AUDA-NEPAD ARTIFICIAL INTELLIGENCE ROADMAP FOR AFRICA: CONTRIBUTING TOWARDS A CONTINENTAL AU STRATEGY ON AI

2024 – 2033

Draft 1.0

ABOUT THE AU AND AUDA-NEPAD

THE AFRICAN UNION (AU)

The African Union (AU) is a continental body consisting of all 55 countries on the African continent. It was established on 26th May 2001 in Addis Ababa, Ethiopia, and launched on 9th July 2002 in South Africa, to replace the Organisation of African Unity (OAU). The AU was formed following the 9th September 1999 Sirte Declaration of the Heads of State and Governments of the Organisation of the African Unity (OAU). The most important decisions of the AU are made by the Assembly of the African Union, a semi-annual meeting of the Heads of State and Governments of its Member States. The AU's secretariat, the African Union Commission, is based in Addis Ababa, Ethiopia. The AU is based on a common vision of a united and strong Africa and on the need to build a partnership between governments and all segments of civil society, in particular women, youth, and the private sector, to strengthen solidarity and cohesion amongst the peoples of Africa. As a continental organisation, it focuses on the promotion of peace, security, and stability. The development work of the AU is guided by the AU Agenda 2063, which is a 50-year plan to harness Africa's comparative advantage to deliver on the vision of "The Africa We Want".

THE AFRICAN UNION DEVELOPMENT AGENCY (AUDA-NEPAD)

The African Union Development Agency (AUDA-NEPAD) is a strategic framework for pan-African socio-economic development. AUDA-NEPAD is spearheaded by African leaders to address critical challenges facing the continent including poverty, development, and Africa's international marginalization. AUDA-NEPAD provides unique opportunities for African countries to take full control of their development agendas, work more closely together and cooperate more effectively with international partners.

AUDA-NEPAD was preceded by the NEPAD Planning and Coordinating Agency (AUDA-NEPAD) which was formed in February 2010 as an outcome of the integration of NEPAD into the AU's structures and processes. AUDA-NEPAD manages several programmes and projects in four main investment portfolios: Natural Resources Governance; Youth and Skills Development; Regional Integration; Infrastructure and Trade; and Industrialization, Science, Technology, and Innovation. About the AU and AUDA-NEPAD

THE AFRICAN UNION HIGH-LEVEL PANEL ON EMERGING TECHNOLOGIES (APET)

The initial Specialised Technical Committee on Education, Science, and Technology (STC-ESTI) called upon the AU Commission and AUDA-NEPAD to guide Member States and RECs regarding technology prospecting, including the necessary regulatory and ethical requirements for Africa to benefit from emerging technologies. The committee mandated the NEPAD Agency to launch a system that would facilitate expert input on technology development, acquisition, and deployment to drive socio-economic growth.

In December 2016, the Chairperson of the African Union Commission, H.E. Dr Nkosazana Dlamini Zuma, appointed a group of ten experts from diverse backgrounds to serve on the African Union High-Level Panel on Emerging Technologies (APET). This panel's primary objective was to harness existing and emerging technologies for Africa's economic advancement. The panel members, who represent a variety of professional fields, provide evidence-based analyses and recommendations to guide policy decisions at continental, regional, and national levels about the utilisation of existing and emerging technologies.

Currently chaired by Prof Yaye Kène Gassama, the High-Level Panel comprises nine leading experts who represent gender and geographical diversity. The panel includes esteemed individuals such as Prof Roseanne Diab, Prof Berhanu Abegaz, Prof Francine Ntoumi, Prof Abdallah Daar, Dr Rachel Chikwamba, Prof Dr Shireen Assem, Prof Karim Maredia, Prof Abubakar Sani Sambo, and Dr William Wasswa. Apart from advising the African Union and its Member States on harnessing innovations and emerging technologies for economic development, the panel also develops strategies, policies, and institutional arrangements to promote and sustain common regulatory approaches for the application of emerging technologies in Africa.

AU HIGH-LEVEL PANEL ON EMERGING TECHNOLOGIES (APET)

AUDA-NEPAD Artificial Intelligence Continental Roadmap for Africa

This Roadmap is the product of the African Union High-Level Panel on Emerging Technologies (APET). It is part of a larger effort by the African Union Development Agency (AUDA-NEPAD) to promote knowledge and learning, share ideas and experiences, provide open access to its research, and contribute to development policy and programme interventions. The knowledge featured in the roadmap is considered to have a bearing on the mission of AUDA-NEPAD and its strategic objectives, as aligned to the AU Agenda 2063, which is a Pan-African Vision of an integrated, prosperous, and peaceful Africa, driven by its citizens, representing a dynamic force in the international arena.

Citation: AUDA-NEPAD Artificial Intelligence Continental Roadmap for Africa

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ISBN:

DATE : February, 2024

ACKNOWLEDGEMENT:

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TABLE OF CONTENTS

DEFINITIONS AND NOMENCLATURE

4IR	Fourth Industrial Revolution
AAIRI	African AI Research Institute
ACB	African Central Bank
ACSA	AUDA-NEPAD Artificial Intelligence Continental Roadmap for Africa
ADEI	African Digital Entrepreneurial Institute
AfCFTA	African Continental Free Trade Area
AI	Artificial Intelligence
AI4D Africa	Artificial Intelligence for Development in Africa
AIB	African Investment Bank
AIDA	Accelerated Industrial Development for Africa
AIMS	African Institute for Mathematical Sciences
AMF	African Monetary Fund
AMV	African Mining Vision
ANPR	Agence Nationale de la Promotion de la Recherche Scientifique
APET	African Union High-Level Panel on Emerging Technologies
APIs	Application Programming Interfaces
AU	African Union
AUCSEG	African Union's Cybersecurity Expert Group
AUFIs	African Union Financial Institutions
CAADP	Comprehensive African Agricultural Development Programme
CAIR	Centre for Artificial Intelligence Research
CFAIR	Centre for AI and Robotics
CIFAR	Canadian Institute for Advanced Research
EAC	East African Community
ECOWAS	Economic Community of West African States
EU	European Union
FAIR	Findable, Accessible, Interoperable, and Reusable
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IDC	International Data Corporation

IDRC	International Development Research Centre
IP	Intellectual Property
ISAGO	Implementation and Self-Assessment Guide for Organisations
ITI	Information Technology Institute
KENET	Kenya Education Network
MAIS	Mauritius Artificial Intelligence Strategy
ML	Machine Learning
NLP	Natural Language Processing
ODeL	Open, Distance and eLearning
OECD	Organisation for Economic Co-operation and Development
PIDA	Programme for Infrastructural Development in Africa
PwC	Price Waterhouse Coopers
PWD	Persons With Disabilities
R&D	Research and Development
SAATM	Single African Air Transport Market
SADC	Southern African Development Community
SDAIA	Saudi Data and Artificial Intelligence Authority
SIDA	Swedish International Development Cooperation Agency
SMMEs	Small, Medium, and Micro Enterprises
STEM	Science, Technology, Engineering, and Mathematics
STI	Science Technology and Innovation
STISA-2024	Science, Technology, and Innovation Strategy for Africa
UN SDGs	United Nations Sustainable Development Goals
UN	United Nations
UNIDO	United Nations Industrial Development Organisation
WHO	World Health Organisation

EXECUTIVE SUMMARY

Artificial intelligence (AI) holds immense value in developing Africa's socioeconomic effectiveness and bolstering the harnessing of 4th industrial revolution (4IR) technologies. By leveraging AI, Africa can enhance productivity, optimise resource allocation, and drive innovation across various economic sectors. AI-powered solutions can streamline processes, automate tedious tasks, and improve decision-making, leading to increased efficiency and competitiveness. Additionally, AI can facilitate access to vital services in areas such as healthcare, agriculture, and education, improving outcomes, and ensuring inclusivity. By embracing AI, Africa can position itself as a hub for technological advancement, attracting investments, fostering entrepreneurship, and creating job opportunities. Ultimately, AI has the potential to empower Africa to overcome developmental challenges, bridge digital divides, and achieve sustainable growth, driving socio-economic transformation and positioning the continent at the forefront of the global digital revolution.

However, Africa faces various challenges in harnessing AI-based technologies, including high costs associated with infrastructure installation, capacity strengthening, and skills expansion. The capital investments required for creating AI systems that simulate human intelligence are substantial and demand time and resources. Additionally, the continuous need for the latest hardware and software poses further financial burdens. However, the cost of avoiding these investments would be even higher in the long run. To address these challenges, African countries should focus on human capital development, infrastructure, and data foundations, enabling environments, AI economy, and sustainable partnerships.

Governance of AI should incorporate ethical principles and legislative instruments to ensure responsible AI development and usage. African countries should adopt national AI strategies that define priorities across economic sectors, enabling effective governance and regulation. Data safety, security, and protection should be prioritised, and mechanisms for auditing and explaining AI systems should be established. Incentives such as tax cuts and simplified business administration should be provided to make AI more accessible to small-to-medium enterprises (SMEs) and drive local innovation.

For Africa to address the challenge of human capital development, knowledge sharing, and fostering an innovative AI environment, there is a need to invest in the workforce and strengthen AI platforms for knowledge sharing. Therefore, to adapt to the changing workplace and take advantage of digital tools, the current and future workforce should be equipped with basic to intermediate digital skills. African governments should collaborate with industry and academia to establish systems for training the workforce in dominant regional languages. Furthermore, African countries can strengthen human capital with intermediate to advanced AI skills by providing training through open-source online platforms in multiple African languages.

An Innovation and Skills Plan is crucial for driving transformation in African businesses by offering a suite of programmes. This can target critical stages of firm growth and provide business innovation support, the plan addresses challenges, and opportunities for businesses in Africa. For example, the African Union can establish an African Artificial Intelligence Research Institute (AAIRI) that can facilitate AI knowledge creation, quality human resource development, and intellectual property creation. The institute will work across multiple countries, physically and virtually, addressing legislation, human rights, algorithmic transparency, fairness, privacy, and data protection. Furthermore, an African Digital Entrepreneurial Institute (ADEI) can also be established to support AI and digital-related entrepreneurial activities across the continent. By creating a conducive environment for small, medium, and micro enterprises (SMMEs) to thrive, the institute will contribute to the economy and drive digital innovation.

Africa can also strengthen its AI capabilities and foster innovation by strengthening data infrastructure for AI in Africa. This can be accomplished by creating market demand for local data centres. African governments should identify key data stakeholders, engage with them, and revise the availability of existing local data centres. By fostering collaboration with data service providers, start-up companies, researchers, and public and private sectors, governments can stimulate market demand for the use of local data centres on the continent. Furthermore, national ministries responsible for education, science, technology, and innovation can stimulate students' interest in data careers by incorporating data literacy and technical data competency courses into the academic curriculum. To supplement these efforts, support such as scholarships and bursaries should be provided for studying data management, and businesses should be encouraged to hire local data practitioners through internship and full-time employment opportunities.

To strengthen skills development in data governance, funds should be allocated to local universities for research and acquiring modern tools for data management. Reliable connectivity between universities should be supported to facilitate data knowledge sharing and collaboration. This includes optimising data centre utilisation and energy consumption whereby a holistic approach is followed to address energy consumption and market needs. To ensure the development of environmentally friendly data centres, it is essential to quantify the current energy usage and market demand. Additionally, establishing collaborations with service providers is crucial for the construction of green energy data centres. African countries should embrace collaboration, build common data centres based on strategic locations and available resources, and optimise data centre utilisation. This includes promoting secure regional data centres and unified policies and supporting local data initiatives.

