed to the SDGs, and in particular Goal No. 10 on reducing inequalities.

It promotes the creation of inclusive digital societies and it strives to unlock the potential of women in ICT and fostering gender equality, supporting the creation of positive socio-economic cycles and tackling unemployment challenges with a special focus on the African continent.

Digital gender equality: EQUALS

EQUALS was founded in 2016 by five partners: The International Telecommunications Union, UN Women, the International Trade Centre, GSMA and the United Nations University. Today, EQUALS is a growing global network of more than 90 partners – including governments, companies and NGOs.

EQUALS works to reverse the increasing digital gender divide, and to close the gap by 2030 – supporting UN Sustainable Development Goal 5 by empowering women through their use of information and communication technologies. An action plan of data gathering, knowledge sharing and advocacy strengthening drives the EQUALS network partnership.

By promoting awareness, building political commitment, leveraging resources and knowledge, harnessing the capacities of partners, and supporting real action – EQUALS seeks to achieve digital gender equality and through this, to improve the livelihoods of millions around the world.

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Virtual reality for better skills: Skilling Uganda

Enabel is currently supporting the Ugandan government with implementation of the 10-year BTVET strategic plan called "Skilling Uganda". The strategy aims at equipping Ugandan youth with the skills and competencies needed in the labour market through innovative approaches such as work-based learning – using virtual reality in regions where there are limited numbers of private sector companies.

The virtual reality initiative aims at providing viewers with a virtual immersion into real work settings. Enabel produces short "how to" clips with major private sector companies, which are used in class as teaching aids. The pilot is expected to develop into a (reliable and free) repository of VR clips for work-based learning covering various trades including green skills, agriculture, construction, handcraft among others. For the Uganda pilot, "how to" clips are uploaded on the YouTube 360° channel. For off-the-grid classroom use in remote areas such as refugee settlements, the clips are downloaded and saved on devices such as smart phones.

eLearning: The Virtual University of Senegal

The Virtual University of Senegal is the first public digital university in Africa, founded in 2013, combining eLearning with presence-based tutorials and networking opportunities. The e-learning platform and the laptops with mobile Internet connexion provided by the University grant students a maximum of flexibility, which allows (self-) employed students, women with children, students living in rural areas and/or far from the capital to access higher education. More than 28,000 students currently study at the Virtual University in humanities and (computer) sciences.

Based in Dakar, the Virtual University relies on 13 Open Digital Spaces or Community Hubs
(Espace Numérique Ouvert, ENO), opened in partnership with the African Development Bank – soon, by the end of 2022, Open Digital Spaces will cover all 50 regions of Senegal. Students are encouraged to engage in activities creating social value and become agents of change in their communities.

In its new portfolio—currently under preparation—Enabel will support the further establishment of the ENO in Kaolack and an extension of its activities through the creation of an innovation hub.

Digital skills: ITU ACADEMY

ITU works with its members, stakeholders and partners to shape the human capacity building agenda and determine priorities, as well as respond to the demand for digital skills development. This is achieved through the generation of training content and curricula in specialized ICT topics, delivery of training and professional development courses, as well as managing knowledge transfer. Through the ITU Academy platform, ITU provides integrated digital skills development activities and trainings that cover a wide range of ICT topics from programmes for government policy makers and regulators, professional business focused curricula for senior ICT executives to specialized programmes for technical and operational staff.

Under the framework of the ITU Academy, a wide range of capacity development activities are implemented, including online and face-to-face training course and delivering and promoting "train the trainer" activities to support ICT instructional and institutional sustainability.

ICT and digital development training: Centre of Excellence (CoE) Network

One of the ITU flagship capacity building initiatives is the Centre of Excellence (CoE) network. Currently, 31 CoEs operate in a number of regions including Africa, the Americas, Arab States, Asia-Pacific, Commonwealth of Independent States (CIS) and Europe. They deliver high quality training in the field of ICT and digital development.

ITU's Digital Inclusion Programme

The ITU Digital Inclusion Programme provides resources on legislation, policies, regulations and business practices to promote digital inclusion through reports, toolkits and guidelines. Examples include digital opportunities (innovative ICT solutions for youth employment), coding boot camps (a strategy for youth employment), and the Digital Skills Toolkit.

Furthermore, ITU's Girls in ICT Portal and the Digital Inclusion Newslog provide up-to-date information and best practices on digital inclusion.

