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**From the New Partnership for Africa's Development to
Agenda 2063: progress in the implementation of sustainable
development in Africa and international support**

Biennial report on the review of the implementation of commitments made towards Africa's development

Report of the Secretary-General*

Summary

The present report is submitted pursuant to General Assembly resolution [66/293](#), through which the General Assembly established the United Nations monitoring mechanism to review commitments made towards Africa's development and requested the Secretary-General to submit a biennial report to review progress on the implementation of such commitments. The report provides an assessment of Africa's development commitments using the Sustainable Development Goal framework, focusing on the interconnection between science, technology and innovation with governance and human capital. Five years before the deadline for the implementation of the 2030 Agenda for Sustainable Development, progress in these areas is insufficient. The report provides recommendations to reverse this trend and activate science, technology and innovation as a driver for industrialization and job creation, and governance as an enabler for human capital development.

* The present report was submitted to the conference services for processing after the deadline for technical reasons beyond the control of the submitting office.



I. Introduction

1. The present report is submitted pursuant to resolution [66/293](#), through which the General Assembly established the United Nations monitoring mechanism to review commitments made towards Africa's development. Through its resolution [76/236](#), the General Assembly endorsed the evaluation by the Office of Internal Oversight Services (OIOS) of United Nations support for the New Partnership for Africa's Development (see [A/76/16](#) and [E/AC.51/2021/4](#)). In the evaluation, OIOS suggested that a focus on gaps and challenges was preventing the implementation of commitments to inform decision-making and recommended establishing a dedicated intergovernmental forum under the auspices of the General Assembly for the periodic review of commitments.¹

2. In implementing that resolution, the Office of the Special Adviser on Africa devised a new structure, differentiating the three components of the monitoring mechanism: (a) monitoring, through a permanently available data platform; (b) reporting, through the biennial reports and other analytical products; and (c) accountability, through the multi-stakeholder dialogue under the auspices of the General Assembly, to provide a dedicated intergovernmental forum.

Methodology for the review of commitments

3. The methodology for reviewing commitments is guided by five principles established in General Assembly resolution [66/293](#): mutual accountability; focus on outcomes; reliance on existing monitoring mechanisms; coherence with United Nations processes; and a cluster-based approach. It builds on the commitments included in the 2030 Agenda for Sustainable Development² and aligns with Agenda 2063: The Africa We Want.³

4. The report is focused on two interlinked clusters: governance and human capital; and science, technology and innovation. It discusses the relevance of those clusters for advancing education, digital transformation and jobs and social protection, three of the six transformative entry points⁴ for advancing Sustainable Development Goal implementation. It also contains a review of the interaction of those transitions with the four critical means of implementation⁵ identified. Through its analysis and recommendations, the report is intended to contribute to the efforts of United Nations country teams to accelerate Sustainable Development Goal implementation during the final five years of the 2030 Agenda, in particular when developing the new generation of cooperation frameworks.

II. Integrated analysis of science, technology and innovation, skills and industrialization for sustainable development

5. In the 2030 Agenda, the interconnections between science, technology and innovation, human capital and industrialization are recognized as key drivers of sustainable development. Through the Global Digital Compact, Member States adopted specific commitments to maximize this potential through digital technologies.

¹ Established through resolution [76/297](#).

² United Nations, SDG Indicators Database, available at <https://unstats.un.org/sdgs/dataportal>.

³ For more information see [A/77/908](#).

⁴ Food systems; energy; education; digital; climate change and biodiversity; and jobs and social protection.

⁵ Finance; technology; Sustainable Development Goal localization; and public sector capabilities.

In this section, Africa's progress in science, technology and innovation⁶ policies and investments is assessed, with a particular focus on strengthening science, technology, engineering and mathematics (STEM) education⁷ to build a skilled workforce. There is then an exploration of how these skills support the growth of information and communications technology (ICT)-led micro-, small and medium-sized enterprises and industrialization, which are essential for creating decent jobs. Lastly, there is a consideration of the role of governance and social protection in ensuring that economic gains translate into inclusive and resilient development.

A. Enhancing science, technology, engineering and mathematics education to promote a skilled workforce in Africa

Assessing progress towards science technology and innovation policy development

6. African Governments adopted the Science, Technology and Innovation Strategy for Africa 2024, which “places science, technology and innovation at the epicentre of Africa’s socioeconomic development and growth”.⁸ Currently, 41 African Union member States have either developed or revised science, technology and innovation policies, with 24 of them doing so since the establishment of the Strategy in 2014.⁹ Many African countries’ science, technology and innovation policies give prominence to investment in research and development, with a specific commitment to increase gross expenditure on research and development to at least 1 per cent of gross domestic product (GDP).¹⁰

7. However, the implementation of this commitment has remained a persistent challenge for Africa, underlining the challenges of mobilizing resources for investment in economic transformation. For instance, in 2023, Africa’s average research and development investment across sectors (Sustainable Development Goal indicator 9.5.1) was at approximately 0.45 per cent of GDP compared with the global average of 1.7 per cent.¹¹ One notable exception is Egypt, which has exceeded the African Union target by allocating more than 1 per cent of its GDP to research and development. While other countries are still working towards meeting the continental benchmark, the trend shows growing investments, for example in Kenya (0.41 in 2022 to 0.81 in 2023), Rwanda (0.65 in 2016 to 0.79 in 2023), South Africa (0.60 in 2020 to 0.62 in 2022) and Tunisia (0.59 in 2015 to 0.75 in 2019).¹²

8. Increasing research and development investments foster industrialization, facilitate technology transfer and promote ICT-driven micro-, small and medium-sized enterprises, in particular in the era of digitalization and knowledge-based economies. For instance, cross-border payments for the use of intellectual property

⁶ Science, technology and innovation encompasses policies, systems and collaborative efforts that drive scientific research, technological advancement and innovation to address global challenges and achieve the Sustainable Development Goals. See <https://sdgs.un.org/documents/policy-brief-1-science-technology-and-innovation-sdgs-roadmaps-framework-and-working>.

⁷ Refers to the academic disciplines of science, technology, engineering and mathematics. It is focused on education and skill development, forming the foundation for a nation’s capacity to engage in science, technology and innovation activities. See <https://unevoc.unesco.org/home/Glossary+article%3A+STEM>.

⁸ Michael J. Khan, “The status of science, technology and innovation in Africa”, *Science, Technology and Society*, vol. 26, No. 3 (September 2022).

⁹ African Union and others, *African Innovation Outlook IV* (Johannesburg, South Africa, 2024).

¹⁰ See <https://archive.uneca.org/node/27763>.

¹¹ World Economic Forum, “Innovative approaches for unlocking R&D funding in Africa”, 9 November 2023.

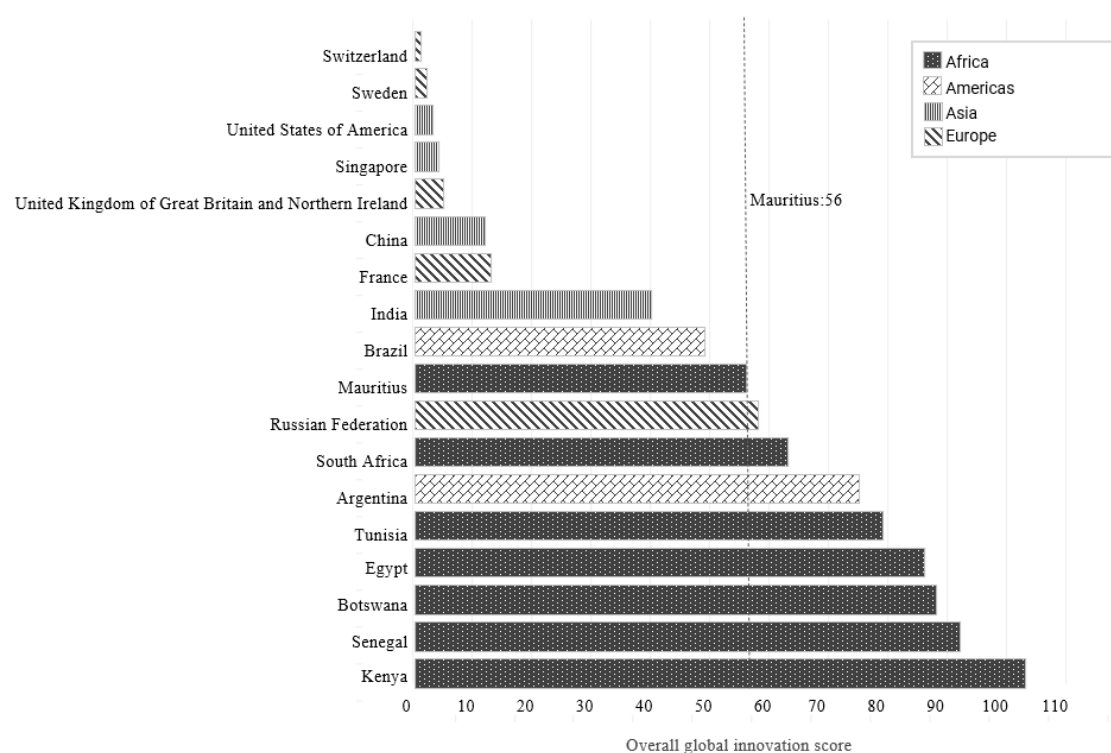
¹² UNESCO Institute for Statistics (2025).

surpassed \$1 trillion dollars in 2022, marking a record high and doubling from 2010, representing 7.5 per cent of the total commercial services trade.

