Navigating the Intersection of Artificial Intelligence and Economic Development in Africa: Policy Requirements and Implications.

Key points

- ❖ Africa faces significant disadvantages and disparities in the adoption, diffusion, and meaningful use of AI technologies compared to the Global North. However, under the right conditions, AI has enormous potential to contribute to solving some of the greatest planetary challenges, from climate change to food security, of which Africa is the greatest victim.
- ❖ African states need to promote inclusive data practices that ensure access to giant data sets and servers needed by African innovators and researchers. They should also open public data for African AI systems to align with local priorities and values, emphasising transparent data collection and model training.
- ❖ African voices, reflecting these common interests, need to be part of global governance agenda-setting, not simply standards receivers.
- ❖ Address AI-related harms through robust regulatory frameworks: that hold providers accountable, nullify liability exclusions, mandate algorithm disclosure for risky systems, and presume AI fault for harm. Distinguish the legal position of developers from service providers, and grant qualified immunity to compliant researchers.
- ❖ Increase regional collaboration on AI-related trade policies that permit preferential access by Africans to pooled African data and other resources to address shared challenges supported by common regulatory frameworks.
- ❖ Address digital inequality in AI diffusion through early AI and digital literacy education, private sector collaboration for equitable access, and regional integration initiatives to bridge the digital divide and empower countries in AI governance and innovation.
- ❖ African countries must collaborate to develop proactive regulatory measures for fair competition, given the complexities introduced by AI, including first-mover advantages, switching costs, strong network effects, and economies of scale and scope. This collaboration is essential to establish a cohesive and robust regulatory framework capable of effectively governing AI-driven markets.

❖ Revise intellectual property laws to adapt to AI: permit the use of copyright material for AI training but with restrictions, explicitly exclude AI outputs from copyright, mandate disclosure of AI generation in copyright claims, require disclosure of AI in patent applications, and clarify that trade secrets relating to AI may not obstruct transparency or disclosure when necessary for security, safety, accountability, non-discrimination, public use, liability, or risk assessment.

Introduction

AI technologies have evolved into a general-purpose technology (GPT), permeating all sectors of the economy and society, with the potential to revolutionise various industries and catalyse economic growth (Hötte et al., 2022). Their potential to increase productivity, efficiency, and scalability could significantly affect Africa and the global landscape. Yet all this potential raises questions about the participation of African countries in the realisation of this potential.
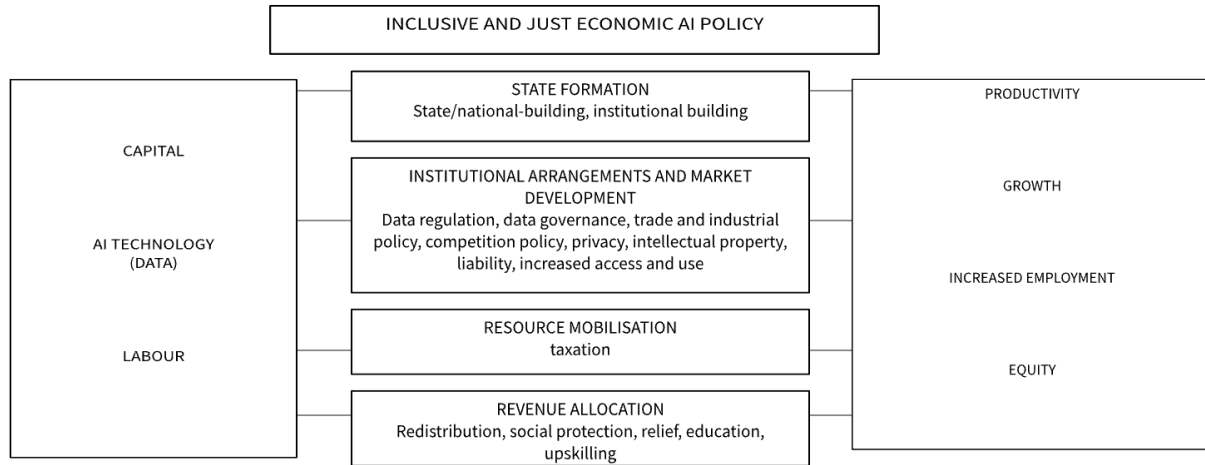
Africa faces significant disadvantages and disparities in the adoption, diffusion and meaningful use of AI technologies compared to the Global North. This policy brief highlights evidence of how AI technologies are affecting employment, competition, intellectual property, trade, taxation, liability and inequality, and the key recommendations below for AI economic policy.

