6. Reflections on South Africa's AI Industrial Policy

by Sandra Makumbirofa

South Africa's positioning on industrial policy for the technology and AI sector is best understood within its broader economic history. Economic policy in SA has included an explicit commitment to rectifying historical injustices and, as such, a natural comfort with inclusive industrial policies as a means toward equitable development. The translation of this intention to reality has, however, been mixed, as I explore in the context of the technology sector.

The Recent History of the Tech Boom in South Africa

South Africa is classified as an upper-middle-income or emerging economy. As an emerging economy, innovation and technology are characterized by a framework that aims to "catch up" to standards set in developed countries. In terms of tech

ranking, South Africa is ranked seventy-fourth out of 134 countries on the Network Readiness Index[441] (following Kenya, which leads the region at seventieth), and seventy-seventh out of 193 countries in the 2023 AI Readiness Index[442] (after Mauritius at sixty-first, leading the region, and Egypt at sixty-second). Rankings have played a particularly influential role in shaping both how government narratives project South Africa's position and influencing capital flows into the region. However, standards such as these often flatten or disregard the nuanced domestic strides, challenges, and details that explain the country's growth trajectory. Moreover, the standards and frameworks employed in these rankings are not neutral, but reflect the perspectives and interests of the countries and institutions setting them. As such, rankings should be contested as they may not capture the multifaceted aspects of a given situation.

South Africa has firmly established itself as a prominent tech hub, with cities like Cape Town and Johannesburg emerging as key players in the startup landscape. Notably, startup funding in South Africa experienced significant growth, skyrocketing from $50 million in 2015 to nearly $350 million in 2021.[443] South Africa's status as a regional tech hub comes in part from the fact that big tech companies such as IBM, Cisco, Microsoft, Amazon, and others have established subsidiaries in the country, making it a supply base for their services and infrastructure for other African countries.[444] Google brought its first cloud region into Africa in South Africa in 2022.[445] Though Kenya, Nigeria, and Egypt frequently outpace South Africa in terms of securing funding for ventures, a noteworthy surge in startup funding nevertheless points to its attractiveness for investors, reflecting both the country's relatively developed economy and its strategic government policies.[446] The technological evolution has led to South Africa's foray into AI efforts, which have risen in recent years. In essence, the history of the tech boom in South Africa reflects a complex interplay between government initiatives and private-sector dynamism.

441 Portulans Institute, "South Africa – Network Readiness Index," 2023, https://networkreadinessindex.org/country/south-africa.
442 Oxford Insights, "Government AI Readiness Index," Oxford Insights, 2023, https://oxfordinsights.com/ai-readiness/ai-readiness-index.
443 Nafisa Akabor, "The Rise of African Tech Hubs: How They Are Becoming the Silicon Valleys of the Continent," CNBC Africa, November 2, 2023, https://www.cnbcafrica.com/2023/the-rise-of-african-tech-hubs-how-they-are-becoming-the-silicon-valleys-of-the-continent.
444 International Trade Administration, "South Africa Country Commercial Guide: Information Technology," 2024, https://www.trade.gov/knowledge-product/south-africa-information-technology.
445 Annie Njanja and Tage Kene-Okafor, "Google Picks South Africa for Its First Cloud Region in Africa," TechCrunch (blog), October 5, 2022, https://techcrunch.com/2022/10/05/google-picks-south-africa-for-its-first-cloud-region-in-africa.
446 Akabor, "The Rise of African Tech Hubs."

