

AFRICAN QUEST FOR DIGITAL SOVEREIGNTY



Chapter from Africa 2025: Prospects and Challenges
Handbook by the HSE University Center for African Studies
Edited by Andrey Maslov

Authors:

Olesya Kalashnik, Expert, HSE University Center for African Studies.

Daria Sukhova, Researcher, Intexpertise, LLC.

With the assistance from Igor Demin, Angelina Pshenichnikova and Maxim Polyakov.

Edited by Andrey Maslov, Director, HSE University Center for African Studies.

Reviewed by Dr. Mactar Seck, Chief of Innovation and Technology Section, UNECA and Tonye Emmanuel, Professor Emeritus, the University of Yaoundé I.

The chapter was prepared within the E-Governance Knowledge Sharing Program supported by the Government of the Russian Federation.

The chapter **African quest for digital sovereignty** offers a broader understanding of digital sovereignty, going beyond data circulation and infrastructure control. It notes that digitalization presents an opportunity for African countries to address pressing socio-economic issues, highlighting the growing need to create frameworks for sovereign development of the sector. The chapter provides unique assessments of foreign influence on digital transformation process and the role of corporations, where African data is stored and websites hosted. The role of African languages in enhancing the social impact of digitalization is explored, with the first evaluation of the availability of African languages on government websites. The chapter serves as an integral part of the handbook *Africa 2025: Prospects and Challenges* prepared by the HSE University Center for African Studies.

Africa 2025: Prospects and Challenges is to serve as a handbook on Africa's development, challenges and prospects. Its target audience is government officials, businessmen, scholars and experts. The handbook aims to provide alternative positive vision on some issues that Africa faces, among them being the fight for food and energy sovereignty, debt crisis, digital transformation, rapid urbanisation and population growth.

The book was prepared by the team of experts and scholars coordinated by HSE University Center for African Studies (Moscow, Russia).

Digital version
of the Handbook
is available here:

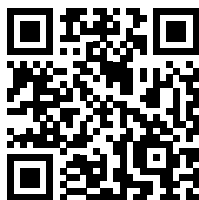


Table of Contents

New stage of African digitalization	3
International development assistance	4
World Bank	6
China	9
Role of international corporations	13
Data sovereignty	16
Hosting of government websites of African countries	21
Connectivity	22
Digitalisation of languages	24
Digitising a language	28
Stakeholder engagement	28
Localisation	29
Case study. Languages in e-governance in Africa	29
Forging sovereign digital future	33

African quest for digital sovereignty

New stage of African digitalisation

The digitalisation of African countries has entered into a new stage where governments tend to adopt a more proactive approach and aim to gain more control over the sector. For now, efforts have been concentrated on data governance and localisation; with data becoming a commodity and Africa generating a vast amount of this strategic asset, governments are aiming to control and leverage the resource.

33 countries have already enacted personal data protection regulations. Some of them, like Senegal and Rwanda, require data to be stored locally. Furthermore, in 2023 the African Union Convention on Cyber Security and Personal Data Protection entered into force, 9 years after its adoption. The year 2024 was marked by the release of the “Common African Position on the Application of International Law to the Use of Information and Communication Technologies in Cyberspace” communiqué.

In 2016, the Network of African Data Protection Authorities (NADPA-RAPDP) was established in Ouagadougou to provide a platform for exchange and cooperation between member authorities and represent the interests of African countries in the global arena. It now comprises data protection authorities from 18 African countries¹. In May 2024,

at the network’s annual general meeting, Eliud Owalo, at the time the Cabinet Secretary at the Ministry of Information, Communications and Digital Economy of Kenya², called for digital sovereignty and data governance in Africa³.

Given the critical importance of ICT in overcoming major socio-economic challenges and fostering self-reliance, there is a need to ensure not only regulation but also sovereign development of the sector

Information and communication technologies (ICTs) are widely considered as an enabler for addressing core socio-economic challenges in a resource-constrained environment, allowing developing nations to build self-reliance in the long run, thus giving rise to the need to ensure not just the regulation but also the sovereign development of the sector.

Digital sovereignty is often reduced to the localisation of data and the development of data infrastructure or government control over the sector⁴.

Digital sovereignty implies sovereign decision-making about the development of ICTs in a country based on sovereign expertise and driven by national interests

This suggests independence at every stage of the process including strategising, regulation, design, operation, management and human resources development.

1 Angola, Benin, Burkina Faso, Chad, Cabo Verde, Gabon, Ghana, Côte-d'Ivoire, Kenya, Mali, Mauritius, Morocco, Niger, Nigeria, São Tomé and Príncipe, Senegal, South Africa, Tunisia, Uganda, Eswatini, Mauritania, Zambia, Zimbabwe.

2 Now Eliud Owalo serves as the Deputy Chief of Staff in the Executive Office of the President of Kenya (Performance and Delivery Management).

3 Network of African Data Protection Authorities (NADPA/RAPDP). Annual General Meeting and Conference NADPA-RAPDP. 2024. URL: <https://www.rapdp.org/en/node/2113>

4 Sometimes, digital sovereignty and data sovereignty are even used interchangeably (e.g. one American law article states: “By “digital sovereignty” (or “data sovereignty”), I [the author] mean the state’s policy or set of policies toward ensuring national sovereignty online.”). (Source: Woods, Andrew Keane, ‘Digital Sovereignty + Artificial Intelligence’, in Anupam Chander, and Haochen Sun (eds), Data Sovereignty: From the Digital Silk Road to the Return of the State (New York, 2023; online edn, Oxford Academic, 14 Dec. 2023), <https://doi.org/10.1093/oso/9780197582794.003.0006>, accessed 23 Oct. 2024.) There is also an understanding of digital sovereignty in relation to cyberoperations on the territory of a foreign state with two approaches: “pure sovereignty” and “relative sovereignty”. (Source: OpinioJuris. The African Union (Rightly) Endorses Pure Sovereignty in Cyberspace. URL: <https://opiniojuris.org/2024/02/05/the-african-union-rightly-endorses-pure-sovereignty-in-cyberspace/>)

As a result, digitalisation, along with a promise of a brighter future, brings new ways and reasons for external influence, also known as “digital colonialism”. It also brings new excuses, or rather old ones under new wrapping. Under the international assistance programmes and the motto of “bridging the digital divide”, external actors and transnational corporations build ICT infrastructure and digital solutions, develop strategies and laws, train Africans, all in order to lay the groundwork for expanding their own presence and revenues in the region, as well as accessing valuable data to train AI models and influence the decision-making. They also use loopholes in the data protection and competition laws to gain advantage in the African markets.

International development assistance

The untapped potential of African digital markets with the ever-growing population, ICT infrastructure and low competition has been attracting all sorts of international actors launching the “Scramble for Africa of the XXI century”⁵, which includes multinational corporations, development assistance, foreign companies going international, with them all pursuing their own objectives – both political and economic.

In 2024, the World Bank estimated that USD 86 billion in investments is needed to ensure internet connection on the continent⁶. Such an assessment is a part of the effort to justify the need for and importance of foreign investment in the sector.

As for African countries, digitalisation is seen not as an end in itself but as an opportunity to address major socio-economic problems, more and more ICT initiatives are labelled as “development cooperation”.

African countries tend to approach the choice of partners pragmatically, without political prejudices, and strive to diversify partnership networks. In his interview to the Global Economic Governance Programme, the Director General of the Information and Digital Systems Agency (ASIN) of Benin Marc-André Loko highlighted: *“In its digital strategy, Benin seeks to diversify its network of best-in-class partners”*⁷. The same approach is followed by most other governments.

However, external financing and assistance often go hand in hand with aid conditions and terms. For instance, Chinese institutions often tie the provision of financing to hiring a Chinese contractor⁸. Similarly, the World Bank’s lending also comes with numerous conditions including hiring a contractor from a short list. Thus, external financing limits African governments’ independence in decision-making.

In 1989, the continent accounted for over one-third of all ICT-related lending by the World Bank with a focus on infrastructure projects, and in 1990 over 90% of its projects in Africa contained a significant ICT component⁹. Multinational computer vendors (such as IBM France, Groupe Bull, ICL) entered the market by providing equipment to governments pursuing digitalisation. At the time, 19% of the ICT-related lending by the World Bank was in the sector of agriculture and rural development (mainly for finance and accounting, information management, management of information systems, office technology, statistics).

Modern initiatives draw on this initial experience, its failures and successes. One of the main challenges lies in the gap between reality and strategy: many initiatives failed because of unrealistic and impractical goals set and a lack of preliminary analysis. Donors tended to underestimate the funding and time required for assistance projects.

5 Danielle Coleman, Digital Colonialism: The 21st Century Scramble for Africa through the Extraction and Control of User Data and the Limitations of Data Protection Laws, 24 MICH. J. RACE & L. 417 (2019). Available at: <https://repository.law.umich.edu/mjrl/vol24/iss2/6>

6 Resilient. Digital Africa. Mobilizing \$86 billion to connect the entire Africa. 2024. URL: <https://resilient.digital-africa.co/en/blog/2024/05/02/mobilizing-86-billion-to-connect-the-entire-africa/>

7 Global Economic Governance Programme. URL: <https://www.geg.ox.ac.uk/content/marc-andre-loko-dans-sa-strategie-numerique-le-benin-est-dans-une-logique-de>

8 Inclusive Development International. Following the money. International contracting. URL: <https://www.followingthemoney.org/international-contracting/>

9 Moussa, Antoun, and Robert Schware. “Informatics in Africa: Lessons from World Bank Experience.” World Development 20, no. 12 (1992): 1737–52. doi:10.1016/0305-750X(92)90088-D.

Cases of international assistance in developing e-strategies for Africa

Country	Project
Cameroon	In 2011, the National Agency for Information and Communication Technology (l'Agence Nationale des Technologies de l'Information et de la Communication, ANTIC) presented a draft of its e-government strategy, EGOV.CM developed in collaboration with the United Nations University (UNU) ¹⁰ . In 2016, an e-Government master plan was developed by the Ministry of Posts and Telecommunications with the assistance of the Korea International Cooperation Agency (KOICA) and sister administrations.
Comoros	The first national digital strategy was adopted by the Council of Ministers in 2019 – Digital Comoros 2028 (Comores Numérique 2028). The World Bank assists in the implementation of the initiative ¹¹ .
Gabon	The Gabon Numerique 2025 was developed with financial support and consultation from the African Development Bank (AfDB) .
The Gambia	In September 2022, the AU-EU D4D Hub sent a technical assistance mission led by the e-Governance Academy and Estonia's ICT cluster ¹² (ITL) at the request of Gambia's Ministry of Communications and Digital Economy. The mission is to assess the country's digital readiness and assist in developing a digital economy strategy ¹³ .
Republic of Guinea	In 2015, the Ministry of Post, Telecommunications and the Digital Economy of the Republic of Guinea adopted the 2016-2020 programme which was aimed at the elaboration of a strategy for the development of telecommunications and the digital economy as an independent sector. This document was developed with material support from the West African Regional Communication Infrastructure Programme (WARCIP) of the World Bank ¹⁴ .
Republic of Guinea	The digital road map document, aimed to provide a digital strategy for the government of the Republic of Guinea, was drafted in 2020 by the League of Arab States ¹⁵ .
Namibia	The Namibian e-governance policy of 2005 was preceded by a study of international practices and consultations with an Indian company – one of the international centres of excellence created by the Confederation of Indian Industry ¹⁶ – which also provided a feasibility report on e-governance in Namibia in June 2004 with recommendations on further e-governance development in the country.
Senegal	In November 2022, the Senegalese government requested technical assistance from the D4D Hub to study the prospects of EU support for Senegal's digital strategy – Stratégie Sénégal Numérique 2025. The research was led by Expertise France in partnership with Enabel , LuxDev and GIZ ¹⁷ . The development of the strategy was supported by the African Development Bank .
Tanzania	In December 2022, the e-Governance Academy (eGA) and the Estonian Association of Information Technology and Telecommunications (ITL) within the AU-EU D4D Hub started a technical assistance mission with the aim of assisting the Tanzanian ICT Commission (ICTC) and the Ministry of ICT in analysing existing challenges and strengths, potential of the Tanzania's ICT sector and developing a new three-year roadmap for boosting digital transformation in the country ¹⁸ .
Zanzibar (Tanzania)	The Danish International Development Agency (DANIDA) provided technical and financial support to assess the Zanzibar digital health sector and develop the Digital Health Strategy 2020/21-2024/25. The USAID , PATH and D-Tree International also supported the development of the strategy.
Tunisia	The e-Governance Academy ¹⁹ experts advised the Tunisian Ministry of Communication and the National Agency of Electronic Certification ("Tuntrust") by providing a policy note on developing e-IDs in the country ²⁰ . The project was funded by the European Bank for Reconstruction and Development.

10 United Nations University. UNU assists in developing national e-Governance strategy for Cameroon. URL: <https://unu.edu/news/news/unu-assists-in-developing-national-e-governance-strategy-for-cameroon.html>

11 ANADEN. Comores Numérique 2028. URL : <https://www.anaden.org/uploads/media/5e3969272d9f8/strat-comores-numerique-v2-3-comprese.pdf>

12 A union of Estonian ICT companies aiming to export their solutions.

13 D4D Hub. AU-EU D4D Hub supports digital transformation in Rwanda and the Gambia. 2022. URL: <https://d4dhub.eu/news/rwanda-gambia>

14 Ministry of Posts, Telecommunications and The Digital Economy of Guinea. Document de Politique et de Stratégies Nationales de Développement des Technologies de l'Information et de la Communication de la République de Guinée. URL: https://smartafrica.org/IMG/pdf/srategie_tic_finale_v.6_28_juillet_2016.pdf

15 Guinea Digital Roadmap. URL: <https://www.arab-digital-economy.org/2020/12.pdf>

16 Confederation of Indian Industry. Centres of Excellence. URL: https://www.cii.in/Centres_of_Excellence.aspx

17 D4D Hub. Le D4D Hub UA-UE renforce la coopération numérique de la Team Europe avec le Sénégal. 2022. URL: <https://d4dhub.eu/news/le-d4d-hub-ua-ue-renforce-la-coop%C3%A9ration-num%C3%A9rique-de-la-team-europe-avec-le-s%C3%A9n%C3%A9gal>

18 D4D Hub. A new digital transformation roadmap for Tanzania. 2023. URL: <https://d4dhub.eu/news/a-new-digital-transformation-roadmap-for-tanzania>

19 A non-profit organisation established in 2002 by the Government of Estonia in collaboration with the Open Society Institute (OSI) and the United Nations Development Programme (UNDP). It derives from Estonian experience.

20 e-Governance Academy. Supporting the e-Identity processes in Tunisia. 2022. URL: <https://ega.ee/project/supporting-the-e-identity-processes-in-tunisia/>

Assistance programmes are instrumental as a soft power tool to increase external influence in African countries by promoting solutions and technologies that are beneficial to the initiators

They provide conditions for the development and implementation of laws, regulations, policies and practices in the countries, which, through management demand and requirements, contribute to the development of their political and economic relations with a donor. The result is the channels of access to the markets. Therefore, such programmes are increasingly being implemented by individual countries and the corporate sector.

