



Artificial Intelligence in Sub-Saharan Africa: Ensuring Inclusivity

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2. Executive Summary

Artificial Intelligence (AI) and the rise of data continue to disrupt various national, regional, and global development sectors. AI offers solution-oriented initiatives and policies in health, telecommunication, transport, agriculture, and more. It is predicted that the adoption of AI will continue to increase in the coming years. Africa is no exception to this phenomenon and its potential benefits are promising for development.

However, the gradual increase in the adoption of AI technology is saddled with slower growth to poverty eradication. This is evident in a fast-paced world hampered by inadequate infrastructure and policy, and slower adoption of new technological products. This research seeks to reveal whether or not artificial intelligence, as a tool or solution, is created with everyone in mind. There is therefore the need for discussions around inequality and inclusivity in the adoption of AI in developing countries.

The research identified the following findings:

1. A multistakeholder group, with pan-African lens and voice, is paramount to developing inclusive AI policies, regulatory frameworks and national strategies.
2. Ensuring inclusivity of existing and emerging AI initiatives will require a different kind of multistakeholder approach. This will need an approach with an African perspective.
3. The involvement of existing local AI systems to collectively develop inclusive policies that govern data use and privacy and fit-for-purpose AI solutions.
4. Improvement in internet infrastructure, stable electricity, and developing digital skills and literacy are key to ensuring AI inclusivity.
5. There is the need to establish benchmarks and standards that all AI initiatives must adopt in its development and implementation to ensure inclusivity in emerging economies.

The research concludes by highlighting the need to broaden the inclusivity spectrum in AI initiatives, such as gender, economic status, ethnicity, religious differences, sexual orientation and education. It also provides governments, civil society groups, technology companies, etc. novel ways of developing inclusive AI systems, policies and national AI strategies.

3. Introduction

The upsurge in big data and Artificial Intelligence has brought many solutions and innovations to various aspects of development such as energy, education, commerce, health, and agriculture. As this continues to grow globally, there have been concerns regarding its adoption in developing economies. However, with various cases of the usage of AI and Big data within developing countries, the potential benefits are promising.

Nonetheless, the evidence in the growth of AI technology has been met with concerns over its adoption in Africa. African economies are faced with delays in poverty eradication while working towards achieving global development goals. This is attributable to inadequate infrastructure and policy, and the adoption of new technological products in a fast-paced world. This begs the question of who the beneficiaries of these technological innovations are and whether or not inclusive impact is attained while focusing on creating systems and enabling avenues to use technology in developing countries.

The UN's article on [Closing the Technology Gap in Least Developed Countries](#) indicates a continually expanding inequality in the use of new technology further entrenched by political, economic, and social consequences. The article posits that developing countries need to prioritise investment in research and development initiatives to ensure better adoption of new technology and create fit-for-purpose tech solutions. Over the past few decades, significant advances in AI have allowed for the development of solutions in various sectors within Africa, with various organisations initiating solutions to leapfrog Africa's development. ([Oxford Business Group, 2019](#), [CNN, 2019](#)) This further emphasises the role of AI innovation in societies and its multidimensional nature. However, with limited policy and regulations, the implementation of AI within Africa has assumed a laissez-faire approach. This presents many concerns regarding data protection, ethical use of technology, and inclusivity issues in the provision of AI solutions in various sectors. ([AI4D, 2019](#))

The [2020 Government AI Readiness Report](#) by Oxford Insights asserts that African countries have implemented measures to improve the "Data and Infrastructure pillar, followed by the Government pillar and then the Technology Sector pillar". The report further asserts that countries are building more capacity in telecommunications and other infrastructure needed to support AI, and in the availability of representative AI training data within the aforementioned pillars. However, African Countries still struggle with growing their capacity in

relation to the size of the technology sector, the business environment, and the creation of a skilled AI workforce. There is also limited documentation of appropriate regulatory and ethical frameworks, and governments themselves generally have low use of ICT functions and IoAs results (the responsiveness to change). The highest-ranked African country (Mauritius) is in 45th position followed by South Africa (59th), Seychelles (68th), Kenya (71st) and Rwanda (87th) compared to developed countries.

