



Association for the
Development of
Education in
Africa

Rethinking the role of Technical and Vocational Education and Training (TVET) in Future Work and Lifelong Learning, in light of Digitalization and the 4th Industrial Revolution (4IR)

SUPPLY SIDE REPORT

Rethinking the role of Technical and Vocational Education and Training (TVET) in Future Work and Lifelong Learning, in light of Digitalization and the Fourth Industrial Revolution (4IR)

SUPPLY SIDE REPORT

November 2020



Ushirika wa Maendeleo ya Elimu Barani Afrika

الرابطة لأجل تطوير التربية في إفريقيا

Association for the Development of Education in Africa

Association pour le développement de l'éducation en Afrique

Associação para o Desenvolvimento da Educação em África

Table of Contents

Acronyms	4
Executive Summary	6
1. Introduction	11
2. Methodology	12
3. Conceptualisation clarifications	13
4. The Fourth Industrial Revolution (4IR)	14
5. Influence of 4IR on TVET	16
6. TVET must adapt itself to provide future skills for future jobs	19
7. Preparedness of Africa for the integration of 4IR in TVET	24
7.1 Governance:.....	24
7.2 Major challenges:.....	24
7.3 Facilities:	25
7.4 Enrolment:.....	25
7.5 Trainers/Teachers:.....	25
7.6 Link with private sector and industry:	26
7.7 Curricula:.....	27
7.8 ICT/Technology:.....	28
7.9 Financing:.....	30
7.10 Strengths and Weaknesses:.....	30
7.11 Advantages and disadvantages perceived of 4IR in TVET.....	33
7.12 Possibilities of adopting the 4IR technologies in TVET.....	34
7.13 Barriers to the enacting 4IR in TVET.....	34
7.14 Cross border possibilities.....	35
8. Conclusion	37
9. Recommendations	42
ANNEX I : List of participating countries	47
ANNEX II : Country Background Papers	48
<i>Côte d’Ivoire</i>	48
<i>Mauritius</i>	64
<i>Rwanda</i>	80
<i>Uganda</i>	100
<i>Angola</i>	117
<i>Gabon</i>	131
<i>Liberia</i>	141
<i>Morocco</i>	153

List of Figures & Tables

Figure 1: The 4 th Industrial Revolution	14
Figure 2: Basic, intermediate and advanced digital skills	15
Figure 3: Future qualifications and skills required from TVET	19
Figure 4: Stages of ICT Development	21
Table 1: Telephone and internet penetration	29
Table 2: Barriers to enacting the 4IR in TVET	34

Acronyms

4IR	Fourth Industrial Revolution
ACQF	African Continental Qualifications Framework
ADEA	Association for the Development of Education in Africa
ACET	African Centre for Economic Transformation
AEC	Annual Education Census
AfDB	African Development Bank
AI	Artificial Intelligence
AU	African Union
BPO	Business Process Outsourcing
CBET	Competence-based Education and Training
CMC	Cités des Métiers et des Compétences
COMESA	Common Market for Eastern and Southern Africa
COVID 19	Corona Virus 2019
CPD	Continuous Professional Development
EMIS	Education Management Information System
EU	European Union
GDP	Gross Domestic Product
GER	Gross enrolment ratio
GSMA	Global System for Mobile Communications
HDI	Human Development Index
ICT	Information and Communication Technology
IFC	International Finance Corporation
IOT	Internet of Things
IT	Information Technology
ILO	International Labour Organisation
LMIS	Labour Market Information System
MGI	McKinsey Global Institute
MITD	Mauritius Institute of Training and Development
MOOC	Massive Open Online Courses
NGOs	Non-Governmental Organisations
NQF	National Qualifications Framework
NREN	National Research and Education Networks
NTQF	National TVET Qualifications Framework
OECD	Organisation for Economic Co-operation and Development
PASET	Partnership for Applied Science Engineering and Technology

PCP	Programme for Country Partnership
PPP	Public-private partnership
QR	Quick Response
REC	Regional Economic Community
R&D	Research and Development
SADC	Southern African Development Community
SDG	Sustainable Development Goals
SENAI	National service for Industrial Training, Brazil
SSA	Sub Saharan Africa
STEM	Science, Technology, Engineering and Mathematics
TQF	TVET Qualifications Framework
TTI	Teacher Training Institute
TVET	Technical and Vocational Education and Training
TVSD	Technical and Vocational Skills Development
UEMOA	Union Economique et Monétaire Ouest Africaine
UIS	UNESCO Institute for Statistics
UN	United Nations
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
UNIDO	United Nations Industrial Development Organisation
UNESCO-UNEVOC	International Centre for Technical and Vocational Education and Training
VET	Vocational Education Training
VT	Vocational Training
VTCs	Vocational Training Centres
WAEMU	West African Economic and Monetary Union
WDA	Workforce Development Agency
WEF	World Economic Forum

Executive Summary

Whether we like it or not, the Fourth Industrialisation Revolution (4IR) technologies are already impacting on our work and on our lives. Artificial intelligence, cloud computing, the Internet of Things and wireless technologies have taken over our daily lives, blending our digital, biological, and physical worlds. This seismic change can particularly be felt in the workplace and every industry around the world. Many of the professions that will most likely be affected by labour market transformations brought about by the 4IR are linked with TVET.

On the other hand, youth unemployment, with a rate three times that of adults is a major issue in all African countries. And the youth population under 25 years old is forecasted to be half the total African population by 2050. Skills mismatch is one of the main reasons given by employers for this setback, hence pinpointing to the weaknesses of the TVET system. It seems that the African education and training system, most particularly, the TVET system is not doing the necessary to make its youth work ready let alone for the 4IR work environment thereby warranting the need for a complete rethinking of its role.

Yet studies have shown that different skill sets are required for the future where - workforce readiness, technical skills, soft skills and entrepreneurial skills (which can promote self-employment) will become a priority. Indeed, the potential future skills, as underlined by the global digital skills survey carried out in October and November 2018 by the IFC of the World Bank Group, which may be needed by our TVET Graduates in order to perform in the new normal environment will be both technical and personal. The survey went even to the extent of defining certain skills related to technical (IT knowledge and abilities, data and information processing, etc) and personal (social skills, adaptability to change, etc) as being mandatory, and others, technical (Knowledge management, etc) and personal (continuous improvement and lifelong learning, etc) as recommendable or optional.

This report provides a general snapshot of the digitalization of TVET and skills systems in a set of countries. The primary data are derived from a desktop literature review on 8 countries, namely Angola, Gabon, Liberia, Ivory Coast, Mauritius, Morocco, Rwanda and Uganda and a set of questions administered through a questionnaire to experts and practitioners in the TVET sectors of Ivory Coast, Mauritius, Morocco, Rwanda and Uganda.

The report demonstrates that TVET has not been given sufficient recognition by African countries despite their declared commitment and some consequential progress. Various characteristics point to that direction: Insufficient funding, generally poor quality facilities (infrastructure and equipment), inadequate facilities for females and vulnerable people and persons with disabilities, lack of competent trainers, lack of CPD for trainers and Management of training Institutions, lack of training capacity, outdated curricula, skills mismatch, low self-esteem, amongst others. In brief, the TVET system in many African countries has been operating generally on a supply mode designed for the previous generation. In addition, the East-Asian model of focusing on labour-intensive and export-oriented manufacturing to capitalize on labour-abundance and labour-cost advantage is rapidly losing ground to the current disruptive technological changes and its impacts on global production and trade.

In most African countries, there is a predominantly negative perception of TVET programmes as being inferior to traditional academic pathways. In Ivory Coast, only 38.5 % of public providers are equipped with an internet connection for the trainees. In Rwanda, buildings in general are substandard compared to the standard provided by WDA. In Uganda, facilities are inadequate in most training centres, both public and private; In Mauritius, the MITD is engaged in the upgrading of its training centres in line with its Transformation Plan 2017-2020.

With respect to the integration of different technologies associated with the fourth Industrial Revolution (4IR), the representatives of Ivory Coast and Uganda replied negatively whereas the response of Rwanda, Mauritius and Morocco is more promising with Rwanda (waiting for the relevant

infrastructure), Mauritius (4IR technologies in specific courses) and Morocco (necessary will be done within the context of the implementation of a new strategy). It is interesting to note though that practically all the countries surveyed mention digital technology such as digitization of training programs, establishment of smart classrooms in all TVET schools, Internet connection in all TVET schools, penetration of ICT devices such as laptops, blended learning comprising of both face-to-face and online learning, as innovative solutions/approaches that could be introduced to improve access, quality and relevance teaching and learning.

Interesting to note, some African countries have already started to invest in the 4IR Technologies alongside existing ICT policies (South Africa, Morocco) or created technology centres (Morocco, Rwanda).¹ In 2017, Rwanda, in partnership with Inmarsat, the provider of global mobile satellite communications, set up a centre for the Internet of Things (IoT) to facilitate students' learning, to develop IoT prototypes and to carry out academic research in the field of potential IoT solutions. The programme aims to accelerate the deployment of the IoT and smart city solutions. Rwanda's government also launched the Irembo platform to provide e-government services such as registering for driving exams and requesting birth certificates. Rwanda has long shown an interest in these types of innovative initiative, adopting its first National Information and Communications Infrastructure plan in 2001.² On the other hand, in March 2019, Morocco and UNIDO signed the Programme for Country Partnership for Morocco (PCP Morocco) document, which will support the implementation of the government's Industrial Acceleration Plan 2014-2020. PCP Morocco is meant to focus on several priority industrial sectors and areas, namely industrial zones, agro-industry, energy, the circular economy, Industry 4.0 and e-commerce.³ Mauritius has already engaged in the Fintech revolution. In addition, it has developed an Artificial Intelligence Strategy since 2018.

Other examples are ANDELA which imparts training in advanced digitised skills in countries like Kenya, Nigeria, Uganda, and Microsoft 4Africa imparting intermediate and advanced digital skills training across Africa with on-the-ground presence in Nigeria, Ghana, South Africa, Egypt, Uganda, Kenya, Rwanda, Mauritius, Malawi and Ethiopia.

However, problems subsist and are mainly related to shortage of availability of high-speed internet through broadband and mobile connections on the one hand and the necessary skills on the other to inspire the take-up of 4IR technologies. The following issues have been mentioned by the different participants:

- Finance is a determinant factor in the digitization of TVET in any country. The challenges for providing access to ICT are the hefty costs associated with establishing ICT infrastructure and providing training for staff, and the high recurrent costs of system maintenance and upgrades, along with the costs of staff skills upgrades. There exists chronic underfunding for TVET facilities as mentioned by the different respondents (Ivory Coast 6.96% of education budget; Rwanda 20%; Uganda 12%; Mauritius 2-3%, Morocco 3.54%), which will further limit digital take-up. TVET institutions need to develop collaborative PPPs, which may lead to funding for improved premises, specialized equipment, consumables, learning factories, etc. Practically all the countries surveyed also depend on development partners for part funding of their operations. Such a funding formula is not sustainable. All countries must eventually be able to stand on their own feet, as in the case of Mauritius where the major sources of funding are Government Grant and training levy contributed by private sector enterprises.
- The present situation regarding TVET trainers is not that good. In Rwanda, over 74% of TVET trainers are not pedagogically qualified. In Ivory Coast, training of trainers and Continuous Professional Development (CPD) are challenges for TVET trainers. In Uganda, there is an insufficient number of TVET trainers with the required competences, skills and industrial experience. In Morocco, training of trainers and managers of Training Institutes must be

¹ Potential of the fourth industrial revolution in Africa 2019 p. 82

² Potential of the fourth industrial revolution in Africa 2019 p. 82

³ Ibid

reinforced. Many teachers do not have the requisite level of digital knowledge and digital skills. This has a direct impact on the potential for digital TVET to take root in curricula and classrooms. Teachers' digital knowledge and skills are key limiting factors in the development of digital TVET. The relentless emergence of new disruptive technologies requires TVET staff to be supported by robust continuing education programmes to ensure constantly updated skills.

- Link with industry is another major issue. A key lesson from more advanced TVET systems is that private sector engagement, in designing and delivering TVET, is crucial for quality and relevance. Regarding the African countries surveyed, when it comes to Institutional management, industry is not involved in the management of Training Providers (Ivory Coast, Rwanda and Morocco), as opposed to the case of Mauritius where representatives of private sector play a major role in the management of training institutions. Regarding Uganda, the new TVET policy 2019 specifies 66% of membership to come from industry.
- The relevance of the curricula of the training programmes delivered is another major challenge as the world of work is changing very fast with digitization. Different mechanics exist in order to ensure that the training offered is responsive to the labour market. Yet, the employability of TVET graduates in the countries surveyed poses problems (Ivory Coast 32.36%; Rwanda 66% after 6 months; Uganda 45.5-75%; Mauritius 65%; Morocco 47.3% after 9 months). In addition, it is not known how much emphasis is being placed on the 4IR technologies. Regarding whether different technologies associated with the fourth Industrial Revolution (4IR) are being integrated in TVET, Ivory Coast and Uganda responded negatively. In Mauritius, technologies related to 4IR are integrated in specific courses in the following fields: IT, Automation, Electronics, Building Services Engineering, Telecommunications, and Industrial Machine Maintenance. Rwanda is awaiting the ICT infrastructure to be developed. In the case of Morocco, this is part of the No 1 strategy of their road map.
- A substantial increase in STEM participation will be needed if countries are to make the most of the opportunities presented by 4IR and drive transformation. STEM approach refers to a pedagogical strategy that emphasizes application of knowledge, skills and values from the disciplines of Science, Technology, Engineering and Mathematics, in an integrated manner to help students solve problems encountered in the real world. The skill changes happening in the factories and the growing adult learning will impose in the future upon TVET graduates to be digitally smart to survive in the economy.

The biggest challenge to the African countries is as one respondent put it *'There is still a significant proportion of the population whose major concern still remains the basics of decent accommodation, safe water, access to affordable health and basic education, clothing, and food security. Therefore, with the basics yet to be satisfied, there is less pre-occupation with the 4IR.'*

For the respondent of Rwanda, 4IR technologies cannot be introduced in TVET education unless the whole country has developed the tools and infrastructure to support digitization and this calls to heavy investment by the government. The Government has to put in place the necessary IT infrastructure across the country and most importantly all higher learning TVET Institutions are connected to fibre link and would be a big boost to adopt the 4IR. For Mauritius, the challenge for vocational training institutions is to adapt to these changes, this includes review of existing training programmes, development of new training programmes, integration of 4IR skills in all TVET curricula, capacity building and upgrading of technology. The disadvantages on TVET might be that unscrupulous education providers might join the race and provide bogus qualifications to ignorant students. Another disadvantage of the 4IR might be that there would be less socialisation among the students and this can have an impact on the student's personal and professional life.

Yet, the whole world is moving and whether we want it or not, we are in a new normal where technology is going to be the main driver impacting on the whole world business. No country will be able to shield itself from that technological invasion. Besides the already present sector divide,

technology divides will marginalize countries which decide to stay away further. It is simply not possible to weather the current technological revolution by waiting for the next generation's workforce to become better prepared. No country can wait for all its people to have the basic amenities before investing into the technology of 4IR. Investing into the right innovative technologies might prove to enhance productivity and add greater values to the economy of the country thereby enhancing more resources to get the people out of these social problems. Whilst education can be used to better train and prepare Africa's youth for emerging technologies, 4IR technologies can also be employed inversely to improve education, access to education and training for digital skills.⁴

So, it is imperative that the TVET system in African Countries be revitalised to ensure its responsiveness to the demands of the 4 IR technologies in what is termed as the "New Normal". Sectors like agriculture-driven transformation, exports-oriented manufacturing, the services sector, tourism, and creative industries would stand to benefit tremendously from those technologies. There is no choice. African countries must invest rapidly into the digitisation of the African TVET system through the integration of digital skills in all TVET curricula together with the cooperation of the employers and their efficient and effective delivery to all citizens without any discrimination. Besides, today, using ICT and the virtual training content (simulators, emulators and virtual reality (and augmented reality) software), "students can learn about various kinds of equipment, including macro-sized tools, ultra-mini tools and highly expensive equipment that institutions cannot afford to buy, and can also learn about how to stay safe in dangerous work situations."⁵

Overall, lack of awareness and uninformed public opinion, uneven digital inclusion, obsolete governance systems not adapted to spatial and temporal issues posed by the 4IR, as well as competition and digital privacy encroachment represent the biggest challenges standing in the way of the adoption and absorption of emerging 4IR technologies on the African continent.⁶ In addition, there is a significant gap between supply and demand across all levels of digital skills in the region. And the supply of digitally-skilled labour in Sub-Saharan Africa must increase to meet anticipated labour market needs or Africa's economies will falter. ⁷ This is applicable to the entire African Continent.

In brief, TVET suffers from a lack of esteem, lack of quality of facilities, insufficient recognition, insufficient competent trainers and continuous professional development of trainers, lack of access capacity, lack of sufficient funding, lack of investment in new technologies (ICT and Internet penetration), lack of expertise in the technologies of 4IR, amongst others. The good thing is that there is a real government will of the responding countries to invest further in TVET in order to provide employable TVET graduates who are globally competitive and can help steer these countries to a different level that bridges the divide between the developed countries and the developing worlds.

We are proposing five recommendations which must be implemented to help revitalize the African TVET system and ensure integration of digitized skills in their TVET system delivery. ***ADEA must be able to bring its technical support together with the other Regional Economic Communities in the implementation of most of these recommendations and help the African countries make this quantum jump into the digitised TVET environment:***

1. Develop and Revisit TVET Policies:

- *Develop TVET policies where they do not exist and review where they are available and look for necessary budget for their implementation.*
- *Ensure a strong link between TVET and the private sector*
- *Ensure integration of ICT and digital skills in all the TVET curricula and in modes of delivery.*

⁴ Potential of the fourth industrial revolution in Africa 2019 p. 182

⁵ Ibid p. 33

⁶ Ibid p. 17

⁷ IFC Digital skills in SSA p. 5

2. Ensure capacity and political commitment:
 - *Government to ensure availability of ICT infrastructure...*
 - *Government to ensure an adequate supply of better-skilled TVET trainers Government to come up with policy measures to attract and retain qualified trainers,*
 - *Government Promote basic digital literacy for the community Re-skill and up-skill populations*

3. Initiate cross border collaboration:
 - *Commission detailed studies for countries that are digitally and TVET-ready*
 - *Possibility of sharing platforms*
 - *PASET (Partnership agreement for applied sciences engineering and technology)*
 - *The Digital Economy for Africa Moonshot initiative⁸ of the World Bank*
 - *The Regional TVET Initiative financed as a World Bank project*
 - *Other possibilities are available, namely:*
 - *African countries can also learn from the experience of partners such as Singapore and Korea*
 - *The Korean government announced a new "Strategy for Vocational Competency Development Training Innovation*
 - *Regions to build up regional repositories of content*
 - *African governments to consider the public-private partnership (PPP) model for infrastructure projects*
 - *Revise the price of Fibre optics connectivity for TVET institutions and Universities.*

4. Seek smart ways to lower costs:
 - *Combine textbooks in certain subjects and an increasing use of electronic materials and technology at least in the beginning*
 - *Countries to consider promoting digitalization of teaching*

⁸ With the aim to digitally connect every individual, business and government in Africa by 2030, the African Union, with the support of the World Bank Group, has embarked on an ambitious journey – a “moonshot” that will help countries accelerate progress, bring high-speed connectivity to all, and lay the foundations for a vibrant digital economy

1. Introduction

The 4IR: Digitization is rapidly transforming economies and societies across the whole world, radically shaping the "what" and "how" of education and training at all levels, in all arenas. Farmers check crop prices online, small business owners set up websites to reach customers, and manufacturing companies use robotics to improve speed and quality.⁹ Our leaders must understand that we need to create opportunity and sow the seeds of hope amongst our youth. In the past years some important progresses have been made in the field of TVET in the African countries. However, as important as these gains have been, they have not delivered the desired learning outcomes and the skills required by the labour market. At the same time, private sector employers believe that the low quality of education is the cause of the skills mismatch and is also thus an impediment to economic growth (ILO 2015). As a result, the authorities concerned are called to redesign their education and training systems to be smarter, more proactive and more supportive to their youth, helping them obtain the skills they need to be prepared not just for the present but also for the future of work.

We have witnessed how our lives have changed with the first industrial revolution, the second industrial revolution and the third industrial revolution. Now with the rapid change of technology never experienced before, the fourth Industrial Revolution is resulting in major disruptions as it is permeating the different areas of the economy and labour markets. The COVID-19 pandemic has likewise triggered an unprecedented crisis on the global economy. It has taken a horrendous toll on human life since the Second World War and brought many countries to a standstill. As a result, the world economy is expected to slow significantly in 2020 and early 2021, and the outlook on all fronts has deteriorated significantly.

"There are, however, areas of the economy that have shown resilience and are already adjusting to the current crisis as an opportunity to invent new ways of operating and doing business. A lot of this has been made possible by leveraging digital technologies and the digital economy."¹⁰

Artificial intelligence, cloud computing, the Internet of Things and wireless technologies have changed our daily lives, blending our digital, biological, and physical worlds. This seismic change can particularly be felt in the workplace and every industry around the world. Many of the professions that will most likely be affected by labour market transformations brought about by the 4IR are linked with TVET. Technological advancement promises disruption across sectors, requiring more complex skills and retraining of the workforce.

In parallel, youth unemployment, with a rate of three times that of adult, is a major issue in all African countries. Skills mismatch is one of the main reasons given for youth unemployment. And the youth population under 25 years old is forecasted to be half the total African population by 2050.¹¹ Yet, it seems that the African education and training system, most particularly, the TVSD is not doing the necessary to make its youth work ready for the 4IR work environment, thereby warranting the need for a complete rethinking of the role of its TVSD systems.

The mission is thus to find out what the different African countries are doing at the level of their TVSD system to equip its youth with the appropriate skills required for future work in the emerging industries with a view to inform the ADEA 2020/2021 High Level Policy Dialogue Forum and propose recommendations to remedy the situation.

⁹ IFC, Digital skills in Sub Saharan Africa

¹⁰ Uganda Economic Update, 15th Edition DIGITAL SOLUTIONS IN A TIME OF CRISIS July 2020 p. iii

¹¹ <https://www.afd.fr/en/actualites/2050-more-half-africas-population-will-...>

2. Methodology

The purpose of the research/study is to gather information regarding current practices of the TVET sector in 10 African countries, two in each Regional Economic Community (REC). The research/study is interested in how TVET institutions in those countries, if any, are adapting their practices in response to the future labour market in the 4IR environment, and if they themselves are making use of digital facilities to improve their administration, teaching and learning in their contexts. The research/study has also discussed barriers to the development and implementation of innovative practices. The study/research covers the TVET ecosystem dimension, with a specific focus on policy, institutional and system levels, including human resource, program management, and teaching and learning processes, institutions and their learning environments, and training providers, and the products and services offered.

In this context, a major literature search was undertaken from documents obtained from the internet with respect to the TVET system of the 10 countries as well as other relevant literature with respect to the Fourth Industrial Revolution, the African Union Agenda 2063, UN 2030 Agenda on SDGs 4 and 8, and other information and best practices obtained from UNESCO-UNEVOC on TVET in the 4IR.

Contact persons were identified from each country as well, except two that did not respond and were requested to send in relevant information pertaining to their respective country. After identifying the key themes to consider, a comprehensive structured questionnaire was designed and developed covering the following: Background information of TVET; Governance and management; Relation with industry; Funding; Responsiveness to labour market; Access and Equity; Curriculum Design; Institutional Governance and Management; TVET Trainers; Quality of Training; and The Fourth Industrial Revolution (4IR).

The questionnaire was sent to the contact persons of 8 countries. Filled in questionnaires were received from 5 countries only (The list of countries contacted are in Annex I). Some countries sent documents on their TVET systems.

Background reports have been written on the TVET system of those 8 countries using information obtained from the internet, from the contact persons and the filled in questionnaires. The reports are in Annex II.

Limitations:

This draft TVET Policy document is based only on desk research of documents available and the feedback obtained from the questionnaire circulated to the contact persons of the countries. This type of research requires significant access to primary data, a sufficient timeframe and opportunities to meet with stakeholders involved directly and indirectly with TVET. However, a number of limitations were identified during the process, including:

Data limitation:

Some countries did not respond at all. Some countries have not yet sent in the required information as requested whilst others have not sent back the filled in questionnaire. As a result, it was difficult to gain access to current data, which makes it difficult to analyse their TVET system. This means the work often had to rely on old data and documents obtained on the net. This lack of up-to-date data may have affected the analysis. Nevertheless, it is hoped the study/research provides the necessary information and impetus for the ADEA to address the fundamental issues of digitising the TVET system.

3. Conceptualisation clarifications

Technical and Vocational Education and Training (TVET) is an international term that was born in 1999 through UNESCO Second International Congress held in Seoul on Technical and Vocational Education. However, various terminologies are used to describe the acquisition of technical and vocational skills. There is an ongoing conceptual debate about the definition and significance of these various terminologies. Terms such as “technical education”, “vocational and technical training”, “technical and vocational education”, and “technical and vocational skills development” are used in different contexts to mean “technical and vocational education and training” or TVET in all its dimensions. In this document, the following definition applies¹²:

- i. Technical and Vocational Education and Training (TVET) is used in its broadest sense to encompass all aspects of skills development and acquisition from all learning environments, whether formal, non-formal and informal. TVET involves the acquisition of practical knowledge and employable skills and the study of related sciences and technologies. It also addresses the issues of employability, the demand and supply of skills, up-skilling, re-skilling, multi-skilling, and lifelong learning. Besides, it is important to make a distinction between the three types of training that are the Formal, Informal and the Non-Formal.
- ii. Formal TVET refers to institution-based or in-school TVET that follows a standardized curriculum with precise learning objectives, usually leading to certification that is nationally recognized.
- iii. Non-formal TVET refers to skills acquisition outside of the school system which is not nationally certified, such as internship training, short-term skills training by NGOs, or on-the-job training in enterprises.
- iv. Informal TVET refers to skills acquisition on the job in formal sector employment or through traditional apprenticeship schemes in the informal sector of the economy.

Education 2030 devotes considerable attention to technical and vocational skills development, specifically regarding access to affordable quality Technical and Vocational Education and Training (TVET); the acquisition of technical and vocational skills for employment, decent work and entrepreneurship; the elimination of gender disparity and ensuring access for the vulnerable.¹³ As a component of lifelong learning, TVET can take place at secondary, post-secondary and tertiary levels. It includes work-based learning, continuing training and professional development that may lead to qualifications. Learning to learn, the development of literacy and numeracy skills, transversal skills and citizenship skills are integral components of TVET (UNESCO, 2015). TVET increasingly focuses on preparing knowledge workers to meet the challenges presented by the transition from the Industrial Age to the Information Age, with its concomitant post-industrial human resource requirements and the changing world of work.

¹² African Union: Continental strategy for TVET

¹³ UNESCO TVET strategy 2016- 2021 p. 4

4. The Fourth Industrial Revolution (4IR)

The First Industrial Revolution started with the advent of steam and water power, enabling the mechanization of production processes. The Second Industrial Revolution was driven by electric power and mass manufacturing techniques.

Information technology (IT) and automation brought in the Third Industrial Revolution (also known as the digital revolution), which is defined by electronics and IT, automated production and advanced globalization. The Third Industrial Revolution has changed human interactions, commerce and entire communities.

The Fourth Industrial Revolution (or Industry 4.0) (Figure 1) is emerging through a range of technologies that are blurring the distinction between physical, digital and biological spaces. It transforms how products are designed, fabricated, used and operated, as well as how they are maintained and serviced. As a construct, 'Industry 4.0' is an overarching transformation that covers every aspect of industrial and economic activities and every aspect of living – it is a total transformation of all sectors into new systems and/or ways of life. Both the terms 'Internet of Things' (IOT) and 'Internet of Services' are considered elements of Industry 4.0 (European Parliament, 2016).¹⁴

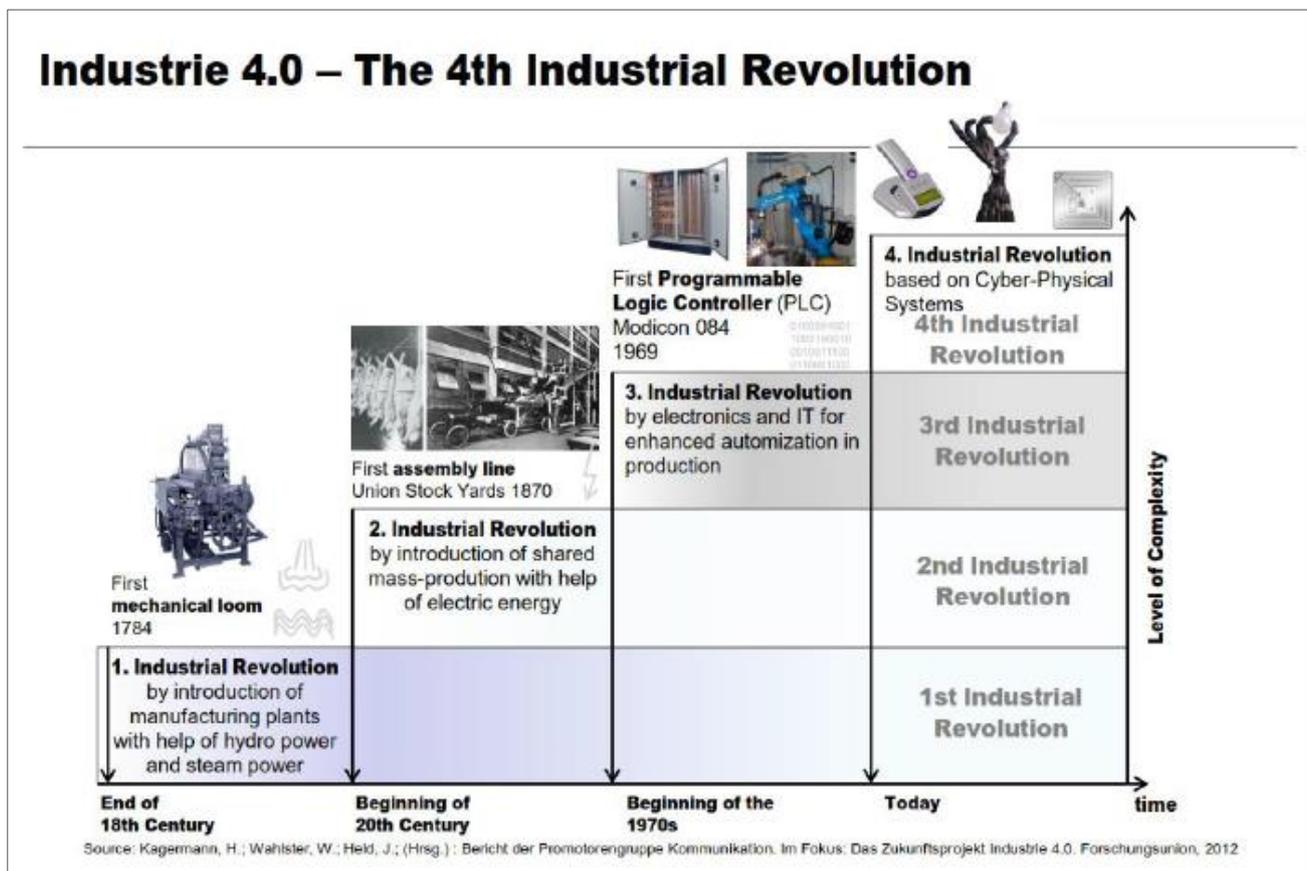


Figure 1: The 4th Industrial Revolution

We are in the middle of a digital revolution that is very likely being accelerated by the Covid-19 pandemic. With new technologies such as 3D printing, Augmented and Virtual Reality, Sensors, Artificial Intelligence, Quantum Computing and Robotics, all of which have the potential to disrupt nearly any industry, we will see new growth, new opportunities and a better future. However, we might

¹⁴ The Digitization of TVET and Skills Systems UNESCO 2020 p. 26

also see regions that are less able to navigate through such complex transitions and might thus miss these opportunities.¹⁵

“The swiftness with which industries and even entire sectors can be disrupted requires agility on the part of companies, individuals and policy-makers. Employees are tasked with ongoing upskilling and reskilling to maintain their productivity and employment, while companies are tasked with the continuous investigation and adoption of new practices, which range from the adoption of new software to integrating new methods of consumer engagements like targeted advertising. For policy-makers, the scope, scale and uses to which data and new technologies are put to use require swift responses to not only protect citizens but also ensure appropriate education for a changing labour market. Unfortunately, in most countries, policy changes are unable to keep up with global technological trends.”¹⁶

Digital technologies and new uses of data and information will disrupt many sectors in Africa. Whether these changes are beneficial or not for people will depend on their skills.¹⁷

Digital Skills:

The authors of the IFC report: digital skills for SSA define digital skills as follows in Figure 2:

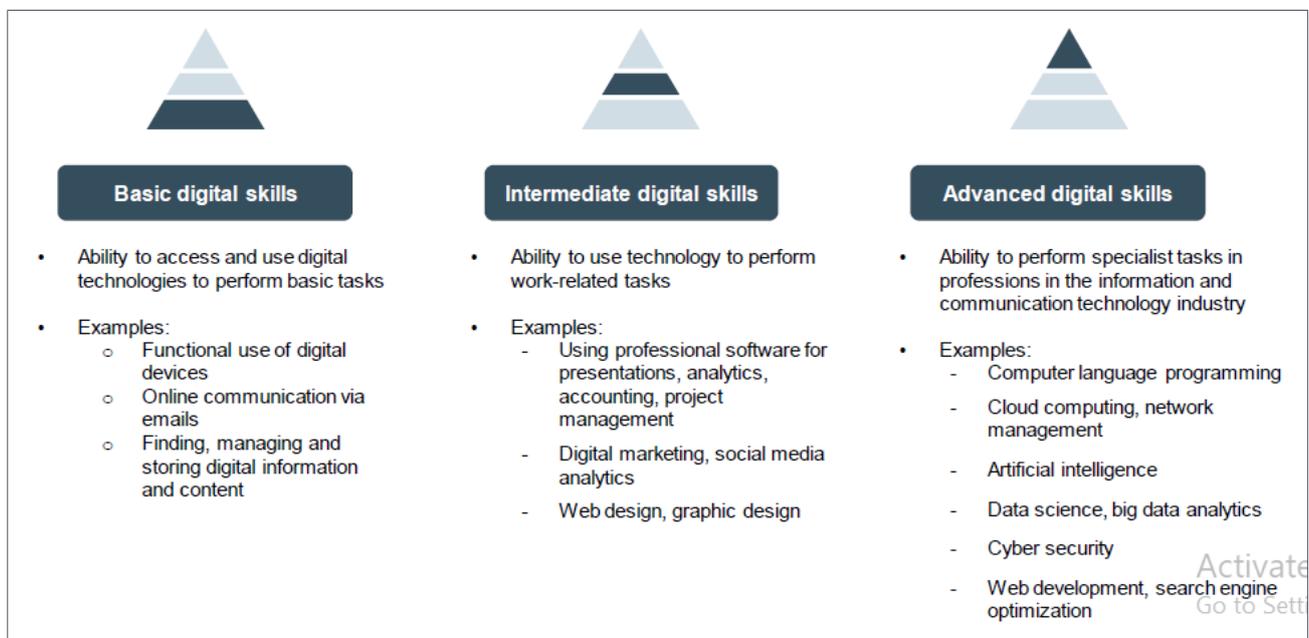


Figure 2: Basic, intermediate and advanced digital skills

¹⁵ ESCP Business school Digital Riser Report 2020

¹⁶ INTEROPERABLE DATA ECOSYSTEMS An international review to inform a South African innovation p. 2)

¹⁷ Event report' "Destination digital Africa: preparing our youth for the future", May 2019, Kigali, Rwanda

5. Influence of 4IR on TVET

Globally, Industry 4.0 is positioned as one of the main drivers of innovation in TVET (Madsen et al., 2016). Policies for digital TVET should therefore be seen through a lens of adaptation to this new industrial paradigm.¹⁸

The Digitization of TVET and Skills Systems UNESCO 2020 report points to a disconnect between the current state of the TVET sector and Industry 4.0, and official policies and strategies in several countries indicate that TVET is reacting to:¹⁹

- increased automation of simple tasks – and increasingly of mid-level tasks – thanks to technologies such as AI
- increased complexity and cost of equipment used in technical occupations
- constantly emerging (new) technologies
- more complex workflows involving multidisciplinary teams
- increased flexibility
- increased productivity, efficiency, quality and reduced time to market
- more R&D activities
- development of new skills and talent globally

In addition, “students these days are not keen to pursue a three- or four-year programme. This is a generation that learns on a needs and modular basis. Learners pick up something, learn it for their needs and move on. The TVET system needs to understand this new type of learner and preferred modes of learning. Inevitably, that means digital learning. In a similar vein to the labour market, we are finding that we are becoming more and more open and that whether we like the term ‘4.0’ or not, as a buzzword it does bring people together and makes them aware of the need for change. The hope is that students will apply pressure to modernize the TVET system and those involved in it.”²⁰

“TVET plays an important role to equip the youth of today for jobs in the future especially in the age of 4th industrial revolution. At the same time, the 4th Industrial Revolution demands 21st-century skills associated with entrepreneurship. Unless they have digital skills they will only get jobs as nannies, security guards or drivers of these highly paid digital geeks.”²¹

In a TVET system built out of hundreds of distinct units, AI could be used to recommend (a) educational/ training resources; (b) learning opportunities; and (c) personalized career pathways, based on aptitude, educational goals and past performance.²² Besides, AI can be used to teach material by presenting content to each student in a different way, based on the student’s learning preferences, as well as to grade assessments.²³

Digitization in the form of distance learning does appear to show benefits in two narrow scenarios:²⁴

- students who are disenfranchised owing to geographical access restrictions to education, such as those living in very rural areas, providing they do not also suffer from other deprivation factors
- workers who already have limited digital skills and are looking to acquire other higher-order skills for purposes of social mobility, by allowing learning to take place more flexibly, in times and place of a learners’ choosing, through e-learning

¹⁸ The Digitization of TVET and Skills Systems UNESCO 2020 p. 28

¹⁹ Ibid

²⁰ The Digitization of TVET and Skills Systems UNESCO 2020 p. 98

²¹ 4th Industrial Revolution and TVET: The Relevance of Entrepreneurship Education for Development p. 12

²² The Digitization of TVET and Skills Systems UNESCO 2020 p. 35

²³ The Digitization of TVET and Skills Systems UNESCO 2020 p. 35

²⁴ Ibid p. 56

Besides, increasing demand for higher-order thinking skills from industry is also increasing the opportunity cost of not entering or continuing education, increasing the value TVET can offer to persons from low educational backgrounds while at the same time exacerbating social divides for those who are not able to access the system.²⁵

An increasing concern for TVET is addressing the digital divide, particularly among adults already in employment. Providing opportunities for such persons to re-enter TVET and acquire new, relevant digital skills is a major focus of policy development in practically every country surveyed, particularly through the introduction of active labour-market policies and support for the adult learning and education sector.²⁶

Traditional learning in TVET is also characterized by some level of fragmentation. At its core, TVET and skills development involves a pedagogical approach based on a mix of theory, practice and work-based learning. For example, learning welding would involve learning the theory of welding, practising welding within the confines of a school workshop and finally refining those skills on a real project at a workplace.²⁷

Students typically alternate between intense periods of classroom or workshop activity with a teacher/instructor, work based learning with a mentor and self-learning. The emergence of always-on, free and easy-to-access communication technologies, particularly mobile messaging, is leading to a new model, which might be called persistent learning. Here, students stay in near-constant contact with each other, their tutors and their mentors via messaging apps – thus bridging the gaps between learning periods that are typical of the traditional model.²⁸

Work-based and online training are meshing together. The National service for Industrial Training, Brazil (SENAI) has created simulation apps in Brazil for some course components to maximize the use of training classrooms. In the process, blended courses were created, with part of the programme delivered online as distance learning, enabling students to complement and blend class-based experiences with studies on digital platforms. SENAI intends to be at the avant-garde of concrete applications and simulations for TVET institutions. For instance, simulations have been created through a tablet app for a mechanic's training on welding processes.²⁹

Two of the Key Take-aways from the 5TH PASET (Partnership agreement for applied sciences engineering and technology) Forum organized by the World Bank in May 2019 in Kigali, Rwanda were that perceptions of TVET education will need to change from being education for low academic performers to an instrumental program in the implementation of 4IR initiatives and innovations and that Investment and reforms in areas such as teaching and curriculum, Information, Communication and Technology (ICT) infrastructure, internet connectivity and regulations, intellectual property rights and use of technology in higher education and TVET systems will be important so that 4IR technologies can be leveraged. Re-skilling and up-skilling of populations through interactive, adaptive and personalized learning in a cost-effective manner using short-courses, distance learning, and virtual learning and training will also be critical.³⁰

In parallel, the World Economic Forum (WEF) highlights several 'game changers', where AI is applied in combination with other Fourth Industrial Revolution technologies, with the potential to deliver transformative solutions. While there is some indication that AI could reduce the cost advantage of African workforces compared with industrialised countries, there is also the prospect of AI plugging

²⁵ Ibid p. 56

²⁶ The Digitization of TVET and Skills Systems UNESCO 2020 p. 56

²⁷ The Digitization of TVET and Skills Systems UNESCO 2020 p. 57

²⁸ Ibid

²⁹ Ibid p. 95

³⁰ World Bank, "Destination digital Africa: preparing our youth for the future", May 2019, Kigali, Rwanda

crucial skills gaps in the workforce, enabling African firms to compete globally where this is currently not possible.³¹

Digital tools can change the dynamics of teaching. They also make students more aware of what constitutes good teaching, and what does not. Digital natives have the experience to become more critical of the quality of TVET and the potential return on investment (ROI) of their learning pathways. Digitalization has increased students' awareness of quality, with the result that they demand more from service providers, institutions and the labour market.³²

³¹ Potential of the fourth industrial revolution in Africa 2019 p. 124

³² Potential of the fourth industrial revolution in Africa 2019 p. 124

6. TVET must adapt itself to provide future skills for future jobs

“There is a gap in skills provision, due to the pace of innovation; students need an adaptive set of skills. A successful education program is the one that ensures their digital readiness.”
Dionisis Kolokotsas, Google

Different skill sets are required for the future where - workforce readiness, technical skills, soft skills and entrepreneurial skills (which can promote self-employment) will become a priority. This tallies with a global digital skills survey carried out in October and November 2018 by the IFC of the World Bank Group, where respondents identified the skills they thought most important for the future workforce as being predominantly socio-behavioural with digital skills in the top seven. The skills cited include critical/analytical thinking, communication, problem solving, leadership, collaboration, digital skills (computer literacy, application of technology), creativity, decision making and reasoning, and team work skills.³³ The survey identifies a demand-supply gap for all skills identified as important for the future workforce, which implies a greater demand for these skills than supply of them in the economy.³⁴

85 per cent of job markets that will exist in 2030 have not yet been invented. Employers anticipate more than 40 percent of skills required for the workforce will change before 2022, with more than half of employees needing to learn different or more advanced skills. About 65 percent of children entering primary school today, according to one estimate, will end up working in a job that doesn't yet exist.³⁵ This will include shifts in the types of skills valued and the emergence of new skills sets, as well as a greater focus on existing skills sets that increase in importance.³⁶ Education curricula must as a result be adapted to impart these skills and countries must develop policies to ensure lifelong learning.