This policy brief aims to provide the policy requirements for an enabling environment that is both risk-mitigating and opportunity-creating for the intersection of AI and economic development. The central research question this study seeks to understand is how AI contributes to, or detracts from, key economic and political aspects of state formation, employment creation, resource mobilisation, and re-distribution in Africa. Investigating these critical factors sheds light on the implications of AI adoption in the region and the policy measures required for more equitable outcomes.

This brief is the synthesis of a comprehensive research report conducted using a mixed-method approach of a thorough desk review of scholarly works to investigate the impact of economic policies on AI diffusion and its societal implications in African countries. In addition, contextual evidence was collected through key informant interviews with stakeholders (African representatives from AI policy organisations, AI associations, regulators, academics, and private sector companies) to gather insights into the role of AI in economic policy formulation, state formation, and resource mobilisation in African contexts. Qualitative data analysis techniques were employed to identify recurring themes and patterns, providing nuanced insights into the complex relationship between AI adoption, economic policies, and their consequences in Africa.

Background

Figure 1: Conceptual framework of the study

INCLUSIVE AND JUST ECONOMIC AI POLICY

CAPITAL	STATE FORMATION State/national-building, institutional building	PRODUCTIVITY
AI TECHNOLOGY (DATA)	INSTITUTIONAL ARRANGEMENTS AND MARKET DEVELOPMENT Data regulation, data governance, trade and industrial policy, competition policy, privacy, intellectual property, liability, increased access and use	GROWTH
		INCREASED EMPLOYMENT
LABOUR	RESOURCE MOBILISATION taxation	EQUITY
	REVENUE ALLOCATION Redistribution, social protection, relief, education, upskilling	

Source: Author estimation

This policy brief is based on a conceptual framework illustrated in Figure 1, where the multifaceted nature of the inputs of the AI value chain, these include data and its value, capital, and labour along with the role of the state in creating an enabling environment through state formation, resource mobilisation, revenue collection, institutional arrangements and market development can foster inclusive, just and sustainable outcomes in Africa through increased productivity, growth, increased employment, and equity.

The political economy of AI in Africa reflects a complex landscape influenced by global power dynamics, economic inequalities, and technological disruptions (Floridi, 2019). AI is a transformative technology that introduces winners and losers, with associated economic disruptions affecting various sectors of the workforce (Trajtenberg, 2018). Class antagonism emerges within the capitalist system, fueled by replacing labour with AI technologies and the concentration of power and wealth in a few dominant tech companies (Jahan & Mahmud, 2015). The dominance of these companies, primarily from China and the US (UNCTAD, 2019), raises concerns about economic and political inequalities, highlighting the need for proactive policies to mitigate potential negative impacts and foster inclusive growth in Africa's AI landscape. For successful development and use of AI in Africa, the African market needs access to sufficient investment capital and large datasets relevant to the continent.

The capital investment landscape in AI reflects a significant concentration of funding in North America and Asia, particularly in the United States and China (Maslej et al., 2024). Despite a recent decline in global AI investment, the long-term trend shows substantial growth. In 2022, the US-led global AI investment by a large margin, followed by China. However, AI investment in Africa remains comparatively low because of challenges such as limited access to venture capital, infrastructure

constraints, a shortage of skilled talent, regulatory uncertainties, and the lack of supportive ecosystems (Zachary, 2020). Efforts are underway to address these disparities, with initiatives and partnerships emerging to bolster AI development in African countries. While some progress has been made in South Africa, Kenya, and Nigeria, there is still a significant investment gap in the region (Maslej et al., 2024).