According to the results of [UNESCO's Artificial Intelligence Needs Assessment Survey, \(2021\)](#), policy initiatives for AI governance in Africa need strengthening. The results of the survey indicated a wide variation in the nature and scope of policy instruments for AI governance. Out of 32 countries surveyed, only 13 have developed AI policies, with 6 countries enacting legislation to address some identified challenges of AI. Also, out of the 32 respondents, only three have indicated the provision of ethical guidelines for AI (Congo, Sao Tome and Principe, and Zimbabwe). According to the survey, 22 out of 32 countries reported having legal frameworks that addressed personal data protection, however these need to be updated to new technological uses to reduce the occurrence of algorithmic biases and discrimination. As of 2019, Kenya is the only country that has an AI taskforce working towards the national strategy out of 46 sub-Saharan African states.

With the growing adoption of AI in Africa, governments have begun to prioritize establishing policies for AI implementation. In recent times, attention has been placed on defining the priority areas and parameters for AI implementation in Sub-Saharan Africa, with a wide range of focus areas such as energy, education, capacity building, health and economics/finance. The African Commission on Human and Peoples' Rights (the Commission) held its 31st session to present a resolution (473) on the need to undertake a study on [Human and People's Rights and Artificial Intelligence](#), Robotics and other new and emerging technologies in Africa. The Commission called on State Parties to ensure that the development and use of AI and related technology is compatible with the mandate of the African Charter - 'to promote and protect human and peoples' rights in Africa'.

The Tony Blair Institute for Global Change shared on emerging trends in [Tech Policy in Africa](#) (2021). The commentary presented indicated that African governments are taking major steps in developing regulatory frameworks for tech and in turn providing an enabling environment for growing tech and digital economies.

With this, African governments such as Kenya and Mauritius ([Oxford Insights,2020](#)) have begun to put measures in place to accommodate the increasing growth of tech in Africa. For instance, Kenya's Digital Economy [Digital Economy Blueprint](#) aims to improve its ability to

catalyze economic growth through five pillars- Digital Governance; Digital Business; Infrastructure; Innovation-Driven Entrepreneurship and Digital Skills, and Values. The blueprint seeks to "Increase the number of graduates to be trained in Advanced Digital skills and required competencies for the digital economy" with a focus on "Developing the digital skills training framework from primary to university by producing highly skilled ICTs graduates with advanced digital skills. Some of these include Artificial intelligence (AI), Machine Learning, Robotics, Big data, Coding, Cyber security, Internet of Things (IoT), and Mobile app development". The government also addresses measures concerning data and aims to establish standards for data handling and sharing, ensure data security, and facilitate universal access to digital services.

4. AI and Inequality in Africa

The discourse over AI and inequality in the region is intertwined with its unique political, economic, and social context¹. The concept of inclusivity is the practice and/or policy of providing access to opportunities and resources for groups who might otherwise be excluded or marginalized, such as individuals of a lower economic status, women, youth, etc.² An article by the Carnegie Council for Ethics and International Affairs on [Artificial Intelligence Ethical Challenges](#) compared AI to nuclear power, indicating its fast growth and adoption in comparison with the needed legislation or standards for its ethical use which is evident in developing countries. In addition, the increased growth in the adoption of AI and Machine learning continues to widen the gap between the rich and the poor, entrenching the privilege of few leading to minimal representation and lack of inclusiveness in global discussions³.

With the growth in AI development in Africa, it is critical to assess existing frameworks that enable inclusivity across board. There has been a major concern that without an objective assessment of AI on the continent, its benefits will not be shared equally, in fact, its adoption may negatively impact some factions in the community and if unchecked, AI undoubtedly will reproduce existing power dynamics⁴. African countries are largely absent from or not well-represented in most prominent fora on artificial intelligence, albeit having a significant opportunity to benefit from it for their economic and social development⁵.

In Africa, limited access to the internet and smartphones can lead to unequal representation of marginalised and excluded groups from benefiting from AI.⁶ An article on [the promises and perils of Africa's digital revolution](#) asserted that the continuous expansion of internet penetration in Africa and its development, does not guarantee its inclusivity, due to low incomes and low ranking among the world technological giants. Fifteen African countries use AI enabled surveillance technologies and drones to monitor crime and deliver lifesaving medical supplies. With this, the impact of these technologies are largely dependent on how governments use them. With low costs and rapid integration AI and drones provide various

¹ Artificial Intelligence and Inequality in the Middle East: The Political Economy of Inclusion, July 2020 <https://ssrn.com/abstract=3659290>

² Homepage <https://aiandinclusionsymposium.com/>

³ Artificial Intelligence must not Exacerbate Inequality Further

<https://www.aljazeera.com/opinions/2021/12/2/artificial-intelligence-must-not-exacerbate-inequality-further>