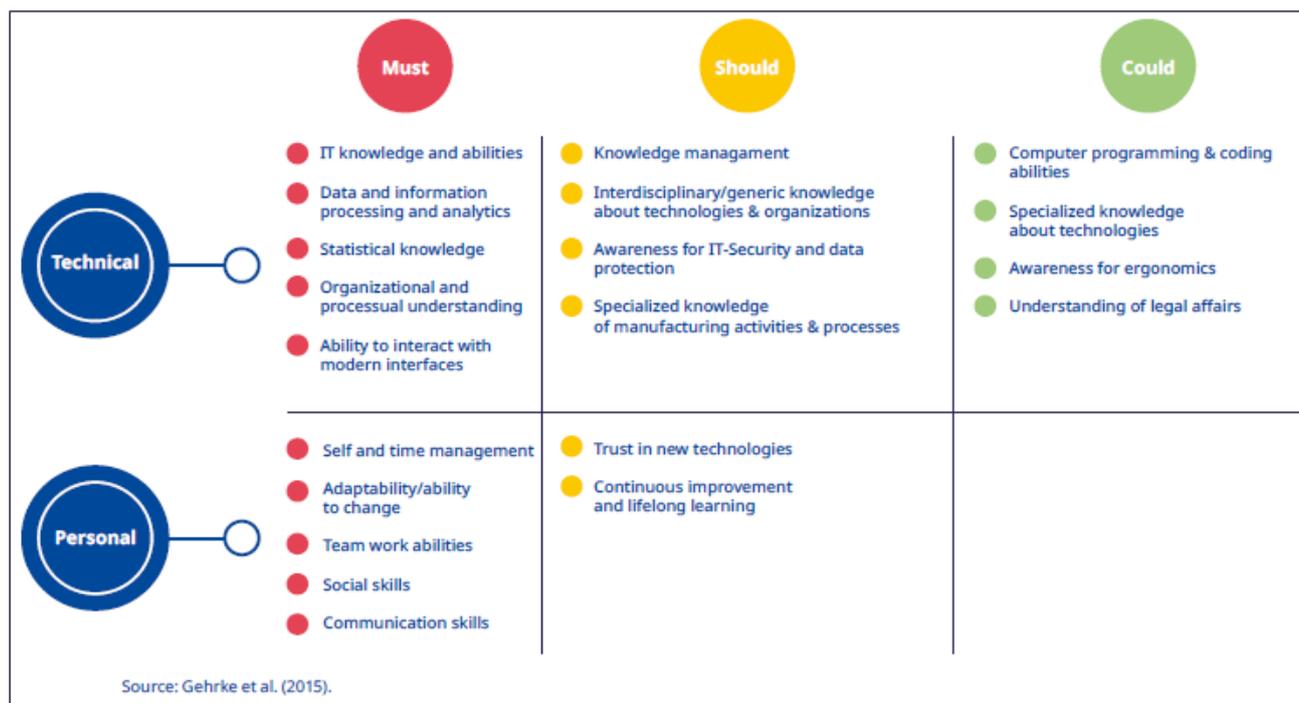


Figure 3: Future qualifications and skills required from TVET

³³ IFC Digital skills in SSA p. 25

³⁴ IFC Digital skills in SSA p. 25

³⁵ Ibid p. 8>About 65 percent of children entering primary school today, according to one estimate, will end up working in a job that doesn't yet exist

³⁶ IFC digital skills for SSA p. 8

Figure 3 above shows potential future skills which may be needed by our TVET Graduates in order to perform in the new normal environment.

Besides, “Economic transformation demands a workforce equipped with the knowledge and skills to be highly productive on farms, in firms, and in government offices – and to generate innovations in technologies, processes, products, and services. At a minimum, that means ensuring young people have solid foundational skills: good basic cognitive, basic Science, Technology, Engineering and Mathematics (STEM) and digital and non-cognitive skills, including interpersonal and socio-emotional skills, such as resilience and curiosity. These foundational skills are essential building blocks from which young people can develop higher order cognitive and technical skills, and they affect future labour market outcomes and key sectors in multiple ways. For example, as agriculture will continue to employ a large share of the workforce in many SSA countries, future jobs and growth in the sector will be reliant on meeting its various skills needs – from basic business and technical skills to enhance productivity to more advanced technical skills throughout the value chain, including marketing, logistics, and agribusiness.” According to the World Bank, higher order cognitive skills, which include unstructured problem solving, learning and reasoning, are increasingly in demand by firms as workplaces become more complex.³⁷

The progress of digitisation and the pace at which technology is created, replaced and retired has made traditional models of training and development difficult to maintain, and innovative solutions to skills development have to be found. Many existing studies identify the jobs and skills most likely to be replaced by machines. This illustrates the need for ongoing changes in education, not only within the traditional education system but also throughout the new career path.³⁸

According to WEF, in ten years, 90% of jobs will require digital skills. Modern vocational and technical training has to adapt to global trends to remain attractive to learners and relevant to employers. To harness the opportunities of Industry 4.0, businesses need skillsets with AI and virtual reality which in turn require the TVET system to tackle the TVET challenges through digitalisation. The professional profiles of tomorrow will be impacted by advanced technologies.

In the past, if a TVET institution wished to teach students how to handle industrial equipment, it either had to install the real equipment, which is expensive, or schedule a day trip to a site that allowed students to see the real equipment. In either case, learners were not able to do certain things, such as taking apart and reassembling the equipment. Today, using ICT and the virtual training content (simulators, emulators and virtual reality (and augmented reality) software), “students can learn about various kinds of equipment, including macro-sized tools, ultra-mini tools and highly expensive equipment that institutions cannot afford to buy, and can also learn about how to stay safe in dangerous work situations.”³⁹

The animations, visuals and graphs on the platform are useful in explaining difficult concepts and, in some cases can be used to demonstrate practical skills.⁴⁰ Using the virtual training ICT, learners can gain a full understanding of how equipment works and under what conditions. They are able to master the work procedures for the equipment, and learn how to handle various emergencies at work.⁴¹

3D augmented reality applications enable students to interact with real world environment using real time data, thus contextualizing knowledge for just-in-time learning. These applications superimpose relevant data on top of the real world in the form of interactive 3D models or 2D information through graphical markers or QR codes. Augmented reality digital resources can be accessed via viewers installed in students’ mobile devices.

³⁷ ACET, Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. viii

³⁸ Ibid p. 9

³⁹ Beyond Access: ICT-enhanced Innovative Pedagogy in TVET in the Asia-Pacific p.

⁴⁰ Beyond Access: ICT-enhanced Innovative Pedagogy in TVET in the Asia-Pacific p. 28

⁴¹ Ibid p. 35

Level of integration of ICT into TVET

TVET organizations differ in terms of their ICT infrastructure and the extent to which they have integrated ICT into teaching and learning. UNESCO (2005) suggests a model to measure the extent of ICT development in an organization, with four stages: emerging, applying, infusing and transforming. This model can also serve as a guide for systematic teacher development in the area of ICT-enabled teaching (see Figure 4 below).⁴²

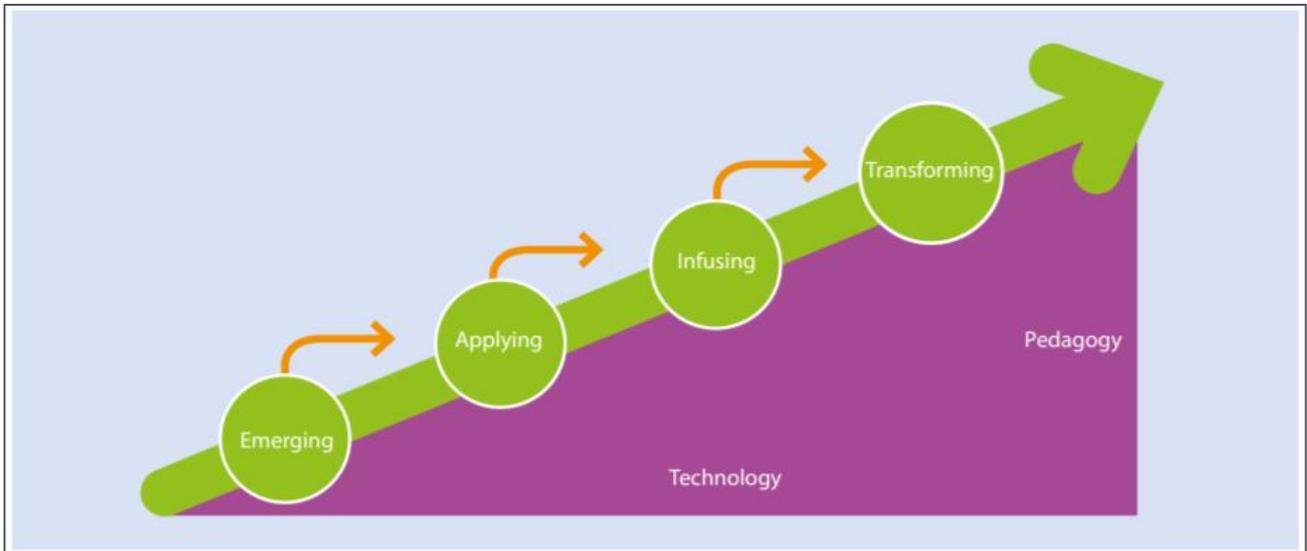


Figure 4: Stages of ICT Development

The ‘emerging’ stage: is considerably driven by management and is focused on building up the ICT and physical infrastructure, including the acquisition of equipment and software. At this stage, teachers use mostly productivity-enhancing ICT tools such as word processors, presentation software, spreadsheets, emails, etc.

At the ‘applying’ stage: teachers use specific software and ICT tools to supplement traditional classroom teaching, for example, drawing, designing and modelling tools.

At the ‘infusing’ stage: various ICT tools are integrated across the curriculum, such that it is possible to have inter-disciplinary curriculum delivered to emulate real-world applications. The ICT tools used at this stage include multimedia, simulation and modelling software.

At the ‘transforming’ stage: there is ubiquitous use of ICT not only for management and productivity, but also within the curriculum. Teachers are confident users of ICT and are capable of designing learner-centred lessons that creatively exploit ICT to engage students in solving real-world problems. Hence, policy work on future skills requires a tri-pronged approach involving.⁴³

1. anticipation of skill needs, as well as areas of deskilling, by surveying emerging technology
2. teaching of transversal or generic skills, particularly learning-to-learn skills, which would allow people to adapt to future changes in the labour market through continued and lifelong learning
3. improving the responsiveness of educational systems to emerging trends, which requires close cooperation between education, research and industry to allow TVET systems to provide skills training in emerging areas

⁴² Beyond Access: ICT-enhanced Innovative Pedagogy in TVET in the Asia-Pacific p. 51

⁴³ The Digitization of TVET and Skills Systems UNESCO 2020 p. 29

Regardless of geographical location, digital disruption is transforming the way career paths are structured, largely driven by two factors: the desire of workers for job security (Rakyan, 2017); and the shortage of skills in the science, technology, education and mathematics (STEM) fields (Donovan & Benko, 2016).⁴⁴ Digitization must open new TVET pathways through changes in modes of study, duration of study, and the place or time of study – the most obvious change being the emergence of online learning.⁴⁵ Digitization improves TVET access – that is an obvious benefit. Job mobility will be improved: digitally proficient people have a market value, even if the market is not outside their door.⁴⁶ Digital technology needs to be deployed in ways that stimulate young people’s interest in joining technical/ technology courses. It is vital to employ technologies – particularly mobile phone and gaming technologies, such as 3D components – for TVET to be valued as an attractive training proposition for young people. Learners can learn individually or collaboratively through a multitude of technology-enabled methodologies, including writing activities, game-like learning environments, simulations and AR. The combination of school and work-based actors (teachers and supervisors) and actions (intertwining learning activities at both locations) is what makes TVET unique.⁴⁷ Digitization facilitates the following modes of TVET learning:

1. **Distance learning and assessment:** Learn anywhere and anytime
2. **Simulation:** Modelling of work-environments in digital worlds
3. **Flipped classrooms:** Receive knowledge at home/online, practice skills in class
4. **Gamification:** Using game incentives schemes to increase motivation
5. **Open distance(Resources):** Increasing access to education by removing restrictions to content
6. **Personalisation:** Enabling each student to study according to their own abilities and aspirations

There has always been the belief that an efficient TVET system can resolve youth employment – but in a technology-driven world, all new jobs require ICT literacy at a higher level than that currently provided in foundation schooling.⁴⁸ Lifelong learning is enabled because of distance learning, which is increasingly technology enhanced. Learning materials in the TVET sector are increasingly delivered in an online context. There is also significant investment in distance learning in prisons, using multimedia to overcome literacy challenges. This is a way of getting people to re-enter the labour market. There is an opportunity for multimedia to get over the obsession with literacy.⁴⁹

Different training models for digital skills are provided by digital skills providers which have developed sustainable business models at basic, intermediate and advanced levels across emerging and developed markets. Examples are ANDELA which imparts training in advanced digitised skills in countries like Kenya, Nigeria, Uganda, and Microsoft 4Africa imparting intermediate and advanced digital skills training across Africa with on-the-ground presence in Nigeria, Ghana, South Africa, Egypt, Uganda, Kenya, Rwanda, Mauritius, Malawi and Ethiopia. Many courses teach broader career skills and emphasize the importance of soft skills in finding jobs, an effective complement to more specific digital skills training. Providers should consider how to integrate digital skills throughout their curriculum. Education providers without digital skills expertise should think about acquiring some as technical knowledge and industry insight will shape the success of new programs.⁵⁰

At the national level, relatively few countries have started developing 4IR strategies alongside existing ICT policies (South Africa, Morocco) or created technology centres (Morocco, Rwanda).⁵¹

⁴⁴ INTEROPERABLE DATA ECOSYSTEMS An international review to inform a South African innovation p. 9

⁴⁵ The Digitization of TVET and Skills Systems UNESCO 2020 p. 111

⁴⁶ Ibid p. 108

⁴⁷ The Digitization of TVET and Skills Systems UNESCO 2020 p. 38

⁴⁸ The digitization of TVET and Skills Systems UNESCO 2020 p. 52, Tan Beng Teong – Selong Human Resource Development Centre (SHRDC)

⁴⁹ The digitization of TVET and Skills Systems UNESCO 2020 p. 52, Terry Neil – Education Specialist, Technical and Vocational Skills Development, COL

⁵⁰ IFC digital skills in SSA p. 14

⁵¹ Potential of the fourth industrial revolution in Africa 2019 p. 82

In 2017, Rwanda, in partnership with Inmarsat, the provider of global mobile satellite communications, set up a centre for the Internet of Things (IoT) to facilitate students' learning, to develop IoT prototypes and to carry out academic research in the field of potential IoT solutions. The programme aims to accelerate the deployment of the IoT and smart city solutions. Rwanda's government also launched the Irembo platform to provide e-government services such as registering for driving exams and requesting birth certificates. Rwanda has long shown an interest in these types of initiative, adopting its first National Information and Communications Infrastructure plan in 2001.⁵²

In March 2019, Morocco and UNIDO signed the Programme for Country Partnership for Morocco (PCP Morocco) document, which will support the implementation of the government's Industrial Acceleration Plan 2014-2020. PCP Morocco will focus on several priority industrial sectors and areas, namely industrial zones, agro-industry, energy, the circular economy, Industry 4.0 and e-commerce.⁵³ The UNIDO Programme for Country Partnership for Morocco is structured around three areas of intervention: i) the creation of a smart factory and the development of partnerships with international agencies to enable rapidly changing sectors (aeronautics, automotive, biomedical, etc.), local industries (textile, agro-industry, etc.), universities, associations and private companies to innovate together in order to improve industrial production; ii) the establishment of an Industry 4.0 integration platform for national cooperation and coordination to enable collaboration and partnerships between the various Moroccan organisations involved in Industry 4.0 and to follow the adoption of technologies and practices of this industry; iii) the development of skills and curricula in areas related to Industry 4.0: the focus will be on building a strong and internationally recognised pool of talent in certain subsectors of Industry 4.0 (Additive Manufacturing, robotics, automation, etc.).⁵⁴

Otherwise, despite multiple readily available technologies for improving TVET and skills development, the UNESCO study only found limited evidence of explicit macro-level strategies to increase efficiencies and/or the impact of TVET through the use of digitization – nor has digitization of TVET or skills development been mentioned as a potential accelerator for desirable social changes.⁵⁵

⁵² Potential of the fourth industrial revolution in Africa 2019 p. 82

⁵³ IFC report on digital skills in Sub Saharan Africa p. 8

⁵⁴ (Potential of the fourth industrial revolution in Africa 2019 p. 82)

⁵⁵ The Digitization of TVET and Skills Systems UNESCO 2020 p. 69

7. Preparedness of Africa for the integration of 4IR in TVET

Currently, there is limited AI education in Africa and there is a shortage of AI experts. In order to reap the rewards of the widespread use of AI technology, countries need to ensure that they have education and skills systems in place to make society ready to work with these technologies and to take full advantage of this technology for socioeconomic development.⁵⁶

Whilst education can be used to better train and prepare Africa's youth for emerging technologies, 4IR technologies can also be employed inversely to improve education, access to education and training for digital skills.⁵⁷ The potential applications of modern 4IR technologies are most apparent within the domains of IoT, Big Data and AI. Selected applications also exist within Additive Manufacturing. It is, however, through education that African youth will become trained adept at using these technologies.

However, developing the skills to be needed for the 4IR technologies must be considered within the context of the Africa continent. But is Africa prepared for the integration of 4IR technologies in its TVET systems? Is its TVET system matured enough and well developed? The Sub Saharan region faces three key challenges. First, there is poor acquisition of foundational skills, with primary school learning outcomes the lowest in the world. Second, schools have limited resources, including classroom, teachers and access to technology-based learning materials. Third, there is a mismatch between the skills taught and those in demand; employers across Sub-Saharan Africa report that lack of access to workers with appropriate skills "is a constraint to their growth and productivity." Stakeholders in the region will need to consider these issues as they determine the most effective way to prepare for the digital future.⁵⁸

A questionnaire was designed and sent to the contact persons of the 8 selected countries with objective to gather input to be used in the rethinking of the role of TVET in future work and lifelong learning, in light of digitalization and 4IR. As mentioned before, 5 countries (or 62.5%) returned the questionnaires duly filled in. The main extracts of the findings are as follows:

7.1 Governance:

Governance is important in as far as good governance implies participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive system, and which follows the rule of law.

Apart from Ivory Coast and Uganda which is in the process of establishing their TVET Council, the three other countries, namely Mauritius, Rwanda and Morocco, have a national TVET body which controls and regulates TVET in their respective countries. Those bodies can act as the coordinators for the introducing of digital skills in their TVET system. However, it is fundamental that the Board members a priori are able to master and be convinced of the critical importance of digital skills. They can have a positive influence over their ministers to whom they report.

7.2 Major challenges:

Here there is a rather a long list of issues which need to be addressed:

- **Ivory Coast** (Increase Access, constant review of curricula, training and CPD of trainers, apprenticeship mode of training, involvement of private sector in their TVET activities),
- **Rwanda** (long term planning, TQF, Untrained trainers, lack of occupational standards, limited involvement of private sector),

⁵⁶ Potential of the fourth industrial revolution in Africa 2019 p. 184

⁵⁷ Potential of the fourth industrial revolution in Africa 2019 p. 182

⁵⁸ IFC report on digital skills in Sub Saharan Africa p. 8

- **Uganda** (skills mismatch, Lack of involvement of private sector, lack of TQF, Inadequate funding, lack of quality delivery, Insufficient trainers, inequitable access, negative perception, fragmentation and lack of coordination)
- **Mauritius** (Poor perception, Need to attract more students, National Certificates not sufficiently known by employers, Stakeholders lack information, Rapidly changing technology, lack of technical expertise in some specific sectors, Lack of Visibility of programmes, insufficient retention rates in some programmes)
- **Morocco** (Lack of access capacity, Training of Trainers, Governance, Financing)

7.3 Facilities:

In most African countries, there is a predominantly negative perception of TVET programmes as being inevitably inferior to traditional academic pathways. There are issues relating to access, equity, quality and relevance, lack of investment, lack of infrastructure and equipment, outdated curricula as confirmed by respondents to the questionnaire, namely Ivory Coast, Mauritius, Morocco, Uganda and Rwanda.

In Ivory Coast, only 38.5 % of public providers are equipped with an internet connection for the trainees. In Rwanda, buildings in general are substandard compared to the standard provided by WDA. In Uganda, facilities are inadequate in most training centres -both public and private; In Mauritius, the MITD is engaged in the upgrading of its training centres in line with its Transformation Plan 2017-2020. Morocco provided a nil response.

At the end of the day TVET graduates lend into jobs which are not well paid if available.

7.4 Enrolment:

Enrolment levels in TVET institutions in the various African countries are low. Formal technical and vocational enrolment comprises just 6 percent of total secondary and post-secondary enrolment in the sub Saharan region.⁵⁹ Females' enrolment is still lower with 42% in Rwanda, 23% in Mauritius, 46% in Uganda and 40% in Ivory Coast as stated by respondents to the survey. There is a shortage of properly trained TVET teachers, both professionally and pedagogically. There is a lack of clear admission and progression structures in TVET. Career guidance is poor. The education system has been designed to churn out academic graduates as opposed to pursuing a TVET future. TVET has been perceived right from its inception as meant for academic failures and inferior to academia. Interesting though to note that practically all the countries surveyed mention innovative solutions/approaches that could be introduced to improve access, quality and relevance especially those that rely on digital technology such as digitization of training programs, establishment of smart classrooms in all TVET schools, ensure Internet connections in all TVET schools, ensure penetration of ICT devices such as laptops, blended learning comprising of both face-to-face and online learning. Etc. However, no respondents mention those innovative measures to change the general negative social perception of TVET as an inferior option and a 'second-class' education, which fosters its stigmatisation and marginalisation as a low status track for poor academic achievers in many African countries.

7.5 Trainers/Teachers:

Teacher's readiness, capacity and ability to use digital skills are crucial. TVET teachers need to master the skill to use these technologies. The ability to quickly find knowledge through IT is increasingly important. The tools are changing and the ability to adapt to the tools has to change.⁶⁰

⁵⁹ IFC report on digital skills in sub Saharan Africa p. 36

⁶⁰ IFC report on digital skills in sub Saharan Africa p. 105

The present situation regarding TVET trainers is not that good as stated by the participants in the survey. In Rwanda, available EMIS data indicate that 93% of all primary teachers and 69.2% of secondary teachers are qualified. However, the TVET system has a significant proportion of unqualified training staff that has inadequate skills in technical, pedagogical and soft skills. For instance, over 74% of TVET trainers are not pedagogically qualified. In Ivory Coast, training of trainers and Continuous Professional Development (CPD) are challenges for TVET trainers. In Uganda, there is an insufficient number of TVET trainers with the required competences, skills and industrial experience. In Morocco, training of trainers and Managers of Training Institutes must be reinforced and their competencies must be certified in order to ensure quality training responsiveness to employers. Four of the 5 countries which responded to the survey have at least one trainers' training centre, except for Mauritius. However, the MITD delivers pedagogical training programme namely the Trainers Certificate in Vocational Training which is of duration 1 year. Besides, industrial experience is part of the requirement of a Trainer in 3 of the 5 countries.

Institutions struggle to recruit and retain enough high-quality teachers and trainers to meet demand (Majgaard and Mingat 2012). In Africa, education cycles are generally dominated by an excessive number of examinations and testing at all stages which takes away from teaching-learning time (Majgaard and Mingat, 2012). As a result, teachers try to teach facts and how to memorize for exams, rather than ensuring students have a solid understanding of the subject. In addition, teachers also often lack access to continuing and structured professional development, so they are unable to use the latest evidence based pedagogical techniques (Oketch and Lolwana, 2017, Majgaard and Mingat, 2012).⁶¹

Many teachers do not have the requisite level of digital knowledge and digital skills. This has a direct impact on the potential for digital TVET to take root in curricula and classrooms. Teachers' digital knowledge and skills are a key limiting factor in the development of digital TVET. The relentless emergence of new disruptive technologies requires TVET staff to be supported by robust continuing education programmes to ensure constantly updated skills. Resistance to change from teachers' unions can also be a major stumbling block to the impact of digitization on the TVET sector.⁶²

More complex and involved digital workflows in industry require these workflows to also be reflected in TVET institutions. Increasingly, positions that were typically covered by a teacher or instructor are evolving into systems that require a team of specialists (teachers, media designers, programmers and subject matter experts) to design and deliver training.⁶³

Concerning how trainers 'preparedness can be addressed through innovative and relevant training programmes, different proposals mentioned did not expound much of what type of training must be provided, besides the fact that ICT must be part of the training, in service trainers will be equipped with the pedagogical skills, technical skills, industrial exposure and ENGLISH proficiency course, industrial attachments for new innovations and technologies.

7.6 Link with private sector and industry:

A key lesson from more advanced TVET systems is that private sector engagement, in designing and delivering TVET, is crucial for quality and relevance. TVET systems need to be demand driven and dynamic so they can respond to the changing needs of the labour market (World Bank 2008), which in turn depends on private sector input in the design of TVET curricula and standards. Students also need to be encouraged to train for work in key sectors, rather than aiming for subjects where there is weak labour demand.⁶⁴ The private sector also has a key role to play in providing essential work experience or practical training opportunities for students (Fares and Puerto, 2009). For example, in Singapore, TVET students often work on projects commissioned by private industry in

⁶¹IFC report on digital skills in sub Saharan Africa p. 32

⁶² Ibid p. 60

⁶³ Ibid p. 60

⁶⁴ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 33

their final year which also helps promote their employment chances. Strong links with the private sector can also help develop TVET trainers to gain up to date industry experience that they can then apply in their teaching. Besides, TVET is relatively expensive to deliver but given the benefit of a quality TVET system for firms, governments across the world are increasingly looking to the private sector to help fund the cost through taxes and levies.⁶⁵

However, the different participants of the survey underlined the limited involvement of industries and private sector in their TVET system, amongst other challenges. For example, Rwanda participant stated that 'the level of engagement of industries in areas of skills development and TVET implementation is not yet at the required standards, especially when it comes to workplace learning'. Uganda mentioned less participation of employers/private sector in TVET as one of their major challenges facing their TVET system. Ivory Coast stated that there is a need for more involvement of private sector in all processes of education and training. But generally, to the question of relation with industry, all the countries surveyed stated that TVET has very close working links with industry except Uganda.

However, when it comes to Institutional management, industry is not involved in the management of Training Providers (Ivory Coast, Rwanda and Morocco), as opposed to the case of Mauritius where representatives of private sector play a major role in the management of training institutions. Regarding Uganda, the new TVET policy 2019 specifies 66% to come from industry. As far as training of the Managers of the Training Institutions is concerned, the situation is positive (Rwanda, Uganda and Mauritius) in some countries and negative in the others.

7.7 Curricula:

Participants in the survey stated that LMIS exist in order to decide upon the courses to be offered. Different mechanics exist in order to ensure that the training offered is responsive to the labour market. It is not known though how much emphasis is being laid on the 4IR technologies. However, the employability of TVET graduates in the countries surveyed poses problems (Ivory Coast 32.36%; Rwanda 66% after 6 months; Uganda 45.5-75%; Mauritius 65%; Morocco 47.3% after 9 months).

The ongoing digital transformation is a critical issue for Africa. It is changing skills requirements for jobs and Africa must urgently address it to provide digital opportunities for the growing population. Yet, most TVET curricula though at African universities are not adapted to train a modern Technician and do not explicitly define their outcomes. The qualifications of a modern TVET Graduate to function effectively have significantly changed from what they were 15 to 20 years ago.

A substantial increase in STEM participation will be needed if countries are to make the most of the opportunities presented by 4IR and drive transformation. STEM approach refers to a pedagogical strategy that emphasizes application of knowledge, skills and values from the disciplines of Science, Technology, Engineering and Mathematics, in an integrated manner to help students solve problems encountered in the real world. In the majority of developing countries, women are much less likely than men to enrol in TVET, with even lower enrolment numbers in STEM fields.⁶⁶ For example, the Africa 2063 Agenda Framework Document sets a target of 70 percent of all high-school graduates going to tertiary education, with 70 percent of those graduating in science and technology related subjects.⁶⁷ However, African college graduates with a STEM degree represent a mere 2% of the continent's total university age population but are increasingly needed across a wide variety of industries (WEF, The Future of jobs and skills in Africa, 2017c).⁶⁸

STEM delivery can also be expensive and so partnerships with other countries, donors and the private sector to share expertise and bring in financing to improve STEM performance. One such example is

⁶⁵ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018 p. 34

⁶⁶ UNESCO UNEVOC

⁶⁷ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 37

⁶⁸ Potential of the fourth industrial revolution in Africa 2019 p. 59

the World Bank–funded Partnership for Skills in Applied Sciences, Engineering and Technology which brings governments from Sub-Saharan Africa, the private sector, and partners, including Brazil, China, and India, to work together and share expertise to help build human capital in the region, including STEM skills in priority areas.⁶⁹

Ghana is introducing a teacher and learning portal in 125 schools targeted at STEM uptake, as part of a secondary education improvement project with the World Bank (2014). The portal will allow teachers and students access to online learning and teaching resources, with a focus on science and mathematics. Teachers will also get support in using ICT to help teach effectively. The portal will act as a platform for knowledge exchange and discussion in national and international networks.⁷⁰

7.8 ICT/Technology:

Technology can help African education systems to leapfrog by improving efficiency, creativity, and access to learning opportunities. The evidence is still relatively weak in terms of the impact of each type of technology on education outcomes, but there is growing belief that ICT integration has a multiplier effect through the education and training system (UIS 2015; World Bank 2018; R4D 2016) as it can help to: connect teachers to content; give students access to education material where teachers are unavailable; tailor learning to a student's needs; reinforce learning (such as with Eneza Education in Kenya that provides questions and answers to students via mobile phones); and make learning more interactive and fun (World Bank 2016). Digital technologies could also support the development of higher order cognitive and non-cognitive skills (Pedro, 2012; Trucano, 2005). Technology could also drastically reduce the time it takes to update curricula (which often takes years) for pre-and in-service teacher training so that teachers and schools keep up to date with the latest pedagogical techniques. It could also reduce the time it takes to update curriculum in secondary schools and TVET institutions.⁷¹

ICT also has the potential to be a cost-effective approach for education delivery, particularly through distance learning and teaching STEM subjects through virtual labs and simulations, instead of resource-intensive labs on site.⁷²

The main barrier to these technologies is connectivity and interoperability, as shown in Table 1 below. Rural connectivity in Africa is a major limitation standing in the way of the deployment of IoT devices. Major improvements in wired and wireless solutions are needed for the technology to be beneficial. For IoT sensors, the issue of connectivity is more nuanced as networks are needed to work over long ranges while also consuming low power. Many current use cases are point solutions rather than interoperable platforms which allow data sharing and more valuable usage.⁷³

Against this background, the only technology which is pervasive in Africa is the Mobile phone. It can be seen everywhere from the urban to the rural areas. And COVID 19 has been a major instrument to the provision of online learning, with many training providers suddenly discovering the importance of online learning. And again, TVET has been the left behind in such an initiative. However, all countries surveyed have undergone several reforms depicting a real desire to revamp their systems. Mobile connectivity is widespread. Data from the World Bank show that cell phone subscriptions are highly prevalent, ranging from approximately 12 subscriptions per 100 people (South Sudan) to 161 subscriptions per 100 people in South Africa.⁷⁴

⁶⁹ Potential of the fourth industrial revolution in Africa 2019 p. 36

⁷⁰ Potential of the fourth industrial revolution in Africa 2019 p. 36

⁷¹ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 37

⁷² Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 37

⁷³ Potential of the fourth industrial revolution in Africa 2019 p. 185

⁷⁴ Potential of the fourth industrial revolution in Africa 2019 p. 72

Table 1: Telephone and internet penetration

	Ivory Coast	Rwanda	Uganda	Angola	Gabon	Liberia	Morocco	Mauritius
Internet penetration (2020)	47 %	26%	24%	28%	62%	12%	69%	68%
Mobile phone connections (% of population) (2020)	131%	73%	60%	45%	149%	83%	118%	150%

- <https://datareportal.com/reports/digital-2020-cote-divoire>
- <https://datareportal.com/reports/digital-2020-rwanda>
- <https://datareportal.com/reports/digital-2020-uganda>
- <https://datareportal.com/reports/digital-2020-angola>
- <https://datareportal.com/reports/digital-2020-gabon>
- <https://datareportal.com/reports/digital-2020-liberia>
- <https://datareportal.com/reports/digital-2020-morocco>
- <https://datareportal.com/reports/digital-2020-mauritius>

As seen in Table 1, Mobile phone penetration is high enough with 3 countries out the 8 surveyed above 100% and will continue increasing whilst Data on internet connectivity likewise indicates a wide disparity in terms of access to ICT and is still on the low side with 4 of the 8 countries surveyed below 30% only. This situation is a severe handicap to the development of digital skills in those countries. In fact, the biggest challenges in Africa remain connectivity and accessibility. Further progress in this space will drive broader adoption of industry 4.0 applications by businesses and consumers.⁷⁵

The GSMA though forecasts that, by 2025, 97% of Sub-Saharan African mobile users will have access to at least 3G. A total of 23% will have access to 4G and 3% to 5G. The first 5G connections are expected to be launched in 2021. Furthermore, Africa had, in 2017, more than 170 million Facebook users, of which 94% were using mobile devices.⁷⁶ With nearly 500 million internet users by 2025 and 97% of mobile connections expected to be using at least 3G, there is a strong case for creating a strong skill and knowledge foundation for Big Data analysis to be prepared for the rapid growth in data volume on the continent.⁷⁷

When asked as to whether ICT is integrated in all TVET curricula, most respondents to the survey responded positively except for Ivory Coast. However, problems are mainly related to shortage of internet connection and lack of sufficient computers (Rwanda and Uganda).

Regarding whether different technologies associated with the fourth Industrial Revolution (4IR) are being integrated in TVET, Ivory Coast and Uganda responded negatively. In Mauritius, technologies related to 4IR are integrated in specific courses in the following fields: IT, Automation, Electronics, Building Services Engineering, Telecommunications, and Industrial Machine Maintenance. Rwanda is awaiting for the ICT infrastructure to be developed. In the case of Morocco, this is part of the No 1 strategy of their road map.

⁷⁵ Deloitte: Industry 4.0 Is Africa ready for digital transformation? P. 4

⁷⁶ Potential of the fourth industrial revolution in Africa 2019 p. 128

⁷⁷ Ibid p. 129

7.9 Financing:

TVET is expensive, and funding is always a challenge. Public-private partnerships (PPPs) are constantly being developed to expand student numbers in TVET. Failure to secure such upfront funding to develop and install such technologies is a major limiting factor for the growth of digital TVET in most economies.⁷⁸ Pressure from the labour market is leading to more career-centred programmes, with industry dictating the necessary fields and expertise to fill the gaps being created by the transformation of the labour market.⁷⁹

It is obvious that financing would be a determinant factor in the digitization of TVET in any country. There exists chronic underfunding in TVET facilities as mentioned by the different respondents (Ivory Coast 6.96% of education budget; Rwanda 20%; Uganda 12%; Mauritius 2-3%, Morocco 3.54%), which will further limit digital take-up. TVET institutions need to develop collaborative PPPs, which may lead to funding for improved premises, specialist equipment, consumables, learning factories, etc. TVET institutions may rely on employers or infrastructure providers, who may subsidize or lend equipment for training purposes. Practically all the countries surveyed also depend on development partners for part funding of their operations. Such a funding formula is not sustainable. All countries must eventually be able to stand on their own feet, as in the case of Mauritius where the major sources of funding are Government Grant and training levy contributed by private sector enterprises. Interesting to note though that all the countries also have a training fund in place or are in the process of establishing one. And the capital budget for Rwanda and Uganda is 40% and 65% respectively, which is very good compared with the other countries participating in the study. Three of the countries have a training levy in place (Ivory Coast, Mauritius, and Morocco). Uganda does not have a training levy in place whilst Rwanda has not yet introduced it.

The challenges for providing access to ICT are the hefty costs associated with establishing ICT infrastructure and providing training for staff, and the high recurrent costs of system maintenance and upgrades, along with the costs of staff skills upgrades. As a result, other sources of funding would need to be looked into.

7.10 Strengths and Weaknesses:

It is interesting to note that the high political will is mentioned by 3 of the respondents as the first strength (Ivory Coast, Rwanda and Uganda). This is important as without the political will, it would be very difficult to advance with the introduction of digital skills. Many other strengths have been mentioned by the different respondents, namely policies enabling companies to be highly involved in the organization of training and in the direct management of training establishments within the framework of public-private partnerships.

Although there are significant positive efforts to strengthen them, the TVET systems in many African countries are characterised by under-resourced, obsolete or damaged infrastructure; inadequate inter-sectoral linkages; lack of labour management information systems; limited curricula and inadequate human resources. As a result, on average, executives think that the quality of vocational training in Africa is low (WEF, 2018b).⁸⁰ These weaknesses are confirmed by the different respondents to the survey questionnaire. In addition, TVET reforms are often ambitious but progress is slow due to capacity and resource constraints, frequent government changes and resistance to change (Kingomber 2011). Often, multiple ministries are involved and a lack of coordination and alignment hampers progress⁸¹

⁷⁸ Potential of the fourth industrial revolution in Africa 2019 p. 72

⁷⁹ Ibid p. 74

⁸⁰ Potential of the fourth industrial revolution in Africa 2019 p. 59

⁸¹ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 35

Challenges

The biggest challenge to the African countries is as the respondent of Uganda said *‘There is still a significant proportion of the population whose major concern still remains the basics of decent accommodation, safe water, access to affordable health and basic education, clothing, and food security. Therefore, with the basics yet to be satisfied, there is less pre-occupation with the 4IR.’*

It is a question of policy decision. Can a country await for all its people to have the basic amenities before investing into the technology of 4IR? Or is it not the reverse which must be done? Investing into the right innovative technologies might prove to enhance productivity and add greater values to the economy of the country thereby enhancing more resources to get the people out of these social problems? The whole world is moving and whether we want it or not, we are in a new normal where technology is going to be the main driver impacting on the whole world business. No country will be able to shield itself from that technological invasion. Besides the already present sector divide, technology divides will marginalize countries which decide to stay away further. It is simply not possible to weather the current technological revolution by waiting for the next generation’s workforce to become better prepared.

In April 2019 the government of the kingdom of Morocco unveiled a project to establish professional training clusters (cités des métiers et des compétences, CMCs) throughout the kingdom. Each of Morocco’s 12 regions will host a CMC, which will be made up of a set of professional training centres tailored to meet the labour needs of the surrounding region. The project sought to accommodate 34,000 trainees, divided into groups of 20. Training in digital technologies is expected to be available in all CMCs, while education focusing on artificial intelligence will only be accessible in the Rabat-Salé- Kénitra and Casablanca-Settat clusters.

“Most developing countries face the constraint of infrastructure. Technology products designed in developing nations are often not designed to meet the needs of the poor or those in remote areas. Affordability is also an issue: with roughly half the world living on less than four dollars a day, many potential users are too poor to afford any form of access to technology (Miah & Omar, 2012).”⁸² The global South and particularly Africa have largely been unable to reap the benefits of the series of technological advancements enabled by modern electricity (Maharajh, 2018). “In addition to sector divides, a developed-developing gap is also emerging. Generally, the global North has made enormous strides in technological growth, especially in computing power (Maharajh, 2018).”⁸³

Let us take the case of Artificial Intelligence which is a group of technologies and techniques, notably those linked to deep learning, natural language processing and signal recognition, which allow computers to learn and interact similarly to humans.⁸⁴

Three conditions currently apply to any and all AI applications:

- The design of AI applications depends on the existence of massive databases of coded material on which to train machines, thus limiting its applicability in many sectors that do not have access to such data sources. In the example above, to recognize a cat, an AI need to be fed thousands of images labelled as ‘cats’ in order to work
- AI does not provide definite answers to any queries – it only provides probabilities. For instance, an AI would state that it is 94 per cent sure that an image is a cat.
- AI requires significant computer resources for training – it is typical to require hundreds or even thousands of special computer cores for AI applications.

⁸² INTEROPERABLE DATA ECOSYSTEMS An international review to inform a South African innovation p. 11

⁸³ INTEROPERABLE DATA ECOSYSTEMS An international review to inform a South African innovation p. 9

⁸⁴ The Digitization of TVET and Skills Systems UNESCO 2020 p. 34

Industries face several challenges in the process of adopting Industry 4.0, including:⁸⁵

- Lack of awareness on the concept of Industry 4.0 and its benefits
- no clear comprehensive policy and coordination on Industry 4.0
- infrastructure gaps, particularly in relation to the digital infrastructure, as well as ecosystem gaps
- lack of targeted incentives to incentivize more companies to move towards Industry 4.0
- mismatched skill sets and lack of right talent/human capital
- lack of standards leading to difficulties in integrating different systems, as well as reliability issues

Examples of African countries with 4IR technologies

It has to be pointed out that some African countries have already integrated digital technology in their businesses. But the value addition of 4IR technologies will lie in their ability to reach the common man.

In Kenya, some technologies already in use are precision farming, sensor technology, AI, and blockchain technology which are being applied in agriculture, climate change, and localization of manufacturing.⁸⁶ However, most farmers are not literate, let alone technologically literate. They need someone who is academically literate to understand how technology can be used for sustainable change in the sector. Most people believe that using a phone is not the same as being able to use mobile technologies strategically. A farmer needs help from someone else.⁸⁷

Mauritius has already engaged in the Fintech revolution. Many companies in ICT/BPO and Banks are already engaged in several activities at different degrees of maturity such as in mobile applications, E-banking, digitization of platforms and business intelligence.⁸⁸ Mauritius has developed its AI Strategy since 2018. The University of Mauritius has just launched a Master's degree in AI for some 25 sponsored students by the Human Resources and Development Council. A new Master's degree in Blockchain is being mounted. An MSC in Robotics is being offered by the Université des Mascareignes.

