

Research Paper

How Technical and Vocational Education Can Help Close Skills Gaps in Africa

November 2023

Issued on the occasion of The Africa Roundtable
“The Path to Success: Education, Skills, and Leadership,”
November 2023, Berlin

Published by Global Perspectives Initiative (GPI) and authored by
the African Center of Economic Transformation (ACET)

 Global Perspectives

 ACET African Center
for Economic
Transformation

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BACKGROUND AND CONTEXT

One-fifth of the global population under the age of 25 lives in Sub-Saharan Africa, the world's youngest region. Africa's working-age population is expected to reach 600 million in 2030, with a youth share of 37 percent — larger than that of China. With the right education and training, coupled with well-defined national development strategies and employment policies, Africa's large and fast-growing youth population could be a great asset for development and provide a comparative advantage in world markets. Instead, however, the unemployment rate across Africa is alarming, with youth unemployment (11.2 percent) almost twice as high as the adult unemployment rate (6.7 percent).

Besides high unemployment, many African workers also suffer from the lack of available formal and productive jobs. In most African countries, over 80 percent of workers are active in the informal sector, either in traditional agriculture or urban informal economic activities. And employment conditions are not only unfavorable for the uneducated youth and women but also for educated graduates. In Ghana, only 10 percent of the 200,000 people entering the labor force each year find formal sector jobs. This trend can be found across other African countries.

A pervasive skills mismatch is one of the driving causes behind the poor employment conditions in many African countries. There are not enough formal sector jobs created each year to match the number of secondary and tertiary graduates, and for many of the formal jobs that are available, graduates lack the necessary skills and training required for the available jobs.

In this paper, we focus on Technical and Vocational Education and Training (TVET) as one part of the solution. This is because ACET research has shown that young graduates with TVET have greater chances of securing employment than youths with general education, both in African countries and around the world, as their skills are in greater demand in the labor market. TVET institutions are often in the best position to provide the kind of education that endows students with the skills — both technical and soft skills — that are in demand today and are likely to be even more important for the future of work.

However, to fully capitalize on the potential offered by TVET, countries need to make some urgent improvements in their current TVET institutions, policies, curricula, and investments in more schools, teachers, and materials. African countries also have the opportunity to learn from success stories from inside and outside the continent — particularly from countries like Germany that have seen much success in using TVET to close skills gaps.

AFRICA'S SKILLS GAP CHALLENGE

While progress has been made in expanding educational access across Africa, the quality and relevance of education often remain insufficient to prepare the youth for the job market. This disconnect between the curriculum and educational resources and labor market demands has led to major skills mismatches. There is an over-supply of graduates specializing in fields not in high demand by employers and industries. These fields include subjects outside of science, technology, engineering, and mathematics (STEM). Consequently, many individuals struggle to secure employment or are forced to accept jobs that do not match their qualifications, leading to the underutilization of their skills and talents.

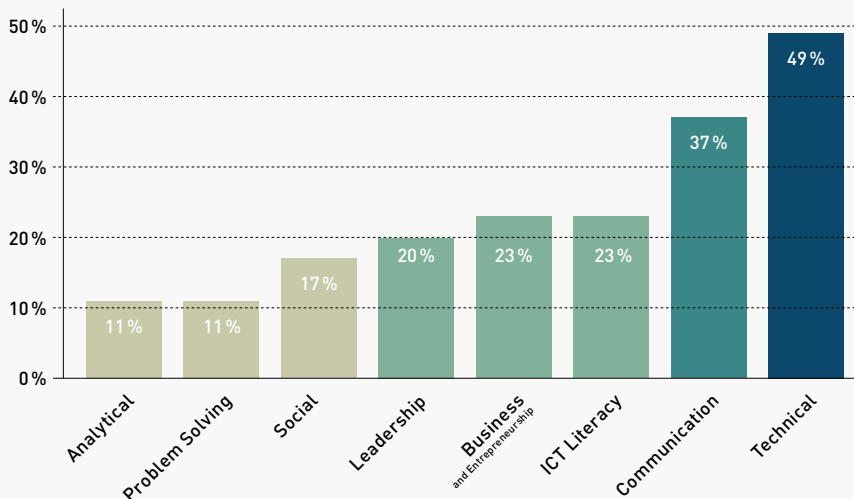
The skill mismatch has far-reaching repercussions on the individual, firm, and macroeconomic levels. On an individual level, high skill mismatches can result in reduced wages, decreased job satisfaction, and frequent job changes. At the firm level, the struggle to locate qualified workers for essential positions can lead to reduced firm dynamism, productivity, profitability, and global competitiveness, threatening the survival of businesses. At the macroeconomic level, structural skill deficits can undermine a nation's competitiveness and exacerbate unemployment problems.