This brings to light an imbalance between the supply and demand of development assistance in the ICT sphere: the supply is often driven by interests of international actors rather than by the demand of African countries.

Assistance projects tend to set ambitious, yet unrealistic goals in line with the donor's strategies strategies, often without proper assessment and ignoring the needs of the recipient, which leads to fragmentation of efforts and waste of resources

Another aspect to consider is international cooperation in developing e-strategies and policies for African countries. External actors provide assistance at the preliminary stages – i.e. assessing the digital sector of a country, challenges and perspectives, suggesting best practices – and participate directly in developing the strategies. The Namibian e-governance policy of 2005 was preceded by a study of international practices and consultations with an Indian company –

one of the international “centres of excellence” created by the Confederation of Indian Industry²¹ – which also provided a feasibility report on e-governance in Namibia in June 2004 with recommendations on further

e-governance development in the country. Likewise, the AU Digital Transformation Strategy was developed with the assistance of multiple international organisations including the UN Economic Commission for Africa, Smart Africa, ITU and the World Bank.

Assistance at the stage of assessment and strategic planning grants external actors the opportunity to influence directions of further development of the sector and tailor it in line with their own interests

World Bank

The World Bank was among the pioneers in assisting African countries with digitalisation. The organisation has launched numerous digitalisation programmes tailored for particular countries like the Digital Cabo Verde project (approved in 2021), Sierra Leone Digital Transformation Project (approved in 2022), eTransform Ghana Project (approved in 2013)²². Over the last decade, its investment in digitalisation

projects on the continent reached USD 2.8 billion²³. The projects are financed mainly by the International Development Association (IDA) which is funded by contributions from the governments of member countries. Each country's share defines its voting power in IDA: the larger the share, the greater the influence on the organisation's strategy, priorities and funding decisions. The United States, the United Kingdom, Japan, France and Saudi

21 Confederation of Indian Industry. Centres of Excellence. URL: https://www.cii.in/Centres_of_Excellence.aspx

22 The World Bank. Ghana's eTransform Project Trains Tomorrow's Leaders. 2021. URL: <https://www.worldbank.org/en/news/feature/2021/11/17/ghana-s-ettransform-project-trains-tomorrow-s-leaders>

23 World Bank. Results Brief. Digital Transformation Drives Development in Africa. 2024. URL: <https://www.worldbank.org/en/results/2024/01/18/digital-transformation-drives-development-in-afe-afw-africa>

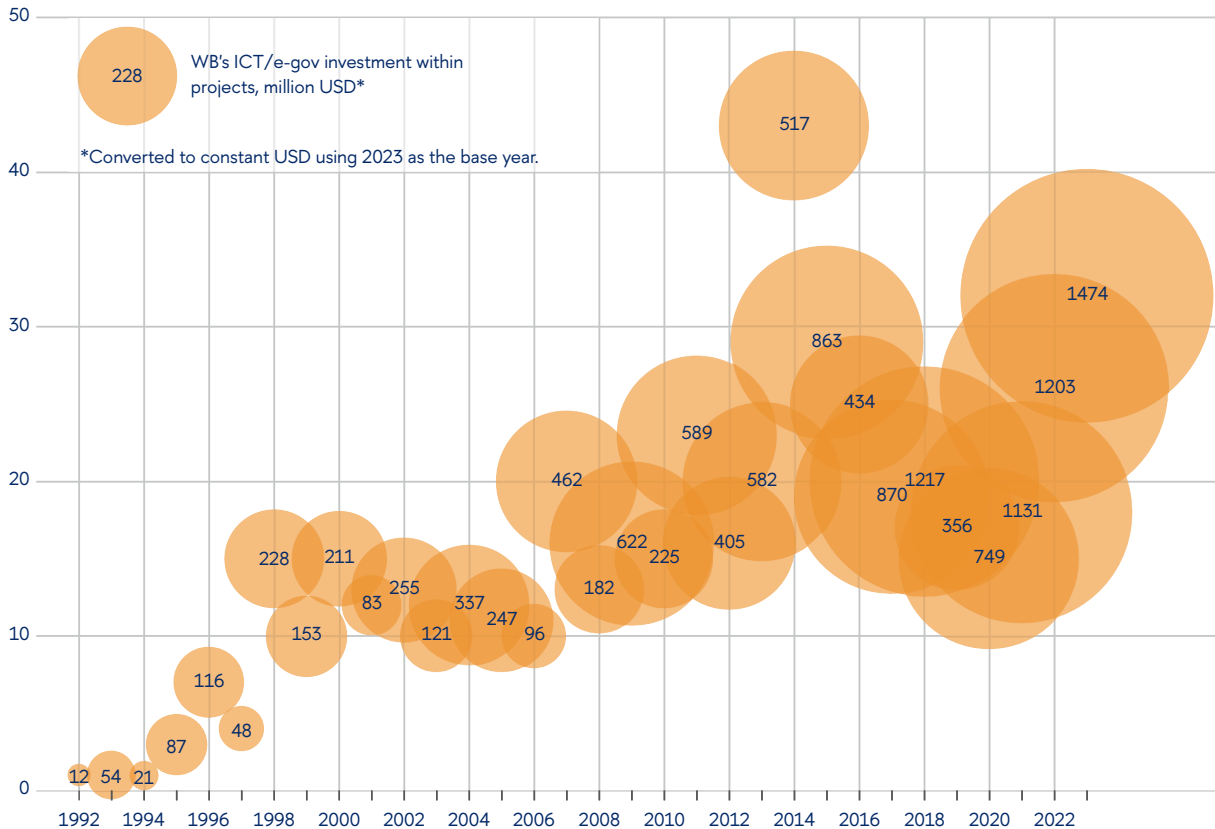
Arabia make up the top five countries by voting power^{24 25}.

Top five recipients in terms of investment are Nigeria, Kenya, Ethiopia, DR Congo, Egypt. Algeria, Eritrea, Sao Tome and Principe, Eswatini, Guinea and Zimbabwe accounted for the least lending by the World Bank.

Between 1992 and 2024 the World Bank implemented in Africa more than 600 projects with a significant ICT component, total ICT investment exceeded USD 15.5 billion²⁶

World Bank's projects with ICT component in Africa dynamics (1992–2023)

Number of projects with ICT component



Source: prepared by the HSE University Center for African Studies based on the World Bank data (Oct 2022).

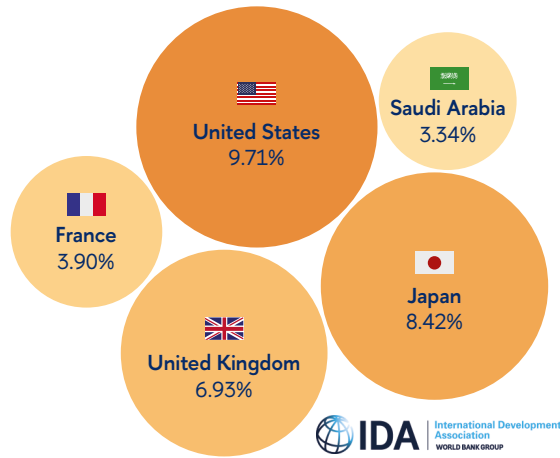
24 World Bank. Public documents. International Development Association. Voting Power of Member Countries (As of September 30, 2024). URL: <https://thedocs.worldbank.org/en/doc/0d24f6d754f61643639df76dac97fda3-0330032021/original/IDACountryVotingTable.pdf>

25 Noteworthy, the United States is also the only World Bank shareholder with a veto power, in particular, over structural changes in the institution. However, having 15.49% share in the IBRD, the US de facto has a veto power over its decisions, whilst the IBRD Board of Directors selects the President of the World Bank. As a result, the President has always been a US citizen. Furthermore, Catherine Gwin, who worked in operations evaluation department for corporate evaluation and methods as a lead evaluation officer (2001-2006) and for an independent evaluation group for corporate evaluation and methods as a lead evaluation officer (2006-2007), stated: "Decisions are, however, often worked out between the United States and Bank management before they ever get to the board, or among members of the board before they get to a vote". (Source: Kapur, Devesh, Lewis, John P., Webb, Richard. 1997. The World Bank, Its First Half Century, volume 2, p. 244. URL: <https://documents1.worldbank.org/curated/pt/405561468331913038/pdf/578750PUB0v20W10Box353775B01PUBLIC1.pdf>)

26 Authors' calculations based on the World Bank Digital Governance Projects database (October 2022) and projects information. URL: <https://projects.worldbank.org/en/projects-operations/projects-list?os=0>

Top-5 countries by voting power in the International Development Association

Together the largest shareholders hold 1/3 of votes



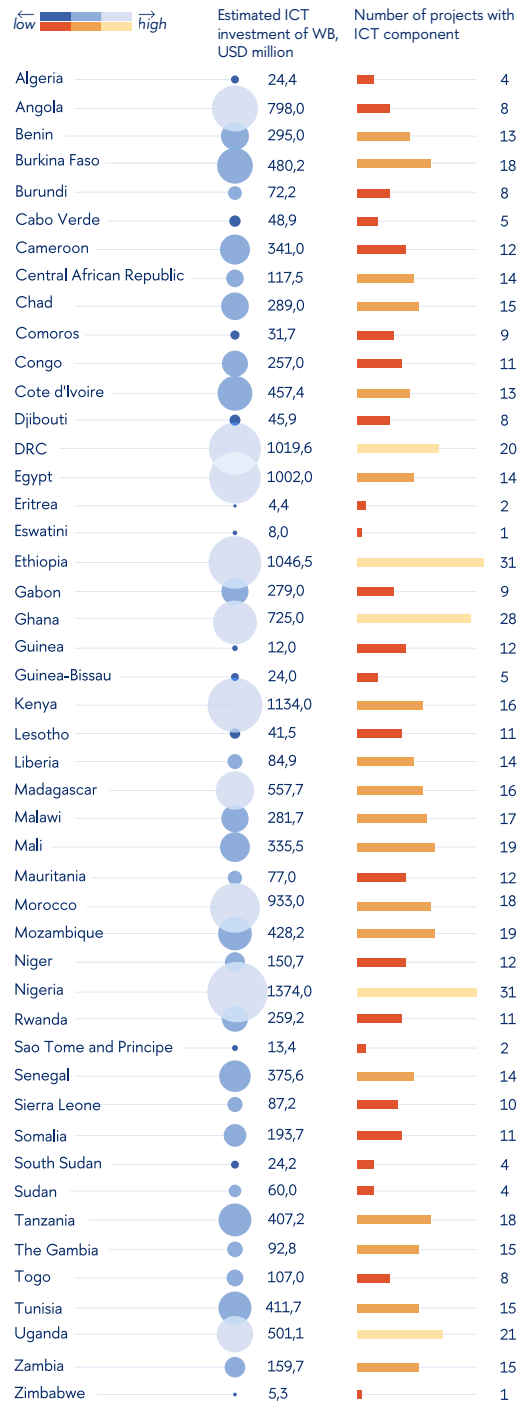
Source: prepared by the HSE University Center for African Studies based on the World Bank data.

The top five recipients in terms of amount are Nigeria, Ghana, Ethiopia, DR Congo and Uganda, whereas Algeria, Eritrea, Sao Tome and Principe, Eswatini and Zimbabwe accounted for the least number the World Bank’s projects with ICT component.

In assessing the degree of each country’s independence in ICT development, not only international participation should be taken into account but also the share of the ICT sector in the GDP.

A specific area of cooperation for the World Bank is digital governance, or GovTech. The World Bank Digital Governance Projects database²⁷ set in 2015 (last updated in October 2022) contains a total of 1,450 projects with ICT or e-governance components financed by the organisation worldwide since 1992. Africa – both Sub-Saharan and Northern – accounts for 505 projects (or 35% of all projects) and USD 13.8 billion in investments (42%). It is noteworthy that not all of the projects initially included ICT components and sometimes the need for digitalisation was determined in the process of implementation (e.g. in the case of the Reforma da Administração Financeira do Estado (RAFE) in Cabo Verde).

World Bank projects in Africa with ICT component (1992–2024)



Source: prepared by the HSE University Center for African Studies based on the World Bank projects information and Digital Governance Projects database (October 2022).

27 The World Bank. Digital Governance Projects Database. URL: <https://datacatalog.worldbank.org/search/dataset/0038056/Digital-Governance-Projects-Database>

China

At the Eighth Ministerial Conference of the Forum on China-Africa Cooperation (FOCAC) held in November 2021, China unveiled a programme dedicated to digital development in Africa, according to which China plans to implement “10 projects in the field of digital economy for Africa by 2035, create centres of Sino-African cooperation in the field of digital innovation and support the development of Sino-African joint laboratories, partner institutes and bases of cooperation in the field of scientific and technical innovations”²⁸.

The same year, the Dakar Action Plan (2022-2024), containing points dedicated to the digital economy, the exchange of scientific and technical knowledge and experience in the field of public services, was adopted²⁹. In the document, China once again promises to implement “10 projects in the field of digital economy for Africa”, support the construction of digital infrastructure in Africa and continue digital dialogue via FOCAC and China-Africa Internet Development and Cooperation Forum.

In the Dakar Plan, China declares its readiness to enhance communication and exchanges with governments of African countries and organisations like “Smart Africa” to boost the innovative development of digital technology in Africa and China-Africa digital cooperation. The two sides will enhance cooperation and promote coordination on personnel training, internet connectivity and the construction of innovation centres, among others.

Both above-mentioned documents support the expansion of cooperation within the Digital Silk Road (DSR) framework. For parties participating in the initiative, China offers digital products and services at competitive prices, investments in their

ICT infrastructure, joint technology projects and research programmes. In return, China receives a reduction in technological dependence on the West, new markets for its high-tech companies and the dissemination of Chinese normative and technological standards, including cyber sovereignty, respect for which is included in the list of fifteen general principles of the Digital Silk Road initiative.

16 countries have officially joined the initiative by signing a memorandum of understanding. More than 40 states, individual companies and organisations participate in the initiative without signing a memorandum. The exact list of countries is unknown. Among the 140 countries that have presumably signed a memorandum of understanding with China on joining the Belt and Road, 52 are African countries (40 of them are Sub-Saharan) with all of them also being potential participants in the DSR³⁰.

According to the data provided by The Economic Times, for 2021, China’s total investment in Africa’s digital infrastructure under the DSR is estimated at USD 8.43 billion³¹. As part of this strategy, the Chinese government is recommending its tech giants – Huawei, ZTE and Cloudwalk – to enter into mobile telephony, social media and e-commerce applications in Africa. The initiative’s projects, information about which is available online, include the joint development of a plan for the inclusive development of e-commerce between China and Africa, the introduction of a technology-driven “platform for hundreds of stores and thousands of products” in Africa, the holding of an online shopping festival in Africa and the promotion of e-commerce activities in the tourism sector.