Overall, on the African continent, South Africa dominates the digital sector, with one of the largest markets in Africa. The telecommunications sector grew dramatically as a result of market liberalization, universal access, and deliberate government policies such as the Broad-Based Black Economic Empowerment (BBBEE) ICT Code.[447] The government's flagship BBBEE[448] policy was originally introduced in 2003 to promote a new class of Black-led businesses and investors. The BBBEE policy had set out a specific code dedicated to the technology and telecommunication (also known as the "Information and Communications Technology" or ICT) sector; in 2016, the government amended[449] the BBBEE ICT code to increase the minimum prescribed equity to be held by Black people from 25 percent to 30 percent. Overall, however, BBBEE has been critiqued for superficial results. For instance, gaps[450] in the legal requirements of enforcement allowed companies to achieve a good BBBEE rating (crucial in accessing financing and incentives) without real transformation in their leadership structures. In addition, concerns remain about the concentration of benefits[451] in wealthier Black households, and the reluctance to comply on the part of companies that do not directly conduct business with the government.

South Africa's decision to deregulate the telecommunications sector in the mid-1990s was a significant juncture in the country's economic development. Liberalization attracted[452] private investments, and the government's policies aimed at achieving universal access and infrastructure development paved the way for South Africa to be one of the regional tech hubs in Africa. Yet even as private enterprise flourished, relative to other regions in Africa, empirical evidence shows[453] that the digital divide persists for ordinary people with very limited computer ownership and digital skills, and that most digital consumption activities are restricted to social interactions and entertainment. In other words, most South Africans use the internet more for social media and watching movies than for business activities or facilitating engagement with their government.

[447] South African Government, "Information Communications Technology (ICT) Policy Colloquium Discussion Document," *South African Government National Gazette* 562, no. 35255 (April 13, 2012): 119.
[448] South African Government, "Broad-Based Black Economic Empowerment Act 53 of 2003," 2004, https://www.gov.za/documents/broad-based-black-economic-empowerment-act.
[449] BBBEE Commission, "B-BBEE ICT Sector," December 2017, https://bbbeecommission.co.za/wp-content/uploads/2017/12/B-BBEE-ICT-SECTOR-a.pdf.
[450] Jeannine van de Rheede, "Black Economic Empowerment in South Africa: Is Transformation of the Management Structures of Enterprises as Essential as It Should Be?," *Law, Democracy and Development* 26 (2022): 84–105, https://doi.org/10.17159/2077-4907/2021/ldd.v26.4.
[451] Neva Makgetla, "The Impact and Outcomes of BBBEE: A Preliminary Assessment," Trade and Industrial Policy Strategies, January 2021, https://www.tips.org.za/research-archive/trade-and-industry/economic-regulation/item/download/1999_7b2101d4b51883615939c16bbc55086b.
[452] Ewan Sutherland, "Telecommunications in South Africa: Enforcement of Competition," *SSRN Electronic Journal*, 2021, https://doi.org/10.2139/ssrn.1988136.
[453] Andrew Partridge, "Digital Inequalities in the Post-Pandemic Recovery: The Case of South Africa," November 3, 2023, https://researchictafrica.net/publication/digital-inequalities-in-the-post-pandemic-recovery-the-case-of-south-africa.

Current Government AI Initiatives and Narratives

The South African government has undertaken several initiatives in AI in the tradition of other industrial policy efforts.[454] These initiatives are characterized by a concerted effort to foster innovation, address socioeconomic challenges, and position the country competitively in the global digital landscape.

The South African government has been invested in positioning the country as a globally competitive player in tech. In 2019, the government established the Presidential Commission on the Fourth Industrial Revolution (PC4IR).[455] The PC4IR is structured to provide guidance to the President and the government regarding policies, strategies, and action plans emphasizing attributes such as intelligence, connectivity, and competitiveness. This marked a proactive step toward positioning South Africa as a globally competitive player, emphasizing inclusivity (regarding race, gender, disability, and poverty) and technological capabilities (though quotas are not explicitly mentioned), even in the face of significant skilled professionals needed for 4IR, infrastructure limitations, and historical governance issues. In December 2023, President Cyril Ramaphosa committed to investing $53 million (and up to $265 million by 2030 from pooling resources with the private sector) toward PhD programs focused on bringing "critical skills in areas like artificial intelligence research, advanced biotechnology, fuel cell development, batteries and other storage, and next-generation mining."[456] This comes against the backdrop of the misappropriation of public funds, with numerous cases of corruption in procurement currently under investigation.[457] In 2018, it was estimated that R27 billion, equivalent to about$1.4 billion, is believed to have been lost due to corrupt practices.[458]

