



LEVERAGING SCIENCE, TECHNOLOGY, AND INNOVATION FOR ENHANCED YOUTH EMPLOYMENT IN NIGERIA

**African Technology Policy Studies Network (ATPS)
TECHNOPOLICY BRIEF NO. 66**

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The African Technology Policy Studies Network (ATPS) is a transdisciplinary network of researchers, policymakers, private sector actors and the civil society promoting the generation, dissemination, use and mastery of Science, Technology and Innovations (STI) for African development, environmental sustainability and global inclusion. In collaboration with like-minded institutions, ATPS provides platforms for regional and international research and knowledge sharing in order to build Africa’s capabilities in STI policy research, policymaking and implementation for sustainable development.



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About the Project

This project was launched amid Africa’s burgeoning youth population, offering immense potential for productivity and inclusive economic growth. However, a significant portion of this demographic faces unemployment challenges exacerbated by the COVID-19 pandemic, necessitating sustainable solutions through effective policy interventions and institutional strengthening. Focusing on Ethiopia, Ghana, Kenya, Nigeria, Rwanda, Senegal, Uganda, and Zimbabwe, the initiative reviews Science, Technology, and Innovation (STI) policies to understand the current landscape, identify successes and failures, and provide evidence-based insights for decision-making in critical sectors for youth employment and wealth creation. Aligned with continental strategies such as the Agenda 2063 and initiatives such as the Mastercard Foundation’s Young Africa Works strategy and the Afreximbank’s campaign for young people’s participation in the implementation of the African Continental Free Trade Area (AfCFTA) and youth mainstreaming in policy engagements and cross-regional dialogues among others, the project aims to inform policymaking and foster stronger linkages among stakeholders to address youth unemployment, skills development, and entrepreneurship. Through rigorous research and stakeholder engagements, the project is catalyzing evidence-based policy discussions and contributing to the formulation of effective strategies for job creation and youth empowerment across Africa.

About Africa Technology Policy Studies Network (ATPS)

The African Technology Policy Studies Network (ATPS) is a transdisciplinary network of researchers, policymakers, private sector actors and civil society promoting the generation, dissemination, use and mastery of STI for African development, environmental sustainability and global inclusion. ATPS has over 5,000 members and 3000 stakeholders in over 51 countries in 5 continents with institutional partnerships worldwide. We implement our programs through members in national chapters established in 30 countries (27 in Africa and 3 Diaspora chapters in Australia, the United States of America, and the United Kingdom). In collaboration with like-minded institutions, ATPS provides platforms for regional and international research and knowledge sharing in order to build Africa's capabilities in STI policy research, policymaking and implementation for sustainable development.

Acknowledgement

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Key Messages

- Youth unemployment is a persistent problem in Nigeria that requires the mainstreaming of Science, Technology, and Innovation (STI) to create more export-oriented and knowledge-based sectors that will reposition Nigeria from an import-dependent to export-oriented economy with more youth participation.
- The Nigerian government has launched various policies and programs to promote job creation among the youth, innovation, skill acquisition, and entrepreneurship. Some of these policies have recorded successes in terms of job creation, youth employment, and skills development. However, there is a general lack of political commitment to adequately mainstream youth employment and employability in the country. Youth employment and entrepreneurship development should be prioritized by the Nigerian government through adequate funding and institutional support, especially in the STI sectors.
- Strong partnerships with international organizations and development partners, alongside achievable policies, and programs, can bring positive impacts to youth employment in Nigeria. The establishment of the National Youth Service Corps (NYSC) Entrepreneurship Program, the Global Environment Facility–Small Grants Programme (GEF-SGP), and Centres of Excellence (CoE) and research institutions around the country have all contributed to the development of skills, productivity, and entrepreneurship among youth, leading to some improvements in economic growth and job creation. Private sector contributions to entrepreneurship and youth employment are paramount for sustained development.
- Nigeria’s fragile economy, insecurity, lack of proper monitoring and evaluation of programmes to support youth and marginalized

groups, inadequate funding for STI programs, and inadequate linkages between research and industry are challenges the country faces. However, these challenges present opportunities for the youth to demand for their rights, for collaboration between researchers and industry players, and for increased civic engagement and participation.