African governments should collaborate with the private sector to develop affordable and accessible digital infrastructure. This includes improving internet access, increasing cloud service availability, and investing in computing resources. Additionally, digital public infrastructure should be established to support AI-powered government services, ensuring digital identification, privacy, security, and data exchange capabilities. In addition, African governments should make a conscious effort to democratise AI by facilitating its introduction into the private sector, including small businesses. AI policies should focus on reducing barriers to AI adoption and ensuring AI technology is available to all through the production of AI-related digital public goods. Therefore, open data platforms and application programming interfaces (APIs) should be promoted to facilitate access to data by AI developers and researchers.

African countries should develop comprehensive national data strategies that address data collection, storage, sharing, and analysis. These strategies should tackle challenges related to data availability, accessibility, and commercialisation. Promoting open data platforms and APIs, as well as establishing data marketplaces, will facilitate access to data for AI development. Further to this, African governments should invest in education and skills development programmes to mitigate the potential negative effects of AI on the labour market. This includes investing in science, technology, engineering, and mathematics (STEM) education and vocational training, implementing social safety nets for displaced workers, and fostering collaboration between governments, businesses, and civil society to address the challenges and opportunities presented by AI.

African countries should prioritise AI education and training at all levels of the education system. This includes providing education, training, and awareness programmes to develop the skills and expertise needed for AI system development. Lifelong learning opportunities should be promoted, and innovative funding mechanisms should be explored to support human capital development and research in AI. Additionally, to attract and retain AI talent, African countries should offer competitive compensation packages, opportunities for career growth, and a supportive environment for innovation and creativity. Engaging with the global AI community through conferences and events will help showcase Africa's potential in AI and attract talented individuals.

African countries should develop AI policies, regulations, and ethical frameworks that promote data privacy, security, transparency, and accountability. Robust data protection laws should be established, and public awareness and participation in AI policymaking should be promoted. African countries should also incentivise investment in AI research and development, provide financial incentives for AI start-ups, and promote investment in AI infrastructure such as broadband internet and local data centres. The African Union can also encourage multinational firms to set up physical offices and research laboratories in the region to facilitate interactions and skills promotion.

To support the growth of AI start-ups in Africa, targeted investment and funding mechanisms should be established. One recommendation is the creation of the African Union AI Grant Fund, with a budget of US$100 million over five years. This fund would allocate 70% of its budget to early-stage and scale-up AI start-up companies, while the remaining 30% would be dedicated to AI research in start-up companies and academic institutions. This fund would lower the risk for private investors and support the maturity of early-stage start-ups, aiming to facilitate the emergence of African AI unicorns.

In addition to the grant fund, the establishment of an African Union AI Investment Fund is proposed. This fund, with a budget of US$200 million over five years, would provide equity and debt investments for AI companies and start-up companies in different funding rounds. It would support investments ranging from US$500,000 to US$5 million and work as a natural progression beyond the early-stage development and research phase. The fund would support the product-market fit, deployment, scale-up, and growth stages of AI ventures in Africa.

As such, case studies such as the Pan-Canadian AI Strategy, the European Union's Digital Europe Programme, France's €1.5 billion investment in AI, and China's Next Generation Artificial Intelligence Development Plan can provide valuable insights. These initiatives have led to increased investment in AI research and development, expanded talent pools, and fostered collaboration between stakeholders.

African countries can learn from these examples to address challenges such as lack of diversity, data privacy concerns, and the misuse of AI. By implementing successful strategies and adapting them to their unique context, African nations can position themselves as global leaders in AI research, development, and application. Fundamentally, APET emphasises the importance of targeted funding and investment mechanisms to support the growth of AI start-up companies in Africa. By providing financial support, fostering collaboration, and addressing challenges, African countries can create vibrant and competitive AI ecosystems, attract top talent, and drive innovation in various sectors such as healthcare, education, manufacturing, and transportation.

To build and strengthen sustainable partnerships in AI, Africa should establish effective communication strategies that highlight the value of AI on both continental and global scales. This entails creating a versatile digital and physical identity for AI in Africa, empowering individuals, and communities with advanced technologies. By leveraging this identity, Africa can unlock the potential of AI to drive innovation, enhance productivity, address societal challenges, and create new economic opportunities. A robust communication strategy should be implemented to engage tertiary, secondary, and primary stakeholders effectively, attracting investments and fostering meaningful engagements. Additionally, policymakers should provide reports on how AI is addressing development in local and regional sectors, ensuring responsible implementation and conformity with regulations.

African countries should prioritise the future of work and collaborate with stakeholders in the AI sector to create opportunities for economic growth, job creation, and skill development. Establishing a robust legal framework and advisory system is essential to facilitate partnerships, standardize modes of communication, and protect intellectual property rights. Africa should also prioritise the identification of AI activities, monitor progress, facilitate resource sharing and networking opportunities, and establish a comprehensive AI network system for tracking ongoing initiatives. Furthermore, effective communication strategies and outreach programmes should be implemented to publicize existing AI models and promote the widespread adoption of AI solutions across various sectors.

To ensure the effective implementation and integration of AI partnerships in Africa’s socioeconomic landscape, the African Union (AU) should establish a Strategy Committee for AI Partnerships and the Economy. This committee, comprised of AI experts appointed by the AU, would be responsible for monitoring and evaluating AI activities and their impact across the continent. The committee should focus on fostering partnerships in the AI sector, encouraging collaborations between local and international stakeholders to leverage expertise and resources. Additionally, the Strategy Committee should ensure that AI initiatives are closely integrated into Africa's socioeconomic development plans, aiming to drive inclusive growth, job creation, and improved living standards.

Implementing the policy recommendations outlined in this AUDA-NEPAD Artificial Intelligence Continental Roadmap for Africa can enable Africa to establish a strong foothold in the field of AI development. By prioritising robust communication strategies, Africa can effectively showcase the value proposition of AI on both continental and global scales, attracting investments and fostering meaningful engagements. This, in turn, would drive innovation, enhance productivity, and create new opportunities for economic growth and development across the continent. Additionally, by focusing on data strategies, Africa can leverage partnerships and establish a solid foundation for the responsible implementation of AI technologies, promoting innovation and attracting further investment. By adopting strategic AI funding and collaborative institutions and integrating AI into Africa's socioeconomic development plans, the continent can harness the potential of AI to drive inclusive growth, job creation, and improved living standards, positioning itself as a leader in AI development and reaping the numerous benefits that come with it.

1 INTRODUCTION

The African Union High-Level Panel on Emerging Technologies (APET) realises that artificial intelligence (AI) has the potential to greatly impact Africa's socio-economic effectiveness and contribute to the harnessing of 4th industrial revolution (4IR) technologies. By leveraging AI, Africa can enhance productivity, drive innovation, and improve access to vital services across various sectors. However, challenges such as high costs, regulation, infrastructure requirements, and skills expansion need to be addressed. To this end, African countries should develop AI technology human capital, AI infrastructure and data foundations, create an enabling environment for AI activities, support entrepreneurship, and strengthen sustainable partnerships to realise the full potential of AI technology.

To accomplish the implementation of AI in the continent, African countries should strengthen the governance of AI. This should incorporate formulating and implementing ethical principles and legislative instruments to ensure responsible AI development and usage. Additionally, African countries should invest in education and skills development to enhance assimilation and support the development of AI innovation and skills transfer. This is crucial to foster an innovative AI environment and ensure a skilled workforce for AI technology in the continent. Furthermore, African countries should prioritise the development of data infrastructure, affordable digital infrastructure, and comprehensive national data strategies. This can be accomplished by collaborating with the private sector and the formation of funding mechanisms and investment funds specifically for AI start-ups are recommended.

Also, African countries should implement effective communication strategies, collaborate with stakeholders, and establish a Strategy Committee for AI Partnerships and the Economy to further strengthen AI integration and implementation in Africa. Fundamentally, African countries should prioritise robust communication strategies to showcase the value proposition of AI on both continental and global scales. Likewise, African countries should attract investments from local and international stakeholders, foster meaningful engagements, and encourage knowledge sharing. African countries should also focus on AI-driven innovation and productivity enhancement to create a conducive environment for technology advancements and position Africa as a hub for AI development and research.

APET advises that African countries should also embrace AI that can drive inclusive growth in Africa and address developmental challenges to bridge the digital divide. This implies that African countries should harness AI's potential by unlocking new economic opportunities, creating AI-related jobs and entrepreneurship, and empowering its citizens by driving socio-economic transformation to position the continent at the forefront of the global digital revolution. Additionally, African countries should leverage and foster AI innovation by attracting investments and driving inclusive growth. By positioning itself as a leader in AI development, Africa should implement AI-driven solutions to empower individuals, uplift communities, and propel Africa towards sustainable and prosperous growth.

1.1 AI FOR ECONOMIC DEVELOPMENT AND GROWTH

Artificial Intelligence (AI) is hastily becoming an epicentre of economic development and growth with significant applications in commerce, education, health, public service delivery, social media and communications, governance, agriculture, and manufacturing, among other economic activities. In Africa, AI is significantly contributing towards accomplishing the African Union's Agenda 2063 and United Nations Sustainable Development Goals (SDGs) through the Science, Technology, and Innovation Strategy for Africa (STISA-2024). Fundamentally, AI is progressively being adopted and implemented to target socioeconomic development, enhance food production, eradicate poverty, and address climate change.

Unfortunately, most African countries have limited or no AI comprehensive policy frameworks to encourage the implementation of responsible AI, regulate AI-enabled business models, strengthen AI-driven socioeconomic development and growth, and effectively promote high-quality African data collection, processing, and interpretation. As such, limited African countries have outlined comprehensive AI-enabled innovation and technological solutions for strategic economic transformation. Remarkably, the Government AI Readiness Index 2021 ranked Africa as one of the regions with the lowest level of readiness for AI adoption, with an overall score of 3.49 out of 10, ranking fifth out of the six regions assessed. The report also highlighted that several African countries are in the lowest range of the rankings, indicating that they face significant

challenges in adopting and implementing AI solutions. These challenges include limited access to digital infrastructure, low levels of digital skills, and inadequate regulatory frameworks for AI. However, the report noted that there are several positive developments in the region, such as the growth of AI start-up companies and the increasing focus on AI in national development agendas.

According to the Government of AI Readiness Index 2022, on a scale of 100 points, the average score for North Africa is 38.59 points, whereas, for sub-Saharan Africa, it is 29.38 points. Both regions are below the global average score of 44.61 points. Furthermore, according to a report by Oxford Insights, Mauritius is ranked first in the African countries' index for AI readiness in the public sector. With a score of 53.38 points, it is ranked 57th globally. The index ranks countries based on 39 indicators across three pillars, namely, government, technology sector, and data and infrastructure.[1] Egypt comes second in Africa, followed by South Africa, Tunisia, Morocco, Kenya, Rwanda, Seychelles, and Nigeria. None of the African countries obtains good scores in the technological sector pillar. On the other hand, high-income countries with strong AI strategies and investments dominate the global rankings, with the United States of America ranking first. The USA is followed by Singapore, the United Kingdom, Finland[2], Canada, South Korea, France, Australia, Japan, and the Netherlands.[3]

The Organisation for Economic Co-operation and Development (OECD) focusing on AI Policy Observatory has reported that the European Union (EU) and sixty other 60 countries have established some form of AI strategies. These AI strategies are covering more than 600 AI policy initiatives. For example, there are more than 50 AI policy initiatives within the EU and approximately 50 AI initiatives in the United States of America (USA). Comparatively, fewer AI initiatives have been established within Africa. To address this strategic gap in the continent, it is necessary to establish an AI continental in Africa.

On the other hand, even with the slowly evolving environment to favour AI in Africa, there exist some examples of AI applications. These are observed in the private sector participation in pursuing AI-enabled businesses and African governments adopting big data approaches and AI applications in their socioeconomic development and growth. For example, the Centre for Intellectual Property and Information Technology Law (CIPIT) at the Strathmore Law School in Kenya have reported about 213 AI-enabled applications being developed in, or for utilisation in, Africa in about 33 sectors in 2021. These AI-enabled applications were especially developed and applied in corporate services, health, agriculture, business intelligence, and education. Within these AI applications, data analytics, chatbots, and decision support are the predominant technologies being developed and implemented as Africa's frontier technology for development.