On AI, the PC4IR warned that the industry was "seriously underperforming" relative to other high-tech sectors. The narrative also signals the idea of South Africa as a hub for regional leadership when it notes that the focus will be on identifying opportunities consistent with an "Africa-centric strategy for the future." The

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[454] South African Government, "Presidential Commission on Fourth Industrial Revolution: Members and Terms of Reference" 646, no. 42388 (April 9, 2019): 12.

[455] Ibid.

[456] Munyaradzi Makoni, "Cyril Ramaphosa Unveils R1bn PhD Initiative," Research Professional News (blog), December 14, 2023, https://www.researchprofessionalnews.com/rr-news-africa-south-2023-12-south-africa-s-president-unveils-r1bn-phd-initiative.

[457] Zukiswa Kota, "South Africa's Corruption Busters: Short-Changed on Funding and Political Commitment," *Conversation*, December 8, 2021, http://theconversation.com/south-africas-corruption-busters-short-changed-on-funding-and-political-commitment-173072.

[458] Busisiwe Radebe, "Corruption Costs SA's GDP R27 Billion Annually," SABC News, June 29, 2018, https://www.sabcnews.com/sabcnews/corruption-costs-sas-gdp-r27-billion-annually.

PC4IR's Strategic Implementation Plan, responding to this diagnosis of underperforming high-tech sectors, recommended the establishment of a national AI institute.

True to this commitment, the AI Institute of South Africa (AIISA) was established (though only after three years) in 2022 with the overarching goal of cultivating a national and internationally recognized AI ecosystem that would foster research and technological advancements in the field of AI within Africa. The Institute explicitly outlined its focus on research and development, coupled with the practical implementation of AI capabilities. One of its stated objectives was to formulate an all-inclusive AI strategy for South Africa, suggesting a comprehensive approach that integrates diverse, ethical, and legal perspectives in shaping the country's path in AI development.

The Department of Communication and Digital Technologies, reporting to the Minister of Communications and Digital Technologies, plays a central role in spearheading these initiatives, collaborating with both public- and private-sector stakeholders. The Department of Science and Innovation (DSI), the Council for Scientific and Industrial Research (CSIR), the Technology Innovation Agency (TIA), and the Industrial Development Corporation (IDC) play a crucial role in advancing emerging technology development, uptake, and upscaling in South Africa. These agencies have been instrumental in funding research and commercialization efforts and providing guidance in technology development. However, business financing is still a significant concern due to poor coordination, unclear funding information, and complex application requirements.[459] Weak links between research organizations and the private sector hinder innovation despite expectations from agencies like the DSI and CSIR. Business support services have low awareness and quality, and policy coordination within the public sector faces challenges such as corruption and mismanagement.[460]

While there is an acknowledgement of the importance of considering the interests of all participants, particularly SMEs and marginalized groups, the implementation in practice appears questionable. Tangible efforts to create an equitable environment are not consistently evident beyond participation in forums and meetings. This could impede the envisioned extensive engagement and

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[459] Rachel Alexander, "Assessing the Ability of the National Innovation System of South Africa to Facilitate the Fourth Industrial Revolution," SARChI Industrial Development, SARChI Industrial Development Working Paper Series, September 2021.
[460] Ibid.

participation, posing challenges to the overall effectiveness and sustainability of collaborative outcomes.