1. Introduction

Nigeria has made some progress in socio-economic development in recent years but continues to face massive challenges in sustaining the development gains. The over-dependence on the oil and gas sector has created a monolithic economy which can hardly sustain the large population of the country that has continued to soar. Low investment in critical sectors has limited job creation and employment opportunities. Unemployment hit an all-time high of 23% in the third quarter of 2018, while the GDP declined from US\$ 568 billion in 2014 to US\$ 397 billion in 2018 (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2021). Despite this, the Nigerian economy remains the largest in Africa. The lack of job opportunities is at the core of the high poverty levels, social inequalities, and socio-political unrest. Nigeria is one of the African countries with the highest youth population, with over 60% of its population of over 210 million people being under the age of 30 years.

Notwithstanding this demographic advantage, youth unemployment remains a major challenge in the country. The youth unemployment rate in Nigeria has been on the rise over the years. It was 12.159% in 2018 and 30% in 2021¹. According to Trading Economics, the youth unemployment rate is projected to reach 56% in 2025 (Trading Economics, 2022). This problem could be linked to skills mismatch and/or lack of enabling environment for employment opportunities to thrive (Olubusoye et al., 2023). To address this challenge, there is a need to leverage Science, Technology, and Innovation (STI) to unlock opportunities for youth employment, skill development, and entrepreneurship. By harnessing STI, Nigerian youth can acquire the requisite skills and knowledge needed to compete in today's rapidly changing job market. This approach can also foster the creation of new jobs and stimulate economic growth. It is estimated that Nigeria's digital economy can create over \$88 billion in value and create millions of jobs by 2030 (World Bank, 2021). By leveraging digital technologies and innovation, STI can create new job opportunities, enhance skills, and promote entrepreneurship.

¹ <https://fred.stlouisfed.org/series/SLUEM1524ZSNGA>

2. Rationale for STI application for Youth Employment Skills Development

The national unemployment rate in Nigeria was predicted to hit 40.6% in 2023 compared to 2022's 37.7%, with youth accounting for a significant proportion of the unemployed (Usen, 2023). The situation has further been aggravated by the COVID-19 pandemic, which has led to job losses and increased economic hardships. The high rate of youth unemployment has implications for the country's economy, social stability, and development. The need to promote youth employability through effective STI policies and institutional support is therefore very exigent. There is inadequate political commitment to implement effective STI policies and programmes which has led to inadequate funding for research and development (R&D). The low funding of STI programmes in Nigeria has resulted in limited opportunities for youth to acquire the necessary skills and knowledge required for the job market or become self-reliant. This has spurred some level of increased civic engagement to draw the attention of the political actors towards job creation and skills enhancement programmes. In response to this situation, the youth are becoming more organized and are able to demand their rights and opportunities. On the other hand, the poor linkage between research and industry in Nigeria has resulted in a mismatch between research outputs and industry needs, low commercialization of research outputs, and poor entrepreneurship development among others. This challenge presents an opportunity for collaboration between researchers and industry players to develop solutions that meet the needs of the market. This undoubtedly leads to the development of new products and services, its commercialization, and the subsequent creation of employment opportunities, especially for the youth. Adequate investments in STI will create more export-oriented and knowledge-based sectors that can reposition Nigeria from an import-dependent into a globally competitive economy with more youth participation.

3. Methodology

This policy brief was developed from a comprehensive study that delved into STI policies, institutions, stakeholder mapping, and an analysis of youth employment within the realm of technological innovation, skill enhancement, and entrepreneurship development. The study was conducted across seven Sub-Saharan African (SSA) countries, namely Ethiopia, Ghana, Kenya, **Nigeria**, Rwanda, Senegal, and Uganda. The study adopted a mixed-methods approach, which enabled the collection of both qualitative and quantitative data. The data-gathering process commenced with thorough desk studies of existing literature and secondary data. Subsequently, key informant interviews (KIIs) were conducted, involving 20 carefully selected respondents, to obtain primary data that encompassed both qualitative and quantitative aspects. To further enrich the dataset and cross-verify information obtained through other methods, focus group discussions (FGD) were carried out. The study engaged participants from a diverse range of stakeholder categories, including government officials and policymakers, representatives from the private sector and industry, members of civil society and non-governmental organizations (NGOs), researchers, development partners, and individuals from the media. Special attention was given to ensuring inclusivity and gender balance in the selection of respondents, with a particular focus on representing the voices of youth and other marginalized groups.