African Girls Can Code Initiative

In collaboration with the African Union Commission, ITU and UN Women launched the African Girls Can Code Initiative (AGCCI) 2018-2022, which consists of a four-year programme to train and empower girls aged 17 to 20 years old with ICT skills.

The initiative intends to motivate girls to learn about digital technologies, establish business networks, meet role models and create a community to share their experiences.

African Girls Can Code Initiative organised the first coding camp for girls in Africa, and it will be followed by 14 more to finish during the 2022 African Union Summit.

Digital literacy initiatives: Africa Code Week

Spearheaded by SAP CSR EMEA in 2015 as part of its social investments to drive sustainable growth in Africa, Africa Code Week is a digital literacy initiative that has benefitted over 4.1 million young Africans across 36 countries. Strong partnerships with the public, private and non-profit sectors are the driving force behind the initiative's ability to drive sustainable learning impact in support of UN Sustainable Development Goals #4 (Quality Education), #5 (Gender Equality) and #17 (Partnerships for the Goals).

SAP and key partners (UNESCO YouthMobile, the Camden Education Trust, the Cape Town Science Centre, Google and the German Federal Ministry for Economic Cooperation and Development - BMZ) have joined forces with 28 African governments, over 130 implementing partners and 120 ACW ambassadors to:

- Introduce coding and digital literacy to 8-16-year-olds with a sharp focus on girl empowerment;
- Build local trainer capacity through dedicated Train-the-Trainer sessions (50,000 trained so far);
- Adopt digital / coding curricula for sustained impact on youth.

The fourth edition of ACW took place in October 2018 with 63,759 free coding workshops organised for 2.3 million young Africans across 37 countries, 46 % of which were girls. In October 2019, ACW aims at engaging 1.5 million youth across 36 countries.

Fostering entrepreneurship: SES' Elevate

Evolving from simple technical training to an advancement and self-development programme, the Elevate project of SES now helps graduates set up their own businesses within the directto-home (DTH) satellite industry. Launched in 2012, the programme has recently experienced a rebrand, including a new curriculum and an impressive set of vital business and marketing skills, health and safety precautions and competencies.

The two-day course requires trainees to perform practice scenarios on the second day. The practical modules are about setting up an installation or engaging in dialogue with a customer. The aim is to impart as much knowledge as possible to our trainees to open up job opportunities and help them develop small businesses throughout Africa. To date, the programme has trained installers across the African continent, including the Democratic Republic of Congo, Cameroon, Ghana, Nigeria, Dote D'Ivoire, Uganda, Kenya, Mail, Senegal, Malawi, Tanzania and South Africa.

Women in ICT: WeCode

To promote women in the ICT sector, the Rwandan ICT Chamber founded WeCode, the first programming school and IT-agency for women in East Africa. It offers high class IT-trainings to working-age Rwandan women with and without prior ICT degrees. WeCode has partnered with Moringa School and Muraho Technology to develop a six-month long business driven training programme. As a Rwandan/Canadian tech company based in Kigali for more than ten years, Muraho Technology provides insights on tech services highly demanded by local and international businesses. Based on this information Moringa School, a Kenyan

world-class software developer accelerator, tailored a curriculum for WeCode's programming school. After the programme, WeCode, which is constantly acquiring international contracts, employs its graduates for a period of six months before releasing them on the Rwandan market. Therefore, when entering the job market, WeCode graduates have developed a high level of independence and international work experience. Several national companies have already offered jobs to future graduates of WeCode. By the end of 2019, WeCode plans to have trained 900 women to become IT-specialists. In addition, their private sector partner Samasource has trained 100 women in freelance IT-jobs in 2018.

WeCode is a project of Rwandan-German Development Cooperation with support of the German Federal Ministry for Economic Cooperation and Development (BMZ).

Job readiness in IT skills: The 1 Million Jobs programme

The 1 Million Jobs programme aims to set up a new institute of technology, with a strong practical traineeship element, supported by a state-of-the-art SAP platform. The aim of the project is to:

- To train rigorously selected unemployed/underemployed youth for job readiness in the middle tier of IT skills.
- To create a traineeship model with continued technical and soft-skills training, supported by mentorship for 3 years.
- To build a state-of-the-art platform connecting job seekers with training providers and job providers, assessing job seekers potential using AI, connecting SME's to the ecosystem (App for job seekers, website for job providers etc.).
- To expand this model and create the digital workforce of the future, across many industry sectors and throughout Africa.
- To support MSMEs with business skills and providing exposure to the market.