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Figure 1
Percentage of students graduating from secondary school who possessed adequate training in various skills



Source: African Center for Economic Transformation (ACET), 2022.

Skill Gap Causes

The skills gaps result from various factors, including limited access to quality education and training and a disconnect between educational institutions and the needs of industry.

1. Limited access to quality education

ACET research has confirmed that education systems offer inadequate access to materials, limited internet connectivity, sub-standard course content, and inconsistent policy implementation. Additionally, school programs tend to focus heavily on examinations rather than practical skills, neglecting important soft skills valued by employers. This is especially concerning given the rapid pace of digitization and automation in the job market, leaving many young people ill-prepared for employment.

2. Weak public/private interfaces

There is a weak interface between the public and private sectors in developing education and training programs in Africa. Industry players are not involved in the development of curricula to advise on the skillsets demanded by the industry to drive economic growth, and when they are, it is usually in a tokenistic manner. Usually, the ministries of education and their agencies organize one-day events to solicit input, but this is not sufficient in aligning industry-demanded skills into the educational curricula.

3. Weak teacher training systems

The quality of the teaching workforce in Africa also presents challenges in preparing young people with the necessary skills for the labor market. Outdated or substandard curricula and assessment methods in teacher training institutions are prevalent issues. For example, Niger faces difficulties in updating the curriculum, particularly in teacher training and course content relevance, affecting subjects like STEM, ICT, and soft skills. This leads to a shortage of qualified teachers and a lack of female role models in these fields.

4. Inadequate career guidance for young people

Furthermore, effective career guidance is essential for guiding young people toward suitable career paths and opportunities. However, poor implementation and a lack of coordination in African schools limit its impact. This situation leaves many young people reliant on advice from individuals who may not be well-informed about the evolving labor market's skillset requirements, potentially leading to unemployment or underemployment.¹

TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING IN AFRICA

Technical and Vocational Education and Training (TVET) is an educational and skill development system that focuses on providing individuals with practical skills, knowledge, and competencies related to specific trades, crafts, and professions. TVET programs are designed to prepare individuals for various careers in skilled trades, technology, and other vocations, emphasizing hands-on training and practical experience. The African Union's 2015 Continental Strategy for Technical and Vocational Education and Training (TVET) uses TVET in its broadest sense, covering all aspects of training and skills development of all cadres, whether formal, non-formal, or informal.

Formal TVET

refers to the whole system governed by precise, laid-down rules. This is essentially training in public or private schools with fixed-term cycles culminating in accreditation in the form of a state diploma or certificate.

Non-formal TVET

has a framework in which training obeys no rules, may be spontaneous, and involves significant unaccredited learning. It includes on-the-job training for the benefit of daily practice on the ground.

Informal TVET

refers to less organized and less structured learning, usually occurring outside educational institutions, with rules of trade that often exist without necessarily being written or formalized.

Various institutions deliver TVET. For instance, Ethiopia and Rwanda have Technical Secondary Schools, Vocational Training Centers (VTCs), and technical tertiary institutions that provide training to various target groups in response to the demands of the industry. Ghana offers formal TVET programs at the secondary and tertiary levels. Private TVET institutions in Ghana make up one-third of all TVET institutions but account for only eight percent of enrollment.² Uganda has informal and formal (both public and private) Business, Technical, and Vocational Education and Training (BTVET) institutions. In 2019, there were 163 public and private training institutions and firm-based training programs. Niger developed a formal public TVET system comprising several levels in the 1970s, intending to cover the entire country, and introduced private TVET institutions in the 2000s. The number of formal TVET institutions in Niger is 467, of which 377 are public and 90 are private.