4. Major Findings

This section presents a summary of the key findings from the study on the contribution of STI to youth employment in Nigeria.

4.1 STI Policies and Programmes for Youth Employment in Nigeria

The government of Nigeria has implemented several policies and programs aimed at creating job opportunities, youth employment and entrepreneurship in the country. For instance, the revised National STI Policy of 2022 has as one of its key strategies, to provide policy incentives to the youth for career development in STI fields. It also aims to promote competition and award schemes in STI among the youth in and outside the educational system. Again, the National Digital Economy Policy and Strategy (2020-2030) aims to create over 10 million jobs by 2023 and has eight pillars for the acceleration of the Nigerian digital economy, including the development of digital services and infrastructure.

The National Agricultural Technology and Innovation Policy (NATIP) (2022-2027), aims to provide capacity-building, acquisition of 21st-century skill sets, and gender and youth-friendly innovations and enterprises for the youth in agriculture. The policy aims to create 1 million new jobs for women and youth along the value chains. The National Youth Policy of 2009 and the Presidential Youth Empowerment Scheme (P-YES) were launched to promote entrepreneurship and self-employment among Nigerian youths. The Youth Enterprise with Innovation in Nigeria (YouWiN!) program provides grants, training, and mentorship to young entrepreneurs with innovative business ideas. The Technology Incubation Program provides funding, mentorship, and infrastructure to startups. The Nigerian Content Development and Monitoring Board (NCDMB) Act of 2010 has led to the creation of over 60,000 jobs in the oil and gas industry. Overall, these policies and programs have contributed to the creation of jobs for Nigerian youth and support for skill acquisition.

Table 1 highlights key policies, programmes, and initiatives in Nigeria that support youth employment and job creation. The Nigerian youth have also been making tremendous efforts towards job creation in the STI sector. The youth are behind most STI start-ups in major private Tech-companies in the country. With over 481 startups, Nigeria is one of Africa’s ‘big four’ startup ecosystems alongside Egypt, Kenya, and South Africa (Mulligan and Jackson. 2022). Major leading companies include Interswitch, flutterwave, IrokoTv, FairMoney, and Credpal among others. Ventures in these startups vary from recruitment to mobility, logistics, agri-tech, entertainment, marketing, prop-tech, legal-tech, waste management and auto-tech (Ibid).

4.2 STI Institutional Framework for Youth Employment in Nigeria

The Science, Technology, and Innovation Policy of 2011 established a governance structure for STI in Nigeria, which includes several organizations. One of such is the National Research and Innovation Council (NRIC) which is composed of the President and the Federal Ministers from different sectoral ministries with connections to STI development. NRIC is responsible for setting national priorities on research and development, coordinating STI activities, and facilitating fundraising activities to support youth employability, entrepreneurship, and job creation. The Federal Ministry of Science, Technology, and Innovation (FMSTI) centrally coordinates research and development activities, and is responsible for the formulation, monitoring, and review of the STI policy. The National Council on Science, Technology, and Innovation (NCSTI) sets broad directions to coordinate STI activities in line with national priorities, monitors the activities of public STI agencies, and disseminates outputs from scientific research. The State Science, Technology, and Innovation Councils (SSTIC) provide leadership and direction for STI activity at the state levels, promotes science education, aligns policies and programs with those of the NRIC, and implements decisions and programs of the NCSTI. The Tertiary Education Trust Fund (TETFund)

² <https://www.scienceandtech.gov.ng/wp-content/uploads/2022/09/NSTIP-2022-EDITION.pdf>

provides grants for humanities and social sciences, STI, and cross-cutting research and development in public universities.

The revised STI Policy of 2022 acknowledges that the lack of long-term commitment to STI has been a major impediment to economic development and emphasizes the need for an effective institutional and legal framework comprising the NRIC, SSTIC, and NCSTI. Other agencies and institutions also have important roles to play in the National Innovation System (NIS) to ameliorate the increasing unemployment rate, especially among the youth. During the KIIs and FGDs conducted in Nigeria, the Federal Ministry of Science, Technology, and Innovation (FMSTI) and The Federal Ministry of Communication and Digital Economy (FMCDE) were rated highest in power and influence over the other agencies, parastatals, and departments in the STI ecosystem. Among the Research category, the Raw Materials Research and Development Council (RMRDC) wields the highest power and influence, while the Innov8 Hub and the Rural Farmers Hub were rated the highest in power and influence among the private sector STI actors in the country. Table 2 highlights the roles and impacts of some selected key stakeholders in the STI ecosystem engaged in supporting skills development, youth employment, and entrepreneurship in Nigeria. All these policies, programmes, and institutions create an enabling environment for youth employment in Nigeria.