The African Union High-Level Panel on Emerging Technologies (APET) considers AI technology the frontier for socioeconomic development, especially during the 4th Industrial Revolution. As such, African countries have the potential to enhance the policy and enabling environment essential for leveraging AI opportunities. This can be achieved by eliminating regulatory and investment constraints and accurately assessing the risks involved in applying AI-enabled policy frameworks, which can inform economic policymaking and planning. Consequently, this can enable the African policymaking process in utilising AI solutions for economic development and growth. This can, in turn, hasten AI applications in socioeconomic development, influence developmental approaches, enhance AI knowledge uptake, strengthen AI technology adoption, support underlying AI policy frameworks, and measure the demand for AI technology.

The AUDA-NEPAD AI Continental Roadmap for Africa is proposing the necessary measures that African countries should adopt to potentially facilitate inclusive and sustainable AI-enabled socioeconomic transformation. These measures aim to increase productivity, create employment opportunities, enhance taxation, mobilise, and utilise resources effectively, streamline fiscal and monetary policies, and boost economic output. This can help African countries not only strengthen participation in AI technology but also broaden the AI economic opportunities and address the underlying constraints and bottlenecks of AI-enabled economic development in Africa.

[1] https://extensia-ltd.com/2023/01/17/ranking-of-african-countries-best-prepared-to-adopt-artificial-intelligence-oxford-insights/#:~:text=The%20%E2%80%9CGovernment%20AI%20Readiness%20Index,%2C%20Rwanda%2C%20Seychelles%20and%20Nigeria.
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2 CONTINENTAL FRAMEWORKS, AND DECISIONS ON SCIENCE, TECHNOLOGY, AND INNOVATION

Several continental frameworks have been established to address the developmental challenges in strategic and vital socioeconomic sectors such as agriculture, trade, healthcare, education, transportation, energy, and mining, among others. These economic sectors can enable African countries to accomplish their respective development goals. These continental frameworks include the Comprehensive African Agricultural Development Programme (CAADP), The Programme for Infrastructural Development in Africa (PIDA), The African Mining Vision (AMV, Science Technology Innovation Strategy for Africa (STISA-2024), Boosting Intra African Trade (BIAT), and The Accelerated Industrial Development for Africa (AIDA). These various frameworks are linked to the African Union Agenda 2063 Continental Framework.

The Comprehensive African Agricultural Development Programme (CAADP) was established to enable African countries to eradicate hunger and decrease poverty by fostering agriculture-led socioeconomic development and growth. This would enable African governments to apportion approximately 10% of their national budgets towards agriculture and rural development to improve sustainable agricultural production, management of land management and reliable water control systems, enhance infrastructure and access to the trade markets and bolster agricultural research, technology dissemination and adoption.

The Programme for Infrastructure Development in Africa, PIDA, is providing a common framework for African stakeholders to fabricate an infrastructure essential for integrated transportation, energy, Information and Communication Technology, and transboundary water networks. The development of the infrastructure is aimed at bolstering trade, spurring economic growth, and job creation. PIDA is a multi-stakeholder programme that facilitates continental and regional infrastructural integration to enhance Africa's competitiveness in the world market.

The African Mining Vision (AMV) aims to utilise mineral resources transparently, equitably, and optimally. This can enable African countries to sustainably grow and develop the African market and economic strength through a diversified, vibrant, and globally competitive industrialised African economy. In contrast, the Boosting Intra African Trade (BIAT) is strengthening Africa's market integration and substantially expanding the capacity of trade for African countries. As such, the BIAT Action Plan has enabled the measurement of Africa's complete trade flows. In this way, African countries can potentially bolster their intra-African trade by addressing supply and demand through comprehensive regional integration, structural transformation, and economic development of Africa. To this end, the BIAT Action Plan has identified the critical infrastructural bottlenecks that are impeding trade facilitation, intra-African trade information networks, and financial challenges against trade and economic operations.

The Action Plan for the Accelerated Industrial Development of Africa (AIDA) is a pan-African programme that was developed by the United Nations Industrial Development Organisation (UNIDO) in 2008 at the request of the African Union, together with African governments and the private sector. The strategy is mobilising both financial and non-financial resources to enhance Africa's industrial performance. In this way, AIDA is focused on driving the integration of industrialisation in national development policies, especially in strategic policies to alleviate poverty, enhance development, and bolster the implementation of priority industrial advancement. This is accomplished by prioritising and maximising the utilisation of local production capacities and inputs. This is undertaken through value addition and enhancing local processing of the abundant natural resources of the African countries. As such, AIDA is supporting the development of small-scale and rural industries, including the informal sectors and intermediate and capital goods industries with high linkages to other sectors of the economy as potential sources of employment creation.

Markedly, the AIDA strategy further is improving Investment and Mining Codes to support the local processing of mineral resources whilst at the same time encouraging mineral resources–rich African countries to prioritise certain portions of commodity price-surge-related premiums for investment in programmes and projects of economic diversification. This challenges African countries to leverage Africa's partnerships, especially within the Newly Industrialising and Emerging Powers of the South, for the development and transfer of technology. This is enabling the establishment of joint industrial enterprises in Africa to enhance substantial access to the market for Africa's manufactured products.

Worth noting is that Science, Technology, and Innovation Strategy for Africa (STISA-2024) acts as the epicentre of Africa's socioeconomic development and growth. As a result, the impact on science and technology has consequential impacts across critical economic sectors such as agriculture, energy, environment, health, infrastructure development, mining, security, and water management, among others. STISA-2024 envisages a science and technology-driven transformation that is steered by innovation to create a knowledge-based economy.

Fundamentally, STISA-2024 prioritises eradicating hunger by accomplishing food and nutrition security, preventing, and controlling diseases, enhancing communication through physical and intellectual mobility, protecting space and the environment, building African societies that are bound by peace, harmony, and security, and strengthening wealth creation. Furthermore, this strategy is building and/or upgrading research infrastructures, enhancing professional and technical competencies, promoting entrepreneurship and innovation, and providing an enabling environment for Science Technology and Innovation (STI) development in the African continent.

2.1 THE AFRICAN UNION'S AGENDA 2063: AFRICA WE WANT

The African Union's (AU) Agenda 2063: "*The Africa We Want*" is Africa's blueprint and master plan that was established to transform Africa's economy to be competitive on the global stage. This continent's strategic framework is delivering on inclusive and sustainable STI-based development to drive a pan-African drive for unity, self-determination, freedom, progress, and collective prosperity pursued under Pan-Africanism and African Renaissance. In addition, the AU's Agenda 2063 is helping African leaders to refocus and prioritise Africa's economic agenda to enhance the continent's economic competitiveness. This can also help prioritise inclusive socioeconomic development, continental and regional integration, democratic governance and peace and security amongst other issues to reposition Africa's global impact.

The AU's Agenda 2063 is a 50-year long-term development plan to revitalize and adapt the continent's developmental agenda to influence economic growth and social progress. This encompasses gender equality and youth empowerment and increasing globalisation through an Information and Communication Technology (ICT) revolution. In this way, African countries can rally support around their common agenda of economic development and investment opportunities in economic sectors such as agri-business, infrastructure development, health, and education, and enhance the value addition in African commodities.

AU's Agenda 2063 has enabled African countries to formulate key flagship programmes that can potentially bolster Africa's economic growth and development and facilitate the rapid transformation of Africa. These flagship programmes are focused on improving Africa's infrastructure, education, science, technology, arts and culture, and peace and security initiatives. This includes an integrated high-speed train network to connect all African capitals and commercial centres. This is aimed at facilitating the movement of goods, factor services, and people timely and cost-effectively. Furthermore, the development of a continental commodities strategy is substantively enabling Africa's capacity to value addition to extract higher dividends from commodities. This is also enabling the integration of Africa's commodities into the global value chains and promoting vertical and horizontal diversification fastened in value addition and local content development.

The establishment of the African Continental Free Trade Area (AfCFTA) is also accelerating intra-African trade to bolster Africa's trading position in the global marketplace. Consequently, AfCFTA can significantly quicken Africa's intra-trade mechanisms to enhance sustainable development. This is also helping African countries strengthen Africa's common voice and policy space in global trade negotiations. On the other hand, the African Passport and Free Movement of People are removing the restrictions on Africans' ability to travel, work and live within their continent. The initiative is transforming Africa's restrictive laws to enhance the movement of people and promote the issuance of visas by Member States to augment the free movement of all African citizens in all African countries.

To accomplish an "Africa We Want", Africa is focused on ending all wars, civil conflicts, gender-based violence, and violent conflicts and preventing genocide. The development of the Inga Dam is anticipated to generate approximately 43,200 MW of power to support current regional power pools. Consequently, this will

transform Africa's power generation to ensure clean and affordable electricity. Additionally, the establishment of a Single African Air-Transport Market (SAATM) is ensuring intra-regional connectivity between the capital cities of Africa to create a single unified air transport market in Africa.

The annual African Economic Forum is a multi-stakeholder meeting that was established to bring together the African political leadership, the private sector, academia, and civil society to reflect on how to accelerate Africa's economic transformation. This could be accomplished by harnessing Africa's vast resources and exploiting key opportunities to hamper economic development. The creation of African Continental Financial Institutions is accelerating the integration of socioeconomic development by mobilising resources within the African financial sector. Fundamentally, these financial institutions are promoting the economic integration of the African Investment Bank and Pan African Stock Exchange with the African Monetary Fund and the African Central Bank.

The Pan-African e-Network is strategically instituting strategic policy frameworks to spearhead transformative e-applications and services in Africa. This is especially crucial in the intra-African broadband terrestrial infrastructure and cyber security to enhance service delivery in the biotechnology and nanotechnology industries. This is to ultimately transform Africa into an e-Society through information and communication technology programmes. In contrast, Africa's Outer Space Strategy is strengthening Africa's usage of outer space to bolster its development. This can critically develop Africa's agriculture, disaster management, remote sensing, climate forecast, banking and finance, and defence and security. Africa's access to space technology products should be prioritised to expand satellite technologies.

The African Virtual and e-University is utilising information and communication technology-based (ICT) programmes to expand access to tertiary and continuing education in Africa. This can enable significantly higher enrolment of students and professionals in multiple sites, simultaneously. The development of relevant and high-quality Open, Distance and eLearning (ODeL) resources is offering students guaranteed access to the University from anywhere in the world and anytime (24 hours a day, 7 days a week).

The cyber security flagship programme for the AU's Agenda 2063 is incorporating the development plans and rapid changes being brought about by emerging technologies. This is to ensure that these emerging technologies are utilised to benefit Africans, institutions, and Member States by ensuring data protection and online safety. This cyber security project is steered by the African Union Convention on Cyber Security and Personal Data Protection.

The African Charter for African Cultural Renaissance is mobilising and unifying the African people covering common ideals and encouraging African culture to foster the ideals of Pan-Africanism. Furthermore, the Encyclopaedia Africana is providing an authoritative resource on the authentic history of Africa and African life. This is to provide the African people with foundational African history, legal, economic, religion, architecture, education, and the systems and practices of African societies.

APET realises that emerging technologies using AI as the epicentre can enable African countries to accomplish these ambitions. This can ensure that AU's Agenda 2063 delivers quantitative and qualitative transformational outcomes for Africa's people. This is also presenting Africa with economic opportunities in practically all economic sectors. As such, the continent's youthful population can benefit from the enormous opportunities in this digital era. Hence, Africa should formulate digitally enabled socioeconomic development and growth. This is because digital transformation can promote innovative, inclusive, and sustainable growth.