⁴ AI in Africa : Framing AI through an African Lens <https://journals.openedition.org/ctd/4775?lang=en>

⁵ <https://www.aljazeera.com/opinions/2021/12/2/artificial-intelligence-must-not-exacerbate-inequality-further>

⁶ Inclusive AI: Technology and Policy for Diverse Urban Future https://11m0g1bkm0s2jajir154zwd-wpengine.netdna-ssl.com/wp-content/uploads/2017/07/Inclusive-AI_CITRIS_2017.pdf

political, economic and security benefits. However, to attain broader impact, it is critical to consider the lives and livelihoods of ordinary citizens.

Some African countries such as Mauritius, Rwanda and Kenya, continue to spearhead tech inclusive economies, by ranking in the top 50 of the International Telecommunications Unions' global cybersecurity commitment index, while other countries are still technologically unprepared. This continues to widen the gap in the ability to adapt to technological changes and to embrace inclusivity. Countries in Africa face specific challenges in terms of infrastructure, skills, knowledge gaps, research capacities and availability of local data, which need to be overcome to fully harness the deployment of AI. To avoid exacerbating the existing digital and knowledge divides, it is essential to address these challenges and raise awareness of AI's potential for sustainable development⁷. Therefore, if Africa wants everyone to benefit from AI, it must ensure its policies on AI are anchored on an inclusive framework or principles. Inclusive framework is necessary because it helps mobilize the collective intelligence of communities, to ensure that voices and concerns of disadvantaged groups are heard and that they are involved in crucial decision-making⁸.

The design and application of AI can reinforce social biases and inequalities, therefore, its development and design must incorporate the perspectives of traditionally underserved and underrepresented groups, which include urban and rural poor communities, women, youth, LGBTQ individuals, ethnic and racial groups, and people with disabilities.⁹ AI algorithms can magnify the bias by missing a significant portion of the population. This can cause "allocative harms" where some people are denied services or opportunities¹⁰.

In many parts of the global north, predictive algorithms used in policing and predicting future criminals have been biased against people of colour than whites¹¹. AI technologies used for labour and workforce development have discriminated against women and denied other vulnerable groups access to public services. "For example MerQ, an Egyptian start up, launched a chatbot through Facebook named Sally, that introduces people to credit card systems in Arabic. While the chatbot is in Arabic and may seem more context specific, it is still exclusive as only 10-15% of Egyptians have bank accounts, reflecting a social reality of a

⁷ The future of Artificial Intelligence in Africa: a joint responsibility, UNESCO
<https://en.unesco.org/news/future-artificial-intelligence-africa-joint-responsibility>

⁸ Artificial Intelligence experts and policymakers discuss inclusion in AI policy development, UNESCO
<https://en.unesco.org/news/artificial-intelligence-experts-and-policymakers-discuss-inclusion-ai-policy-development>

⁹ Homepage <https://aiandinclusionsymposium.com/>

¹⁰ Artificial Intelligence and Inequality in the Middle East: The Political Economy of Inclusion, July 2020
<https://ssrn.com/abstract=3659290>

¹¹ <https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>

historical mistrust of banks, and 60 percent of Egyptians do not have access to the Internet or Facebook. Credit rating algorithms that may include alternative data such as neighbourhoods, can magnify socio-economic differences embedded in the data bias."¹²

¹²Artificial Intelligence and Inequality in the Middle East: The Political Economy of Inclusion, July 2020
<https://ssrn.com/abstract=3659290>

5. Main Findings

1. Current Multistakeholder Approach on AI is Failing Inclusivity

An emerging concept in the AI ecosystem is Responsible AI, which among its tenets highlights the need for the inclusion of excluded voices in the development of AI to ensure that AI technologies account for the needs of diverse groups. Inclusion of excluded groups is often done through multistakeholder initiatives. Multistakeholder groups are often categorised into national organizations, governments, the private sector, and civil society. Consultation among these groups is often a “box-ticking exercise” without focusing on bringing in diverse perspectives¹³. For example, some interviewees noted that the business sector is more persuasive towards another stakeholder group; the government to buy into the rhetoric of their marketing strategy when they are bringing skills.