In Rwanda, the private sector has worked with partners like Knowledge Lab (K-Lab), which has produced around 60 businesses and Fab-Lab which has been working on IoT and fabrication in collaboration with MIT. Gender gaps in ICT projects have been reduced through training of girls to prepare them for ICT jobs. Venture capital is being promoted in collaboration with K-Lab. Fellowships are being promoted in various sectors as digital transformation platforms.

In South Africa, researchers estimated that 41 percent of all work activities could be automated, while in Ethiopia, Nigeria, and Kenya, this is 44 percent, 46 percent, and 52 percent, respectively.⁸⁹ The IFC report on digitization skills for sub-Saharan Africa illustrates a significant market size for teaching digital skills through 2030 across Sub-Saharan Africa, estimated at nearly \$130 billion with some 650 million people in need.

To the question as to whether the different technologies associated with the fourth Industrial Revolution (4IR) are being integrated in TVET in their respective country, the representatives of Ivory Coast and Uganda replied negatively whereas those from Rwanda, Mauritius and Morocco are more promising with Rwanda (awaiting for the relevant infrastructure), Mauritius (in specific courses) and Morocco (within the context of the implementation of a new strategy).

⁸⁵ The Digitization of TVET and Skills Systems UNESCO 2020 p. 26-27

⁸⁶ Dr Desai, PASET conference 2019, Kigali, Botswana

⁸⁷ The Digitization of TVET and Skills Systems UNESCO 2020 p. 109 David Maduri – Founder, Refuge Network and Airves

⁸⁸ Mauritius AI strategy, 2018

⁸⁹ IFC Digital skills in SSA p. 22

7.11 Advantages and disadvantages perceived of 4IR in TVET

Questions were asked in the questionnaire as to what are the advantages and disadvantages perceived by introducing 4IR in TVET in the different African countries.

The advantages were stated by respondents as follows:

- **Ivory Coast:** Certain costs are reduced (physical, psychological and financial). Reduction of risk of contamination of certain diseases
- **Rwanda:** Increased productivity, efficiency and quality in processes, greater safety for workers by reducing jobs in dangerous environments, enhanced decision making with data-based tools, improved competitiveness by developing customised products. The 4IR will lead to the big loss of jobs by traditional skills to the machinery and technologies. It is only people with technical skills who will be in a good position to suite with this era. TVET graduates therefore are expected to suite very well in this revolution.
- **Uganda:** 4IR shall compel TVET to have curricula that is responsive to the new skills and competences required to work in technologies that are rich in Artificial Intelligence and automation. It shall also require TVET trainees and trainers to adapt to new tools and innovations that augment productivity and a whole new set of productivity values.
- **Mauritius:** 4IR provides new opportunities for development of TVET through the adoption of digital technologies. Digital platforms enable training to be delivered online and reach a wider population of learners. The use of innovative pedagogies and didactics helps to improve the quality of training.

The advantages of the 4IR on TVET/ TVSD is that we are currently providing hands on training experience to students and thus the students not acquire only the theoretical part of the training but they are also shown how to use the technology and how to apply it in specific situations. Having said that, it goes without saying that TVET institutions will play an important role in the training of students during the 4IR. These new technologies will enhance the student learning providing students with simulation based learning. TVET students will thus acquire skills from different training institute and platforms without the need to travel to other countries in order to benefit from these trainings. Morocco did not submit anything on the section on the fourth Industrial Revolution

The disadvantages were stated by respondents as follows:

- **Ivory Coast:** Youth are no more in touch with physical practice; and development of computer piracy.
- **Rwanda:** 4IR technologies cannot be introduced in TVET education unless the whole country has developed the tools and infrastructure to support this and this calls to heavy investment by the government. There is need to have skilled trainers to adopt the 4IR technologies in teaching and learning and these are not there yet. Need for the tools and equipment for students to use in TVET for utilization of 4IR technologies in learning and this calls for the budget to individual students and the Institution.
- **Uganda:** It may affect inclusive TVET by increasing the disparities in access to 4IR-compliant TVET. This is more so given that majority of developing societies have not yet fully benefited from previous Industrial revolutions. There is still a significant proportion of the population whose major concern still remains the basics of decent accommodation, safe water, access to affordable health and basic education, clothing, and food security. Therefore, with the basics yet to be satisfied, there is less pre-occupation with the 4IR.
- **Mauritius:** 4IR is transforming businesses rapidly and many existing jobs are being replaced or reviewed and new jobs are being created. The challenge for vocational training institutions is to adapt to these changes, this includes review of existing training programmes,

development of new training programmes, integration of 4IR skills in all TVET curricula, capacity building and upgrading of technology. The disadvantages on TVET might be that unscrupulous education providers might join the race and provide bogus qualifications to ignorant students. Another disadvantage of the 4IR might be that there would be less socialisation among the students and this can have an impact on the student's personal and professional life.

7.12 Possibilities of adopting the 4IR technologies in TVET

When asked if they believe the TVET institutions in their respective country are in a position to adopt the technologies associated with the 4IR, the various participants to the survey responded as follows:

- **Ivory Coast:** yes as we live in a globalised world of give and take
- **Rwanda:** Yes, the TVET institutions in our country are in a position to adopt the technologies associated with the 4IR because due to the Government will to embrace technologies in all economic sectors, the Government has put in place the necessary IT infrastructure across the country and most importantly all higher learning TVET Institutions are connected to fibre link and would be a big boost to adopt the 4IR.
- More effort is being made by the Government to have TVET education taking up to 60% of students in education and this shows a will and preparation of the government to adopt 4IR through TVET education. However there is still a need to prepare the ground to with the right technologies, tools and equipment to make sure our TVET institution are ready to adopt the 4IR.
- **Uganda:** The desire is there but there are other competing priorities that make the 4IR not such a high order priority for TVET institutions because they are responding to the local needs. However, there are some public and private TVET institutions shall make such investments in the 4IR capabilities.
- **Mauritius:** In some of the TVET courses, especially the higher level ones and the ones that are technologically-driven (e.g. automation, electronics, ICT and Building Services), it will be easier to incorporate the skills required, as compared to the ones whereby educational background of the trainees is relatively lower. Besides, some of the TVET institutions are already delivering courses in fields that are related to the 4IR such as Internet of things, Big Data, etc.

7.13 Barriers to the enacting 4IR in TVET

As to the possible barriers to enacting 4IR within the TVET training centres in order of priority, the respondents pointed to the following (Starting with 1 to be the most severe barrier and increasing in number for the least severe barrier). Totalling the figures points to a table as shown in Table 2 below representing the most severe barrier at the top and least severe at the bottom of the table.

Table 2: Barriers to enacting the 4IR in TVET

Possible Barriers	Severity of the barrier				
	CI	RW	UG	MU	Total
Financial restrictions	03	1	2	2	8
Lack of staff expertise and the need to acquire new knowledge	08	2	3	2	15
Lack of perception of 4IR	01	10	1	3	15
Awkward fit with subject area	04	7	7	3	18
Requirements of professional associations	09	4	4	3	20
Confusion over what needs to be taught	02	11	5	3	21

Curriculum too crowded already and lack of time to update courses	05	6	11	2	23
Lack of relevant course examples	13	3	6	1	23
Lack of institutional drive and commitment	07	8	9	1	25
Lack of academic rigour/misunderstanding	10	9	7	2	28
Lack of staff awareness	14	5	10	3	32
Perceived irrelevance by staff	06	14	8	3	33
Perceived irrelevance by students	11	13	12	3	39
Inability of students to grasp the issues	12	12	13	3	40
No barriers identified		15			

A simple analysis points to financial restrictions as the most severe barrier, which is quite obvious, followed by lack of staff expertise and the need to acquire new knowledge, and lack of perception of 4IR.

7.14 Cross border possibilities

Can cross-border collaborations/partnership be used to promote TVET using digital technology so that countries which are more advanced could help and share their expertise with the personnel in other countries as well as share their platforms, thereby reducing the exorbitant cost implications? The different respondents to the survey pointed the following:

- **Ivory Coast:** The different platforms (WAEMU, ADEA) must be interoperable
- **Rwanda:**
 - Cross-border collaboration/partnership can be used to promote TVET using digital technology in a way that some countries may be more advanced in the use of digital technology so borrowing of ideas and learning from others countries experience would be important in promotion of TVET at a much faster rate.
 - The technologies can always be shared, and hence new technologies developed, or tools and equipment in one country can be used online by another country once there is good collaboration and partnership without duplicating the same technologies. This would save in terms of time and money.
 - Skilled trainers from one country can also help in training in another country once there is good collaboration and partnership since with technology, training can also done online using video conference, virtual classrooms and remote laboratories and other tools using digital technologies
- **Uganda:** The Sector is in the process of developing a Framework to guide on integration of digital technology in delivery and learning in TVET.
- **Mauritius:**
 - To take stock of existing best practices pertaining to TVET
 - To carry out assessment of potential for development of 4IR in each centre
 - For capacity building of key stakeholders in TVET
 - For financing programmes
 - To share implementation plan

Besides, local institutions can collaborate with international institutions on a regular basis without the need of travelling or visiting other countries in order to establish partnerships or collaborative ideas. This section has shown that TVET suffers from a lack of esteem, lack of quality of facilities, insufficient recognition, insufficient competent trainers and continuous professional development of trainers, lack

of access capacity, lack of sufficient funding, lack of investment in new technologies (ICT and Internet penetration), lack of expertise in the technologies of 4IR, amongst others. The good thing is that there is a real government will of the responding countries to invest further in TVET in order to provide employable TVET graduates who are world competitive and can help steer these countries to a different level that bridges the divide between the developed countries.

8. Conclusion

Technology is reshaping almost all aspects of our lives including our jobs and skills required, our habits, our education and training system, our society and even our biology. Together with increasing access to education and skills training there are opportunities for Africa to reap the rewards of AI. AI is expected to offer vast opportunities in several important sectors for Africa. Sectors such as healthcare, agriculture, education, government, finance and transportation are expected to experience positive changes with the application of AI. In particular, AI may change the current situation in which African working productivity has stagnated.⁹⁰

For the past 15 to 20 years, the advice to African countries was simple: follow the East-Asian model. In other words, reduce costs by improving investment climates, and focus on labour-intensive and export-oriented manufacturing to capitalize on labour-abundance and labour-cost advantage. This model has been shown to lead to fast growth and employment, mainly in assembly line jobs that often do not require many skills beyond basic literacy. However, with the current disruptive technological changes and its impacts on global production and trade, the way forward is not so clear.⁹¹

Creating decent jobs in line with future 4IR expectations requires policies and strategies that increase productivity, labour absorption and enable the re-allocation of labour from traditional to modern jobs and sectors. As such, five potential pathways with high potential employment impacts can be identified: (1) agriculture-driven transformation, (2) exports-oriented manufacturing, (3) a modernized services sector, (4) tourism, and (5) creative industries.⁹²

It must be noted that AI and automation can also pose a threat to Africa. A strong negative relationship exists between skill levels and the probability of automation. Jobs with a low risk of being computerised usually require higher skill levels and share the common attributes of creative and social intelligence. AI and robotics will reduce the competitiveness of low-cost and low-skilled labour. Furthermore, AI is also expected to result in the reshoring of manufacturing to industrialised economies and to possibly eliminate the traditional paths of industrialisation and the advantage of cheap labour.⁹³

As a result, the Fourth Industrial Revolution (4IR) requires the African TVET sector to be proactive and revamp itself in line with the new demands of the 4IR. The IFC report on digitization of skills for SSA found that the labour market for digital skills is already highly developed in Sub-Saharan Africa, with respondents to the digital skills survey they carried out estimating about half of jobs require some digital skills. However, there is a significant gap between supply and demand across all levels of digital skills in the region. And the supply of digitally-skilled labour in Sub-Saharan Africa must increase to meet anticipated labour market needs or Africa's economies will falter.⁹⁴

Countries are facing an unprecedented challenge of re-imagining and overhauling outdated education systems built for another era. They must confront this reality to prepare the next generation of learners for an evolving landscape of new skills, jobs, and technological changes. Political commitment and ownership from African Governments will be vital to transform the existing traditional education systems and ensure that the digital transformation is positive for populations.

Digitisation is also changing the ways people learn. They do not have to go to a classroom all day. It is driven by learner needs and brings in flexible learning opportunities which in parallel suit better lifelong learning and Continuous Professional Development. "Blended learning is the most important systemic trend in teaching and learning being accelerated by digitization. Specific technologies in

⁹⁰ Potential of the fourth industrial revolution in Africa 2019 p. 119

⁹¹ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 2

⁹² Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. v)

⁹³ Potential of the fourth industrial revolution in Africa 2019 p. 121

⁹⁴ IFC Digital skills in SSA p. 5

teaching and learning that are changing the way teachers teach include micro lectures, special apps and websites such as Moso Teach and Ketangpai (www.ketangpai.com). The technologies that appear to have the highest impact on TVET staff include mobile communication technology, like WeChat and Ding Talk. Almost every TVET staff and student in China has WeChat, and most important notices are usually sent via WeChat.⁹⁵ Digitization of processes within industry means that workers need to return to education or training at several stages across their working careers to remain relevant. It is said that both workers and companies prefer that such education or training is either seamlessly integrated into the workplace or can take place simultaneously to workplace demands, without disrupting normal workflows or take the form of evening classes, online courses or online trainings.

Besides, Industry 4.0 is driving an explosion in the use of software to drive hardware used by staff at all levels of organizations, across all sectors of industry. Most of these software packages tend to be specific or heavily customized to the needs of specific industry segments, and as such do not lend themselves to generic training programmes. Since it is often only cost-effective to provide students with adequate training on these technologies at the workplace, they are further strengthening the value proposition for apprenticeships and other forms of work-based learning. Countries are faced with an unprecedented challenge of updating education and training systems built for another era.

Nonetheless, Africa is still lagging behind, largely being a consumer and not a producer of new technologies. Its performance in human capital is a major concern and may represent one of the major roadblocks for the continent to benefit from the 4IR.⁹⁶ The 4IR will for sure disrupt our way of living, our work, and our habits. How people benefit from it depends upon the skills of the people. Hence, it is imperative that government policies be amended to ensure that digital skills be entrusted to our population at all levels. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), on average 61% of adults in Sub Saharan Africa can read and write with understanding, one of the lowest adult literacy rates in the world. Adult literacy rates range from 19% in Mali to 90% in the Seychelles. Fourteen of the 22 countries in the world with literacy rates below 60% are in Sub-Saharan Africa. On average, the quality of maths and science education is the lowest in Africa (WEF, 2018b). In general, ICT illiteracy is still at a very high rate in Africa. An analysis of the WEF Future for Production data reveals that the active population in Africa possesses on average lower digital skills (WEF, 2018b).⁹⁷ Many youths are ill-prepared to fill the few openings because they do not have the skills required by employers (AfDB 2015) due either to the poor quality of their education or specialization in subject areas (such as arts and humanities) other than those that employers demand (such as science, technology, engineering and mathematics, STEM). Each year, 10-12 million youths, many educated, enter the workforce, yet only 3 million formal jobs are created (AfDB, 2017).⁹⁸

On the supply side, the reduced extent and speed of the internet on the continent is hindering the take-up of 4IR technologies. On the demand side, however, a large number of individuals and households do not use, or do not have devices to access, the internet.⁹⁹ With Africa's population expected to double by 2050 to 2.4 billion people, it is essential that we grasp the leapfrog opportunity offered by the 4IR to make the transition from the agrarian era.¹⁰⁰

The Education 2030 Framework for Action, which outlines how to translate the global commitment into practice (UNESCO et al., 2015), recognizes the immense potential of ICT in achieving lifelong learning for all. It highlights the need for ICT to 'be harnessed to strengthen education systems' and to assist in increasing knowledge dissemination, expanding access to information, improving the

⁹⁵ The Digitization of TVET and Skills Systems UNESCO 2020 p. 104-105 Professor Zhao Zhiqun, Institute of Vocational and Adult Education, Beijing Normal University

⁹⁶ Potential of the fourth industrial revolution in Africa 2019 p. 57

⁹⁷ Ibid p. 61

⁹⁸ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 15

⁹⁹ Ibid p. 17

¹⁰⁰ Dr. Akinwumi Ayodeji Adesina President African Development Bank-Potential of the fourth industrial revolution in Africa 2019

quality and effectiveness of learning, and in providing more effective services' (UNESCO et al., 2015, p. 8). The Education 2030 vision was affirmed by the Qingdao Declaration (UNESCO, 2015d), articulated at the International Conference on ICT and post-2015 education, which noted that ICT can improve access to education and inclusion, support open education resources and solutions, support quality learning, facilitate lifelong learning pathways, enable online learning and improve mechanisms for quality assurance and recognition of learning.¹⁰¹

On the other hand, traditional TVET skills are still dependent on face-to-face teaching and learning – often in a very informal environment subject to doing things in a certain way when the economy is driven by the informal economy. In the case of technologies that are either advanced (e-commerce) or in their infancy (blockchain), citizens will still find reasons to resist take-up until there is a very compelling reason to change current practices.¹⁰²

Whereas in the past the unemployed and those in the informal sector in Africa were mainly the uneducated, now the face of unemployment and the urban informal sector is changing to become that of the secondary or tertiary school graduate.¹⁰³ With the right education and training, coupled with national economic strategies and policies that provide the right environment for rapid economic growth and creation of employment opportunities, Africa's large and fast-growing youth population could be a great asset for development and a comparative advantage in world markets.¹⁰⁴ The World Bank (2015) recommends a strong focus on the education of girls and women, as well as higher labour force participation by women, as these highly correlate with lower fertility rates.¹⁰⁵

McKinsey Global Institute MGI (2016) estimates that Africa needs to enrol 33 million young Africans in vocational and technical education in secondary schools by 2025 compared to 4 million in 2012 to support transformation.¹⁰⁶ There is therefore the need to work hard and train a critical mass of scientists to develop knowledge and create technologies. That way Africa would not just be a consumer, but producer of technology in a contextual manner.

A future-oriented Technical and Vocational Education and Training (TVET) education ecosystem requires: access to well-developed and modern TVET qualifications; certification and credentialing systems based on agreed industry standards and the identified needs of both learners and employers and updated on a rolling basis to ensure continued relevance, and employer input into its design (WEF, 2017b).¹⁰⁷ Government commitment to digital transformation is key to improve the training quality of TVET and promote the innovation of teaching and learning modes in TVET. However, there are significant hurdles to overcome if Africa is to reap the full benefits of a digital transformation for inclusive growth and job creation. The needs of Industry 4.0 still have to be understood.¹⁰⁸ However, the 4IR certainly does offer opportunities for African citizens and businesses to gain access to new sources of information and new forms of education (online courses utilising AI and virtual classrooms).¹⁰⁹ The solution may, however, come from the use of ICT in the TVET delivery.

Very few countries have a coherent strategy to digitize TVET and skills systems because initiatives to digitize TVET may be driven variously by institutions themselves, by industry, by employment or industrial policy, or by education ministries. There are many prerequisites to that. Hence, it would be advisable to have clearly defined policies by the Government in order to show and guide the development of digitization of TVET.

¹⁰¹ Beyond Access: ICT-enhanced Innovative Pedagogy in TVET in the Asia-Pacific p. 10

¹⁰² The Digitization of TVET and Skills Systems UNESCO 2020 p. 109

¹⁰³ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. vii

¹⁰⁴ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 1

¹⁰⁵ Ibid p. 16

¹⁰⁶ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018 p. 15

¹⁰⁷ Potential of the fourth industrial revolution in Africa 2019 p. 59

¹⁰⁸ The Digitization of TVET and Skills Systems UNESCO 2020 p. 110 Vince Maione – Director, National Skills Council Malta

¹⁰⁹ Potential of the fourth industrial revolution in Africa 2019 p. 34

Governments must invest more in modular digital literacy and ICT training. Digital technologies are particularly effective when used as blended learning tools that can be operationalized in social practices (such as teamwork, peer-based learning and collaborative problem solving), particularly when they are linked with real problems or project-based learning.¹¹⁰ Integration of ICT into TVET is no longer a good-to-have initiative; rather, it is an integral component that enables graduates to be adaptable and ready to 'produce new ideas, to transform old ones, to combine and codify information into intellectual property and to incorporate it into new products and processes.'¹¹¹

With this new pedagogical approach, students are encouraged to learn independently, search for new information and collaborate online, thus learning with and through technology to create knowledge.¹¹² The provision of online learning provides the students with greater flexibility in accessing learning resources and learning support, so that the course becomes more suited to their needs. Geographical location is no longer an issue for students, which encourages lifelong learning. Such learning can be pursued anywhere and at any time. The course structure nurtures self-directed learning capacity and the students find the learning environment safe and more student-centred.¹¹³ Students can acquire an initial understanding of the topic at home and therefore be more prepared to participate in classroom discussions and practical training. Teachers leverage this to encourage self-directed learning and to implement flipped classroom.¹¹⁴ With the flipped learning resources available online, students are able to learn at their own pace and go through the material repeatedly if required. The quizzes are useful to students in enabling them to check their understanding.¹¹⁵

However, it is essential to update TVET teachers' pedagogical skills and to introduce ICT tools for teaching and learning. Tools such as simulations, 3D immersive virtual reality, videos, collaboration software and mobile devices (including smartphones), can make training much more engaging than conventional modes of delivery (Kotsik, Tokareva and Chinien, 2009). These technologies support different learning styles and, when used appropriately, these tools can assist teachers to inculcate positive attitudes towards learning and build transversal competencies (Zuolkernan, 2006).¹¹⁶

TVET and skills systems need to invest heavily in market intelligence and forecasting, to prepare and build courses for emerging digital skills. Data-driven TVET and skills systems are likely to become the norm in the coming years.¹¹⁷ Skills needs are changing very fast. It is important to understand the skills demand so that there can be changes at the TVET and university levels to adapt to the market needs. Forecasting skills needs by using direct industry consultation, surveys, focus groups and national skills frameworks are all slow and expensive methods. The solution is to use big data analytics, intelligent skills-gap analysis, and automatic mapping of curriculum to granular skills and modular education. Today, there is an increasing use of AI for course mapping, adaptive curricula, lifelong learning and jobs matching to leverage the needs of the market.¹¹⁸

With the combination of big data, advanced robotics, AI advancements, interoperability and the Internet of Things, the sustainable development goals are more within reach than they ever have been: innovations such as massive open online courses (MOOCs) and personalised learning AI could provide remote learning opportunities to improve education access and outcomes; prescriptive AI linked to soil sensors could greatly improve crop yields and decrease food poverty; and advancements in interoperability in healthcare could dramatically improve patient care and allow for new types of healthcare delivery to reduce maternal and infant mortality.¹¹⁹

¹¹⁰ The Digitization of TVET and Skills Systems UNESCO 2020 p. 110 Vince Maione – Director, National Skills Council Malta p. 78

¹¹¹ Park and Kim, 2009, p. 1915). (Beyond Access: ICT-enhanced Innovative Pedagogy in TVET in the Asia-Pacific p. 4

¹¹² Beyond Access: ICT-enhanced Innovative Pedagogy in TVET in the Asia-Pacific p. 27

¹¹³ Beyond Access: ICT-enhanced Innovative Pedagogy in TVET in the Asia-Pacific p. 21

¹¹⁴ Ibid p. 29

¹¹⁵ Ibid p. 27

¹¹⁶ Beyond Access: ICT-enhanced Innovative Pedagogy in TVET in the Asia-Pacific p. 9

¹¹⁷ The Digitization of TVET and Skills Systems UNESCO 2020 p. 79

¹¹⁸ World Bank, 5th PASET, destination digital Africa, Kigali, Rwanda

¹¹⁹ INTEROPERABLE DATA ECOSYSTEMS An international review to inform a South African innovation p. 10

Extensive use of ICT can support the expansion of the formal sector in both absolute and relative terms (La Porta and Shleifer 2014 cited in UN 2017). As discussed previously, effective diffusion of productivity-enhancing technology in rural areas can help agricultural firms expand, thus supporting formalisation in agriculture and sectors linked to it through the value chain. 4IR technologies, in particular blockchain and basic technologies such as mobile phones also help to increase the chances of formalization (UNDP 2017). However, technological changes will need to be properly regulated to ensure they do strengthen formal employment, rather than encourage new forms of informal employment.¹²⁰

African governments might consider the merits of the public-private partnership (PPP) model for infrastructure projects. In countries outside Africa, the model has proven successful in helping to compensate for low public sector investment in key areas. African countries can benefit from the experience of such countries in developing robust PPPs that channel the necessary resources to key areas for the development of infrastructure for connectivity.¹²¹

Besides, the COVID 19 Pandemic has revealed the weaknesses of the TVET system in its ability to sustain training delivery during the crisis. This further reinforces the need for urgent necessary actions to ensure a greater digitisation of the TVET in order for the system to be prepared in case of similar crisis in the future.

¹²⁰ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 29

¹²¹ AFDB Potential of the fourth industrial revolution in Africa p. 124

9. Recommendations

It is recognised that the 4IR is changing the skills required for jobs - workforce readiness, technical skills including digital skills, soft skills and entrepreneurial skills (which can promote self-employment) will become a priority.

It is evident that with the rapid change in technology digital skills are becoming more and more essential for the jobs of today and tomorrow. Whether these changes are beneficial or not for people will depend on their skills. In the 21st century, digital literacy is a skill that each citizen must have in addition to writing and reading literacies.

Digital technologies and new uses of data and information will disrupt many sectors in Africa. Consequently, African nations must prioritize the development of digital skills to sustain economic growth and deliver on an agenda to embrace the digital age. The demands of education are changing hence African governments need to equip and empower the youth with relevant skills to explore opportunities so that they can impact our society.

African Universities and TVET will need essential infrastructure to produce knowledgeable and skilful youth. They will also need to connect with each other and work together to mobilize resources for research in science, technology and innovation. As mentioned earlier, the COVID 19 has demonstrated the weaknesses of the TVET systems in many countries in their sustaining delivery of training during the pandemic. The 4IR requires all African countries to work together as these are times of rapid change.

As mentioned earlier, certain sine qua non conditions are warranted if the African countries want to ensure integration of 4IR technologies in their TVET system and catch up with the developed countries. They are at a defining moment to ensure Africa breaks the digital divide and become part of the developed world. A series of recommendations are proposed here to help revitalize the African TVET system and ensure integration of digitised skills in their TVET system delivery. ***ADEA must be able to bring its technical support together with the other Regional Economic Communities in the implementation of these recommendations and help the African countries to make that quantum jump into the digitised TVET environment:***

9.1. Develop and Revisit TVET Policies:

- ***Develop TVET policies where they do not exist and review where they are available and look for necessary budget for their implementation.*** They must be accompanied with well thought of operational plans together with key performance indicators and necessary resources identified. Very few countries have a coherent strategy to digitize TVET and skills systems because initiatives to digitize TVET may be driven variously by institutions themselves, by industry, by employment or industrial policy, or by education ministries. Hence, it would be advisable to have clearly defined policies by the Government in order to show and guide the development of digitization of TVET.
- ***Ensure a strong link between TVET and the private sector:*** A key lesson from more advanced TVET systems is that private sector engagement, in both the design, management and delivery of TVET, is crucial for quality, relevance and responsiveness. Reasons thereof are:
 - First, TVET is relatively expensive for governments to deliver, but a quality system provides an obvious benefit for firms.
 - Second, TVET systems need to be demand driven and dynamic so they can respond to the changing needs of the labour market, which in turn depends on private sector input in the design of curricula, standards and in the quality assurance of provision and standards.

The close and continuous engagement with industry is necessary to jointly agree on standards and curricula that meet the needs of the formal sector—and as much as possible, the informal sector as well.

- Third, the private sector also has a key role to play in providing essential work experience or practical training opportunities for students. Furthermore, African governments might consider the merits of the public-private partnership (PPP) model of countries outside Africa for infrastructure projects. For example, in Singapore, TVET students often work on projects commissioned by private industry in their final year which also helps promote their employment chances.¹²²
- **Ensure integration of ICT and digital skills in all the TVET curricula and in modes of delivery.** Integration of ICT into TVET is no longer a good-to-have initiative; rather, it is an integral component that enables graduates to be adaptable and ready to ‘produce new ideas, to transform old ones, to combine and codify information into intellectual property and to incorporate it into new products and processes’¹²³ In addition, the modes of delivery must gradually change from the only face to face approach to a blended method of delivery whereby the trainees receive knowledge at home/online and practice skills in class. This blended method brings with it many advantages including access and learning at one’s own pace.

Curricula must be revised in collaboration with the private sector as it is essential to have close partnerships between schools and the immersive technology solution providers when developing the content.¹²⁴

Curricula to reflect the needs of the 4IR, such as IoT, AI as well as 3D technologies in TVET, and should include non-cognitive skills viz interpersonal and socio emotional skills such as resilience, curiosity and entrepreneurship skills. However, for sustainable and pervasive integration of ICT into curriculum delivery, TVET providers and other stakeholders must consider the strategic readiness; organizational readiness; pedagogical readiness and technical readiness; operational readiness as well as learner readiness.¹²⁵

9.2 Ensure capacity and political commitment:

TVET has not been given its due recognition so far as underlined in the different countries responses from the point of view of funding, parity of esteem, access, quality trainers, and responsiveness amongst others. As a result, strong political commitment and ownership from Governments are needed to realise the scale of the reforms as well as prioritise and take difficult and daring decisions to transform the existing traditional TVET systems and ensure that the digital transformation is positive for populations. Consequently,

- **Government to ensure availability of ICT infrastructure,** internet connectivity and regulations, intellectual property rights and use of technology for the delivering of digital skills to students and make availability of broadband in place before digital learning can take place. Infrastructure has to be in place, and government’s role here is vital, for example to provide bandwidth in remote areas to aid learning. Digital highways need to be built.¹²⁶ Besides, affordable internet connectivity is essential in this revolution, especially "last mile" connectivity¹²⁷ for universities and TVET schools.
- **Government to ensure an adequate supply of better-skilled TVET trainers** who are capable of developing and adapting skills systems that are relevant to the needs of the labour

¹²² Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018 p. Viii

¹²³ Park and Kim, 2009, p. 1915). (Beyond Access: ICT-enhanced Innovative Pedagogy in TVET in the Asia-Pacific p. 4

¹²⁴ Ibid p. 41

¹²⁵ Beyond Access: ICT-enhanced Innovative Pedagogy in TVET in the Asia-Pacific p. 49

¹²⁶ The Digitization of TVET and Skills Systems UNESCO 2020 p. 99 Tan Beng Teong – SHRDC

¹²⁷ The last mile connectivity is defined as the connectivity between the main backbone network and the users'

market in specific contexts. There must be sufficient TVET Trainers who are able to make training much more engaging than conventional modes of delivery. They must all be digitally equipped and provided with tools to inculcate positive attitudes towards learning and build transversal competencies. They must have real experience in the areas they are teaching so that they can better relate their teaching with the specificities of the labour market and give participants real insight into their related challenges.

- **Government to come up with policy measures to attract and retain qualified trainers,** including: creating clear and flexible pathways for becoming a TVET trainer (with commensurate salaries); developing progression routes within the profession for career growth; implementing a consistent training protocol to ensure skills are current and relevant; and enacting minimum competence standards. However, more in-depth research on prospective and current TVET teacher motivations is needed to help inform policy design to ensure reforms succeed (Grijpstra, 2015).¹²⁸ A key priority in efforts to increase the quality and relevance of TVET is the reform of pre-service teacher training and the provision of continuous professional learning for practicing teachers. Another essential point is to train the teaching staff so that they are able to use the technologies effectively in the classroom and demonstrate to students how to use this type of ICT. Hence, it is essential to update TVET teachers' pedagogical skills and to introduce ICT tools for teaching and learning. The UNESCO model as depicted in Figure 6 can serve as a guide for systematic teacher development in the area of ICT-enabled teaching.
- **Government to promote basic digital literacy for the community:** This can prove to be a useful investment so that no citizen is left behind. Government policies must be amended to ensure that digital skills be entrusted to our population at all levels. As we harness technologies, it will be good to ensure a certain level of digital readiness. Perceptions of TVET education will need to change from being education for low academic performers to an instrumental program in the implementation of 4IR initiatives and innovations.

Re-skill and up-skill populations through interactive, adaptive and personalized learning in a cost-effective manner using short-courses, distance learning, and virtual learning and training will also be critical.

9.3 Initiate cross border collaboration:

Challenges that countries face would include human capital capacity and funding. The way forward involves increased collaboration. Rather than starting from scratch, countries can learn from other countries' experiences in regions which have already successfully embarked on the transformation (ACET 2014). For example, to increase access to ICT, both Kenya and Rwanda consider ICT equipment as capital goods, which are zero rated for customs duties. Rwanda has also reduced corporate tax from 30 percent to 15 percent for ICT investors (Banga and te Velde, 2018).¹²⁹ The countries which responded to the questionnaire are all favourable to this initiative. Besides, the main barriers as they point out are financial restrictions and lack of staff expertise. The ADEA must certainly be able to bring its support here with the collaboration with other Regional Economic Communities.

- **Commission detailed studies for countries that are digitally and TVET-ready** to know more about their models and how they have been developed and implemented and study how those models could be shared and adapted to the other countries. Those measures could then be integrated in the different countries TVET policies for implementation.
 - **Possibility of sharing platforms** to develop training materials and facilitate distance learning among institutions, IT professionals, and Internet providers could be explored. There are examples of such existing African Initiatives, as follows:

¹²⁸ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 42

¹²⁹ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 27

- **PASET (Partnership agreement for applied sciences engineering and technology)** is an African initiative which can serve as an effective and flexible platform for countries to collaborate and benchmark initiatives. Other organisations could provide the necessary assistance, both human, technical and financial. Overall, PASET focuses on maximizing investment in key sectors, while increasing the capacity of universities, research centres and technical and vocational education and training (TVET) centres to generate knowledge and create skilled workforces, researchers and innovators relevant to Africa's development challenges.
- **The Digital Economy for Africa Moonshot initiative¹³⁰ of the World Bank** will invest about USD25 billion up to 2030 to support Africa's digital transformation. This provides a huge opportunity for countries that are ready to access it and it could be mobilized to support countries to further develop their digital skill country action plans. PASET offers an effective and flexible platform to collaborate on this and help countries to strategically build their capacity.¹³¹
- **The Regional TVET Initiative¹³², which is financed as a World Bank project**, and has the objective to train highly qualified technicians towards creating a skilled workforce that meets the demands of the economy. The project addresses challenges at the institutional, national and regional levels focusing on priority industries with considerable shortage in TVET level skills such as transport, energy, manufacturing and ICT.¹³³ The possibility of having such an initiative being replicated for digital skills could be looked into.
- **Other possibilities are available, namely:**
 - **African countries can also learn from the experience of partners such as Singapore and Korea** to develop effective country action plans for digital skills. Action plans must focus on well-defined activities, have a clear division of roles and responsibilities, and include a comprehensive budget and clear monitoring and evaluation plan.
 - **The Korean government announced a new "Strategy for Vocational Competency Development Training Innovation for the 4IR"** in April 2019 which aims to eliminate barriers to education and training opportunities, educate future talent to lead innovation, nurture manpower in response to industrial demand, and establish a performance-based society.
 - **Regions to build up regional repositories of content** which will make the sharing and reusing materials or curricula easier. It can also help to determine the enablers and inhibitors of interoperable data management and usage systems; provide evidence of best practice and learnings in terms of approaches in designing, developing and maintaining complex data systems; and explore opportunities for partnership with or usage of existing systems or platforms.
 - **African governments to consider the public-private partnership (PPP) model for infrastructure projects.** In countries outside Africa, the model has proven successful in helping to compensate for low public sector investment in key areas. African countries can benefit from the experience of such countries in developing robust PPPs that channel the necessary resources to key areas for the development of infrastructure for connectivity.¹³⁴

¹³⁰ With the aim to digitally connect every individual, business and government in Africa by 2030, the African Union, with the support of the World Bank Group, has embarked on an ambitious journey—a "moonshot" that will help countries accelerate progress, bring high-speed connectivity to all, and lay the foundations for a vibrant digital economy

¹³¹ World Bank, 5th PASET, Destination digital Africa, May 2019, Kigali, Rwanda

¹³² The Regional TVET Initiative, currently implemented as a World Bank-financed project, will develop highly specialized regional flagship institutes in 16 selected TVET institutions in sub-Saharan Africa (SSA). ... The interventions under the project will be at 3 levels – regional, national, and center-level

¹³³ Ibid p. 20

¹³⁴ AFDB Potential of the fourth industrial revolution in Africa p. 124

- **Revise the price of Fibre optics connectivity for TVET institutions and Universities.** Fibre optics has increased a lot and National Research and Education Networks (NRENs) have done tremendous work to improve connectivity between universities. However, the pricing for connectivity is still high and more work is needed for TVET schools' connectivity. African Universities and TVET will need essential infrastructure to produce knowledgeable and skilful youth. They will also need to connect with each other and discuss to mobilize resources for research in science, technology and innovation.

9.4 Seek smart ways to lower costs:

Building new infrastructure is particularly expensive, but alternative measures such as establishing virtual science labs in schools, replacing boarding schools with less costly day schools closer to student populations, relying on multi-skilled teachers to teach several subjects while streamlining the curriculum, and engaging the private sector to help provide capacity can help lower costs in the face of increased demand.¹³⁵

- **Combine textbooks in certain subjects and an increasing use of electronic materials and technology** at least in the beginning. Governments can help build capacity for ICT use in education through developing comprehensive and integrated ICT strategies that focus on building capacity overall, pedagogy and training teachers to use and apply ICT across subjects; integrating digital content into the curriculum; and considering public-private partnerships to share costs (Bashir et al, 2018).¹³⁶ However, use of the 3D virtual reality system requires a dedicated space. The cost is significant, so a dedicated budget is needed, especially if immersive environments are installed on multiple campuses. For 3D augmented reality, the cost is lower as mobile devices can be used. Students can use their own mobile devices or school supplied devices.¹³⁷
- **Countries to consider promoting digitalization of teaching:** Access to resources is almost unlimited and this can address the issue of geography by using the internet. Technology can give a more personalized experience and ensure material is most up-to-date.

¹³⁵ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 43

¹³⁶ Future of Work in Africa - Implications for Secondary Education and TVET Systems 2018-p. 40

¹³⁷ Beyond Access: ICT-enhanced Innovative Pedagogy in TVET in the Asia-Pacific p. 41

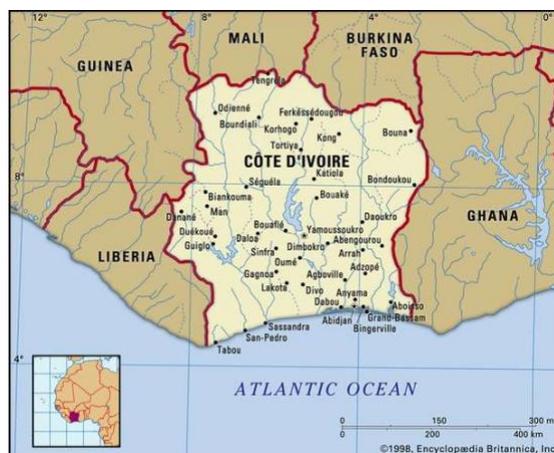
ANNEX I : List of participating countries

	Countries contacted	Countries with background paper	Countries which returned the questionnaire
1	Angola	yes	no
2	Ivory Coast	yes	yes
3	Gabon	yes	no
4	Liberia	yes	no
5	Mauritius	yes	yes
6	Morocco	yes	yes
7	Rwanda	yes	yes
8	Uganda	yes	yes

ANNEX II : Country Background Papers

Côte d'Ivoire

The Republic of Ivory Coast is located in West Africa and covers an area of 322,462 km². With a population of nearly 27 million, it has a population density of 73 people per km². Its capital is Yamoussoukro. It is bordered to the east by Ghana, to the west by Liberia and Guinea and to the north by Mali and Burkina Faso. It has a coastline of just over 500 km in its southern part. The relatively smooth relief is made up of plains in the South, tiered plateaus in the Center and North and mountains in the West, the highest point of which is Mount Nimba (1,753 meters). It is accompanied by seasonal tropical movements marked by heavy monsoon-like rainfall in many parts of the country: average annual rainfall varying between 900 mm (in the North) and 2,300 mm (in the South).



Administratively, the country is divided into 14 districts including two autonomous districts (Abidjan and Yamoussoukro), 31 regions, 108 departments, 510 sub-prefectures and 197 communes. At the decentralized level, the region is headed by a regional prefect, the department by a department prefect and the sub-prefecture by a sub-prefect. At the decentralized level, the District is led by an appointed Governor, the region by a President of the Regional Council and the Municipality by an elected Mayor.

The Western African country was hailed as a model of stability. But an armed rebellion in 2002 split the nation in two. Since then, peace deals alternated with renewed violence as the country slowly edged its way towards a political resolution of the conflict.