2.2 THE SCIENCE, TECHNOLOGY, AND INNOVATION STRATEGY FOR AFRICA (STISA-2014-2024)

The Science, Technology, and Innovation Strategy for Africa (STISA-2014-2024) is enabling Africa's socioeconomic development and growth. This is being accomplished in critical economic sectors such as agriculture, energy, environment, health, infrastructure development, mining, security, and water management, among others. The strategy envisions an innovative and transformational Africa through a knowledge-based economy. Furthermore, STISA-2024 is prioritising the eradication of hunger and accomplishing food security,

prevention and control of diseases, communication through physical and intellectual mobility, protection of Africa's space, societal peace, stability, harmony, and wealth creation.

The speedily developing AI-based technologies can potentially address the highly critical challenges that are negatively impacting Africa's socioeconomic development and growth. For example, agriculture is benefiting from AI-based economies by enhancing planting and harvesting management efficiency and effectiveness to increase yields. Healthcare is being tailored to enhance healthcare quality, accessibility, and decision-making outcomes. AI is also improving the efficiency and responsiveness of public services to enhance the impact. Additionally, access and security of financial services are being expanded as well.

Forward-thinking policymakers are supporting innovative start-up companies and encouraging technology partnerships between civil society groups and international global stakeholders. This is helping these countries to mobilise and promote the growth of a vibrant AI ecosystem in Africa. However, African countries should address the structural challenges that are impeding the development of a healthy AI ecosystem in Africa. This includes adapting education systems to develop the necessary skills required to thrive in the 4IR era, expand broadband coverage, and promote responsible and ethical AI to enhance fairness, security, and inclusive AI applications. Furthermore, ensuring a deeper, broader, and more accessible pool of data can also enable AI researchers, developers, and users to drive AI-enabled technologies.

To transform and change the landscape of 4IR technologies, Africa should address the inherent challenges in the development of AI and embrace these challenges to benefit from AI-based socioeconomic development and growth. This can be accomplished by establishing clear roadmaps to benchmark and influence the adoption and implementation of this technology. African countries should recalibrate their laws and legal frameworks to support data-driven technologies and innovation-driven growth. This can also strengthen the supporting infrastructure for AI development and encourage a collaborative approach to allow concerned stakeholders to share their expertise and insights, and foster trust.

With enabling and suitable policies, Africa can significantly benefit from AI-related transformations. In this way, African countries promote a common digitalisation agenda for the African continent and establish an African Common Position to coordinate and distribute the roles to each stakeholder. This can promote the sharing of experiences and best practices, and exchange lessons learnt on information and communication and digital policies. This can also help African countries consider postal digitalisation as national prioritisation and digital strategy This is enabling African countries to pursue the digitisation of postal financial services and establish cashless systems to facilitate payment and banking systems.

2.3 THE POSITION OF THE AFRICAN UNION HIGH-LEVEL PANEL ON EMERGING TECHNOLOGIES (APET) ON AI-ENABLED SOCIOECONOMIC DEVELOPMENT

The AU High-Level Panel on Emerging Technologies realises that AI in Africa can address some of the continent's most pervasive challenges to eliminate poverty, improve education, deliver healthcare, and eradicate diseases sustainably. AI can also help African Union Member States address the growing demand for food from the fast-growing population inclusively. Furthermore, AI is expanding access to innovative and productivity-bolstering technology to stimulate the economic growth that the continent needs. Additionally, APET observes that AI is profoundly restructuring how work is executed to enhance efficiency and productivity and enhance the delivery of governmental services for citizens.

AI is also expected to generate new and high-value jobs that require technical skills such as network engineers in the banking sector and web programmers in the retail industry. Furthermore, there will be a higher demand for data scientists, robotics experts, and AI engineers. This is because AI will unlock the value of data, enhance cognitive processes, and improve predictive capacities. Consequently, this is allowing African governments to manoeuvre and steer better policy frameworks and decision-making. Additionally, AI is expanding socioeconomic growth by potentially doubling Africa's GDP growth rate by 2035. Therefore, the capability to harness even a fraction of this can substantially benefit Africa's economic development and eliminate poverty. Particularly, AI is positively impacting Africa's agriculture, healthcare, public services, and financial services.

3 A CASE FOR AI IN AFRICA

To strengthen the AUDA-NEPAD AI Continental Roadmap for Africa, AU Member States should formulate accompanying legislation and laws to facilitate the adoption. This is primarily because some African countries may not yet have developed their own AI strategies or have laws and regulatory frameworks in place to govern AI. Additionally, there may be a need to showcase ongoing AI activities and plans to demonstrate the potential impacts and outputs of the AI economy in Africa.

To enhance the impact of AI technology in Africa, African countries may need to strengthen the development of human skills capital for AI to enhance the impact of AI technology in Africa. Furthermore, the roadmap should comprehensively capture challenges and opportunities for the youth and include exemplary case studies of AI in human capacity building from AU Member States and informal sector activities. Thus, to strengthen advocacy, AI should be presented more practically to help policymakers easily understand and grasp the value of AI investments. This should also include bringing on board diasporic engagements and partnerships. African countries should also consider the vast plethora of African languages when considering AI human capacity building and skills development. This will help make AI relevant for local African communities and eliminate language barriers and the various dynamics brought about by the different African accents when communicating.

Considerations on ethical consequences should capture concerns on data protection and safety of AI systems, ethical considerations, computing, and stakeholder, systems. This includes incorporating each perspective of human capital skills development, and capacity building and strengthening. Further to this, African countries should consider a broader emphasis on the need for training and enabling AI jobs and entrepreneurship within the public and private sectors.

Within the public sector, this capacity strengthening can help public sector workers understand the benefits of AI-enabled governance and management. Thus, public awareness and engagement should be considered lifelong learning exercises to enable skills acquisition and support all the facets of socioeconomic activities. Most importantly, women's representation across all existing and emerging technologies across all socioeconomic activities should be prioritised, and the current university systems should be used to bridge the different technologies with the local people and communities' engagements.

Furthermore, infrastructure and data foundations and use in AI systems should also be considered to enhance the impact of AI in Africa. For example, data centres require vast and efficient energy to remain operational. Therefore, provisions for efficient and reliable energy sources should be considered. For instance, this can be accomplished by establishing tier 4 green energy data centres to enable reliability, instead of relying on unreliable national electricity grids. Additionally, the data policies should consider the level of development to encourage data ownership and access to data, and the need for developing a reliable electricity grid.

There is a need for skills development in data governance to enable collaborations and sharing of infrastructure. These provisions should demonstrate the need to create benefits and opportunities for data centres and the cost of not taking the necessary actions to ensure AI development in Africa. Such collaborations and partnerships will greatly improve the optimal utilisation of data centres in collaboration with the private sector. AI experts noted that it remains impractical to establish data centres without addressing Africa's unreliable energy challenges, the need for the data market, and optimising the utilisation of data centres to prevent their underutilisation.

This holistic and comprehensive approach will enable all entities to gain access to local data storage facilities and enhance the local market infrastructure. For example, when Meta (Facebook) instals data centres and fibre connections around the African continent accompanied by small computing centres around the shores, African countries should partner with Meta to negotiate access to the data and facilities. This can significantly enhance the opportunities for local data centre infrastructure access and enhance the legal jurisdictions of the data being hosted within African countries. Therefore, African countries should also strengthen data literacy to complement the infrastructure and human resource capacity, as well as improve the local manufacturing of devices.

Creating an enabling environment for AI deployment is crucial. To achieve this, it is important to assess the number of African countries that currently have AI strategies. This will allow for a clear definition of Africa's AI readiness index according to international standards and facilitate AI self-regulation. The focus should be on self-regulation for each socioeconomic sector to govern AI certification, codes of conduct, and the costs of AI implementation frameworks. For instance, self-regulation tools for data protection can help AI companies evaluate themselves on AI ethics. If AI companies fall short of certain aspects of the AI regulatory framework, they should report themselves to the governing bodies.

However, to promote self-reporting and ethical standards upon violation of some aspects of AI ethics and regulation, African countries should establish some incentives to encourage self-reporting. APET further suggests that the incentives should involve access to data auditing, renewal of operational licenses after auditing has been completed and finalised, promoting the acquisition of data protection offices, and the reduction of penalty upon self-reporting of breached AI ethics and regulatory frameworks. The strategy of AI self-regulation should borrow practices from medical and legal self-regulation practices concerning the renewal of licenses.

The AI economy should also be determined to realise its benefits and opportunities for African countries. This can help African countries promote the domestication of funding mechanisms to enable self-funding within African countries and enhance public-private investments. This should also provide areas that require urgent investments across the various AI-enabled socioeconomic activities. In addition, the next steps of AI economic adoption and uptake should consider enhancing the security of AI. This can improve trust in Africa's AI systems to enhance the returns to investments within local investments. Therefore, African countries should consider the amount of research, development, and innovation required to address African challenges and generate local solutions at national and regional levels.

To promote AI businesses, start-up companies, and entrepreneurship in Africa, the AUDA-NEPAD AI Continental Roadmap should focus on creating an enabling environment by offering incentives such as tax waivers, subsidies, and local funding mechanisms. Consequently, this can create AI business-friendly investment platforms for optimal socioeconomic activities and impacts, especially on local investments and human capital development. Therefore, to focus on the immediate next steps, African countries should enhance crowdfunding and collaborations within the continent.

APET also realises that building sustainable partnerships can help African governments and innovators to establish and develop comprehensive and viable collaborations and support systems. These partnerships should include domestic joint ventures on common interests, enhance skills transfer partnerships, promote innovation partnerships, and strengthen partnerships on technology, finance, capacity building, and trade. Worth noting, the approach of the partnerships concerning all the Strategic Pillars should be synergized strategically.

In creating partnerships based on common ground, the data metrics should cluster the stakeholders based on their interest in AI activities, enable the tracking of their performance, and enhance the sharing of resources. These can be accomplished through short-to-medium-to-long-term partnerships depending on the specific private-public partnerships, and diasporic partnerships. Moreover, these partnerships should be progressive and action-oriented and there should be some mechanisms to measure the progress, benefits, and opportunities of partnerships. This can facilitate and enable collaborations and support. Most importantly, the African Union can facilitate and coordinate the partnerships as a neutral body and generate progress reports to help African countries monitor and evaluate their AI uptake progress. Such provisions can help African countries be more competitive and seek ways of improving their inputs and outputs. Most importantly, African governments should appreciate the importance of AI readiness and progress measurements to strengthen their AI initiatives, and centres of excellence.

This roadmap outlines key policy recommendations and a developmental strategy aimed at African countries. The strategy emphasises the importance of developing human capital in AI, strengthening AI infrastructure and data management, creating an enabling environment for AI-based socio-economic development, enhancing the AI economy, building partnerships for collaborative AI initiatives, and fostering capacity for monitoring and evaluation AI strategies in African countries. APET observes that these pillars define critical areas of interest of Africa in harnessing AI and are based on outcomes of various stakeholder consultations held on AI across the continent, summarised as follows:

4 STRATEGIC PILLAR 1: DEVELOPING HUMAN CAPITAL FOR AI

This strategic pillar focuses on how African countries should develop human capital suitable for AI. APET recommends that African countries should address the urgent need to equip the current and future workforce with digital skills, especially AI skills, foster AI innovation, establish AI-related research institutes, support digital entrepreneurship, and promote collaboration through AI networks. By implementing these recommendations, Africa can lay a solid foundation for its active participation and contribution to the ongoing digital revolution.