Initiatives managed by state-owned companies play a crucial role in China’s assistance initiatives. Main actors include Huawei and ZTE

28 The State Council of China. China-Africa ties to spur digital field. 2021. URL: http://english.www.gov.cn/news/international/exchanges/202112/03/content_WS61a96889c6d0df57f98e5f5a.html

29 China International Development Cooperation Agency. Forum on China-Africa Cooperation – Dakar Action Plan (2022-2024). URL: http://www.cidca.gov.cn/2021-12/02/c_1211471277.htm

30 China-Africa Joint Efforts to Build a «Digital Africa» and the Way Forward. URL: http://www.xyfzqk.org/UploadFile/Issue/202111080001/2022/6//20220610094501WU_FILE_0.pdf
https://www.cfr.org/sites/default/files/pdf/Chinas%20Digital%20Silk%20Road%20and%20Africas%20Technological%20Future_FINAL.pdf

31 The Economic Times. China reportedly investing \$ 8.43 bn in Africa as part of Digital Silk Road initiative. 2021. URL: <https://economictimes.indiatimes.com/news/international/world-news/china-reportedly-investing-8-43-bn-in-africa-as-part-of-digital-silk-road-initiative/articleshow/87039334.cms>

Government initiatives:

China-African Innovation Cooperation Center (中非创新合作中心)³².

Created in 2018 in accordance with the results of above-mentioned China Africa Cooperation Forum and the Beijing action plan (2019-2021). It carries out technology transfer and cooperation in the field of innovation and entrepreneurship and supports the exchange of innovative achievements between Chinese and African youth.

China-Africa Internet Development and Cooperation Forum (中非互联网发展与合作论坛)³³.

The forum was held only once in 2021 but with the prospect of further meetings and cooperation. It was hosted by the State Internet Information Office of China and now is positioned as a platform for discussions and promotion of Chinese legal and ideological standards, including the promotion of the “Sino-African Initiative to Build a Community of a Shared Future in Cyberspace”.

Huawei is the most active Chinese state-owned company in Africa and according to data collected by the Center for Strategic and International Studies (CSIS)³⁴, Huawei had already concluded 23 e-government deals in Africa by 2021. The main area of work is the creation of cloud services for

data storage, with Africa accounting for the largest number of the company's transactions (36%). A few publicly disclosed examples, information are presented below. Projects funded by Huawei are classified as “assistance”, although they are commercial entities.

Senegal

National Data Centre of Senegal (塞内加尔国家数据中心)³⁵

Established in 2021, the national data centre is financed with a loan by the **Export-Import Bank of China** (Exim) and supported by equipment and technologies from **Huawei**. The centre is involved in data storage, digitalisation of public services, technology transfer and personnel training. The cost of the project is estimated at USD 79 million³⁶. The data centre will tap into global networks through an undersea cable as well as Senegal's 6,000-km fibre optic network. At the launch of the centre, President Macky Sall said that the government would migrate all state data and platforms to the data centre. State-owned businesses such as Senelec, the national electricity company, will also move their data to the centre in tandem with government agencies. The centre will serve both the public and private sectors and offer cheaper infrastructure to Senegal's growing community of tech startups than entrepreneurs will find abroad³⁷.

32 China-Africa Innovation Cooperation Centre. Official website. URL: <http://www.caicc.net.cn/>

33 The China-Africa Internet Development and Cooperation Forum was held. 2021. URL: https://www.gov.cn/xinwen/2021-08/25/content_5633126.htm

34 Center for Strategic and International Studies is recognised as undesirable organisation in the Russian Federation by the decision of the Russian Prosecutor General's Office.

35 Seetao. The Belt and Road Initiative has shifted from infrastructure construction to digital information construction. 2023. URL: <https://www.seetao.com/details/213555.html>

36 Further Africa. China plans digital dominance in Africa via Digital Silk Road. 2021. URL: <https://furtherafrica.com/2021/12/30/china-plans-digital-dominance-in-africa-via-digital-silk-road/>

37 Reuters. Senegal aims for digital sovereign. 2021. URL: <https://www.reuters.com/article/senegal-datacenter-idINL5N2O44D3>

Cabo Verde

National data centre of Cabo Verde

As part of the eGovernment project, **Huawei** built a national data centre for Cabo Verde. Internal office networks and videoconferencing systems for the government, schools and hospitals were also set up. The collaboration between the Cabo Verde Ministry of Education and Huawei made it possible to establish the WebLab integrated ICT training system to foster ICT talent development in the country and encourage the exchange and advancement of social information³⁸.

Tanzania

In 2015, the USD 94 million investment in constructing a government data centre was announced. **Huawei** Tanzania provided advisory support to the project which was completed in 2016. The data centre is managed by Tanzania Telecommunication Company Limited (TTCL)³⁹.

Kenya

Huawei and **Safaricom** cooperation project for the operation of public security platforms for police surveillance in Nairobi and Mombasa, as well as for the training of ICT specialists and civil servants was launched in 2019 and is still in operation⁴⁰. The agreement with Huawei is renewable every five years. As a result, a large number of training sessions on artificial intelligence, cybersecurity and emerging technologies were conducted. Moreover, boosted by Huawei's Kenya deal, Safaricom launched its 5G network in October 2022, a first in the region. Since then, the service provider has commissioned over 200 5G sites across 11 counties including Nairobi, Mombasa, Kisumu, Kisii, Kakamega, Nakuru, Kiambu, Machakos, Kajiado, Vihiga and Siaya.

Morocco, Kenya, Rwanda

Cooperation projects of the country's branch ministries with Chinese state-owned companies DJI and Huawei during the COVID-19 period.

With the approval of the ministries, **DJI** provided these countries with the opportunity to use commercial drones to ensure the security of local administrations, including curfews, spraying of disinfectants and public announcements in cities⁴¹. **Huawei** supplied diagnostic systems based on cloud computing and artificial intelligence, as well as communication platforms for hospitals⁴².

38 Huawei. Cape Verde Goes Digital. URL: <https://www.huawei.com/en/huaweitech/publication/winwin/31/bringing-the-digital-world-to-cape-verde-archipelago>

39 Sky Scraper City. Dar es Salaam Kijitonyama \$94M National Data Center| U/C. 2015. URL: <https://www.skyscrapercity.com/threads/dar-es-salaam-kijitonyama-94m-national-data-center-u-c.1829633/>

40 Huawei. Safaricom and Huawei are building the world's first E2E 400G backbone network. 2019. URL: <https://www.huawei.com/cn/news/2019/2/safaricom-end-to-end-400g-backbone-network>

41 CAAC News. Drone development in Africa: on the field of hope. 2022. URL: http://www.caacnews.com.cn/1/10/202207/t20220708_1348523.html

42 Huawei. National Center for Telemedicine: Making medical care more timely and warmer. 2020. URL: <https://www.huawei.com/cn/huaweitech/publication/winwin/36/telemedicine-case>

Kenya, South Africa, Zambia, Zimbabwe, Tanzania, Togo, Mali, Madagascar, Mozambique

Huawei's projects to build cloud data storage, including government data⁴³

According to a database compiled by the Center for Strategic and International Studies Reconnecting Asia Project, **Huawei** has either completed or is currently building multimillion dollar data centres and cloud services in several African countries. This is part of the company's strategy to widen its reach in Africa – it is currently working on 25 projects across Africa. Most of the financing comes from Exim and China Development Bank (Huawei is a big beneficiary of credit from the China Development Bank)⁴⁴.

Mozambique, Tunisia, Senegal, Cameroon, Libya, Cape Verde, Malawi, Zambia, etc.

Huawei's project "Seeds for the Future"⁴⁵

The youth empowerment programme founded by Chinese tech giant **Huawei** was launched in 2008. It is involved in the training and subsequent employment of relevant personnel and the holding of thematic events. In 2020, to maintain programme continuity during the pandemic, the programme moved online for the first time to deliver a wider range of online educational resources for more talented young students, while maintaining face-to-face activities and events. For example, Huawei "Seeds for the Future" successfully trained over 600 students across Africa in 2021. The project created a global network of top talent from developing countries and provided a number of participants with international internships as an opportunity to get a closer look into technology, such as exhibition hall visits, factory explorations and other enterprise insights in China. This programme will allow the company to continue to double its efforts in bridging the digital gaps and spreading its technological standards.

Cameroon

The National Emergency Telecommunications Network (RNTU) project was launched in 2022 in collaboration with **Chinese ZTE**. The project allows for the government teams to manage emergencies confidentially and securely without having to go through a public network. It also includes the e-police system, a centralised platform for managing security operations. The main services offered are: the management of police information, criminal information, registers of criminal cases and wanted persons⁴⁶.

43 SCMP. China promotes 'digital silk road' as solution to Africa's data needs. 2021. URL: <https://www.scmp.com/news/china/diplomacy/article/3160525/china-promotes-digital-silk-road-solution-africas-data-needs>

44 SCMP. African nations continue to put trust in Huawei for data management. 2021. URL: <https://www.scmp.com/news/china/diplomacy/article/3138917/african-nations-continue-put-trust-huawei-data-management>

45 China Arabcf. Huawei organizes the first Seeds of the Future Alumni Conference for Northern Africa in Tunisia. URL: http://www.chinaarabcf.org/zagx/gjydy/202206/t20220623_10708524.htm

46 Investir au Cameroun. Télécommunications : le Cameroun se dote d'un réseau sécurisé à plus de 77 milliards de FCFA. 2022. URL: <https://www.investiraucameroun.com/gestion-publique/1407-18197-telecommunications-le-cameroun-se-dote-d-un-reseau-secure-a-plus-de-77-milliards-de-fcfa>



Read more about international assistance in digitalisation of African countries in the handbook by the HSE University Center for African Studies **E-Governance in Africa 2024: Challenges and Opportunities**

For African countries digital sovereignty lies not in complete withdrawal of foreign aid but in embracing a multifaceted approach to international development assistance, recognising the importance of diversifying partners and sources of aid

This includes partnering with nations outside of the list of traditional Western aid donors, such as those in Asia and the Middle East. Furthermore, at the current stage of digitalisation African countries may turn to each other and their South peers for experience, knowledge and expertise. More and more, African countries are tending to turn to **peer-to-peer knowledge sharing** in search for suitable solutions. Often, the process is moderated and supervised by international organisations or other countries⁴⁷. However, there is an emerging trend towards intra-African initiatives.

In November 2023, **Eswatini** signed a memorandum of understanding with **Rwanda** with the aim of leveraging Rwanda's expertise in developing national e-procurement and financial management information systems⁴⁹.

In May 2023, technicians from the **Burundian** Ministry in charge of community development visited **Cameroon** and **Benin** with the aim of experience exchange in the process of introducing biometric identity cards⁵⁰.

In 2023, the Korean International Cooperation Agency (KOICA) organised a knowledge sharing programme between **Rwanda** and **Nigeria** (held in Kigali) for the Nigerian Government Service Portal (GSP) team to learn about Rwanda's digitalisation journey through study visits and discussions related to policies, strategies, and programmes implemented by the country.

International assistance projects should also be chosen based on the national strategy and interests to avoid waste of resources and fragmentation of efforts. Special attention is to be paid to studying local peculiarities and adapting knowledge and solutions of the donor to the local conditions, including local experts in the transfer process in order to develop national expertise.

Role of international corporations

International corporations present in the African markets invest in building ICT infrastructure and digital solutions, training, all in order to lay the groundwork for expanding presence and revenues in the region, as well as accessing valuable data to train AI models.

Even in South Africa, a Yale University scholar argues⁵⁰, digital ecosystems are dominated by foreign, notably US, entities, which endows them with unprecedented power over key sectors, whether politics, culture or the economy.

47 For instance, the World Bank also established a South-South Exchange Program in the frameworks of the ID4D initiative for peer-to-peer knowledge exchange. Under the Program, in 2018, the delegations of Côte d'Ivoire and Guinea visited Peru to find out from the staff of the Peruvian identification agency about the process of implementing the national ID system.

48 The New Times Rwanda. Eswatini borrows Rwanda's best practices in e-Governance. URL: <https://www.newtimes.co.rw/article/12120/news/africa/eswatini-borrows-rwandas-best-practices-in-e-governance>

49 Burundi Eco. A quand la carte d'identité biométrique ? 2023. URL: <https://burundi-eco.com/a-quand-la-carte-d-identite-biometrique/>

50 Kwet, Michael, Digital Colonialism: US Empire and the New Imperialism in the Global South (August 15, 2018). For final version, see: Race & Class Volume 60, No. 4 (April 2019); DOI: 10.1177/0306396818823172

Apart from revenues, companies gain access to data and human resources

For instance, Samasource, a US AI data training company, employs 2,000 Kenyans and Ugandans to process data for companies including Google and Microsoft⁵¹.

Leila Janah, the founder and CEO of Samasource, a US AI data training company:

“If you use a mobile phone or laptop’s facial recognition features, drive a car or shop online, there’s a good chance that a person in East Africa helped train the algorithm that makes your technology work.”

Corporations launch numerous pan-African conferences, hackathons and digital skills programs to train and select ICT specialists from African countries. Only Google has more than 150 active Google Developer Groups and 100 Developer Student Clubs in Africa. The final prize often includes visits or internships in these companies which actually leads to brain drain on the continent.

Corporations under the motto of “bridging digital divide” and a label “corporate social responsibility” lay the groundwork for expanding their own presence and revenues in the region

For instance, Meta⁵² backs the development of the 2Africa sea cable. Another example is collaboration between the Ministry of Digital Development of **Madagascar** and Orange Madagascar in 2018 to launch the ICT Buses (TIC Bus) project: buses equipped with computers, internet connection and generators travelled to remote areas of Madagascar in order to educate residents about new technologies⁵³.

International corporations are also the dominant operators of the telecommunications sector in

African countries. 75% of the telecommunications market in Africa is controlled by international corporations including MTN, Vodacom, Airtel, Orange, e& (ex-Etisalat), with them collectively accounting for 85% of all mobile subscribers on the continent. National or African operators are dominant in **Namibia** (99%, MTC Namibia and Telecom Namibia), **Cabo Verde** (100%, Cabo Verde Telecom under the brand Alou and Unitel T+, Angola), **Ethiopia** (94%, Ethio Telecom), **Algeria** (73%, Mobilis and Djazzy).

This articulates the need for modifying antitrust regulations in line with the changing market rules. **Antitrust regulations for the ICT sector** have not found wide recognition on the continent yet. However, the importance of data in the modern economy can allow tech giants to exert influence up to the point of “data colonialism”⁵⁴, indirectly regulating even non-digital markets, sometimes resorting to internet-for-all initiatives as a cover.

Digital markets have their specific features that may lead to increased concentration of the market, preemption of emerging markets, while complicating antitrust regulations. These include: network effects, scale and scope advantages, multi-sided platform structure, ecosystem economy, reliance on data, zero-price business models, interoperability, switching costs and multi-homing, consumer behavioural biases (e.g. default bias and saliency bias, “nested” decision-making, status quo bias) and tipping.