**OPPORTUNITIES FOR TVET TO ADDRESS SKILLS
MISMATCHES**

TVET equips young people with the necessary skills for employability³ and prepares young people to fill specialized roles in the industrial sector.⁴ Research has shown that youths with TVET have greater chances of securing employment than youths with general education. For example, in an ACET multi-country study published in 2021⁵, skillsets from TVET were in short supply yet highly demanded in the African labor market. This was the opposite for skills coming from traditional grammar schools. In Malaysia, the employability rate of TVET graduates has increased from 65.5 percent in 2010 to 87.6 percent in 2020, outperforming non-TVET graduates since 2012.⁶ In Germany, the employment rate of TVET graduates reached 90 percent in 2019, well above the EU average of 81 percent.⁷ The employment rate of TVET graduates in Germany is also 23.3 percentage points higher than graduates from general education.⁸ In France, the employment rate of TVET graduates of 70.2 percent is higher than that of graduates from general education by 3.6 percentage points.⁹

Germany

Germany, in particular, is notable for its robust TVET system, serving as a reference for many countries, both developed and developing. The German TVET system uses a dual approach of classroom learning and industrial apprenticeships. TVET students in Germany spend two-thirds of their time learning on the job with companies and the remaining one-third in the classroom.¹⁰ The TVET system in Germany benefits from strong funding support from the government and private companies, ensuring its sustainability.¹¹ TVET trainees also receive salaries from the organizations they undertake their apprenticeships with, enabling them to focus exclusively on their training without any financial challenges.¹² Germany's TVET system has influenced the TVET systems in many countries, including Kenya and Rwanda in Africa. Germany's Education Ministry supports the European Alliance for Apprenticeships established by the European Commission. Germany has also established an apprenticeship toolbox to provide support to countries in Europe and beyond on how to properly implement the dual apprenticeship scheme.¹³

South Africa

South Africa has placed heavy emphasis on the acquisition of TVET skills relevant to the job market. The TVET system in South Africa is properly integrated with the labor market through the Work-Integrated Learning program, which allows students the opportunity to intern with industries to gain hands-on, relevant experience.¹⁴ TVET students in South Africa receive specialized training in entrepreneurship, and those without the means to fund their training, including persons with disabilities, receive financial supports from the government to do so.¹⁵ Regular assessments on the current and future skills needed by the job market are also conducted by the South African government to ensure TVET students are well prepared to bridge current and future skills gaps.¹⁶

Rwanda

In Rwanda, innovation and digital technologies have been integrated into their TVET system, allowing students to have access to digital learning resources and technology-related TVET skills to better prepare students for the needs of the Fourth Industrial Revolution. About 50 percent of TVET trainers in Rwanda have been trained in Information Communications and Technology (ICT) to properly train their students.¹⁷ The Rwandan government also collaborates with relevant continental and international organizations, development partners, and the private sector to continually improve its TVET system in the areas of capacity building, curriculum development, and the formulation of TVET policies.^{18 19 20}

Kenya

In Kenya, there is a strong collaboration between the TVET system and the industrial sector, ensuring that TVET curriculum is aligned with the needs of the industrial sector. The strong collaboration also provides TVET students with opportunities for internships or apprenticeships, enabling them to acquire current relevant skills in high demand by the industrial sector.²¹

Finally, beyond Kenya's budgetary allocation to the TVET sector and support from development partners, the TVET system receives training levies from institutions that benefit from the services of the certified TVET trainees, ensuring that there is sustainability in the financing of the TVET system.²² Nason (2019)²³ reports that only 12.5 percent of TVET diploma graduates were unemployed, against the 93.75 percent of unemployed non-TVET diploma graduates.

RECOMMENDATIONS FOR IMPROVED TVET RELEVANCE AND QUALITY

To ensure TVET becoming a sustainable, significant, and meaningful solution for skills mismatches in Africa, TVET systems need to overcome a myriad of challenges. The following recommendations provide policy solutions for some of the most pressing and common issues.