Advancing Africa's science, technology and innovation landscape: global challenges and regional progress

9. Significant efforts are required to position the continent to benefit from the rapidly evolving science, technology and innovation ecosystem. No African country appeared among the top 50 countries in the Global Innovation Index 2024.¹³ Mauritius stands out as the highest-ranked African country in the Index owing to its strategic focus on innovation and development. Its performance is driven by strengths across Global Innovation Index pillars, notably institutions (thirty-third), market sophistication (twenty-fourth) and human capital and research (sixty-ninth), which support its shift towards manufacturing and financial services.¹⁴

Figure I
Global Innovation Index in selected countries



Source: Global Innovation Index 2024.

10. At the regional level, there has been an increase in the number of technology hubs, which are significantly impacting various sectors, including financing, agriculture, health and education. The number of technology hubs has increased from 260 in 2013 to 820 in 2023 throughout the continent.¹⁵ For instance, Nigeria has 108 technology

¹³ The Global Innovation Index is an annual ranking of countries based on their innovation capabilities and performance, published by the World Intellectual Property Organization (WIPO).

¹⁴ Soumitra Dutta and others, eds., *Global Innovation Index 2024: Unlocking the Promise of Social Entrepreneurship*, 17th ed. (Geneva, WIPO, 2024).

¹⁵ African Union, *Review of the Science, Technology and Innovation Strategy for Africa, Final Report (STISA-2024)* (Addis Ababa, December 2023).

hubs, South Africa 87, Kenya 83 and Egypt 53.¹⁶ African countries have also made progress in scientific outputs, as a result of enhanced research and development partnerships, enhanced access to technology and research data and an increased number of researchers. The number of scientific publications increased from 73,055 in 2014 to 171,576 in 2022.¹⁷

11. A critical enabler of this innovation ecosystem is digital infrastructure, which is expanding rapidly in sub-Saharan Africa, driven by strong investment incentives. However, unlocking the full potential of digital growth will require digital access to be made both affordable and widespread. In this regard, the adoption of digital public infrastructure presents a transformative opportunity. By adopting digital public infrastructure approaches, African countries can upgrade their service delivery systems in a safe, inclusive and secure manner – while upholding human rights and safeguarding intellectual property. Digital public infrastructure can serve as a foundational layer that accelerates innovation, fosters entrepreneurship and ensures that technological progress benefits all segments of society.¹⁸ African countries such as Ghana, Kenya, Morocco, Nigeria, Rwanda, Senegal, South Africa and Tunisia are developing tech companies with support from new legislation, digital innovation policies, private investors and international partners.

Strengthening Africa's science, technology and innovation through international partnerships and domestic resource mobilization

12. Achieving sustainable progress in science, technology and innovation in Africa requires a decisive shift towards domestic resource mobilization, supported by strong digital public infrastructure. While international partnerships remain important, as emphasized in Sustainable Development Goal indicator 17.6.1, overreliance on external funding undermines long-term resilience. In more than 45 African countries, more than 80 per cent of gross domestic expenditure on research and development is financed by external sources. This dependency is compounded by persistently low public and private investment in tertiary and STEM education. For instance, although the STEM graduation rate in Tunisia stood at 22 per cent in 2021, its public spending on tertiary education remained at just 1.4 per cent of GDP. Throughout the continent, average research and development investment is only 0.45 per cent of GDP – well below the global average of 1.7 per cent, with only Egypt exceeding the African Union target of 1 per cent. Private sector engagement remains limited, further constraining innovation capacity. Strengthening domestic investment in science, technology and innovation alongside, not in place of, international support, is therefore critical. It will require coordinated policies that align education systems with national innovation goals, create incentives for private sector participation and leverage digital infrastructure to expand inclusive access and accountability.¹⁹

13. At the same time, most African countries lack concrete strategies to mobilize private investment in research and development, including the use of fiscal and legal incentives. The private sector contributes less than 15 per cent of national gross expenditure on research and development in many countries, and in some cases this share is declining.²⁰ However, there are notable exceptions. For example, South Africa mobilizes more than 40 per cent of its gross expenditure on research and

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ *2024 Annual Report of the Interdepartmental Task Force on African Affairs (IDTFAA): Shaping Africa's Inclusive and Sustainable Digital Future Anchoring the Pact of the Future* (United Nations publication, 2024).

¹⁹ Ibid.

²⁰ African Union, *Review of the Science, Technology and Innovation Strategy for Africa, Final Report* (2024).

development from private sources, and Egypt recorded the highest level of domestic research and development expenditure on the continent – amounting to \$8.86 billion in 2022.²¹

14. To reduce dependence on external funding and support a lasting science, technology and innovation system, African countries need to strengthen domestic resource mobilization systems. This depends on digital tools that help Governments in public financial management, share data more effectively and increase public trust. These systems can improve how resources are managed and make it easier to fund science, research and innovation in the long run.²²

15. While international funding will remain important, the long-term sustainability and resilience of Africa's science, technology and innovation systems hinge on domestic investments supported by digital public infrastructure-enabled domestic resource mobilization.

Bridging the science, technology and innovation gap: enhancing science, technology, engineering and mathematics education and policy implementation in Africa

16. STEM education and training are pivotal to creating a skilled workforce to advance science, technology and innovation (Sustainable Development Goal indicator 4.4.1) and leverage the potential of frontier technologies. Frontier technologies represented a \$2.5 trillion market in 2023 and are estimated to reach \$16.4 trillion by 2033.²³ STEM education can address the skills mismatch and a general lack of prospects that push an estimated 30 million youth entering the labour market in Africa each year (excluding North Africa) into joblessness.²⁴ For example, from 2022 to 2023, Nigeria, Ghana and Kenya were the world's fastest-growing countries with regard to Github developers, which is considered a proxy for artificial intelligence readiness.²⁵ Furthermore, artificial intelligence has the potential to help overcome barriers encountered by persons with disabilities, leading to more inclusive societies and job markets. Recognizing this potential, at the Transforming Education Summit digital education was reaffirmed as a public good and a gateway initiative put forward to support the development of public digital learning platforms and curricula. Similarly, the Doha Programme of Action for the Least Developed Countries contains a proposal for the creation of an online university aimed at making STEM education accessible to the least developed countries. At the regional level, the African Union Agenda 2063, the Science, Technology and Innovation Strategy for Africa 2024, the Continental Education Strategy for Africa 2016–2025 and the African Digital Transformation Strategy provide a framework for strengthening STEM education and harnessing science, technology and innovation to enhance industrialization and socioeconomic development in Africa, including the establishment of a Pan African Virtual and E-University.

17. Based on these commitments, most African countries have developed national policies that promote STEM education through domesticating the Science, Technology

²¹ Saifaddin Galal, "Value of gross domestic expenditure on research and development in Africa from 2020 to 2022, by leading country" (10 March 2025), available at www.statista.com/statistics/1344996/gerd-value-in-africa-by-country/.

²² 2024 Annual Report of the Interdepartmental Task Force on African Affairs.

²³ United Nations Conference on Trade and Development (UNCTAD), *2025 Technology and Innovation Report: Inclusive Artificial Intelligence for Development* (United Nations publication, 2025), available at <https://unctad.org/publication/technology-and-innovation-report-2025>.