Digital for innovation hubs: Enabel and MTN Uganda

Enabel has partnered with Uganda's leading mobile telecommunications operator MTN to set up digital for innovation hubs in 9 vocational training institutions. The collaboration, a real demonstration of public-private partnerships, will see MTN provide items such as computers, servers, Internet connection and be responsible for the maintenance of these hubs. The initiative will enable Ugandan youth to gain access to open educational resources for skills development. ICT in education in Uganda is usually limited to learning basic skills such as word processing and working with spreadsheets. The hubs, which are expected to be the game changer, will play a pivotal role in the promotion of ICT enhanced learning including the use of video tutorials, virtual reality, and online textbooks among others.

MTN entered the collaboration as part of its corporate social responsibility initiatives and provides the technical expertise needed to roll out such initiatives. Enabel, being a brand trusted by both parties, acts as a broker between MTN and the vocational training institutions. This public private partnership (PPP) in skills development ensures the project will ably integrate ICT in skills provision and ensures sustainability.

Training educators: French Development Agency, Agence Universitaire de la Francophonie and Orange Madagascar

The French Development Agency AFD has partnered with the Agence Universitaire de la Francophonie (AUF) and Orange Madagascar to train primary school teachers using mobile phones. The mobile phones allow tutors to connect with remotely located teachers through a platform developed by Orange, and to send regular quizzes and automated information to keep the teachers updated. Digital material to be used in classrooms can also be transferred. The permanent communication between tutors and teachers reduces the isolation of teachers and strengthens their pedagogical supervision.

MAMA-LIGHT® Innovation Data and Sustainability Centre: MALINODASUC®

In Burkina Faso, the H.R.H. Princess Abze Djigma Foundation launched a block chain project bringing together a total of 1.3 million women in the shea butter

value chain, connecting them to the digital world via the e-cooperative YAM® Token.

In partnership with the West Africa Solar Pack hosted by ECOWAS Centre for Renewable Energy and Energy Efficiency, the initiative works to create a minimum of 1 million jobs in each country of the ECOWAS region, matching local business and citizen daily needs through digital cooperation.

Promoting innovation in higher education: EDULINK II

Financed by the European Union and implemented by the ACP Secretariat, the EDULINK II programme is designed to continue fostering cooperation in the field of Higher Education between the countries of the ACP States and the European Union. The programme aims at promoting innovation in Higher Education Institutions in the African Caribbean and Pacific States, and hence at ensuring their competitiveness in the global environment.

The expected results of implementing the EDULINK II Programme are:

- Enhanced contribution to national and regional policies and development plans for cooperation in higher education.
- Increased inter-institutional networking between HEIs in the ACP and with EU HEIs, including institutions offering teacher training, degrees and diplomas contributing to regional solutions to teacher shortages.
- Improved management and financial administration of ACP HEIs.
- Upgraded qualifications of academic staff of ACP HEIs.
- Improved institutional frameworks to pursue academic programmes and academic excellence in ACP HEIs.
- Increased mobility of postgraduate students and teaching staff through the provision of joint programmes.
- Delivered study programmes in high-level skills required by the national and regional labour markets.
- Relevant national or regional quality assurance standards of study programmes are met.

Goal III. Improving the business environment and facilitating access to finance and business support services to boost digitally enabled entrepreneurship.

African Development Bank Innovation Lab

The Innovation and Entrepreneurship Lab (IEL) is an initiative under the Jobs for Youth in Africa (JfYA) programme of the AfDB. The objective of the Innovation Lab is to support Africa entrepreneurship ecosystem by strengthening the capacity of enterprise support organizations (ESOs) - i.e. business incubators, accelerators and financial intermediaries including fund managers operating at all stages of the start-up investment cycle to help entrepreneurs create commercially viable and sustainable ventures that employ young people with a focus on young women entrepreneurs.

The Lab will incubate and pilot promising new ideas and assess best practices for existing interventions in support of entrepreneurship and youth employment. In addition, the Lab will provide knowledge resources to help mitigate the constraints and challenges entrepreneurs face in Africa and allow them to successfully launch and grow their businesses and create employment for young people. Lab activities will address five pillars, namely: i) Market Analysis & Networking, ii) Capacity Building, iii) Knowledge & exchange platform, iv) Financial Support for Start-ups & v) Innovation & Incubation. The Lab has recently been launched and an extensive ESO and entrepreneurship market study is now underway, the results of which will be published in June 2019. The Lab is supported by the

AfDB working in collaboration with several initiatives and partners.