The development of AI technology relies heavily on large datasets, which can perpetuate existing inequalities and biases, particularly in regions like Africa, where data may not be adequately representative or regulated. This lack of African-specific data contributes to the reinforcement of biases and stereotypes in AI applications that perpetuate social and historical injustices. Moreover, data access drives AI development, but it also raises concerns about data exploitation and privacy, particularly within the framework of the data extraction business model known as "surveillance capitalism." This model thrives on the collection and analysis of vast amounts of user data to create unparalleled market intelligence, often at the expense of individual privacy and autonomy (GPAI, 2022).

Since data is a crucial component of AI technology, it is essential to distinguish between the market value of data and the social value of data. The market value of data reflects its monetary worth in commercial transactions, the social value encompasses broader benefits contributing to societal welfare. This disparity often leads to negative social outcomes, as activities focused solely on market value may neglect broader societal needs and exacerbate inequality (Bennett Institute, 2020; Coyle & Diepeveen, 2021; Coyle & Manley, 2021). In addition, insights from (Mazzucato, 2018) on value in economics emphasise that a narrow focus on market value can lead to value-extracting activities, such as rent-seeking (which redistribute wealth without creating new wealth from productive activities), rather than value-creating activities which bring profits. This perpetuates economic inequality and distorts resource allocation within the economy.

To foster inclusive growth and address these challenges, it is crucial to prioritise value creation over data extraction. This entails developing a deeper understanding of the social value of data and prioritising activities that genuinely contribute to societal welfare and progress. By doing so, we can ensure that data-driven initiatives prioritise inclusive growth and benefit society.

The following section discusses the different economic policy instruments that African AI policy should consider.

AI Economic Policy Instruments

On Harms

The increasing adoption of AI in Africa raises concerns about potential harms, including algorithmic discrimination, labour market disruption, and damage caused by AI technologies. These risks, which span from redundancy due to automation to algorithmic bias and the unpredictability of AI-controlled weapons, highlight the need for robust regulatory frameworks to mitigate AI-related harms (Claypool & Hunt, 2023; Chitimira & Ncube, 2021).

Policy approaches historically focus on distributing technology-induced harms while permitting technology use. However, addressing AI-related harms presents unique challenges due to the complexity and novelty of AI technologies. Existing regulatory frameworks, while addressing some issues, such as discrimination, may not fully cover all AI-related harms, affecting the incentives for avoidance and mitigation (Agrawal et al., 2019a).

One key aspect of addressing AI-related harms is liability. As AI becomes more prevalent, determining accountability mechanisms for AI-related harm is crucial. However, liability rules face challenges in the context of AI, including uncertainty in standards of liability, difficulty in identifying responsible parties, and the absence of intentionality in AI-driven actions (Hallevy, 2016a; Kingston, 2018).

Civil liability rules traditionally manage physical damages and property but may lag in addressing non-physical economic losses caused by AI systems. Uncertainty in liability standards and responsible parties complicates the assignment of risk and accountability, especially in cases of unintended harm or unforeseen consequences of AI deployment (Giuffrida, 2019).

The absence of clear liability rules may deter investment in AI technologies, potentially hindering innovation and competition. To address these challenges, concerted efforts are needed from policymakers, regulators, researchers, and industry stakeholders. Since the developers and deployers of AI technology are best placed to reduce harm because they determine what technologies are developed and how they are deployed strict liability rules in which AI service providers are responsible for all harms caused by AI will provide the strongest incentives for the development of harm prediction, reduction and recompense.

On Inequality

While AI has the potential to boost productivity and economic growth, it does not necessarily translate into the equitable distribution of benefits and increased freedom for individuals. Evidence suggests that AI deployment, particularly in the developing world, is widening inequalities and eroding socio-economic freedoms, exacerbating existing structural inequalities.

Redistribution effects in response to AI deployment pose significant concerns for policymakers (Korinek & Stiglitz, 2019). In cases where markets do not function perfectly and redistribution mechanisms are costly or ineffective, workers may end up worse off as AI technology diffuses into the economy.

Structural and historical legacies embedded in data used to train AI models contribute to the replication and amplification of existing inequalities, exacerbating disparities across gender, ethnic, and geographic lines (Breckenridge, 2019; Mohamed et al. 2020). Marginalised groups, including low-income earners and individuals with low levels of education, are often excluded from digital activities and therefore overlooked in AI outcomes, further widening the gap. Additionally, the high costs associated with developing AI systems, coupled with concerns about data privacy and control, pose significant barriers to developing local AI capabilities.