APET notes that by adopting and implementing these policy recommendations, African countries can develop a skilled workforce, foster innovation, and entrepreneurship, and position themselves as active contributors to the global AI revolution. The roadmap provides a roadmap for leveraging AI technology to drive inclusive growth, job creation, and sustainable socio-economic development throughout the continent. Therefore, to accomplish robust human capital development for AI, African countries should undertake the following strategy:

1) ***Anticipate Possible Changes in the Labour Market to Mitigate Unexpected Job Losses***: African countries should anticipate the possible changes in the labour market and subsequently take proactive steps to mitigate any negative effects such as job losses. Fundamentally, African governments and businesses should invest significantly in education and skills development programmes to ensure that workers have the necessary skills to thrive in an AI-powered economy. To accomplish this, African countries should identify the jobs that are likely to be automated and the skills that will be in demand in the future labour market and develop education and training programmes to teach workers the skills they need to succeed in these jobs. African countries should also provide financial assistance to workers who need to retrain or upskill. African countries should also create new jobs in the AI sector and other high-growth industries and encourage businesses to adopt AI technologies in a way that creates jobs and benefits workers. African countries can develop policies to support workers who are affected by changes in the labour market including job training programmes, unemployment benefits, and wage subsidies.

2) ***Invest in AI-inclusive STEM Education to Provide Hands-On Experience***: African countries should also invest in STEM education and vocational training programmes that provide practical, hands-on experience in areas such as data analysis, robotics, and programming. African governments should implement social safety nets to provide a safety net for workers who may be displaced by AI. This can include unemployment benefits that include training programmes for reskilling and job placement services. Thus, to effectively prepare for the impact of AI on the labour market, governments, businesses, and civil society should work together collaboratively. This includes sharing knowledge and expertise and developing joint strategies to address the challenges and opportunities presented by AI.

3) ***Endow AI Education to Strengthen AI Training at All Levels***: African countries should prioritise AI education and training at all levels, ensuring that education, training, and awareness are provided throughout society. This includes integrating AI education into the curriculum, promoting AI research and development, and introducing the concept of "AI +X" to showcase the impact of AI on various aspects of life. Workers should be offered lifelong learning opportunities, and awareness programmes should target the informal sector and those without formal education.

4) ***Upskill and Reskill African Workforce to Enhance Africa's Digital and AI Skills***: African countries should impart basic-to-intermediate digital skills to the digitally unskilled workforce in Africa. APET believes that recognising the changing nature of the workplace. African countries should formulate informal and capacity-strengthening mechanisms to upskill the existing workforce and provide training to future employees according to their specific needs. African countries should foster collaborations between the government, industry, and academia to design and implement training programmes that can cater for different languages and regional contexts.

5) ***Incorporate Data Literacy and Technical Competency Courses in Africa's Curriculum from Preschool to Tertiary Levels:*** AU Member States' Ministries of Education should stimulate students' interest in data careers by incorporating data literacy and technical competency courses in the academic curriculum from preschool to tertiary level. This can facilitate exposure to the world of data to develop their skills in this area, which could lead to them pursuing data careers in the future. Therefore, African countries should incorporate data literacy and technical competency courses in the academic curriculum. This should be implemented by adding new courses on data science, data analytics, and machine learning to the curriculum, and incorporating data literacy and technical competency elements into existing courses, such as mathematics, statistics, and computer science. Furthermore, African countries can bring data professionals to speak to students about their work, organise data hackathons and competitions, and create data visualisation projects for students to work on. African countries can develop students' skills in data by providing students with hands-on experience with data tools and technologies and creating opportunities to apply their skills to real-world problems.

6) ***Establish African Open-Source Platforms in Multiple Languages to Provide Training Resources for AI Professional Development***: For African countries to actively participate in the 4th industrial revolution, including the AI-driven revolution, the continent should establish a large pool of individuals with intermediate to advanced AI skills. African countries can accomplish this by establishing an African open-source platform in multiple languages. This open-source platform can be accessible to all international, regional, and local language audiences. This platform can provide training resources for entrepreneurs, product developers, researchers, and other professionals seeking to leverage AI technology. The platforms could provide access to various training materials, including online courses, tutorials, and documentation, and host events and workshops to bring together AI professionals from across the continent. These platforms can also connect people with job opportunities, funding opportunities, and other resources.

7) ***Establish an Innovation and Skills Plan to Drive Business Transformation to Support Start-Up Companies***: African countries should simplify and consolidate existing innovation programmes to make them more accessible and effective. African countries should offer should also offer new business innovation support to help start-ups grow and succeed. This involves streamlining the application process, reducing the number of hoops that start-ups should jump through, and making sure that the programmes are aligned with each other. Furthermore, African countries can provide start-ups with access to mentors, training, and funding. It could also involve creating incubators and accelerators to help start-ups grow and scale. This can create an enabling environment for innovation so that African businesses can overcome challenges and capitalize on opportunities in the AI era.

8) ***Create an African AI Research Institute to Strengthen AI Governance and Ethics***: The African Union Member States should develop an African AI Research Institute (AAIRI) to foster collaboration, knowledge creation, and intellectual property development. The AAIRI can operate across multiple African countries, both physically and virtually. This can help address AI pertinent issues such as algorithmic transparency, fairness, privacy, and liability to strengthen AI governance and ethics. This governance can help African countries manage the development and use of AI and ensure that AI systems are transparent, fair, and respectful of privacy. AI ethics will guide the development and use of AI by ensuring that AI systems are used in a way that is beneficial to society and does not harm individuals or groups.

9) ***Form an African Digital Entrepreneurial Institute to Enhance Problem-Solving and Capacity Building***: Alongside AAIRI, African countries should create an African Digital Entrepreneurial Institute (ADEI) to support AI-related entrepreneurial activities across the continent. The ADEI can provide training, mentorship, and funding to AI entrepreneurs by ensuring access to courses, workshops, and networking opportunities. This institute can help entrepreneurs develop AI solutions that address the continent's most pressing challenges such as poverty, hunger, and diseases.

10) ***Introduce Micro-Credentials for Lateral Entry into the AI Field to Enhance the AI Talent Pool***: African countries should recognise the multidisciplinary nature of AI and introduce micro-credentials for lateral entry into the AI field. This can allow individuals from various backgrounds to gain the skills

and knowledge they need to contribute to AI research and development. These credentials should be aligned with the needs of the AI industry to provide individuals from various backgrounds with pathways to contribute to AI research and development. The micro-credentials should be affordable and accessible to individuals from all backgrounds. This could be done by offering them online or through community colleges and other non-traditional educational institutions.

11) ***Establish AI Networks to Identify and Nurture AI Talent to Bolster Collaboration***: African countries should create AI networks to identify and nurture talent in the field to discover and empower individuals with AI expertise. By leveraging existing networks and creating new ones, Africa can discover and empower individuals with AI expertise. This can be accomplished by bringing together individuals and organisations participating in the AI field as a network to provide a forum for sharing ideas, collaborating on projects, and mentoring young AI talent. African countries can leverage these networks by providing them with funding and support.

5 STRATEGIC PILLAR 2: USING INFRASTRUCTURE AND DATA AS FOUNDATIONS FOR STRENGTHENING AI SYSTEMS

This strategy provides recommendations and action plans to strengthen data infrastructure and data use for AI in Africa. The strategy on infrastructure and data use encompasses various aspects, including market demand creation, skills development, energy optimisation, ethics, open verifiable national databases, intellectual property protection, and the use of synthetic data. By implementing these recommendations and action plans, Africa can strengthen its data infrastructure for AI, drive sustainable development, and tackle societal challenges, ultimately positioning itself as a leader in the global AI landscape.

The strategy should guide African governments, ministries, institutions, and stakeholders in developing a robust foundation for AI implementation and utilisation on the continent, summarised as follows:

1) ***Create an Inclusive Digital Infrastructure to Deploy AI Systems***: African countries should build inclusive digital infrastructure to provide affordable and accessible broadband and capabilities for deploying AI systems for private and public services. These are the following actions to build an inclusive digital infrastructure:
    a. African countries should build a digital infrastructure that can improve access to high-speed internet, increase the availability of cloud services, and invest in computing resources. In collaboration with the private sector, African governments should ensure that the foundational infrastructure for AI is provided.
    b. African countries should deploy AI-powered digital government services by utilising the digital public infrastructure that provides capabilities for digital identification, consent, privacy, security, interoperability of systems, and data exchange.
    c. African governments should ensure that the prices of digital devices and equipment are affordable by considering removing taxes on equipment and exploring funding schemes with the private sector to make equipment affordable and available to citizens.

2) ***Foster a Market Demand for Local Data Centres with the Relevant Stakeholders***: African governments should engage with the relevant and key data stakeholders to identify their needs and revise the availability of existing local data centres. This will help to create a market demand for local data centres and encourage businesses to invest in these facilities. This can be accomplished by identifying key data stakeholders such as banks, telecommunications companies, and e-commerce retailers, understanding the needs of key data stakeholders to determine their requirements for data storage and processing and addressing their concerns about the security and reliability of local data centres.

3) ***Strengthen Local Data Centres to Promote AI Competitiveness in the Global AI Economy***: African countries should review the availability, capacity, and accessibility of existing local data centres. African countries should institute mechanisms to improve the availability of local data centres. Also, African countries should provide financial incentives to businesses that build or upgrade data centres

or reduce the regulatory burden on data centre operators. To accomplish this, African countries should identify gaps in the availability of local data centres and areas where improvements can be implemented, and institute mechanisms to improve the availability of local data centres. This includes providing financial incentives to businesses that build and upgrade data centres, reducing the regulatory burden on data centre operators, and providing tax breaks for businesses that use local data centres.

4) ***Establish Strategic Green-Energy Powered High-Performance Computing Centres by 2030 for Africa's Research and Innovation***: By 2030, African countries should establish strategic high-performance computing centres, regional data centres, and fast connectivity. These centres should be powered by green energy, offer widespread broadband coverage, and ensure accessible smart devices and affordable internet. Their primary focus should be on advancing research and development in Africa, positioning the continent as a global digital economy leader. Additionally, these centres should address pressing challenges such as climate change, poverty, and disease. To mitigate power challenges, African countries should invest in green energy sources such as solar and wind power for high-performance computing applications. This includes developing contingency plans for power outages and utilising backup generators and cloud computing services. Upgrading existing centres and building new ones with green energy integration should also be pursued.

5) ***Implement Financial Data and Computing Infrastructure to Close the Gap of Africa's Insufficient Financial Services***: African countries should implement financial data and computing infrastructure to enhance access to financial data due to underdeveloped financial systems in many African countries. This will help AI researchers and developers obtain the necessary data for training and testing their models. African countries should facilitate the establishment of open data initiatives to make government data freely available to the public. In addition, African countries should deliberately establish these initiatives to enable AI researchers and developers to utilise financial data and computing infrastructure for training and testing their models effectively. African countries should also support the growth of fintech start-up companies to leverage technology to enhance financial services in Africa. African start-up companies should leverage mobile money to provide financial services to individuals lacking access to traditional banks.

6) ***Form Unified Legal and Ethical AI Systems to Promote Responsible AI***: African countries should ensure ethical AI practices and establish unified legal systems that define AI ethics and promote the ratification and implementation of relevant conventions and recommendations. African countries should ensure ethical AI practices and establish unified legal systems that define AI ethics. Africa should develop and adopt codes of ethics for AI developers and users and establish regulatory bodies to oversee the development and use of AI. A unified legal system involves creating a pan-African AI law and framework that can be adopted by all African countries. Furthermore, African countries should harmonise their various AI laws, define the principles to guide the development and use of AI and promote the application of these guiding principles in practice. The unified legal AI systems in Africa can help to enhance trust in AI by providing clear rules and regulations for its development and use, improving coordination between different African countries on AI-related issues, and enhancing cooperation between African countries and the international community on AI-related issues.

7) ***Create Open Verifiable National Databases Compliant with the AU Data Policy Framework***: African countries should create open verifiable national databases by developing and implementing a data governance framework that is compliant with the AU Data Policy Framework. This will help to ensure that these databases are accessible, transparent, and accountable. African countries can develop and implement a data governance framework to identify the laws, regulations, and policies to govern the collection, use, and sharing of data. African countries should also establish institutions and mechanisms to oversee the implementation of these laws, regulations, and policies, make the data in these databases available to the public and ensure that the data is accurate and up to date. This could also involve using technologies such as blockchain to make the data tamper-proof.