Start-up acts in Tunisia and Senegal

Complex business registration processes and uniform tax regimes currently harm creation and ease of doing business for emerging entrepreneurs in Africa. Good practices from Tunisia and Senegal show how start-up acts created through a participatory and inclusive approach to policy-making can provide a comprehensive response to these obstacles. As part of the broader Digital Tunisia 2020 strategy to boost socioeconomic development and expand technological infrastructure, the Start-up Act is expected to increase the number of start-ups, especially in the high-tech sector and with a focus on youth employment. The Tunisian act goes one step further, by offering stipends to support founders in their first year of operations, covering patenting fees and ensuring employees the right to return to their old jobs after a failed attempt to set up their business. The unique bottom-up initiative that gave rise to the Tunisian start-up act has contributed greatly to the comprehensiveness and user-centred orientation of the act and laid ground for replicating co-creation processes through initiatives such as the I4Policy start-up hackathon in Senegal. The ongoing consultations to develop the Senegal Start-up Act aim at providing recommendations to promote innovation and entrepreneurship, covering areas including tax policies, start-up financing, start-up labelling, as well as data collection and sharing for developing better business plans. In April 2019, Mali joined Tunisia and Senegal, when the government released a policy document and invited all relevant stakeholders to review frameworks and policies that will make up the Start-up Act.

World Bank and ITU's Financial Inclusion Global Initiative (FIGI)

FIGI is a three-year programme of collective action led by ITU, the World Bank Group and the Committee on Payments and Market Infrastructures, with support from the Bill & Melinda Gates Foundation.

The initiative acts as a collaborative body to provide resources to help transform plans into reality, and to measure the success of the implemented plans. FIGI aims to advance research in digital finance and accelerate financial inclusion in developing countries, and the programme focuses on the enabling legal and regulatory frameworks and the financial and ICT infrastructure, as well as improvements in product design and access networks. There is also a specific focus on improving electronic payment acceptance by merchants, digital ID and eKYC, and the security of financial and ICT infrastructure for digital financial services. In addition, this initiative will provide the tangible opportunity to engage global funders to build out their funding capacity to bring DFS across their coverage geographies.

China, Egypt and Mexico have been identified as three target countries for collaboration and implementation.

Closing the Gender Digital Divide: Solutions for Youth Employment (S4YE)

Solutions for Youth Employment (S4YE) is a multi-stakeholder coalition among key players from the public sector, private sector and civil society aiming at closing the Gender Digital Divide. It has two strategic priorities: accelerate innovation (through cutting-edge and evidence-based solutions) and generate knowledge and learning to scale programme impact and influence policy dialogue. S4YE publishes an annual Report on Digital Jobs for Youth. It provides operational recommendation for the design and implementation of integrated and gender-inclusive digital jobs interventions for youth. Digital jobs allow cutting search costs, widening employment areas or changing a gender-oriented organisation of work. It is a key tool for the inclusion of young women by overcoming social, economic, political and physical constraints. All sectors are drivers of demand for digital jobs and S4YE addresses ad hoc recommendations to all kind of players being youth employment programmes, governments or private sector.

Digital Transformation of the ICT ecosystem in Africa: ITU Innovation Platform

The United Nations' International Telecommunication Union (ITU) is working towards the digital transformation of the ICT ecosystem in Africa. Its

Development Sector (ITU-D) fosters international cooperation and solidarity in the delivery of technical assistance. ITU believes in the potential for leapfrog in Africa through the opportunities brought by digital transformation and a thriving entrepreneurial economy. To develop its projects, ITU works through public-private partnerships and cooperation initiatives.

ITU has developed an innovation platform that can be utilized to accelerate the digital economy. This global platform serves to provide knowledge, build capacity, assess the ecosystem, and develop concrete projects for countries in order to enable digital entrepreneurship. Countries can make concrete plans with ITU and its partners to scale up this activity, which has already been done for over 20 countries worldwide. This platform looks at the systemic issues of digital economy to nurture digital entrepreneurship. Without systemic approach, sustainable development will be very difficult, as initiatives cannot have synergies and investment impact.

Tech entrepreneurship: Make-IT in Africa

The "Tech Entrepreneurship Initiative Make-IT in Africa" promotes digital innovation for sustainable and inclusive development in Africa and is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ), as part of BMZ's Digital Africa Initiative.