The lack of transparency regarding AI algorithms creates avenues for unaccountability, as firms and governments may justify AI use based on supposedly neutral objectives while inadvertently reinforcing socio-economic inequalities (Zhang et al, 2021). Additionally, the dominance of large multinational corporations in AI service provision further limits the ability of local firms in the developing world to compete and scale up, potentially exacerbating economic inequalities.

To address these challenges, concerted efforts are needed from policymakers, regulators, industry stakeholders, and civil society organisations.

On employment

The discourse surrounding the impact of AI on African labour markets reveals a complex landscape marked by high unemployment rates and significant disparities across the region (World Bank, 2022). The advent of AI in the labour market mirrors historical patterns of technological displacement, yet with distinct characteristics. Unlike previous industrial revolutions, AI targets mental rather than physical tasks, as such that it threatens the skills of middle-class workers, altering established power dynamics between labour and capital. AI's unique focus on mental tasks suggests a fundamental restructuring of institutional control mechanisms initially designed to regulate manual labour. Projections of AI's net effects on employment vary widely, with some foreseeing substantial job losses (Korinek & Stiglitz, 2019) and others envisioning enhanced productivity and economic progress (Horowitz et al., 2018). Predictive tasks, central to AI, profoundly influence decision-making processes, complicating assessments of AI's overall impact (Agrawal et al., 2019b). However, studies suggest that AI adoption may augment demand for skilled jobs while polarising the labour force by replacing medium-skilled workers with lower-skilled counterparts.

The diffusion of AI in Africa presents opportunities and challenges for the continent's labour market. Despite potential benefits for sectors like resource extraction and tourism, Africa's reliance on these

industries, coupled with existing barriers such as limited digital skills, language diversity, and lag in policymaking, poses significant challenges to AI adoption and its equitable distribution (Bhorat et al., 2023). The current digital skills gap, coupled with a lack of awareness about AI tools, inhibits individuals from accessing and using digital technologies effectively.

To address these challenges, concerted efforts are needed to identify and develop skills which are complementary with AI, enhance digital literacy, raise awareness about AI tools, and develop policies responsive to the fast-paced nature of AI diffusion.

On Competition

The concentration of AI competence and data control in the hands of a few big tech companies poses significant challenges to competition, free agency, and innovation (OECD, 2022). African countries mainly import AI technologies, limiting their ability to influence AI development. Companies that are early adopters of AI technologies may gain significant competitive advantages, making it challenging for late entrants to catch up. The development and deployment of AI systems often require substantial initial investments in technology infrastructure and talent. However, once established, the marginal costs of producing additional units or services may be relatively low. AI-driven platforms and services benefit from economies of scale and scope, enabling larger companies to leverage their vast user bases and data resources to drive innovation and maintain market dominance. AI-powered platforms and networks tend to exhibit strong network effects, where the value of the service increases as more users join the network, reinforcing the dominance of established players. Users and consumers may face significant switching costs when migrating from one AI-powered platform or service to another, further entrenching the market position of dominant players.

AI poses challenges to competition policy, including legal issues, gaps in regulation, and difficulties in detecting anti-competitive practices. In addition, identifying AI-driven anticompetitive behaviour can be difficult, particularly when it occurs autonomously or through complex algorithms. AI-driven decision-making processes can blur the distinction between tacit and explicit collusion, making it difficult for regulators to identify and prosecute anticompetitive behaviour effectively. Additionally, regulators and competition authorities may lack the technical expertise and resources to understand and investigate complex AI systems and algorithms. Finally, detecting and analysing AI-driven anticompetitive behaviour requires specialised tools and methodologies, which may not be readily available or accessible to regulatory agencies in Africa. AI can also be used to predict future human choices and for public surveillance, which empowers the state and tech companies to influence humans to act according to the logic of the state and the logic of the market (Agrawal et al., 2019a).

To address these challenges, comprehensive regulatory frameworks are needed to govern data control and foster fair competition.