Nevertheless, inclusivity has been emphasized by the promotion of public-private partnerships, as recommended in the PC4IR, and the country's tech history, which involved a mix of private-sector investment and state efforts to create an environment conducive to technological advancements. Private companies, both domestic and international, have made substantial investments in South Africa's tech infrastructure.[461] Initiatives such as data centers, AI research, and educational programs have been launched by companies like Equinix, Google, and Vantage Data Centers.[462]

South Africa's National AI Institute: Industries of Focus

The key players driving the AI Institute of South Africa are its three cofounders: the Department of Communication and Digital Technologies (part of the Ministry of Communications and Digital Technologies), the University of Johannesburg, and Tshwane University of Technology (TUT). The University of Johannesburg and TUT hubs' stated goals are driving strategic AI projects in mining, government cloud (including upskilling and reskilling public servants in AI and digital skills), and motor industry infrastructure; AI Biometric Systems (to streamline the processing of tourist and business visas through the utilization of contemporary and secure identity authentication systems); criminal justice system development (to streamline the value chain and document management processes within the criminal justice system.); farming and food production; and healthcare and coal renewables that will convert coal to renewable energy. Investing in AI biometrics and the criminal justice system raises concerning implications, especially in the contentious domains of biometrics and criminal justice. The deployment of such technology will require careful consideration of ethical concerns, privacy issues, and potential biases to ensure responsible and fair use in these critical areas.

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[461] International Trade Administration, "South Africa Country Commercial Guide: Information Technology," 2024, https://www.trade.gov/knowledge-product/south-africa-information-technology.
[462] Kelello Mashiane and Rethabile Molala, "Foreign Direct Investment Tracker: Fourth Quarter 2022," Trade and Industrial Policy Strategies, accessed January 16, 2024, https://www.tips.org.za/manufacturing-data/fdi-tracker/item/4543-fdi-tracker-q4-2022.

In the government's narrative, collectively these projects are aligned with its broader economic policy focus, as it envisions AI as a catalyst for job creation, skills development, and enhanced global competitiveness. However, no substantive evidence reports detailed information on use cases, budgets, or progress on these objectives. In addition, the PC4IR Strategic Implementation Plan does not address how the government plans to use emerging technologies to solve pertinent and long-standing social issues in South Africa, including crime, high unemployment, inequality, and unreliable electricity supply.

As South Africa heads toward a general election in 2024, the role of AI and technology in the political landscape cannot be overstated. The government's focus on tech initiatives serves to burnish its reputation and public image, and may be influenced by a desire to project a modern and technologically advanced service delivery. In response to persistent corruption concerns, in his annual African National Congress (ANC) statement in January 2023, Ramaphosa advocated using technology, including AI, to enhance transparency and accountability in government procurement processes. This also comes against the backdrop of several calls from the Democratic Alliance (DA) opposition party to cut the public-sector employment rolls. While the emphasis on technology might be considered part of a broader economic strategy, its effectiveness in addressing the country's pressing issues, such as high unemployment and racial inequality, requires careful scrutiny and remains untested.

Capacity Building for Public Servants

A look at the selection of projects that the AIISA is focusing on shows a heavy emphasis on capacity-building for public servants. This means enhancing their competencies, training, and overall capabilities to perform their duties effectively and efficiently. One could argue that this emphasis on capacity-building serves multiple purposes, some extending beyond the immediate realm of technology and skills development.

On one hand, the government frames its commitment to building AI capabilities within the public sector as an effort to modernize governance, improve service delivery, and enhance operational efficiency. Given the transformative potential often assigned to AI technologies, investing in the technological skills of

government employees aligns with global trends and the evolving nature of public administration.

On the other hand, one could interpret this emphasis on capacity-building as a strategic move to deflect attention from the opposition party, the Democratic Alliance,[463] from making calls for budget cuts and perceived failures in service delivery. By showcasing a commitment to technological advancement, the government may seek to shift the narrative away from criticisms of its performance in traditional service areas. It is therefore essential to note that overreliance on AI without addressing fundamental institutional issues of mismanagement and misallocations of funds, inadequate service delivery, or neglecting ethical considerations may not only fail to solve these issues, but may even exacerbate current economic and social challenges, as we'll see in the next section.