Improve the relevance of curricula by strengthening partnerships with the private sector

Although TVET education is often more relevant than general education, the relevance of skills taught in TVET institutions can be improved. TVET policy and curricula should be heavily informed by employers. Particularly in Fourth Industrial Revolution (4IR) sectors, the private sector needs to help educational institutions understand current job needs. Such an ecosystem is necessary to improve access to high-quality and relevant career guidance and early exposure to the world of work. In Rwanda, large formal sector firms, including manufacturers and service providers, are involved in training initiatives to upskill the labor force and provide job placement services. Additionally, the public-private partnership model ensures skills align with current and future labor market demands and are linked to the Ministry of Education's National Qualification Framework, which enhances labor market functioning for youth by coordinating signals from employers about their required standards in terms of knowledge acquisition.

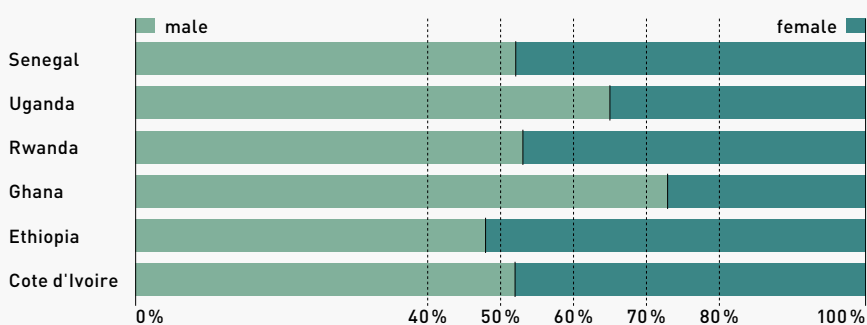
Improve the quality of TVET education by investing in teacher training and equipment

Most TVET institutions in Africa do not have an adequate number of trained teachers to properly train the learners. In some countries, most TVET teachers resign from their jobs because of poor conditions of services. According to the World Bank (2023)²⁴, more than 25 percent of teachers in secondary TVET institutions resign from their jobs every year in Niger, Mauritius, and Mauritania. In Djibouti, the TVET teacher attrition rate is as high as 75 percent per year. Moreover, inadequate physical and digital TVET infrastructures and equipment across the African continent hamper the provision of quality TVET to students. While few TVET institutions have modern facilities and equipment, the great majority are still using obsolete equipment, impeding the abilities of the learners to properly grab the skills required for the current and future job markets.

Improve inclusivity by targeting female students and other excluded vulnerable groups

Enrolment of female students in TVET programs has generally improved but remains low compared to the enrolment of male students. In some countries such as Ethiopia, Côte d'Ivoire, and Senegal, girl-child enrolment in TVET programs has significantly improved over the years with near-parity rates, but in others such as Ghana and Uganda, the numbers remain low. Factors that contribute to this gender imbalance include negative stereotypes, high costs of TVET programs and their requirements, and harmful socio-cultural norms.

Figure 2
Percentage of students enrolled in TVET programs by gender



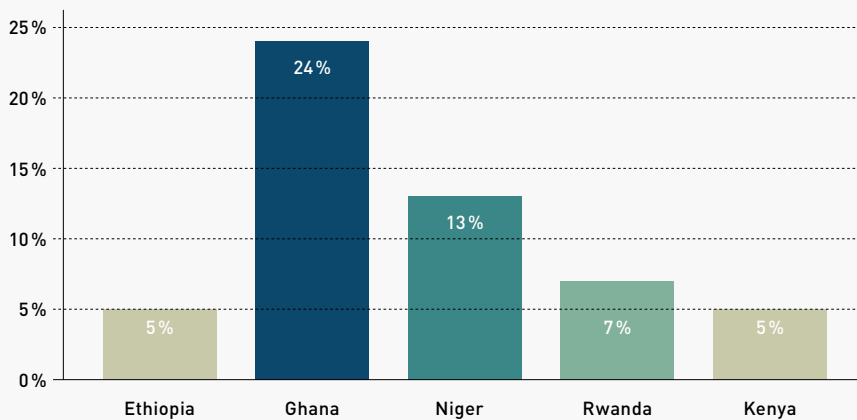
Source: Author's computation with data from UNESCO, 2023.

Beyond gender, there are large disparities in the enrollment of students in TVET programs. Persons with disabilities, lower socioeconomic backgrounds, and those from rural areas are significantly underrepresented in TVET institutions. Most TVET institutions across Africa are not disability-friendly, and teachers are not adequately equipped to handle persons with disabilities. Students who lack the means to pay are also excluded from enrolling in TVET programs.