On Intellectual Property

The analysis of intellectual property (IP) issues in the context of AI in Africa reveals several critical challenges and bottlenecks. Historically, IP laws in African countries have been shaped by colonial powers and global trade agreements, leading to imbalanced regulations prioritising monopolies over public interest considerations (Saint-Amour, 2010). The complexity of IP regimes, especially copyright and patent laws, exacerbates these challenges. The development and application of AI technologies raise questions about copyright infringement, authorship, and the patentability of AI-generated inventions (Craig, 2022; Ginsburg & Budiardjo, 2019). Furthermore, the opacity of generative AI systems complicates trade secret protection and enforcement. Africa's ill-preparedness to address these issues stems from a lack of literature and legal frameworks tailored to the intersection of AI and IP.

To address these challenges, several recommendations can be considered. Firstly, there is a need for comprehensive reforms of IP laws in African countries to ensure they are balanced and protect the public interest, including through mandatory disclosure of the training data and code of Generative AI when intellectual property concerns arise. Second use of copyright work to train AI must be regulated so that it is permitted only in ways that do not inequitably undercut the livelihoods of authors and artists.

On Trade

The digital divide among African countries hampers the ability of African businesses to fully leverage AI for tasks such as customs procedures, trade facilitation, and supply chain optimisation. Concerns over data ownership and sovereignty and cross-border data flow impact AI trade dynamics in Africa. African countries may seek to protect their data sovereignty and national security interests by imposing restrictions on cross-border data flows and regulating the ownership and use of data generated within their territories (Rixen & Rohlfing, 2007). These measures can affect the transfer and exchange of AI technologies and data-intensive services, potentially limiting opportunities for international trade and collaboration in AI.

African countries also face legal challenges in regulating AI trade, including issues related to the laws that lack contextual relevance and applicability, divergent regulatory approaches among countries, regulatory arbitrage, and the lack of standards harmonisation across countries (Makumbirofa and Banya, 2023). The lack of harmonised regulations across countries complicates cross-border AI trade and creates uncertainty for businesses operating in multiple jurisdictions. Divergent regulatory approaches may also impede the free flow of AI technologies and hinder international cooperation and collaboration in AI development and trade.

Many African countries emphasise the need for transparency in accessing AI source code as a prerequisite for investment or market entry. This is resisted by vendors who claim disclosure is a barrier to international commerce that might slow the spread of AI technology worldwide. Is it more important for African countries to get AI technologies than to regulate them to manage risk and challenge bias?

Cross-border data exchange for AI applications is hindered by a lack of transparency and divergent regulatory frameworks, including varying approaches to privacy and data protection laws. This creates uncertainty and complexity, requiring meticulous compliance efforts and an understanding of diverse legal landscapes. Ethical considerations, such as obtaining explicit consent for data processing and ensuring transparency, further complicate cross-border data exchange. Cybersecurity risks add another layer of challenge, necessitating robust risk management strategies and collaboration among entities engaged in data exchange.

To address these issues, concerted efforts are needed from multiple stakeholders.

On taxation

Taxation plays a crucial role in state formation and resource mobilisation. The state-building role of taxation can be seen across two principal areas: the rise of a social contract based on bargaining around tax, and the institution-building stimulus provided by the revenue imperative. Progress in the first area can foster representative democracy, and progress in the second area strengthens state capacity (Bräutigam, 2009). Traditionally, however, there have been low levels of tax collection in Africa. In comparison with countries in the Global North, most African governments are able to collect approximately 15% of their GDP in taxes (Nepad, 2022). Factors contributing to this include a small taxable base, a large informal sector, and poor tax administration.

However, as digital technology is gaining momentum on the continent, tax authorities are increasingly adopting and using technology solutions to improve their core functions and efficiently collect revenues in their countries. Technology can potentially improve tax collection in three areas: identifying the tax base, monitoring compliance, and facilitating compliance (World Bank, 2023). Artificial Intelligence is one such technology that is increasingly being adopted and used by tax administrators. Challenges of adoption and use arise from the availability, quality, and usability of data, as well as the lack of skilled personnel to manage AI systems. These issues hinder the effective implementation of AI in tax administration.