Historical lessons from digital governance¹⁴ indicate that the multistakeholder approach and its underlying power dynamics - different political and ideological paradigms¹⁵ - hinder excluded groups' full participation during the decision-making process for AI development, adoption, and policy¹⁶. There are disparities in power, information asymmetries and intersecting interests amongst the stakeholders within the African AI ecosystem. The interdependent relationships and power dynamics between these stakeholders influence the distribution of resources, development of AI technologies, attitudes toward AI, creation of legal and regulatory frameworks, and advocacy for communities impacted by the adoption of AI¹⁷. Also, some interviews highlighted that Africans are marginalized from the economic and societal benefits of AI due to a lack of control over the ownership of the AI technologies, for instance, the biometric identity systems, which are being used in the financial sector in Ghana. Multistakeholderism does not mean that power differentials get equalised automatically. Interviewees noticed that multistakeholderism is a group of different stakeholder groups in one room but the moment the groups step out, it is the government

¹³ Artificial Intelligence & Equality Initiative Nanjira Sambuli (2021) <https://www.carnegieaie.org/blog/five-challenges-with-multistakeholder-initiatives-on-ai/>

¹⁴ Artificial Intelligence & Equality Initiative Nanjira Sambuli (2021) <https://www.carnegieaie.org/blog/five-challenges-with-multistakeholder-initiatives-on-ai/>

¹⁵ Artificial Intelligence & Equality Initiative Nanjira Sambuli (2021) <https://www.carnegieaie.org/blog/five-challenges-with-multistakeholder-initiatives-on-ai/>

¹⁶ AI in Africa : Framing AI through an African Lens <https://journals.openedition.org/ctd/4775?lang=en>

¹⁷ AI in Africa : Framing AI through an African Lens <https://journals.openedition.org/ctd/4775?lang=en>

that is the final decision maker. Interviewees pointed out that multistakeholderism is a way of saying, we are open to ideas, but are still close-minded to this feedback and are unable to implement it in a way that is more inclusive of other groups.

Particularly with multistakeholder initiatives on AI, there is the need to understand the challenges that make inclusion difficult to achieve. Some interviewees noted that one of the challenges with multistakeholder models border on their sustainability. Other key AI challenges¹⁸ include, inequality of stakeholders, resource-intensive participation, AI agenda and objectives being shaped by funders, lack of power to enforce, and the unclear relationship between multistakeholderism and multilateralism. Interviewees noticed that the objective of multistakeholderism is to push the agenda of inclusivity and ask critical questions on the subject.

Nonetheless, the impact on what is actually developed, is more connected to the value that those who are in power see. For example, the drive towards closing the gender digital divide came from the UN publishing documents and highlighting the need to make sure that women are connected to the internet. AI stakeholders must consider other alternatives like multilateralism. Interviewees indicated that stakeholders know how to speak on inclusivity according to what the national standards or the regional standards are but there's a need to take into account who is funding or resourcing the AI initiative.

Interviewees argued that this funding imbalance carries the risks, particularly where the ethical norms and values designed into these AI systems might collide with those of the African communities in which they are being deployed. For example, the [Lacuna Fund Initiative](#)¹⁹, funds initiatives within areas of health, agriculture and language, but it may seem unlikely that they will fund projects outside their purview, but equally important and urgent.

In Africa, the AI ecosystem²⁰ is dominated by two major stakeholders - those who have the resources [time, labour, funds, equipment, etc] to develop AI products and those who have the fiscal power to purchase these products. For example, Africa's AI ecosystem is flooded with investments from Big Tech companies - Google, Microsoft, IBM, Facebook, etc. - and

¹⁸ Artificial Intelligence & Equality Initiative Nanjira Sambuli (2021) <https://www.carnegieaie.org/blog/five-challenges-with-multistakeholder-initiatives-on-ai/>

¹⁹ Lacuna Fund provides data scientists, researchers, and social entrepreneurs in low- and middle-income contexts globally with the resources they need to either produce new datasets to address an underserved population or problem, augment existing datasets to be more representative, or update old datasets to be more sustainable.

²⁰ The African AI ecosystem, in this context, refers to the groups, and their interdependent relationships, who impact and are impacted by AI

multilateral organizations - IDRC, GIZ, EU, etc. Less power is held by stakeholders who advocate for inclusivity on behalf of those whose political and civil rights are affected by adoption of a particular AI.²¹

Some interviewees noticed that the development of AI in Africa - data infrastructure, developers, labour force, consumer base, policy development and research - is clouded with Western voices who often provide the funding and technical capacity. Interviewees also suggested that the perspective of the global north that predominantly informs the current discussion on AI inclusion and ethics in Africa limits commitment to addressing the African historical, social and economic injustices. It also obscures the voices of Africans who understand their local needs and how AI can be of use.