4.3 Challenges and Opportunities for Youth Employment in Nigeria

Nigeria's economy is fragile, driven mainly by oil revenue; with a working-age population and adult literacy rate estimated at 60%. In 2022, Nigeria's gross domestic expenditure on research and development (GERD) was 0.13% of its GDP, which translated to an investment of 1.5 billion U.S. dollars in research and development (Sasu, 2023). The lack of political commitment to adequately support the implementation of STI policies, especially in low R&D investments, has led to increasing unemployment among the youth. Poor coordination among STI stakeholders and inadequate

linkages between research and industry are other major challenges. Many youth, women, and marginalized communities criticize the lack of adequate support and poor infrastructure required for STI development. Insufficient funding, limited access to technology, and inadequate R&D facilities hinder their ability to innovate and create employment opportunities in science and technology. These have further led to a high rate of brain drain which directly impedes innovation in homegrown skills. A recent survey conducted by the National Universities Commission (NUC) to hear the voices of the youth, women, and the marginalized shows that 89% of the 140 interviewed respondents, who were only youth, said that they are not aware of the policies and actions of the government to using STI to improve their skills for the future (NUC, 2023). They all responded that the curriculum does not prepare them for future job roles and skills. According to the survey some women randomly interviewed highlighted a lack of access to opportunities created by the STI policies. They feel that government initiatives, scholarships, and training programs in STI are not inclusive and do not reach those in remote or disadvantaged areas. This scenario leads to a lack of equal opportunities for skill development and employment.

From a gender perspective, women often face gender-based barriers in accessing STI-related opportunities and jobs. They report discrimination, lack of support and unequal treatment in the field. Women and marginalized communities experience these inequalities and yet if allowed to participate fully, they are likely to do well and excel in all interventions geared toward innovation, entrepreneurship, and job creation. Some youth and marginalized communities' express concerns about the relevance and effectiveness of the skills training provided under STI policies. They argue that the skills being taught in public and private research institutions may not align with the demands of the job market or may not adequately prepare them for employment (Sapiro and Ward, 2020). This leads to a mismatch between available skills and job opportunities.

However, it is from these challenges that opportunities can arise

given the right enabling environment. For instance, developing skills and providing funds to initiate startups and small businesses can lead to increased opportunities for the youth. This will require a concerted effort amongst all stakeholders working within their mandates to play their different roles in a conducive environment. A platform for engagement and consultations amongst the key stakeholders is critical in ensuring that they all pull in one direction, thereby minimizing duplication and maximizing synergies that will be created. The government, through its national plans and vision, should seek to expand the economy to target new sectors outside the traditional ones. The private sector could play the critical role of investing in opportunities that promote research as well as startups in STI. Such investments will not only create a more enabling environment but will also enhance innovation and competitiveness in the STI sector.

Under such an environment, product development can easily be commercialized and will easily feed into the economic space of the country. Civil society organizations can play their part in creating innovative programs and initiatives to support skills development, mentorship, youth employment, and entrepreneurship. They can also play a critical role in voicing these challenges through various forums to advocate and create awareness of the importance of investing in the youth and marginalized groups. Furthermore, Nigeria's infrastructure deficit provides an opportunity for investors, either individually or through public-private partnership (PPP) arrangements. Finally, there is the opportunity for collaboration between researchers and the industry in generating market-driven solutions, resulting in the commercialization of research outputs and the creation of new job opportunities for the teeming youth population in the country.