Contrary to common competition laws which focus on regulating the **marketing of products**, antitrust regulation in the digital market concerns the **product itself** (such as product design) and the **company’s business model**. The authorities may therefore demand to redesign the product (service) or adjust a business model to make it comply with the law.

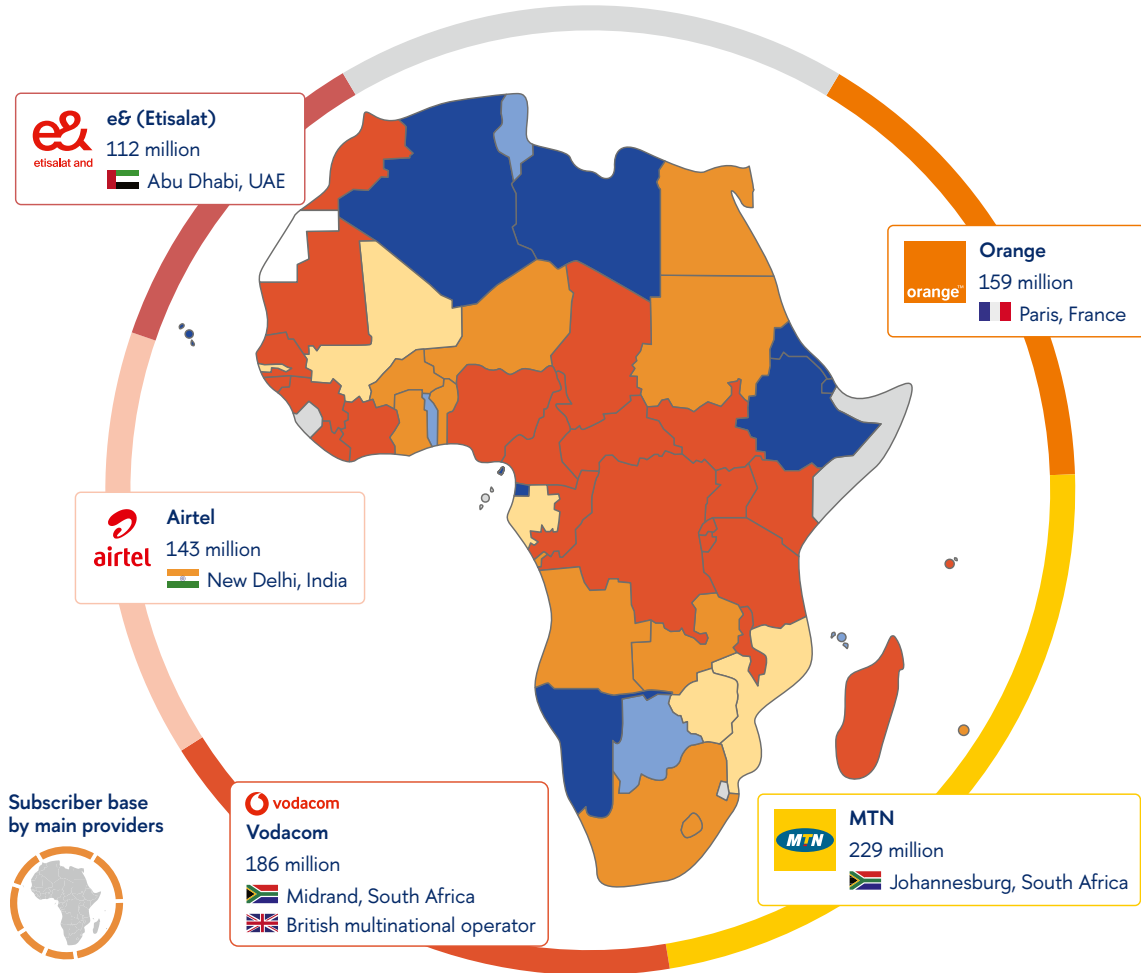
51 LinkedIn. Leila Janah. How East Africa trains AI. URL: <https://www.linkedin.com/pulse/how-east-africa-trains-ai-leila-janah>

52 Meta is recognised as an extremist organisation in the Russian Federation by the decision of Tverskoy District Court of 21.03.2022 (Case № 33-21933/2022).

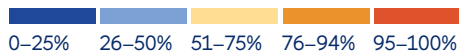
53 Call Center Madagascar. Des TIC Bus Pour Le Développement Numérique De Madagascar. 2018. URL: <https://www.callcentermadagascar.com/tic-developpement-numerique-madagascar/>

54 Foreign Policy Magazine. Is Big Tech Setting Africa Back? URL: <https://foreignpolicy.com/2020/11/11/is-big-tech-setting-africa-back/>

International telecommunications service providers in African markets

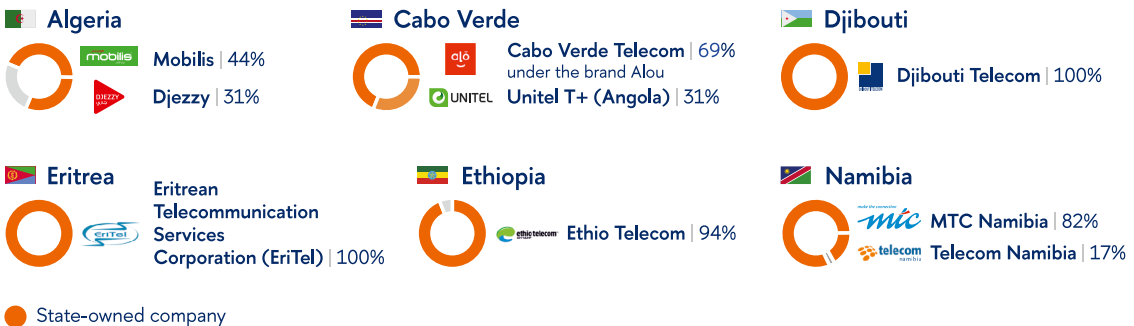


Share of international telecom providers in the national market



Source: prepared by the HSE University Center for African Studies based on countries' data and companies' reports 2023-2024.

African markets with largest shares of national telecom providers



Source: prepared by the HSE Center for African Studies based on countries' data and companies' reports 2023-2024.

The modernisation of competition legislation requires comprehensive approaches that would include **non-price dimensions** in defining market power and dominance and in assessing mergers. For instance, the ability to collect or generate and process big data volumes should be considered among the criteria of significant market power. Whilst assessing mergers, consequences unrelated to price should be taken into account, as mergers can affect incentives for innovation, quality of service, performance, etc.

Examples of anti-competitive practices in the digital markets include self-preferencing, refusal of data collection or data sharing, killer acquisition and exploiting consumer behavioural biases. In South Africa's practice, as analysed by the World Bank's International Bank for Reconstruction and Development (IBRD), predatory pricing and exclusivity agreements were most common when it came to abuse of market dominance⁵⁵.

As a case in point, the competition authority of South Africa expressed concern in July 2022 that Google's paid search results – without being clearly labelled as advertising – were increasing the costs for platform customers and benefiting the tech giant. The preferential placement of Google's own specialised search units is an example of unfair competition.

In 2022, five African countries – Egypt, Kenya, Nigeria, Mauritius and South Africa – held a meeting to discuss cooperation in regulating competition in the digital markets of the continent⁵⁶. In a joint statement, heads of the national competition authorities affirmed that digital markets present “considerable challenges for competition law enforcement and policy in terms of the unique competition issues that arise”.

Allegedly 80% of the African data is stored abroad

To date, the African continent has seen several attempts of setting anti-monopoly regulations for the ICT actors. In 2018, the governments of **Uganda**, **Zambia** and **Benin** tried imposing taxes on social media. At that time, supporting local ICT projects was among the announced goals. In Uganda, a USH 200 tax was imposed on the use of 58 over-the-top (OTT) services (including Facebook, Twitter, WhatsApp) as well as a 1% tax on e-money transfers. However, this resulted in a decrease in social media usage, a trend coupled with a 74% slide in revenues of companies that relied on social media for business. Therefore, a balanced approach is needed to maximise societal benefits without reversing the natural trends in the industries.

Data sovereignty

Cloud technologies have become essential for enhancing digitalisation and delivering public services. In recent years, the corporate sector and governments across Africa have started moving their data into the cloud. However, these clouds are mostly run by the foreign providers, whose data centres are located overseas.

As stated in the Digital Transformation Strategy for Africa 2020-2030⁵⁷, plenty of IT content consumed in Africa comes from outside. For instance, in 2021 it was revealed⁵⁸ that 70% of Nigerian government agencies host their data abroad. As specified by the Oxford Business Group and the Africa Data Centres Association⁵⁹.

Marseille is the main gateway⁶⁰ for offshoring the data. The data is transferred to Marseille-based Digital Realty's⁶¹ data centres via 16 undersea cables.

55 World Bank. Antitrust and Digital Platforms: An analysis of global patterns and approaches by competition authorities. URL: <https://documents1.worldbank.org/curated/en/893381632736476155/pdf/Antitrust-and-Digital-Platforms-An-Analysis-of-Global-Patterns-and-Approaches-by-Competition-Authorities.pdf>

56 Cliffe Dekker Hofmeyr. Collaboration by African competition regulators with respect to the regulation of digital markets in Africa. URL: <https://www.cliffedekkerhofmeyr.com/en/news/publications/2022/Practice/Competition/competition-law-alert-Collaboration-by-African-competition-regulators-with-respect-to-the-regulation-of-digital-markets-in-Africa.html>

57 African Union. The Digital Transformation Strategy For Africa (2020-2030). URL: <https://au.int/sites/default/files/documents/38507-doc-dts-english.pdf>

58 The Guardian. 70% of govt agencies host data abroad despite \$220m local infrastructure. URL: <https://guardian.ng/technology/70-of-govt-agencies-host-data-abroad-despite-220m-local-infrastructure/>

59 Africa Data Centres Association. State of the African Data Centre Market 2021. URL: http://africadca.org/wp-content/uploads/2021/12/ADCA-Annual-Report-2022_Final-1.pdf?success=1686795969

60 Innovation Origins. Marseille Is Among One Of The World's Leading Data Hubs, But Growing At The Seams URL: <https://innovationorigins.com/en/marseille-is-among-one-of-the-worlds-leading-data-hubs-but-growing-at-the-seams/>

61 Digital Realty (main page). URL: <https://www.digitalrealty.com/>

Offshore hosting compromises the confidentiality, integrity and availability of the data and entails a variety of risks

Offshoring also has a negative impact on the operational performance level, which embraces the quality, dependability, speed, flexibility and cost factors.

Hence, the total costs of offshoring comprise the evaluation cost (the due diligence, contracting, etc. usually involves legal fees), cultural cost⁶² (estimated to add from 3% to 27% to the total cost), transition cost, internal workforce cost and contract management cost (estimated to add an additional 6% to 10% to the total cost).

When the data is hosted abroad, the submarine cables and satellite links transport data between users and data centres located overseas through the complex routes. Given that the African continent's infrastructure at all stages of the value chain is often underdeveloped or outdated, it remains a challenge to keep the information properly secured during the transit. Poorly developed local cloud infrastructure also multiplies the expenses.

According to a report by Google⁶³, existing underwater cables are outdated and rely on older technology, while many countries lack redundancy. Edge locations (Telcos, IXPs, ISPs) on the continent are yet to be fully developed. As specified by the African IXP Association⁶⁴, there are 52 active IXPs located in 47 cities in 36 countries. Middle mile infrastructure is still underdeveloped, despite the estimated growth (72%) between 2015 and 2020. Internet access networks do not provide universal access, as 25%

of the population does not live within the footprint of mobile broadband networks. Therefore, content has to travel further to end users, which increases cost of access and latency.

The African continent also lacks infrastructure such as data centres. All the critical equipment and applications are housed in the data centres. Africa accounts for less than 2% of the global data centre capacity.

According to the Africa Data Centers Association (ADCA) 2021 report⁶⁵, the continent has 140,000 square metres of data centre space shared among about 100 data centres. It is noticeable that the distribution of these facilities is uneven, given that **South Africa** accounts for more than two-thirds of the continent's capacity. As stated in the report, 10% of the existing DC capacity serves nearly half of Sub-Saharan Africa's economic output and broadband connections. The AIIM (African Infrastructure Investment Managers)⁶⁶ estimated that as of 2023, there is 250 MW of installed data centre capacity across Africa. Thus, there is a need to rely on data centres in Southern Africa or outside the continent.

As stated in the ADCA 2023 report⁶⁷, **South Africa, Nigeria, Egypt, Morocco** and **Kenya** are the main hubs of the African data centre market. According to the report, South Africa comprises 165 MW of live capacity. The figures for Nigeria and Kenya are 21 MW and 15 MW respectively. Live capacity in both Morocco and Egypt comprise 13 MW. For instance, the IT capacity per million residents in Nigeria stands at 0.60 MW, compared to 47.21 MW in the United Kingdom.

62 Includes cultural, language, organisational and work environment differences in the process of offshoring as well as experience differences.

63 Africa Practice. Equiano Subsea Cable: Regional Economic Impact Assessment. URL: <https://africapractice.com/wp-content/uploads/2021/10/Equiano-Regional-Economic-Impact-Assessment-6-October-2021.pdf>

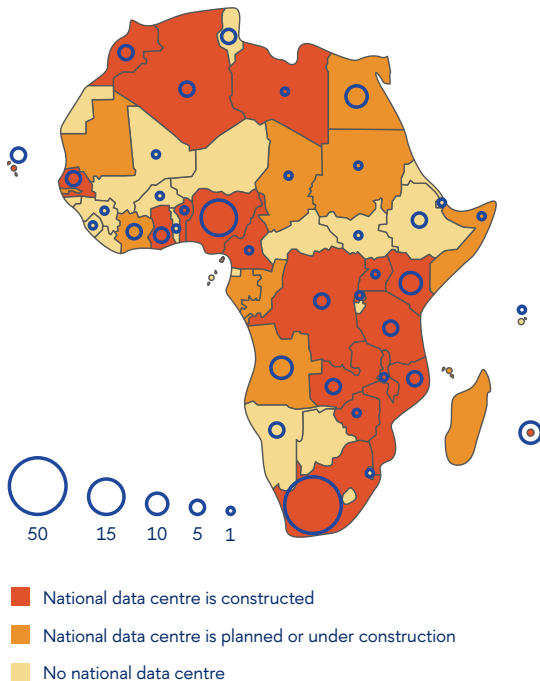
64 The African IXP Association. List of active Internet exchange points in Africa. URL: <https://www.af-ix.net/ixps-list>

65 Africa Data Centres Association. State of the African Data Centre Market 2021. URL: http://africadca.org/wp-content/uploads/2021/12/ADCA-Annual-Report-2022_Final-1.pdf?success=1686795969

66 African Infrastructure Investment Managers. Africa's data centre growth opportunity. URL: <https://aiimafrica.com/media/media-centre/africas-data-centre-growth-opportunity/>

67 Market Spotlight. Africa's Key Data Centre Markets. URL: http://africadca.org/wp-content/uploads/2023/07/Title_Africas-Key-Data-Centre-Markets.pdf?success=1694286277

Data centres in Africa



Source: prepared by the HSE University Center for African Studies based on Arizton Advisory & Intelligence and Data Center Map data.