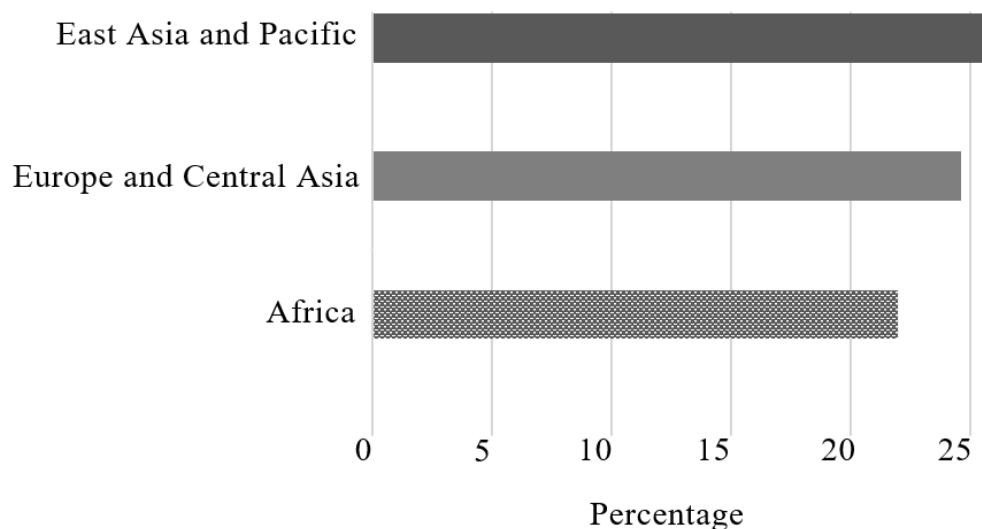
²⁴ Mo Ibrahim Foundation, "Africa's youth: jobs or migration?", 2019.

²⁵ UNCTAD, *2025 Technology and Innovation Report*.

and Innovation Strategy for Africa 2024.²⁶ However, even though most African government development policies and national plans contain references to STEM (usually called mathematics and science), effective policy implementation remains a challenge. Given that the number of STEM graduates per country or region may serve as an indicator of future scientific and technological capacity, Africa has the biggest gap to overcome in terms of STEM graduates compared with other regions.

Figure II

Average percentage of science, technology, engineering and mathematics graduates (2015–2020)



Source: United Nations Educational, Scientific and Cultural Organization (UNESCO), Institute for Statistics school closure data, available at <https://covid19.uis.unesco.org/global-monitoring-school-closures-covid19/>.

18. Currently, less than 2 per cent of African students under 18 complete school with basic STEM skills.²⁷ Within the continent, the Northern Africa subregion represents an exception. In Tunisia, approximately 40 per cent of tertiary students graduate in STEM fields – one of the highest rates globally. Algeria, Mauritania and Morocco also have approximately 29–30 per cent STEM graduates, exceeding many developed economies such as the United Kingdom of Great Britain and Northern Ireland (26 per cent), France (25 per cent) and Spain (23 per cent).²⁸ Governments in Northern Africa have implemented ambitious policies to promote STEM, including curriculum reforms and teacher training programmes, which could suggest a correlation between public and private investment in STEM and higher graduate rates.

Vocational and technical training

19. Most African countries also face challenges with STEM-oriented vocational and technical education, which accounts for an average of less than 17 per cent of the student population.²⁹ This is in contrast to some Organisation for Economic

²⁶ United Nations, Office of the Special Adviser on Africa, “Science, technology, engineering and mathematics (STEM) as an enabler for development and peace”, policy paper, February 2022.

²⁷ Kelly Chibale, “Investing in STEM education and building scientific capacity is critical for Africa”, Daily Maverick, 14 July 2022.

²⁸ Katharina Buchholz, “Which countries’ students are getting most involved in STEM?”, World Economic Forum, 20 March 2023.

²⁹ Based on available data for 32 African countries.

Co-operation and Development (OECD) countries, in which 40 per cent, on average, of high school students choose vocational and/or technical tracks,³⁰ and China, with approximately 36 per cent of upper-secondary students enrolled in vocational programmes.³¹

20. This means that Africa has a much smaller pipeline of youth gaining practical STEM technical skills through vocational training. Low participation in both academic STEM education and technical and/or vocational training contributes to the continent's skills gap. Improving STEM outcomes in Africa will require public investment to be grown to increase university STEM graduates and quality technical and vocational education and training education (e.g. technician training, ICT certificates, engineering technology programmes) to be expanded to meet labour market needs. Africa will need an additional 23 million STEM graduates by 2030 to fill critical positions in engineering, information technology and healthcare.³²

21. It is estimated that, by 2030, more than 230 million jobs in Africa will require digital skills, creating a potential demand for nearly 650 million training opportunities to upskill the workforce, in particular in STEM fields.³³ The ability of Africa to convert its youth dividend – with a projected 850 million young people by 2050 – into a highly skilled STEM workforce can be a game changer³⁴ for a digital-driven economy and industrialization. In this context, the brain drain is a risk to be mitigated through comprehensive policies that expand training capacities and promote job opportunities in the technology sector.³⁵ Leveraging STEM education as an enabler of science, technology and innovation has the potential to significantly drive the growth of ICT-led micro-, small and medium-sized enterprises and industrialization in Africa. By investing in STEM education, African countries can cultivate a new generation of skilled professionals and innovative entrepreneurs capable of leading the continent's transformation in the global economy.

B. Information and communications technology-led micro-, small and medium-sized enterprises, innovation and industrialization

Unleashing possibilities of digitalization and micro-, small and medium-sized enterprises

Progress in upscaling Africa's ICT infrastructure

22. Africa continues to lag in digital infrastructure compared with other regions. In 2023, fixed Internet broadband subscriptions per 100 inhabitants (Sustainable Development Goal indicator 17.6.1) in Africa stood at 0.8, significantly lower than the global average of 19.³⁶ Despite this infrastructure gap, the percentage of

³⁰ Organisation for Economic Co-operation and Development (OECD) “Vocational education and training (VET)” (2019), available at <https://gpseducation.oecd.org/IndicatorExplorer?query=47&indicators=C004>.

³¹ World Bank, “Share of all students in upper secondary education enrolled in vocational programmes (%)”, Gender Data Portal. Available at <https://genderdata.worldbank.org/en/indicator/uis-gtvp-3-v>.

³² World Economic Forum, *Future of Jobs Report 2023: Insight Report* (Geneva, 2023).

³³ International Finance Corporation, *Digital Skills in Sub-Saharan Africa: Spotlight on Ghana* (Washington, D.C., 2019).

³⁴ Eric K. Ogunleye, “Leveraging potentials of the youth for inclusive, green and sustainable development in Africa”, presentation during the policy dialogue hosted by African Development Bank, July 2023.

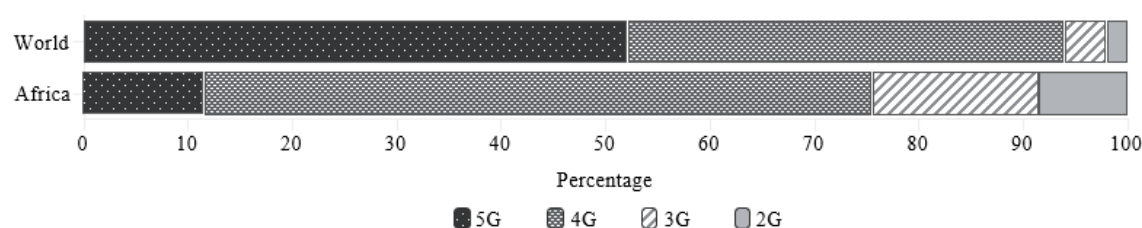
³⁵ World Bank, *World Development Report 2023: Migrants, Refugees and Societies* (Washington, D.C., 2023).

³⁶ See <https://www.itu.int/en/ITU-D/Statistics/Pages/SDGs-ITU-ICT-indicators.aspx>.

individuals using the Internet (Sustainable Development Goal indicator 17.8.1) has increased by 10 per cent since 2019, to reach 38 per cent, although this rate remains below the global average increase from 52 per cent to 68 per cent.³⁷ In 2024, 34 per cent of African women and 45 per cent of men used the Internet, compared with the global average of 65 per cent and 70 per cent, showing a wider gender gap.³⁸

23. Concerning the mobile network (Sustainable Development Goal indicator 9.c.1), most of Africa's population was covered by 4G (60 per cent) in 2024. While a small number of Africans are covered by 5G (11 per cent), the rest remain with 3G (15 per cent) and 2G (11 per cent).³⁹ This shows a lag in technology penetration compared with the global average, as shown in figure III.