4.4 Best Practices and Impacts on Youth Employment in Nigeria

Partnerships and collaborations among institutions within the STI ecosystem have had a great impact on skills development, youth employment, and entrepreneurship in Nigeria. Such partnerships

such as the Feed the Future project which is co-implemented with USAID have increased employment opportunities, promoted innovation, and empowered women and youth, among other positive impacts. There are ongoing efforts in the implementation of policies to drive local interventions geared towards creating jobs for the youth and marginalized groups. The Global Environment Facility–Small Grants Programme (GEF-SGP) and the National Youth Service Corps (NYSC) Entrepreneurship Program are examples of policies that support entrepreneurship and job creation. The GEF-SGP has supported over 2,200 community-based projects in Nigeria since 2009, creating over 10,000 jobs with a focus on supporting youth and women-led initiatives. The NYSC program, which is a one-year mandatory service program for Nigerian graduates, has had a significant impact on youth employment. The NYSC program has also played a significant role in promoting entrepreneurship among young graduates. Additionally, ten centres of excellence have been set up in Nigeria, thanks to the US\$500 million in World Bank loans. These centres support the training of youths in industry-relevant skills for job creation and entrepreneurship.

The creation of various funds to support young researchers is also one of the key actions that have revitalized the development of the SME sector. The TETFund for example has been a huge success and its extension to TVET and other research bodies will have an even greater impact. The National University Commission in Nigeria has supported the change to new Core Curriculum Minimum Academic Standards (CCMAS) for universities in Nigeria to focus on outcome-based education. This CCMAS is designed to ensure that young graduates are equipped with relevant skills and knowledge for work through science, technology, and innovation. The Mastercard Foundation has contributed to youth employment and job creation in Nigeria through its Scholars Program in partnership with the American University of Nigeria (AUN). This has led to improved quality education and leadership development for poor young Nigerians, offering full scholarships, mentoring, internships, and community

service opportunities. The program has supported over 300 students and graduates, creating over 50 jobs through their entrepreneurial ventures (Babalola, 2022).

Another example is the Youth Employment in Agribusiness and Sustainable Agriculture (YEASA) programme launched by the International Institute of Tropical Agriculture (IITA) in 2012 to empower youths and women in agribusiness through capacity building, mentoring, access to finance and markets, and policy advocacy, adopted a participatory approach that involved the beneficiaries in co-designing and co-implementing the interventions that suited their needs and aspirations. The programme also leveraged on STI to enhance the productivity, profitability and sustainability of the agribusiness ventures. YEASA programme has trained over 7,000 youths and women and created over 3,000 jobs in the agricultural sector (Chiekezie et al., 2016).

Table 1: A summary of key STI Policies, their roles and impact on skills development and youth employment in Nigeria

STI Policies and Programmes	Roles in skills development and youth employment	Impact on skills development and youth employment	Remarks
<p>The revised STI policy of 2022</p>	<ul style="list-style-type: none"> - Aims at fostering an effective National System of Innovation (NSI), that will create an enabling environment for research, development and innovation that could generate new products, services and solutions that meet the needs and demands of the market and society. - Promoting a knowledge-based economy, will enhance the quality and relevance of education and training that equip the youth with the necessary skills and competencies for the 21st century. - Leverage on STI to address some of the key challenges and opportunities that affect the livelihoods and well-being of Nigerians, such as poverty reduction, health improvement, environmental protection, food security and others. 	<ul style="list-style-type: none"> - The policy creates an enabling environment for innovation and entrepreneurship that could generate new products, services and solutions for the market and society. The enabling environment fosters youth entrepreneurship and the creation of startups that support youth employment. - The policy also launched Nigeria's first STI television station to increase awareness and advocacy. 	<ul style="list-style-type: none"> - The policy is timely at a time when the country is grappling with serious youth unemployment problems, skills mismatch, and gross brain drain. There is, therefore, a need for commensurate political commitment in the areas of funding research and innovation, STI infrastructure development, opportunities for skills acquisition and empowerment of start-ups to achieve the aims of the policies. Synergy among the critical stakeholders in the STI ecosystems will ensure the efficiency of resource use.