The majority of cloud services in Africa are operated and controlled by foreign entities. Microsoft, Google, Amazon, IBM and Huawei are among the continent's main cloud services providers

For instance, Microsoft is present⁶⁸ in **Egypt, Morocco, Kenya, Nigeria** and **South Africa**. According to the Africa Interconnection 2021 Report⁶⁹, Microsoft's cloud business revenues within the continent come 75% from South Africa and 25% from the rest of Sub-Saharan Africa.

Google operates in Africa through Digicloud Africa⁷⁰, the distributor of all Google Cloud products. The distribution service is operational in 39 African countries.

According to the China Surveillance State: A Global Project⁷¹ 2021 report, Huawei middleboxes (the devices that forward data and have an ability to read and manipulate data) are located in 18 African countries. Huawei Cloud services are available⁷² in at least 22 African countries.

As highlighted in the Importance of Data Localisation in Cybercrime Investigations⁷³ report,

Technology companies have a monopoly on data, which allows them to determine their level of involvement in how the data are used

Poorly developed local cloud infrastructure results in the lack of employment opportunities for local specialists, as well as in a shortage in training on maintenance of sensitive data for local employees. Thus, data localisation is crucial concerning the development of domestic capacity in the digital sector.

Otherwise, the government's power and control over data is diminishing. An example of successful industry development is the case of Cameroon, where four data centers owned by both local and foreign operators, Cameroon Telecommunications (CAMTEL), Cameroon Postal Service (CAMPOST), Orange and MTN, are in operation. They can form a network of interconnected cloud storage platforms within the country.

The legal basis of data protection and localisation regarding sovereignty is critical. The lack of robust data localisation laws raises concerns on data security. According to the Importance of Data Localisation in Cybercrime Investigations⁷⁴ report, a foreign state where the data is hosted may have

68 Cloud Skill Challenge. Azure CDN Coverage by Metro. URL: <https://learn.microsoft.com/en-us/azure/cdn/cdn-pop-locations>

69 HubSpot. Africa Interconnection Report. URL: <https://f.hubspotusercontent00.net/hubfs/3076203/Africa%20Interconnection%20Report%202021.pdf>

70 Dig Cloud Africa. Google's reseller enablement partner in Africa. URL: <https://www.digicloud.africa/>

71 TOP 10 VPN Digital Rights Research Grant. China's Surveillance State: A Global Project. URL: <https://www.top10vpn.com/assets/2021/07/Chinas-Surveillance-State.pdf>

72 Huawei Cloud. Where Can I Access HUAWEI CLOUD International Website Services?. URL: https://support.huaweicloud.com/intl/en-us/intl_faq/en-us_topic_0115884694.html

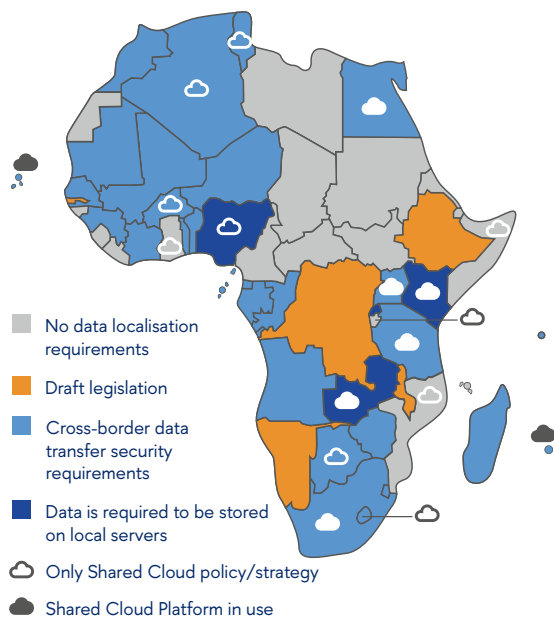
73 University of Passau. The Importance Of Data Localisation In Cybercrime Investigations. URL: https://www.digital.uni-passau.de/fileadmin/user_upload/Muson_i_M__The_Importance_of_Data_Localisation_in_Cybercrime_Investigations.pdf

74 University of Passau. The Importance Of Data Localisation In Cybercrime Investigations. URL: https://www.digital.uni-passau.de/fileadmin/user_upload/Muson_i_M__The_Importance_of_Data_Localisation_in_Cybercrime_Investigations.pdf

a stronger jurisdictional basis over the cloud data. Hence, the hosting state can potentially exercise unilateral access to data if there are no legislative measures concerning data localisation.

Data localisation is important in terms of ensuring data privacy, protection and cybersecurity. Furthermore, data localisation requirements are adopted in order to support local law enforcement by ensuring that local authorities have access to the data needed to investigate crimes and oversee activities in such sectors as telecommunication, banking and insurance to mitigate geopolitical risk and financial sanctions and to facilitate economic development, including job creation through fostering the local data processing industry.

Data localisation in African countries



Source: prepared by the HSE University Center for African Studies calculations based on the World Bank's GovTech metadata of March 2023, the United Nations Conference on Trade and Development (UNCTAD) data of December 2021, and laws and regulations of African countries.

According to the UNCTAD, as of 2024, 33 African countries (61%) have enacted or embraced certain forms of regulation with the aim of protecting personal data⁷⁵. Namibia, Eswatini, Malawi and Ethiopia have enacted draft legislation. Libya, Sudan, Eritrea, Central African Republic, Burundi, Guinea-Bissau, Sierra Leone and Liberia lack relevant legislation.

As of 2024, the majority of data protection laws of African countries (52%) only prohibit or impose regulations on cross-border data transfer. Nigeria, Rwanda and Zambia require data to be hosted within the country's borders

Regional (UNECA, African Union) and subregional organisations contribute to the development of data protection legislation. Legislative tools such as the 2008 East African Community Framework for Cyber Laws, the 2010 Supplementary Act on Personal Data Protection of the Economic Community of West African States (ECOWAS) and the 2013 Southern African Development Community model law have been developed. The African Union developed the first pan-African framework with the **African Union Convention on Cyber Security and Personal Data Protection (Malabo Convention)** in 2014, which entered into force in June 2023.

Among other initiatives aimed at improving data policy on the continent are the **Policy and Regulation Initiative for Digital Africa (PRIDA)**⁷⁶ and **Smart Africa**⁷⁷. Being a joint initiative of the African Union, the European Union and the International Telecommunication Union (ITU), PRIDA has the objective of creating a harmonised and enabling regulatory framework for the use of ICT. Smart Africa supports the creation of a harmonised framework for data protection legislation in Africa through the Smart Africa Data Protection Working Group, which aims at mapping legal frameworks, implementing guidelines for Smart Africa Member States and making recommendations on enhancing harmonisation and collaboration mechanisms between Data Protection Authorities (DPAs).

⁷⁵ UNCTAD. Data Protection and Privacy Legislation Worldwide URL: <https://unctad.org/page/data-protection-and-privacy-legislation-worldwide>

⁷⁶ European Commission. Policy and Regulation Initiative for Digital Africa (PRIDA). URL: https://international-partnerships.ec.europa.eu/policies/programming/programmes/policy-and-regulation-initiative-digital-africa-prida_en

⁷⁷ Smart Africa (main page). URL: <https://smartafrica.org/>

Egypt

In 2023, the Human Rights Watch (HRW) revealed⁷⁸ that vast amounts of children's personal data were exposed by the Government of Egypt and the private British company Academic Assessment Ltd. The sensitive data included over 72,000 records of children's names, dates of birth, gender, home addresses, email addresses, phone numbers, schools that they attend, grade level, personal profile photos and copies of their passport or national ID.

The data contained over 350,000 files and included information on children who applied to take the Egyptian Scholastic Test (EST) between September 2020 and December 2022. In March 2022, the ownership of the exam was changed from the Government of Egypt to a UK company. According to the HRW, it is unclear exactly when and how the government sold or transferred ownership of the EST and its students' data to Academic Assessment.

The unprotected data was hosted on Amazon Web Services, Amazon's cloud storage services. The data remained accessible until it was taken down on 15 March 2023, after Human Rights Watch's notification on the child data privacy violation. The data was left unprotected on the web for at least eight months.

Egypt's 2020 data protection law recognises that children's data are entitled to special protections, but does not specify them. The Egyptian data protection authority is soon to be founded to ensure compliance with the law.

Rwanda

According to the Internet Society 2017 report⁷⁹, in 2016 the Rwanda ICT Association⁸⁰ conducted the year-long 'Rwanda Content Hosting' pilot project of transferring the websites stored abroad to local hosting.

As stated in the report, over half of all .rw and .co.rw websites were hosted in the US due to the low monthly hosting cost. According to the study, the servers for the pilot project were set up by RICTA through a sponsorship by BSC Ltd. in the Telecom House, a key hub for telecommunications in Rwanda. Three Rwandan web hosting providers (the names are not specified) participated in the pilot. Each one was provided with server capacity in the form of three virtual private servers (VPS), which were used to migrate a selection of websites previously hosted in the US (and in some cases Europe) to Rwanda.

The outcome of the project is defined by the accelerated speed of the websites when accessed from the host country, which results in greater visitor engagement, an increase in the number of page views and returns to the website and longer time spent on the website.

78 Human Rights Watch. Egypt: Data of Tens of Thousands of Students Compromised. URL: <https://www.hrw.org/news/2023/04/19/egypt-data-tens-thousands-students-compromised>

79 Internet Society. The Benefits of Local Content Hosting: A Case Study. URL: https://www.internetsociety.org/wp-content/uploads/2017/08/ISOC_LocalContentRwanda_report_20170505.pdf

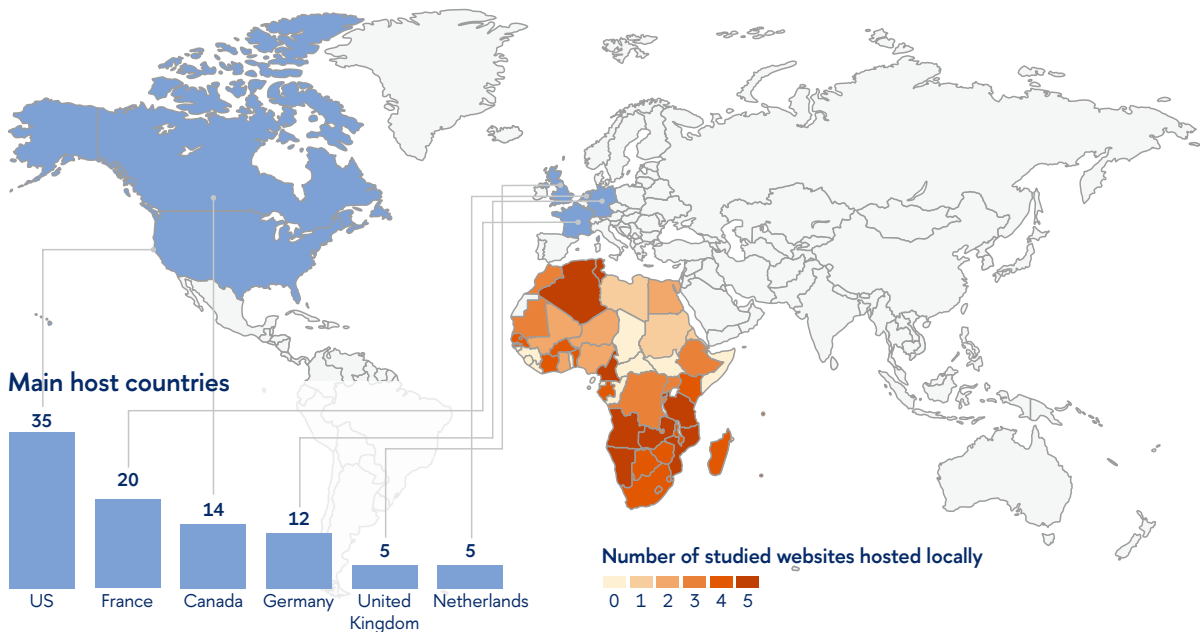
80 RICTA (main page). URL: <https://www.ricta.org.rw/>

Hosting of government websites of African countries

In order to assess the actual status of website localisation on the African continent, a study was conducted focusing on the hosting of African government websites. This research involved analysing the geographical locations of the servers

hosting these websites, examining the proportion of sites hosted within Africa compared to those hosted outside of Africa. The government websites were chosen as fundamental for digital sovereignty of the nations and indicating governments' approach toward it. Overall, 55% of the studied websites were hosted locally, illustrating an increased local capacity of African countries and a trend toward digital sovereignty.

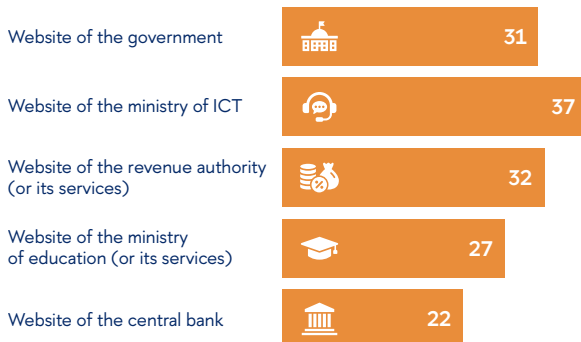
Hosting of government websites of African countries



Initial study by the HSE Center for African Studies

Overall, **55%** of studied government websites were hosted inside the country.

Share of government websites hosted inside the country



The study examined the most common sites available for the majority of the countries and were chosen considering the following factors:

The website of the government is the fundamental website for e-governance and is indicative of the government's approach toward digital sovereignty.

The website of the ministry of ICT is indicative of the responsible ministry's policy in the field of digital sovereignty.

The website and services of the revenue authority transmit sensitive financial information and show the approach to its localisation and protection.

The website and services of the ministry of education represent the digital sovereignty policy for G2C services and citizens' information.

The website of the central bank expands the sample as banks are often considered to lead in digitalisation and shows the bank's approach toward digital sovereignty.

Source: prepared by the HSE University Center for African Studies.