Despite the instability, Ivory Coast is the world's largest exporter of cocoa beans, and its citizens enjoy a relatively high level of income compared to other countries in the region.¹³⁸

Human Development Record

HDI

Table 1: Côte d'Ivoire Human Development Record, 2018

Human Development Index (HDI) (Value)	Life expectancy at birth (Years)	Expected years of schooling (Years)	Mean years of schooling (Years)	Gross National Income (GNI) per capita (2011 PPP \$)	GNI per capita rank minus HDI rank	HDI Rank (out of 189)
0.516	57.4	9.6	5.2	3,589	-16	165

Source: Human Development Report 2019, pg. 302¹³⁹

Côte d'Ivoire's HDI value for 2018 is 0.516 – which put the country in the low human development category – positioning it at 165 out of 189 countries and territories. Between 1990 and 2018, Côte

¹³⁸ <https://www.bbc.com/news/world-africa-13287216>

¹³⁹ <http://hdr.undp.org/sites/default/files/hdr2019.pdf>

d'Ivoire's HDI value increased from 0.391 to 0.516, an increase of 31.8 percent. Adult literacy rate is 43.8% (Male 63.7% and Female is 47.2%).¹⁴⁰

Between 1990 and 2018, Côte d'Ivoire's life expectancy at birth increased by 4.2 years, mean years of schooling increased by 3.2 years and expected years of schooling increased by 3.7 years. Côte d'Ivoire's GNI per capita increased by about 27.9 percent between 1990 and 2018.¹⁴¹

Gender Inequality Index

Table 2: Côte d'Ivoire gender inequality index, 2018

	Value	Rank
Gender Inequality Index (2018)	0.657	157

Source: <http://hdr.undp.org/sites/default/files/hdr2019.pdf>

Côte d'Ivoire has a GII value of 0.657, ranking it 157 out of 162 countries in the 2018 index. In Côte d'Ivoire, 9.2 percent of parliamentary seats are held by women, and 17.8 percent of adult women have reached at least a secondary level of education compared to 34.1 percent of their male counterparts. Female participation in the labour market is 48.3 percent compared to 66.0 for men.¹⁴²

Economy

Since the colonial period and after its independence, Côte d'Ivoire took advantage of its favourable natural geographical situation and rich arable land and opted for agricultural development as its first economic pillar, with export crops such as coffee, cocoa, latex, sweet /bananas and, more recently, cashew nuts. Today, agriculture still accounts for about 20 per cent of GDP. The sources of growth on the supply side are mainly found in agricultural exports (18.7% growth in 2017), trade (8.0%) and banking and insurance (18.0%). These three sectors contributed 1.99, 0.68 and 0.64 points to GDP growth in 2017.¹⁴³

The economy has expanded by an average of 8% per year since 2011, making Côte d'Ivoire one of the fastest growing countries in the world. However, the country's GDP growth has gradually declined from 10.1% in 2012 to 7.7% in 2017 and is estimated at 7.4% in 2018.¹⁴⁴

The economy continues to post good numbers. Real GDP growth was 7.4% in 2018 and 2019, and could remain above 7.0% during 2020–21, assuming good rainfall and favourable terms of trade. The service sector remains the main driver of the economy, contributing 3.4 percentage points to growth in 2018. Industry contributed 1.5 percentage points in 2018 thanks to a dynamic agrifood industry and construction and public works sector. The primary sector contributed 0.8 point thanks to agriculture, which benefited from good rainfall and seed distribution by the government. The contribution of extractive industries fell due to the slump in oil production.¹⁴⁵

For 2019-20, the service sector and private investment will remain the main sources of growth and should benefit from the dynamism induced by new activities in trade, transportation, and telecommunications.¹⁴⁶

Cacao farming contributes 15% of GDP and about 38% of exports In September 2019, Côte d'Ivoire and Ghana (62% of world production) signed an agreement to increase the bean prices paid to

¹⁴⁰ From questionnaire

¹⁴¹ http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/CIV.pdf p.2/3

¹⁴² http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/CIV.pdf p.6

¹⁴³ State of skills: Ivory Coast, ILO 2019/20 Pg. 8

¹⁴⁴ <https://www.worldbank.org/en/country/cotedivoire/overview>

¹⁴⁵ African Economic Outlook 2019, Country Notes – Ivory Coast, Pg. 148 <https://www.afdb.org/en/documents/african-economic-outlook-2020>

¹⁴⁶ Ibid

farmers. Agricultural processing will benefit from the growth in private investment, which should remain above 10% in 2021.¹⁴⁷

Based on the assumptions and priorities that have been presented, the 2020 budget has been balanced in terms of resources and expenditure (resources equal to expenditure) at 8,061 billion CFAF against an amount of 7,334.3 billion CFAF for the 2019 budget. The 2020 budget therefore increases by 726.7 billion CFAF, or 9.9% compared to the 2019 budget.¹⁴⁸

Concerning projects and infrastructures in the education-training sector, the 2020 budget allocates 1,342.0 billion (1 USD = 555 CFA) to the education-training sector, including 107.9 billion for projects and educational infrastructure.

Another aspect of the diagnosis relating to costs and funding shows a constant and significant commitment of the State for several years in favour of education. Indeed, the share of public education expenditure as a percentage of GDP has exceeded 4% for nearly two decades, a level that places Côte d'Ivoire among the countries in the sub-region investing the most in its education system.¹⁴⁹

Poverty

After a decade of political and economic crisis, the Ivory Coast has recorded since 2012, strong economic performance accompanied with substantial poverty reduction. The poverty rate has declined to 28 percent (\$1.90 a day poverty line, 2011 PPP) in 2015, down from an estimated 34 percent in 2011. The poverty rate using the national poverty line was down to 46 percent in 2015. Strong economic growth was a driver of poverty reduction during this period, although the benefits have not been equally distributed. While GDP growth is driven by retails and construction, employment is highly concentrated in agriculture (family farms) and non-agricultural self-employed occupations mostly owned by women with no formal education.

The recent deceleration of growth, although at 7 percent, will slow down poverty reduction. Meanwhile the recent increase of farmgate cocoa prices is favourable to poor cocoa farmers and is incentivizing growers. Prospects for cocoa production remain historically high. However, the recent corona virus outbreak is expected to hamper cocoa consumption in short term in China, the main driver of global cocoa consumption, creating an excess supply that will pressure prices downward. Besides, the expansion of cash transfer program designed to support poor households is expected to reduce the number of those living in poverty. However, the expected elimination of some VAT exemptions might have negative distributional impacts.¹⁵⁰

The Labour Market

The Ivorian population, estimated at 23,681,171 inhabitants, comprises 62.8% of the working-age population and lives mainly in urban areas (52.8% including 21.1% in Abidjan). This population is extremely young insofar as 63.1% are at most 35 years old and is also poorly educated (73.1% have at most primary level). The labour force was estimated at 8,658,707 people in July 2016 (with men at 60.1%), and by low-skilled people (73.5% have at most primary level).¹⁵¹

Despite the efforts of the Government, a large segment of the population, especially young people, does not yet have access to gainful employment or profitable productive activity. This segment of the population is the most vulnerable in the labour market. Total unemployment rate is of the order of

¹⁴⁷ Ibid

¹⁴⁸ http://budget.gouv.ci/uploads/docs/Budget%20Citoyen_2020_30-04-20.pdf Pg. 27
https://www.google.com/search?q=budget+citoyen+2020+cote+d%27ivoire+pdf&rlz=1C1CHZL_enMU741MU741&oq=Budget+citoyen+2020&aqs=chrome..69l67j0j15&sourceid=chrome&ie=UTF-8

¹⁴⁹ Education/Training Sector Plan 2016-2015 p. 24

¹⁵⁰ Poverty & Equity brief, Ivory Coast, April 2020; https://databank.worldbank.org/data/download/poverty/33EF03BB-9722-4AE2-ABC7-AA2972D68AFE/Global_POVEQ_CIV.pdf

¹⁵¹ National Employment Policy 2016-2020 p. 19

5.3%¹⁵², which is not bad at all. Beyond unemployment, the jobs held are more precarious. In 2016, 98.7% of young people aged 14 to 24 and 94.7% of those aged 25.34 were employed in the informal sector.¹⁵³

Young people are especially victims of the mismatch between training and employment. This phenomenon has been unanimously criticized since the publication of the ILO report on “the diploma syndrome and graduate unemployment”. All the reports on the match between the diploma and the employment of technical and academic structures have constantly updated this information. Low qualification, the orientation of the training system by supply and not by demand and initial training deemed too theoretical are factors that limit the employability of job seekers, especially young people.¹⁵⁴

The agro-industrial sector accounts for about 50 per cent of manufacturing and 8 per cent of GDP. However, the variety and complexity of processing activities are limited. The potential for added value and job creation, particularly in small and medium-sized businesses, is therefore significant (World Bank, 2019). In total, the secondary sector represents about a quarter of GDP and 6 per cent of jobs. The tertiary sector, which accounted for 46.2 per cent of employment in 2019, contributes 32.3 per cent to GDP (World Bank, 2019).¹⁵⁵

The significant place of agriculture in the country’s development strategy requires substantial skilled labour for its continued performance. Indeed, Côte d’Ivoire faces the challenge of modernizing agricultural production in order to minimize its environmental impact, improving working conditions, including by eliminating child labour in the cocoa industry, and supporting the development of higher value-added processing activities. However, the current vocational training system in agriculture lacks sufficient resources to ensure the development of skills in a sector that accounts for almost 50 per cent of jobs.¹⁵⁶

The Education and Training system

TVET Architecture

The general objectives of TVET in Ivory Coast are¹⁵⁷:-

- To respond to the training needs of the population to make them employable and prepare them for the socio economical life, and
- To develop the human capital of enterprises to enhance their performance and competitiveness

Those objectives are based on seven strategies, namely:

- Partnership for work-based training and access to the job market.
- Access to training.
- Range of training offered.
- Skills certification.
- System governance.
- Clean-up and supervision of private establishments.
- Funding of the TVET system

School attendance to the age of 16 became compulsory in 2016 but the primary school completion rate remains low. In 2017, 78.5 per cent of boys completed primary school compared to 64.7 per cent of girls. High tuition costs and distance are the main reasons why young people do not attend school.

¹⁵² From questionnaire

¹⁵³ Ibid p. 21

¹⁵⁴ Ibid p.21

¹⁵⁵ States of skills: Ivory Coast, ILO 2019/20 Pg. 9

¹⁵⁶ States of skills: Ivory Coast, ILO 2019/20 Pg. 10

¹⁵⁷ From questionnaire

In secondary and tertiary education, school enrolment rates are similar to the average for Sub-Saharan African countries, i.e. 51 per cent and 9.3 per cent respectively (UIS, 2019). The low enrolment rates over the past 30 years are reflected in the low education level of the population aged 15-34, 50 per cent of whom have not completed primary school and only 24 per cent of whom have continued beyond the primary level.¹⁵⁸

In 1970, a high economic growth in Ivory Coast prompted the creation of a Ministry of Technical Education and Vocational Training. This was at the base of a strong quantitative and qualitative training development. There followed the setup of different training structures to support the economic growth which contributed to the training of the rural population, the production of skilled artisans, technicians, High skilled technicians, engineers, trainers and continuous professional development of in-service employees.

Governance

TVET is currently under the supervision of the Ministry of National Education, Technical Education and Vocational Training. In contrast with general education which enjoys a stable institutional frame and ministerial continuity, TVET is poorly grounded institutionally and very unstable. Since 2011, TVET institutional affiliations and ministers have changed at least four times. Various mergers, splits, and relocations of departments and central offices have prejudiced the long-term vision and actions.¹⁵⁹ The role of the relevant central departments and related structures is to develop, design and plan the national training policy, draw up curricula and syllabuses, plan the sequence of teaching programmes, manage programmes and projects, mobilize human, material and financial resources and monitor and evaluate courses and activities. Regional and departmental offices are responsible for the implementation and execution of the national vocational training policy at the local level.¹⁶⁰

There are five main TVET supervisory entities in Côte d'Ivoire¹⁶¹:

- i. The Teaching Institute for TVET Tuition (IPNETP), in charge of pedagogical research as well as of trainers' and supervisors' initial and continuing training;
- ii. The National Agency for Vocational Training (AGEFOP), a consultancy in vocational training design tasked with researching and analyzing vocational training needs and meeting them through the implementation of projects;
- iii. The Vocational Training Development Fund (FDFP), which funds initial and continuing training with revenue from the training tax (0.4% of the private sector payroll) and the additional tax for continuing vocational training (1.2% of the private sector payroll);
- iv. The Ivorian Centre for the Development of Vocational Training (CIDFOR), in charge of promoting vocational training in Côte d'Ivoire using information technology and documentation; and
- v. The Centre for the Promotion of New Information and Communication Technologies (CPNTIC), for the promotion and development of information and communication technologies (ICT) in technical and vocational education and training.

In addition to the TVET system overall, a number of training institutions operate under the supervision of more than ten technical ministries. The ministries for agriculture and fisheries account for about ten of these institutions, with an estimated 3,000 students. Other ministries such as health, social affairs, industry, commerce, culture, sports, communication and telecommunications and many others have similar training centres.¹⁶² To date it is not possible to make a comprehensive quantitative and qualitative assessment of the training delivered by these providers. This sectoral setup operates

¹⁵⁸ Ibid p. 11

¹⁵⁹ Ibid p. 22

¹⁶⁰ From questionnaire p. 22

¹⁶¹ Ibid p. 23

¹⁶² States of skills: Ivory Coast, ILO 2019/20 Pg. 33

outside the traditional training system; consequently, credentials issued in one system are not recognized in the other. As part of the TVET reform, an alignment is being undertaken, with the intention of including these centres¹⁶³.

It is important to note the kind of relationship that industry has in various aspects of TVET as below. Industry is involved in the following:¹⁶⁴

- Different processes of TVET such as planning
- Design of curriculum
- Donation of equipment
- Industrial placement of trainees
- Industrial placement of Trainers
- Part time Trainers from Industry

Contrarily Industry is not involved in the following activities:

- Involvement in Management of Training Centres
- Tailor-made training with industry

With regard to a mechanism to set standards and qualifications for any occupation, skill, technology or trade in line with the needs of the labour market, there exists a public private partnership (PPP) and the setting up of 13 professional branches. A mechanism is currently being developed to come up with standards and qualifications for each occupation and competency for each trade depending on the labour market needs.¹⁶⁵

Management of Training centre

As part of quality enhancement, every training centre needs to have a Management Committee. According to the respondent, training centres have a Management Committee on which are represented parents, trainers representatives and the Director of the Training Centre.¹⁶⁶ Industry is not represented. Yet according to the respondent, regulation n°2018-874 of 22 November 2018 makes provision for a new governance of TVET Training Centres with a joint steering committee of each Training Centre. It made mention of a strong presence of private sector in the management of training centre and provides a certain level of autonomy and flexibility to the management of the training centre. It seems that a pilot testing is on for the past two years and after evaluation, it will be extended to all training centres in 2021.

Access and Equity

To deliver training to students, Côte d'Ivoire has public training institutions, public training delivery units (some of which are mobile) in rural areas and approved private training institutions and consultancies.¹⁶⁷

Table 3: Statistical survey collection report 2018-2019

Status of training centre	Authorized training centres	Functional			Non-functional	Return rate (Collected/ (Collected + not collected))
		With learners		Without learners		
		Data Collected	Data Not collected			

¹⁶³ Ibid p. 33

¹⁶⁴ From questionnaire

¹⁶⁵ From Respondent

¹⁶⁶ From Respondent

¹⁶⁷ MNETEVT annual statistics 2018/19 p. 12

Public	75	73	0	2		100,0%
Private	460	210	7	71	172	96,8%
Private TC	409	180	6	64	159	96,8%
Consultancy	51	30	1	7	13	96,8%
Total	535	283	7	73	172	97,6%

Source: MNET EVT annual statistics

There were 535 Training Providers comprising 75 public and 460 private Training centres and consultancies in 2019. However, according to the table above, 172 Training centres were not functional at the time of the survey carried out in 2019, all private. To note, there was a total of 680 private training institutions and consultancies in 2017, against 433 in 2011, a 57% increase.¹⁶⁸

The different modes of training delivery are:

- Pre service mode of training (Initial)
- Dual apprenticeship mode of training
- Qualifying vocational training

Table 4: Number of private training centres from 2011 to 2016

	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016
Pvte TCs	306	330	352	381	507
Consultancies	127	132	140	148	173
Total number of Pvte TCs	433	462	492	529	680

Source: Données DEEP, DPS/METFP

In fact, the 62 existing public TVET institutions are spread fairly equally throughout the country. In contrast, public establishments under construction are mainly concentrated in the southern half of the country.

There are 13 public training delivery units operating in rural areas, with 10 mobile training units offering non-formal training and 3 application and production workshops to develop the skills of craftspeople and provide logistical support to young graduates.

Public sector training institutions, the number of which has hardly changed since 2002, have an average annual intake capacity of 35,000. Almost all the buildings of the public system are derelict and the equipment obsolete. As a result of political commitment and economic recovery, the number of TVET students has increased from 39,365 in 2011 to 107,060 in 2017. The private sector provides the majority of courses on offer (63.4% against 36.6% in the public sector).¹⁶⁹

¹⁶⁸ ETFP PSR 2016-20 p. 17

¹⁶⁹ States of skills: Ivory Coast, ILO 2019/20 Pg. 31

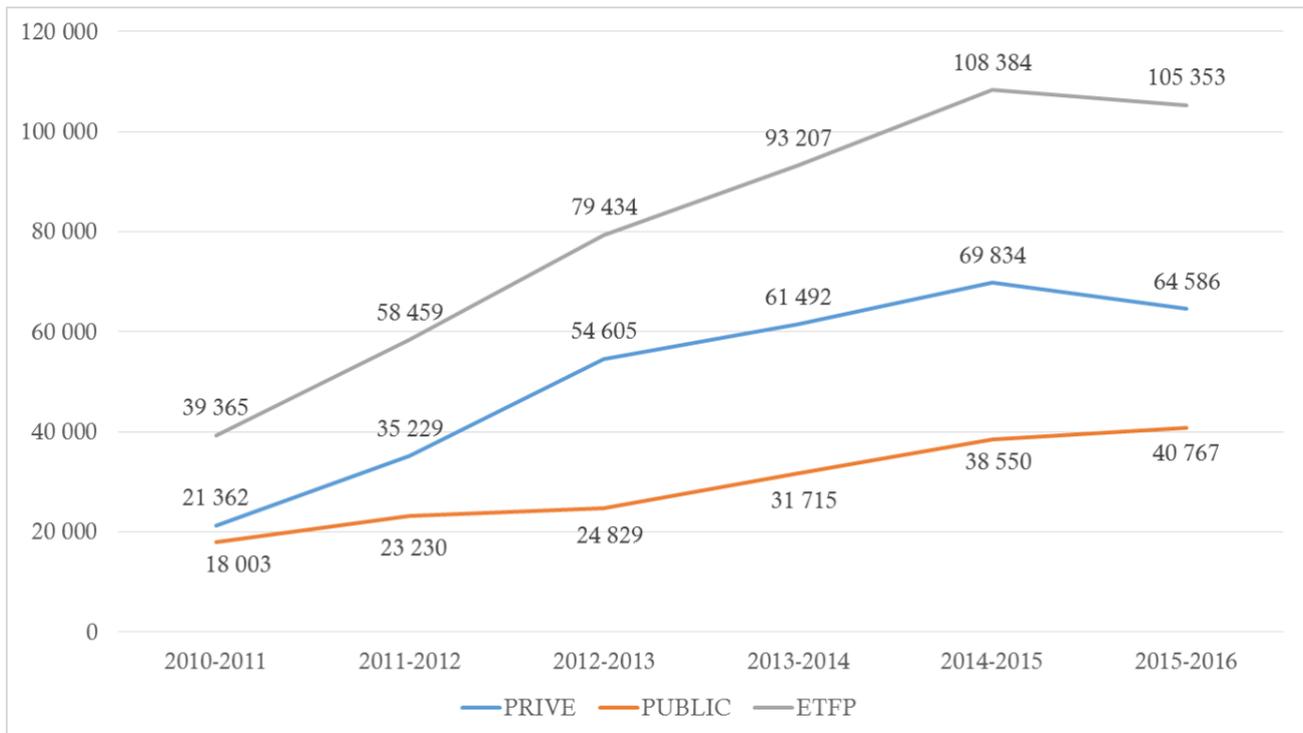


Figure 1: Number of trainees in public and private TCs¹⁷⁰

As part of the TVET reform, a vast programme for the construction of infrastructure is under way (28 public institutions to increase the public TCs to 90) throughout the country to significantly increase the delivery of training in various vocational streams. The objective is to increase capacity in public training centres from 40 767 students and trainees in 2016 to 100 000 in 2020.¹⁷¹

One problem lies in the lack of consultation with local and sectoral stakeholders prior to setting up new training institutions.¹⁷²

A few programmes and projects have been or are being implemented to give access to the job market to vulnerable populations or improve their employability, particularly young people without formal qualifications and women. Programmes run by the Ministry of Youth Promotion and Employment can be aggregated into three groups, totalling 49,869 participants over 2018-2019. They are¹⁷³:

- Skills development programmes with 9,199 participants: Additional Non-formal Training (FCQ), Training as a Passport for Employment (driver's licence), Apprenticeships and Training Worksite Programme;
- Internship Programmes with 11,877 participants (Qualifying Internship, AEJ School Internship, THIMO (Travaux à Haute Intensité de Main d'oeuvre), THIMO AEJ and THIMO BCP-E Programmes);
- The Youth Entrepreneurship Programme with 21,929 participants (AEJ funding platform, operation "Action for Youth", Enable Youth BAD and the Poultry Farming Programme (PAPAN)).

The place of TVET in secondary education is still limited, with 5.72 per cent in 2018 despite an upsurge in enrolments in recent years (UIS Data). Overall, men and women are equally represented,

¹⁷⁰ ETFP PSR 2016-20 p. 18

¹⁷¹ ETFP PSR 2016-20

¹⁷² States of skills: Ivory Coast, ILO 2019/20 p. 31

¹⁷³ States of skills: Ivory Coast, ILO 2019/20 Pg. 36

with some disparities depending on the status of the institution. In the private sector, about 54 per cent of students are women, against 46 per cent in the public sector.¹⁷⁴

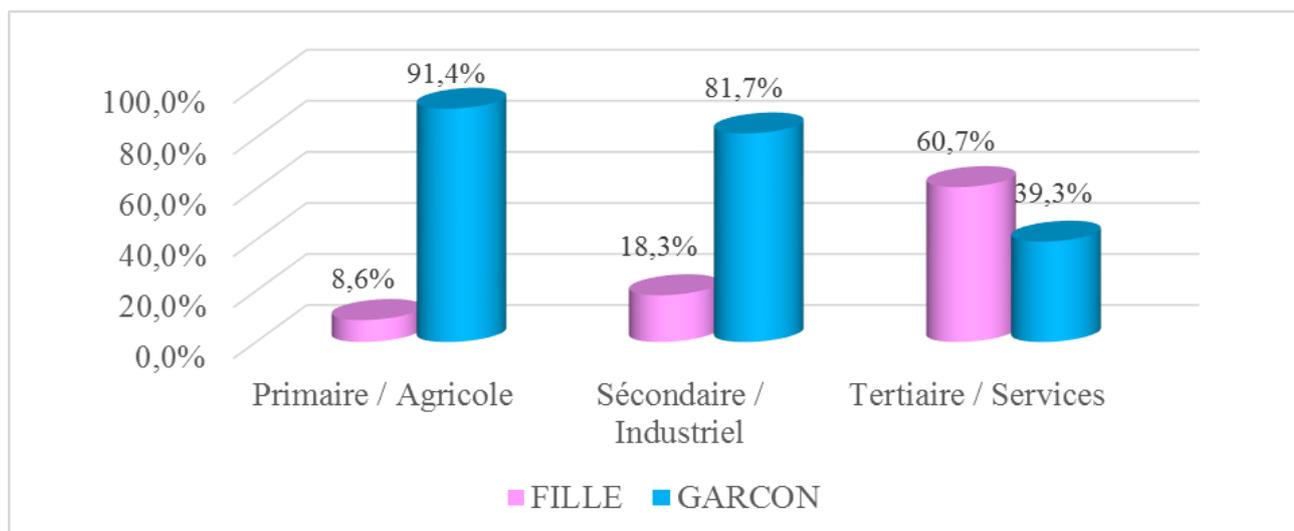


Figure 2: percentage of enrolment in the different sectors on a gender basis¹⁷⁵

In TVET, enrolment almost tripled from 2005, reaching 105,353 learners in 2016, 49% of whom were girls. This development was attributable to the increase in enrolment in tertiary technical education, which represented 72.5%.¹⁷⁶ The near equality observed between the number of girls and boys, however, masked a low presence of girls in the agricultural and industrial sectors, i.e. 8.6% and 18.3% of the enrolment respectively, unlike the tertiary sectors where they constituted the most of the enrolment with a proportion of 60.7%. The reform aims to incite more girls to enrol on TVET courses to increase the percentage from 18.3% in 2016 to 30% in 2020 and 50% in 2025. In addition to maintaining the significant gender differential within the sectors, the strong growth in the number of TVET enrolment was not enough to resolve the question of the relevance of the current training offer to the needs of the Ivorian economy. In fact, data from the Ministry responsible for Technical Education and Vocational Training showed that agricultural sectors were almost non-existent with a rate of 0.2% of learners, while tertiary sectors were strongly represented, i.e. 72.5% of learners far ahead of industrial sectors, which only accommodated 27.3% of the trainees. In terms of geographic distribution, almost all technical and vocational training establishments were in urban centres and the private sector controlled the majority, thus limiting access to young people from poor families.¹⁷⁷

The very first cause of poor access to TVET and higher education related to the limited number of infrastructures available to these levels of education due to the high costs of acquiring and maintaining these infrastructures as well as low share of the national budget devoted respectively to these sub-sectors.

The other weakness of these sub-sectors (TVET and higher education) lies in the low absorption of graduates by the labour market. Several reasons relating to insufficient learning conditions explain this situation. These include in particular: the unresponsiveness of training programs to the needs of the economy and the absence of a systematic retraining policy for trainers with regard to technological development, obsolescence of equipment and obsolescence of infrastructure, the inadequacy of the legal and institutional framework, the weakness of the partnership with the private sector and the involvement of professionals in the management of establishments, the unsuitability of training conditions to the needs of specific groups such as women and people living with a disability, the lack

¹⁷⁴ Ibid p. 30

¹⁷⁵ ETFP PSR 2016-20 p. 19

¹⁷⁶ Ibid p. 19

¹⁷⁷ Education training sector plan 2016-25, p. 19

of linkage between general education and vocational training, the lack of quality assurance and continuous improvement mechanisms, the weakness of the accreditation system and monitoring of private training establishments, prohibitive training costs and poor monitoring of the professional integration of graduates.¹⁷⁸

The challenge is to increase TVET enrolment to at least 25% of secondary education by 2025.

A major regulation with respect to apprenticeship mode of training delivery was passed in 2019, n° 2019-118 of 06 February 2019. The aim was to ensure a greater number of youth, irrespective of their education level, to access TVET in areas relating to industries and their situation. In this context, an experimental phase of Apprenticeship mode of training has been launched in January 2020 with some 6000 apprentices.¹⁷⁹

TVET Funding

Whilst the private sector contributes to the funding of vocational training, the main source of TVET funding remains the State. However, the share allocated to TVET remains very small compared to the total government budget for the education sector (6.96% of the education budget allocated to TVET)¹⁸⁰. Despite the role that the State intends to give this type of education in order to achieve its ambitious goal of becoming an emerging country by 2020, and despite the increase in enrolments from 5 per cent to 7 per cent, TVET funding has remained constant in recent years at around 41 billion CFA francs. And yet, in view of the obsolescence of management tools, the destruction of a large quantity of training materials following the long crisis and compulsory school attendance, this sector should receive the greatest degree of attention. Most of the resources allocated to TVET go to teachers' salaries and operating costs (93%). The share allocated to work equipment and tools accounts for only 7 per cent of the total budget. Of this amount, 21 per cent goes to subsidise private vocational education, which accounts for 63.4 per cent of the total student intake. With this level of funding, private training providers have to rely heavily on tuition fees to cover their costs.¹⁸¹

The private sector financial contribution to TVET comes from two taxes: the initial tax for apprenticeship vocational training (0.4% of the private sector payroll) and the additional tax for continuing vocational training (1.2% of the private sector payroll), both of which are collected and managed by the Vocational Training Development Fund (FDFP). In addition, as part of the TVET reform, the private sector has helped fund the definition of occupational sectors, with the support of donors and the work of the Occupational Sectors Commissions. In addition, in 2018, the private sector, with ILO support, financed the survey on skills requirements for four occupational sectors (construction, mining and quarrying, hotels and restaurants, banking and microfinance). However, private sector funds are mainly directed towards the tertiary sector, where training costs are low. To date, the private sector has not undertaken to help provide heavy equipment for training workshops, which is the most expensive component of TVET.¹⁸²

TVET in Côte d'Ivoire has for many years enjoyed strong support from technical and financial partners (TFPs) as part of multilateral cooperation, as well as support from some countries as part of bilateral cooperation, including Brazil, France, Germany, Japan and Morocco. This support comes in the form of budget contributions or the execution of TVET development projects.¹⁸³

Quality and Relevance

Quality Assurance

¹⁷⁸ Ibid p. 29

¹⁷⁹ From questionnaire

¹⁸⁰ From questionnaire

¹⁸¹ State of skills; Ivory Coast, ILO 2019-20, p. 26

¹⁸² Ibid p. 27

¹⁸³ Ibid p. 27

As mentioned above, the TVET subsector is fraught with a series of weaknesses, namely: the unresponsiveness of training programs to the needs of the economy and the absence of a systematic retraining policy for trainers with regard to technological development, obsolescence of equipment and obsolescence of infrastructure, the inadequacy of the legal and institutional framework, the weakness of the partnership with the private sector and the involvement of professionals in the management of establishments, the unsuitability of training conditions to the needs of specific groups such as women and people living with a disability, the lack of linkage between general education and vocational training, the lack of quality assurance and continuous improvement mechanisms, the weakness of the accreditation system and monitoring of private training establishments, prohibitive training costs and poor monitoring of the professional integration of graduates¹⁸⁴.

To provide quality tuition in both public and private TVET, the ministry in charge of training has set up a Department of Teaching Streams, Innovation and Quality (DFIQ), which is responsible for the qualitative assessment of training courses, programmes and curricula delivered, with a view to gradually reviewing them in accordance with established standards. However, this newly created department has only just begun its work. It is still understaffed and lacks the means and tools to carry out its tasks. In the meantime, this is done by the General Inspectorate, which deploys inspectors throughout the country to evaluate teaching methods and teachers. The purpose of this assessment is to verify the alignment between the curricula developed and those actually delivered. But in the field, it is difficult to differentiate between these entities. Moreover, having designed the training courses and curricula, this department cannot sufficiently distance itself to assess their quality (conflict of interest).¹⁸⁵

In 2016-2017, an administrative audit was carried out in only half the TVET establishments (DPS, 2016-2017). The situation is pressing in public TVET institutions, with only 26 per cent being audited. TVET teachers are also very rarely assessed on teaching techniques. Still in 2016-2017, the proportion of teachers with TVET classroom responsibilities who were assessed on teaching methods was only 8 per cent (DPS, 2016-2017). Some training institutions tried to take steps to safeguard the quality of their services, for instance, AGEFOP (Agence Nationale de la Formation Professionnelle), which set up a Quality Department to carry out an assessment at the end of each project to identify strengths and weaknesses and measure the impact on students, apprentices' supervisors and employers.¹⁸⁶

As the private sector provides the majority of training courses (63.4% against 36.6% in the public sector), a special department within the Ministry of National Education and Vocational Training is assigned to it, the Department for the Supervision of Private Schools (DEEP). The main responsibility of this department is the administrative supervision of private TVET structures through an accreditation system.¹⁸⁷

The employment rates of the TVET graduates are not very high, though there has been a consequent increase from 2016 to 2018 as per table below. It must be pointed though that the pass rate is fairly high (CAP 88.52%; BEP 77.62%; BT 88.83%).¹⁸⁸

Table 5: Employment rate of TVET graduates¹⁸⁹

Year	2016 (8 mths after graduation)	2017 (9 mths after graduation)	2018 (9 mths after graduation)
Employment rate	14.43%	37.05%	32.06%

¹⁸⁴ Ibid p. 29

¹⁸⁵ State of skills; Ivory Coast, ILO 2019-20 p. 35

¹⁸⁶ Ibid, p. 35

¹⁸⁷ Ibid p. 34

¹⁸⁸ From questionnaire

¹⁸⁹ From questionnaire

Respondent stated that TVET has an enabling role in national development and reform agendas. In this respect, a joint steering committee for TVET was established in 2016. And in order to better respond to the needs of companies and to the world of work with a view to enhance employability of TVET graduates, a series of measures were adopted viz 35 pedagogical supervisors and 10 Trainers were trained to develop competency based curricula, 11 training programmes were revisited together with the private sector, 6 new fields of training, 10 new programmes in agro industry, renewable energy and energy efficiency.

Curriculum

Technical support from employers' organizations and trade unions is important to resolve the thorny issue of the mismatch between training and employment. As part of the TVET reform, a partnership agreement was signed in 2009 between the Ministry for Technical Education and Vocational Training, on the one hand, and the private sector and trade chambers, on the other, through the following organizations: the General Confederation of Côte d'Ivoire Businesses (CGECI), the Federation of Small and Medium Enterprises (FIPME), the Movement of Small and Medium Enterprises (MPME), the Chamber of Commerce and Industry of Côte d'Ivoire (CCI-CI), the National Trade Chamber of Côte d'Ivoire (CNM-CI) and the National Chamber of Agriculture of Côte d'Ivoire (CNA-CI). All these entities played an important role in drafting the TVET reform documents and in implementing it through their involvement in various bodies.¹⁹⁰

However, this strong collaboration at the highest level between the private sector and the State does not appear to filter down to the businesses and training institutions that are supposed to implement the agreements. The work of SERFEs indicates that businesses are still reluctant to open their doors to graduates of the training institutions, whether for internships or for hiring. Moreover, it seems that most companies are still unaware of the existence of training institutions capable of providing the profiles sought in their industries.¹⁹¹

Under the partnership agreement between TVET and the private sector, skills identification and anticipation is allocated to the National Council of Occupational Sectors (CNBP), with the support of the National Coordination Body for Advisory Vocational Commissions (CN-CPC). Each of the 13 sectors is responsible for identifying the skills requirements of the sector. Members of the occupational sectors have now been trained, which enabled them to develop some fifty training programmes. The implementation of these courses is, however, hampered by a shortage of financial resources in the administration and training institutions.

It is generally felt that training programmes have changed little in 30 years despite evolving skills requirements. Some occupations with training methods and tools that do not reflect current production systems are no longer of interest to students but they continue to be offered in training institutions. This is the case, for example, for basket weaving at the Grand Bassam Vocational Training Centre (with only one student) and ceramics at the Katiola Ceramics Centre. The challenge is to ensure continuous updating and adaptation of training programmes to the needs of the economy.

Due to limited resources, training providers are usually not in a position to systematically assess labour market requirements, with the exception of the National Agency for Vocational Training (AGEFOP), which has a Prospective Study Department and an Engineering and Development Department.¹⁹²

Poor anticipation of skills requirements is reflected in the mismatch between training courses offered and training needed. Training for agricultural and livestock technicians, for example, is only available

¹⁹⁰ State of skills; Ivory Coast, ILO 2019-20, p. 24

¹⁹¹ Ibid p. 25

¹⁹² State of skills; Ivory Coast, ILO 2019-20, p. 28

in a few specialized centres, with a total of about 3,000 students. This is very inadequate when nearly 50 per cent of the jobs nationally are concentrated in agriculture.¹⁹³

One major challenge is to be able to regularly review the training programmes to better respond to the labour market.¹⁹⁴

Training facilities

The application of the practical component that must follow theoretical training is poor, due in particular to a lack of financial resources for equipment and materials.¹⁹⁵ According to the respondent to the questionnaire, 85% of training centres have access to running water, electricity and latrines and only 38.5% have internet access.¹⁹⁶

Almost all the buildings of the public system are derelict and the equipment obsolete.¹⁹⁷

TVET Trainers

According to the DPS (Department for planning and statistics, Ministry for Technical Education and Vocational Training), in 2016-2017, TVET as a whole comprised 14,240 supervisory staff (teachers, administrative and management staff). One third of those with classroom responsibilities had been teaching for more than 20 years. Although this may be seen as a high level of experience, it can also hide issues with keeping curricula current, as very few teachers attend continuing training. Despite the reform that has been undertaken, the gap between schools and businesses affects practical training in TVET institutions.¹⁹⁸

Table 6: Number of TVET trainers in public and private training centres

	Females	Males	Total
Public Training centres	567 (18.5%)	2500 (81.5%)	3067
Private Training Centres	478 (17%)	2344 (83%)	2822

Source DPS/Annuaire 2017-2018 FP

Table 6 above shows a vast majority of TVET trainers are males with a percentage of about 82% for both public and private training centres. As far as their profile is concerned, they are either university graduates or High skilled technicians or engineers.¹⁹⁹ They are recruited on the basis of competition for public training centres and authorization to train for the private training centres. There is only one Training of Trainers Institute (Institut Pédagogique National de l'Enseignement Technique et Professionnel (IPNETP)). All trainers must follow a pedagogical skill training and they do not need to have industrial experience.²⁰⁰ The salaries of trainers are being paid by the government. However, it is difficult to recruit experienced trainers. According to respondent, there is no CPD policy for trainers. According to the respondent, only 3067 or 52% of trainers are fully qualified²⁰¹, a fairly not conducive training environment. The challenge is to ensure the training and CPD of TVET Trainers.

According to the Respondent, in order to enhance capacity of TVET trainers, some 550 trainers in accountancy for public and private training centres and 10 pedagogical supervisors have been trained by SYSCOHADA.²⁰²

¹⁹³ Ibid p. 29

¹⁹⁴ From questionnaire

¹⁹⁵ State of skills; Ivory Coast, ILO 2019-20, p. 33

¹⁹⁶ From questionnaire

¹⁹⁷ From questionnaire p. 31

¹⁹⁸ Ibid p. 32

¹⁹⁹ From questionnaire

²⁰⁰ Ibid

²⁰¹ Ibid

²⁰² Ibid

To the question as to how can the status of the profession be enhanced through professionalisation of individual teachers/trainers with support from TVET institutions and partners, the respondent to the questionnaire responded that this can be done through online learning and making available ICT tools at reasonable costs.

Another series of initiatives viz industrial stage of trainers (CIDFOR), pathways with other educational streams within the compulsory schooling up to the age of 16, reviewing of TVET examinations, reform of TVET scholarships, review of institutional frameworks, etc were initiated to further enhance the TVET system.²⁰³

TVET Reform, if any

The current skills development policy is aligned with the TVET reform initiated in 2007, which came about from observing a lack of linkages between training institutions and businesses. To address this issue, two partnership agreements were signed between the private sector (including trade chambers) and the Ministry for Higher Education and Scientific Research (MESRS) in 2007 and the Ministry for Technical Education and Vocational Training (METFP) in 2009. The main objective of the two agreements was to establish a structured dialogue between schools and businesses; several implementing entities were created in parallel.²⁰⁴

The core of the reform was to rely on the partnership between schools and businesses, on the basis of which the training system must be able to meet the needs of the population and those of the national economy in quantity and quality. The key point was to develop human capital in order to make it efficient and productive. The reform identified seven strategic focus areas as compiled in the 2016-2025 strategic plan, namely:

- i. Partnership for work-based training and access to the job market.
- ii. Access to training.
- iii. Range of training offered.
- iv. Skills certification.
- v. System governance.
- vi. Clean-up and supervision of private establishments.
- vii. Funding of the TVET system.

Nearly ten years after the start of the reform, the country has developed and adopted a ten-year strategic plan (2016-2025) with the vision of developing an efficient TVET system that offers various groups the skills that will help make Côte d'Ivoire an emerging country.²⁰⁵

To tackle the issues of access to the job market for young people and underemployment, Côte d'Ivoire has developed several employment policies and strategies, which include the National Strategy for Youth Employment in 2016 and the 2016-2020 National Employment Policy which has not yet been adopted. All these initiatives are based on the 2016-2020 PND, the policies of which aim specifically at boosting employment. They include:

- The introduction of a provision on internships and first jobs in the new Labour Code, which is currently being revised;
- Stronger job creation programmes for young people and women;
- The implementation of regional job creation strategies; and

²⁰³ From questionnaire

²⁰⁴ State of skills: Ivory Coast, ILO 2019/20p. 16

²⁰⁵ Ibid. 18

- Better access to public contracts for SMEs through the draft Law for the Promotion and Guidance of SMEs.²⁰⁶

The role of international development agencies in the national TVET system

The development of this sectoral strategy document is the result of collective and cooperative work which has known, at each of its stages, the involvement of all stakeholders under the coordination of the Task Force and with constant and multifaceted support of Technical and Financial Partners, particularly the French Development Agency, the French Embassy, the African Development Bank (ADB), the World Bank, the JACOBS Foundation, the United Nations Industrial Development Organization (UNIDO), the World Food Program (WFP), the Global Partnership for Education (GPE), the IIEP Pôle de Dakar of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the of the United Nations Children’s Fund (UNICEF).²⁰⁷

The main challenges

The main facing TVET in Ivory Coast can be enumerated as flows:

- Insufficient intake capacity
- Low participation of women and rural populations.
- Poor quality.
- Lack of funding.
- Misalignment of training with the needs of the economy
- Poor institutional grounding.
- Lack of transparency

The Fourth Industrial Revolution (4IR)²⁰⁸

With respect to the 4IR, the respondent gave the following definition: ‘The 4IR is characterised by the fusion of numerical, biological and physical worlds together with increasing utilisation of new technologies such as Artificial Intelligence (AI), cloud computing, robotics. 3D drafting, Internet of Things (OT) and advanced WIFI technologies, amongst others’.

As somebody involved in TVET, he underlined a few possible impacts on Ivory Coast economically, socially and education wise. He stated two simple advantages without further elaboration.

As to the disadvantages of 4IR in TVET in Ivory Coast, respondent mentioned:

- Trainees will no longer be in touch with reality
- Development of hacking

Regarding whether the TVET institutions in Ivory Coast are in a position to adopt the technologies associated with the 4IR, the response was positive as they are in a globalised world with lots of data.

Concrete examples are as follows

In educational administration: *Online Registration of trainees, and Online orientation of trainees using geo-referenced professional school card*

In teaching and learning: *Online learning using application software*

Respondent said that no data are available regarding how the use of 4IR technologies affected the cost of TVET in Ivory Coast. However, he stated that examination results are online.

²⁰⁶ Ibid p. 13

²⁰⁷ Education/Training sector plan 2016-25 p. 11

²⁰⁸ From questionnaire

With respect to lessons learned in the introduction of the 4IR technologies into Ivory Coast, and the advice he would give other TVET institutions in other countries, they are as follows:

- Job execution in real time
- Dematerialisation
- Reduced movement

Concerning how can digital skills be integrated into technical and vocational training in the era of the 4IR with cascading effect to help advance access and quality for learners in an inclusive manner, respondent stated that:

- Introduction of online learning
- Introduction of virtual reality in the TVET system

With respect to the innovative solutions/approaches that could be introduced to improve access, quality and relevance especially those that rely on digital technology, he proposed the following:

- Introduction of online learning
- Introduction of virtual reality in the TVET system

Concerning cross-border collaborations/partnership which can be used to promote TVET using digital technology, the response was that the different platforms (**WAEMU, ADEA**) must be operational in between the different countries.