Considerations for Equity and Justice in South Africa's Tech Industrial Policy

The various AI initiatives across national, provincial, and local levels are not without potential unintended consequences, and they often showcase a top-down approach. Given the limited evidence of progress, questions arise about the true inclusion and representation of South Africa's diverse population in these endeavors. The dominance of white[464] male founders in the industry has sparked concerns about the further concentration of wealth in long-privileged groups emanating from apartheid. While the private sector has in the past driven innovation and investment in some areas of the economy,[465] questions linger about the equitable distribution of opportunities, particularly considering the historical context of apartheid.[466]

Furthermore, the emphasis on AI-driven economic growth may inadvertently exacerbate existing social disparities, particularly in terms of access to education and employment opportunities. South African learners exhibit myriad challenges,[467]

[463] Leon Schreiber, "DA Three-Step Guide to Solving the Public Sector Wage Impasse," Democratic Alliance, May 4, 2021, https://www.da.org.za/2021/05/da-three-step-guide-to-solving-the-public-sector-wage-impasse.
[464] Ventureburn, "Infographic: The 2018 Ventureburn Tech Startup Survey," 2018, https://ventureburn.com/2018/11/infographic-2018-ventureburn-survey.
[465] Philip Joubert, "State of South Africa's Software Developer Nation 2023," OfferZen, 2023, https://www.offerzen.com/reports/software-developer-south-africa-2023.
[466] Andreoni et al., eds., *Structural Transformation in South Africa*.
[467] Bongiwe Mbinqo-Gigaba, "Capacity Building of STEM Educators: DBE Briefing; with Minister & Deputy Minister," March 7, 2023, https://pmg.org.za/committee-meeting/36485.

especially in STEM subjects like mathematics and the physical sciences. Official records show that in the 2022 national exams, only 55 percent passed mathematics at the minimum threshold of 30 percent, with 37.8 percent achieving 50 percent or above. Similarly, only 35.3 percent attained 50 percent or more in the physical sciences. These low performance levels raise serious concerns about the workforce's preparedness for tech careers. To achieve the government's goal of positioning South Africa as a regional tech hub, addressing these educational challenges is imperative. An appropriately educated and gainfully skilled workforce is essential for the success of any tech hub, highlighting the urgent need for improvements in STEM education and appropriate upskilling that produces an internationally competitive workforce.

The digital divide, where rural areas face infrastructure limitations and limited intercity connectivity, remains a pertinent issue and creates a price-sensitive market that requires affordable services. The risk of reinforcing well-documented biases in AI algorithms,[468] if not meticulously addressed, poses profound ethical concerns. Foreign AI-focused companies use technologies trained on data that is not representative[469] of the African context.[470] Furthermore, the reliance on international collaborations may inadvertently lead to a dependence on external expertise, potentially hindering the development of a robust, locally driven AI ecosystem, a situation that already exists in many other industries across the African continent. Striking a balance between leveraging global knowledge and ensuring local autonomy is a critical consideration for the South African government.

Academic institutions, such as the University of Johannesburg and the Tshwane University of Technology, actively engage in AI research and development, driven by motivations ranging from becoming "a leading AI hub in Africa"[471] to supporting small and medium enterprises through enhancing their digital skills. However, there is a lack of defined metrics to assess how the nation intends to accomplish this objective. The apparent lack of emphasis on tailoring AI solutions to address local challenges and leaving the digital divide unaddressed raises questions about how aligned current academic efforts are with the broader socioeconomic landscape.

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[468] Jade Abbott, Dossou Bonaventure, and Mbuya Rooweither, "Comparing Africa-Centric Models to OpenAI's GPT3.5," Lelapa AI, February 9, 2023, https://lelapa.ai/comparing-africa-centric-models-to-openais-gpt3-5-2.
[469] Arthur Gwagwa et al., "Artificial Intelligence (AI) Deployments in Africa : Benefits, Challenges and Policy Dimensions," *African Journal of Information and Communication* no. 26 (December 2020): 3–30, https://doi.org/10.23962/10539/30361.
[470] Abbott, Bonaventure, and Rooweither, "Comparing Africa-Centric Models to OpenAI's GPT3.5."
[471] University of Johannesburg, "UJ Set to Advance as the Hub of Artificial Intelligence in South Africa," *University of Johannesburg News*, January 16, 2018, https://news.uj.ac.za/news/uj-set-to-advance-as-the-hub-of-artificial-intelligence-in-south-africa-2.