Connectivity

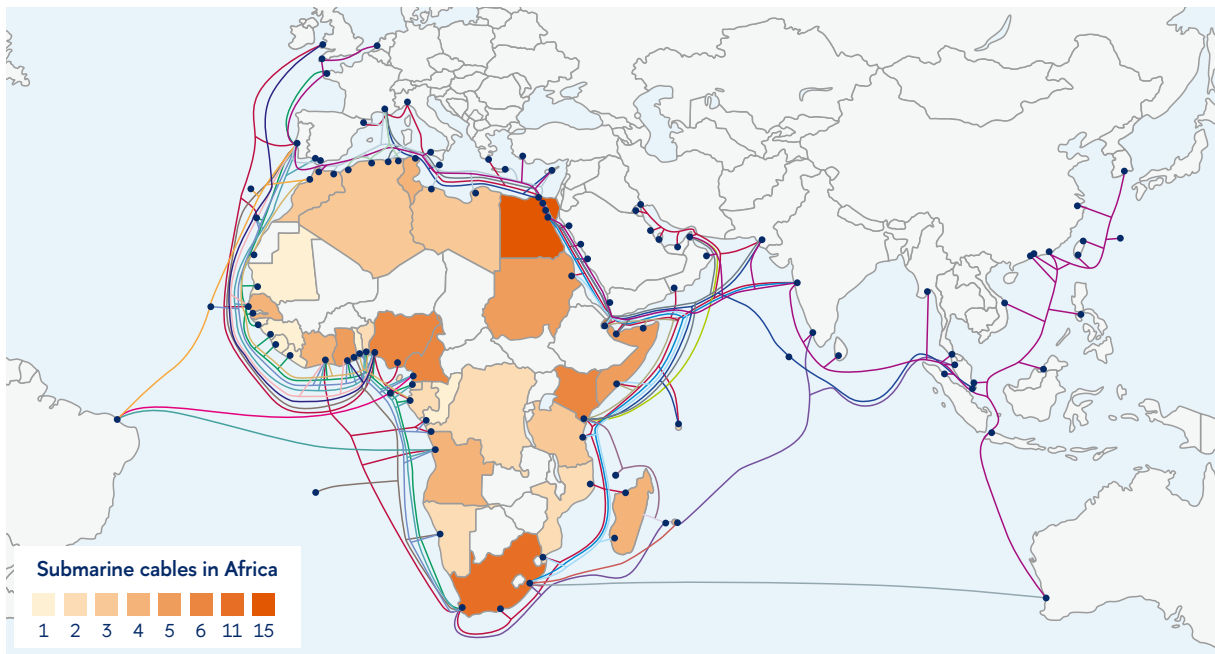
Another aspect to be considered is dependence on few submarine cable systems making African countries vulnerable to Internet outages due to natural disasters, cable cuts or, potentially, international sabotage.

Overall, more than 90% of world internet traffic is transmitted via submarine cables⁸¹

To date, Africa is connected to 71 submarine cables (out of 529 globally), active or planned, most of them leading to Europe. 17 African countries are connected to 1 or 2 submarine cables which puts

them in a dependent position. Countries aim to establish more resilient cable designs, expand terrestrial fibre, diversify communication paths in order to ensure reliable Internet connection on the continent and limit reliance on vulnerable submarine cable systems. Nigeria, Kenya, Cameroon with 6 cables, South Africa and Djibouti with 11 and Egypt with 15 cables are among the leaders on the continent. Regionalising fibre networks and expanding terrestrial fibre is especially crucial for land-locked countries. For instance, Uganda has connected its network to those of Kenya, Tanzania, Rwanda and DR Congo.

Main submarine cables of Africa

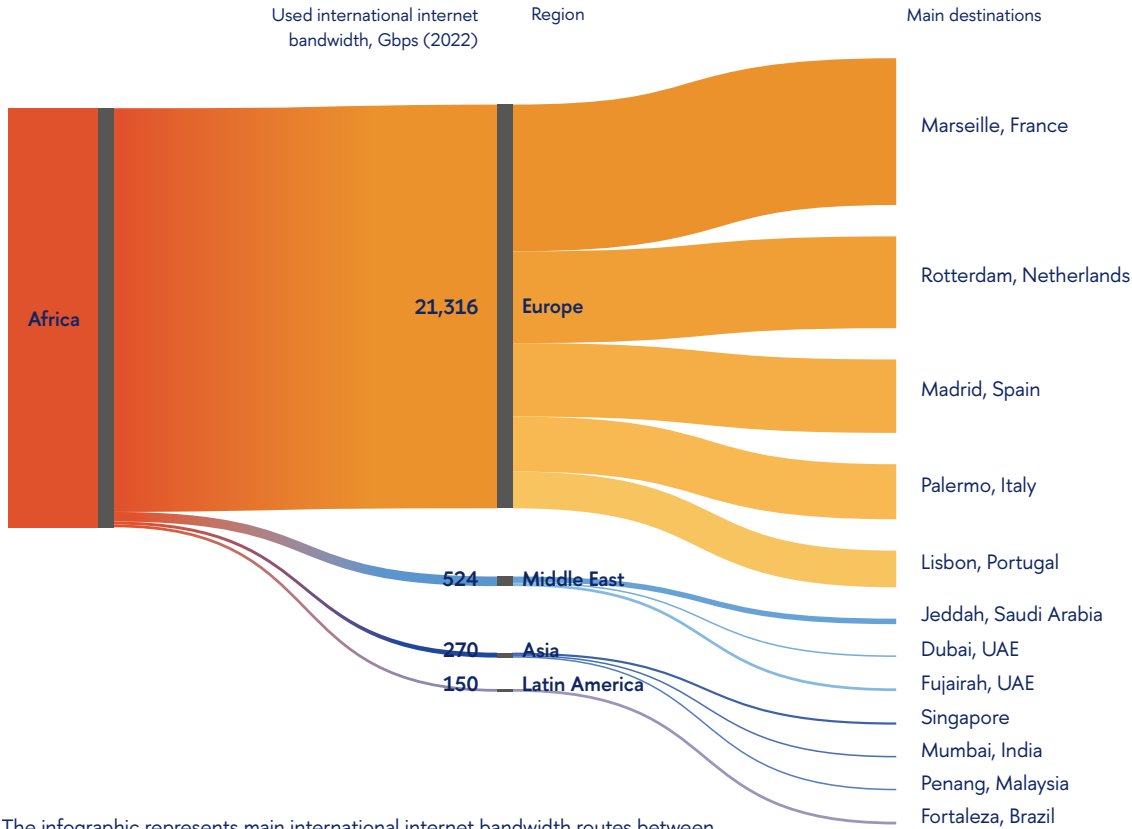


- Africa-1
- 2Africa
- Africa Coast to Europe (ACE)
- SAT-3/WASC
- West Africa Cable System (WACS)
- South Atlantic Inter Link (SAIL)
- Equiano
- MainOne
- EllaLink
- Glo-1
- Maroc Telecom
- South Atlantic Cable System (SACS)
- SAFE
- The East African Marine System (TEAMS)
- SEACOM/Tata TGN-Eurasia
- Eastern Africa Submarine System (EASSy)
- Lower Indian Ocean Network 2 (LION2)
- Lower Indian Ocean Network (LION)
- T3
- Umoja
- PEACE Cable
- Djibouti Africa Regional Express 1 (DARE 1)
- Medusa Submarine Cable System
- SeaMeWe-3
- Med Cable Network

Source: prepared by the HSE University Center for African Studies based on TeleGeography data.

81 CCDCOE. Strategic importance of, and dependence on, undersea cables. 2019. URL: <https://www.ccdcoe.org/uploads/2019/11/Undersea-cables-Final-NOV-2019.pdf>

International internet bandwidth between Africa and metropolitan areas



The infographic represents main international internet bandwidth routes between Africa and metropolitan areas, with the routes bandwidth capacity in Gigabits per second (Gbps).

Source: prepared by the HSE University Center for African Studies based on TeleGeography data.

February 2024

Due to a dragging anchor three submarine cables in the Red Sea were damaged: the Seacom/Tata cable, the Asia Africa Europe-1 (AAE-1), and the Europe India Gateway (EIG), affecting Tanzania, Kenya, Uganda and Mozambique. It was possible to reroute traffic through international cables in Djibouti.

March 2024

Due to an undersea canyon avalanche the outage happened in West Africa⁸² affecting 13 countries including Côte-d'Ivoire, Liberia, Burkina Faso, Mali, Guinea, South Africa, Nigeria, etc. Four cable systems were damaged – WACS, MainOne, South Atlantic 3 and ACE. Operators used cross-border terrestrial fibre networks to reroute traffic to the Equiano cable which was not affected by the avalanche.

May 2024

EASSY and SEACOM, the submarine cables connecting South Africa and Kenya, were disrupted, leading to an internet outage across East Africa. The cables were repaired three weeks after the disruption. These outages are reported to have severely affected the banking sector, mobile phone operations, money transfer services and stock exchange markets in Mozambique, Malawi, Kenya and Tanzania⁸³.

82 Developing Telecoms. Internet down due to subsea cable damage in Africa. 2024. URL: <https://developingtelecoms.com/telecom-technology/optical-fixed-networks/16421-connectivity-down-due-to-subsea-cable-damage-in-africa-2.html>

83 Internet Society. 2024 East Africa Submarine Cable Outage Report. 2024. URL: <https://www.internetsociety.org/resources/doc/2024/2024-east-africa-submarine-cable-outage-report/>

Digitalisation of languages

Africa is a space of vast cultural and linguistic diversity. As of 2024, it accounts for 30% of the world’s languages⁸⁴. While the population of Northern Africa predominantly speaks Arabic (with a number of regional exceptions), the majority of countries of Sub-Saharan Africa do not have a single dominating local language. Being the second region in the world with such a multiplicity of languages after Asia, African linguistic density exceeds that of Asia. The “population per language” ratio stands at 646 thousand people per language, compared to 2 million people per language in Asia⁸⁵. African languages are dominant in physical space; yet, they are scarcely exhibited in the digital one.

The digitalisation of African languages is a key step towards ensuring that communities can fully harness the benefits of the digital age while preserving their linguistic and cultural heritage and can be considered as a cultural aspect of digital sovereignty.

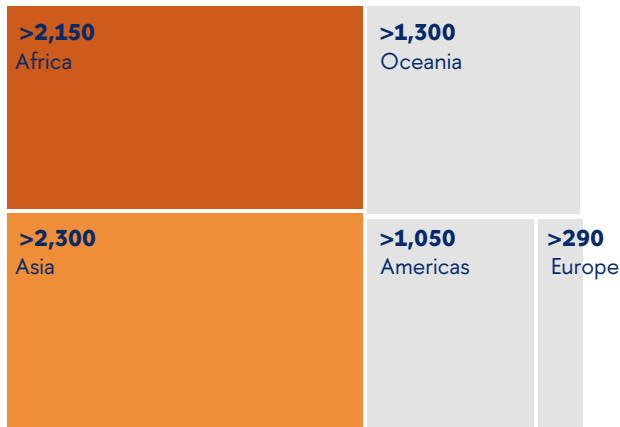
In line with Agenda 2063⁸⁶ adopted by the African Union, the governments of the states aim to:

- “implement programmes for the production of contents in national (indigenous) language and using national languages as part of administrative processes of the countries by 2025”;
- “harness the indigenous African languages in a practical manner”.

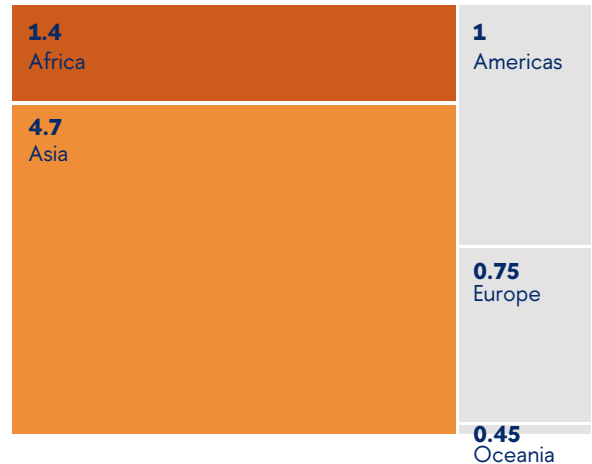
The Digital Transformation Strategy for Africa 2020-2030 sets the goal of “promoting the penetration and use of ICTs into local communities using African languages”.

While more than 80% of the digital content is delivered in 10 languages, namely English, Chinese, Spanish, Arabic, Portuguese, Japanese, Russian, German, French and Malaysian⁸⁷, non-dominant languages become more vulnerable to the decline.

Languages by region



Population by region, billion speakers



Source: prepared by the HSE University Center for African Studies based on the Ethnologue and UN data.

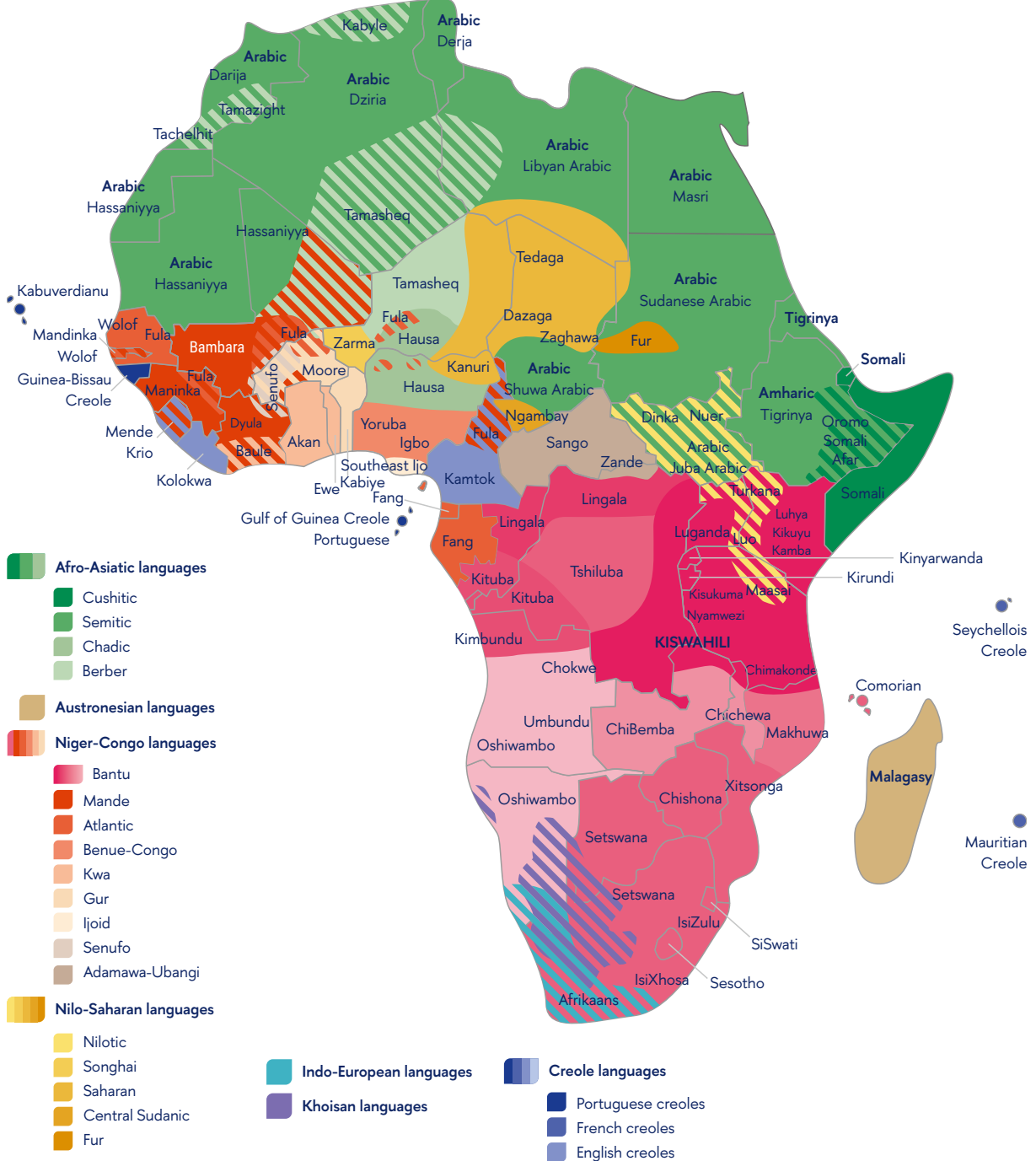
84 The Ethnologue. What continents have the most indigenous languages? URL: <https://www.ethnologue.com/insights/continents-most-indigenous-languages/>

85 E-Governance in Africa 2024: Opportunities and Challenges. URL: <https://e-governancehub.ru/read-book-e-governance-in-africa-2024-challenges-and-opportunities/>

86 African Union. Agenda 2063. URL: <https://au.int/en/agenda2063/overview>

87 Meital K. and Jason M. (2022) Language and Coloniality: Non-Dominant Languages in the Digital Landscape. Policy. URL: <https://policy.org/wp-content/uploads/2022/08/Languages-Coloniality-Report.pdf>

Main languages of Africa's major population centers and trade routes



Note: the map represents languages used by more than 50% of the population living on the given territory; the majority of languages have a national or regional status and serve as lingua francas.