In close collaboration with more than 30 corporate and financing partners, social enterprises, hubs, and networks, 'Make-IT in Africa' supports the growth of an enabling environment for young entrepreneurs in the digital sector – to facilitate better access to finance, markets and skills. These tech entrepreneurs have the potential to modernise the economies and societies of their countries, discover innovative solutions for development challenges, and create new opportunities for employment.

Catalysing technology, innovation and impact investment: Agri-Business Capital (ABC) Fund

The Agri-Business Capital (ABC) Fund sponsored by the International Fund for Agricultural Development (IFAD) is a new model and anchored by the European Union, the ACP Group, the Government of Luxembourg and AGRA providing catalytic grants in a "first-loss" tranche protecting financial investors in the mezzanine and senior tranches at lower-risk-reward expectations and therefore being able to provide capital for the "missing-middle" (US$ 25.000 to 1.000.000) to small-holder farmers and their agribusinesses. These new impact investing models of "blended-finance impact first funds" have the great advantage of different forms of (non-profit, impact and financial) capital being united in the same vehicle providing capital on innovation and start-up stages of enterprises. Hence, these public private partnerships are able to catalyse technology, innovation and impact investment by filling the financing gap and fuelling tech start-ups.

Digital economy policy vision: i4Policy

Innovation for policy (i4Policy) is a policy initiative launched In October 2016 by a group of African innovation hubs, policymakers, entrepreneurs and community catalysts to establish a grassroots vision for digital economy. In 2018, they collaboratively drafted a policy vision with hubs across the continent in the form of the Africa Innovation Policy Manifesto v1.2. It was a bottom-up co-writing process led by 48 ecosystem leaders from 25 African countries and representing the major linguistic groups on the continent. Today, 126 community innovation hubs across 39 countries with communities of more than 700,000 innovators and entrepreneurs have endorsed the Manifesto. It is a living document with its online Consultation tool for amending, discussing and rating its different aspects. The i4Policy community has indicated their willingness to further their agenda by strategically engaging with policymakers to develop and reform public policies, and they have developed participatory and deliberative policy reform methodologies to do so. With these tools, i4Policy has organized 10 Policy Hackathons in nine countries to identify relevant and effective public policy interventions and engender broad-based coalitions to design and implement policy reforms. A broad range of international partners have supported the community's policy hackathons and participatory policy reform efforts. The community is currently supporting public policy reforms across the West African Economic and Monetary Union and working on the Manifesto to refine

concrete recommendations for sub-regions and the continent.

Partnerships for growth: The GSMA Ecosystem Accelerator programme

The GSMA Ecosystem Accelerator programme focuses on bridging the gap between mobile operators and start-ups, enabling strong partnerships that foster the growth of innovative mobile products and services. With 21 investments through grant funding (between £100K-£250K per start-up) in Africa over the past 3 years, and a unique positioning aimed at fostering more collaboration between start-ups and mobile operators in the continent, the programme has been among the most active initiatives supporting African start-ups over the past few years.

African digital innovation: Linkub Africa

Linkub Africa is the first pan-African incubator, an "Innovation Factory", and a cluster of African digital innovation.

This space brings together various stakeholders of digital innovation in Tunisia, in Africa and at the international, Think Tank, investors, research laboratories, large companies and startups, Universities, with a goal: exchange, develop, accelerate and co-build digital innovation projects and foster the emergence of disruptive innovations through a model of collaboration and original confrontation.

The Linkub Africa partners to date are : the Tunisian Government, Smart Africa Alliance, SECO Switzerland, GIZ, Make IT Africa, Swiss Technopole Yverdon, ITU, African Union, Deloitte Africa, Nordic IT, Tunisian Universities, Virtual University of Tunisia (created in 2002) Afric'Innov, MEST Incubator, Startupboostx, Do4Africa, LIST Luxembourg, Incubator of Shwanigan (Canada) and SSVAR (Swiss Society of Virtual, Augmented and Mixed Reality), among others.

Employment in digital platforms: FairWork project

Conducted by researchers from the Oxford Internet Institute, Universities of Cape Town, Manchester, Oxford and the Western Cape; the FairWork project is investigating to what extent fair work principles are being adopted by the 'gig economy' labour-based digital platforms in Africa (and other developing countries).

Platform work provides essential income and opportunities to many. However, some types of platform work have also become synonymous with extremely low pay, precarity, and poor and dangerous working conditions. This is a state of affairs that is not just undesirable for workers, but also for client firms and end-consumers. Client firms will want to avoid the reputational risks of outsourcing to poorly-treated workers; and research has shown that consumers who are able to do so are often willing to pay a premium to ensure that products they buy were produced under good working conditions.