With respect to the barriers to enacting 4IR within the TVET training centres in order of priority, he pinpointed Lack of perception of 4IR, Confusion over what needs to be taught, financial restrictions, awkward fit with subject area, Curriculum too crowded already and lack of time to update courses, perceived irrelevance by staff. The message is very clear in that the 4IR is not well understood in the Ivorian TVET system with lack of perception of 4IR as the number one barrier.

Mauritius

Economy and Labour Market

Mauritius is an island which spans 2,040 square kilometres and has an Exclusive **Economic Zone** covering 2.3 million square kilometres. It has a population of nearly 1.3 million and had a population density of 631 persons per km² as at end 2019. Its population age structure depicted by a population pyramid has shifted from wide base to shrinking base and thickening body, showing an ageing population.

Since the 1980s, the government of Mauritius has sought to diversify the country's economy beyond its dependence on just **agriculture**, particularly sugar production. Real GDP growth was moderate yet steady, averaging 3.8% during 2015–19. Growth was mainly driven by financial services, retail and wholesale trade, tourism, and information and communications technology. GDP per capita trended upward, reaching an estimated \$10,200 in 2019 —the third highest in Africa after Equatorial Guinea and Seychelles. The economy is largely service-based (76% of GDP in 2019), followed by industry (21%) and agriculture (3%). Aggregate demand has been underpinned by strong growth in household consumption, while investment stood at 19% of GDP in 2019.²⁰⁹ Mauritius is now categorized by The World Bank amongst the countries with a high income economy with a GDP per capita for 2019 is US\$12,740, a 3.5 percent increase over the 2018 figure.²¹⁰ Manufacturing and agriculture have been growing at a slower pace, and output in the traditional sugar sector declined. These growth patterns continue an ongoing trend of structural transformation, with more knowledge intensive modern services sectors expanding while some of the sectors that have traditionally provided low-skilled employment stagnating or even contracting.



However, the COVID 19 together with the concomitant world GDP contracting by about 3% has brought a New Normal with latest forecasts point to a GDP contraction of up to 11 percent in 2021, the worst GDP contraction ever for Mauritius.²¹¹

Labour force participation rate was 58.7% (73.1% for males and 45% for females). The unemployment rate for the first quarter of 2020 is estimated at 7.1% (43% M and 57% F), compared to the rate of 6.9% at first quarter 2019 and the rate of 6.4% at the fourth quarter of 2019. It has to be underlined that 25% of the unemployed were under 25 years old. Education wise, 49% of the unemployed did not have the Cambridge School Certificate (SC) or equivalent and among them, 20% had not even passed the Certificate of Primary Education (CPE) or equivalent. The youth unemployment has been a major issue for Mauritius. It is often the result of a combination of skills mismatch and rising expectations of young labor market entrants resulting in high reservation wages. Various schemes had been launched to counter act this phenomenon.

Mauritius faces the challenge of managing its transition to a knowledge-based high-income economy driven by innovation and productivity growth. This will require a concerted effort to remove bottlenecks to new sources of growth and private investment, such as a lack of connectivity, skills shortages, and misaligned incentives.

²⁰⁹ African Development Bank, African Economic Outlook 2020 supplement, Mauritius economic outlook

²¹⁰ EDB: WB classifies Mauritius as a high income country; <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>

²¹¹ Republic of Mauritius, MOFED budget speech 2020/2021 p. 2

According to the 2019 Human Development Report, the Human Development Index (HDI) value, which is the index used by the United Nations to measure the progress of a country, for 2018 is 0.796 – which put the country in the high human development category – positioning it at 66 out of 189 countries and territories. It must be emphasized that all successive governments who came to power in Mauritius have all had education high on their development agenda.

Table 1: Mauritius' HDI and component indicators for 2018 relative to selected countries and groups

	HDI value	HDI rank	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2011 PPP US\$)
Mauritius	0.796	66	74.9	15.0	9.4	22,724
Botswana	0.728	94	69.3	12.7	9.3	15,951
Gabon	0.702	115	66.2	12.9	8.3	15,794
Sub-Saharan Africa	0.541	—	61.2	10.0	5.7	3,443
High HDI	0.750	—	75.1	13.8	8.3	14,403

Source: Human Development report, 2019

The rapid shift from labour-intensive sectors to emerging high value-added sectors requires higher skills. As mentioned in the budget speech 2010/2021, the new vision for the future is a Mauritius driven by data technology. In this context, a new Data Technology Park has been announced in the budget. This Park, based on knowledge and skills, will lay the foundation for a data driven economy and would create the right eco-system to accelerate the innovation process from idea to creation. It will encompass 12 highly skilled and specialised centres from additive manufacturing to deep artificial intelligence. The Deep Artificial Intelligence Centre will provide the necessary support for start-ups, existing businesses and government services to achieve a major digital transformation.²¹² It must be mentioned that Mauritius has developed a Mauritius Artificial Intelligence strategy in November 2018 towards making AI a cornerstone of the next development model by recognizing the potential of the technology to improve growth, productivity and the quality of life, and makes recommendations to achieve objectives set.²¹³

Technical and Vocational Education and Training (TVET) in Mauritius

TVET has a very long history in Mauritius, starting very timidly indeed in early 1900s and gradually developing into what it is today. Needless to underline that it has gone through a difficult and hesitating pathway. A copy of the trajectory of the evolution of TVET in Mauritius is as per Annex I.

TVET has been very closely associated with the economic development of Mauritius in one way or another, most particularly with the creation of the Industrial Trade Training Centre (ITTC) in 1967, the school of Industrial Technology of the University of Mauritius in 1968 (now the Faculty of Engineering), the Lycée Polytechnique de Flacq in 1981, the IVTB in 1988 and the TSMTF in 1990.

The setting up of the IVTB marked an important milestone in the evolution of TVET in Mauritius. Employers' organizations and other private sector representatives figured prominently on the Council of the IVTB. It was clearly mentioned in the National Development Plan 1988-90 that the IVTB **'will not therefore be a heavy handed monolithic organisation which will crowd out others from the national training effort or stifle private initiative but rather ensure that all these efforts complement one another as part of a coherent strategy to meet industrial training needs, at least cost'**. The IVTB then became operational in January 1989 with numerous challenges, such as the need to ensure quality of training dispensed by the private training centres, resolve the equivalence and validity of certificates being issued, ensure access to a greater people to be trained etc.

²¹² Republic of Mauritius, MOFED budget speech 2020/2021 p. 17

²¹³ Mauritius Artificial Intelligence strategy, 2018

Initially, the Industrial and Vocational Training Board (IVTB) cumulated the role of provider, regulator and facilitator of training. With the growing number of private training centres, IVTB was being seen more and more in a conflicting situation of a regulator and provider of training. Coupled with this was the fact that the different types of qualifications being issued by the private training institutions were creating confusion at the level of the end users. There was thus a need to reform the sector and split the roles of IVTB to be in conformity with good governance.

The reform of the TVET sector was implemented through a series of new Governments Acts and regulations. These define the roles, objectives and functions of several new corporate bodies and set the framework for their operations as given below. The IVTB, which became the MITD in 2009, became the public provider of training leaving the role of regulator to the MQA (2001) the regulator and facilitator to the HRDC (2003).

The Mauritius Qualifications Authority was set up in May 2002 and took over the regulatory function for training. It was attributed other roles such as the development of a national qualifications framework, which would integrate academic and vocational awards and provide links between formal education and training.

As mentioned earlier, TVET has always played and plays a very important role in the national development strategies of Mauritius as expressed in the successive Government Programmes.

The major challenges which the Mauritian TVET face are:

- Poor perception of TVET
- Attracting more students to MITD courses
- National Certificates not sufficiently known by employers
- Stakeholders lack information on MITD.
- Fee-paying courses compared to free education.
- Rapidly changing technology
- Technical expertise in some specific sectors.
- Visibility of MITD programmes
- Retention rates in some programmes.

The overall objective of the National TVET Policy of Mauritius as per the Nine Year Basic Continuous Education policy document (2015) is to ensure that all graduates emerging from the TVET stream are highly skilled and ready for employment. The main policies and strategies guiding the TVET system as laid down in the Nine Year Schooling policy document are as follows.

Strategic Actions/Main Activities

A. Rethink the role and the image of TVET

2016-2020	<ul style="list-style-type: none"> • <i>Establish close linkages between training centres and businesses/Industries for greater employability of TVET graduates</i> • <i>Review the curriculum with on- going involvement of industry for</i> <ul style="list-style-type: none"> (i) <i>greater programmatic relevance to changing labour market demands and</i> (ii) <i>integration of employability skills in core curriculum content</i> • <i>Enhance the learning environment and equip training centres with state-of-the-art technology</i> • <i>Set up model training centres</i> • <i>Upskill leaders and trainers of training centres through continuous professional development</i>
------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<ul style="list-style-type: none"> • <i>Establish pathways to promote the attractiveness of the TVET sector to students in the Secondary General Stream</i>
2021-2025	<ul style="list-style-type: none"> • <i>Engage in international benchmarking of the TVET system</i> • <i>Conduct external evaluation of the curriculum and training dispensed and review of same in the light of evaluation</i> • <i>Make TVET an attractive career for qualified / professional trainers</i>
2026-2030	<ul style="list-style-type: none"> • <i>Establish a fully modernised and equity-based skills development TVET sector</i>

B. Provide an adequate supply of skills at mid-technician level for emerging economic growth poles

2016-2020	<ul style="list-style-type: none"> • <i>Embed and institutionalize Polytechnic Education into the training landscape as an alternative to tertiary education</i> • <i>Create enabling conditions for an increased private sector participation in the provision of fit-for-purpose training</i> • <i>Review periodically the National Skills Strategy to prevent skills slow down</i>
2021-2025	<ul style="list-style-type: none"> • <i>Undertake a needs assessment for the expansion of Polytechnic Education</i> • <i>Sustain the competitive edge of the labour force through regular upgradation of training programmes</i>
2026-2030	<ul style="list-style-type: none"> • <i>Institutionalise a lifelong training mindset</i>

C. Set up a transparent and efficient quality assurance system and strengthen national qualifications systems

2016-2020	<ul style="list-style-type: none"> • <i>Elaborate and implement a Quality Assurance Framework</i> • <i>Implement new policy for qualification development</i> • <i>Upgrade the Recognition of Prior Learning Framework to include new fields</i>
2021-2025	<ul style="list-style-type: none"> • <i>Benchmark TVET National Qualifications against international/regional qualifications frameworks</i>
2026-2030	<ul style="list-style-type: none"> • <i>Work towards making of VET sector a reference point in the region</i>

In addition, the following policies/strategies are being implemented:

- Education (inclusive of TVET) is compulsory for children up to the age of 16 years.
- TVET courses are also offered free of charge by the MITD up to the National Certificate Level 3 and the fees are subsidised for higher level courses.
- TVET trainees benefit from free travelling facilities by bus.
- Monthly allowances paid to apprentices comprising of stipend and travelling allowance

Governance and Management

The Government Programme 2020-2024 refers to education and skills for the world of tomorrow:²¹⁴

- Access to educational facilities to students with disabilities will be improved.

²¹⁴ Government Programme 2020-2024: Towards an inclusive, high income and green Mauritius, forging ahead together

- Government will continue to invest in facilities to promote dual and vocational training in order to provide learning and work-study opportunities to our youth in non-academic fields.
- In line with the education reform policy, an Institute of Technical Education will be set up to create opportunities and pathways for students to pursue studies in technical education.
- To better prepare and empower our young people, a National Skills Development Strategy will be developed.
- This Strategy will map out the skills development needs for the next five years and address the new trends influencing skills development policies, such as industry 4.0, Artificial Intelligence and ageing population. It will also outline incentives for our youth to engage in green tourism activities and modern agriculture.

The following institutions have been set up for the regulatory, provision/certification and facilitation of training:

The **Mauritius Qualifications Authority (MQA)** is the regulatory body and its objects are as follows. It operates under the aegis of the Ministry of Education, Tertiary Education and Scientific Research.

- a) To develop, implement and maintain a National Qualifications Framework;
- b) To ensure compliance with provisions for registration and accreditation in this Act;
- c) To ensure that standards and registered qualifications are internationally comparable.

The MQA became operational since 08 May 2002 and central to its regulatory function, the Authority has the key responsibility to maintain the National Qualifications Framework (NQF) – a system designed to recognise the attainment of knowledge, understanding and skills by people in Mauritius; to ensure compliance with provisions for registration and accreditation of training institutions; to ensure that standards and registered qualifications are internationally comparable; to recognize and evaluate qualifications for the purpose of establishing their equivalence in the TVET sector and to recognize and validate competencies acquired outside the formal education and training systems.²¹⁵ The MQA is responsible for ensuring the quality of all training (state or the private sector), and also deals with recognition and equivalence of technical qualifications. The MQA registers training institutions, managers, program officers and trainers and approves courses as well as accrediting training institutions and courses. The quality assurance mechanism allows for accreditation of the providers of training, which ensures that courses delivered at different levels are evaluated for high quality education and training.

The **Human Resource Development Council (HRDC)** is the facilitator of training and its objects are as follows. It reports to the Ministry of Labour, Human Resource Development and Training

- a) Promote human resource development in line with national economic and social objectives;
- b) Stimulate a culture of training and lifelong learning at the individual, organisational and national levels for employability and increasing productivity; and
- c) Provide the necessary human resource thrust for successful transformation of the economy of the country into a Knowledge Economy.

The management of the training levy/grant scheme which had been instituted by the IVTB since 1989 to provide for fiscal and financial incentives to private employers in order to catalyse their investing into the training and retraining of their employees was transferred to the Human Resource Development Council (HRDC).

HRDC manages different other schemes, inter alia:

²¹⁵ MQA annual report 2015 p. 9

- the National Skills Development Programme (NSDP) to provide industry-driven training to individuals aged from 16 to 35 years to boost their employability skills and support youth employment and to provide financial incentive to enterprises to meet skills needs at enterprise level and national level and
- the Sectoral Skills Development Scheme (SSDS) to encourage clustering of small and medium enterprises for skills development of existing employees.

The **Mauritius Institute of Training and Development (MITD)** is the training provider and awarding body and its objects are as follows. It reports to the Ministry of Labour, Human Resource Development and Training

- Promote excellence in technical and vocational education and training;
- Promote research and enhance knowledge in technical and vocational education and training;
- Increase access to technical and vocational education and training through the setting up of training centres;
- Promote exchange programmes and courses with other institutions in technical and vocational education and training;
- Assist in the apprenticeship of persons who are, or will be, employed in commercial, technical and vocational fields

The functions of the Institute as per the Act are to:

- Develop and conduct technical and vocational education and training programmes and courses;
- Provide research and training activities in technical and vocational education and training;
- Engage in research activities in technical and vocational education and training;
- Provide consultancy services in the field of technical and vocational education and training;
- Set up training centres for technical and vocational education and training;
- Review and develop curricula in technical and vocational education and training based on national standards registered under the National Qualifications Framework;
- Safeguard and market the intellectual property rights and products of the Institute;
- Award certificates and diplomas, or any other technical and vocational qualifications;
- establish exchange programmes and courses with any other institution in technical and vocational education and training;
- Co-operate with other institutions having objects wholly or partly similar to those of the Institute;
- Advise the Minister on all matters pertaining to technical and vocational education and training

The Skills Development Authority Act has been enacted on 2 October 2019. Its objective is to provide for the establishment of a Skills Development Authority which will act as an independent regulator, confer awarding powers to training institutions in the Training and Vocational Education and Training (TVET), develop a skills framework, set up and maintain a register of skills and skilled persons and ensure quality assurance in the TVET sector. It may be noted that the SDA has not yet been set up.

Link with Industry

The private sector is represented on the Boards of MQA, MITD and HRDC. Private Sector is also represented at the level of management of training centres through the School Management Committees set up by the MITD. Private Sector also contributed towards the financing of training

through the training Levy which presently stands at 0.5% of the wage bill. Training Advisory Committees have been set up by the MITD which comprise private representatives of different economic sectors. The private sector also participates in the development of curriculum and assessment schemes through their involvement in the DACUM workshops organised periodically by the MITD. The private sector also participates in the delivery of training through apprenticeship mode, industrial attachment of trainees and industry-based projects works.

Industry is involved in the following:

- Design of curriculum
- Donation of equipment
- Management of Training Centres
- Industrial placement of trainees
- Industrial placement of Trainers
- Part time Trainers from Industry
- Tailor-made training with industry
- Are there any SSC, ITB or TAC*

As for whether TVET has an enabling role in national development and reform agendas, TVET occupies an important role in national development and reform agendas. Most of the training centres, including polytechnics have been set up in response to the development of specific economic sectors like Tourism and Hospitality, ICT, Health Care, Engineering, Building Construction and Textile. More recently, government has come up with specific programmes to address the shortage of skills though the National Apprenticeship Programme (NAP) and the National Skills Development Programme (NSDP). Currently, with the emphasis on the social projects of government. MITD is being called upon to come up with appropriate training programme to respond to skills fields.

Besides, at the level of the MQA, Industry Trade Advisory Committees have been set up to set standards and assign qualification levels based on set criteria. Consultations are held between the MITD and employer representatives to ascertain the needs of labour market prior to development of courses. Resource persons from industry participate in the development and validation of curricula to ensure relevance of training.

Access and Equity

Formal training is delivered by the MITD through full-time and part-time modes which lead to nationally/internationally recognised qualifications. The MITD is also responsible for the implementation of the National Apprenticeship Programme (NAP) which is based on the German Dual system. The courses offered through this mode also lead to nationally/internationally recognised qualifications. Non-formal and informal training are mainly provided by Non-Governmental Organisations (NGOs).

Table 2: Number of trainees enrolled at the MITD in 2019

	Number of courses	Female Trainees	Male Trainees	Total number of trainees
Full time	61	622	1651	2273
AS		706	1029	1735*
Part time		561	1593	2154
Total		1889 (31%)	4273 (69%)	6162

- *60% of the Apprenticeships followed training at the Ecole Hoteliere
- 31% of pre-employment trainees (F/T and AS) are females as per strategic plan 2013-17
- AS =Apprenticeship scheme

In addition, polytechnics Mauritius enrolls another 1000 trainees every year. Those figures exclude enrolment of trainees of private training providers.

To improve access, quality and relevance especially those that rely on digital technology the innovative solutions/approaches that could be introduced are according to the respondent:

- The adoption of blended learning comprising of both face-to-face and online learning
- Access to open educational resources in the field of TVET
- Offer of more part-time award courses for those already in employment

Strategies that governments should put in place to change the general negative social perception of TVET as an inferior option and a 'second-class' education, which fosters its stigmatisation and marginalisation as a low status track for poor academic achievers in many African countries are as follows:

- Upgrading and rationalization of training centres
- Review of MITD training programmes
- Upgrading of equipment
- Capacity building of trainers
- Upgrading and standardization of instructional materials
- Rebranding of TVET
- Strengthening the quality assurance system

As to the incentives available to promote gender in TVET, they are as follows:

- Tuition fees have been waived for all award courses to increase access
- Free bus travelling facilities to TVET learners
- Increase in allowances paid to apprentices
- Courses through different modes namely full-time mode and part-time mode and the apprenticeship mode to provide greater access to training.
- The "Back to Work" programme has been put in place by the government in 2016. The aim is to empower vulnerable women to reintegrate the labour market whereby increasing the female labour market participation rate. In this context, training has been offered by the MITD on employability skills needed in the
- As a measure to promoting gender equality, in the budget 2016/2017, Government provided a special fund for projects meant for enhancing the employability of vulnerable groups and women. In this context, the MITD implemented a training project with the 'Ecole des Sourds' for enhancing the employability of girls and women suffering from hearing impairment.

Besides, policy measures have been initiated to improve the parity of esteem between academic education and TVET and between different forms of TVET. One of the specific goals of the NYCBE Reform is to give greater recognition to the value of TVET in building human capital that will spearhead the transformation of the Republic into a knowledge-based, skills-driven economy. In this context, the TVET sector is being reviewed to providing a more attractive and valuable pathway to school leavers after basic education. Moreover, the policy regarding higher qualification requirement at SC for students to progress to Grade 12 has resulted into an increase in the number of school leavers choosing the TVET pathway for their career development.

In addition, the National Qualifications Framework makes provision for articulation between TVET and higher education. The policy of tuition free tertiary education in publicly funded institutions has also been extended to the MITD courses.

Quality and relevance

Facilities

The facilities of MITD training centres are generally of good quality. The MITD is engaged in the upgrading of its training centres in line with its Transformation Plan 2017-2020. In this context, the infrastructural facilities of training centres are being upgraded in a phased manner. The strategic actions consist of the following:

- i. Upgrading and rationalization of training centres
- ii. Review of MITD training programmes
- iii. Upgrading of equipment
- iv. Capacity building of trainers
- v. Upgrading and standardization of instructional materials
- vi. Rebranding of TVET
- vii. Strengthening the quality assurance system

In general, the MITD training centres are well equipped with all necessary facilities for the delivery of quality training. Industrial attachment is used to complement training which cannot be provided at the centre level in cases where the equipment are very expensive and the work stations cannot be replicated in training centres.

Quality assurance is ensured at different stages of the training process as follows.

- Adoption of best practices for development of curricula
- Mechanism for review of curricula and vetting by industry
- Benchmarking of curricula with other TVET institutions
- Monitoring of the training process by centre managers and coordinators
- Provision of standardised instructional materials
- Continuous professional development of trainers
- Upgrading of training equipment
- Analysis of training process and feedback by top management
- Regular inspection by the MQA

Responsiveness to labour market

In order to reduce skills mismatch, training and orientation services are being provided through:

- Information desks
- Trade fairs
- Open days
- Talks in colleges

Counselling and orientation are also being conducted by the HRDC with the collaboration of Career Guidance Office and career counsellors in secondary schools.

There is also a LMIS which the Ministry of Labour, Human Resource Development and Training has set up. It is a work-based information system to register jobseekers, vacancies and perform job matching. The LMIS comprises an electronic labour exchange which is an online interactive platform meant for jobseekers and employers.

In addition, the HRDC conducts skills shortage surveys to identify skills requirements on a sectoral basis. The information is used by training providers.

The average employment rate of TVET graduates is around 65% and some 15% pursue further training. The employment rate is relatively high among apprentices that is, over 80%.

At the level of the MITD, tracer studies are carried out systematically 6 months after completion of courses. The study is carried out by the research department of the MITD.

Curriculum

The curriculum design is being carried out based on job analysis using the DACUM process, and it consists of the following stages.

- Identification of training needs analysis
- Job analysis through the DACUM workshop comprising of resource persons from industry
- Curriculum development and scheme of assessments
- Vetting of curricula by advisory committee comprising of industry representatives
- Accreditation of programme by the regulatory authority (MQA)

The curricula are reviewed every 5 years or earlier in case of major technological changes in the fields

Involvement of industry in curriculum design

To ensure responsiveness of the curricula, industry is involved at the different stages of the curriculum design namely, training needs analysis, job analysis through the DACUM process, vetting of curricula and schemes of assessments and accreditation of courses. At the level of the MQA the curricula are considered by the relevant Trade Advisory Committees comprising of private and public sector representatives prior to accreditation.

To enhance employability of the TVET graduates (self-employed or employed in industry) and to promote the total development of learners along with the trade specific knowledge and skills, soft skills integrated in the curricula namely communication skills, work ethics and citizenship education as well as entrepreneurship.

Elements on sustainable development have also been incorporated in the MITD courses to create greater awareness about environment preservation among the learners.

Training of trainers have been carried out and new training programmes have also been developed. In addition, ICT is integrated in all TVET curricula. At the level of the MITD all the training centres are equipped with the necessary ICT facilities for the delivery of this module.

Regarding technologies related to 4IR are integrated in specific courses in the following fields: IT, Automation, Electronics, Building Services Engineering, Telecommunications, and Industrial Machine Maintenance.

Management of Training Centres

With a view to improve the efficiency and effectiveness of training centres, School management committees have been set up in some MITD training centres especially those which are specialised in a field. The meetings of the School Management Committees are held every 3 months. It helps to assist the training centres in meeting their objectives, to forge strong partnerships with industry to know the latter's needs, investment plans and technological changes and to ensure the training programmes to be effective and result in employment of the graduates. The managers in turn hold regular meetings with the staff including trainers.

With respect to the autonomy of the training centre, each centre is considered as a cost centre and they are allocated their own budgets. They have certain autonomy for decision making on matters regarding their day-to-day running. They have the autonomy to establish linkages with industry and mount tailor made courses.

The members of the SMCs comprise representatives of industry and public bodies. However, some members are not able to attend meetings regularly because of their professional commitments.

As far as training necessary training in Leadership and Management is concerned, most of the managers have been sponsored by the MITD to follow courses in leadership and management either at universities in Mauritius or on exchange programmes with friendly countries.

Staffing

All the MITD trainers (100%) are fully qualified and registered with the MQA as per statutory requirements to deliver training up to a certain level in a particular field.

The number of staff at the MITD as at 30 June 2017 was 759.

Category	No of staff in post by category as at 30 June 2017
Management cadres	34
Training cadres	394
Administrative cadres	174
Support cadres	157
TOTAL	759

Source: MITD Annual report 2016-2017

Trainers represent 51% of the total staff at the MITD, or a ratio of trainees to trainer ratio of about 15 for full time courses. As a general rule, Trainers are allowed to provide training only at a level lower than their own qualifications. All Trainers must follow a Trainer's Certificate in Vocational Training, which is a pedagogical training programme. The theoretical part of the course is provided within the MITD House and it has a supervised work experience which is carried in the workplace. Besides, trainers cannot practice if they are not registered with the MQA. Obviously, to be registered with the MQA they must satisfy criteria as defined by the MQA.²¹⁶

Regarding industrial experience, at the level of selection of trainers during the recruitment exercise weightage is given to candidates for industrial experience.

Attracting highly experienced trainers is a challenge in some areas as the salary earned by qualified and experienced persons is much higher in the private sector compared to the public sector. Moreover, in some fields where technical skills are predominant, the experienced persons from industry do not possess the minimum qualification requirements for the post as laid down in the scheme of service.

At the MITD all trainers are required to undergo pedagogical training. Moreover, technical training is provided to trainers as part of their CPB particularly in the event of curriculum review and introduction of new technology. The budget allocated for CPD is about 0.5% of the MITD budget.

With respect to the profiles of the trainers, there are two categories of training staff namely Training Officers and Instructors and their entry requirements are as follows.

Training Officers: Higher School Certificate, Degree in related field and 3 years post qualification experience

Instructors: School Certificate (with at least 5 credits), Higher School Certificate and at least National Certificate Level 4 in the related field

²¹⁶ MQA Website

Recruitment is done through the standard selection process of the MITD comprising of open advertisement and selection through interviews

Mitigating strategies for the low status challenge of the TVET trainer profession could be that:

- The status of TVET trainers must be aligned with that of mainstream educators in terms of conditions of service.
- Career pathway should be established for progression of trainers within TVET

Funding

The major sources of funding of TVET in Mauritius are Government Grant and training levy contributed by private sector enterprise. Government allocates 3% of the education budget to TVET. Expenditures are broken down as follows:

Recurrent (Staff costs and other operational costs).....	80%
Capital expenditure.....	20%

There is a training fund in place which is administered by the Human Resource Development Council (the facilitator of training). The employers from private sector contribute 0.5% of their wage bill as a training levy to this fund.

Regarding training fees, the tuition fees for TVET courses offered by public provider have been waived with the policy measure of tuition-free of tertiary education in 2018. The tuition fees account for a very small percentage of the budget of the MITD training centres (around 3%).

The MITD has a policy for Training/ consulting services and work for industry. It develops and implements tailor made courses based on specific training needs of companies. The MITD also conducts training needs analysis for enterprises on demand.

Alternative financing mechanisms to increase access, quality and relevance are available and include:

- Funding from the National Empowerment Foundation, International organisations viz United Nations Development Programme (UNDP), Agence Francaise de Developpement (AFD) and Commission de L'Ocean Indien (COI) for targeted training programmes
- Funding of specific training programmes by industry

Reform of the TVET sector²¹⁷

In the wake of the Nine-Year Continuous Basic Schooling (NYCBS), the MITD underwent a major reform to provide a more attractive educational and viable pathway to school leavers after Grade 9. It has to be underlined that the NYCBS gives an option to students completing the 9 year basic school to go for School Certificate (Technical) Grade 10 or national vocational qualification.

As mentioned above, The TVET reform focused mainly on the following features:

- i. Review of MITD Training Centres
- ii. Capacity building of trainers
- iii. Upgrading of equipment
- iv. Upgrading and standardisation of instructional materials
- v. Upgrading and rationalisation of training centres
- vi. Rebranding of TVET
- vii. Strengthening of quality assurance system

²¹⁷ MITD Annual report 2016-17 p. 26

The reform in the TVET sector has been implemented in a phased manner as from January 2017 with a view to ensuring that the MITD is fully prepared for receiving the first batch of students opting for the TVET stream.

Polytechnics Mauritius (PML)

In addition, Polytechnics Mauritius, a body corporate was established under the aegis of the Ministry of Education, and Human Resources, Tertiary Education and Scientific Research in 2017 with the objective of running training programs to serve the emerging needs of Mauritius for a qualified and skilled human resource at mid-professional level. Programs provided by PML are dynamic and customised to the needs of the world of work. Industry is involved at the start itself, at the stage of programme design, rather than being subject to choices drawn by the institution that they were not party to.

PML offers the following free courses in Microsoft Technology Associate Certification, Microsoft Certified Software Associate, Diploma in Information Technology (Big Data Analytics), Diploma in Information Technology (Internet of Things), a Diploma in IoT and Big Data Analytics, which merges well with AI. Final year students of these programmes will surely develop their capstones project for the final showcase based on AI or AI automated devices. Students already have Machine Learning and AI in their module study, hence an added advantage for them when developing their project.

The Government Programme 2020-2024 referred to education and skills for the world of tomorrow:²¹⁸

- Access to educational facilities to students with disabilities will be improved.
- Government will continue to invest in facilities to promote dual and vocational training in order to provide learning and work-study opportunities to our youth in non-academic fields.
- In line with the education reform policy, an Institute of Technical Education will be set up to create opportunities and pathways for students to pursue studies in technical education.
- To better prepare and empower our young people, a National Skills Development Strategy will be developed.
- This Strategy will map out the skills development needs for the next five years and address the new trends influencing skills development policies, such as industry 4.0, Artificial Intelligence and ageing population. It will also outline incentives for our youth to engage in green tourism activities and modern agriculture.

The Fourth Industrial Revolution

For this section on the Fourth Industrial Revolution, two representatives responded, from the MITD and from PML.

According to the first respondent, The Fourth Industrial Revolution (4IR) is the fusion of the digital, biological, and physical worlds, as well as the growing utilization of new technologies such as artificial intelligence, cloud computing, robotics, 3D printing, the Internet of Things, and advanced wireless technologies, among others which have far-reaching implications on almost every aspect of daily life, affecting how individuals interact with technology, and transforming where and how work is done.

The response provided by both respondents shows a fair appreciation of the 4IR and its impact. For instance, the 4IR “has transformed our society, changing the way people interact and communicate through use of digital devices, businesses are being transformed radically and many existing jobs are being reviewed/replaced due to increasing use of automated technologies. In TVET, innovative pedagogies and didactics are increasingly being used to enhance the effectiveness and efficiency of training.”

²¹⁸ Government Programme 2020-2024: Towards an inclusive, high income and green Mauritius, forging ahead together

“Many types of jobs may disappear or may be done by robots or AI enabled machines. This will in turn affect the society as many people can find themselves frustrated since they don't have jobs and this in turn will affect the global economy as cases of fraud, theft, crimes etc. might be on the rise. Regarding economic changes, new payment methods such as cryptocurrency, Block chain will come into play and the business model also might change i.e. businesses will become virtual. Regarding the education sector, this might lead to exclusions i.e. only students who have anticipated and embraced the change will have an edge other those not willing to accept the predicted changes and thus they will be leaning the new technologies and will therefore be able to choose a career which is in high demand.”

And as for the perceived advantages:

- The 4IR provides new opportunities for development of TVET through the adoption of digital technologies.
- Digital devices are increasingly being used for facilitating teaching-learning.
- Digital platforms enable training to be delivered online and reach a wider population of learners.
- The use of innovative pedagogies and didactics helps to improve the quality of training.
- Enhance the student learning providing students with simulation based learning
- Students will thus acquire skills from different training institute and platforms without the need to travel to other countries in order to benefit from these trainings.

And for disadvantages respondent mentioned the following:

- The 4IR is transforming businesses rapidly and many existing jobs are being replaced or reviewed and new jobs are being created.
- The challenge for vocational training institutions is to adapt to these changes, this includes review of existing training programmes, development of new training programmes, integration of 4IR skills in all TVET curricula, capacity building and upgrading of technology.
- Unscrupulous education providers might join the race and provide bogus qualifications to ignorant students.
- There would be less socialisation among the students and this can have an impact on the student's personal and professional life.

As to the question whether the TVET institutions in Mauritius are in a position to adopt the technologies associated with the 4IR, the response was positive for some of the TVET institutions which are already delivering courses in fields that are related to the 4IR such as Internet of things, Big Data, etc. especially the higher level ones and the ones that are technologically-driven (e.g. automation, electronics, ICT and Building Services), as it will be easier to incorporate the skills required compared to the ones whereby educational background of the trainees is relatively lower.

Concrete examples mentioned was the use of platforms such as Zoom and Microsoft Learning for delivery of training in Teaching and Learning as well as teaching programs related to the Internet of Things, Big Data etc. No examples were mentioned for the Educational administration.

When it comes to how the use of 4IR affected the cost of TVET in Mauritius, one respondent stated that it could not be evaluated at this stage. It was clear that not much use of 4IR has been effected so far. However, the other respondent stated that the 4IR has greatly reduced the travel cost of training and he gave the example where training is delivered online and there is no need to travel to the campus to attend the lecture.

In the same light, no evaluation of outcomes could be effected. The 4IR Technologies are still at the infant stage, especially in TVET. A proper policy and appropriate strategies need to be developed for its vulgarisation in Mauritius. The other respondent stated that even during crisis situations such as the one experienced during the lockdown period due to Covid 19, the delivery of the lectures was not impacted as they switched to online lectures.

Concerning how can digital skills be integrated into technical and vocational training in the era of the 4IR with cascading effect to help advance access and quality for learners in an inclusive manner, one respondent stated the following:

- Need for digitalisation of learning materials
- Capacity building among administrators and trainers in TVET
- Investment in relevant technologies
- Ensure that trainers and learners are equipped with appropriate tools and have access to internet
- Availability of appropriate Open Educational Resources (OER) for TVE

And the other respondent stated that with virtual reality and augmented reality, digital skills can easily be integrated into technical and vocational training. For example 3D models can be used for demonstration purposes or they can also make a virtual tour using the tools which are readily available to them.

With respect to the innovative solutions/approaches that could be introduced to improve access, quality and relevance especially those that rely on digital technology, he proposed the following:

- Investment in relevant technologies
- Ensure that trainers and learners are equipped with appropriate tools and have access to internet
- Availability of appropriate OER for TVET

The other respondent stated that hybrid models could be used whereby some of the classes could be taught in the traditional way and a blended type of learning could be introduced whereby the lectures could be recorded and uploaded on an LMS so that students who are not able to come to classes physically, can have access to the pre recorded lecture and can thus follow the lecture from their places at their own pace.

Concerning cross-border collaborations/partnership which can be used to promote TVET using digital technology, the response was that:

- Take stock of existing best practices pertaining to TVET
- Assessment of potential for development of 4IR in each centre
- Capacity building of key stakeholders in TVET
- Financing programmes
- Implementation plan
- Local institutions can collaborate with international institutions on a regular basis without the need of travelling or visiting other countries in order to establish partnerships or collaborative ideas

With respect to the barriers to enacting 4IR within the TVET training centres in order of priority, one respondent pinpointed Lack of institutional drive and commitment and Lack of relevant course examples followed by Financial restrictions, Lack of academic rigour/misunderstanding, Lack of staff expertise and the need to acquire new knowledge, and Curriculum too crowded already and lack of time to update courses. The other correspondent mentioned financial restrictions as the number one barrier. Next came the following at par Lack of staff expertise and the need to acquire new knowledge;

Inability of students to grasp the issues; Lack of institutional drive and commitment and Lack of staff awareness.

Conclusion

Mauritius, the small country, which ranked first in the SSA according to Global Innovation Index 2020, with a GDP per capita trended upward, reaching an estimated \$10,200 in 2019 – the third highest in Africa after Equatorial Guinea and Seychelles, An Internet penetration of 68% as at January 2020, An Artificial Intelligence Council, a Deep Intelligence Centre, etc is poised to be at the forefront of technology. Its relative small size and wired throughout the island is an enormous advantage.

However, despite good TVET governance, TVET still suffers lots of shortcomings in Mauritius and it is not surprising to note that the 4IR is still in its infancy in Mauritius. Yet TVET has always figured high on the agenda of successive governments. For instance, in the Government programme 2020-2024, it is stated that

- To better prepare and empower our young people, a National Skills Development Strategy will be developed.
- This Strategy will map out the skills development needs for the next five years and address the new trends influencing skills development policies, such as industry 4.0, Artificial Intelligence and ageing population. It will also outline incentives for our youth to engage in green tourism activities and modern agriculture.

In the same light, the whole TVET system is being revamped; Polytechnics Mauritius has been incorporated in 2017 and the courses it offers are on the high end of technology. It offers the following free courses in Microsoft Technology Associate Certification, Microsoft Certified Software Associate, Diploma in Information Technology (Big Data Analytics), Diploma in Information Technology (Internet of Things), a Diploma in IoT and Big Data Analytics, which merges well with AI. Final year students of these programmes will surely develop their capstones project for the final showcase based on AI or AI automated devices. Students already have Machine Learning and AI in their module study, hence an added advantage for them when developing their project.

Both PM and the MITD, most particularly through the high skilled courses, have already started to integrate of the technologies associated with the 4IR in their TVET system though still in its infancy stage. However, with the necessary technical and financial assistance, they would be able to move fast into the 4IR.

Rwanda

Introduction²¹⁹

Rwanda is a small landlocked country in east-central Africa with a population of **12.7 million**²²⁰. Its total land area is 24,670 Km² and it has a population density of 525 per Km². Most of its population, over 82%, live in rural areas.

Economy and Labour market

Since the emergency and recovery period that followed the Genocide against the Tutsi in 1994, Rwanda has achieved substantial socioeconomic progress, with economic growth rates among the fastest in the world coupled with substantial gains in poverty reduction. Growth across all sectors has been positive and resilient in the face of a slowing global economy. Signs of socio-economic transformation have emerged as the labour force moves from agriculture to higher productivity services and industry. The World Bank (2018) praised Rwanda's "remarkable development successes", which have helped reduce poverty and inequality.

Rwanda's strong economic growth was accompanied by substantial improvements in living standards, with a two-thirds drop in child mortality and near-universal primary school enrollment. A strong focus on homegrown policies and initiatives has contributed to significant improvement in access to services and human development indicators.

Rwanda however remains one of the world's poorest countries, although it ranks higher than many other sub-Saharan African countries on the 2018 U.N. Human Development Index was 0.536 in 2018 and ranked 157 out of 189 countries assessed.²²¹

Human Development Record

HDI

Table 1: Rwanda Human Development Record, 2018

Human Development Index (HDI) (Value)	Life expectancy at birth (Years)	Expected years of schooling (Years)	Mean years of schooling (Years)	Gross National Income (GNI) per capita (2011 PPP \$)	GNI per capita rank minus HDI rank	HDI Rank (out of 189)
0.536	68.7	11.2	4.4	1,959	11	157

Source: Human Development Report 2019

Rwanda's HDI for 2018 is 0.536. However, when the value is discounted for inequality, the HDI falls to 0.382, a loss of 28.7 percent due to inequality in the distribution of the HDI dimension indices. Guinea and Togo show losses due to inequality of 33.4 percent and 31.7 percent respectively. The average loss due to inequality for low HDI countries is 31.1 percent and for Sub-Saharan Africa it is 30.5 percent. The Human inequality coefficient for Rwanda is equal to 28.4 percent.



²¹⁹ BBC monitoring – Essential Media Insight monitoring.bbc.co.uk

²²⁰ <https://www.statistics.gov.rw/publication/rphc4-population-projections>

²²¹ Human Development Report 2019

Gender Inequality Index

Table 2: Rwanda gender inequality index, 2018

	Value	Rank
Gender Inequality Index (2018)	0.412	95

Source: <http://hdr.undp.org/sites/default/files/hdr2019.pdf>

Rwanda has a GII value of 0.412, ranking it 95 out of 162 countries in the 2018 index. In Rwanda, 55.7 percent of parliamentary seats are held by women, and 12.9 percent of adult women have reached at least a secondary level of education compared to 17.9 percent of their male counterparts. For every 100,000 live births, 290.0 women die from pregnancy related causes; and the adolescent birth rate is 39.1 births per 1,000 women of ages 15-19. Female participation in the labour market is 84.2 percent compared to 83.6 for men.²²²

The Rwandan economy²²³

Rwanda, with a GDP per capita of 818 USD²²⁴ now aspires to reach Middle Income Country (MIC) status by 2035 and High-Income Country (HIC) status by 2050. This aspiration will be carried out through a series of seven-year National Strategies for Transformation (NST1), underpinned by detailed sectoral strategies that are aimed toward achievement of the Sustainable Development Goals.

The NST1 came after the implementation of two, five-year Economic Development and Poverty Reduction Strategies – EDPRS (2008-12) and EDPRS-2 (2013-18), under which Rwanda experienced robust economic and social performances. The NST-1 2017–2024 (Republic of Rwanda, 2017), is the main implementation strategy for the remainder of Vision 2020 and the first seven years of Vision 2050. It combines the previous 7YGP and the EDPRS into one coherent strategy. It will also serve as a strategy for making progress towards achieving the SDGs, the Africa Union *Agenda 2063*, and the EAC *Vision 2050*. Growth averaged 7.5% over the decade to 2018, while per capita growth domestic product (GDP) grew at 5% annually.²²⁵

Donor aid, political stability, low corruption, and pro-investor policies have enabled high economic growth rates (4-9% annually) over the past decade.