Finally, global tech companies like Equinix, Google, and Vantage Data Centers are making substantial investments in AI infrastructure in South Africa.[472] Equinix alone is investing $160 million in a local data center; in 2022, Google promised to establish a new Google Cloud region (no investment numbers were announced at the time). This influx of foreign investments raises concerns about the control and influence exerted by foreign companies, in the process monopolizing a nascent industry and potentially shaping the tech landscape according to global, rather than domestic, priorities.

The South African government's initiatives around AI reflect both a strategic alignment with broader economic policy objectives and a response to critiques of its past performance. The deliberate targeting of specific AI projects that the government is promoting through the AI Institute, the collaboration with diverse stakeholders, and the emphasis on innovation are an indication of the government's desire to make the country both a target for investment and a regional hub in the burgeoning AI infrastructure industry. However, unintended consequences, such as the potential to exacerbate social disparities and continued external dependencies, highlight the necessity for vigilance around democratic governance,[473] inclusion and empowerment of civil society in this process, and ethical considerations in the pursuit of the government's goal.

A Look at the Effectiveness of Government Efforts

The disconnect between the initiation and scale-up of AI initiatives in South Africa is a multifaceted challenge encompassing several critical factors. The foremost impediment lies in resource constraints,[474] primarily limited funding. Many pioneering AI pilot projects encounter difficulties securing the financial backing necessary for the expansive infrastructure, comprehensive testing, and sustained development needed for scaling.[475] For example, evidence from a study conducted

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[472] Kelello Mashiane and Rethabile Molala, "Foreign Direct Investment Tracker: Fourth Quarter 2022," (Trade and Industrial Policy Strategies, accessed January 16, 2024, https://www.tips.org.za/manufacturing-data/fdi-tracker/item/4543-fdi-tracker-q4-2022.

[473] Research ICT Africa, "Online Consultation: What Will a Just Global Digital Compact Look Like for Africa?," April 3, 2023, https://researchictafrica.net/2023/04/03/online-consultation-what-will-a-just-global-digital-compact-look-like-for-africa.

[474] Emile Ormond, "Artificial Intelligence in South Africa Comes with Special Dilemmas – plus the Usual Risks," *Conversation*, January 27, 2023, http://theconversation.com/artificial-intelligence-in-south-africa-comes-with-special-dilemmas-plus-the-usual-risks-194277.

[475] Joubert, "State of South Africa's Software Developer Nation 2023."

by the University of Johannesburg[476] showed that though there are various incentives and funding initiatives from different government entities to support agri-industrial development, advancements in health and mining, encompassing funding for startups, trials, prototyping, and infrastructure, anecdotal insights show that there is a significant gap in funding at the commercialization stage, potentially hindering the development of technologies within the country. This has also led to instances where technologies developed in South Africa were sold, implemented, and profited from by foreign companies, as was the case with a desalination technology adopted by Israeli companies.[477] This suggests that while funding initiatives are reported, there is a critical gap in funding support for the crucial commercialization phase, impacting the potential success of AI technology businesses in South Africa.

This funding shortfall at such a critical stage not only curtails the reach of these projects, but also impedes their potential impact on the broader socioeconomic landscape. Another pivotal factor contributing to this disconnect is the prevalent skills gap, specifically the scarcity of a skilled workforce proficient in AI and related fields. Bridging this gap necessitates the establishment of robust programs for skills development, education, and training both within academic institutions and the existing workforce.