8) ***Develop Intellectual Property Rights Frameworks and Tools to Enhance AI Innovation and Entrepreneurship***: African countries should develop intellectual property (IPR) frameworks and tools to protect and administer IPR for AI to ensure that African innovators and entrepreneurs can benefit

from their work in the AI field. These IPR frameworks should involve developing and adopting laws, regulations, and policies that govern the protection and administration of IPR for AI. It could also involve establishing institutions and mechanisms to oversee the implementation of these laws, regulations, and policies, as well as providing training and education on IPR for AI. Notably, well-structured IPR frameworks and tools can attract investment in the AI field by providing investors with greater certainty about the protection of their investments, promote innovation by providing innovators with the incentive to develop new AI technologies and create jobs in the AI field by providing opportunities for innovators and entrepreneurs to commercialise their work.

9) ***Utilise Synthetic Data in AI Applications to Address Data Scarcity in Africa***: African countries should use synthetic data in AI applications to address the data scarcity challenges in Africa. Synthetic data, when appropriately modelled, can supplement real data, and improve algorithm performance, facilitating the development of AI models that accurately reflect local contexts. The synthetic data, artificially generated, can be used to supplement real data and to create new data sets. Since data scarcity is a prevalent challenge for many African countries, synthetic data can be used to train AI models for a variety of purposes, such as image recognition, natural language processing, and fraud detection. This should be undertaken about the local contexts, circumstances, and conditions.

10) ***Build Data Monetisation and Cross-Border Data Movement to Solve Africa's Socio-Economic Challenges***: AU Member States should cooperatively establish data monetisation and cross-border data movement to unlock the continent's full potential in data-driven innovation. African countries should also create mechanisms to share data and resources to develop new products and services that benefit the entire continent. This can enable the AU Member States to create a more open and connected data environment to drive economic growth and social development. African countries should use data to create new products and services, such as personalised healthcare recommendations, targeted marketing campaigns, and predictive weather forecasts. Furthermore, African countries should share data to improve public services, such as tracking disease outbreaks and managing natural disasters. This can also include using data to develop new technologies and solutions to African socio-economic development and growth.

6 STRATEGIC PILLAR 3: CREATING AN ENABLING ENVIRONMENT FOR AI DEVELOPMENT AND DEPLOYMENT

African countries should create an enabling environment for AI development and deployment by implementing several key measures. This includes establishing supportive policies, regulations, and legal frameworks that define AI ethics and protect intellectual property rights. Below are the strategy recommendations for consideration by AU Member States:

1) ***Provide Support to AI Start-Up Companies in Africa to Grow and Scale Up to the Commercial Level***: African governments and the private sector should support local AI start-up companies. This requires helping start-up companies with the right advice and infrastructure (legal, ethical, technical, among others) needed to create responsible AI products, grow, and scale up quickly. The following actions can boost start-up companies using AI in Africa:
    a. Streamline AI-specific startup incubation mechanisms and infrastructure such as technology parks and innovation hubs to provide office space, business and market advice, and clerical help to reduce the cost of starting a company and channel the focus of the engineers and scientists toward the technical problem at hand. African countries should also provide research and development (R&D) grants to provide the necessary infrastructure, capacity strengthening, and support. AI innovation hubs can provide access to education and training in AI to help people develop the skills they need to work in the AI industry. For example, the Nigerian government has established the AI for Development Academy, which provides training in AI to government officials, entrepreneurs, and other stakeholders.
    b. Provide incentives for public and private companies to purchase AI products locally from African AI companies rather than import from abroad. African countries should also augment

the funding offered to start-up companies through government-related bodies and other available funding streams.

c. Launch continental and national AI projects to address socio-economic challenges and bolster Africa's AI industry. Encourage innovation by presenting select projects as competitive opportunities for AI pioneers. Furthermore, African countries should host competitions at various levels to stimulate AI utilisation in addressing real-world challenges and fostering new market prospects. These competitions should connect promising entrepreneurs and startups with investors, mentors, donors, and government officials, enabling them to solve innovation challenges through AI applications.
d. Facilitate platforms to connect start-up companies with larger national and multinational corporations to showcase their AI ideas and applications. These initiatives can effectively promote awareness of AI technologies in Africa and individual countries. Moreover, they serve as a platform for participants to develop their entrepreneurial skills and support their overall growth.
e. Engage academia to train and provide low-cost talent and research on local needs and challenges. This will create an AI ecosystem with lower development costs, AI applications tailored to local needs, and a reduction in dependence on foreign companies.
f. Promote African governmental incentives for AI growth to stimulate the AI ecosystem. African governments should offer subsidies and tax waivers to foster the expansion of the AI economy. For instance, African governments should grant exemptions from corporate taxes to AI start-ups during their initial years of operation. This can significantly lower the capital and operational costs to enhance their chances of success during the crucial early stages. This can remove barriers for aspiring AI entrepreneurs and encourage innovation and entrepreneurship.
g. Provide tax waivers to attract investment to the AI sector and signal the government's commitment to supporting innovation and entrepreneurship, leading to a cycle of investment and industry growth.
h. Provide incentives such as subsidies and import duty reductions to reinforce Africa's AI implementation strategy. Subsidies provide financial support for AI companies, encouraging research, development, and the expansion of AI technologies and solutions. African countries should also provide import duty reductions to level the playing field, attract investment and foster growth while supporting local manufacturing and technology industries.
i. Enable regulatory sandboxes that are created in controlled environments for AI start-ups to test their products and services, thereby, reducing regulatory burdens and promoting innovation and compliance.

2) ***Foster a Collaborative and Supportive Environment for AI Entrepreneurs to Encourage the Growth of AI***: African countries should encourage and prioritise the growth of AI start-ups and SMEs through funding and support programmes, such as incubators and accelerators, backed by government-related bodies and projects. In addition, facilitating the procurement of local AI solutions by public and private organisations should be promoted.

3) ***Democratise Access to AI Technology Regardless of the Socio-Economic Status to Build an AI Skilled Workforce***: African countries should make a conscious effort to democratise AI in African countries by providing access to AI technology to everyone, regardless of their socioeconomic status. African governments should facilitate the introduction of AI technology into the private sector, including small businesses, by providing incentives for the use of AI technology. To accomplish this, African countries should provide free or low-cost AI training to people from all backgrounds to build a skilled workforce that can use AI to solve problems. Additionally, African governments should focus on democratising AI by making AI technology available to all through the production of AI-related digital public goods.

4) ***Reduce Barriers to AI in Africa to Incentivise Businesses Adopt AI Technology***: African countries should reduce the barriers impeding AI adoption and use. African governments should focus on democratising AI by making AI technology available to all. This can be accomplished through the production of AI-related digital public goods, such as open-source AI tools and datasets, to make AI technology more accessible to everyone, regardless of their budget. Additionally, African governments

should actively and deliberately address myths and misconceptions about AI to reduce the fear and distrust of AI, which can be a barrier to adoption. Fundamentally, African governments should develop policies that promote the adoption and use of AI to incentivise businesses that adopt AI, funding for AI research and development, and regulations that ensure that AI is used ethically and responsibly.

5) ***Promote Open Data and Collaboration to Facilitate AI Governance***: In collaboration with all stakeholders, African governments should explore policies and actions on Open Data, Open Storage and Computing, Open AI models, Open AI Algorithms, and Open AI marketplaces in collaboration with relevant stakeholders. African countries should create a more open and collaborative environment for AI development and use, which will benefit the entire continent. African governments should also develop policies that require public institutions to release data in open formats to make data more accessible to researchers, businesses, and other stakeholders.

6) ***Enhance Access to Quality Data for AI Development and Deployment***: African countries should develop comprehensive national data strategies that include data collection, storage, sharing, and analysis to ensure the availability and quality of data for AI development. This will help to ensure that AI systems are trained on high-quality data that is representative of the African continent. Fundamentally, African countries can collect data from a variety of sources, including government agencies, businesses, and individuals. African countries can store data in secure and accessible locations, create a comprehensive dataset through data sharing, and undertake data analysis to identify patterns and trends that can be used to improve AI systems.

7) ***Create Data Marketplace Through Well-Coordinated National Strategies to Enhance Data Commercialisation***: African government should create a data marketplace through well-coordinated national data strategies and should also tackle challenges related to the availability, accessibility, and commercialisation of data. Furthermore, the national data strategies should provide guidelines on data standards, data classification, and data governance. Therefore, African governments should develop national data strategies that outline the goals and objectives for creating a data marketplace and establish data standards to ensure that data is shared in a consistent and interoperable format to simply access to access data from different sources businesses and organisations. Additionally, African governments should classify data to protect privacy and security to ensure that data is used ethically and responsibly.

8) ***Promote Data Governance Frameworks to Ensure Data Quality and Interoperability***: African countries should develop and implement data governance frameworks and data standards that will ensure data quality and interoperability across different systems. Further to this, African governments should promote the use of open data platforms and Application Programming Interfaces (APIs) to facilitate access to data by AI developers and researchers. African countries should develop data governance frameworks that outline the principles and practices for managing data to ensure data quality, security, and privacy. Moreover, African countries should establish data standards to ensure that data is shared in a consistent and interoperable format to enable data sharing, data management, and compliance. African countries can accomplish data governance as follows:
    a. Create and adopt a national data strategy to accelerate responsible AI implementation. African countries should establish a National Data Strategy focused on data protection, privacy, and quality data for AI, including data sharing and reuse. They should also collaborate with international organisations such as WIPO and PAIPO to strengthen patent and intellectual property rights, liability, and competition laws. African countries should adopt and develop National AI Strategies that outline the vision and plan for AI implementation in government, private sector, and academia. This can be accomplished by identifying key enablers and initiatives to drive AI advancements in the government's AI strategies.
    b. Establish an AI Council to provide research-based technical and strategic advice. The AU should establish an AI council that will focus on providing research-based advice to African governments based on regional and national levels. This AI council can help RECs and Member States receive technical and strategic advice on handling new AI space developments such as the ChatGPT and deep fakes. This council can guide the creation of an enabling environment. Furthermore, each nation should have an AI ethics council that encourages sectorial or industrial-led self-regulation.

c. Strengthen data privacy and security to protect human rights. African countries should prioritise the development of comprehensive AI policies, regulations, and Ethical AI Frameworks that prioritise data privacy, and security, and address social and ethical concerns. This includes working towards the establishment of ethical AI frameworks that promote transparency, accountability, and the protection of privacy and human rights.
d. Promote data protection laws and regulations to ensure responsible use of data. African countries should promote robust data protection laws and regulations to ensure the responsible use of personal data. As such, African countries should actively engage with civil society organisations, promote public awareness of AI, and encourage public participation in AI policymaking processes. By doing so, African countries can foster an enabling environment for AI that upholds ethical principles, safeguards data privacy, and addresses societal and ethical implications.

9) ***Create a Regulatory Framework Supportive of AI Innovation to Foster AI Ecosystems***: African countries should institute a supportive AI ecosystem that encourages collaboration, aids start-up companies, and drives AI growth through national and continental projects. Collaboration across the public and private sectors, academia, and civil society is vital for creating an enabling environment for AI. This involves forging partnerships to advance AI research, development, and deployment, and fostering ecosystems that support AI start-ups and entrepreneurs.

10) ***Reshape the Outlook on AI in Africa to Bridge the Gap Between Academia and Business***: African countries should undertake media campaigns to shift citizens' mindsets towards functioning in a digital economy driven by AI. Innovative funding mechanisms, particularly for research and development, bridge the gap between academia and business. African countries should also support indigenous AI research centres and create regional centres of excellence with satellite laboratories across African countries to leverage limited resources and encourage cross-border collaboration.