Also, interviewees highlighted that AI solutions in Africa are often developed by foreign companies with very limited participation from the local AI ecosystem. There are not enough Africans creating AI solutions for Africa. Some of the interviewees noticed that the conversation around inclusivity on the African continent is that the developer community of AI are looking to develop AI solutions that can get them paid and have access to resources, due to the current economic situation.

2. Tech Business Models Lack Inclusivity Approach

Most businesses investing in AI on the continent use business models that are profit oriented and not necessarily for inclusivity. Some of the interviewees argued that every business aims to find an opportunity to make profit and not to be inclusive. For example, Google is a for profit company, it's not a non-profit. So it becomes a matter of, should we [Google] develop our technologies in a way that ensures everybody in these large communities will have access? Or should we go to the communities or target people that are more likely to have money and we can get higher returns? Interviewees also noted that if we can prove to businesses that they will make more money by being more inclusive, then they are more likely to do it. Some of the interviewees argued that if it is just a matter of businesses being kind to Africans and making sure that they are inclusive, then it becomes the responsibility of the government and not the businesses.

Some of the interviewees noticed that the danger of forcing businesses to develop inclusive AI products is that we will have products developed specifically to meet Sustainable

²¹ AI in Africa : Framing AI through an African Lens <https://journals.openedition.org/ctd/4775?lang=en>

Development Goals (SDGs), and not developing AI solutions that may be relevant for low-income people that are not necessarily tied to an SDG. For example, businesses will develop AI solutions that help people find water, but not AI solutions that help people feel safe when using Tinder.

3. Small Businesses Lack Access to Data to Compete in the AI Market

Some of the interviewees pointed out that African SMEs could disproportionately be displaced by AI automation projects. For example, in software automation, the big inclusivity issue is that small enterprises are generally not targeted by source automation projects because the vendors do not see a market in Africa yet for small enterprises. They speculated that when software automation gets more effective, because of AI advancement, there will be a bigger gap between small and medium enterprises, and big enterprises that can afford Western technologies that have been enhanced by software automation. Given that data is a differentiating market factor, data becomes a source of authority and an impediment to levelling the playing field for the less powerful²².

Data inequality manifests in the underlying forces in the AI market and in the competition that exists between large international companies and local small to medium enterprises. As large data sets are a prerequisite for developing AI, utilising AI is limited to those who can afford to either buy them from data brokers, research institutions or consultants, or those who have the capacity, be it technical, infrastructural or financial, to gather and analyse large amounts of data²³. In Africa, for example, there are few local start-ups using AI technologies to provide services to some financial institutions but rely on AI platforms from Big Tech companies like Microsoft and Google because of their access to large datasets²⁴.

Interviewees noticed that another critical inclusivity issue is that SMEs are generally not targeted by software automation projects because the vendors do not see a market in Africa yet for small enterprises. When software automation gets more effective because of AI advancement, we may see a bigger gap between SMEs and big enterprises that can afford western technologies that have been enhanced by software automation. For example, as we get more formalised accounting professional service providers, companies like PwC and others are often better placed to be resilient in a situation where automation considerably

²² Artificial Intelligence and Inequality in the Middle East: The Political Economy of Inclusion, July 2020
<https://ssrn.com/abstract=3659290>

²³ Artificial Intelligence and Inequality in the Middle East: The Political Economy of Inclusion, July 2020
<https://ssrn.com/abstract=3659290>

²⁴ Responsible Artificial Intelligence in Sub-Saharan Africa: Landscape and General State of Play
<https://africa.ai4d.ai/wp-content/uploads/2021/03/AI4D-Report%E2%80%94Responsible-AI-in-SSA.pdf>

reduces the need for intermediaries - smaller accounting companies, smaller auditing companies - we find that SMEs will be getting less business.

4. Limited Datasets on Gender and AI Skills Gap

Regardless of the high internet penetration growth in Africa, the digital gender gap keeps increasing significantly²⁵. As a result, women are very likely to be marginalised by AI actors. Women are often excluded by data and algorithm biases especially as they reflect and sometimes amplify inequities on the ground. For instance, there are inaccuracies resulting from a “data blur” as aggregation clouds out details, especially on gender-sensitive issues like health and employment. “Data inaccuracy” can also be an outcome of top-down data collection methodologies which miss activities and communities that fall outside the radar of the formal lens, resulting in “data blindness”²⁶.