Key growth sectors include tourism, coffee, tea, tin mining, construction, and an emerging financial services sector. The government also aims to turn Rwanda into a regional trade, logistics, and conference hub. It has invested in the construction of new business class hotels and a convention center in Kigali, a planned new airport, and an expansion of the national airline RwandAir – which is pursuing U.S. federal approval for direct flights between Kigali and the United States. Much investment has been concentrated in Kigali, which has received international plaudits for its clean and safe streets. Rwanda was ranked 29 out of 190 on the World Bank's 2019 Doing Business report, the only low-income country and one of only two African countries (along with Mauritius) in the top 50. Rwanda's continual improvements in the annual rankings reflect its efforts to reduce bureaucratic red-tape, protect property rights, improve access to credit, expand the supply of reliable electricity, and ensure contract enforcement.²²⁶

Labour market structure and outcome

²²² Human Development Report 2019, Inequalities in Human Development in the 21st Century Briefing note for countries on the 2019 Human Development Report - Rwanda

²²³ Congressional Research Service <https://crsreports.congress.gov/R44402>

²²⁴ Ref: <https://www.statistics.gov.rw/publication/gdp-national-accounts-2019>

²²⁵ Rwanda ESSP 2018 p. 3

²²⁶ Human Development Report 2019, Inequalities in Human Development in the 21st Century Briefing note for countries on the 2019 Human Development Report - Rwanda

About 75% of Rwandans are engaged in agriculture, many for subsistence; the country is nonetheless reliant on food imports, in part due to having the highest population density in continental Africa. The government seeks to transform the economy into one that is services-oriented and middle income, launching programs to expand internet access, improve education, and increase domestic energy production. The percentage of population in working age group (e.g. 16-65) is 57% and that of youth age group (e.g. 16- 24) is 18%.²²⁷

Rwanda has a relatively high unemployment rate of the order of 22.1% (Female 25%; Male 19.6%), and a youth (16 - 30 years old) unemployment rate of 27.2%.²²⁸

Private sector growth and competitiveness in Rwanda is hampered by low levels of productivity and skills in the workforce²²⁹. Employability of the TVET graduates is a challenge²³⁰. Though according to the response from the questionnaire, the recent survey has shown 66% after six months of graduation.²³¹

A priority in TVET will be to ensure relevance to the labour market, through the provision of an innovative, responsive training system. Success will be monitored through graduate transition rates into the labour market and employers' satisfaction with the skills graduates demonstrate. Rwanda is one of the fastest growing economies in Africa and available data indicate that 70% of the TVET graduates and 67% of higher education graduates are able to secure paid employment, and that employers' satisfaction levels are high (MINEDUC, 2016e). A key to success through this ESSP period will be to identify the changing requirements of employers to ensure training provides the relevant bridge to the world of work. Provision of careers guidance and counselling services will be provided at all TVET institutions to orient trainees towards potential opportunities in the rapidly changing Rwandan labour market.

The Education and Training system

Education's alignment to broader Government strategies

Successive Rwandan ESSPs have been aligned to the national macroeconomic development programme – the *Economic Development and Poverty Reduction Strategy* (EDPRS). The goals of EDPRS-1 and EDPRS-2 have been to achieve sustainable economic growth and social development. Four thematic priority areas were identified in EDPRS-2 as a focus for prioritisation and planning. These are:

- Economic transformation.
- Rural development.
- Accountable governance.
- Improved productivity and youth employment.

The Education Sector Strategic Plan (ESSP) 2013/14–2017/18 (MINEDUC, 2013) has contributed substantially and directly to the fourth priority area – *improved productivity and youth employment*. The Education Sector Strategic Plan (2018/19–2023/24) builds upon the achievements of the previous ESSP (2013/14–2017/18) and accommodates new thinking and policy directions that will support Rwanda's aspirations for transformation from a predominantly agrarian-based, low-income economy to an industrial upper middle-income nation by 2035.

Since 2010, the *Seven-Year Government Programme* (7YGP) has provided a broad programme of action guiding the activities of all sectors over the period 2010–2017. It rests on four broad pillars:

²²⁷ <https://www.statistics.gov.rw/publication/rphc4-population-projections>

²²⁸ <https://www.statistics.gov.rw/datasource/labour-force-survey-2020>

²²⁹ Rwanda ESSP 2018 p. 14

²³⁰ Ibid

²³¹ From questionnaire

good governance, justice, economic development, and social well-being; with education, science and technology being included under the latter (Republic of Rwanda, 2010).

Under this broad programme, successive ESSPs have focused on turning the above national objectives into viable education development programmes. The initial focus has been on getting all children and young people into education and enabling them to complete nine years of free education of good quality under the Nine Years Basic Education (9YBE) initiative. This has substantially increased enrolment in primary and lower secondary education. Since 2012, this has been expanded to 12 years of free quality education. The education objectives within the 7YGP are to strengthen the quality of education, to promote Rwanda's cultural values, and to develop graduates who are self-reliant job creators who add value to their products for both the local and foreign markets (Republic of Rwanda, 2010; MINEDUC, 2013).

Since 2010, there has been increased prioritisation and fast-tracking of three policy options:

- A focus on good quality education which is relevant to the national, social, economic and cultural development needs of Rwandans (the achievement of this policy option is expected to result in comparative advantage for Rwanda in both regional and international labour markets).
- Ensuring that children and youth who are out of school and out of training get education and training.
- For Rwanda to be an active member of the East African region, sharing experiences in education, innovation, research and development, and aligning the curriculum to the EAC curriculum framework.

The Education Sector Policy Framework

The national education goals and objectives in the Rwandan *Education Sector Policy* (MINEDUC, 2003) provide the philosophical basis of the role of education in the country and are the basis for developing all education development programmes. The core objectives and messages echoed in the education policy framework are underpinned by the following 8 specific policy objectives:

Box 1: Education policy objectives

- To ensure that education is available and accessible to all Rwandese people.
- To improve the quality and relevance of education.
- To promote the teaching of science and technology, with a special focus on ICT and usage of digital content in all subjects.
- To promote the four languages of Kinyarwanda, English, French and Swahili in the country, with English as the language of instruction for teaching and learning at all levels except preprimary and lower primary, where Kinyarwanda is used.
- To promote an integral, comprehensive education oriented towards the respect of human rights and adapted to the present situation of the country.
- To inculcate in children a sense of, and to sensitise them to, the importance of the environment, hygiene and health and protection against HIV/AIDS.
- To improve the capacity for planning, management and administration of education.
- To promote research as a mobilising factor for national development and to harmonise the research agenda.

Those objectives have paved the way to the development of a series of sub sector and thematic policies plans. A list is being given in ANNEX I.

Rwanda has achieved significant success against the education MDGs, achieving the goal of universal primary education, with a Net Enrolment Rate (NER) of 97.6% (MINEDUC, 2016*b*). Rwanda also boasts the highest Primary Enrolment Rates in East Africa, as well as gender parity at preprimary, primary and secondary levels. Rwanda is committed to the SDGs, Ministry of Education is the lead for SDG 4, which states: ‘Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.’

This is central to the ambition of the ESSP 2018/19 - 2023/24. Targets under SDG 4 cover every level of education from pre-primary through to tertiary education, including a target that by 2030 all girls and boys will complete free, equitable and quality primary and secondary education, leading to relevant and effective learning outcomes. Targets also make reference to skills development, education for global citizenship and education for sustainable development.

Table 3: Educational Status

School completion rate	Primary	Secondary
Female	89%	17.4%
Male	101.8%	20.4%
Total	95.4%	18.9%

Source:

https://mineduc.gov.rw/fileadmin/Documents/statistics/Rwanda_Education_Statiscal_Year_Book_2019.pdf

Governance

The Ministry of Education (MINEDUC) assumes the lead responsibility for policy formulation, educational planning, coordination and M&E at the national level, and is the lead Ministry for the education sector, with responsibility for policy formulation, coordination and regulation through setting norms and standards for the education sector.

MINEDUC’s mission is “To transform Rwandan citizens into skilled human capital for the socioeconomic development of the country by ensuring equitable access to quality education, focusing on combating illiteracy, promotion of science and technology, critical thinking, and positive values.”

It works closely with semi-autonomous Government agencies and with other Government Ministries at central and decentralised levels such as the Rwanda Education Board (REB), the Workforce Development Authority (WDA), the Rwanda Polytechnic (RP), the Higher Education Council (HEC), the University of Rwanda (UR) and the National Commission for UNESCO (CNRU).

The decentralisation process in Rwanda has devolved greater levels of accountability and decisionmaking to districts and schools but there remains a need to strengthen governance and accountability at district and school level, and to improve school management and inspection – especially around issues of teaching and learning.

Below is the structure of the Education and Training system.

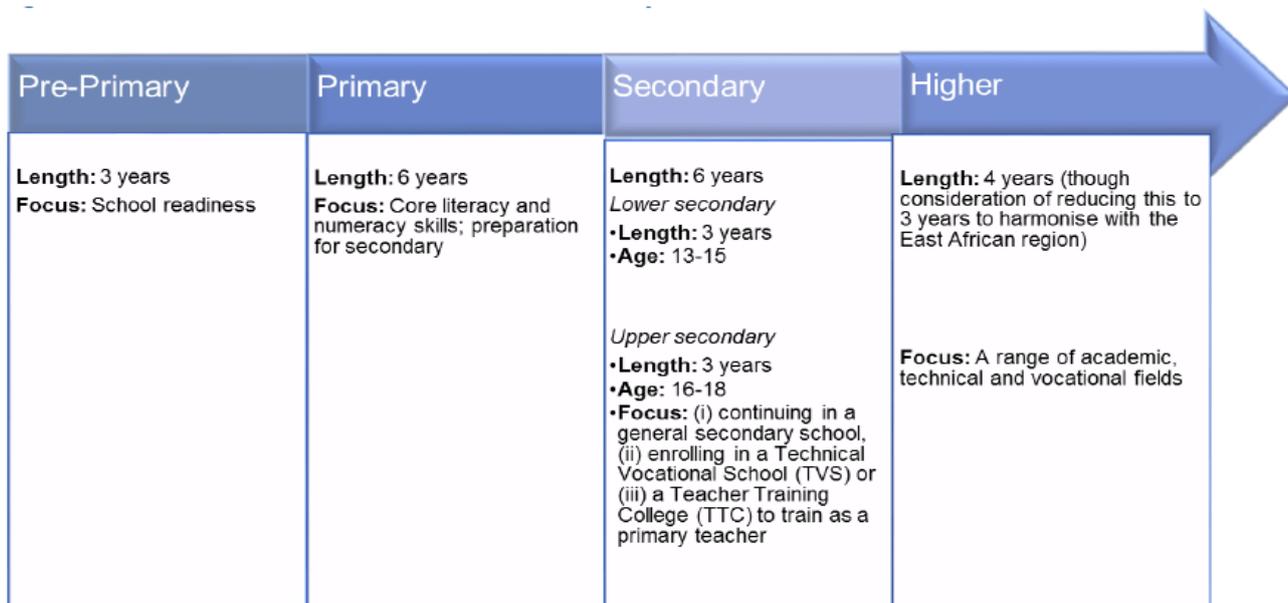


Figure 1: Structure of the Rwandan education system, 2017

The TVET Sector

The TVET sub-sector has developed a comprehensive policy framework and institutional and organisation infrastructure for delivery of the TVET policy (2015) and accompanying strategy, as well as a *National Policy on Workplace Learning to Prepare Rwandan Youth for Employment (Workplace Learning Policy)* (MIFOTRA, 2015) The new WDA and RP law (2017) specifies TVET institutional mandates, structures, roles and responsibilities. The focus of all these policy frameworks is for Rwanda to move towards a demand-driven, labour market-oriented system of training, with programmes producing the skills required in the world of work – employed and self-employed.

Overall objective

The overall objective of TVET policy is to guide the provision for practical hands-on-skills to meet the labor market demands. TVET general objective is to provide the economy with qualified and competitive workers and to train citizens able to participate in economic growth, poverty reduction and environment protection by ensuring the same training opportunities to all social groups without discrimination.²³²

The different TVET Policies and Strategies guiding the TVET system are:

Access

Skills **levels of TVET** in Rwanda are delivered at various education levels as stipulated in Rwanda TVET Qualifications Framework (RTQF), the tools that define levels of competences of graduates with different certifications. These trainings are conducted in two categories of schools including: TVET schools and Polytechnics. These schools are owned by Government, government aided schools and private Investors. It is also important to note that every Rwandan with any prior education level can find where to enrol to acquire the solicited TVET skills.²³³

- **TVET schools** – these schools deliver technical and vocational training for principally 9 Year Basic Education graduates and other beneficiaries regardless of their level of education. Under the new system and the Rwanda TVET Qualifications Framework (RTQF), these centres predominantly offer from level 1 up to Level 5 to all Rwandans. These qualifications utilize a

²³² From Questionnaire

²³³ From Questionnaire

modular system, allowing these modules to be offered at the TVET schools as short-courses for rapid skill upgrading.

- **Polytechnics** – these institutions deliver training at post-secondary technical college level. Students who enrol in these colleges must have completed the upper secondary school or equivalent. Polytechnics provide 2-3 year diploma and/or advanced diploma courses to produce higher-level technicians corresponding to level 6 and 7 of the RTQF.

There has been a continuous increase in the number of TVET schools and students. However, the number of male students is always greater than that of females. Table 2 shows the enrolment trends in Vocational Training Centres (VTCs), Technical Secondary Schools (TSSs) and polytechnics.

Table 4: TVET enrolment trends from 2012 to 2016

Year	2012	2013	2014	2015	2016
Enrolment (all categories)	74,320	83,893	93,024	94,373	93,158
Male	54.3%	56.9%	56.3%	58.2%	58.2%
Female	45.7%	43.1%	43.7%	41.8%	41.8%
TVET providers (all categories)	278	308	365	383	394

Source: MINEDUC (2012) and MINEDUC (2016b)

Of the three categories, the TSS share of the students was 65,583, followed by VTCs, with 18,585. In the period between 2012 and 2016 the number of TVET providers increased from 278 centres to 394 centres. Overall, there has been a steady increase in the numbers enrolled in these programmes, albeit with a slight decline in 2016 in TSSs. Overall enrolment has increased by 25%, from 74,320 in 2012 to 93,158 in 2016, but this has been against an ESSP target of 134,185, which required an 80% expansion. Informal TVET, which is provided by industries, is not included in this official statistic and, if it was considered, thus need to be considered in future Statistics, the current enrolment figures would move upwards, estimated to be 116,292 students. EICV-4 data (NISR, 2016) indicate that the share of the population enrolled in TVET courses increased slightly from 2.06% in EICV-3 (2011) to 2.46% in EICV-4 (2013).

Table 5: TVET enrolment trends from 2016 to 2019

Description/Year	2016	2017	2018	2019
Total trainees	93,158	90,015	92,835	97,235
Male	52,090	51,381	53,246	56,708
Female	41,068	38,634	39,589	40,527
% of Male	55.9%	57.1%	57.4%	58.3%
% of Female	44.1%	42.9%	42.6%	41.7%
Trainees in Public schools	27,761	28,598	30,972	34,045
Male	17,381	18,648	20,011	23,267
Female	10,380	9,950	10,961	10,778
Trainees in Government aided schools	12,484	12,208	12,170	12,411
Male	7,231	6,853	6,595	6,682
Female	5,253	5,355	5,575	5,729
Trainees in Private schools	52,913	49,209	49,693	50,779
Male	27,478	25,880	26,640	26,759
Female	25,435	23,329	23,053	24,020

Table 6: TVET providers

TVET providers (all categories)	394	402	360	341
Public	104	102	96	92
Government aided	42	40	45	45
Private	248	260	219	204

The transition rate from secondary to TVET (including horizontal transition) is 31.6% (they are students who joined TVET level 3 from ordinary level in 2019)²³⁴. Rwanda plans to continue investment in TVET, with the aim of ensuring 60% of students leaving 9YBE access high quality, demand-driven, competence-based TVET programmes in TSSs or VTCs. The graduates of the TSSs will also be oriented towards higher-level specialised TVET courses offered by polytechnics. The expected increased enrolment will be a shared responsibility between the public and private sectors. This will ensure that Rwanda attains adequate and skilled human resources to address the imbalance in the supply and demand of skilled labour.

During the period of this ESSP 2018/19–2023/24, at least one upper secondary school of excellence will be established in each district and at least four TVET centres of excellence will be established across the country, benchmarked against regional and international standards, supported by a gender-sensitive business plan to promote increased female participation.²³⁵

The 2019 statistics show that trainees in private schools have a big share of 52.2% compare to the public and government aided schools. The trainees in public schools are 35 % and government aided represents 12.8%. This is the results of ongoing initiative of encouraging private operators to invest in TVET. Provision of TVET is also done through workplace in a formal of Industrial Based Training, Rapid Response Training and Recognition of Prior Learning.²³⁶

Equity

Gender and equity are cross-cutting themes. GoR has a draft *Girls' Education Policy* (2017) (MINEDUC, 2017b) and a *Draft Revised Special Needs and Inclusive Education Policy* (2017) (MINEDUC, 2017c), which both update the previous 2008 versions. These recognise that additional resources are often needed to enable all students to access education. In 2016, enrolments are close to gender parity at the pre-primary and primary level, but girls outnumber boys in secondary education (MINEDUC, 2016b). MINEDUC keeps statistics of enrolment of pupils with disabilities at every level, which is commendable.

Gender dynamics in TVET have seen little change over the last five years, with the percentage of female students reducing slightly, from 45.7% in 2012 to 41.8% in 2016. The *2017 Education Sector Analysis* (MINEDUC, 2017) shows significant differences between the sexes in choice of subject, heavily influenced by traditional gender roles. There continues to be under-representation of female learners in TVET programmes.²³⁷

Students leaving lower secondary education who joined TVET decreased from 33.1% in 2018 to 31.6% in 2019. A significant difference between male and female is observed: between 2016 and 2019 male registered a percentage increase of 6.5 % (from 30.2 to 36.7%) while female registered a percentage increase of 0.7% (from 26.1 to 26.8%).²³⁸ No incentives have been introduced yet to

²³⁴ https://mineduc.gov.rw/fileadmin/Documents/statistics/Rwanda_Education_Statiscal_Year_Book_2019.pdf

²³⁵ MINEDUC ESSP 2018/19 p. 27

²³⁶ From questionnaire

²³⁷ Rwanda ESSP 2018 p. 10

²³⁸ Rwanda Education Statistical year book 2019 p. 68

promote gender in TVET. However, there is political will to ensure at least 30% of students are female.²³⁹

Out of the 18,585 trainees enrolled in VTCs, 290 (1.56% of trainees) have some forms of disability and 51.38% of them are female. In addition, the data indicate that 3,235 students enrolled in VTC are orphans and 47.91% of them do not have fathers and 22.23% do not have both parents. The number of orphans in VTCs has decreased, from 6,276 in 2015 to 3,235 in 2016.²⁴⁰

TVET attendance is predominant in urban rather than in rural areas and it is highest in Kigali than elsewhere (NISR, 2016). When age is considered, access to TVET for younger individuals is still limited (about 2%), whilst the highest TVET school attendance was observed among the population aged between 20 and 24 years (5%) (NISR, 2016). There was a drastic decrease among the older cohort of those aged between 25 and 29 years (from 12% in EICV-3 to 3% in EICV-4), an indication that access to TVET is getting more common among the younger individuals than the older ones.

To the question as to what are the innovative solutions/approaches that could be introduced to improve access, quality and relevance especially those that rely on digital technology, it was interesting to underline that the response in the questionnaire had all to do with new technology, namely:²⁴¹

- Digitization of training programs
- Establishment of smart classrooms in all TVET schools
- Ensure Internet connections in all TVET schools
- Ensure penetration of ICT devices such as laptops, etc

However, when asked about the strategies that the government should put in place to change the general negative social perception of TVET as an inferior option and a 'second-class' education, which fosters its stigmatisation and marginalisation as a low status track for poor academic achievers in many African countries, the response had all to do with traditional inputs viz;²⁴²

- The Government should conduct awareness campings on the importance of TVET in terms of employability (Get quick employment of self-employment)
- Ensure the implementation of career guidance framework
- Ensure quality TVET delivery. Through this, TVET will market itself.

Quality and Relevance

The Workforce Development Authority (WDA) was initially established in 2008 to provide the institutional framework to provide a strategic response to the skills development challenges facing the country across all sectors of the economy. However, the new enactment of 18/10/2016 re-defines its mandate as a TVET overall supervisory and quality standards body. The main functions now include developing TVET standards; monitoring implementation; policy dissemination; and playing an advisory role in relation to all TVET implementers.

The effectiveness of TVET is reported through the *National Tracer Survey and Employer Satisfaction Survey for TVET Graduates* (WDA, 2016). It showed that 75% of employers report being satisfied with the skills of TVET graduates, one percentage point below the ESSP target of 76% (MINEDUC, 2013). However, the *Rwanda Private Sector Development Strategy* (MINICOM, 2013) states that the percentage of employers identifying limited skills of educated workforce as a major constraint to productivity has doubled since 2006, and calls for urgent measures of intervention. The private sector growth and competitiveness in Rwanda is hampered by low levels of productivity and skills in the

²³⁹ From input to questionnaire

²⁴⁰ Rwanda ESSP p. 10

²⁴¹ Input to questionnaire p. 13

²⁴² Ibid

workforce. Several studies (WDA, 2016; HEC, 2015) have pointed to challenges relating to the employability of the graduates from upper secondary and TVET institutions and HEIs.²⁴³

On the other hand, there is a lack of adequate infrastructure, equipment and constant supply of training consumables. According to WDA quality audit report (2018), only 40% of TVET schools have adequate facilities while others are in poor conditions or in alarming situation. 23 % of schools do not have any workshop for practice. Only 15% of them have smart classrooms while 14 students share one (1) computer. This situation is due to the insufficient funding of the TVET subsector. This lack of equipment and consumables leads to the limited number of practical sessions which hinder the implementation of competency based curriculum.²⁴⁴

Yet, the methodology for developing computer based curricula is there as per the questionnaire. But it seems that the sector skills councils exist but not operational properly. There is Limited involvement of industries and private sector: the level of engagement of industries in areas of skills development and TVET implementation is not yet at the required standards, especially when it comes to workplace learning. There is a need to engage private companies especially for implementation of the dual training.²⁴⁵ To have industry practitioner participation in curriculum development workshops is difficult as they request a monetary compensation for them to allow them to leave their business for some time and come to contribute in curriculum development.²⁴⁶

Management of TCs

TVET schools are categorized as follows:

- TVET schools at lower level (level 1-5) : These schools have School Assembly Committee which is composed by representatives of Parents, teachers and students
- Integrated Polytechnic Regional Colleagues (IPRCs) : these schools have Senate and Board of Governing

According to the response in the questionnaire, industry is not represented on the management committee.

On the other hand, TCs' managers are given training in leadership and management in the framework of in-service training. Currently, Rwanda TVET Trainer Institute is piloting School management and leadership training program for TVET school managers. Besides, there are two meetings between the Management of the TCs and their trainers every term, at the beginning and end of term.

Trainers

Available EMIS data indicate that 93% of all primary teachers and 69.2% of secondary teachers are qualified. However, over 74% TVET trainers are not pedagogically qualified. There is a need of Full Operationalization of Rwanda TVET Trainers Institute and its satellite centres.²⁴⁷

Table 7: Total Number of TVET trainers in public and private TCs

	<i>Male</i>	<i>Female</i>	<i>Total</i>
<i>Public TCs</i>	<i>2549</i>	<i>856</i>	<i>3,405</i>
<i>Private TCs</i>	<i>2357</i>	<i>946</i>	<i>3,306</i>

²⁴³ Rwanda ESSP 2018 p. 14

²⁴⁴ From questionnaire

²⁴⁵ From questionnaire

²⁴⁶ From questionnaire

²⁴⁷ From questionnaire

Regarding the profile of trainers, it depends on the level at which the Trainer is providing training. In principle, a trainer should be certified and train at a level below his/her level of qualification. There are policies for training of trainers and their continuous professional development (CPD) and the budget is generally come from the Projects and Development Partners.

One major problem is that TVET trainers keep on leaving the teaching profession because they look at a more competitive salary which TCs cannot afford to pay them. However, Rwanda is working on TVET financing module which can impact on TVET trainer incentives.²⁴⁸

There are currently five categories of TVET trainers, of which 29% are certified and accredited. The projected increase in TVET enrolment will mean that an increased number of new TVET trainers will be required, all of whom will require training according to the Rwandan TVET trainers and 'training of trainers' qualification frameworks. For trainers to be certified, they must be competent in both the occupational-related subject and in the necessary pedagogical skills to deliver the competence-based curriculum. Institutionalisation of CPD for TVET trainers is expected to help meet the demands of the fast-changing world of the labour market.

With regard to the integration of entrepreneurship skills in the teaching of TVET, there is an entrepreneurship module at each level of RTQF. Actually there are teachers who have an entrepreneurship background. To be noted that most of trainers/teachers got pedagogical skills but do not have technical skills. In addition, other soft skills are also integrated in TVET teaching, namely:

- ICT skills*
- Communication at workplace
- Languages a workplace
- Safety, health and environment at workplace

However, sustainable development is not integrated in the TVET programme.

*With regard to ICT, the problems are mainly related to shortage of internet connection and lack of sufficient computers.²⁴⁹

RTQF

In June 2012, the Authority launched the TVET Rwanda Qualifications Framework (RTQF) which is a tool used to measure and define how the learners have to proceed from one year to the other, using the course modules that are universal to all TVET institutions in the country. The current Rwanda TVET Qualifications Framework (RTQF) consists of seven levels while the highest qualification is only advanced diploma (level 7). Based on RTQF, TVET Institutions are limited to offer training programs up to advanced diploma only, which is a barrier in professional development of human resources. There is a need to upgrade the RTQF up to level 9 and finalize the development of Bachelor and Masters of Technology.²⁵⁰

ICT in TVET

An ICT in Education Policy (MINEDUC, 2016d) which focuses on developing digital content aligned to the curriculum; increased ICT penetration and usage in education through smart classrooms; the development of education leadership and training courses for teachers in and through ICT; and enhanced teaching, learning and research through ICT. STEM and ICT are core GOR priorities for improving the relevance of education. However, there is currently a shortage of adequately qualified teachers and lecturers, and of laboratory equipment and in schools, TVET institutions and HEIs.

²⁴⁸ Input from questionnaire

²⁴⁹ Input from questionnaire

²⁵⁰ Ibid

However, only 13% of secondary schools have an Internet connection and 22.9% of TVET institutions have smart classrooms (MINEDUC, 2016b)²⁵¹. With respect to TVET,

- Provision and levels of ICT infrastructure for TVET and higher education institutions will be determined by RP and HEC.
- Similarly, TVET trainers and HEI lecturers' competencies to use multi-media in the delivery of lessons, including online learning, will be promoted. This will include the use of technology to support improvements in pedagogy.
- In support of the acceleration of the necessary growth in TVET, these courses will be digitalised and made available to learners across the country.

TVET Funding

MINEDUC's budget has been fairly stable in recent years. In 2017/18, the sector has an estimated budget of just under 241 billion Rwandan francs (FRW) that is 13.1% of the GoR's national budget. This is slightly under international guidelines, which suggest that 15%–20% of Government expenditure should be devoted to education. Out of this, 12% (29 billion FRW) is allocated to TVET whilst there has been a reduction in allocation for higher education (15%).²⁵²

The major sources of funding of TVET in Rwanda are

- Government
- Development Partners
- Private Sector
- Parents (Training fees) estimated to be 5%

It has to be underlined that External contributions reflect Government priorities and support is given on- and off-budget. In 2016/17, donors contributed approximately an additional FRW 32 billion in off-budget projects, with 52% going to TVET (16.7 billion FRW).

According to ESSP 2018, the various options of orienting 60% of lower secondary education graduates into quality TVET programmes and the implementation of the Rwanda TVET Qualification Framework (RTQF), competence-based curriculum, quality standards, a trainer's strategy and modernising TVET infrastructure, might be difficult to achieve without additional financial resources.

Key challenges in the Education and Training sector²⁵³

Rwanda has made considerable progress in the education sector over the last five years. Yet, some key challenges remain as outlined in the *2017 Education Sector Analysis* (MINEDUC, 2017) as follows:

Challenge 1: Insufficient teacher competencies in subject content, pedagogy and languages of instruction (English) threaten to jeopardise curriculum delivery and inclusion, and ultimately negatively impact on student learning outcomes. Ensuring teachers, trainers and lecturers have the knowledge and skills to implement the new competence-based curriculum will be the biggest success factor in relation to providing quality education and is therefore the main priority for this ESSP.

Challenge 2: GoR currently invests below the recommended 15% - 20% of the overall Government budget to education, which creates a risk to the sustainable expansion of quality education.

Challenge 3: The current mechanisms and tools to monitor progress (e.g. through the measurement of key composite indicators to enable more effective monitoring of the ESSP) are not strong, which poses a major risk to the provision of equitable access to relevant, quality education. New indicators

²⁵¹ Rwanda ESSP 2018 p. 14

²⁵² Rwanda ESSP 2018 p. 12

²⁵³ Rwanda ESSP 2018 p. 14

and disaggregated data are required for key indicators to better target interventions as, whilst considerable progress has been made in increasing access to education, this has not been even across wealth quintiles, gender, different socio-economic groups or amongst children and young people with Special Educational Needs (SEN). Disparities in both access and quality also remain between urban and rural communities, and across districts.

Challenge 4: Limited coordination between ESSP and district plans through *performance contract* poses a risk to education sector progress. The *2016 MTR of the ESSP* (MINEDUC, 2016e) identifies a system weakness in regard to monitoring the quality of learning, and reinforces that responsibility for creating conditions for schools to flourish and children to learn effectively is heavily weighted towards district administrators, over whom central Government agencies have limited influence.

Challenge 5: Insufficient cooperation between the public and private sector in education poses a moderate risk for coherent expansion and quality – particularly for pre-primary, TVET and higher education.

Actions for TVET Reform

ESSP 2018/19 – 2023/24. The Sector Strategic priorities have been formulated based on assessment of progress under ESSP 2013/14 – 2017/18, the challenges identified in the 2017 Education Sector Analysis (MINEDUC, 2007) and an extensive and collaborative consultative process with over 250 education stakeholders. New areas under this ESSP include STEM, ICT, research and innovation, all of which are key national priorities. It must be underlined that all levels of education, including TVET, are concerned.

The 9 strategic priorities together with their relative outcomes are clearly spelt out in the ESSP 2018/19 – 2023/24, which has as vision “*To ensure Rwandan citizens have sufficient and appropriate competencies (skills, knowledge and attitudes) to drive the continued social and economic transformation of the country*” together with the activities needed to achieve those individual outcomes. The strategic priorities and outcomes are as follows:

Strategic Priorities	Outcomes
1. Enhanced quality of learning outcomes that are relevant to Rwanda’s social and economic development	<p>1.1 All learners achieve basic levels of literacy and numeracy in early grades and beyond.</p> <p>1.2 All learners enter primary school at the correct age and successfully complete 12 years of basic education.</p> <p>1.3 TVET and HEI programmes are responsive to both labour market needs and Rwanda’s social and economic development.</p>
2. Strengthened CPD and management of teachers across all levels of education in Rwanda	<p>2.1 All schoolteachers, TVET instructors and higher education lecturers have appropriate levels of skills and competencies to deliver the curriculum.</p> <p>2.2 Improved management, welfare and deployment of teachers in order to attract and retain high quality teachers in the teaching profession.</p>
3. Strengthened STEM across all levels of education in Rwanda to increase the relevance of education for urban and rural markets.	3.1 STEM strengthened across all levels of education
4. Enhanced use of ICT to transform teaching and	4.1 ICT strengthened across all levels of education

learning and support the improvement of quality across all levels of education in Rwanda.	
5. Increased access to education programmes, especially at pre-primary, secondary, TVET and higher education levels, in Rwanda.	5.1 All children complete school readiness programmes. 5.2 Increased number of students enrolled in TVET and higher education programmes. 5.3 Increased adult literacy and numeracy
6. Strengthened modern school infrastructure and facilities across all levels of education in Rwanda	6.1 All schools, TVET and higher education institutions have sufficient modern infrastructure, facilities and resources
7. Equitable opportunities for all Rwandan children and young people at all levels of education.	7.1 Ensure gender parity in participation and achievement at all levels of education. 7.2 Increased participation and achievement of children and young people with disabilities and SEN at all levels of education
8. More innovative and responsive research and development in relation to community challenges	8.1 Increased research and development that responds to community challenges with innovative approaches 8.2 Enable the country to be an active contributor to the global knowledge economy
9. Strengthened governance and accountability across all levels of education in Rwanda	9.1 Improved leadership in schools, TVET and higher education institutions, as well as administration, management and support services. 9.2 Improved public–private partnerships (PPPs) in education. 9.3 Improved linking of central and decentralised education planning.

This is followed by a more detailed narrative of the rationale behind each strategic priority, what results/outcomes are expected, and what the key activities are for realising the expected outcomes. The paper will now focus only on the activities concerning the TVET sub sector.

	Outcome	Activities
Responsiveness to labour market	TVET and HEI programmes are responsive to both labour market needs and Rwanda’s social and economic development	<ul style="list-style-type: none"> • Increase in uptake of TVET as a post basic option • Creation of clear pathways into different levels of TVET • Increase the availability of competence-based, responsive TVET curricula • Increase in the number of TVET graduates who have the required skills and competencies at graduation • Establishment of partnerships with private sector in design and delivery of courses • Research collaboration between national, regional and international HEIs

Trainers	All schoolteachers, TVET instructors and higher education lecturers have appropriate levels of skills and competencies to deliver the curriculum	<ul style="list-style-type: none"> • Skill all newly qualified teachers to deliver the competence-based curriculum • Provide school-based mentoring for all newly recruited teachers • Increase the English language proficiency of all teachers • Increase the number of teachers practising school-based CPD linked to competence-based curriculum • Increase in the use of TVET Trainers' qualifications framework and occupational curricula for all trades • Implement TVET quality assurance standards at all levels • Retain and incentivize qualified and certified TVET Instructors
	Improved management, welfare and deployment of teachers in order to attract and retain high quality teachers in the teaching profession	<ul style="list-style-type: none"> • Increase use of Teacher Management Information System (TMIS) for effective management and distribution of teachers • Improve teachers' welfare in order to attract and retain high quality teachers in the teaching profession
STEM	STEM strengthened across all levels of education	<ul style="list-style-type: none"> • Establish STEM schools of excellence in every district
ICT	ICT strengthened across all levels of education	<ul style="list-style-type: none"> • Equip primary, secondary, TVET and higher education institutions with smart Classrooms • Enhance teaching skills in ICT across all levels • Develop and use digitalised content for all levels of education
Access	Increased number of students enrolled in primary, secondary, TVET and higher education programmes	<ul style="list-style-type: none"> • Increase enrolment in TVET
	Increased adult literacy and numeracy	<ul style="list-style-type: none"> • Increase in enrolment in adult literacy programmes • Provide greater access to reading materials for neo-literates • Train more adult literacy instructors
Infrastructure and Facilities	All schools, TVET and higher education institutions have sufficient modern infrastructure, facilities and resources	<ul style="list-style-type: none"> • Equip schools to meet minimum standards, including for electricity, water, toilets and hand-washing facilities • Increase investment in TVET and HEI infrastructure and facilities
Gender Issues	Ensure gender parity in participation and achievement at all levels of education	<ul style="list-style-type: none"> • Raise public awareness of the different barriers to boys and girls completing and achieving in education

		<ul style="list-style-type: none"> • Increase the number of teachers trained in gender-responsive pedagogy • Increase the percentage of female TVET trainees and trainers
	Increase the participation and achievement of children with disabilities and SEN at all levels of education	<ul style="list-style-type: none"> • All schools run community campaigns to change attitudes towards the right to education of LwD • Increase in number of schools, TVET and higher education institutions that meet standards of accessibility for LwD • Give schools, TVET and higher education institutions access to adapted teaching and learning materials for learners with SEN • All TTCs and Teacher Training Institutes (TTIs) include a component on inclusive education and teachers are also provided with in-service and CPD opportunities • All schools have at least one teacher who is competent in inclusive education • All teachers identify learners with SEN and take action to ensure needs are met • Increase in the supply of assistive devices and services to support access and learning of LwD and those with SEN • Increase in the number of children and young people with SEN sitting national exams
Research and Development	<p>Increased research and development that responds to community challenges with innovative approaches</p> <p>Increased number of cited publications emanating from collaborative research in Rwanda as well as number of patents which will demonstrate the impact of the country in the global knowledge economy</p>	Increase the number of locally produced and published research/studies that are relevant to the socio-economic development of Rwanda
Governance	Improved leadership in schools, TVET and higher education institutions, as well as administration, management and support services	Increase in the number of schools, TVET and HEI leaders trained and mentored in Leadership
	Improved PPPs in education	Strengthening links between TVET institutions, local communities and private sector, particularly in financing and work placements

	Improved linking of central and decentralised education planning	Developing and implementing an ESSP implementation communications strategy to ensure greater linkages between district education plans and ESSP priorities
--	------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------

Cross cutting issues

The following are cross cutting issues and are present throughout the system in all levels of the education sector. They are:

- Gender, SEN and inclusive education
- School health, hygiene, sanitation, environmental protection and climate change
- HIV/AIDS prevention, life skills and sports
- Institutional capacity building
- Regional integration and international benchmarking

The ESSP 2018/19 -2023/24 details how they must be mainstreamed as part of the delivery of education services in Rwanda.

The Fourth Industrial Revolution

Whether we like it or not, Artificial Intelligence, Cloud Computing, Internet of Things and Wireless Technologies have taken over our daily lives, blending our digital, biological and physical worlds. This seismic change can particularly be felt in the workplace and every industry around the world. Many of the professions that will most likely be affected by labour market transformations brought about by the 4IR are linked with TVET.

As to the understanding of the 4IR the response provided in the questionnaire shows a clear understanding and how it is going to impact Rwanda economically, socially and educationwise. As to the disadvantages of 4IR in TVET in Rwanda, the respondent mentioned the following:

- One of the main disadvantages is that 4IR technologies can be introduced in TVET education unless the whole country has developed the tools and infrastructure to support this and this calls to heavy investment by the government.
- There is need to have skilled trainers to adopt the 4IR technologies in teaching and learning and these are not there yet.
- Need for the tools and equipment for students to use in TVET for utilization of 4IR technologies in learning and this calls for the budget to individual students and the Institution.

As to the question whether the TVET institutions in Rwanda are in a position to adopt the technologies associated with the 4IR, the response was positive as the government’s will is there and necessary efforts are being made:

- Yes, the TVET institutions in Rwanda are in a position to adopt the technologies associated with the 4IR because of the Government will to embrace technologies in all economic sectors, the Government has put in place the necessary IT infrastructure across the country and most importantly all higher learning TVET Institutions are connected to fibre link and would be a big boost to adopt the 4IR.
- More effort is being made by the Government to have TVET education taking up to 60% of students in education and this shows a will and preparation of the government to adopt 4IR through TVET education. However there is still a need to prepare the ground to with the right technologies, tools and equipment to make sure our TVET institution are ready to adopt the 4IR.

Concrete examples provided are as follows:

- In Educational administration, *the TVET institutions manage the student's data like, registration, application, payment transactions, assessment and grading online using the Management Information Systems.*
- In Teaching and learning, *the students are being taught online via elearning platform, where virtual classrooms are created, video conferencing, online attendance, online assessment and grading. Technologies such as robotic training have been embraced in TVET institutions and good internet connection is being used via fibre link and 4G network.*

When it comes to how has the use of 4IR technologies affected the cost of TVET in Rwanda, the respondent has limited his response to e learning and its advantage in the COVID 19 period. He acknowledged limited use because the 4IR has not been used on high scale as there is need to develop and deploy the technologies and tools necessary for 4IR training in TVET at a significant level. The use technology in teaching and learning has been a barrier because not all students have the necessary equipment and tools and internet connection is either not good enough or not covering the whole country. This can affect the educational outcome in TVET as facilities to use the 4IR in teaching are not adequate.

Regarding lessons learned in the introduction of the 4IR technologies into Rwanda, and the advice he would give other TVET institutions in other countries, he had this to say:

- The graduates come out equipped with new technologies and hence competitive to the global market though they have not reached the level they desire.
- The use of 4IR technologies leads to cost reduction in the TVET education
- Resources can easily be shared online within different institutions and this can even be extended across the borders.
- Good skilled trainers can easily train many students from different institutions as this would be done online.

Concerning how can digital skills be integrated into technical and vocational training in the era of the 4IR with cascading effect to help advance access and quality for learners in an inclusive manner, respondent stated that:

- Technology can be used in teaching and learning and this means that once the infrastructure is developed the access and quality can be easily attained as the students can study from wherever they are and this would be cost effective to the students.
- In terms of quality the skilled trainers can easily be accessed and used even from across the country borders.
- The use of new technologies and high-end equipment of 4IR in training would lead to the competent graduates in the labour market on the globe.

With respect to the innovative solutions/approaches that could be introduced to improve access, quality and relevance especially those that rely on digital technology, he proposed the following:

- Access: Use of technology in teaching and learning like video conferencing, online content, virtual classroom would be an innovative solution to improve access in TVET education.
- Quality: The use of online content, virtual classroom and sharing on resources online as well collaboration with other institutions and other nations would improve the quality of education since skilled experts can easily be accessed.
- The availability of technological tools on premises and online would improve relevance as technology has no discrimination in usage, hence this improves relevancy.

Concerning cross-border collaborations/partnership which can be used to promote TVET using digital technology, the response was that

- Some countries may be more advanced in the use of digital technology so borrowing of ideas and learning from others countries experience would be important in promotion of TVET at a much faster rate.
- The technologies can always be shared, and hence new technologies developed, or tools and equipment in one country can be used online by another country once there is good collaboration and partnership without duplicating the same technologies. This would save in terms of time and money.
- Skilled trainers from one country can also help in training in another country once there is good collaboration and partnership since with technology, training can also done online using video conference, virtual classrooms and remote laboratories and other tools using digital technologies

With respect to the barriers to enacting 4IR within the TVET training centres in order of priority, he pinpointed financial restrictions, lack of staff expertise and the need to acquire new knowledge, lack of relevant course examples, requirements of professional associations and the lack of staff awareness to be the 5 major ones. It is interesting to note that perceived irrelevance by staff and students are mentioned as the smallest barriers.

Conclusion

Rwanda is a country which has made tremendous progress from the genocide which hit it in 1994. It has laid tremendous emphasis on education and training in order to move it forward. Rwanda considers that TVET does not only provide skills to gain paid employment but also to promote and support creativity, innovation and entrepreneurship to develop the ability to create jobs and employment opportunities. It is one of the most powerful tools to fight poverty. Rwanda believes that Technical and Vocational Education Training (TVET) skills are one of the drivers that support the economic transformation the country needs.