11) ***Develop Policies and Programmes to Attract and Retain AI Talent in Africa***: African countries should implement competitive compensation packages to attract and retain AI talent, offering salaries, benefits, and bonuses that align with global standards. African governments should facilitate the relocation and repatriation of AI professionals. To retain talent, opportunities for career growth, professional development, mentorship, and leadership roles should be provided. Creating a culture of innovation and creativity is crucial, fostering an environment for advanced research, experimentation, and collaboration. Engagement with the global AI community through conferences and events will showcase Africa's potential and draw talented individuals to the region.

7 STRATEGIC PILLAR 4: ESTABLISHING A CONDUCIVE ECONOMIC CLIMATE FOR AI

African countries should bolster their AI economy in a more targeted manner by focusing on specific areas of growth and development. This includes creating specialised AI clusters and innovation hubs that concentrate resources, expertise, and infrastructure in specific sectors such as healthcare, agriculture, finance, or transportation. African countries should foster collaboration between industry, academia, and government in these targeted areas. This can encourage African countries to develop AI solutions that can address their unique challenges and opportunities. Additionally, African countries should offer targeted incentives and support to startup companies and entrepreneurs working in these sectors to access funding, mentorship, and regulatory flexibility. This can further stimulate the growth of AI-driven businesses and attract investments. By adopting this focused approach, African countries can leverage their strengths, accelerate AI adoption, and foster sustainable economic development. The strategy that African countries should adopt, and implement was summarised as follows:

1) ***Establish Targeted Investment and Funding Mechanisms for African AI Start-up Companies***: AU Member States should implement targeted investment for AI start-up companies in Africa to connect entrepreneurs with financial backers. Currently, several AU Member States have established AI funds

to provide capital and support to AI start-ups. For example, the Rwandan government has established the US$100 million AI for Good Fund, which provides funding and support to AI start-ups that are working to address social and economic challenges in Rwanda. Additionally, some AU Member States are providing tax breaks and other incentives to attract AI start-ups to their countries. For example, the Kenyan government is providing a 10-year tax holiday to AI start-ups that are registered in Kenya.

2) ***Mobilise Domestic and External Resources to Enhance Funding Mechanisms for AI Start-Up Companies***: African governments should mobilise domestic to enhance financial and technical support for public universities and start-up companies developing AI products and services. African countries can also seek additional resources from international developmental partners to complement domestic efforts and funding mechanisms. The AI research and innovations being supported by this funding should incorporate African solutions addressing specific Africa's socio-economic developmental challenges.

3) ***Adopt the African Union AI Grant and African Union AI Investment Funding Mechanisms***: African governments should adopt, adapt, and implement the African Union AI Grant and the African Union AI Investment funding mechanisms (Table 1). These funding mechanisms can be implemented as follows:
    a. The funding mechanisms should support early-stage and scale-up AI start-ups, as well as AI research, with a total funding amount of US$100 million and US$200 million, respectively. This should be undertaken over a duration of 5 years by allocating 70% of the funds to start-ups and 30% to research. These funding mechanisms can lower the risk for private investors and support the maturity of start-ups in facilitating the emergence of African AI unicorns. This can contribute significantly to the growth and development of the AI ecosystem in Africa.
    b. African countries should draw inspiration from similar investments undertaken by some global countries around towards AI development and deployment (Table 2). The Pan-Canadian AI Strategy, the European Union's Digital Europe Programme, the French Government's €1.5 Billion Investment in AI, China's Next Generation AI Development Plan, and South Korea's Investment in Advanced AI Chips all showcase the positive outcomes of government investment in AI. These outcomes include enhanced investment in AI R&D, the development of a strong talent pool, and the creation of vibrant AI ecosystems.
    c. African countries should also address limited data privacy and the misuse of AI and align their investments in AI and strive to be at par with global leaders. Through targeted investments in AI strategies and funds, African countries can foster innovation, drive economic growth, and position themselves as key players in the global AI landscape.

Table 1: Proposed Funding Mechanism for Enhancing AI Development in Africa

Funding Mechanism	African Union AI Grant Fund	African Union AI Investment Fund
Goal	Support early-stage and scale-up AI start-ups, AI research	Support equity and debt investment for AI companies, support growth stages
Funding Amount	US$100 million	US$200 million
Duration	5 years	5 years
Allocation	70% to start-ups, 30% to research	Equity and debt investment across funding rounds
Impact	Lower risk for private investors support start-up maturity. Facilitates the emergence of African AI unicorns.	Support product-market fit, deployment, scale-up, and growth stages

Table 2: Examples of Global Governments' Investments in AI Strategies and Their Impact

Case Study	Pan-Canadian AI Strategy	European Union's Digital Europe Programme	French Government's €1.5 Billion Investment in AI	China Next Generation AI Development Plan	South Korea's Investment in Advanced AI Chips
Funding Amount	US$125 million	€7.59 billion (for 2021-2027)	€1.5 billion over 5 years	US$2.1 billion government fund	US$642.5 million
Impact	Increased investment in AI R&D. Increased talent pool. Increased collaboration.	Increased investment in AI R&D. Increased talent pool. Increased collaboration.	Increased investment in AI R&D. Vibrant and competitive AI ecosystem.	Become a global leader in AI R&D. Strong AI talent pool. Vibrant AI ecosystem.	Creation of new AI chip start-up companies. Development of new AI chip technologies. The attraction of foreign investment.
Challenges	Lack of diversity. Limited data privacy. Misuse of AI	Lack of diversity. Limited data privacy. Misuse of AI.	Lack of diversity. Limited data privacy. Misuse of AI.	Young and inexperienced talent pool. Limited data privacy. Misuse of AI.	Industry competitiveness. Capital-intensive. Time-consuming

4) ***Establish an African Union AI Challenge for Start-Up Companies to Leapfrog AI Innovation and Commercialisation***: AU Member States should establish the African Union AI Challenge can be an annual event that tackles major challenges across sectors in Africa, stimulating innovation, and seeking solutions as outlined in Table 3. African countries undertake this initiative to spur innovation and find solutions to tough challenges in Africa. This can be accomplished by fostering government support and private-sector collaboration to create supportive policy frameworks and enhance AI innovation and commercialisation. The challenge should start by offering significant prize amounts ranging between US$100,000 and US$2 million. African governments are encouraged to allocate the initial funding towards such AI initiatives to enable start-up companies and academic institutions to participate by submitting their AI solutions.

5) ***Ensure Sustainability of the African Union AI Challenge to Strengthen the AI Ecosystem***: Subsequently, to ensure the sustainability of this initiative, Africa's private sector and previously supported startup companies should contribute to AI funds that support other upcoming local start-up companies. The objectives of the challenge should include advancing AI, thereby, increasing the number of stakeholders in the AI ecosystem, and attracting potential support from bilateral and multilateral partners. Furthermore, the initiative should leverage corporate social responsibility initiatives of large corporations in Africa.

6) ***Establish AI Trade Shows for Exhibitions and Expositions to Showcase Newly Developed AI Products***: The AU should establish an African Union AI Trade Show, an annual event that brings together AI start-up companies, enterprises, investors, and governments. The trade show should provide a platform for African AI start-up companies to showcase their products to relevant and key stakeholders. The trade show should also feature deal rooms where the AU can facilitate deals and collaborations between specific start-up companies, investors, and governments to encourage deal-making, investment, and partnership.

7) ***Expand the Capacity of the AI Trade Shows to Enhance AI Visibility***: The African Union AI Trade Show should provide a total investment of US$1 billion in African AI companies within a span of 5 years. The Trade Show is envisaged to establish 1,000 strategic partnerships during the same period. To ensure regional representation, the trade show should be hosted in different countries each year, following a rotational mechanism to cater for West Africa, East Africa, Central Africa, Southern Africa, and North Africa. The hosting responsibility should be undertaken by the respective governments of the chosen countries. By adopting this approach, the trade show will enhance the visibility of AI start-up companies across various African nations.

8) ***Partner Venture Capital Firms to Bolster AI Investments***: African governments, start-up companies, and innovators should partner with venture capital firms specialising in AI investments as another potential avenue for complementary funding. These firms may be interested in becoming venture partners and contributing to the AI fund, which currently stands at US$100 million. Furthermore, the AU should tap into the corporate social responsibility initiatives of large corporations operating in Africa. By engaging with these companies, African countries should seek contributions to the AI funds, thereby supporting the development of AI start-up companies in the continent while aligning with corporate social responsibility goals.

Table 3: African Union AI Challenge and its Potential Impact

	Initiatives	African Union AI Challenge	Outcomes	Impact
1	**Description**	An annual challenge that poses major challenges in Africa across various sectors (e.g., health, agriculture, education, and government services) to spur innovation and find solutions.	Spur innovation and solutions to tough challenges in Africa.	Government support and collaboration with African governments to create supportive policy frameworks.
2	**Winning Prize**	Ranges from US$100,000 to US$2 million.	The annual challenge across sectors with a significant prize range of US$100,000 to US$2 million.	Encourage governments to allocate funds to AI initiatives
3	**Participants**	Start-up companies and academic institutions can submit their solutions.	Submissions are accepted from start-up companies and academic institutions.	Contributions to AI funds for supporting local start-ups.
4	**Objectives**	To spur innovation and find solutions to tough challenges in Africa. To advance Artificial Intelligence. To increase the number of actors in the ecosystem.	Advancement in Artificial Intelligence. Increase the number of actors in the AI ecosystem. Potential support from bilateral and multilateral partners.	Corporate social responsibility. Leverage corporate social responsibility initiatives of large corporations in Africa.
5	**Support**	Bilateral and multilateral partners can provide support.	Seek partnerships from international multilateral organisations and private organisations. Funding support from bilateral organisations.	Venture capital firms. Partner with venture capital firms specialised in AI investments. Contribution to the AI fund as venture partners.
6	**Model Inspiration**	Modelled after the Defence Advanced Research Projects Agency (DARPA) under the US government.	Internet revolutionised communication and access to information. GPS impacted transportation and national security. Stealth technology improved national security.	The internet revolutionized communication and access to information. GPS transformed transportation and national security. Stealth technology enhanced national security.
7	**DARPA Successes**	Development of the Internet. Development of GPS. Development of stealth technology.	The Internet facilitates instant communication, provides access to vast information resources, and drives the growth of industries and technologies. GPS enables precise and reliable global positioning, navigation, and timing information, transforming sectors such as aviation, shipping, logistics, and personal navigation to enhance efficiency, safety, and productivity in these industries. Stealth technology minimises radar detection of military assets such as aircraft and ships to offer strategic advantages in military operations, enables more effective and covert missions, bolsters defence capabilities, and influences the balance of power among nations.	DARPA Grand Challenge (2004-2007): Development of autonomous vehicles. DARPA Robotics Challenge (2012-2015): Development of semi-autonomous robots for disaster scenarios. DARPA Lifelong Learning Machines (L2M) Challenge (2021-present): Development of adaptable AI systems.
8	**DARPA Challenges**	Controversy over potential misuse. High cost of research and development. Time-consuming development process.	Controversial technologies and potential misuse. High cost of technology development. Time-consuming development process.	DARPA challenges have faced controversy and concerns regarding the potential misuse of the technologies being developed. The research and development process for DARPA challenges involves high costs, which can be a significant barrier to innovation. The development process for DARPA challenges is often time-consuming, requiring extensive resources and expertise.

8 STRATEGIC PILLAR 5: BUILDING SUSTAINABLE PARTNERSHIPS

Africa should institute, build, and strengthen sustainable partnerships for AI in Africa through several key strategies. This can be accomplished by establishing formal frameworks and policies that encourage collaboration and cooperation among various stakeholders, including governments, academia, the private sector, and civil society organisations. These frameworks should prioritise the sharing of knowledge, resources, and expertise to foster innovation and address common challenges. Additionally, African countries should create platforms and networks to facilitate ongoing dialogue, exchange of best practices, and joint initiatives. These platforms can include conferences, workshops, and research collaborations, where stakeholders can converge to share experiences, learn from each other, and collectively advance AI development in Africa.