Figure III
Share of population covered by mobile network, 2024



Source: International Telecommunication Union, *Measuring Digital Development: Facts and Figures 2024*.

Leveraging ICT to unlock the potential of micro-, small and medium-sized enterprises

24. Micro-, small and medium-sized enterprises, many of which are led by women and youth, are the backbone of Africa's economy and the main source of employment.⁴⁰ In some African countries, micro-, small and medium-sized enterprises contribute from 20 per cent to 40 per cent of national GDP, with even higher figures when informal businesses are accounted for.⁴¹ ICT-driven micro-, small and medium-sized enterprises are crucial for advancing digitalization and industrialization in Africa. Access to electricity, still limited in many African countries, and ICT availability and affordability, are critical factors for promoting the digitalization of micro-, small and medium-sized enterprises, in particular in rural areas. Three out of four firms experience recurrent electricity outages in Africa, disproportionately impacting small and medium-sized enterprises, which are less likely to have access to generators.⁴²

25. To unlock their full potential, micro-, small and medium-sized enterprises need to be fully integrated into the regional and global value chains. Africa's micro-, small and medium-sized enterprises currently operate in upstream, less technology-intensive sectors, in which less processing is required and which therefore contribute less value added to exports.⁴³ In addition, the lack of adequate financing for micro-, small and medium-sized enterprises remains a critical challenge. From 2006 to 2023, only 16.9 per cent of small-scale manufacturing industries in sub-Saharan Africa

³⁷ See https://www.itu.int/hub/publication/D-IND-ICT_MDD-2024-4/.

³⁸ Ibid.

³⁹ See <https://www.itu.int/itu-d/reports/statistics/2024/11/10/ff24-mobile-network-coverage/#chart-2>.

⁴⁰ Alexander Raia, "Responsibly financing Africa's missing middle", 12 November 2024.

⁴¹ Ibid.

⁴² World Bank, *Digital Opportunities in African Business* (Washington, D.C., 2024).

⁴³ World Trade Organization, "Small and medium manufacturing enterprise trade participation in developing economies", MSME Research Note #2, 2022.

accessed loans or lines of credit (Sustainable Development Goal indicator 9.3.2), compared with the global average of 30.6 per cent.⁴⁴ The micro-, small and medium-sized enterprises financing gap in sub-Saharan Africa is estimated at \$331 billion.⁴⁵

26. Innovative financial technology (fintech) financing solutions are crucial for closing the financial gap. As Africa's fintech market evolves, investment has increasingly been focused on advanced areas such as small and medium-sized enterprise lending and specialized payment solutions, which accounted for approximately 70 per cent of funding value in 2022–2023.⁴⁶ By 2028, financial technology revenues could reach \$47 billion, nearly five times their 2023 value of \$10 billion.⁴⁷

27. Another challenge is the limited digital capacity of micro-, small and medium-sized enterprises to promote an ICT-driven economy. A study in six African countries found that, while 86 per cent of firms with five or more workers had digital tools, only 23 per cent used them for productive tasks.^{48,49} The overall economic effects of the digitalization of firms might be limited if not expanded to micro and informal businesses, which account for most employment in Africa.⁵⁰

Promoting innovation and industrialization in Africa

Calibrating innovation ecosystems for industrialization

28. Innovation is crucial for advancing technology and diversifying Africa's economy through industrialization. A conducive policy environment, including effective intellectual property ecosystems, is essential to fostering local innovation. Member States are committed to promoting innovation through Sustainable Development Goals 9 and 17,⁵¹ but Goal 9 performance has been slow in Africa. With a projected 91 per cent gap in innovation by 2030, urgent, continent-wide efforts are needed to foster technological advancement.⁵²

29. Africa's limited innovation capacity constrains industrial competitiveness and decent job creation by hindering technological progress. With reference to Sustainable Development Goal indicator 9.5.2, in 2021, Africa had only 821 researchers per million inhabitants, significantly below the global average of 1,352. The potential of Africa is nonetheless underlined by the relatively higher number of researchers than in other developing regions.

⁴⁴ United Nations Statistics Division. See <https://unstats.un.org/sdgs/report/2024/Goal-09/>.

⁴⁵ World Bank, *MSME Finance Gap: Assessment of the Shortfalls and Opportunities in Financing Micro, Small, and Medium Enterprises in Emerging Markets* (Washington, D.C., 2017).

⁴⁶ See <https://www.mckinsey.com/industries/financial-services/our-insights/redefining-success-a-new-playbook-for-african-fintech-leaders>.

⁴⁷ Ibid.

⁴⁸ Burkina Faso, Ethiopia, Ghana, Kenya, Malawi and Senegal.

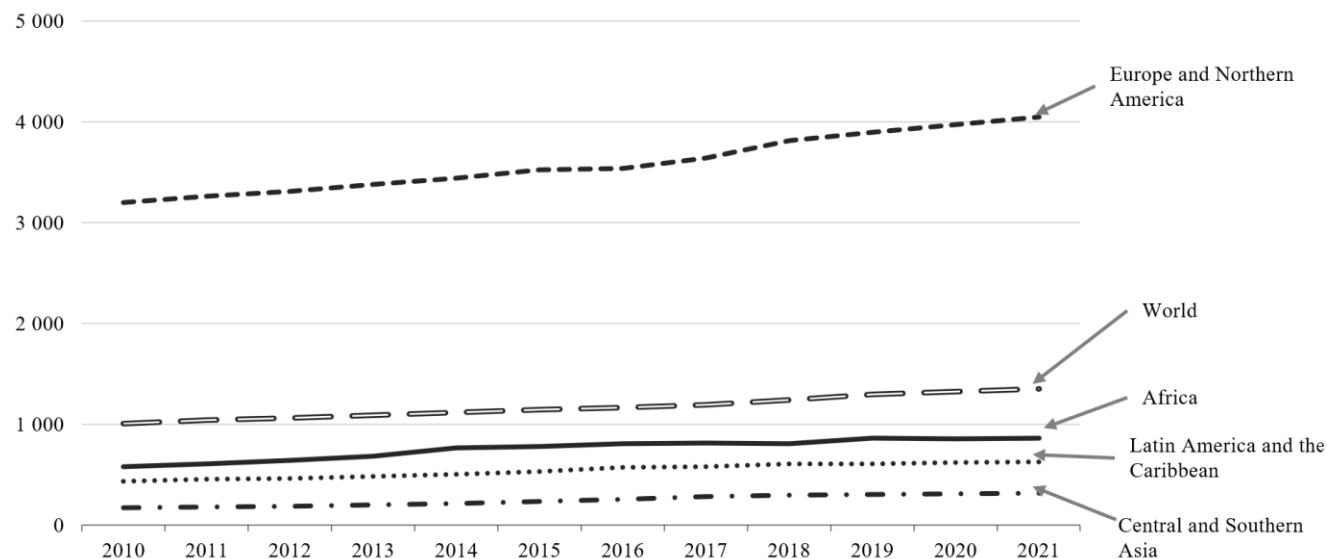
⁴⁹ World Bank, *Digital Opportunities in African Business*.

⁵⁰ Ibid.

⁵¹ Sustainable Development Goal target 9.5, Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.

⁵² See <https://www.unido.org/sites/default/files/unido-publications/2024-06/Industrial%20Development%20Report%202024.pdf>.

