

## SDG-STYIP Impact Labs Issue Paper for SDG 9: Industry, Innovation and Infrastructure

### 1. Introduction

This Issue Paper identifies emerging issues, systemic challenges, and barriers to progress on the achievement of SDG 9 - Industry, Innovation and Infrastructure.

### 2. Landscapes of Issues under SDG 9

**Africa's lagging infrastructure development, particularly in the energy sector, has compromised industrial development across the region.**

- Infrastructure constraints are major obstacles to industrialization on the continent, given that inadequacies and unreliability in power generation, transport networks, ports and logistics systems continue to limit industrial development and affect households, particularly severe in low-income countries in Africa.
- The potential for green industrialization in Africa is anchored in its abundant renewable energy resources, including solar, wind, hydropower, and geothermal energy. The continent already outperforms other developing regions in renewable energy use, largely driven by low-income and lower-middle-income countries that are leapfrogging into clean energy systems. Fully exploiting that resource wealth requires coordinated investment strategies that are focused on expanding both renewable power generation and industrial manufacturing capacity.
- Africa also faces severe infrastructural bottlenecks in power generation. High energy costs and supply disruptions increase energy insecurity and undermine industrial competitiveness. The full realization of digital industrialization will require action to ensure a reliable and affordable supply of energy.

**Poor domestic and international transport connectivity and insufficient regional transportation corridors limit economic and social development**

- Only 34 percent of rural Africans live within two kilometers of an all-season road, constraining mobility, market integration, and access to public facilities.
- Despite Africa's existing railways and ports, transportation infrastructure is underused or inefficient. Persistent congestion and recurring disruptions in ports, under-maintained railways, climate-vulnerable, and poorly paved roads have presented the necessity to overcome operational bottlenecks besides advocating for investments.
- Over 30,700 km of highways and 30,200 km of railways are planned to be built by 2040.<sup>1</sup> Such ambition can only be achieved with dedicated commitments from every member. Improving both domestic and regional transportation is also a foundation to boost regional trade and integration, alongside strengthening soft infrastructure such as export-import documentation clearance, customs procedures, and other trade facilitation processes that enable efficient cross-border movement of goods.
- Women particularly in rural areas face persistent and unequal access to infrastructure,

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<sup>1</sup> Programme for Infrastructure Development in Africa (PIDA)

limiting their economic participation and increasing vulnerability. Poor road networks and unreliable transport mean over 60% of rural women in Africa subregions except North Africa spend long hours reaching markets and health services. Public transport is also unsafe, with a significant share of gender-based violence cases occurring in or near transport hubs.

### **Low manufacturing value addition and limited manufacturing job creation constrain industrial competitiveness and economic resilience**

- The share of manufacturing value added (MVA) in African GDP reached an average of 10.6%, significantly lower than the global average of 16.5%.
- The manufacturing sector's contribution to African GDP remains weak, reflecting the need to invest in productive infrastructure, develop technological capacities, and improve business climate. The implementation of AfCFTA needs to be accelerated to attract foreign investment, support robust regional value chains across key industries such as pharmaceuticals, agro-processing and heavy industry (including cement and steel production) and upgrade Africa's position in global value chains.<sup>2</sup>
- The global clean energy transition is rapidly increasing demand for raw commodities and critical minerals, presenting a major opportunity for Africa. However, many countries in the region continue to export raw or minimally processed mineral commodities, such as copper and cobalt, and missing significant opportunities for value addition, industrial development, and local job creation.
- The manufacturing employment proportions of all subregions are severely lagging the global average, revealing that Africa's industrial fabric is unable to sustainably absorb the growing labor force and fully play its role as an engine of inclusive growth globally.
- Except for North Africa, infrastructure job creation and contracting remains largely male-dominated in most countries in African regions. Yet this sector offers high-growth and well-paying employment. In Rwanda for example, only 14.6% of workers in construction are women, while men account for over 85.4%, and up to 97% in transportation and storage.<sup>3</sup> Women's roles are often informal, low-paid, and limited to unskilled labor.