Source: prepared by the HSE University Center for African Studies.

22 out of over 2,000 languages spoken in Africa are supported and promoted by large-scale enterprises⁸⁸

The use of African languages online is hindered by social constraints. European languages maintain the status of prestigious levels, while the majority of indigenous ones are often seen as means of informal communication. The lack of informational and scientific resources in local languages also spur the expansion of their use.

The issue of indigenous languages' web presence is exacerbated by the scarcity of online resources needed to develop smart engines on language and data processing. The process of language research and analysis is predominantly supported by local communities, small private companies and academia.

With the increase in internet use, which has grown from 38% in 2014 to 63% in 2021, the number of users who are non-native English speakers has significantly risen. The web penetration still covers less than a half of the adult population of the African continent, standing at 40% and covering roughly 450 million users, compared to 614 million in Europe⁸⁹.

In 2024, 49.5% of websites implement English as a main language of content delivery⁹⁰, whilst in 2022, English along with French, Spanish and Portuguese comprised less than one-third of languages spoken by internet users. African languages, including Swahili, Amharic, Oromo, Hausa and others, constituted less than 0.1% of web content. Yet, in 2000 the average number of languages represented on global company websites stood at 6 and increased more than fivefold in 2022, amounting to 34⁹¹.

Amharic and Somali are considered as digitally vital languages with a similarly high level of use for accessing Wikipedia and producing social media content. Online use of Tigrinya is predominantly supported by the availability of automatic translation and presence in search engine services. etc. Although the majority of web content in Ethiopia is created in local languages, English dominates in terms of content consumption⁹².

In Tanzania, Swahili and English mixed use is common on social media. A pattern of regenerating the content initially coming in English to Swahili is also common. Online political activity is usually undertaken in Swahili and is viewed to be more powerful. While Swahili is a national language and a regional lingua franca, it is often considered to be "non-academic", while English is viewed as a language of social mobility. In Uganda, most national media houses produce content in English and Luganda. Swahili is an official language as well; however, publications in this language are rather uncommon⁹³.

In 2025, the Egyptian dialect of Arabic dominates among the African idioms available on Wikipedia, with more than 1.6 million publications available. It is followed by Afrikaans and Swahili, with 124 thousand and 98 thousand articles respectively⁹⁴.

In 2024, English, French and Swahili accounted for about 65% of all web traffic originating from Africa. However, the proportion of internautes whose first language is the African one remains low. The total number of speakers of Swahili as a first and second language is approximately 97.6 million, yet only about 32.8% have access to the Internet. Among the 88 million Hausa speakers, the estimated

88 Lionbridge. Embrace the Online Opportunity of African Languages. URL: <https://www.lionbridge.com/content/dam/lionbridge/pages/blogs/translation-localization/embrace-the-online-opportunity-of-african-languages/embrace-the-online-opportunity-of-african-languages-infographic-english.pdf>

89 E-Governance in Africa 2024: Opportunities and Challenges. URL: <https://e-governancehub.ru/read-book-e-governance-in-africa-2024-challenges-and-opportunities/>

90 W3Techs. Usage statistics of content languages for websites. URL: https://w3techs.com/technologies/overview/content_language

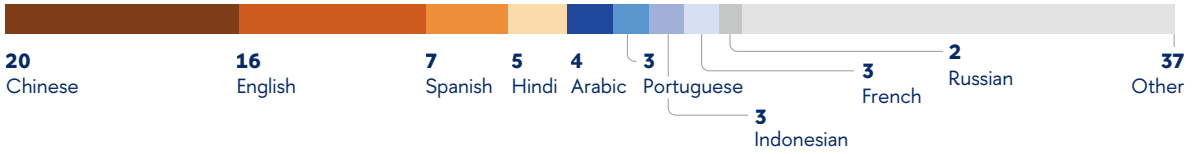
91 Web Globalization Report Card 2022. The report assesses the availability of languages on 150 websites of global companies (e.g. Wikipedia, Toyota, eBay, Lenovo, etc.). URL: <https://www.bytelevel.com/reportcard2022/>

92 Meital K. and Jason M. (2022) Language and Coloniality: Non-Dominant Languages in the Digital Landscape. Policy. URL: <https://policcy.org/wp-content/uploads/2022/08/Languages-Coloniality-Report.pdf>

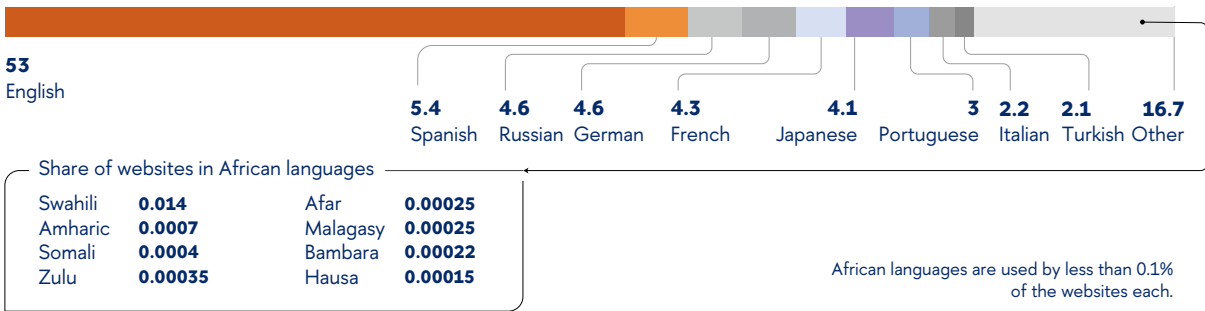
93 Ibid.

94 Meta-Wiki. List of Wikipedias. URL: https://meta.wikimedia.org/wiki/List_of_Wikipedias

Share of Internet Users by Language, %



Share of Websites by Language, %

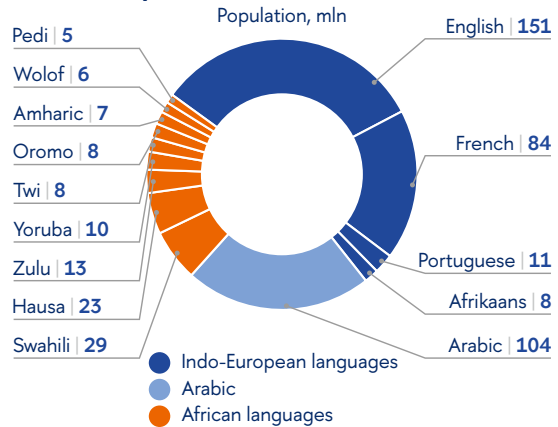


Source: prepared by the HSE University Center for African Studies based on 22 Web Globalization Report and W3Tech data.

number of active internet users is 31.5%. Afrikaans had the highest online activity in 2024, with 18 million Afrikaans native speakers and 74.4% online coverage⁹⁵.

Big tech is taking action on implementing African languages. As of 2023, **Google** enabled automatic translation to 25 African languages⁹⁶, and in 2024, the corporation added⁹⁷ over 25 languages to its translation engine. **Microsoft** enables the users to access the content in 10 languages which are widespread in Africa⁹⁸, and **Amazon** offers six, namely Afrikaans, Amharic, Arabic, Hausa, Somali and Swahili. A Chinese public company **Alibaba** is the leader regarding the number of introduced languages, which amounts to 40⁹⁹.

Main languages used by Africans online, 2022



Source: prepared by the HSE University Center for African Studies based on CSA Research. Africa: Localization's Newest Frontier, 2022; Lionbridge. Embrace the Online Opportunity of African Languages, 2022.

95 Data are presented based on Observatory of Linguistic and Cultural Diversity on the Internet (OBDILCI) calculations of 2024. Ethnologue data were used to determine the number of speakers of each language. The percentage of language speakers with Internet access is calculated based on ITU and World Bank data. To calculate the proportion of internet users for each language, aggregated country data was used, including the number of native speakers in the country, the percentage of internet users in the country, and the total number of countries where the language is spoken. Source: Observatory of Linguistic and Cultural Diversity on the Internet (OBDILCI). Indicators for the Presence of Languages in the Internet. URL: <https://www.obdilci.org/projects/main/>
 Pimienta D, Blanco Á, de Oliveira GM. The method behind the unprecedented production of indicators of the presence of languages in the Internet. Front Res Metr Anal. 2023. URL: <https://pmc.ncbi.nlm.nih.gov/articles/PMC10233101>

96 Afrikaans, Amharic, Arabic, Bambara, Chichewa, Ewe, Hausa, Igbo, Kinyarwanda, Krio, Lingala, Luganda, Malagasy, Oromo, Sepedi, Sesotho, Shona, Somali, Swahili, Tigrinya, Tsonga, Twi, Xhosa, Yoruba, Zulu

97 Connecting Africa. Google Translate adds 25+ African languages. URL: https://www.connectingafrica.com/author.asp?section_id=761&doc_id=786935

98 Afrikaans, Amharic, Arabic, Malagasy, Somali, Swahili, Tigrinya, Tonga, Zulu

99 African Languages Lab. Facts & Figures. URL: <https://www.africanlanguageslab.com/old-facts-figures>

Digitising a language

African languages are often viewed as “low resource”¹⁰⁰. Low-resource languages are languages limited in terms of digital resources critical to perform linguistic operations based on technology use, such as machine learning and translation.

Natural language processing (NLP), which includes speech recognition, text classification, natural-language understanding and natural-language generation, faces a range of challenges when put in the African linguistic landscape. Among them are **lack of resources** (predominantly digital and crucial for language processing), **low discoverability** (existing research and datasets on languages are often unavailable for wide audience, requiring special academic permission), **scarcity of publicly-available benchmarks, low reproducibility** caused by poor research output exchange and societal issues (indigenous languages are rarely seen to become a primary communication axis)¹⁰¹.

Nevertheless, implementation of the technology is exacerbated by a range of obstacles. There are several methods on technology use: **cross-lingual transfer** makes it possible to transmit models trained on high-resource to low-resource languages; however, the inclusion of languages to this methodology derives from the availability of monolingual data. Furthermore, since the benchmark tasks are sourced from English, some drawbacks exist.

Multilingual approaches were designed in order to train the same models for many languages at once and enabled to train models on translation between English and the 10 most high-resource African languages. The language resources were derived from private data and public TED talks. Hence, the models preliminary

developed on high-resource languages could be inapplicable by virtue of technological limitations, linguistic differences and lack of qualified personnel, as well as data amounts and quality¹⁰².

Furthermore, the lack of language datasets and low levels of use in the digital space exacerbate the issue of misinformation. Detection machine-learning mechanisms are often unavailable due to inability to train the engine¹⁰³.

Stakeholder engagement

African languages are predominantly being digitalised by local and academic communities, encompassing Africans either residing in African countries or those in diaspora, as well as linguists and academics¹⁰⁴

In order to overcome the challenges of web language resource scarcity, a “participatory approach” is being undertaken in order to conduct the research and perform NLP and MT operations.

The key contributors to the creation and development of machine translation technologies are **content creators** (journalists, copywriters, creative writers), **language practitioners** (translators, transcribers, linguists), **curators** (content selectors), **language technologists** (software engineers, NLP practitioners) and **evaluators** (machine translation model analysts). Stakeholders involved in education, legal, public relations (PR), customer service, media, government, health, commerce, and market research are considered to be the direct users of African NLP technologies, while the general public absorbing the output of the NLP in media and literature is viewed as indirect users of the technology. The groups which are unlikely to benefit from NLP are low-income, disabled or living outside the internet penetration zone¹⁰⁵.

100 Shikali, Casper S., and Refuoe Mokhosi. «Enhancing African low-resource languages: Swahili data for language modelling.» Data in brief 31 (2020). URL: [https://www.data-in-brief.com/article/S2352-3409\(20\)30845-3/fulltext](https://www.data-in-brief.com/article/S2352-3409(20)30845-3/fulltext)

101 Masakhane. URL: <https://www.masakhane.io/>

102 Nekoto W. et al. Participatory Research for Low-resourced Machine Translation: A Case Study in African Languages. URL: <https://arxiv.org/pdf/2010.02353>

103 Meital K. and Jason M. (2022) Language and Coloniality: Non-Dominant Languages in the Digital Landscape. Policy. URL: <https://policity.org/wp-content/uploads/2022/08/Languages-Coloniality-Report.pdf>

104 Ibid.

105 Siminyu K. et al. Consultative engagement of stakeholders toward a roadmap for African language technologies. Patterns, Volume 4, Issue 8. URL: [https://www.cell.com/patterns/fulltext/S2666-3899\(23\)00189-7?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2666389923001897%3Fshowall%3Dtrue](https://www.cell.com/patterns/fulltext/S2666-3899(23)00189-7?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2666389923001897%3Fshowall%3Dtrue)

Localisation

Localisation, which stands for the adaptation of user interfaces and digital information to the local types of communication, culture and standards, is inevitable in order to adjust science and technology within the diverse societies and cultures. The process of localisation is bound to the use of language. In practical application, it implies software and content adaptation and an enterprise activity, whilst linguistic information is an integral part of such a process¹⁰⁶.