Figure IV
Researchers per million inhabitants (2010–2021)



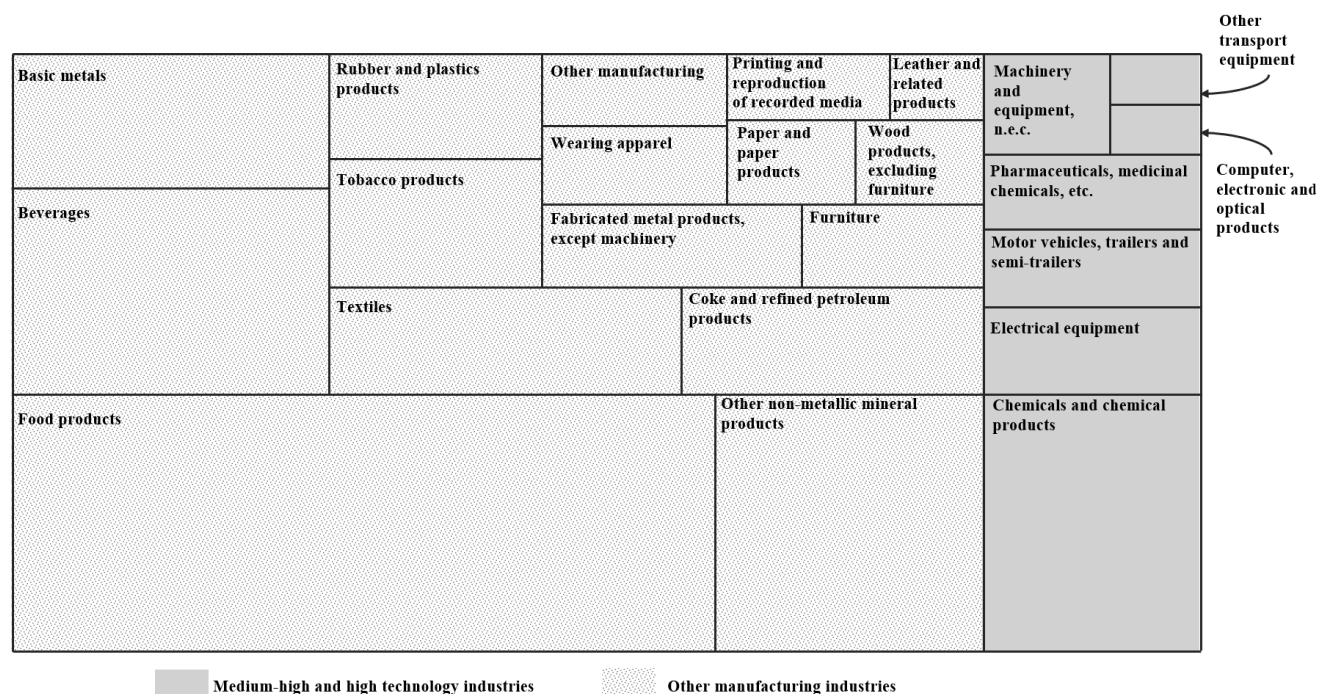
Source: Created by author using data from UNESCO Institute for Statistics.

Accelerating Africa's industrialization through science, technology and innovation

30. Africa's limited technological and innovation capacity contributes to slow industrialization progress. In 2023, Africa's share of global manufacturing value added was 2.0 per cent, and the continent's manufacturing value added share in GDP (Sustainable Development Goal indicator 9.2.1) was 10.3 per cent, compared with the global average of 16.7 per cent.⁵³ While manufacturing value added generation responds to various factors, inadequate science, technology and innovation capacities limit direct value addition and disincentivize investment, creating a ripple effect on industrialization.

⁵³ See United Nations Industrial Development Organization (UNIDO), *International Yearbook of Industrial Statistics* (Vienna, 2024).

Figure V
Distribution of manufacturing value added by industry in Africa, 2022



Source: UNIDO, *International Yearbook of Industrial Statistics 2024*, (Vienna, 2024), Factsheet: Africa, available at <https://stat.unido.org/portal/storage/file/publications/yb/2024/YB-core-2024-regfacts-afr-pdf.pdf>.

31. Similarly, Africa's medium and high-tech share in manufacturing value added (Sustainable Development Goal indicator 9.b.1: medium and high-tech industry value added) was 19.8 per cent in 2021, which is less than the world average of 46.1 per cent and the lowest among global regions.⁵⁴ To further promote medium and high-tech industry value added, it is necessary to reinforce coherence between science, technology and innovation and industry policies in order to effectively leverage science, technology and innovation for industrialization.

32. Implementing effective science, technology and innovation policy frameworks and targeted investments will strengthen Africa's physical and human capacities, which foster the capacities of micro-, small and medium-sized enterprises. A thriving micro-, small and medium-sized enterprise sector expands employment opportunities, ultimately increasing the potential for broader social protection.

C. Creation of decent jobs through innovation and industrial growth

The link between ICT-led micro-, small and medium-sized enterprises, industrialization and decent jobs

33. The expansion of ICT-led micro-, small and medium-sized enterprises and industrialization represents a vital pathway to increasing productivity and creating decent jobs in Africa, building directly on the foundations of strengthened science, technology and innovation systems and improved STEM education. By equipping the

⁵⁴ Asia and Oceania, 48.0 per cent; Northern America and Europe, 45.7 per cent; and Latin America and the Caribbean 32.5 per cent. See UNIDO, *International Yearbook of Industrial Statistics 2024*.

workforce with relevant technical skills, innovation capacities and digital literacy, science, technology and innovation and STEM initiatives enable micro-, small and medium-sized enterprises and industries to grow, diversify and generate employment opportunities, in particular for youth and women. These jobs are essential not only for providing income and stability but also for developing Africa's human capital and reducing reliance on informal, insecure work. However, unlocking this potential requires effective governance to ensure that the growth of micro-, small and medium-sized enterprises and industrialization translates into fair wages, labour protections and equal opportunities – with benefits for both people and planet. In this way, science, technology and innovation, skills development and industrial growth work together to drive inclusive economic transformation, with governance creating an enabling framework that secures rights and sustains resilience.

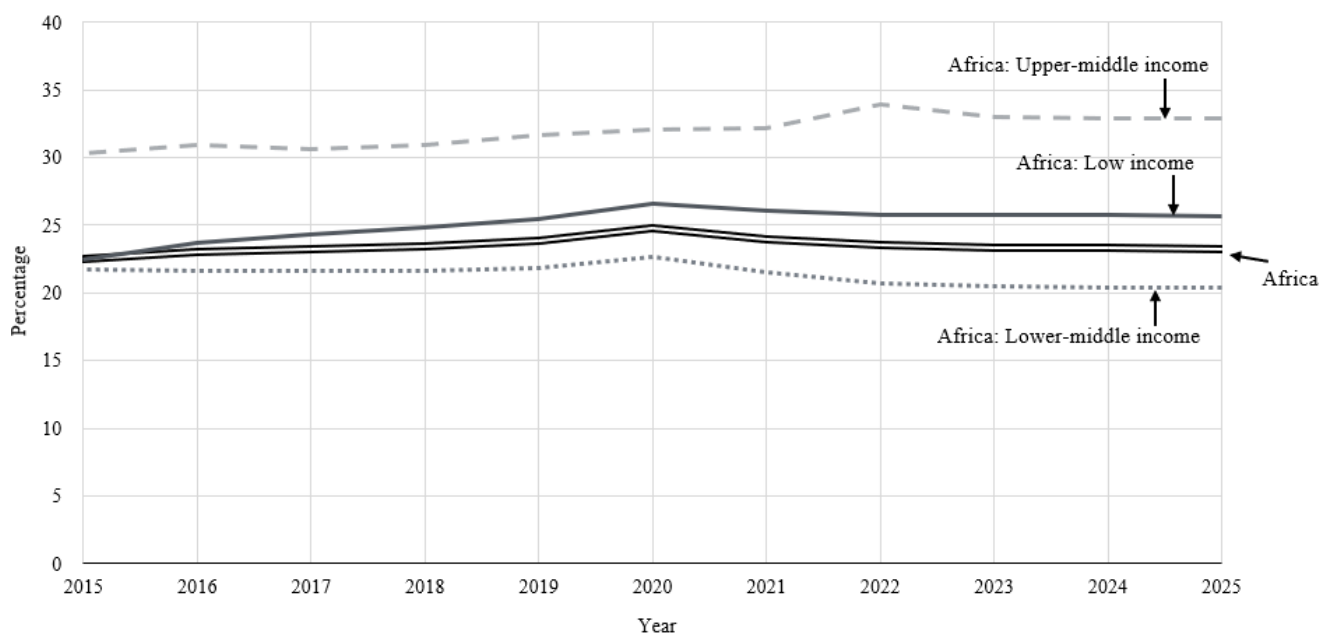
Unemployment, informality and the barriers to decent work in Africa

34. Africa's labour markets continue to face persistent challenges, with youth and women disproportionately excluded from stable employment. Youth unemployment rates (Sustainable Development Goal indicator 8.5.2: Unemployment rate, by gender, age and persons with disabilities) remain alarmingly high as at 2024, in particular among young women (23.2 per cent), compared with 18.5 per cent for young men. The picture becomes even bleaker considering that nearly three in four (71.7 per cent) young adult workers were in insecure employment in 2023, decreasing by only 0.6 percentage points over the past two decades.⁵⁵ These figures highlight the growing difficulties that young people face in transitioning into decent work, despite the continent's expanding workforce.