Finally, the aforementioned inadequate technological infrastructure, particularly in remote or underserved areas, poses a substantial hindrance to the deployment and scalability of AI solutions. To put it simply, the paucity of reliable infrastructure hampers the accessibility of AI technologies to broader population segments, exacerbating existing disparities. As I'll explore in the next section, the uncertain regulatory environment compounds these challenges, with the absence of clear and supportive frameworks for AI technologies creating an atmosphere of uncertainty. This regulatory ambiguity not only inhibits substantial investment, but also dampens the enthusiasm of organizations to scale up their initial pilot projects.

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[476] UJ-TRCTI, "Emerging Technologies in South Africa: A Landscape Analysis," University of Johannesburg, June 3, 2022, https://www.uj.ac.za/wp-content/uploads/2022/02/uj-emtech-digital.pdf.
[477] Ibid.

Regulatory Guardrails (or Lack Thereof) For AI

While the government's focus on inclusive policies and localization aligns with historical industrial policy goals, this has not been paired with a comprehensive policy position on AI governance. This raises concerns about potential oversight in addressing the multifaceted risks associated with AI technologies. The government's historical emphasis on self-sufficiency and economic growth seems to extend to cutting-edge technologies.[478] In addition, the government's apparent reluctance to formulate a comprehensive AI policy risks prioritizing short-term innovation over long-term risk mitigation. This suggests that the government, in its pursuit of technological advancement and economic growth, might be inclined to embrace the benefits of AI without adequately addressing the associated risks and ethical considerations.

The minimal mention of AI in policy documents, fleeting references in government engagements, and the absence of dedicated AI policy initiatives could be interpreted as either an oversight or a deliberate choice to downplay the multifaceted risks associated with AI technologies. The acknowledgement by government ministers[479] of the lack of AI regulation, coupled with concerns about how the country can regulate AI without a clear policy position, underscores a potential gap in the government's strategic planning. While South Africa has personal data protection, intellectual property, and copyright laws, all of which could be applied to the tech industry, these regulations might not be sufficiently adapted to address the nuances of novel AI applications. The need for legislative changes to ensure holistic protection for data subjects highlights a regulatory lag, potentially leaving individuals vulnerable to privacy infringements and various forms of harms resulting from the unbridled use of AI. Until the government legislates clear policy on the use and deployment of AI, this will continue to be an issue.

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[478] Andreoni et al., eds., *Structural Transformation in South Africa*.
[479] South African Government, "Minister Khumbudzo Ntshavheni: Artificial Intelligence Regulation While Encouraging Innovation," November 4, 2021, https://www.gov.za/news/speeches/minister-khumbudzo-ntshavheni-artificial-intelligence-regulation-while-encouraging.

It is essential to note the Competition Commission's Online Intermediation Platforms Market Inquiry,[480] initiated in 2021 due to concerns that certain features of these platforms, including e-commerce, online travel agencies, food delivery, app stores, and property/automotive classifieds, were hindering competition in South Africa. The Commission aimed to promote the participation of small and medium enterprises (SMEs) and historically disadvantaged persons (HDPs) in these markets, and it concluded its market inquiry in July 2023 with enforceable remedies these platforms must adhere to. These remedies are the first in the African context to confront the power of Big Tech. They range from disallowing platforms such as Google to self-preference their products over smaller South African platforms, to Booking.com ceasing narrow price parity practices. Following this announcement, Google quickly announced a partnership with SA's tourism department to improve travel directories online.[481]

The Commission also encourages the government to prioritize the development and implementation of comprehensive AI governance policies to ensure ethical AI practices, protect privacy, and address biases.[482]

Conclusion

South Africa's historic industrial policy outcomes acknowledge the limitations of orthodox economic reforms and aims for a more integrated approach. However, the slow mobilization of support instruments and policy alignment continue to hobble efforts toward this desired approach.