The main pillars of localisation are: equipping system deployment at local level in order to advance documents production and multilingual web content delivery; content production and translation; and adaptation of user interface to devices. Among the crucial factors are the availability of a standardised orthography and local data, usefulness of localised software marketing, and the user community engagement, which implies literacy and computer literacy¹⁰⁷.

The majority of languages originating from Sub-Saharan Africa are written with an extended Latin script, while some languages of the Sahel zone, Northern Africa and the Horn of Africa¹⁰⁸ use non-Latin scripts. This brings a number of challenges on user interface adaptation, as the majority of website templates are originally designed for Latin scripted languages.

A notable example of localisation is the adaptation of operating systems and software to local context. For instance, standard Microsoft Office software is available¹⁰⁹ in more than 100 languages, with three of them (Afrikaans, Amharic and Arabic) being widespread in Africa. In addition, an additional software MS Language Accessory Pack can be downloaded in Wolof, Zulu, Igbo, Yoruba, Kinyarwanda, isiXhosa, Sesotho, Swahili, Setswana and Hausa¹¹⁰.

Product localisation and adaptation to the local context entails significant gains to eGDP (the share of GDP that is generated by e-commerce), as indicated by online consumer behaviour¹¹¹.

Case study. Languages in e-governance in Africa

During the initial study of representation of African languages on official websites of public entities, websites of 15 African countries were covered, including four North African countries and 11 Sub-Saharan countries. More than 10 websites of selected domains were studied for each country¹¹², with the total coverage amounting to 182 websites. The availability of translation not only in any other language, but especially indigenous African languages was examined along with the methods of translation.

The results show that only 41.5% of the websites provide translation in at least one language (76/183) whilst 58.5% do not have any translation (107/183). At the same time, the regional distribution suggests that North African governmental websites are almost twice as likely to have translations, as compared to e-services of Sub-Saharan countries. Overall, findings of the digital linguistic landscape study show that French-Arabic and French-English pairings were the most prevalent.

However, in North Africa, websites usually allow translation in European languages, mainly French despite the fact that French is not the official language of any country in Northern Africa. Indigenous languages are available only on some Moroccan platforms, whereas in Sub-Saharan Africa the percentage is much higher and more than two-thirds of government websites with translations available offer translation into indigenous languages (Table 1).

106 African Languages in a Digital Age.

107 Ibid.

108 E.g. Arabic, Amharic, Tamazight, Nko script, etc.

109 Microsoft. What languages is Office available in? URL: <https://support.microsoft.com/en-us/office/what-languages-is-office-available-in-26d30382-9fba-45dd-bf55-02ab03e2a7ec>

110 Microsoft. Language Accessory Pack для Microsoft 365. URL: <https://support.microsoft.com/ru-ru/office/language-accessory-pack-%D0%B4%D0%BB%D1%8F-microsoft-365-82ee1236-0f9a-45ee-9c72-05b026ee809f?redirectSourcePath=%252Fen-US%252Farticle%252Foffice-Language-Interface-Pack-LIP-downloads-D63007C2-E8AE-41FD-8BFB-FCE2857010E1>

111 Google. IFC. E-Conomy Africa 2020. URL: <https://www.ifc.org/content/dam/ifc/doc/mgrt/e-economy-africa-2020.pdf>

112 The countries selected are: Algeria, Angola, Benin, Comoros, Democratic Republic of Congo, Ghana, Egypt, Ethiopia, Kenya, Nigeria, Morocco, Rwanda, Tanzania, Tunisia, South Africa. The spheres selected are: e-taxes and finance, business, tourism, public procurement, education, healthcare, legislation, and a platform that is supposed to serve as a one-stop shop.

That said, it is noteworthy that only three out of 11 Sub-Saharan countries account for 76% of websites with translation in indigenous languages – Tanzania, Ethiopia and Rwanda.

The most represented languages include **Swahili** (Tanzania, to a lesser extent Kenya), **Amharic** (Ethiopia), Kinyarwanda (Rwanda), and **Tamazight** (Morocco), whilst Somali, Afrikaans, Yoruba, Hausa, Lingala, and Malagasy are much less popular.

Government portals in English-speaking countries rarely offer translation (only some 16% of the studied websites or a total of 10 out of 64) with Tanzania and Rwanda being exceptions to this rule. In Tanzania, nine websites in English have a Swahili translation (45%, and there are also websites only in Swahili), whilst there are only three in Kenya (20%) and one in Nigeria (less than 10%). In Rwanda, four websites provide a Kinyarwanda translation (25%).

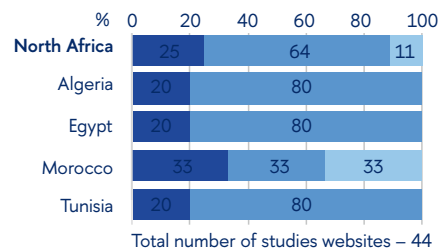
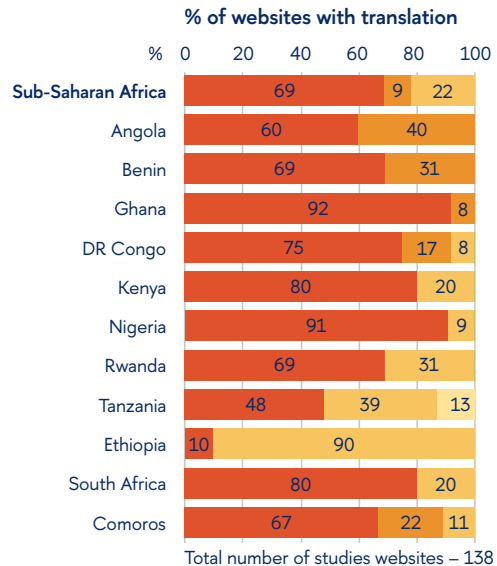
The countries with French and Portuguese speaking populations showed a similar pattern and on average are more likely to have translation than English-speaking countries; even so, the rate remains low (35% or 14/40 websites¹¹³).

As for the spheres, government websites for tourists predictably more often have translations, usually in English and sometimes in other European languages or Arabic. Tanzanian, Rwandan, Kenyan and Ethiopian portals also have translations in African languages – Swahili, Kinyarwanda, Swahili and Amharic respectively. Following close behind in terms of the availability of translations are government websites aimed at integration of services (i.e. “one-stop shop portals”).

Indicatively, services in the educational sector are the least likely to have translation, especially in indigenous languages – only five out of 15 websites examined provide translation. Yet, some of them (e.g. website of the South African National Department of Basic Education) have educational content such as workbooks in native African languages.

Availability of translation on selected government websites in Africa

a preliminary study



- No translation, one European language
- Only European languages
- European + African languages
- Only Swahili
- No translation, only Arabic
- Arabic + French/English translations
- Arabic + European languages + Tamazight translations

Source: prepared by the HSE University Center for African Studies.

Though about one-half of websites of legislative bodies have translations available, PDF files of the documents published on the websites do not tend to have translations available in indigenous languages, which also could serve as a constraint for achieving universal legal literacy on the continent.

113 Without counting North African countries.

It is worth highlighting that the stage of e-government development does not significantly influence the linguistic landscape of services offered and does not guarantee multilingualism in the digital sphere. Existing studies of e-government routinely fail to account for this factor as a means of promoting the use of digital public services and facilitating citizens' access to them and do not consider multilingual provision as a way to promote social inclusion.

For instance, despite being the continental leader according to the UN e-government Development Survey of 2022¹¹⁴, South Africa does not provide citizens with multilingual digital public service: of 11 examined websites, only two have a translation. The South African one-stop shop platform for e-services¹¹⁵ allows a Google-powered translation in 133 languages, including the country's 11 official languages. The website of the South African government¹¹⁶ provides a translation in 11 official languages; however, it is not available on the home page, but rather only on pages with a service description. Moreover, the services are delivered predominantly in English.

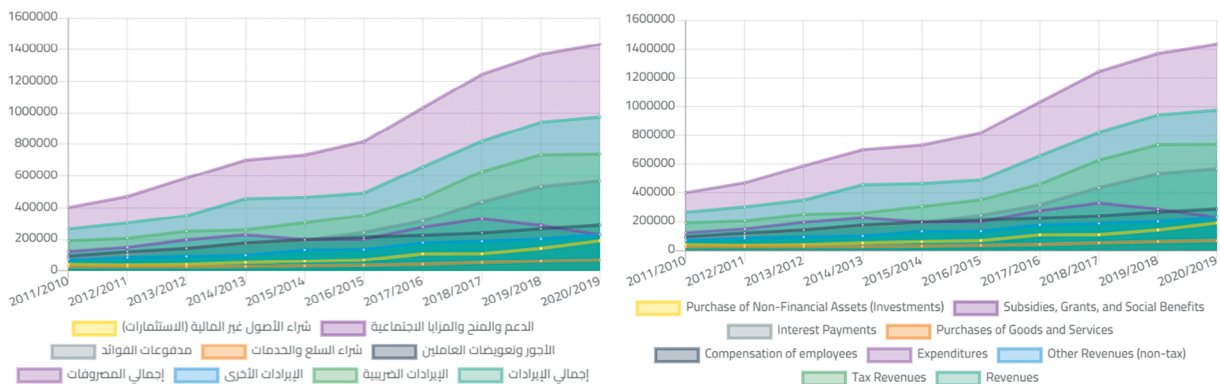
Whilst the same characteristic can be applied to Ghana and Kenya, which ranked in the UN

E-Government Development ranking 7th and 10th on the continent respectively, the countries with the most translations available in indigenous African languages – Tanzania and Ethiopia – were ranked 26th and 43rd by the UN.

By contrast, Tunisia, Morocco, Egypt, and Algeria are among the top 10 of e-government development in Africa, and the countries' governmental websites systematically provide translations in Arabic, French or English. Regarding the methods, an automatic translation powered by Google is the most commonly used; however, since it does not translate pictures, graphs, etc., mixed methods of translation are used on some websites (e.g. website of the Egyptian Ministry of Finance¹¹⁷).

Among the noted peculiarities of the digital linguistic landscape of African government websites are some technical issues with the functionality of the translations, which have not been fixed over the years and therefore can be perceived as an integral feature of the landscape. For instance, even though some websites offer the translation, it does not function properly and not all the content is translated, resulting in information being provided in a mixture of two languages on the pages (Ethiopian E-Services Portal¹¹⁸).

Picture 1.



Source: Egyptian Ministry of Finance

114 UN E-Government Knowledgebase. URL: <https://publicadministration.un.org/egovkb/data-center>

115 South African e-Services Portal. Official website. URL: <https://www.eservices.gov.za/>

116 South African Government. Services for residents. Official website. URL: <https://www.gov.za/services/services-residents>

117 Arab Republic of Egypt. Ministry of Finance. Official website. URL: <https://mof.gov.eg/en>

118 Ethiopian E-Services Portal. Official website. URL: <https://www.eservices.gov.et/>

- ምርመራ እና ቁጥጥር
- የሰነድ መስጠት
- Construction Company group
- Construction Machinery Group
- Construction Project Registration group
- Construction Project registration
- Genetically modified organisms (GMO)
- Environmental impact assessment (ESIA)
- ለአበቦች የብቃት ማረጋገጫ
- ለኪሚካል ምህንድስና የብቃት ማረጋገጫ ፈቃድ
- ማንነት ሰነድ
- Non Genetically modified organisms (GMO)
- Environment, Forest and Climate Change
- transportation service
- supporting letter
- Market Information
- Award and recognition
- Topic for system admin training
- የህግ ጻፊዎች ማዕዘን
- የመሠረተ ልማት ገደብ ማዕዘን
- Price approval
- የጋደል ውጤት
- For (Era) Employees
- Geothermal Operation License
- Era Information requester



- በብዛት የተጠየቁ አገልግሎቶች**
- 1 በሥራ ላይ ያሉ የመንግስት ሠራተኞች የማህበራዊ ዋስትና አገልግሎት ምዝገባ
 - 2 Issuance of Diplomatic ID Card
 - 3 Renewal of Professionals License
 - 4 ለጥላቻ ተሽከርካሪ ለሽከርካሪዎችና ረዳቶች የድንበር ተሽጋሪ ፈቃድ መስጠት
 - 5 New Registration of Professionals License

- በቅርቡ የተጨመሩ አገልግሎቶች**
- 1 Name Change for Construction Company's License
 - 2 Provision of Facility Services.
 - 3 Provision of Regular Training.
 - 4 Provision of Management Profession Competency Assurance.
 - 5 Provision of Tailor Made Training.

Source: Ethiopian E-Services Portal¹¹⁹

The screenshot shows the website's navigation menu at the top with options like 'About Us', 'Products & Services', 'e-Services', 'Media Center', 'Procurement', 'Publications', 'Standards & Guidelines', 'eGov. Meeting', 'Training', and 'Blog'. The main content area is divided into two columns. The left column, titled 'STANDARDS AND GUIDELINES', features a grid of document covers including 'Acceptable ICT Use Policy Sample', 'E-Government Architecture, Vision, Standards and Technical Guidelines', 'E-Government Guidelines', and 'Standards and Guidelines for Government e2E Project Implementation'. The right column, titled 'NEWS UPDATES', lists recent news items such as 'e-GA YAWAFUNDA WACHAMBURI WA MIFUMO YA TEHAMA...', 'MAMLAKA YA SERIKALI MTANDAO (e-GA) NA CHUO KI...', and 'KAMATI YA BODI YA UKAGUZI, VIHATARISHI NA UBOR...'. A 'View All' link is located at the bottom right of the news section.

Source: Tanzania E-Government Authority website¹²⁰

African quest for digital sovereignty

119 Ethiopian E-Services Portal. Official website. URL: <https://www.eservices.gov.et/>
 120 Tanzania e-Government Authority. Official website. URL: <https://www.ega.go.tz/>

Another interesting feature applies mostly to Northern African countries. For instance, despite offering a translation in French or Arabic, most Algerian and some other Northern African websites do not have a button to toggle between the languages. Instead, the language can be changed via the link to the page.

Based on the initial results of the study, local initiatives can be suggested as a means to boost the use of African languages in digital governance.

Forging sovereign digital future

The pursuit of digital sovereignty in Africa is a multifaceted endeavour that cannot be reduced to mere control over data and infrastructure

While these elements are undoubtedly critical, a holistic approach must incorporate various dimensions, including the diversification of foreign

aid sources, the mitigation of technological dependency, and the assurance of reliable infrastructure. As Africa navigates its digital future, it must also prepare for potential disruptions by developing alternative solutions that ensure continuity and resilience.

Central to achieving digital sovereignty is the development of human capital. Digital sovereignty cannot be realised without a robust pool of expertise and decision-makers who are equipped to address the unique challenges of the continent. This includes fostering homegrown talent capable of innovating and leading within the tech sphere.

Moreover, the current stage of digitalisation presents an invaluable opportunity for African nations to collaborate and learn from one another. By sharing experiences and best practices, countries can accelerate their digital agenda while fortifying the continent's collective sovereignty.



Center
for African
Studies

HSE University