As a result, it has come up with a series of Education Sector Strategic Policies in line with its economic development policies, the latest being ESSP 2018/19 -2023/24 which details various objectives, outcomes, activities and targets. The country's target in the National Strategy for Transformation (2017-2024) is to increase the number of students attending TVET schools to 60% by 2024 from 31.1% in 2017. It aspires to reach Middle Income Country (MIC) status by 2035 and High-Income Country (HIC) status by 2050.

Integrating the technology of the 4IR can fit in the Rwanda ESSP 2018/19 – 2023/24. Already, new areas under this ESSP include STEM, ICT, research and innovation, all of which are key national priorities. Obviously, necessary technical and financial assistance would have to be made available to build up the necessary infrastructure and equipment (teaching and learning, and educational management), the training of trainers, the training materials.

Bibliography

1. Republic of Rwanda, Education Sector Strategic Plan 2018/19 – 2023/24
2. BBC monitoring – Essential Media Insight monitoring.bbc.co.uk
3. Congressional Research Service <https://crsreports.congress.gov/R44402>
4. Puttanna K and Dusaidi G. Odette, (2017), Research paper 'TVET on the labour market of Rwandan youth', EPRA International Journal of Economic and Business Review

ANNEX I

Rwanda has a series of education sector policies. There is a series of Policies which have been developed to ensure that TVET is aligned with the national policies of the country.

- EDPRS 1
- EDPRS 2

List of education Policies

- Draft Revised Special Needs and Inclusive Education Policy (2017);
- Draft Girls' Education Policy (2017);
- Draft Curriculum and Assessment Policy (2016)
- Early Childhood Development Policy (2016) and accompanying Strategic Plan;
- Information and Communication Technology (ICT) in Education Policy (2016) and accompanying Implementation Framework;
- Draft Teacher Development and Management Policy (2016) and accompanying Strategic Plan;
- Competence-Based Curriculum Framework (2015)
- Technical and Vocational Education and Training (TVET) Policy (2015) and accompanying Strategic Plan;
- Workplace Learning Policy (2015);
- Higher Education Policy (2014);
- National Employment Programme (2014)
- Rwanda Private Sector Development and Youth Employment Strategy (2013–2018)
- Nine-Year Basic Education Strategy (2008);
- National Science, Technology and Innovation Policy (2005, reviewed in 2013/14 to also include a five-year strategic plan).
 - Education Sector Policy Framework ESPF 2003
 - 7YEP (2010 – 2017)
 - ESSP 2013/14 – 2017/18
 - NST 1 (2017-2024)
 - draft *Girls' Education Policy* (2017) (MINEDUC, 2017*b*)
 - *Draft revised Special Needs and Inclusive Education Policy* (MINEDUC, 2017*c*)

Human Development Record

HDI

Table 1: Uganda Human Development Record, 2018

Human Development Index (HDI) (Value)	Life expectancy at birth (Years)	Expected years of schooling (Years)	Mean years of schooling (Years)	Gross National Income (GNI) per capita (2011 PPP \$)	GNI per capita rank minus HDI rank	HDI Rank (out of 189)
0.528	63.0	11.2	6.1	1,752	11	159

Source: Human Development Report 2019

Uganda's HDI value for 2018 is 0.528— which put the country in the low human development category— positioning it at 159 out of 189 countries and territories. The rank is shared with Tanzania (United Republic of). Between 1990 and 2018, Uganda's HDI value increased from 0.312 to 0.528, an increase of 69.1 percent. Table 1 reviews Uganda's progress in each of the HDI indicators. Between 1990 and 2018, Uganda's life expectancy at birth increased by 17.1 years, mean years of schooling increased by 3.3 years and expected years of schooling increased by 5.6 years. Uganda's GNI per capita increased by about 131.0 percent between 1990 and 2018.²⁵⁸

Table 2: Gender Inequality Index

	Value	Rank
Gender Inequality Index (2018)	0.531	127

Source: Briefing note for countries on the 2019 Human Development Report – Uganda

Uganda has a GII value of 0.531, ranking it 127 out of 162 countries in the 2018 index. In Uganda, 34.3 percent of parliamentary seats are held by women, and 27.4 percent of adult women have reached at least a secondary level of education compared to 34.7 percent of their male counterparts. For every 100,000 live births, 343.0 women die from pregnancy related causes; and the adolescent birth rate is 118.8 births per 1,000 women of ages 15-19. Female participation in the labour market is 67.2 percent compared to 75.0 for men.²⁵⁹

Poverty

According to the latest official estimates, between 2012 and 2016 poverty increased moderately from 19.7 percent to 21.4 percent, and inequality rose as the Gini index went from 41 to 42.8. This was the result of the overall economic slowdown observed during that period, coupled with a severe drought that affected the country in 2016 and 2017. Multi-dimensional poverty incidence, which in addition to the monetary dimension includes measures of human capital deprivation and access to basic services, reached almost 60 percent in 2016. The factor that contributed the most was low access to basic services, mainly improved sanitation and electricity. Important geographical disparities remain: rural areas lag behind urban centers along most dimensions, and the Eastern and Northern regions comprise 3/4 of the monetary poor.

The effects of COVID-19 outbreak will likely result in an increase of monetary poverty and stall progress in some of the human capital indicators, due to disruptions in the delivery of education and health services. The necessary preventive measures to contain the pandemic will first affect households engaged in the services sector (around 30 percent of the labor force) and tourism. Eventually, declines in FDI and supply disruptions will lower aggregate demand, which added to an

²⁵⁸ Briefing note for countries on the 2019 Human Development Report – Uganda

²⁵⁹ Ibid

overall slowdown in trade, will reduce the demand for food and agricultural products, depressing rural incomes. Without the support of social protection programs to help cope with these type of shocks, the welfare of households will suffer, particularly those at the bottom of the income distribution. The magnitude of the welfare impacts may be partially offset by the fact that the large majority of Ugandans depend (43 percent) on subsistence agriculture for their livelihoods.²⁶⁰

Labour Market

Scarcity of employment and work opportunities is a key feature of Uganda's labour market.

Half of all Ugandans were of working age in 2016. Of those, only 53 per cent were active in the labour force, and 48 per cent were employed. Labour force participation rates were particularly low among women (40 per cent, compared with 56 per cent of men), and in rural areas (48 per cent, compared with 67 per cent in urban areas).

According to the Uganda National Household Survey, 2016/17, total unemployment rate stood at 9%, female unemployment rate at 13% and male unemployment rate at 6%.²⁶¹

Vulnerable employment in agriculture or informal services is the only option for most Ugandan workers. In 2018, own-account workers and contributing family workers comprised nearly two-thirds of total employment (nearly three-quarters of female employment), and paid employees nearly one-third. Informal employment represented 85 per cent of non-agricultural employment, and up to 90 per cent in rural areas and among youth (aged 18–30). Some 28 per cent of children aged 5–17 were working (UBOS, 2018). High-skill occupations were scarce, below one-tenth of total employment, at just under 20 per cent in urban areas, and only 8 per cent in rural areas (UBOS, 2018).²⁶²

The Education and Training system

Uganda's basic education system does not form a strong foundation for BT/VET, nor does it equip all young people with the basic skills they will need to enter the labour market.

The gross enrolment ratio at primary level has been close to 100 per cent in recent years. However, learning outcomes are low. In 2016, only 29 per cent of children in Grades 5 and 6 were able to write at Grade 4 level (Uwezo, 2018). Moreover, high enrolment at primary level does not translate into high enrolment at post-primary level. The gross enrolment ratio at secondary level was only 28 per cent in 2017, ranging from less than 10 per cent in the most disadvantaged districts of the Northern region, to more than 60 per cent in urban districts of the Central region (World Bank, 2018b). As a result, in 2016, only 24 and 12 per cent of the population had attained secondary education and post-secondary education, respectively. In rural areas, three-quarters of the labour force had only attained primary education, or had received no formal schooling. As a result, most young workers are undereducated (see figure 1)²⁶³.

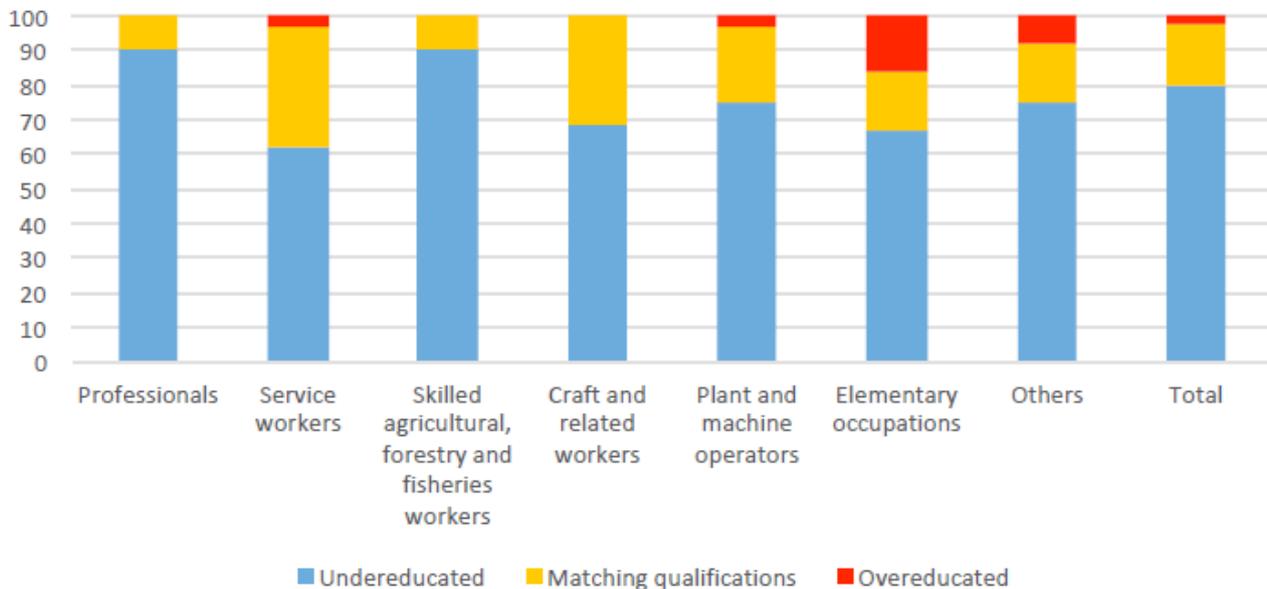
²⁶⁰ Poverty & Equity brief, Uganda, April 2020

²⁶¹ Uganda National Household Survey, 2016/17

²⁶² State of skills – Uganda, pg. 10

²⁶³ State of skills – Uganda, pg. 11

Figure 1. Undereducation and overeducation among young workers (aged 15–29) in Uganda, 2015



Source: UBOS, 2016.

Technical and Vocational Education and Training (TVET)

With Uganda being among the nations with the youngest population in the world, TVET has a big enabling role in national development and reform agenda. The National Development Plan III (NDP-III) emphasizes Human Capacity Building and the role of TVET and skills development in achieving that agenda. However, there are still gaps that government is trying to address in respect to priority-setting and funding for TVET²⁶⁴

The major challenges of TVET in Uganda are as follows:²⁶⁵

- 1) Skills mismatch with the labour market demands.
- 2) Less participation of employers/private sector in TVET.
- 3) An ideal TVET System is an employer-led skills development structure anchored on research.
- 4) Lack of a proper TVET qualifications framework.
- 5) Inadequate funding to TVET, despite the related high costs of training delivery.
- 6) Lack of clear institutional framework that allows for quality delivery.
- 7) of all forms and modalities of TVET; careers advice and recruitment; accreditation, assessment and certification; monitoring and evaluation of the system.
- 8) Overlapping mandates among legally established organs and institutions.
- 9) Insufficient numbers of TVET trainers with the required competences, skills and industrial experience.
- 10) Inequitable access to TVET institutions.

²⁶⁴ From questionnaire

²⁶⁵ From questionnaire

- 11) Negative perceptions of TVET; low enrolment for females in Science, Technology, Engineering and Mathematics (STEM) related courses and unfriendly environment for people with special needs.
- 12) Fragmentation and lack of coordination of TVET across various sectors.

The entire education and training system is currently under re-structuring.

The new TVET policy vision is “a coordinated, labour-market responsive TVET system, producing a skilled, high-quality, competent workforce that is employable and responsive to the national needs and is globally competitive to support Uganda’s sustainable economic, social and environmental development.”²⁶⁶ And the TVET policy mission is “to promote, regulate, provide, coordinate, and develop an inclusive, flexible, and equitable TVET system through; registration, licensing, accreditation and development of institutions, programmes and trainers, for delivering a relevant and competent workforce responsive to the requirements of the labour market.”

The specific objectives are: ²⁶⁷

- a) To promote economic relevance of TVET;
- b) To improve equitable access to TVET and employability of TVET graduates;
- c) To improve quality of TVET;
- d) To promote sustainable TVET financing; and
- e) To ensure effectiveness in TVET management and organization

Governance

The TVET Policy 2019 provides for the establishment of the TVET Council to regulate and quality assure TVET in Uganda. It will be under the Ministry responsible for Education. The TVET Council will be a regulatory body representing the demand side of the TVET policy, with two thirds (2/3) or sixty six percent (66%) of the council members being employers from the industry.²⁶⁸ Its mandate is to regulate TVET through establishment of standards, qualifications, registration and accreditation systems for institutions/providers, programmes and trainers. It is also responsible for the development and maintenance of the TVET Qualifications Framework.

There are policies in place that promote partnerships with various stakeholders, however their involvement in the decision making, planning management of TVET is still limited, partly due to some existing laws which are under review, but also some of the stakeholders themselves are still weak and not interested in partnerships on TVET. However, of recent there is significant increase in participation from Employers/private sector and development partners. There are now about five Sector Skills Councils already established, majority of the members are from private sector.

Industry Involvement

Regarding the relation with Industry, the following has been reported in the questionnaire:²⁶⁹

- Industry is partially involved in the different processes of TVET
- Industry is partially involved in the design of curriculum
- Industry is partially involved in Management of Training Centres
- Industry is involved in industrial placement of trainees
- Industry is partially involved in Tailor-made training with industry
- Industry is involved in SSC, ITB or TAC*

²⁶⁶ Final TVET Policy implementation guidelines May 2020 p. 9

²⁶⁷ Final TVET Policy implementation guidelines May 2020 p. 9

²⁶⁸ Final TVET Policy implementation guidelines May 2020 p. 14

²⁶⁹ From questionnaire

Industry is not involved in the following activities:

- Donation of equipment
- Industrial placement of Trainers
- Part time Trainers from Industry

*(SSC=Sector skills council; ITB=Industry Training Board; TAC=Trade advisory committee)

As stated in the TVET Policy 2019, the TVET system will be run in a tripartite manner by three categories of stakeholders; the demand side (employers / private sector) represented by the TVET council through the Sector Skills Councils (SSCs), Government represented by Ministries, Departments and Agencies with a role in TVET through an Inter-Ministerial Committee and the supply side especially employees and learners from public/private training institutions and providers). Roles and responsibilities are clearly defined as per section 7.2 of the Policy document.

The Ministry of Education and Sports and other Ministries involved in TVET delivery will devolve their regulatory and quality assurance roles to the TVET Council, and they will concentrate on coordination of the implementation of policy provisions. The regulatory function under the Directorate of Industrial Training (DIT) standards and qualifications arm will be managed under the regulatory body – the TVET Council.

It will inter alia, develop the TVET strategy and priority areas from the relevant National Development Plan (NDP) to guide prioritisation and planning and offer information, advice and guidance to SSCs and Permanent Secretaries of the relevant Government Ministries as well as mobilise funds from the public and private sectors, development partners for the Skills Development Fund (SDF) and administer the SDF and ensure that it is well targeted to address SSC priorities and labour market needs.

The Ministry of Education and Sports, in turn, will have the primary responsibility and accountability for the coordination and successful implementation of this Policy. It will, inter alia, ensure that a TVET directorate is established to provide policy guidance, coordinate TVET delivery and offer administrative support to the public and private TVET providers to meet needs of the labour market and the economy. Too often we see a lack of coordination amongst the different ministries and a fragmentation of TVET in many countries²⁷⁰.

The District Local Government Authorities Governance

The central government will devolve some of the current TVET functions especially for Skills Development Centres (SDCs) and VTIs to the district and sub-county local government levels for purposes of proper implementation of this policy. However, the District local government and subcounty authorities should work closely with the Sector Skills Council (SSCs) and seek guidance where necessary since TVET delivery is a highly specialised function.

Institutional governance

At the level of the Institutions providing TVET, there are governance bodies responsible for the strategic direction and overall governance of the institutions, with at least sixty-six (66%) percent or two thirds of the Council/Board members being representatives of the employers.

Formal training centres have management committees, composed of school management, representatives of students, local government, ministry responsible, representatives of employers, representatives of alumina, and they meet once per term or once a semester. However, TCs do not have autonomy and meetings between Management of TCs and their trainers are irregular. Managers

²⁷⁰ Final TVET Policy implementation guidelines May 2020

of TCs have barely been trained in Leadership and Management, even though plans are underway to provide them with necessary trainings.

TVET legislation

The Business, Technical and Vocational Education and Training (BTJET) Act was passed in 2008. It provides for the TVET institutional and legal framework and defines the scope and levels of different TVET programmes and the roles of different providers. The Act distinguishes between the functions of training provision and quality assurance, describes the criteria and access requirements for TVET programmes and establishes institutional and management arrangements for defining qualifications (standards, testing and certification) and for providing training in formal and non-formal institutions.

Act of 2008 paved the way for the establishment of the Uganda Business and Technical Examinations Board (UBTEB) under Part VI, Section 26, Sub section 1 of the BTJET Act, sub section 1; and operationalised by the Statutory Instrument 2009 No. 9.

Act of 2008, section 20 establishes the Uganda Vocational Qualification Framework (UVQF) which is integrated in the Directorate of Industrial Training (DIT) to perform the following roles²⁷¹:

- To develop occupational standards, Assessment and Training Packages (ATPs), accrediting assessment centres and assessors;
- To conduct competence based assessments; and
- To issue certification to successful candidates.

TVET Policy 2019

The Ugandan TVET system suffered from a series of shortcomings despite the BTJET Act of 2008. Many reasons have been stated to explain the lack of implementation of the Act, resulting in an inefficient and ineffective TVET system, such as over lapping mandates with other institutions; lack of an institutional framework; lack of clear establishment procedures for BTJET Institutions; lack of transitional provisions for the existing Institutions; lack of governance structures for BTJET Institutions.²⁷²

In addition as mentioned in the Policy 2019, there were other challenges which lead to the failure of the TVET implementation, namely:²⁷³

- i. an insufficient number of trainers with the required CBET trainers' competences
- ii. limited industry participation
- iii. inadequate research support services
- iv. poor geographical distribution and location of TVET institutions
- v. negative perceptions of TVET (iii) low enrolment for females in Science, Technology, Engineering and Mathematics (STEM) related courses
- vi. unfriendly environment for people with special needs
- vii. uncoordinated admission of students to TVET institutions
- viii. low enrolment in TVET institutions due to the high cost of technical training and lack of awareness resulting in many trainees ending up in cheap alternative programmes whose graduates do not acquire the requisite skills relevant to the world of work
- ix. TVET delivery inadequately funded, fragmented and uncoordinated across the various sectors.

²⁷¹ World TVET Database- Uganda UNESCO-UNEVOC 2014 p. 7

²⁷² Uganda TVET Policy 2019 p. 7

²⁷³ Uganda TVET Policy 2019 p. 7

Hence the need for a TVET policy was felt to support the implementation of key reform undertakings in the education system and also facilitate the review of the current laws and generate an appropriate legal framework to support the socio-economic transformation of the country.

Thus the TVET Policy 2019 establishes an employer-led TVET system whose purpose is to provide a framework for the development of TVET which will enable the training of a highly skilled and competitive workforce.²⁷⁴

Its **vision is** “a coordinated, labour-market responsive TVET system, producing a skilled, high-quality, competent workforce that is employable and responsive to the national needs and is globally competitive to support Uganda’s sustainable economic, social and environmental development.”

And its **mission is** “to promote, regulate, provide, coordinate, and develop an inclusive, flexible, and equitable TVET system through; registration, licensing, accreditation and development of institutions, programmes and trainers, for delivering a relevant and competent workforce responsive to the requirements of the labour market.”

The Key Policy Priority Areas are:

- Establishment of an employer-led TVET system;
- Establishment of the TVET Council by an Act of Parliament;
- Development and implementation of standards for trainers; institutional leadership and a national TVET Qualifications Framework that is harmonised with the regional, continental and global frameworks;
- Mainstreaming cross-cutting issues into all aspects of TVET;
- Improvement of access to and quality of TVET;
- Provision of adequate, well trained TVET trainers and providers;
- Providing for adequate and sustainable TVET financing; and
- Promotion of positive public awareness and perception towards TVET.

And the anticipated TVET Policy Impact is a continuously improving and world-class TVET system that delivers the most preferred graduates, creates employment and entrepreneurship opportunities, and contributes to the country’s sustainable economic, social and environmental development within the regional and global context.

The policy objectives, namely to promote the economic relevance of TVET, improve access and employability of citizens by increasing TVET training, improve the quality of the TVET system, put in place measures and plans for promoting adequate and sustainable TVET financing and ensure effective TVET management and organisation are spelt out in the table below together with the necessary strategies for their implementation.

It is interesting to note that emphasis is laid on governance and management, sustainable funding, quality and relevance and access and equity of the TVET system together with a functional monitoring and evaluation system.

The missing consideration in this policy is the fact that we are now living in an environment of the 4th Industrial Revolution (4IR) and if necessary action is not taken now, the divide will be enlarging between the developed and less developed countries, including African countries. In addition, the pandemic COVID 19 has entered the scene and it seems that Africa, which seemed to have been protected therefrom, is now being impacted upon.

²⁷⁴ Uganda TVET Policy 2019 p. 9

Table 3: TVET Policies and Strategies²⁷⁵

Policy objectives	Strategies
<p>1. To promote the economic relevance of TVET.</p>	<ul style="list-style-type: none"> • Strengthening the role of employers and business communities in TVET delivery; • Promoting skills for productivity in formal, non-formal and informal settings by ensuring life-long learning opportunities for TVET; • Establishing and linking the TVET Management Information System (MIS) to the Labour Market Information System (LMIS); • Establishing business incubation/innovation centres in TVET institutions to boost entrepreneurship and other aspects of TVET; and • Embracing and enhancing the apprenticeship system to provide the on-job training competences.
<p>2. To improve access and employability of citizens by increasing TVET training.</p>	<ul style="list-style-type: none"> • Promoting a flexible and demand driven TVET delivery system through competence based modularised packages and use of ICT; • Making TVET affordable through subsidies, such as the provision of financial support to the learners through bursaries and scholarships; • Enhancing TVET provision and access to the vulnerable, and disadvantaged persons of all age groups through affirmative action; • Establishing Skills Development Centres (SDC), Vocational Training Institutes (VTIs), Technical including Nursing, Midwifery and Allied Colleges (TCs), National Polytechnics (NPs) and a National Technical University (NTU); • Providing professional career guidance and placement services for TVET learners so as to enable them make apt choices and access industrial attachment; • Improving public perception and image of TVET by encouraging many young people to join TVET training • Promoting partnerships between TVET institutions, Industry and employers; • Providing and easing the access to appropriate training equipment and materials, and also by improving the training facilities.
<p>3. To improve the quality of the TVET system.</p>	<ul style="list-style-type: none"> • Developing a TVET Qualifications Framework and ensuring that it is applied during implementation; • Strengthening the capacities of both public and private TVET institutions and providers; • Developing mechanisms to enable both employers and the private sector to define the occupational and competence standards; • Reviewing and developing TVET curricula based on the relevant occupational standards;

²⁷⁵ Uganda TVET Policy 2019 p. 11

	<ul style="list-style-type: none"> • Reviewing and developing a TVET-specific admission system for the relevant qualification levels in consultation with the World of Work; • Integrating and mainstreaming training of TVET lecturers, tutors, instructors and trainers within the TVET system and subjecting them to the minimum competence-based qualifications taking into account their individual industry, apprenticeship and relevant workplace experiences; • Regularising the TVET assessment and Certification Body with specific functions related to the preparation, coordination, research and promotion of; syllabi, examination, assessment and certification of learners and TVET trainers, as per the agreed upon • occupational standards in line with the career pathways and regional standards and practices; and • Promoting research and innovation in all TVET institutions and to all TVET providers.
<p>4. To put in place measures and plans for promoting adequate and sustainable TVET financing.</p>	<ul style="list-style-type: none"> • Establishing a TVET financing framework agreed upon by all stakeholders following the principle that TVET beneficiaries have to co-finance it; • Establishing a Skills Development Fund (SDF); • Advocating for increased Government budget allocation to the TVET sub-sector; • Putting in place incentives to encourage the private sector to invest in TVET; and • Increasing the efficiency to minimise costs in all aspects of TVET delivery
<p>5. To ensure effective TVET management and organisation</p>	<ul style="list-style-type: none"> • Establishing a TVET Council which will holistically regulate the TVET system in line with labour market demands; • Establishing a TVET Directorate in the Ministry of Education and Sports which will be responsible for coordination and successful implementation of TVET delivery / Training; • Streamlining the informal and in-company training, apprenticeships and also by aligning it with the TVET Qualifications Framework; • Streamlining the categories of formal TVET institutions/providers to provide for proper pathways for TVET graduates; • Reforming and restructuring the management and governance of TVET institutions; • Ensuring that at least 66 percent (%) or two thirds (2/3) of members of governing bodies of public and private TVET institutions are selected from and are representatives of the relevant employers / industry; • Establishing an effective TVET Management Information System (MIS) and a functional TVET monitoring and evaluation system; and • By benchmarking and learning lessons on TVET reforms from the past experience and from other countries that are better in some aspects.

Access and Equity

Access to BTJET and skills development is limited by the small size of the sector, with few training providers and insufficient capacity of firms – most of which are small and informal – to train their employees. Disadvantaged and vulnerable groups face specific difficulties.

Youth who never enrolled in, or did not complete primary school cannot enter formal BTJET. Several public BTJET providers have recently introduced non-formal training, consisting of short courses that target informal sector workers, but these operate on a small scale, with limited resources, and do not have wide appeal (World Bank, 2015a). The concentration of the training supply in urban areas, particularly in Kampala, excludes persons living in remote rural areas, among them disadvantaged districts in Northern Uganda, which host large refugee populations. Skilling Uganda and the NDP II have therefore both declared investments in infrastructure, with a focus on women, people with disabilities, and rural populations; this latter is a key area for investment. Several donor-funded training programmes target these populations²⁷⁶.

Table 4: Annual enrolment of trainees (Males and Females) on TVET courses in public and private Training Providers

	Males				Females				Total	Source
	F/T	P/T	A/S	Total	F/T	P/T	AS	Total		
Public TCs (No.)	-	-	-	31,314 (70%)	-	-	-	13,287 (30%)	44,601	<i>Education Sector analysis report</i>
Private TCs (No.)	-	-	-	47,641 (46%)	-	-	-	54,544 (54%)	103,185	<i>Masterlist of education institutions</i>
Total TCs				78,955 (54%)				67,83 (46%)	146,786	

Source: From questionnaire

From the table, it can be seen that altogether there are more male trainees (54%) than female trainees (46%), with public training centres enrolling 70% of male trainees. Contrarily, more female trainees are enrolled in private training centres. Bursaries and scholarships consider that 35% should be females in male dominated fields.²⁷⁷

With respect to innovative solutions/approaches that could be introduced to improve access, quality and relevance especially those that rely on digital technology, the respondent mentioned the following initiatives:²⁷⁸

- 1) Mobile workshops.
- 2) E-learning and smart classrooms.
- 3) 'Industry in schools' and 'schools in industry'.
- 4) On-line courses with e-assessment.

From a broader perspective, African countries should put in place strategies that would contribute to change the general negative social perception of TVET as an inferior option and a 'second-class' education, which fosters its stigmatisation and marginalisation as a low status track for poor academic achievers. Below are the different strategies identified by the questionnaire respondent:

²⁷⁶ State of skills – Uganda, pg. 30

²⁷⁷ From questionnaire

²⁷⁸ From questionnaire

- 1) African countries must establish TVET qualification frameworks which promote horizontal and vertical progression
- 2) Governments must recognize competences and skills other than concentrating on academic qualifications. This means that the salary structures should recognize skills and be attractive for people with skills and competences but not just paper qualifications.
- 3) Governments must invest in TVET to make it attractive.
- 4) TVET Trainers must be conversant and part of industry, industry must also invest in TVET to get skilled manpower.
- 5) African countries must move from making good paper policies and strategies and shelving them but seen to implement them.

TVET Delivery

The most practiced modes of delivery are the Formal and non-formal ones which have clear ways of being assessed and recognised. The new TVET policy recognises the rest and it is hoped that the Vocational Qualifications Framework to be developed will take care of all these modes of delivery.²⁷⁹

Training Providers

Data are not readily available as TVET delivery in Uganda is still in its infancy stages of reform and actual development. The concentration of data collection (scanty) has been on only public providers. However, the TVET MIS is being established which will help capture such data and information for policy and decision making in the near future.²⁸⁰

Centre-based BTVET does not operate on the scale needed to train the 500,000 to 800,000 youth who enter the labour market each year. The BTVET sub-sector comprises about 131 public training providers and 670 registered private training providers. Public training providers offer higher skills, especially at postsecondary level, such as technician training. Private training providers include non-governmental organizations (NGO), faith-based organizations and for-profit firms. They tend to focus on a narrow range of skills that do not require costly equipment, but differ greatly in terms of capacity, training type and quality. Their numbers and enrolment are difficult to ascertain, as many of them are unregistered. Centralized in Kampala, registration is costly and its input-based criteria (buildings, equipment, teacher qualifications) are difficult to meet for small-scale providers who operate informally (World Bank, 2015a).²⁸¹

Funding

The major sources of funding of TVET in Rwanda are from:

- 1) Government
- 2) Fees payable by students/parents/guardians
- 3) Development partners

The budget allocated to TVET by Government as a percentage of the education budget was about 12% in FY 2019/20 from 10.56% in FY 2016/17.²⁸²

The TVET Policy 2019 provides for the establishment of a Skills Training Fund, and the reform process of amending the current the BTVET Act 2008 is already underway.

As per the respondent, the revenues generated obtained from Training fees as a percentage of budget of TC are fairly on the high side with about 42 – 65% depending on the courses and location of the

²⁷⁹ From questionnaire

²⁸⁰ Ibid

²⁸¹ State of skills – Uganda, pg. 26

²⁸² From questionnaire

training centre.²⁸³ Yet there is no policy in place for Training/ consulting services and work for industry. Besides, there is no training levy paid by organizations but the reforms are geared towards this direction. Government and Employers have formed a working group to explore this further.²⁸⁴

A sustainable funding strategy will be developed. The TVET Policy is to be financed by both Government and the private sector. Government will diversify sources of funding and involve all stakeholders through Public-Private Partnerships. Diversification will be considered by engaging enterprises, local authorities and individuals while respecting the principles of equity and inclusion. In addition, cost sharing, and loans, will be secured to increase efficiency and accountability and to stimulate demand for TVET. Incentives and accountability mechanisms will be established to raise awareness and increasing investment in TVET by a broad range of actors and shifting the traditional input-based models of allocation and use of resources to more performance-based financing models.²⁸⁵

Quality and Relevance

Lack of resources constrains BTVET quality and labour-market relevance. Public and private BTVET institutions often have to operate with outdated equipment, and the fragility of informal firms reduces their capacity to accept apprentices. Many teachers in formal institutions have received insufficient training, whether technical and vocational or pedagogical, and have limited workplace experience. Education levels are low among master craftsmen in the informal sector. Relevance is a key concern for formal BTVET institutions, especially in the public sector, due to the absence of social dialogue in governance structures, an inadequate system of skills anticipation, and limited opportunities for work-based learning. Both public and private BTVET institutions tend to follow outdated curricula, which focus on theory at the expense of practice, and fail to complement technical and vocational skills with soft skills. BTVET remains centre-based, since there are no formal apprenticeships in Uganda. Informal apprenticeships, which focus on existing products and technologies, are of direct relevance to the current needs of Uganda's economy. However, the system needs to be upgraded to better cater for the country's future skills needs (Government of Uganda, 2012).²⁸⁶

National Qualifications Framework

Currently, there is no NQF in Uganda but this has been identified already as a gap to fill in the new 5-year Sector Strategic Plan for the period 2020/2021 – 2024/2025. The EAC member states are contemplating of having one for TVET; the regional qualification framework for Higher Education is already in place.²⁸⁷

The TVET policy puts much effort in ensuring the quality of TVET programmes, through the establishment of the NQF. Once in place, the NQF will allow TVET providers to reshape their programmes according to these standards. In general, the NQF is supposed to guide the TVET reforms in respect to the curriculum, assessment, teacher training and linkages to the labour market.²⁸⁸

TVET Curriculum and Assessment

In the past curriculum design was supply-led with institutions or the curriculum development body initiating a review or development. But of recent, Government of Uganda has developed over 25 new curricula at diploma level through a demand lead process. The industry through sector skills councils did a rapid industry scan, defined the needs, and developed occupational standards, training and

²⁸³ From questionnaire

²⁸⁴ From questionnaire

²⁸⁵ Final TVET Policy implementation guidelines May 2020

²⁸⁶ State of skills – Uganda, pg. 27

²⁸⁷ From questionnaire

²⁸⁸ Final TVET Policy implementation guidelines May 2020 p.39

assessment standards together with industry players.²⁸⁹ Curricula are usually reviewed each 3-5 years even though some have taken longer to be reviewed.²⁹⁰

Respondent stated that entrepreneurship and soft skills are integrated in the different curricula, namely communication, presentation skills and customer care. Contrarily, sustainable development is not yet integrated in TVET curricula.

On the other hand, ICT is integrated in all TVET curricula despite the fact that most training places lack ICT equipment and internet connectivity.

As mentioned above, in the past the training programmes were supply-led, but the new TVET policy 2019 emphasises employer-led TVET system which when established, the programmes will be demand-driven, as stated below:

- The TVET curriculum are to be developed in consultation with the National Curriculum Development Centre (NCDC), Assessment Bodies, world of work (Industry) and the TVET institutions and providers.
- Assessment to be conducted by Assessment Bodies in consultation with the industry.
- All assessment bodies to assess and award qualifications based on the TVET council approved programmes in line with the TVET qualifications Framework and the National Qualifications Framework and set standards for ease of equating qualifications²⁹¹.

Examinations

There are four bodies under the MoES which regulate and conduct national examinations and issue certificates relating to TVET at the moment; 1. Uganda Business and Technical Examinations Board (UBTEB), 2. Directorate of Industrial Training (DIT), 3. Uganda Nurses and Midwife Examinations Board (UNMEB), and 4. Uganda Allied Health Examinations Board. The process of merging the first two together and the last two together is under way, to have only two assessment boards²⁹².

Trainers

Table 5: Total Number of TVET trainers in public and private TCs.²⁹³

	Male	Female	Total
Public TCs	3,581 (77%)	1,078 (23%)	4,659
Private TCs	6,432 (62%)	4,002 (38%)	10,434
TOTAL	10,013 (66%)	5,080 (34%)	15,093

Source: From questionnaire

As far as Trainers are concerned, there are many more male trainers than females as depicted in Table 5. The difference is more marked in public training centres with 77% of Male Trainers.

As far as recruitment is concerned, TVET Trainers in public institutions are centrally recruited through the government agency called the Education Service Commission (Uganda's Education Service

²⁸⁹ From questionnaire

²⁹⁰ From questionnaire

²⁹¹ Final TVET Policy implementation guidelines May 2020 p. 17

²⁹² From questionnaire

²⁹³ From questionnaire

Commission). Their profiles will depend on the level of training and training programmes. The respondent further stated that there are enough Trainers with a pupil trainer ratio of 12 to 1.

Regarding the Trainer Training institute, there are two pedagogical training centres; one for engineering related courses and another for health training courses. All trainers must follow a pedagogical training programme. However, industrial experience is not a requirement for the moment. It will be under the new reform.²⁹⁴

Presently, both the quality and quantity of trainers are inadequate. This is why, training of trainers and their continuous professional development (CPD) have been provided for under the new TVET Policy 2019, so that they update their knowledge and practice, cognizant of the changing trends in practice and technology which are fundamental aspects of TVET²⁹⁵. This will also help to heighten the status of the TVET trainer profession together with mitigating strategies such as industry linkages, training with production and adopting pedagogy specific to TVET trainers as opposed to the conventional pedagogy for ordinary teachers.²⁹⁶

Labour market responsiveness

Young people face particularly difficult transitions to the labour market in Uganda, due to the low quality and relevance of skills delivered by the education and training system, and the scarcity of employment opportunities. According to the ILO's School-to-Work Transition Survey, 64 per cent of youth aged 15–29 were working in 2015, but mostly in vulnerable employment, as own-account or contributing family workers. Only 27 per cent were considered to have successfully completed their labour market transition, a process that took an average of three years (UBOS, 2016).²⁹⁷

Counselling and orientation of trainees in their selection of TVET courses is being done, but in a more generic way and not specific to TVET, resulting in a skills mismatch. This mismatch would explain the high pass rate of 80%,²⁹⁸ against 45% - 75% employment rate of TVET graduates, which varies for different levels and specializations. The New TVET policy 2019 requires the TVET Directorate ensures that counselling and orientation of trainees is taken as a priority.²⁹⁹

In addition to this, the Ministry responsible for Labour and employment is establishing a LMIS and the MoES is also establishing a TVET MIS, and the two shall be linked together.³⁰⁰ These tools will help to analyse current skills gaps and mismatches, and forecasting future skills needs.³⁰¹

The Fourth Industrial Revolution³⁰²

With respect to the 4IR, respondent to the questionnaire states that 4IR is going to affect the way they think TVET in a globalized and highly digital environment augmented by automation and artificial intelligence. The advantages are the 4IR shall compel TVET to have curricula that is responsive to the new skills and competences required to work in technologies that are rich in Artificial Intelligence and automation. It shall also require TVET trainees and trainers to adapt to new tools and innovations that augment productivity and a whole new set of productivity values.

The downside of 4IR is that it may affect inclusive TVET by increasing the disparities in access to 4IR-compliant TVET. This is more so given that majority of developing societies have not yet fully benefited from previous Industrial revolutions. There is still a significant proportion of the population whose major concern still remains the basics of decent accommodation, safe water, access to

²⁹⁴ Ibid

²⁹⁵ Final TVET Policy implementation guidelines May 2020 p.31

²⁹⁶ From questionnaire

²⁹⁷ State of skills – Uganda, pg. 31

²⁹⁸ From questionnaire

²⁹⁹ From questionnaire

³⁰⁰ From questionnaire

³⁰¹ State of skills – Uganda, pg. 22

³⁰² From questionnaire

affordable health and basic education, clothing, and food security. Therefore, with the basics yet to be satisfied, there is less pre-occupation with the 4IR.

And as to whether he believes the TVET institutions in Uganda are in a position to adopt the technologies associated with the 4IR, the response is that the desire is there but there are other competing priorities that make the 4IR not such a high order priority for TVET institutions because they are responding to the local needs. However, some public and private TVET institutions will make such investments in the 4IR capabilities.

With respect to concrete examples of the ways in which TVET institutions of Uganda are using the technologies associated with 4IR to improve:

- Educational administration: No example was given
- Teaching and learning: Use of smart classrooms and transition to training in robotics and automation manufacturing.

Generally, the 4IR has not yet impacted the cost of TVET delivery in the country except in the new courses under the Oil and Gas occupations. As mentioned by Respondent, use of 4IR is still in its infancy in Uganda. So they are not yet in position to offer substantive feedback in this survey in respect to the 4IR and TVET. The TVET sub-sector is yet to come up with a comprehensive strategy of integrating the 4IR. The Sector is in the process of developing a Framework to guide on integration of digital technology in delivery and learning in TVET.

When asked about the possible barriers to enacting 4IR within the TVET training centres, he mentioned the following in order of priority: Lack of perception of 4IR, financial restrictions, lack of staff expertise and the need to acquire new knowledge, Requirements of professional associations and confusion over what needs to be taught. And the least severe barriers are would be perceived irrelevance by students and inability of students to grasp the issues.

Conclusion

According to World Bank report “Digital Solutions In A Time of Crisis”, the increased use of digital technologies by Uganda during the COVID-19 lockdown such as mobile money, on-line shopping, on-line education, digital disease surveillance and monitoring, and dissemination of public health messages shows the great potential to support faster economic recovery and strengthen resilience against similar shocks.³⁰³

However, as demonstrated above, the Ugandan TVET system suffered from a series of shortcomings despite the BTVET Act of 2008, though ambitious in its objectives. Hence the need for a TVET policy was felt to support the implementation of key reform undertakings in the education system and also facilitate the review of the current laws and generate an appropriate legal framework to support the socio-economic transformation of the country.

The 4IR is still in its infancy stage as stated by the respondent to the questionnaire. The Sector is in the process of developing a Framework to guide on integration of digital technology in delivery and learning in TVET. However, the 4IR has to be well managed though the desire is there.

It may affect inclusive TVET by increasing the disparities in access to 4IR-compliant TVET. This is more so given that majority of developing societies have not yet fully benefited from previous Industrial revolutions. There is still a significant proportion of the population whose major concern still remains the basics of decent accommodation, safe water, access to affordable health and basic education,

³⁰³ World Bank (April 2020), Digital Solutions In A Time of Crisis, https://www.google.com/search?q=Digital+Solutions+In+A+Time+of+Crisis&rlz=1C1CHZL_enMU741MU741&oq=Digital+Solutions+In+A+Time+of+Crisis&aqs=chrome..69i57.6580j0j15&sourceid=chrome&ie=UTF-8

clothing, and food security. Therefore, with the basics yet to be satisfied, there is less pre-occupation with the 4IR.

According to the World Bank, the GoU is on the right path, highlighted in the Digital Uganda Vision, the Data Protection and Privacy Bill, and in various ICT initiatives seeded across MDAs. But how can those initiatives be leveraged to integrate the 4IR technologies in the TVET system? Linkages between the real sectors, like agriculture and manufacturing and the digital economy can serve as the base to enhance further the digitalisation of Uganda.

Angola

Introduction

With a population of 31.8 million spread over an area of 1.25 million km² Angola is a vast country with a long coastline and central plateau.³⁰⁴ It thrusts inland across Southern Africa to border Namibia, Botswana, Zambia, and the Democratic Republic of the Congo. Its principal cities, including its capital, Luanda, look west over the South Atlantic to Brazil, another Portuguese-speaking nation.