### **Structural financing challenges and weak statistical systems limit industrial development in Africa, especially for SMEs and small-scale industries.**

- SMEs constitute the backbone of Africa's private sector, contributing to over 30% of GDP, and up to 50% or more when the informal sector is included. Their sustainable development has spillover effects varying from poverty reduction, employment and economic growth, as well as inequality reduction.
- In 2025, more than 60% of African SMEs are unable to obtain formal bank loans,

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<sup>2</sup> UNIDO, 2025. *Industrial Development Report 2026. The Future of Industrialization. Building Future-ready Industries for Sustainable Development*, pg. 116 -118. <https://www.unido.org/sites/default/files/unido-publications/2025-11/UNIDO%20IDR26.pdf>

<sup>3</sup> United Nations Conference on Trade and Development (UNCTAD). (2022). *Enhancing productive capacities in Rwanda*. Geneva: UNCTAD.

compared with less than 40% in Latin America. High interest rates, costly credit, and restrictive collateral requirements further limit job creation and SMEs' investment in productive transformation.

- Continental SME access to finance averages 18.05%, well below global benchmarks. Commercial banks and venture capital funds should develop and expand diversified financing instruments. Business associations can improve credit information systems and strengthen SME data collections while development finance institutions can support risk-sharing mechanisms.
- Most infrastructure investments in Africa remain gender blind. This means that women's needs related to transport, water access, energy, safety, and unpaid care work are not systematically considered in planning or budgeting.

**Low R&D investment, talent shortages, and under-leveraged innovation capacity have slowed industrial upgrading and technology adoption.**

- Low expenditure in R&D across the continent has a vital spillover effect given that innovation can widely affect industrial productivity, agriculture, health, education, and poverty reduction.
- In 2023, Africa's average R&D investment across sectors was at approximately 0.45% of GDP compared to the global average of 1.7%. Despite notable progress made in multiple countries, low public funding, low private sector participation, and under-resourced research institutions need to be addressed to support R&D.
- Innovation capacities, including R&D, remain constrained by insufficient investment in human capital, particularly in technical and vocational education and training. Human capital deficits require urgent attention to developing the innovation ecosystem.<sup>4</sup>
- Researcher density concentrated in North Africa while most regions are underserved. Brain drains, fragmented university-industry collaboration, and near-zero R&D investment still exist in many countries, which can weaken innovation capacity and lead to further talent shortage continent-wide, affecting long-term competitiveness.

**Limited affordable and reliable internet access constrains digitalization, industrialization and inclusive economic participation.**

- Internet access is foundational for innovation, industrialization, digital jobs, education access, and global partnerships.
- In 2023, 92.8% of the African population was covered by at least one 2G network, a rate that, although high, remains below the global average (97.7%). Infrastructure investment is uneven, with underdeveloped fiber backbone and last-mile connectivity in many countries, with wide rural-urban digital divides. Limited broadband access further reduces firms' ability to integrate into technology-heavy value chains and participate in e-commerce markets.

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<sup>4</sup> UNIDO, 2025. *Industrial Development Report 2026. The Future of Industrialization. Building Future-ready Industries for Sustainable Development*, pg. 108. <https://www.unido.org/sites/default/files/unido-publications/2025-11/UNIDO%20IDR26.pdf>

- Diversified stakeholders can play a key role with private telecom operators advancing infrastructure-sharing models, fintech and digital service providers expanding access, venture capital and blended finance for broadband and data center infrastructure, and public-private partnerships for last-mile connectivity.
- In African subregions except for North Africa, the persistent gender gap in access to digital systems continues to constrain the lives of women and girls, limiting their access to these opportunities and reinforcing structural inequalities. Despite the continent's growing digital infrastructure, women remain significantly underrepresented both as users and as creators of digital innovation. This divide is driven by intersecting barriers, such as affordability, accessibility, limited digital literacy, and restrictive social norms, and is deepening existing patterns of gender inequality, discrimination, and technology-facilitated violence against women and girls.