<p>Vision 2030</p>	<ul style="list-style-type: none"> - Creates an enabling environment for job creation, entrepreneurship, and youth employability. - Outlines strategies for promoting a diversified economy, increasing investment in key sectors, and improving access to finance, skills development, and business support services. - Also aims to promote social inclusion, environmental protection and economic growth through advocacy, education, engagement, policy advancement and innovation. 	<ul style="list-style-type: none"> - Has supported the implementation of the Sustainable Development Goals and the National Development Plan. - Created opportunities for youth empowerment, skill development, job creation and entrepreneurship in various sectors of the economy 	<ul style="list-style-type: none"> - Prioritizing diversification of the economy is a very laudable direction. However, monitoring and evaluation of progress made over time are key to the successful implementation of the policy.
<p>The N-Power programme</p>	<ul style="list-style-type: none"> - Aimed to address unemployment and skills development among Nigerian youth. - The program has provided job opportunities and training in various sectors contributed to the development of critical skills needed in Nigeria's economy and improved the livelihoods of beneficiaries. 	<ul style="list-style-type: none"> - Has contributed to creating a pipeline of skilled and employable young Nigerians who contribute to the country's economic growth in the long term. - About 500,000 young Nigerians have been trained across different sectors, including education, health, agriculture, and technology. 	<ul style="list-style-type: none"> - The issues of corruption were prominent in the implementation process. Such loopholes should be envisaged, and strategies put in place to counter them during the planning and implementation stages.

<p>The Youth Enterprise with Innovation (YouWIN!) programme</p>	<ul style="list-style-type: none"> - Supports young entrepreneurs in Nigeria with business training and funding. - Drives Skills development and youth employment in Nigeria by providing young entrepreneurs with access to finance and mentorship, enabling them to start and grow their businesses. 	<ul style="list-style-type: none"> - Strengthen partnerships with private sector stakeholders. Since 2011, it has supported over 3,900 youth-led businesses, created over 30,000 direct jobs, and generated over \$15 million in annual revenue. - The programme has facilitated access to finance, training, and mentoring, contributing to the development of a vibrant entrepreneurial ecosystem in the country. 	<ul style="list-style-type: none"> - Providing a platform for enhanced access to finance is a step in the right direction. Sustainability would mean creating more innovative ways to enhance access to funding for the youth and providing customized training and mentorship to enhance entrepreneurship.
<p>The National Digital Economy Policy and Strategy (2020-2030)</p>	<ul style="list-style-type: none"> - It aims to reposition Nigeria's economy to leverage digital technologies for growth and development. - Seeks to empower Nigerians with the right skills to create and use digital solutions, foster innovation, and entrepreneurship, create jobs and wealth, and enhance service delivery and inclusion 	<ul style="list-style-type: none"> - The policy has created over 400,000 jobs for Nigerian youths. - It has enabled the growth of the digital economy, which is projected to contribute 45% of Nigeria's GDP by 2025. This has opened up more opportunities for young people to start and grow their businesses in the digital space. 	<ul style="list-style-type: none"> - Building on the digital revolution will enhance the competitiveness of Nigeria's economy. A critical concern will be to guard against inequalities that could result from the digital divide because of the huge digital literacy gaps and gender disparity issues relating to the adoption of digital technologies.

<p>Special Tertiary Education Trust Fund (TETFund) for TVET.</p>	<p>- Supports the setting-up of specialised centres of excellence for the training of willing students during off-semester, to acquire specialized skills like automobile maintenance, welding, carpentry, tailoring, graphic design, etc. These centres are driving the development of skills in job creation entrepreneurship, with support from the Federal Ministry of Science and Technology.</p>	<p>- Over 22,000 youths with disabilities have been trained in various vocational skills, resulting in job creation and a reduction in unemployment rates³. - It has supported the establishment of 42 new TVET centres, providing more opportunities for youths with disabilities to acquire skills and improve their employability.</p>	<p>- High-level monitoring and evaluation of the project is needed. There should be increased transparency and coordination in the selection of grantees.</p>
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Table 2: Summary of key institutions, their roles and impact on youth employment in Nigeria