Also, women stand to benefit from policies that consciously address these anomalies, provide safety nets, and utilize AI technologies for inclusion in new forms of sustainable work, entrepreneurship and innovation²⁷. From a developmental perspective, African countries lack gender data on two fronts — the availability of official national statistics to provide open-source data, and the availability of quantitative and qualitative research on gender issues in relation to AI.

²⁵ AI and Gender in Africa, Nagla Rizk <https://openair.africa/ai-and-gender-in-africa/>

²⁶ AI and Gender in Africa, Nagla Rizk <https://openair.africa/ai-and-gender-in-africa/>

²⁷ AI and Gender in Africa, Nagla Rizk <https://openair.africa/ai-and-gender-in-africa/>

6. Recommendations

1. Multistakeholder Approach should have an African Lens

The exclusion of any stakeholders in decision-making would also run contrary to the African principles of collectiveness²⁸. Some of the interviewees argued that Africa needs a cross-sectional, collaborative platform where Africans are able to work on different aspects of AI, outline pan-African views on AI ethics and inclusion for Africa. Multistakeholder groups can contribute to defining what inclusivity means in different contexts. For example, a Canadian developer might be doing a project, using an algorithm that's probably going to have a global impact, is not necessarily going to have a view on what inclusivity means within the Ghanaian context. Therefore, what multistakeholder groups can do across the region is to define it in their own context and assess the inclusive AI framework based on what best practices are outlined in the inclusive definition. Multistakeholder consultation processes must ensure the participation of key groups in the development of public policies on AI.

Many of the interviewees highlighted that the government and civil society organizations need to counter the profit-orientation of the private sector in developing AI solutions, to drive value and innovation and to be the voice for the people. A multistakeholder convening is needed to track progress of both government and private sector AI initiatives. The multistakeholder group can form a public watchdog institution, with some form of government mandate to hold companies developing and deploying AI solutions accountable.

2. Improve Internet Infrastructure, Digital Skills and Literacy

To ensure the integration of AI technologies into every aspect of the African citizens' lives, the internet connectivity gap must be closed, especially the rural and urban divide. Who is going to use AI if there are no people connected to the internet and if there are no people who have the devices to be connected? Investing in technology may be necessary, but it is not sufficient to achieve inclusion. Some of the interviewees argued that if AI solutions are developed and implemented to minimize the spread of COVID-19, how would that work in a context where people do not have access to devices or where people do not have a stable internet connection?

²⁸ AI in Africa: Framing AI through an African Lens <https://journals.openedition.org/ctd/4775?lang=en>

3. Tech Developers and Researchers should have Inclusive Innovation Mindset

If AI is to help build a better future, it must be designed to expand access to opportunities and actively benefit the people it currently harms most²⁹. The interest to build inclusive AI solutions should emerge from within the organization. Some of the interviewees indicated that developers and AI researchers have to become agents at transforming the mindset within organizations, in terms of how AI solutions are developed, question how diverse and representative is the dataset that's being used and ensure a gender-balanced team. Therefore, the ethics and principles around accountability, transparency, privacy by design, data minimization, need to be translated in a way that vulnerable communities can understand.

4. Policies should Address Inequality, Ethics, Regulation and Human Rights

African governments need to develop their own inclusive policy frameworks that reflect the realities in the continent and follow globally accepted standards. Also, African governments must outline their plans to tackle any potential societal or regional inequality caused by AI, and this must be explicitly addressed as part of the implementation of the Industrial Strategy³⁰. Some of the interviewees noted that there are implicit and explicit costs to the process of ensuring inclusive AI. Therefore, AI policies must account for the implicit and explicit costs implications for inclusive AI designs and develop the solutions to mitigate these hurdles.

Many interviews highlighted that the legal, ethical and human rights frameworks are needed for African countries to optimise the best uses of AI frameworks that will protect citizens data and build trust, legitimacy for AI and the multitude of other applications. An example is the Global Partnership on AI Working Group's framework which focuses on responsible AI, data governance, and the future of work, innovation and commercialization of AI.