35. This exclusion is further reflected in the large proportion of youth not in education, employment or training (Sustainable Development Goal indicator 8.6.1). A total of 27.2 per cent of Africa's youth are disengaged from both work and education, with young women facing significantly higher rates of exclusion than their male counterparts. This gendered gap highlights systemic inequalities that limit access to skills development and job opportunities, weakening the continent's ability to harness its demographic dividend.

⁵⁵ International Labour Organization (ILO), "Global employment trends for youth 2024: sub-Saharan Africa", August 2024.

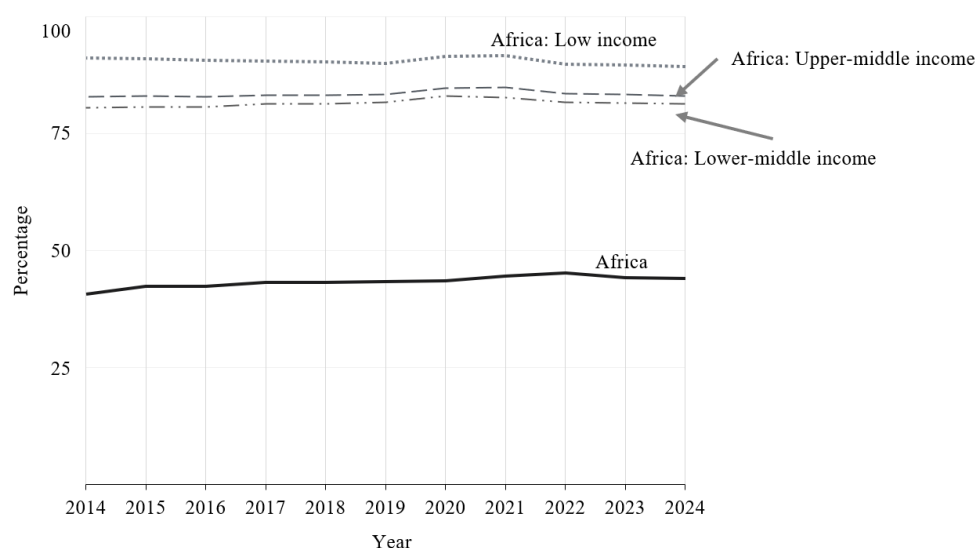
Figure VI
Sustainable Development Goal indicator 8.6.1: Proportion of youth (aged 15–24 years) not in education, employment or training



Source: Office of the Special Adviser on Africa with International Labour Organization (ILO) data.

36. Moreover, even among those who are employed, most remain trapped in informal work (Sustainable Development Goal indicator 8.3.1). As at 2024, informal employment accounted for 76.6 per cent of non-agricultural jobs in Africa, with women (78.1 per cent) slightly more affected than men (75.2 per cent). Figure VII illustrates how informality dominates across sectors, in particular in agriculture and services, leaving workers without legal protections, stable wages or social benefits. This persistent informality reflects the underdevelopment of high-productivity sectors such as manufacturing and technology, which are crucial for driving structural transformation and providing decent employment.

Figure VII
Percentage of informal employment in agriculture and non-agriculture sectors in Africa (2014–2024) (Sustainable Development Goal indicator 8.3.1)



Source: Office of the Special Adviser on Africa with ILO data.

37. Together, these trends highlight the urgent need to link Africa's industrialization and digitalization efforts with effective job creation strategies.

Industrialization as a driver of employment transformation

38. Industrialization is essential for creating formal, stable and higher-paying jobs in Africa. One promising approach is to pursue import substitution strategies at the continental level, which would allow African countries to capitalize on economies of scale.⁵⁶ Developing industries that currently rely on imported goods present a low-hanging opportunity – not only to generate direct employment in manufacturing but also to create jobs across related value chains. These include sectors such as transport, logistics and business services. Together, these approaches can help shift workers out of informal and low-productivity employment into more secure and productive work.

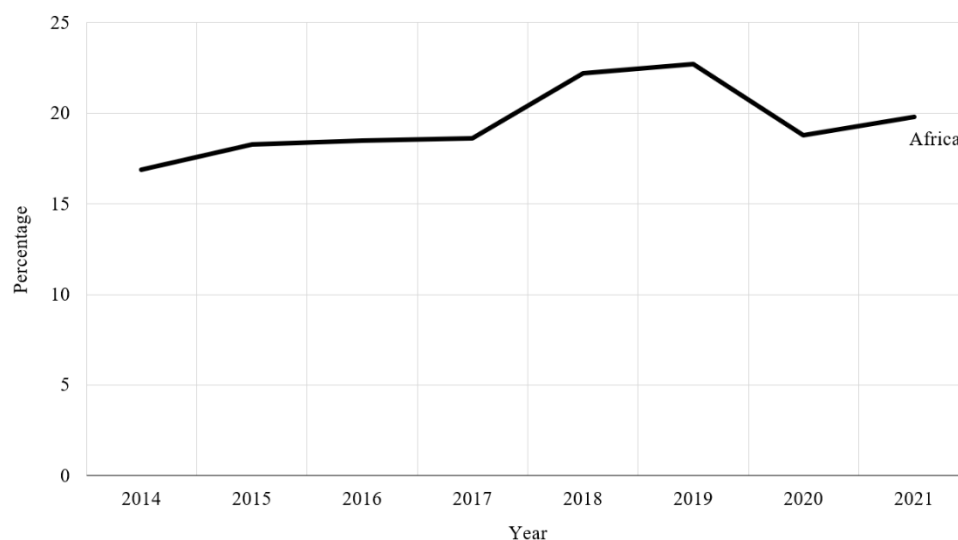
39. Referring to some examples from across the continent, the manufacturing sector in Morocco benefits from strong automotive and aeronautics industries, pushing its medium- and high-tech industry value added to 37.5 per cent of total manufacturing. Similarly, South Africa has leveraged its pharmaceutical and machinery sectors, achieving a 23 per cent medium and high-tech share, while Egypt reached 18.7 per cent, reflecting steady progress towards industrial upgrading. Moreover, while medium- and high-tech industries are essential for decent, future-ready jobs, progress has been inconsistent. After a modest rise from 16.9 per cent in 2014 to 22.7 per cent in 2019, medium and high-tech value added – owing to the impact of coronavirus disease (COVID-19) – dropped back to 19.8 per cent in 2021, highlighting ongoing challenges in scaling up advanced manufacturing and technology sectors. Figure VIII illustrates this fluctuation, signalling the need for targeted policies to stabilize and grow these industries.

⁵⁶ See <https://www.un.org/en/un-chronicle/growing-middle-class-and-continental-import-substitution-connecting-dots-unlock-made>.

40. However, despite these positive examples, overall industrialization across Africa remains limited. The contribution of manufacturing to GDP has stagnated,⁵⁷ averaging only 10.57 per cent from 2014 to 2023, with value added per capita declining from \$217 in 2014 to \$209 in 2023.

Figure VIII

Proportion of medium and high-tech industry value added in total value added in Africa (2014–2021) (Sustainable Development Goal indicator 9.b.1)