Improve the sustainability of TVET financing

TVET remains heavily underfunded in many African countries. Financial allocations to the TVET sector as a percentage of national education budgets are lower than their global peers. According to the World Bank, low- and middle-income countries, including those in Africa, spend less than 0.2 percent of their GDP on TVET, compared to the 0.46 percent spent by high-income countries.²⁵ Whilst countries such as Ghana have made recent improvements to their TVET budget allocations, others still lag behind. For instance, in 2022, Ghana allocated 24 percent of its education budget to TVET (compared to 25 and 52 percent allocated to senior high education and tertiary education, respectively).²⁷ Niger spends about 13 percent²⁶, and Kenya and Ethiopia allocate only 5 percent of their education budget to TVET.^{28 29}

Figure 3
Percentage of education sector budget spent on TVET in 2021



Source: Author's computation with data from the education budgets of the selected countries.

Digitalize TVET by investing in digital infrastructure and STEM uptake

Technology changes rapidly, but African education systems do not. This will lead to widening digital skills gaps. The poor state of digital infrastructure is an important contributing factor. While some countries have improved physical infrastructure in schools and lowered the cost of education in recent years, investments in digital infrastructure still lag behind and will need to catch up. Improvements in digital infrastructure need to include access to stable electricity and computers in schools and training centers, low-cost and high-speed connectivity, cloud data storage, and computational capacity.

Furthermore, ACET's research shows that uptake and performance in STEM is relatively low. Improving STEM uptake at the secondary education level requires a holistic and coherent approach to tackling the underlying challenges. A significant shift in STEM uptake at upper secondary will require clear targets matched by necessary resources and incentives for providers and students. Examples include addressing the shortage of qualified STEM teachers with the right subject knowledge and pedagogical skills in primary and secondary schools. It also requires that STEM curricula are relevant and that resources align with targets and targets alongside accountability systems to help drive delivery.

THE ROLE OF AU/EU PARTNERSHIPS

Continuous AU/EU partnerships can improve the qualities and overall outcomes of TVET in Africa. Such partnerships are already yielding results. For instance, the Ghana Skills Development Initiative pioneered by GIZ Ghana and implemented in collaboration

with the Commission of TVET (CTVET) has helped ensure an inclusive and higher-quality TVET system for the acquisition of relevant skills and the creation of decent work in Ghana since 2012.³⁰ GIZ Ghana supported CTVET to develop and implement the Competency Based Training (CBT) curriculum under the third phase of the Ghana Skills Development Initiative. The current fourth phase of the initiative³¹ prioritizes the incorporation of a competency-based training curriculum into the curriculum of public institutions, TVET systems, and the private sector of Ghana. The phase focuses on strengthening the capacity of CTVET to develop relevant curricula and register and accredit TVET institutions to ensure effective co-ordination of the TVET sector.³² The EU is also providing funding to strengthen TVET systems in several African countries.^{33 34}

In the ongoing AU/EU partnership, the following are expected from EU member states:

- **Financial support based on outcomes from TVET institutions**, such as the enrolment and completion rates and the rates of transitions to the job market, among others.
- **Capacity building of TVET institutions through learning partnerships** with TVET institutions in the EU, such as training of trainers' programs for TVET teachers.
- **Partnerships with industries in the EU** to offer TVET students in Africa in-person or remote internships to provide the students with hands-on experience.
- **Institutional support to strengthen the policies** guiding TVET systems in Africa and the capacities of TVET regulatory bodies and institutions to effectively carry out their mandates.
- **Support for stronger African digital champions**, particularly at the highest level of government and industry. Around the world, the digital revolution and the policies that guide it have been championed by different kinds of leaders. In Europe, the EU has pushed a "human-centric" approach to digital policy that seeks a fair and equitable digital economy. **The African Union Commission (AUC) and African Heads of State need to intentionally champion Africa's digital transformation.** Smart Africa is a move in the right direction but only represents a portion of the continent, and additional platforms are needed to crowd in private sector leaders as key partners with the AUC and Heads of State. The AU/EU partnership presents an opportunity to champion this agenda.

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Figure 1

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Figure 2

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IMPRINT

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