STI Institutions	STI Institutions Roles in skills development and youth employment	Impacts on skills development and youth employment
Government: Ministries, Agencies and Departments (MDAs)		
Tertiary Education Trust Fund (TETFund)	<ul style="list-style-type: none"> - Provides supplementary support to all levels of public tertiary institutions with the main objective of using funding alongside project management for the rehabilitation, restoration, and consolidation of Tertiary Education in Nigeria. It supports research in STI through the National Research Fund and the Institution-Based Research Fund. 	<ul style="list-style-type: none"> - As of 2021, TETFund has disbursed over ₦1 trillion to beneficiary institutions, resulting in improved quality of education and increased employability of graduates. Additionally, TETFund-supported research has contributed to the development of innovative solutions in various fields, leading to the creation of new job opportunities for young people.
The National Office for Technology Acquisition and Promotion (NOTAP)	<ul style="list-style-type: none"> - Supports skills development and youth employment through policies, programs, and initiatives; Provides skills, funding, and job opportunities through targeted training that has resulted in the empowerment of youths. 	<ul style="list-style-type: none"> - Facilitated the registration of over 50 patentable inventions by Nigerian youths, enabling them to commercialize their ideas and contribute to the country's economic growth. - In 2020 alone, NOTAP trained over 500 youths in technology entrepreneurship and innovation, resulting in the creation of over 1,000 jobs (Asemota, 2021).
Private Sector		
The Innov8 Hub	<ul style="list-style-type: none"> - Drives to empower young entrepreneurs and promote innovation; Offers training, mentorship, and funding opportunities to startups; and supports skills development and youth employment in Nigeria. 	<ul style="list-style-type: none"> - Has supported over 100 businesses and created more than 500 jobs since its inception in 2018; Providing access to resources and networks that help young entrepreneurs turn their ideas into successful businesses.

FlutterWave	<ul style="list-style-type: none"> - Support skills development and youth employment in Nigeria through training in software development and tech skills. 	<ul style="list-style-type: none"> - The company has trained over 5,000 software developers in Nigeria through its “Flutterwave Developer Academy” program, and its payment gateway has enabled many Nigerian businesses to expand their reach and hire more employees.
Civil Society Organizations (CSO's)/ Non-Governmental Organisation (NGOs)		
The Association of Professional Women Engineers of Nigeria (APWEN)	<ul style="list-style-type: none"> - Aims to provide mentoring, training, financial support, and networking opportunities to young women in engineering, helping to increase their employability and entrepreneurship skills. 	<ul style="list-style-type: none"> - Has provided training to over 500 young women engineers and facilitated the creation of over 100 jobs through its entrepreneurship program. APWEN's efforts have contributed to the increase in the number of female engineers in Nigeria, which has risen from 11% in 2015 to 16% in 2021.
Rural farmers hub	<ul style="list-style-type: none"> - Provides farmers with advisory services guided by satellite-based remote imagery; Encourages the sustained economic development of smallholder farmers by achieving higher levels of productivity through innovative information technology and technical training of youths in rural communities. 	<ul style="list-style-type: none"> - Has provided job opportunities and improved skills for young people in rural areas, which can have a positive impact on the local economy and promote sustainable development. Farmers mainly in rural communities in Nigeria have been assisted in increasing crop yield by up to 55% in Fine-grained crops.

5. Conclusion

Promoting youth employability through effective policy and institutional support is crucial for sustaining Nigeria's economic growth and development. The country has a large youth population, which presents both opportunities and challenges. With the right policies and institutional support, Nigeria can harness the potential of its youth to drive innovation, productivity, and economic growth. Efforts to promote youth employment should focus on providing relevant education and skills training that align with the needs of the job market and industry. Additionally, there should be a focus on creating an enabling environment that encourages entrepreneurship and innovation. This includes access to finance, mentorship, and business development support. Effective policy and institutional support will require collaboration between the government, private sector, research institutions, universities including TVETs and civil society organizations. Institutional reforms such as streamlining the regulatory environment and reducing the bureaucratic hurdles for starting and growing businesses can contribute to promoting youth employability.

6. Policy Recommendations

Based on the key findings from the study, the following policy recommendations are proffered to enhance youth employment, sustainable and inclusive skills development, and entrepreneurship development in Nigeria:

Recommendation 1: There should be a comprehensive strategy that combines economic diversification, increased STI funding, and political commitment to enhance youth employment and foster technological innovation development: The government should prioritize investment in non-oil sectors, particularly the technology and digital economy, to create new job opportunities for young people. This can be achieved by providing incentives such as innovation funds for technology start-ups, Science, Technology, Engineering, and Mathematics (STEM), and TVET education; improvement in R&D infrastructure; convivial environment for ease of doing business, tax breaks, and continuous capacity building opportunities, especially for the youth. Simultaneously, the government must demonstrate a strong commitment to the implementation of the STI policies and programmes, with adequate funding for R&D, improved governance, and accountability. Investing in STEM education, establishing innovation hubs, addressing skills gaps, and promoting entrepreneurship and innovation can empower the youth and drive sustainable economic growth. The private sector employers of labour and development partners should develop internal mechanisms to support programmes that target outcome-based education, local fabrication and economic diversification through targeted funding and direct investments.