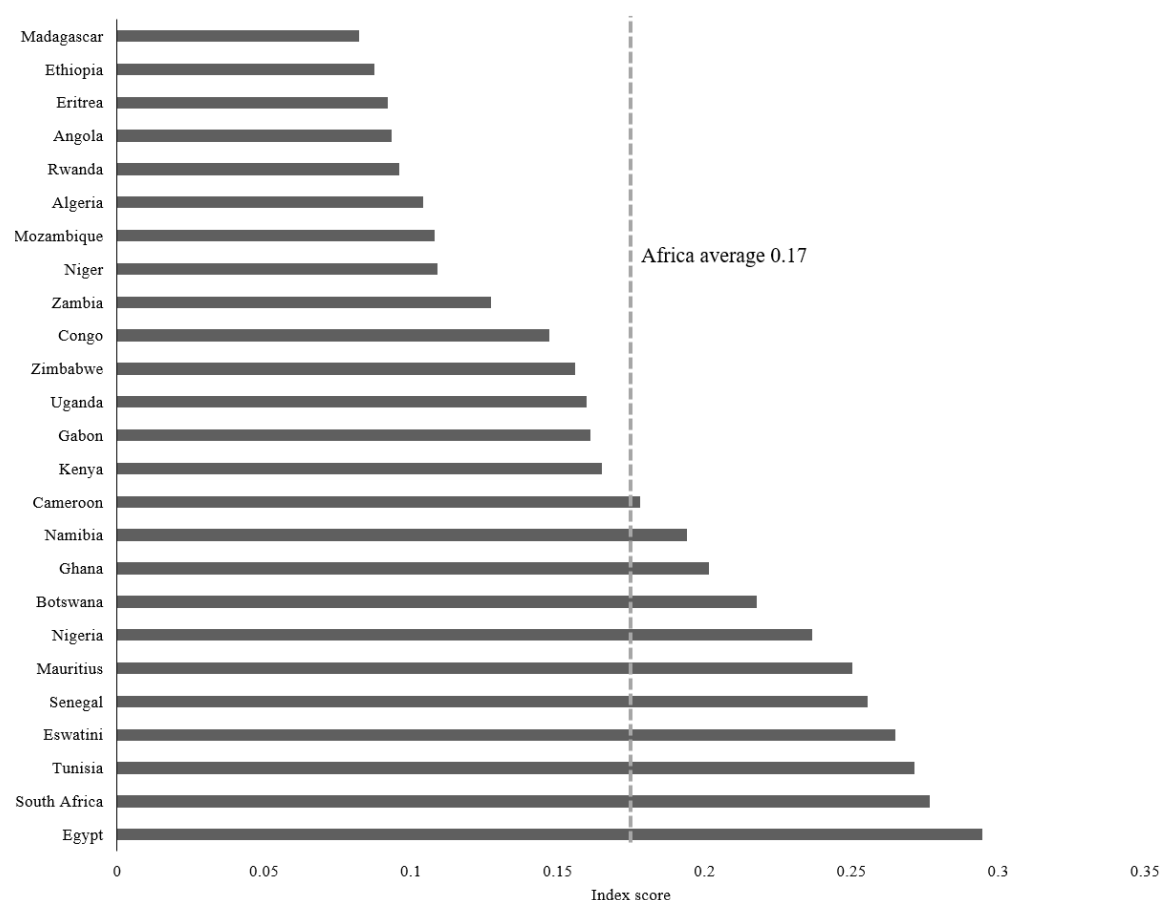
Source: Office of the Special Adviser on Africa with ILO data.

41. The benefits of industrialization also lie in its potential to reduce informality by offering structured, contract-based employment and supporting linked sectors through value chain development. When industries grow, they stimulate demand for transport, warehousing, marketing and other services, reinforcing the creation of decent work beyond factory floors.

42. However, Africa's industrial competitiveness, as measured by the Sustainable Development Goal 9 Industry Index, remains low, with an average score of 0.17, far below global benchmarks. Without stronger investment and financing mechanisms, better infrastructure and coordinated industrial policies, Africa's transition to a high-productivity economy will remain slow and uneven. This is highlighted in figure IX, showing how African countries lag in overall industrial development and competitiveness.

⁵⁷ For more information, see <https://openknowledge.worldbank.org/server/api/core/bitstreams/59357018-7c50-5925-b91d-e98d4966d14b/content>.

Figure IX
Average Sustainable Development Goal 9 Industry Index scores (2014–2021) for selected African countries



Source: Office of the Special Adviser on Africa with United Nations Sustainable Development Group data.

43. As Africa advances industrialization, expands ICT-led micro-, small and medium-sized enterprises and creates pathways for decent jobs, millions of workers remain trapped in vulnerability. Informality dominates labour markets, and structural inequalities continue to exclude large parts of the population from stable employment. In this context, social protection systems become essential to ensure that the gains of industrial transformation are both sustainable and inclusive. Without adequate safety nets, workers remain exposed to economic shocks, job losses and income insecurity, conditions that can quickly undermine progress made through industrial growth. For industrialization and decent work to truly drive resilience, they must be matched by robust social protection systems that support workers during periods of transition and safeguard livelihoods as economies evolve.

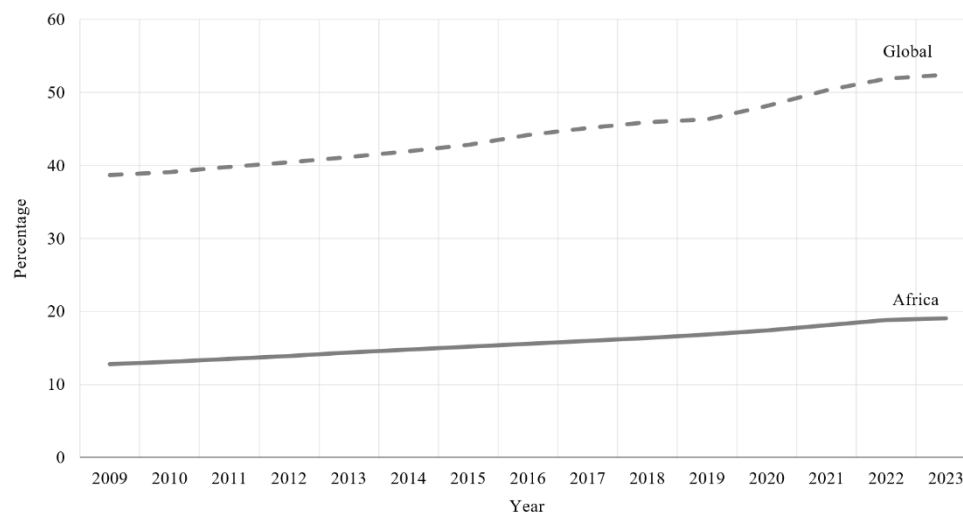
D. Hybrid social protection systems: safeguarding workers and sustaining the gains of industrialization

Limited formal coverage, enduring Indigenous systems

44. In 2023, 19 per cent of Africans (see figure X) – by comparison with a 52 per cent global average – had access to at least one form of social protection benefit.⁵⁸ This limited coverage leaves workers particularly vulnerable in the face of industrial restructuring or economic downturns, where job losses are not met with adequate compensation or retraining support. Despite the growth of formal social protection policies across the global South, coverage remains low. As a result, Indigenous support systems remain the main source of protection for many rural and vulnerable populations. While some argue that these should be replaced by formal frameworks, evidence from countries such as Botswana, Nigeria and South Africa shows that limited resources make this unrealistic.⁵⁹ In many contexts, Indigenous systems are not just complementary, they are essential. In Ethiopia, for example, approximately 90 per cent of the population relied on at least one indigenous support system in 2015.⁶⁰

Figure X

Sustainable Development Goal indicator 1.3.1: Proportion of population covered by at least one social protection benefit



Source: Office of the Special Adviser on Africa with United Nations Sustainable Development Group data.

45. The inadequacy of formal social protection is further reflected in the declining share of labour income in Africa's economies. Over the past two decades, the labour share of GDP has remained persistently low, exacerbating income inequality and reducing the share of economic growth that reaches workers. Figure XI highlights this trend: the labour share of GDP remains persistently low. In 2004, the labour share

⁵⁸ ILO, World Social Protection Data Dashboard, available at <https://www.social-protection.org/gimi/WSPDB.action?id=32>.

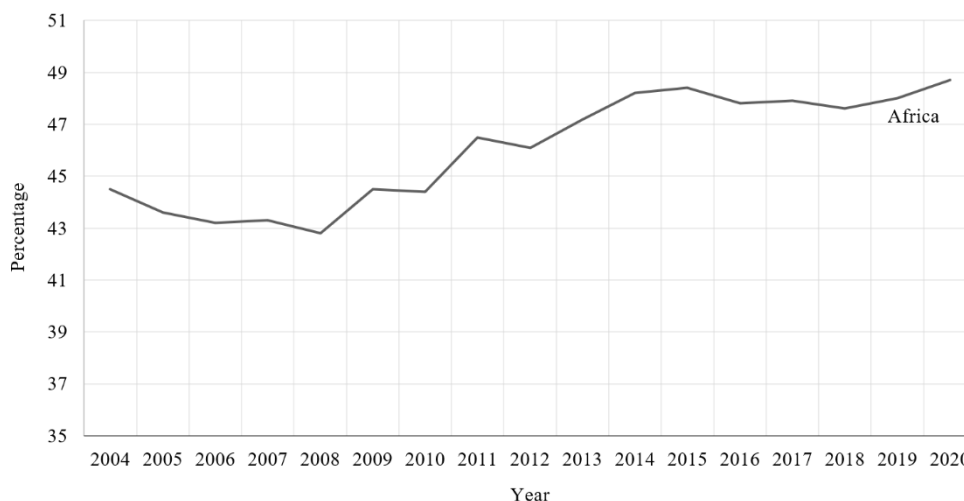
⁵⁹ Tomy Ncube and Una Murray, "Using design thinking and community development principles to optimize the interaction between informal and formal social protection systems", *Journal of International and Comparative Social Policy*, vol. 40, No. 2 (July 2024).