Supported by GIZ, the Fairwork project is committed to highlighting best and worst practices in the emerging platform economy. Governments, platform operators, unions and workers have all been consulted to establish a series of core principles, used by the project to rate and rank platform companies.

The project feeds into the Fairwork Foundation agenda, which seeks to harness consumer power along with leverage from workers and platforms to significantly contribute to the welfare and job quality of digital workers.

African incubators: Afric'innov

Afric'innov is a pan-African incubator network run by the NGO Bond'Innov, funded by the French Agency for Development (AFD) and the International Organisation of the Francophonie. Furthermore, the network works hand in hand with the research institution IRD, the World Bank and telecom operator Orange for technical assistance.

Afric'Innov digital tools offer support to entrepreneurs via follow-up mechanisms, standardised indicators for analysing their impact, eLearning for managers and operational teams, and a handy collaborative resources toolbox. It supports the professionalization of African incubators while mainstreaming best practices among them, seeking to allow the emergence of a high number of quality start-ups and entrepreneurs. So far, the

network counts with 31 incubators in 15 countries, and has supported over 200 start-ups.

It offers training and seed funding programmes, digital tools for managing incubation, and a quality label to put each qualified incubator in communication with its community. The label has been co-developed with five international institutions, 33 incubators and 18 start-ups; and it rates the quality of infrastructures, governance transparency, clearness of service offer and the adaptability and usefulness of the resources and supporting models provided to start-ups.

Supporting the tech ecosystem: ITC's NTF IV Tech Sector Development

The UN International Trade Centre (ITC) has been building tech-sector competitiveness in developing countries since 2010. Currently, the tech-sector development practice accelerates 120+ tech startups and strengthens the tech ecosystems in East and West African countries. ITC supports digital entrepreneurship on three interlinked levels, working with market partners to connect companies with business opportunities. ITC staff as well as local and international experts – through "training of trainers" with the latter - deliver blended capacity building for startups. At the meso level, ITC partners with tech hubs as "multipliers" on the ground, in close coordination with relevant government ministries and agencies.

ITC emphasizes international business development. Supported tech startups participate in regional and international tech events, where they connect with business partners and international investors. Through ITC's NTF IV Tech Sector Development, customized toolkits are offered and adapted to the startups' level of maturity (innovation (ideation), entrepreneurship (minimum viable product launched) and growth (market-product fit) and specialisation (fintech, e-commerce, agritech, ed-tech etc.).

Goal IV. Accelerating the adoption of eServices and the further development of the digital economy for achieving the Sustainable Development Goals (SDGs).

ITU's programmes for eServices

- ITU has developed an SDG Digital Investment Framework as an analytical guide to digital investment by identifying reusable ICT building blocks to deliver priority SDG use cases. The framework builds on a whole-of-government approach to ICT investment that is required in order to deliver impact at scale, and the SDG provide a strong strategic foundation for digital economy that is integrated across government both horizontally and vertically.
- The ITU Digital Innovation Framework assists countries, cities and ecosystems in addressing today's challenges by empowering them to accelerate their digital transformation.
- To fully utilise the power of ICTs for sustainable development (ICT4SDG), the ICT Applications programme assists ITU members in bringing impact to their national development agendas by providing the tools to develop and implement sustainable solutions at the national level; and to work in a number of cross cutting initiatives to leverage multi-stakeholder collaboration and the power of ICT4SDG. The aim is to facilitate the development and adoption of innovative solutions that will bring impact to people, and to accelerate the achievement of the SDGs.
- ITU is working on collaborative regulation tools and research, as well as on building blocks for a broader universal service (Universal service v.2) in future regulatory and legislative policy. UAS 2.0 will enable incorporation of the various dynamics of the telecommunications and ICT services sector and is more flexible and better aligned with the current convergence of services, networks and content. A set of recommendations and guidelines will be presented that will be used to improve procedures and mechanisms of universal

service management and associated aspects, particularly in terms of financing.

CIB Egypt Data Lab and Fintech

In 2015, CIB pioneered to build an advanced analytics and big data lab. The bank's vision was to evolve from a successful, yet local, traditional bank into a leading data-driven, customer-centric organisation that fully understands its existing and potential customers' needs and tailors financial products and services accordingly.

Now, CIB is Egypt's largest sponsor of fintech start-ups, the first North African bank to use smart lending to reach the unbanked, and the first to join R3, the world's largest financial services consortium using block chain technology.