As South Africa navigates the growth of AI technologies, its context and history emphasize that critical considerations must include addressing historical imbalances, fostering diversity, bridging the digital divide, and formulating comprehensive AI governance policies. Given the capital-intensive nature of these endeavors and the stated development goals, South Africa requires the collaboration and convergence of public- and private-sector efforts to shape its

[480] James Hodge et al., "Online Intermediation Platforms Market Inquiry: Summary of Final Report Findings and Remedial Actions," Competition Commission, July 2023, https://www.compcom.co.za/wp-content/uploads/2023/07/CC_OIPMI-Summary-of-Findings-and-Remedial-action.pdf.

[481] Selene Brophy, "Google Partners with South Africa to Fix Unfair Search Results for Small Travel Operators," Skift, November 14, 2023, https://skift.com/2023/11/14/google-partners-with-south-africa-to-fix-unfair-search-results-for-small-travel-operators.

[482] Nqobile Dludla, "South Africa to Probe Meta, Google Competition with News Publishers," Reuters, October 17, 2023, https://www.reuters.com/world/africa/south-africa-probe-meta-google-competition-with-news-publishers-2023-10-1.

future technological trajectory. Still, only vigilant attention to inclusive development and risk management will ensure sustainable and equitable growth.

Neva Makgetla has eloquently emphasized the need to "decolonise industrial policy."[483] Investment in the improvement and expansion of technological infrastructure, particularly in underserved regions, is paramount to ensuring its equitable access and scalability. This entails targeted and sustained efforts to enhance technological accessibility in remote areas and mitigate existing disparities. Additionally, achieving regulatory clarity through establishing clear and supportive guidelines is imperative and urgent. A transparent regulatory environment that centers equity, democracy, and "a growing, deconcentrated and inclusive economy"[484] instills confidence in society and its citizens, and eventually in investors and organizations seeking to scale their AI projects, fostering an environment conducive to sustained development.

So far, AI policy in South Africa has focused on limited government initiatives and some targeted research efforts (such as the Artificial Intelligence Institute of South Africa). Yet there is an urgent need for increased financial support, with the encouragement of both public- and private-sector investment in AI projects. Financial incentives and grants can play a pivotal role in facilitating the scaling of successful pilot technologies, fostering an environment conducive to innovation.

Ethical concerns surrounding bias and discrimination, particularly in datasets used for AI technologies, demand critical attention. The perpetuation of existing social biases through biased datasets poses significant ethical challenges, potentially reinforcing societal inequities.[485] Privacy concerns related to the collection and use of personal data in AI applications add another layer of complexity.[486] Striking a delicate balance between innovation and safeguarding individual privacy is a paramount challenge in the evolving AI landscape. Additionally, the proliferation of digital innovations increases the risk of cybersecurity threats and breaches.[487] Ensuring the robust security of AI systems becomes imperative to safeguard

[483] Neva Makgetla, "Industrial Policy and The COVID-19 Pandemic: The South African Experience," ECIDC Project Paper (UNCTAD, April 2022), https://unctad.org/system/files/official-document/BRI-Project_RP26_en.pdf.

[484] The Competition Commission (website), accessed February 13, 2024, https://www.compcom.co.za.

[485] University of Johannesburg, "UJ Set to Advance as the Hub of Artificial Intelligence in South Africa," *University of Johannesburg News*, January 16, 2018, https://news.uj.ac.za/news/uj-set-to-advance-as-the-hub-of-artificial-intelligence-in-south-africa-2.

[486] Amba Kak, "Remarks from AI Now ED Amba Kak on Day 2 of the UK AI Safety Summit," AI Now Institute (blog), November 2, 2023, https://ainowinstitute.org/publication/remarks-from-ai-now-ed-amba-kak-on-day-2-of-the-uk-ai-safety-summit.

[487] Heloise Pieterse, "The Cyber Threat Landscape in South Africa: A 10-Year Review," *African Journal of Information and Communication* 28 (2021): 1–21, https://doi.org/10.23962/10539/32213.

against malicious activities that could compromise the integrity and functionality of these technologies.

Finally, the need for government regulation cannot be overstated. Clearly setting out an AI policy that enshrines democratic governance of emerging technologies, promotes inclusion, and protects privacy should be a priority.