African countries should leverage existing international partnerships and forge new ones with global organisations, development agencies, and technology companies. Collaborating with organisations such as the United Nations, World Bank, and technology giants can provide Africa with access to funding, expertise, and cutting-edge technologies, while also enabling knowledge transfer and capacity building. By instituting, building, and strengthening sustainable partnerships, Africa can harness the power of AI to drive inclusive and sustainable development, tackle pressing societal challenges, and position the continent at the forefront of the global AI landscape. The strategy recommendations to build and strengthen sustainable partnerships were summarised as follows:

1) ***Launch an Effective Communication Strategy for AI Partnerships***: African countries should develop comprehensive communication and advocacy policies to engage stakeholders effectively. This communication and advocacy strategy should emphasise the value proposition of AI in Africa, by positioning AI within a formal context and position on both continental and global levels. Furthermore, Africa should attract investments and foster meaningful collaborations, making the AI venture in Africa more compelling and rewarding.

2) ***Implement a Continental Advocacy Strategy for Accurate AI Decision-Making***: African countries should implement a continental communication and advocacy strategy through campaigns, education, advertisements, and mass media efforts to raise public awareness about AI applications, benefits, user-friendliness, potential, and accessibility of existing and upcoming AI interventions. This will significantly empower users with relevant AI knowledge to make informed decisions and fully leverage the transformative power of AI in their daily lives.

3) ***Foster Collaboration on AI Policy Framework Between African Governments***: African governments should collaborate to establish a common AI policy framework that supports the growth of AI start-ups within each country. This framework can include policies such as tax breaks for AI companies, investment in AI research and development, and the creation of a regulatory environment that is supportive of AI innovation. By leveraging these supportive policies, the African Union should encourage governments to allocate funds to AI initiatives, thus boosting the financial resources available for the development of AI start-ups. This funding can be used to support AI research and development, provide training for AI professionals, and help AI start-ups scale up their operations.

4) ***Create a Framework for Cooperation on AI Between Different Levels of Government and Different Stakeholders***: African countries should establish and foster partnerships at local, regional, and continental levels. African countries are encouraged to implement the following recommendations to enhance communication and advocacy in AI:
    a. Prioritise the future of work and foster collaboration among stakeholders in the AI sector to create economic growth, job opportunities, and skill development.
    b. Establish a robust legal framework and advisory system to facilitate partnerships, standardize communication modes, and protect intellectual property rights.

c. Prioritise the identification of AI activities, monitor progress, and facilitate resource sharing and networking across the continent to accelerate AI development and adoption.
d. Develop modules to publicise and raise awareness of existing AI models, promoting understanding and adoption of AI solutions.
e. Establish a digital survey and questionnaire structure for systematic data collection and analysis, informing effective policymaking and targeted interventions.
f. Identify and engage stakeholders, both local and international, to foster effective collaborations and build strong networks in the AI sector.
g. Foster transparent communication, trust, and mutual expectations to facilitate productive and successful collaborations.
h. Focus on core areas of interest, such as education, healthcare, agriculture, and entrepreneurship, to drive progressive partnerships and collaborations that address societal challenges and promote sustainable growth.

5) ***Initiate Continental and National AI Projects to Incentivise Public-Private Partnerships***: African countries should initiate continental and national AI projects to address African challenges, along with establishing centres of excellence at various levels, which can further enhance the AI ecosystem. African governments should also foster public-private partnerships, incentivise private-sector investment in AI, and promote international collaborations to exchange knowledge, resources, and participation in global AI initiatives and projects.

6) ***Mandate Multinational Firms to Establish Physical Offices and R&D Laboratories in Africa to Enhance AI Advancement***: African countries should mandate multinational firms to establish physical offices and R&D laboratories in strategic parts of the continent to ensure that AI is used in a way that is beneficial to all Africans. This strategy would encourage multinational firms to have a closer presence in Africa, which would allow them to interact more closely with African governments and stakeholders. This would also ensure that AI is developed and used in a way that is aligned with African priorities and values. Additionally, having physical offices and R&D laboratories in Africa would allow multinational firms to develop products and services that are specifically designed for the African market. This can ensure that AI is used to solve African problems and to improve the lives of Africans. Finally, having physical offices and R&D laboratories in Africa would create jobs and opportunities for African workers. This would help to build up Africa's AI skills and capabilities, which would ultimately benefit the continent as a whole.

7) ***Establish a Strategy Committee for AI Partnerships and Economy in Africa***: The AU should establish a Strategy Committee for AI Partnerships and the economy. This committee, appointed by the African Union, should consist of experts tasked with monitoring and evaluating the activities of AI and its impact across the continent. African countries should leverage AI partnerships and economic opportunities to drive sustainable and progressive development in Africa's socio-economic landscape. The Strategy Committee should ensure that AI initiatives are closely integrated into Africa's socio-economic development plans to maximise the potential of AI technologies. This can drive inclusive economic growth, job creation, and improved living standards across the continent.

9 STRATEGIC PILLAR 6: FOSTERING CAPACITY FOR MONITORING AND EVALUATION OF AI STRATEGIES IN AFRICAN COUNTRIES

African policymakers should regularly report on the impact of AI in local and regional socio-cultural and economic sectors. It is crucial for African countries to effectively monitor AI regulation and responsibly implement AI technologies for socio-economic development. This will enhance the capacity for monitoring and evaluating AI strategies in African countries. Therefore, AU Member States should deliberately undertake monitoring and evaluation of AI strategies to ensure adherence to timelines, indicators, implementation plans, target and performance indicators, risk factors, and success factors. This can guarantee the successful development and deployment of AI in Africa.

The following actions should be implemented to ensure the evaluation and monitoring of AI development and deployment in Africa:

1) ***Establish Timelines for AI Implementation to Ensure Efficiency***: African countries should strengthen the monitoring and evaluation of their national AI strategies by establishing clear timelines for AI development and deployment. These timelines should ensure that the strategy is implemented in a timely and efficient manner. However, these timelines should be realistic and achievable and should be communicated to all relevant stakeholders involved in the implementation of the strategy.

2) ***Develop Target and Performance Indicators to Measure the Progress of the AI Strategy:*** African countries should develop a set of targets and performance indicators to measure the progress of the AI strategy. These indicators should be specific, measurable, achievable, relevant, and time-bound. These indicators should be aligned with the goals and objectives of national development plans and AI implementation strategies. Additionally, the target and performance indicators should be developed based on the specific activities outlined in the implementation plan. These indicators should measure the progress of the AI strategy and identify any areas where the strategy is not meeting its goals.

3) ***Outline the AI Implementation Plan with a Budget and Timeline***: After establishing the target and performance indicators, African countries should create a comprehensive implementation plan. This plan should delineate the specific activities that will be undertaken to achieve the goals and objectives outlined in the strategy. It should encompass a budget allocation and a timeline for the implementation process. By including these elements, the implementation plan provides a clear roadmap for executing the strategy effectively and efficiently.

4) ***Identify and Assess Risk Factors of AI Implementation***: During the monitoring and evaluation process, African countries should identify and assess the risk factors associated with AI implementation. These factors should encompass potential limitations, such as insufficient funding, a lack of technical expertise, and changes in the political and regulatory landscape. Recognizing and evaluating these risk factors is essential as they have the potential to hinder the socio-economic development and growth facilitated by AI technologies.

5) ***Indicate the Success Factors of an AI Implementation Strategy***: During the monitoring and evaluation process, African countries should identify and assess success factors. These factors serve as benchmarks for tracking progress and enable the implementation of intervention measures when these success factors have not been achieved. Success factors may encompass elements such as strong leadership, a well-defined strategy, and a supportive environment for innovation. By focusing on these factors, African countries can effectively measure their success of implementation, or lack thereof, and subsequently make the necessary adjustments to ensure the fulfilment of their AI goals and objectives.

6) ***Involve All Relevant AI stakeholders in AI Implementation and the Monitoring and Evaluation Process***: To ensure a well-rounded AI implementation process, African countries should engage all relevant stakeholders in the monitoring and evaluation phase. These stakeholders should encompass government officials, innovators, industrial partners, businesses, civil society organisations, and the public. By involving a diverse range of stakeholders, the monitoring and evaluation process will become more comprehensive and accurate. This inclusive approach enables a holistic assessment of the AI implementation, incorporating different perspectives, and ensuring that the interests and needs of various stakeholders are considered.

7) ***Harness and Leverage Data Collected Within Africa to Implement Monitoring and Evaluation of AI Implementation***: African countries should harness, and leverage data collected within Africa to conduct the monitoring and evaluation of AI implementation. This data can be gathered through diverse sources such as surveys, interviews, and performance reports. By carefully analysing this data, African countries can accurately identify the areas where the AI strategy is yielding positive outcomes and areas that require improvement. Utilising this data-driven approach enables informed decision-making and targeted interventions to optimise the impact of AI implementation in Africa.

8) ***Automate Certain Tasks for Monitoring and Evaluation of AI Strategy***: African countries should leverage AI technology to automate certain tasks within the monitoring and evaluation of their AI strategy. By doing so, African countries can streamline processes and save valuable resources that can be allocated to other essential tasks. Automation in monitoring and evaluation allows for increased efficiency and effectiveness, enabling stakeholders to concentrate their efforts on areas that require human expertise and decision-making.

9) ***Implement a Continuous Improvement Approach to AI Implementation***: African countries should adopt a continuous improvement approach to AI implementation, guided by the insights and recommendations derived from ongoing monitoring and evaluation processes. This means that the implementation and evaluation of AI strategies should be a continuous and iterative process, aimed at refining and enhancing the AI strategy over time. By embracing this approach, African countries can maximise the benefits of their AI investments, staying agile and responsive to evolving needs and opportunities in the AI landscape.

10 CONCLUSION

APET advises that African countries should formulate legislation and laws that can facilitate the adoption of AI, especially in countries lacking AI strategies and regulatory frameworks. Furthermore, African countries should create platforms that can showcase the ongoing AI activities and plans to demonstrate the potential impacts and outputs of the AI economy in Africa. Additionally, African countries should strengthen human capital development and skills in AI which are crucial to enhance the impact of AI. Additionally, African countries should address challenges and opportunities for the youth, include case studies of AI in human capacity building, and consider the diverse languages spoken in Africa to ensure AI is relevant and accessible to local communities.

Ethical considerations should be integrated into AI policies, with a focus on data protection, the safety of AI systems, and stakeholder perspectives. African governments should also prioritise the training and enablement of AI jobs and entrepreneurship within the public and private sectors, as well as emphasise women's representation in technology. Most importantly, African countries should strengthen infrastructure and data foundations by incorporating efficient and reliable energy sources for data centres and data ownership policies. African countries should also prioritise skills development in data governance to enable collaborations and sharing of infrastructure.

To promote the AI economy, African countries should implement self-regulation and incentives for self-reporting. This includes formulating and implementing domestic funding mechanisms, public-private investments, and security measures for AI systems in Africa. In addition, Africa's AI research and innovation should focus on generating local solutions for African challenges and in African languages. Thus, incentives such as tax waivers, subsidies, and local funding mechanisms can support AI businesses, startups, and entrepreneurship. Moreover, creating sustainable partnerships encompassing joint ventures, skills transfer, innovation, technology, finance, capacity building, and trade should be established.

Finally, APET emphasises the importance of implementing these policy recommendations within the framework of strategic partnerships, progress monitoring, and evaluation. The African Union can play a crucial role in facilitating and coordinating these partnerships and generating progress reports to enhance competitiveness and improve AI initiatives and centres of excellence across African countries. Regular measurement of AI readiness and progress can strengthen the AI ecosystem and drive continuous improvement.