5. Develop Inclusive Assessment Framework

The UNESCO's assessment of AI needs in Africa noted that existing technological legal frameworks may need to be updated to the new uses and applications of data engendered

²⁹ Comments on AI's Impact on People with Disabilities to UN Special Rapporteur <https://cdt.org/insights/comments-on-ais-impact-on-people-with-disabilities-to-un-special-rapporteur/>

³⁰ AI in the UK, <https://publications.parliament.uk/pa/ld201719/ldselect/ldai/100/100.pdf>

by AI to offset biases and discriminations, including on the basis of race and gender³¹. Interviewees pointed out that Africa needs an inclusive and ethical assessment framework that advances the legislative efforts with its iterated development based on research of social impacts of AI in the continent and introduce the safeguards to balance AI opportunities and risks. For example, when a tech company indicates that it's invested in AI in Africa, how do we confirm and track the progress of such investment? There is a need to draw in different strategies, from a legal and community perspective, to measure such investments. For instance, the World Benchmarking Alliance's digital inclusion benchmark has developed a framework to measure what technology and telecommunication companies are doing to enhance universal access to digital technologies, improve all levels of digital skills, foster trustworthy use by mitigating risks and harms and innovate openly, inclusively, and ethically³².

6. Build Local Data Infrastructure to Host Local and Process Diverse Datasets

Some interviewees posited that In Africa, inclusivity constraints emerge from the lack of data to guide decision making by AI and other emerging technologies. As a result, Africa needs to collaborate with external parties and partners to rapidly adopt some best practices around data collection and measurements to better inform their AI policymaking. Many interviewees agreed that AI inclusion cannot be achieved without building the capacity to generate the use of data. So, an inclusive framework should explore ways to make data available to those who need it most, especially local businesses. AI applications use massive volumes of data, hundreds of terabytes that need to be accommodated, stored, processed and managed via technical infrastructures, computing power and resources.³³

Local start-ups should have access to massive data storage and computing power infrastructure, similar to Amazon's Cloud Computing Software or NASA's Open Stack, to help close the market inequality. It provides an affordable alternative for start-ups to scale their services as they grow rather than incurring huge costs of using foreign services.³⁴ In addition, AI companies should explore new data collection methodologies, such as data layering,

³¹ Artificial Intelligence Needs Assessment Survey In Africa, United Nations Educational, Scientific and Cultural Organization (2021)
<https://unesdoc.unesco.org/ark:/48223/pf0000375322/PDF/375322eng.pdf.multi>

³² Digital Inclusion Benchmark, World Benchmarking Alliance
<https://www.worldbenchmarkingalliance.org/publication/digital-inclusion/>

³³ Artificial Intelligence and Inequality in the Middle East: The Political Economy of Inclusion, July 2020
<https://ssrn.com/abstract=3659290>

³⁴ Artificial Intelligence and Inequality in the Middle East: The Political Economy of Inclusion, July 2020
<https://ssrn.com/abstract=3659290>

that provide accurate reflections of realities and provide a new data source for AI. It helps democratize access to the datasets, which often is controlled by a select few³⁵.

³⁵ Artificial Intelligence and Inequality in the Middle East: The Political Economy of Inclusion, July 2020
<https://ssrn.com/abstract=3659290>

7. Conclusion

African governments and its stakeholders must acknowledge that AI and other emerging technologies have huge potential to transform their economies and improve livelihoods. Therefore, it is important to ensure that the AI policies and strategies developed reflect the needs of everyone and not just a few. Also, such strategies should explicitly indicate the resources dedicated to mitigate the risks of AI to vulnerable communities and ensure everyone benefits from AI and other emerging technologies. Furthermore, there is the need to assess existing AI strategies, policies, or digital transformation strategies to identify how inclusive they are.

8. Appendices

1. Appendix 1: Methodology

The methodology included desk research: web content analysis of public documents and datasets (e.g., past recorded forums, presentation slides, etc.). Desk research was complemented by participating at public events and meetings and conducting research interviews. Stakeholder identification and outreach were carried out through existing contacts, their recommendations, and snowball sampling. From February to October 2021, the author conducted 12 semi-structured research interviews.

The broader interview theme was the development of inclusive AI frameworks in sub-Saharan Africa. Interview questions asked to identify ways governments, civil society organizations, policymakers, businesses, etc. can develop inclusive AI solutions and regulatory policies that benefits everyone. Interviewees included tech policy analysts, AI industry researchers, technology businesses owners, civil society organization practitioners and AI and inclusion advocates.. All research interviews were conducted under a research protocol approved by Paradigm Initiative.



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