To address these challenges, concerted efforts are needed from various stakeholders. Governments should prioritise investment in digital infrastructure and capacity building to improve data quality and enhance the readiness of tax administrators to adopt AI technologies.

Key Recommendations

To build a resilient labour market:

The International Labour Organisation (ILO) should include in its outputs an annual taxonomy of jobs in the context of, with jobs linked to specific tasks classified as either complementary, neutral, or substitutable to AI. National governments should then conduct regular skills audits using a task-based approach and link this with the ILO job taxonomy to allow assessments of key risks of job displacement and opportunities for AI to boost productivity and employment. This will allow for estimations of the labour market impacts of AI and identification of skills development interventions which will reduce employment losses and maximise employment gains, thus ensuring that AI has an overall positive impact on the labour force.

To foster a fair and competitive market environment

The African Union (AU) should encourage collaborative and coordinated regulatory approaches among African nations to address challenges posed by AI in competition. African regulators should actively participate in global governance efforts so that global AI governance frameworks consider the unique needs and challenges of different regions while working towards shared principles and standards for the responsible and ethical use of AI technology worldwide. At the same time, African Competition Authorities should foster cross-border collaboration among competition authorities to address AI-related challenges.

To enable a robust intellectual property regime

Copyright legislation must be amended to make use of copyright materials in generative AI into account. Copyright law must clarify copyright in which circumstances using of copyright material for training AI models is permitted with appropriate restrictions. Legislation should also explicitly exclude AI outputs from copyright, AI productions must be marked, and data and code used to produce generative AI output used in every copyright translation and court proceeding. Similarly, patent law to must explicitly require disclosure of AI use in generating patent claims.

To safeguard privacy

The legislature must pass or update personal data protection laws and create well-resourced, independent regulators for data and competition. Legislation must grant affected humans the right to be informed about and to challenge automated decisions, with decisions on challenges made by humans with full power to reverse such decisions.

To ensure accountability for harms

Liability rules must be adopted by courts in common law countries and legislatures elsewhere to ensure that AI service providers are liable for harms caused by AI models, and that contractual terms excluding liability for AI systems are void, and AI algorithms controlling systems with potential harm are disclosed.

To create a harmonised digital single market for trade

The AU and AfCFTA must encourage regional collaboration on AI-related trade policies to develop harmonised regulatory frameworks. African trade policymakers should develop policies promoting balanced data partnerships to prevent data exploitation and foster mutually beneficial collaborations. In addition, trade terms should not prevent African countries from requiring AI software source code disclosure.

To promote efficient resource mobilisation

Tax Administrators from across the continent with support from entities such as the African Tax Administration Forum (ATAF) must design policies that standardise data access and usage formats, to streamline the collection and protection of tax administration data. African Tax Administrators should modernise tax systems through technology adoption, skills enhancement and institutional capacity building.

To ensure fair and just equity

Efforts are needed to increase digital inclusion in Africa, mainly focusing on marginalised groups, to ensure their visibility in databases feeding into AI systems. This calls for nationally-representative demand-side data, to gain a thorough understanding of the digital access barriers within a particular country and how these barriers differ across different population segments, something which is currently sparse on the African continent. Utilising a proportion of Domain Name Server registration fees to fund the collection of demand-side data would offer a solution to fund such studies. Even just 1% of subscription fees would go a long way to collecting this data and allow countries to identify and address digital inequalities within their countries. As the contribution to fees would then be linked to access levels, the process would be progressive in that the most advanced economies would contribute most on a per capita basis.

Overall, economic policy must create an enabling environment that is both risk-mitigating and opportunity-creating for AI adoption to benefit all Africans. In conclusion, the discourse surrounding the state's role in shaping the emerging landscape of AI in Africa and the implications of data value within this context underscores the critical importance of policy frameworks and institutional mechanisms in fostering inclusive and sustainable economic development.

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Authors:

This brief was prepared by Sandra Makumbirofa, Andrew Rens, Andrew Partridge and Roland Banya. Correspondence may be addressed to smakumbirofa@researchictafrica.net

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Research ICT Africa
Workshop 17 | 17 Dock Road | V&A Waterfront | Cape Town, 8001 | South Africa
T: +27 21 447 6332409