Nigeria needs to increase its annual budget for R&D to at least 1% of GDP and prioritize research that can lead to technological innovation and economic growth. Increased funding can support the establishment of technology hubs, innovation centres, and research institutes, which can serve as incubators for young innovators and entrepreneurs. This will lead to the development of new products,

services, and businesses that can create employment opportunities for young Nigerians. Additionally, funding can also support the development of vocational and technical education programs to equip young people with the skills needed to participate in emerging sectors such as renewable energy, biotechnology, and ICT. There should be specific financial policies to encourage private sector business funding of research and innovation. Such policies may include tax exemptions, lower tax rates, duty-free imports of STI products, friendly policies on government grants, and lower interest rates etc. These will indirectly promote an enabling environment for STI to thrive thereby enhancing youth employment in the country.

Recommendation 2: There is need for increased coordination of the critical actors in the STI ecosystem to improve synergies in boosting youth employment and job creation in the country:

Improving coordination among STI stakeholders, including the government, private sector, academia, research institutions, and civil society organizations is necessary to reduce duplication of efforts, lack of synergy, and fragmentation of STI activities. For example, if universities, government agencies, and private companies collaborate more effectively to identify and prioritize the most promising areas of research and innovation, this can lead to the creation of new industries and job opportunities for young people. If these stakeholders work together to improve access to training and mentoring programs, young people can gain the skills and knowledge needed to succeed in high-demand fields. There is a need to encourage investment in R&D infrastructure, facilities, science parks, and technology incubators to improve research collaboration, access to research equipment, and innovation outputs. Additionally, the country needs policies and frameworks that can bridge the gap between research and industry to promote the commercialization of research outputs, create new products and services, and generate employment opportunities for the youth. For instance, if the government invests in building better transportation systems, it can open new opportunities for businesses to expand

their reach and hire more workers. This could result in more job openings for the youth in fields such as logistics, transportation, and construction. Improved power supply and access to clean water can create more job opportunities in the manufacturing and agricultural sectors among others.

Recommendation 3: There should be an increased prioritisation of outcome-based education and research in STI to cushion the future of work challenges:

Public and Private research institutions should prioritize and allocate resources for training and research projects that address the needs and challenges faced by youth, women, and the marginalized communities to prepare them for future of work needs; establish partnerships and collaborations with marginalized communities to co-create research projects and ensure the inclusion of their perspectives and knowledge as well as harness their inherent potentials that could contribute to developments; and develop and implement mentorship programs to support young researchers, especially those from marginalized communities, to enhance their skills and access to opportunities in research and development. The development partners need to support capacity-building initiatives that aim to develop the skills of youth, women, and marginalized communities in the science and technology sector; invest in initiatives that promote gender equality, inclusion, and diversity in science and technology fields and partner with local organizations and communities to ensure the sustainability and relevance of interventions in marginalized areas thus making it more impactful. In this sense, there is need to ‘formalize the informal sectors’ to prepare them more adequately to contribute to national development. Support from development partners can go a long way to achieving this through partnerships with relevant African organizations.

Recommendation 4: There is need for more inclusive STI policy development and its implementation:

In developing STI policies, there is need to make the process all-inclusive ensuring that the voices of the youth, women, and marginalized groups are taken

into consideration. Similarly, adequate implementation strategies and monitoring, evaluation, and learning plans must be put in place to ensure effective implementation and desired impacts from such policies. When all stakeholders participate in co-designing and co-developing policies and programmes, there is a high tendency that they will give their support in its implementation leading to the desired impacts. The Nigerian Youth Employment Action Plan (NIYEAP) 2021-2024 is a comprehensive and coordinated policy framework that aims to address the challenges and opportunities for youth employment in Nigeria. The policy was developed through a consultative process involving various ministries, agencies, development partners, youth organizations, and experts. It has four priority areas of intervention: employability, entrepreneurship, employment, and equality and rights.

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