⁶⁰ Martha A. Nathan and Elliot Fratkin, "The lives of street women and children in Hawassa, Ethiopia", *African Studies Review*, vol. 61, No. 1 (April 2018).

stood at 44.5 per cent, declining to 42.8 per cent in 2008, with only a modest recovery to 48.7 per cent by 2020. Without stronger mechanisms to redistribute gains, economic growth risks deepening rather than reducing inequality.

Figure XI

Labour share of gross domestic product in Africa (Sustainable Development Goal indicator 10.4.1: Tracking workers' share in economic output)



Source: Global Findex Database 2021. See www.worldbank.org/en/publication/globalfindex/Data.

E. Governance as the foundation for resilience and people-centred development

Public spending inefficiencies and budget execution challenges

46. Resilience cannot be achieved without governance that places people at the centre of policy design and implementation. Beyond facilitating growth, governance can enable an integrated approach to industrialization and social policies to build human capital, promote decent work and protect vulnerable populations. This requires an approach that combines regulatory frameworks to promote fair labour practices, including occupational health and safety, and public investments to enhance health and education systems and support health and unemployment insurance schemes and other programmes that contribute to the social protection floor. For example, national action plans on business and human rights are effective policy tools to promote decent jobs and social corporate responsibility. In this context, public inefficiencies represent a significant challenge as they reduce the funding available for public social protection programmes and undermine the capacity of public administrations to enforce regulatory frameworks.

47. In Africa, inefficiencies in public spending across key sectors result in estimated annual losses of more than \$40 billion (education and infrastructure) and \$28 billion (health).⁶¹ Budget deviations frequently exceed 15 percentage points, disrupting the delivery of vital services such as health, education and social safety nets. These gaps are reflected in low public spending efficiency scores, averaging just 0.585, compared

⁶¹ Liwaaddine Fliss, "Fighting inefficiencies in public spending: Africa's next battle?", United Nations, Office of the Special Adviser on Africa, 2023.

with 0.825 in other developing regions,⁶² significantly reducing the impact of government spending on poverty reduction and social protection. Such inefficiencies restrict the reach and quality of social protection systems, including health and education, leaving millions exposed to economic shocks and insecurity.

48. Nonetheless, political will exists. Africa's regional frameworks, including Agenda 2063, the Yaoundé Tripartite Declaration on the Implementation of the Social Protection Floor (2010), the Ouagadougou +10 Declaration on Employment, Poverty Eradication and Inclusive Development (2015), and the Abidjan Declaration on Advancing Social Justice: Shaping the Future of Work in Africa (2019), demonstrate strong commitments to positioning social protection as a foundation of inclusive development.⁶³ However, translating these commitments into impact requires accountable governance that strengthens budget credibility, prioritizes investment in people and aligns national strategies with the evolving needs of workers and communities.

49. Moreover, effective governance must acknowledge and integrate Africa's traditional forms of social protection, such as community savings groups, family support networks, and Indigenous welfare systems, into formal national strategies. These locally embedded systems provide critical, low-cost support for vulnerable populations and have historically filled protection gaps.⁶⁴ As demand for formal social protection grows, these informal mechanisms present an opportunity to rapidly expand coverage in underserved areas if complemented by enabling legal and policy frameworks that bridge formal and informal safety nets.

50. Good governance is therefore the connective tissue that binds together human capital investment, decent work creation and resilient social protection. Without strong institutions and transparent management of resources to coordinate these elements, Africa risks repeating the shortcomings of the era of the Millennium Development Goals, where economic growth was not inclusive and vulnerabilities persisted.⁶⁵ By adopting people-centred governance approaches focused on accountability, efficiency and inclusion, Africa can transform its demographic dividend into a foundation for long-term resilience, social equity and sustainable development.

III. Conclusions and recommendations

51. With only five years remaining to meet the commitments reflected in the 2030 Agenda for Sustainable Development, time is running out. As highlighted throughout the analysis, progress in the implementation of commitments has been too slow, putting the achievement of the Sustainable Development Goals in Africa and globally at risk. Science, technology and innovation, in particular, frontier technologies and the digital transformation, can be instrumental in accelerating the implementation of the 2030 Agenda and Agenda 2063.

52. To address this challenge, six transitions as investment pathways and four means of implementation have been identified. Their potential catalytic impact can help

⁶² Djedje Hermann Yohou, *In Search of Fiscal Space in Africa: The Role of the Quality of Government Spending*, Études et Documents, n° 27 (Clermont-Ferrand, France, Centre d'études et de recherches sur le développement international, 2015); and Fliss, "Fighting inefficiencies in public spending".

⁶³ Rui Xu, "Indigenous social protection schemes as building blocks for extending social protection coverage in Africa", policy paper, United Nations, Office of the Special Adviser on Africa, January 2024.

⁶⁴ Ibid.

⁶⁵ Cristina Duarte, "Home-grown school feeding: from hot meal to macroeconomic tool – a low-hanging fruit for Africa's urgent challenges", policy paper, United Nations, Office of the Special Adviser on Africa, 2024.

developing countries leapfrog towards sustainable development, moving from narrow project-based approaches to strategic interventions with a multiplier effect on all areas of development. As the report shows, financing, science, technology and innovation and governance (both from the perspective of institutional capacities and Sustainable Development Goal localization) are key enablers needed to activate the multiplier impact of education and digital transformation, leading to more decent jobs, enhanced social protection and resilience. Indeed, efficient institutions and conducive policy and regulatory frameworks are pivotal to reversing the current trend and fully harnessing the potential of science, technology and innovation. Targeted policy interventions can activate a virtuous circle that advances human capital formation, creates decent jobs and strengthens social protection systems by promoting technology-driven economic growth and industrialization.

53. Progress in science, technology and innovation requires the scaling up of investments in education, research and development and infrastructure, in particular digital public infrastructure. In the current context of fiscal constraints, domestic resource mobilization is the only tool that can mobilize the necessary financing by increasing the efficiency of public revenue, de-risking private investments and tapping into new potential funding sources. In turn, enhancing domestic resource mobilization systems to meet this function entails embracing digital public infrastructure and digital transformation. Understanding this circular relationship is essential to promoting complementary interventions that trigger a positive ripple effect. In this context, social protection systems and science, technology, engineering and mathematics (STEM) education play a mutually reinforcing role, supporting the job market and creating a safety net to ensure that technology-driven growth is inclusive and sustainable.

54. To advance in this direction, United Nations country teams are playing a central role in shaping a new generation of cooperation frameworks that respond to national priorities and specific development needs. In line with the 2030 Agenda for Sustainable Development and Agenda 2063, these frameworks integrate key transformative initiatives and align with the priority actions identified in the Pact for the Future to harness science, technology and innovation. In this context, the following recommendations are made for African countries and their development partners:

Recommendation 1. Advance integration between science, technology and innovation, domestic resource mobilization and digital public infrastructure to build a sustainable innovation and financing ecosystem by aligning national science, technology and innovation strategies with domestic development priorities, prioritizing investment in science, technology and innovation to drive long-term productivity and resilience and leveraging digital public infrastructure to enhance revenue collection, public financial management and transparency;

Recommendation 2. Strengthen science, technology, engineering and mathematics education to build a future-ready workforce, by establishing coordination mechanisms that foster collaboration between academia and industry to continuously align skills with labour market needs, and developing monitoring and evaluation frameworks and robust data to appropriately direct investment and other interventions;

Recommendation 3. Enable ICT-led micro-, small and medium-sized enterprises and industrialization as engines of decent work, by expanding digital infrastructure, including last-mile infrastructure, harmonizing intellectual property frameworks through the adoption of the annexes to the African Continental Free Trade Area Protocol on Intellectual Property

Rights, and enhancing targeted financing mechanisms for micro-, small and medium-sized enterprises in technology-intensive sectors, in particular through fintech;

Recommendation 4. Expand hybrid social protection systems to support workers and sustain development, by harmonizing legal frameworks that protect and regulate traditional social protection practices, ensuring alignment with national and international labour and welfare standards, and recognizing and fostering their role as complements to national social protection strategies and effective, low-cost tools to increase coverage in rural and underserved areas rapidly;

Recommendation 5. Promote inclusive science, technology and innovation-led growth, creating decision-making spaces that bring workers, employers and Governments together, and advancing research, policy, investment and capacity-building efforts to reduce gender disparities, in particular in science, technology, engineering and mathematics education.