One of Africa's major oil producers, Angola has been striving to tackle the physical, social and political legacy of a 27-year civil war that ravaged the country after independence.³⁰⁵



Political Context

Angola has maintained political stability since the end of the 27-year civil war in 2002. In 2010, a constitution established a presidential parliamentary system with the president no longer elected by direct popular vote but instead as the head of the party winning the most seats. The 2010 Constitution sets a limit of two, five-year presidential terms. The country's first local elections are planned for 2020. Internationally, Angola is becoming more assertive and demonstrating a more steadfast commitment to peace and stability in Africa, particularly in the Great Lakes region. Very recently it facilitated an agreement to end mounting tensions between the neighbors Rwanda and Uganda.³⁰⁶

Human Development Record

HDI

Table 1: Angola Human Development Record, 2018

Human Development Index (HDI) (Value)	Life expectancy at birth (Years)	Expected years of schooling (Years)	Mean years of schooling (Years)	Gross National Income (GNI) per capita (2011 PPP \$)	GNI per capita rank minus HDI rank	HDI Rank (out of 189)
0.574	60.8	11.8	5.1	5.555	-16	149

Source: Human Development Report 2019

Angola's HDI value for 2018 is 0.574 – which put the country in the medium human development category – positioning it at 149 out of 189 countries and territories. Between 2000 and 2018, Angola's HDI value increased from 0.394 to 0.574, an increase of 46.0 percent. Between 1990 and 2018, Angola's life expectancy at birth increased by 15.5 years, mean years of schooling increased by 0.7 years and expected years of schooling increased by 8.3 years and its GNI per capita increased by about 34.2 percent.³⁰⁷

³⁰⁴ <https://www.bbc.com/news/world-africa-13036732/> <https://www.worldbank.org/en/country/angola/overview>

³⁰⁵ <https://www.bbc.com/news/world-africa-13036732>

³⁰⁶ <https://www.worldbank.org/en/country/angola/overview>

³⁰⁷ Human Development Report 2019, Inequalities in Human Development in the 21st Century, Briefing note for countries on the 2019 Human Development Report, Angola. Pg 3 http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/AGO.pdf

Angola's 2018 HDI of 0.574 is below the average of 0.634 for countries in the medium human development group and above the average of 0.541 for countries in Sub-Saharan Africa. From Sub-Saharan Africa, countries which are close to Angola in 2018 HDI rank and to some extent in population size are Senegal and Zambia, which have HDIs ranked 166 and 143 respectively.³⁰⁸

Table 2: Gender inequality index

	Value	Rank
Gender Inequality Index (2018)	0.578	144

Source: <http://hdr.undp.org/sites/default/files/hdr2019.pdf>

Angola has a GII value of 0.578, ranking it 144 out of 162 countries in the 2018 index. In Angola, 30.5 percent of parliamentary seats are held by women, and 23.1 percent of adult women have reached at least a secondary level of education compared to 38.1 percent of their male counterparts. For every 100,000 live births, 477.0 women die from pregnancy related causes; and the adolescent birth rate is 150.5 births per 1,000 women of ages 15-19. Female participation in the labour market is 75.4 percent compared to 80.1 for men.³⁰⁹

Economy

Angola continues to face a challenging macroeconomic environment since the sharp drop in oil prices in 2014. A real GDP contraction of 0.1% is estimated for 2019, indicating that the recession has not yet ended. Even so, there are signs of recovery, and growth of 2.8% is predicted for 2020. The oil price shock of 2014 reduced oil revenues from 35.3% of GDP to 17.5% in 2017, leaving an estimated fiscal deficit of 0.1% of GDP in 2019. The value-added tax adopted in 2019 should broaden the tax base and reduce government dependency on oil-related revenues.

Foreign currency shortages generally pose challenges to the tradable (mainly nonoil) sector. Manufacturing contracted 6.5% in the first quarter of 2019. In contrast, construction, electricity, and agriculture posted positive growth, on balance increasing the nonoil sector's growth. Unemployment is currently 28%, and real GDP per capita growth is expected to stay negative given the low productivity and fast population growth.³¹⁰

Second largest oil producer in Africa, Angola also has the third largest GDP in sub-Saharan Africa, after Nigeria and South Africa. After a long civil war, the country posted one of the highest economic growth rates in the world, driven by its oil wealth. Angola was then severely affected by the fall in oil prices and by the fall in world demand (notably from China). In 2019, it entered its fourth year of recession, which was extended by the drop in production in mature oil fields; indeed GDP growth contracted by -1.5% in 2019. According to the updated IMF forecasts from 14th April 2020, due to the outbreak of the COVID-19, GDP growth is expected to fall to -1.4% in 2020 and pick up to 2.6% in 2021, subject to the post-pandemic global economic recovery.³¹¹

In 2019, despite the efforts made in terms of reforms (adoption of a VAT law, exchange rate liberalization, conservative amending budget), the Angolan economy continued to suffer from the poor prospects of the oil sector. The decline in oil revenues prevents the improvement of the budgetary balance, which should drop from 0.3% GDP in 2019 to -0.5% GDP in 2020 and -0.1% GDP in 2021.³¹²

³⁰⁸ Ibid

³⁰⁹ Ibid p 5-6

³¹⁰ African Economic Outlook, Country Notes – Angola, Pg. 137. <https://www.afdb.org/en/documents/african-economic-outlook-2020>

³¹¹ Angola: Economic and Political Overview, Mauritius Trade Easy, 2020

³¹² Ibid

The National Development Plan for 2018-2022 aims to address structural bottlenecks and promote human development, public sector reform, diversification and inclusive growth. The authorities also affirmed their commitment to improve governance and fight corruption.³¹³

Angola is Africa's second largest oil producer, a net producer of natural gas and also the third largest producer of diamonds in the continent, surpassed only by Botswana and the Democratic Republic of Congo. The Angolan economy - the third largest in sub-Saharan Africa - is dominated by the oil and gas industry, which accounts for about 50% of its GDP and is the primary source of revenue for the country (more than 70% of government revenue and 90% of Angola's exports come from oil activities). In addition to diamonds, the country also produces gold, granite, gypsum, marble, and salt, and possesses numerous undeveloped minerals with potential for extraction including beryllium, clay, copper, iron-ore, lead, lignite, manganese, mica, nickel, peat, phosphate rock, quartz, silver, tungsten, uranium, vanadium, and zinc. The industrial sector represents 42.2% of GDP and 8% of employment. Currency shortages caused the manufacturing sector to contract by 6.5% in the first quarter of 2019. Despite its potential, the agricultural sector is underdeveloped and not very productive, contributing to 10% of GDP but employs 50% of the population. Only about a third of Angola's arable land is used for harvests; of those, only 100,000 out of 5 million arable hectares benefit from machinery and/or animal traction for sowing and harvesting. Angola's agriculture mainly consists of subsistence farming. The key industrial crops are coffee and cotton. The Government recently heavily invested in coffee, sugarcane and ethanol productions, which should help to diversify agricultural revenues and exports. The services sector (banking, communication, tourism) is also growing rapidly, accounting for 46.8% of GDP and employing 43% of the population. Tourism is growing, although there is a severe shortage of hotels and other types of accommodation. The construction sector is booming (9% of GDP), driven by a large reconstruction program launched by the government.³¹⁴

Poverty

The incidence of poverty in Angola as of 2019 based on a monetary measure of welfare (monthly food and non-food consumption expenditures per adult equivalent) is 32.3 percent at the national level and is almost three times higher in rural areas (54.7%) than in urban areas (17.8%).³¹⁵

The duality of the Angolan economy is also reflected in two very different "types" of poverty. On the one hand, there is a traditional rural sector dominated by low-productivity subsistence agriculture. Poverty, outside of Luanda, is largely concentrated in this sector: 69% of households in the poorest national quintile are employed in the agricultural sector, vs. less than 15% in the top quintile.³¹⁶

On the other hand, there is a modern export-oriented oil-economy, which is mostly concentrated in Luanda and some other urban centres. In these areas, where employment in agriculture is marginal, poverty tends to be linked to issues of unemployment and informality: In Luanda, non-employed households represent almost half (47%) of the population in the poorest, vs. 24% in the third quintile.³¹⁷

Labour market structure and outcome

An important share of the labour force (15-64 yrs. old) is not educated, especially females. 44 percent of the labour force has less than primary education. Among females, 56 percent have less than primary education, whereas among males this fraction is 32 percent. The youth (15-25 yrs. old), and especially males, who enter the labor force are more educated, in the sense that a higher proportion of the youth have incomplete secondary education or more, in comparison to older age groups.³¹⁸

³¹³ Ibid

<http://www.mauritiustrade.mu/en/market-survey/angola/economic-and-political-outline>

³¹⁴ Angola: Economic and Political Overview, Mauritius Trade Easy, 2020 <http://www.mauritiustrade.mu/en/market-survey/angola/economic-and-political-outline>

³¹⁵ Angola Poverty Assessment, 2020, Pg. 18

³¹⁶ Ibid p. 18-19

³¹⁷ Ibid p. 19

³¹⁸ Ibid p. 55

The share of youth not studying and not working is higher for females than males and the gap increases with age. As they get older, females drop from school and either stay at home or work in low skill jobs. Males are more likely to either study or work than females. The gap in time allocation between males and females increases from aged 16 to 20. From 21 years old to 24, youth are mostly working, but an important share stayed at home doing nothing.³¹⁹

Labour force participation

The working age population is estimated at 14 million individuals (almost 50 percent of the total population) of which 53 percent are female and 47 percent are male. Approximately, 10 million people are in the labour force (economically active population) of which, 9 million are employed and 1.6 million are seeking for a job. The population outside the labour force (economically inactive) is estimated at 3 million people of which 1.5 million are inactive and 1.7 million are discouraged.

There is a difference in participation in the labour force by gender. While almost 80% of males 15 and older are either working or looking for a job, 73% of females are in the same situation. Both, males and females have similar participation rates when they are young and old. When they are teenager, 15 to 19 years old, their participation rate is low and around 38 percent as they spent most of their time studying or out of the labour force. However, once they reach 25 years old, on average 14 percent of the females remain outside the labour force, mainly as housewives, compared to 6 percent of males. When they are old, (65 years of age and older) participation rate is 78 percent and mostly as employees.³²⁰

Unemployment

Unemployment rate is 15 percent and is higher in urban than in rural areas. The unemployment rate in the urban area is around 23%, more than 7 times higher than in the rural area, which is 3%. 93 percent of the total population seeking for jobs are in the urban areas. There are no differences in unemployment rates between male and females, but females represent 52% of the total unemployed. The youth face higher unemployment rates. The unemployment rate is higher in young people aged between 15 and 24 years, reaching 29%, which is more than twice the unemployment rate of people aged 25-54, 11%. The unemployed youth represent more than 50 percent of the total unemployed in Angola. The youth are overall more educated than the older; however, they have limited opportunities to find a job.³²¹

The informal sector

70% of jobs in Angola are in the informal sector. An informal worker is defined as: working without a written contract, in a company not registered with public agencies, and does not benefit from any social security benefits (paid annual leave, health insurance, etc.) Informality is higher for females than males (75% vs. 66%) and increases with age. Informality rate is above 70% in commerce/hotels, agriculture, manufacturing and construction.³²²

Women in waged employment often face informality and poor working conditions. Most of women are working in vulnerable jobs facing high informality and poor working conditions. The share of vulnerable employment (own account workers and contributing family workers) in total employment is 81.5% for women and 56.4% for male. Most women work in the informal market (74.7% of women are informal compared to 65.6% of men). The median earning for male is twice as much as for female (30 thousand kz per month vs 15 thousand kz per month). Almost 50% of employed females are low earners

³¹⁹ Ibid p. 59

³²⁰ Angola Poverty Assessment, 2020, Pg. 54

³²¹ Ibidp.60-61 <https://openknowledge.worldbank.org/bitstream/handle/10986/34057/Angola-Poverty-Assessment.pdf?sequence=4&isAllowed=y>

³²² Ibid p. 66

compare to 22.8% of males and females represent 65% of the total earners with low earnings. Half of the women worked in the agriculture sector a number that drops to 38.6% for men.³²³

The Education and Training system

Secondary technical and vocational education under the responsibility of the Ministry of Education (MED - Ministério da Educação) is the subsystem of vocational technical education, but also professional and technical schools aims to the training of skilled workers and technicians of intermediate level that the country needs for its economic and social development.

High school coach is aimed at the training of technicians at the intermediate level (intermediate between the technical professional diploma and skilled workers) for the following sectors: Science Engineering and Technology; Social Science and Communication of Policies; Science and Administration of the Authority; Exact Sciences; Natural Sciences and Environmental; Medical and Health Sciences; Agricultural Sciences and Fisheries; Hospitality and Tourism; Humanities and Arts, for a period of 4 years.³²⁴

Governance

The TVET in Angola falls within the competencies of two different Ministries: 1) Ministry of Education (MED) responsible for the formal Technical Vocational Education (TVE) through the lower and higher secondary education system and 2) Ministry of Public Administration, Labour and Social Security (MAPTSS - Ministério da Administração Pública, Trabalho e Segurança Social) responsible for the non-formal Technical Vocational Training (TVT) courses, thus ensuring a stronger link between vocational training and the labour market.³²⁵

At an institutional level articulation between the Education Ministry (MED) and the Ministry of MAPTSS is very weak: while in theory education ministry's technical schools are offering long term technical education, and the MAPTSS training centres run by its National Institute of Employment and Professional Training (INEFOP - Instituto Nacional de Emprego e Formação Profissional) offering short term courses, there is apparently no real concrete distinction. Worse still, both systems are not aligned and have not exit and entry points.

Currently, and based on the decree 90/04 of the Council of Ministers from 4th of December of 2004, defining the status of the technical education sub-system, TVET is organized into two levels, basic and medium. From the 7th grade on, students can enroll in a 3 year basic professional training course that offers an exit to the labour market after completion of the 9th grade. Above this is a 3 year medium level professional education course, starting from the 10th grade with a single exit to labour market after the 12th grade.

With regard to professional training centres, whose status is based on the Council of Ministries' decree 16/98 of 3rd of July of 1998, there are currently some 326 such institutions in the country. Only 18% are run by the INEFOP, another 7% by other state organizations, while the remaining 75% are in private hands. The average quality is still considered very low, and despite the pressure from youngsters and the high demand for qualifications, a lot of these centres function below full capacity. INEFOP has divested itself of all provincial offices based on the MAPTSS executive decree 42/05 of 30th of March of 2005.³²⁶

Access and Equity

³²³ Ibid p. 57

³²⁴ Country Report On Policies And Mechanisms For Integration Into The Workforce And Job Creation, 2014, Pg. 7

³²⁵ European Union – Republic of Angola, National Indicative Programme 2014-2020 Pg. 8

³²⁶ Assessment and review of Technical and Vocational Education and Training (TVET) in the SADC Region and development of a regional strategy for the revitalisation of TVET, 2010, Pg. 55)

Young people in the system of training in 2014 (public and private institutions):³²⁷

- Vocational Training: 25275 (16 934 male: 67% and 8341 female: 33% in various specialties of vocational training units, between training centres, centres of integrated employment and training centres professional, mobile and pavilions to arts and crafts.
- Technical Vocational Education and Training (10 to 12 grade): 178607 (92876 male: 58% and 85731 women: 42%, with an increase of 26 883 (16.3%), in relation to the year 2013.
- Total amount: 203,882 young people in VT/TVET.

TVET Delivery

In 2012, there were 192 Technical Schools (98 public and 94 private). In 2010, there was an enrolment of 106 200 students in Technical Vocational Education (TVE), instructed by 3700 teachers, with 20 100 graduates having concluded one of the 59 courses of middle-level technical education. According to the Angolan National Development Plan (ANDP) this number of students enrolled in TVE should be increased to 440 000 in 2020. There are also TVT courses organized by other Ministries and by private companies which are not under MAPTSS responsibility.³²⁸

Angola currently has 195 technical institutes of TVET under the responsibility of the National Directorate of Technical Vocational, Education and Training of MED, 101 are publics and 94 are private. On the other hand MAPTSS has 365 vocational training centers, of which 97 fall under the responsibility of the INEFOP, 245 are private and conduct only lifelong learning activities, and 23 belong to other organizations. Their total capacity of 24 564 students can accommodate only a fraction of the potential demand.³²⁹

TVET Funding

Although public investments in education have more than doubled over the last nine years from almost 4% in 2006 to 9.07% in 2015 of total State Budget (around USD 6.6 billion in 2015), the share to TVET (around USD 287 billion in 2015) is insufficient to address massive skill shortages and meet market demands. According to the Government estimates, the minimum number of TVET graduates should reach 22 000 in 2020, and the minimum number of VET graduates should be four times higher reaching 90 000 in 2014.³³⁰

Quality and Relevance

Another big problem especially for professional training centres is the question of teaching staff and their qualification, especially in practical technical terms, but also in pedagogical terms. Linked with this is a retention problem as good qualified personnel are very much in demand in the economy. Outdated curricula and equipment are other major deficiencies of the current TVET system.³³¹

Angola started the Reform of Vocational and Technical Training (RETEP) in 2001 aiming at expanding the training offer by improving the level and quantity of infrastructure, the equipment of the laboratories and training workshops, curriculum reform and improvement of the system of training of trainers. Despite the efforts made, the reform has been implemented at a slow pace and the TVET system is still inadequate in both quantity and quality. The main bottlenecks are: (i) the lack of market research analysis at provincial level prior to the development of infrastructures; (ii) the lack of involvement from the private sector; (iii) the lack of coordination between vocational training centres and the education system; (iv) the fragmentation between private and public initiatives and within the public system itself; (v) the lack of reliable statistical data on TVET indicators; (vi) the poor capacity of the TVET system

³²⁷ Country Report On Policies And Mechanisms For Integration Into The Workforce And Job Creation, 2014, Pg. 11.

³²⁸ European Union – Republic of Angola, National Indicative Programme 2014-2020 Pg. 8-9

³²⁹ Country Report On Policies And Mechanisms For Integration Into The Workforce And Job Creation, 2014, Pg. 9

³³⁰ European Union – Republic of Angola, National Indicative Programme 2014-2020 Pg. 14

³³¹ Assessment and review of Technical and Vocational Education and Training (TVET) in the SADC Region and development of a regional strategy for the revitalisation of TVET, 2010, Pg. 56

in matching the skill-demand in the economy; (vii) the lack of qualified trainers; (viii) the high geographical concentration of training offer in Luanda; and (ix) the poor quality of basic education that limits the students ability to take real advantage of the training they undergo.³³²

Curriculum

The National Institute of Employment and Professional Training (INEFOP) organize the levels and modules that are part of courses, the training and qualification units, offers courses that conform to the following organization:

Level I – Pavilions of Arts and Crafts

- Entry Profile
 - Read and write up to 6th grade;

Level II – Rural Schools of Crafts Training; Professional Training Centres; Integrated Training Centres Professional

- Entry Profile
 - 6th grade to 9th grade;
 - Candidates with a good improvement at the level and considered to be qualified on the aptitude test

Professions (short duration): Agriculture; Handicraft; AutoCAD; Panel-beating; Plumbing; Carpentry; Accounting; Tailoring-sewing; Cookery; Decoration; Project Designer; Electrician; Low Voltage Electrician; Electronics; Hardware; Computer; English; Mechanical-auto; Civil Constructor; Baking and Pastry; Mason; Mason Plasterer; Refrigeration; Civil Locksmith; and Welding.³³³

Trainers

The Angola Country Report for 2014 Ministerial conference on youth employment mentioned that there was a plan to build a National Institute of excellence for the training of future teachers (graduates) out of universities and technical institutes, by giving them technical and pedagogical innovation skills to meet the challenges of education and the competitiveness of the contexts. Similarly, this institution will also train young workers (monitors) to support the practical labs courses and workshops of the secondary technical institutes. It was expected to update 210 teachers and 80 monitors to start working in 2016.

This measure aimed at the reduction of foreign workers whose annual supply had reached 400 experts, with high costs for the budget of the Ministry of Education, and in many cases there's no transfer of knowledge to the Angolan teachers because foreign teachers are full time occupied with students.³³⁴

TVET Reforms

• Reform Programme for Vocational and Technical Training (RETEP)

Already in 2000 the Government launched a Reform Programme for Vocational and Technical Training (RETEP), worth US\$48 million in order to improve the quality and availability of vocational/technical training throughout the country. Under the RETEP program it was planned to relaunch and modernize the vocational and technical training facilities throughout the country to address the urgent need for qualified labour, and thus help reduce unemployment. Already, the Ministry of Education, which was responsible for the implementation of RETEP, had opened 12 vocational/technical institutes: nine in Luanda, and one each in Benguela, Cabinda and Huila.

³³² European Union – Republic of Angola, National Indicative Programme 2014-2020 Pg. 9

https://ec.europa.eu/international-partnerships/system/files/nip-angola-edf11-amended-2016_en.pdf

³³³ Country Report On Policies And Mechanisms For Integration Into The Workforce And Job Creation, 2014, Pg. 7).

http://tvsd.adeanet.org/sites/default/files/documents/angola_country_report.pdf

³³⁴ Country Report On Policies And Mechanisms For Integration Into The Workforce And Job Creation, 2014, Pg. 9

Combined, the nine facilities were planned to have capacity for 45 000 learners. There was a plan to build another 32 institutes and to train 800 more trainers.

Concerns about poor interministerial articulation have led the Government to set up a joint Commission to pave the way for a more structural TVET reform. The functions of this Commission, called CASETFP, were set up in the Council of Ministers' Resolution 9/08 of the 20th of November of 2008, which provided an outline of the future coordination between both sub systems. The Commission was headed by the Vice Minister of MAPTSS and had for purpose to establish the lines of coordination between professional training and technical education sub systems; to develop and propose policies; and to define qualification and skills profiles as well as exit points to the labour market³³⁵

- **National Development Plan 2018-2022**

Program 1.2.5: Improvement and Development of Technical and Vocational Education and Training (TVET)³³⁶

The Basic Law No. 17/16, of 7 October, of the Education and Training System establishes that the subsystem of the Secondary Technical and Vocational Education and Training (Article 34) ensures technical and professional preparation of individuals, necessary for the completion of each of their cycles, for their insertion in the labour market, without prejudice to the possibility of continuing studies in the Higher Education subsystem.

The Secondary Technical and Vocational Education and Training subsystem thus forms the basis for technical and school-age youth, job seekers and workers, preparing them for profession or specialty, in order to respond to the country's socio-economic needs and/or to the continuity of their training in higher education.

TVET is undergoing an update and revision phase (reform of Technical and Vocational Education and Training), focusing on the training and capacity building of national staff through the implementation of the National Staff training and better performance of educational institutions. This education subsystem aims to develop the human potential of Angola, through the training of national staff in strategic areas of training and their insertion in the labour market. The Ministry of Education plans to increase the training offer of TVET courses to respond to the demand of the labour market, in conjunction with the National Staff Training Plan (PNFQ - Plano Nacional de Formação de Quadros).

The program to improve Technical and Vocational Education and Training responds to several challenges in the field of creation and extension of the mid-level professional technical courses, namely: insufficiency of specialists from the specific component for the functioning of the courses; poor maintenance and insufficient material resources and appropriate equipment in educational institutions; weak link between these institutions and the labour market work (offer of internships by companies, analysis of the level of insertion of students in the labour market).

Programme	Objectives	Goals
Improvement and Development of Technical and Vocational Education and Training	<u>Objective 1:</u> Satisfy the demand for mid-level staff in the labour market in strategic domains, through training of technical and	<u>Goal 1.1:</u> The participation rate in the TVET subsystem goes from 9.2% in 2017 to 16.2% in 2022 <u>Goal 1.2:</u> The number of students graduating from TVET courses

³³⁵ Assessment and review of Technical and Vocational Education and Training (TVET) in the SADC Region and development of a regional strategy for the revitalisation of TVET, 2010, Pg. 54-55

³³⁶ NDP 2018-2022, Pg. 98-99, translated from Portuguese

	professional middle managers, in quantity and quality	goes from 29,650 in 2017 to 46,500 in 2022
	<u>Objective 2:</u> Guarantee a greater exchange between students and companies, promoting insertion in the labour market, through the promotion of Insertion into Active Life Offices (GIVA) of Mid-level Technical Institutes and increasing the participation of students in curricular internships	<u>Goal 2.1:</u> In 2020, 100% of students have vocational guidance through the Insertion into Active Life Offices (GIVA - Gabinetes de Inserção na Vida Activa) <u>Goal 2.2:</u> In 2022, 60% of finalist students at Mid-level Technical Institutes participate in supervised curricular internships
<p><u>Priority Actions:</u></p> <ul style="list-style-type: none"> • Create new courses, within the scope of the PNFQ guidelines; • Extend the supply of deficit courses in the face of demand; • Recruit specialist teachers; • Train teachers; • Equip laboratories and workshops; • Streamline the Insertion into Active Life Offices (GIVA); • Promote the articulation between Technical and Vocational Education and Training and the National Vocational Training System; • Promote partnerships with companies to carry out curricular internships; • Prepare studies on the employability of TVET; • Implement a system for evaluating TVET courses. 		
<p>Entity responsible for the program: MED (National Directorate of Professional Technical Education)</p> <p>Other participating entities: PNFQ UTG (Unidade Técnica de Gestão / Technical Management Unit); Provincial Governments; Teaching Institutions</p>		

Program 1.3.1: National Staff Training Plan³³⁷

The National Staff Training Plan 2013-2020, is the instrument for implementing the National Staff Training Strategy, and resulted from the finding that there is a lack of qualifications in the national staff stock, in areas considered strategic and priority. Thus, it seeks to promote the quantitative and qualitative adjustment between the training offer and the demand for staff in the labor market. In this way, it contributes to support the development of Angola's human potential, ensuring the training and enhancement of qualified and highly qualified human resources, as an essential condition for the sustainability of economic, social and institutional development and for the competitive international insertion of the Angolan Economy.

The PNFQ is structured in action programs: Training of Senior Managers; Training of Medium Staff; Training of Teachers and Researchers for Higher Education and the National Science, Technology and Innovation System; Training of Teaching Staff and Specialists and Researchers in Education; Training of Staff for Public Administration; Training of Cadres for Entrepreneurship and Business Development; Professional qualification. The PNFQ UTG (Technical Management Unit) assumes itself as a coordinating and monitoring entity, with the competent Ministries (MAPTSS, MED, MEP and MESCTI - Ministério do Ensino Superior Ciência Tecnologia e Inovação/ Ministry of Higher Education Science Technology and Innovation) implementing the action programs.

³³⁷ NDP 2018-2022, Pg. 106, translated from Portuguese

Considering the results achieved so far, but also the new conjuncture of the country, it is now urgent to reprogram the PNFQ.

This program appears here as an integrator of several initiatives, focused on supporting the quantitative and qualitative development of Angola's human potential, with a view to promoting the adjustment between the supply and demand for qualified human resources. In this context, it was decided not to identify goals for graduates, which should be ensured within the framework of sectoral programs by the bodies of the Central Administration.

Programme	Objectives	Goals
National Staff Training Plan	<u>Objective 1:</u> To reprogram the National Staff Training Plan (PNFQ) in order to adjust its structure, goals and horizon to the current conjuncture and the country's development priorities	<u>Goal 1.1:</u> National Staff Training Plan rescheduled until 2019
	<u>Objective 2:</u> To regulate the training offer in the areas considered strategic in the PNFQ (courses in areas that tend to be in balance, courses in deficient areas and courses in areas with no offer)	<u>Goal 2.1:</u> By 2022, at least 85% of courses are created according to the training needs identified in the PNFQ
	<u>Objective 3:</u> To improve the degree of employability of graduates from TVET and higher education systems	<u>Goal 3.1:</u> By 2022, at least 6 studies of training and employability of the PNFQ training offer are carried out
	<u>Objective 4:</u> To obtain permanent information about the Staff available in Angola, through a Staff Registration and Management Information System (SRMIS), with a database of staff in the Central State Administration, the Local State Administration and promote its generalization to the Angolan economy	<u>Goal 4.1:</u> By 2022, the SRMIS has information on the available staff in Angola, with phased targets throughout the period, in order to cover: the staff of the State's Central Administration, by 2020; the staff of the State's Local Administration, by 2021; the staff of the National Economy, by 2022
<p><u>Priority Actions:</u></p> <ul style="list-style-type: none"> • Reschedule the PNFQ by 2022; • Proceed with the survey of the quantitative and qualitative needs of the strategic areas of training at the Provincial level, with the active participation of the Ministerial Departments and the Provincial Governments; • Reprogram the goals of each PNFQ Action Program, according to the installed capacities of the Ministerial Departments responsible for the management of the Education and Training Subsystems (professional training, technical and vocational secondary education and higher education); • Formulate and determine the most suitable financing modalities for all education, training and research subsystems, in a triangular logic, that is, promoting the articulation between 		

<p>the State, the Education and Training Institutions (public and private) and the Business Sector, based on the criteria of efficiency and rationalization of public expenditure;</p> <ul style="list-style-type: none"> • Promote articulation and coordination with partners, whether bilateral or multilateral donors, enhancing alternative sources of financing for PNFQ programs and actions; • Promote the creation of courses in domains that tend to be in balance, courses in deficient domains and courses in domains with no offer according to the reprogramming of the PNFQ; • Promote the conduct of Training and Employability Studies by the Ministries: two by MED, two by MESCTI, and two by MAPTSS; • Implement the SRMIS and ensure the registration of Angolan staff available in the public and private sector; • Ensure PNFQ communication and dissemination and information on staff training in Angola, through the edition of the “Qualificar” bulletins; • Create the technical conditions for the calculation of the Human Capital Index and disclose its results annually.
<p>Entity responsible for the program: PNFQ UTG</p> <p>Other participating entities: MED; MESCTI; MAPTSS; MAT; MEP</p>

Program 1.3.2: Strengthening the National Vocational/ Professional Training System³³⁸

Professional training is a strategic objective for the development of the country's human resources, promoting an improvement in the qualifications of Angolans and preparation for the labour market. In this sense, it is also assumed as an effective instrument to fight poverty and social inclusion.

The vocational training system covers initial training, preparation for access to employment and professional practice and lifelong training, also governed by the Basic Law of the National Vocational Training System of 1992 (Law no. 21 –A / 92 of 28 August), outdated in view of the country's evolution and international recommendations in terms of human resources development in a perspective of learning based on competences and better articulated with the education system, in particular with Technical and Vocational Education and Training.

Within the Ministry of Public Administration, Labour and Social Security (MAPTSS), the National Directorate of Labour and Professional Training (DNTFP - Direcção Nacional do Trabalho e da Formação Profissional) and the National Institute of Employment and Professional Training (INEFOP) are the entities responsible for coordinating the training system and the implementation of training programs.

The present program aims to promote the increase in the qualifications of human capital in line with the municipalisation process. Thus, it seeks to expand vocational training to all municipalities, with a view to promoting an increase in the levels of professional skills and responding adequately to the needs of qualified labor, according to the realities of the different territories. Adopting as an elementary premise the adequacy of training responses to the evolving needs of the labor market and companies, it also seeks to respond to the challenge of lifelong learning, through the pillar of continuous training.

³³⁸ NDP 2018-2022, Pg. 108-109, translated from Portuguese

Programme	Objectives	Goals
Strengthening the National Professional Training System	<u>Objective 1:</u> Promote the increase in professional skills levels and respond adequately to the needs for qualified labor in the country through the expansion of professional training to all municipalities	<u>Goal 1.1:</u> By 2022, 254 thousand people trained by the National Employment and Professional Training System (SNEFP - Sistema Nacional de Emprego e Formação Profissional) <u>Goal 1.2:</u> Network of vocational training centers in the country expanded by 30% by 2022 <u>Goal 1.3:</u> Training capacity in territories without training infrastructure increases from 35 in 2017 to 50 mobile units of vocational training in 2022
	<u>Objective 2:</u> Providing help to young people in vocational and professional decision-making and informing them about existing professional opportunities	<u>Goal 2.1:</u> 18 provincial vocational guidance centers implemented by 2022
	<u>Objective 3:</u> Promote the maintenance of employment through the continuous training of employed persons	<u>Goal 3.1:</u> By 2022, 35 thousand people trained in continuous training through SNEFP
<p>Priority Actions:</p> <ul style="list-style-type: none"> • Prepare a new Basic Law for the National Vocational Training System; • Build and acquire equipment for new training units • Rehabilitate and re-equip existing training units; • Recruit, select and train the human resources necessary for the operation of the training units to be built / acquired, their admission and training (trainers and support staff); • Establish and operationalise the municipal centers for coordination and consultation of professional training; • Hold/perform initial and continuing training protocols for workers between training centers professional and companies or business associations; • Develop new initial and continuing training courses according to the dynamics of the economy and sectoral policies; • Put the Dual Professional Training System into operation on an experimental basis; • Train 1,500 trainers and 300 managers trained in the SNEFP, in order to raise the technical and professional skills of managers and technicians in the integrated employment and vocational training system; • Implement Provincial Professional Guidance Centers; • Promote information and vocational guidance programs to improve the skills and competences of assets, as well as facilitate individual options related to the profession or professional career; • Continue the development of didactic instruments (teaching tools) to support the AVANÇO program (competency profiles and training manuals); • Strengthen and expand the scope of action of the Supervision and Quality Service of the National Vocational Training System. 		
<p>Entity responsible for the program: MAPTSS</p>		

Other participating entities: INEFOP

Program 1.3.3: Establishment of the National Qualifications System³³⁹

The National Staff Training Strategy recommends the definition and implementation of a National Qualifications System (NQS / SNQ Sistema Nacional de Qualificações).

The NQS is a facilitating instrument that articulates the education, professional training system and the market through the identification, characterization and validation of professional skills, promoting the human, professional and social development. It arises from the need to articulate the qualifications obtained within the scope of the education and training subsystems within a single framework and to value the skills acquired throughout life in informal and non-formal contexts.

It is an essential element in the path of Qualification and Professional Certification of individuals, but it is also responsible for determining what is relevant in terms of producing professional profiles for the job market. In other words, the essential requirements inherent to the work and performance of a profession, thus contributing to promote the adequacy of the training offer to the country's development needs, according to the requirements of the labor market. The NQS contains the following components: National Qualifications Framework (NQF / QNQ Quadro Nacional de Qualificações); National Qualifications Catalog (NQC / CNQ - Catálogo Nacional de Qualificações); Skills Accreditation, Recognition, Validation and Certification Process.

SADC has defined as a goal, the progressive reach of equivalence, harmonization and standardization of the Education and Training Systems of the region, with a view to facilitate the mutual recognition of qualifications among the member states. It recognizes that it is important to have harmonized training programs and qualifications, in a coherent system of mutual recognition of skills, where the portability of technical and vocational training qualifications across national borders can be a factor of integration in Africa.

The PNFQ UTG (Technical Management Unit) will be the structure responsible for coordinating the work for the implementation of the NQS in Angola, in conjunction with other bodies with competences in the fields of design and implementation of vocational education and training policies, namely MED, MAPTSS and MESCTI.

The present program aims to implement the NQF, in its three components, and to create the National Qualifications Agency (Authority) of Angola.

Programme	Objectives	Goals
Establishment of the National Qualifications System	<u>Objective 1</u> : Integrate and articulate the qualifications resulting from the different education and training subsystems: basic, secondary, technical and vocational education, higher education, professional training and processes of recognition and certification of competences in the NQF	<u>Goal 1.1</u> : National Qualifications Framework, with the structure of qualification levels, elaborated and approved by 2019

³³⁹ NDP 2018-2022, Pg. 110-111, translated from Portuguese

	<p><u>Objective 2:</u> To improve knowledge of the most relevant professions, tasks and functions in the country, based on a sectoral dimension, through the definition of priority professional families and their professions and professional profiles with the respective qualifications for each profession, structured in the NQC</p>	<p><u>Goal 2.1:</u> National Qualifications Catalog prepared with at least 65 associated professions up to 2022</p>
	<p><u>Objective 3:</u> Recognize and increase the population's qualification levels with the implementation of policies and incentives for lifelong learning, promoting the valuation and certification of the learning acquired in different contexts, through the definition and approval of the Competence Recognition, Validation and Certification Scheme (RVCC- Regime de Reconhecimento, Validação e Certificação de Competência)</p>	<p><u>Goal 3.1:</u> Competence Recognition, Validation and Certification Scheme (RVCC) defined and approved by 2019 <u>Goal 3.2:</u> 80 pilot RVCC experiments carried out by 2022</p>
<p>Priority Actions:</p> <ul style="list-style-type: none"> • Elaborate the Legal Regime of the National Qualifications System; • Review the basic legislation for Vocational Training and TVET; • Prepare the NQF with the definition of the academic and professional qualifications required for the performance of a profession; • Develop a proposal for priority professional profiles for the preparation of qualifications that will integrate the NQC; • Review the basic legislation for Certification and Accreditation of Training Entities; • Review legislation for the award of professional equivalences and double certification in professional training courses; • Implement the RVCC through the identification of qualifications introduced in the NQC and professional profiles, organized in units of competence and corresponding training modules, such as the definition of assessment instruments in relation to which the candidate will be evaluated and awarded a certification (school and / or professional) • Establish the National Qualifications Agency (Authority) of Angola; • Develop and implement an Integrated and Qualifications Information System. 		
<p>Entity responsible for the program: PNFQ UTG</p> <p>Other participating entities: MED; MESCTI; MAPTSS</p>		

Gabon

Introduction

Gabon, a central African country, is rich in natural resources. Located on the Atlantic Ocean, it borders Cameroon, Equatorial Guinea, and the Republic of Congo. It is sparsely populated, with a population of 2 million (2017) over an area of 267,667 sq km and with forests covering 85% of its territory.³⁴⁰



Gabon nonetheless has one of the highest urbanization rates in Africa; more than four in five Gabonese citizens live in cities. The capital, Libreville, and Port Gentil (the economic capital) of the country are home to 59% of the population. One in two Gabonese citizens is under the age of 20, with the fertility rate in urban areas at four children per woman against six in rural areas, according to the 2012 Second Demographic and Health Survey.

Human Development Record

HDI

Table 1: Gabon Human Development Record (2018)

Human Development Index (HDI) (Value)	Life expectancy at birth (Years)	Expected years of schooling (Years)	Mean years of schooling (Years)	Gross National Income (GNI) per capita (2011 PPP \$)	GNI per capita rank minus HDI rank	HDI Rank (out of 189)
0.702	66.2	12.9	8.3	15,794	-40	115

Source: Human Development Report 2019, pg. 301³⁴¹

Gabon's HDI value for 2018 was 0.702 – which put the country in the high human development category— positioning it at 115 out of 189 countries and territories. Between 1990 and 2018, Gabon's HDI value increased from 0.619 to 0.702, an increase of 13.4 percent.

Between 1990 and 2018, Gabon's life expectancy at birth increased by 5.2 years, mean years of schooling increased by 4.0 years and expected years of schooling increased by 1.1 years. Gabon's GNI per capita decreased by about 18.5 percent between 1990 and 2018.³⁴²

Gender inequality index

Gabon has a GII value of 0.534, ranking it 128 out of 162 countries in the 2018 index. In Gabon, 17.4 percent of parliamentary seats are held by women, and 65.6 percent of adult women have reached at least a secondary level of education compared to 49.8 percent of their male counterparts. Female participation in the labour market is 43.4 percent compared to 60.2 for men.³⁴³

³⁴⁰ <https://www.bbc.com/news/world-africa-13376333>

³⁴¹ <http://hdr.undp.org/sites/default/files/hdr2019.pdf>

³⁴² Human Development Report 2019, Inequalities in Human Development in the 21st Century, Briefing note for countries on the 2019 Human Development Report, Gabon. Pg 2-3 - http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/GAB.pdf

³⁴³ Human Development Report 2019, Inequalities in Human Development in the 21st Century, Briefing note for countries on the 2019 Human Development Report, Gabon. Pg 5-6 http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/GAB.pdf

Table 2: Gabon Gender inequality index, 2018

	GII value	GII Rank	Maternal mortality ratio	Adolescent birth rate	Female seats in parliament (%)	Population with at least some secondary education (%)		Labour force participation rate (%)	
						Female	Male	Female	Male
Gabon	0.534	128	291.0	96.2	17.4	65.6	49.8	43.4	60.2
Botswana	0.464	111	129.0	46.1	9.5	89.6	90.3	66.2	78.6
Namibia	0.460	108	265.0	63.6	39.7	40.5	41.9	56.2	65.9
Sub-Saharan Africa	0.573	—	550.0	104.7	23.5	28.8	39.8	63.5	72.9
High HDI	0.331	—	56.0	33.6	24.4	68.9	74.5	53.9	75.6

Maternal mortality ratio is expressed in number of deaths per 100,000 live births and adolescent birth rate is expressed in number of births per 1,000 women ages 15-19.

Source: Human Development Report 2019

Economy

Gabon is an upper-middle-income country. The fifth largest oil producer in Africa, it has had strong economic growth over the past decade, driven by its production of oil and manganese. The oil sector has accounted for 80% of exports, 45% of GDP, and 60% of fiscal revenue on average over the past five years. However, as the country is facing a decline in its oil reserves, the Gabonese government has decided to diversify its economy. Gabon's fiscal position worsened in 2015, with the country recording a fiscal deficit for the first time since 1998. Despite the government's attempts to rein in expenditure and offset the decline in oil revenue, Gabon's economy stalled in 2017 and was projected to grow by 0.8% in 2018 compared to 0.5% in 2017. This trend is attributable to limited expansion of the secondary and tertiary sectors, impacted by the decline in public expenditure. However, higher prices for crude oil, manganese, and rubber – exported by the country – contributed to growth in the primary sector.³⁴⁴

Gabon's economic recovery continued in 2019, thanks to the momentum of nonoil activities (mines, timber, rubber, and palm oil), with estimated real GDP growth of 3.4% in 2019 (0.8% in 2018), driven by the exploitation of new oil wells (up 11.8%), nonoil exports (18.6%), and total investment (4.5%). The inflation rate declined from 4.8% in 2018 to 3.4% in 2019, approaching the CEMAC community target of 3%.³⁴⁵

Gabon harbours 25% of the world's proven reserves of manganese. National exports grew by 47.7% thanks to an increase in world demand (China, Europe, and India). In 2014, the government decided to process some of it locally, and the investments under way for the local conversion of manganese to ferromanganese should eventually triple the value added produced.³⁴⁶

Poverty

Inequality, measured by the Gini index, is at a moderate level of 38; but wide geographic disparities in poverty and large social inequalities undermine prospects for shared prosperity and sustainability of poverty reduction. Gender gaps in education have had negative repercussions on women employment, and early school dropout is significantly high outside the capital and often goes in hand with larger share of people living in jobless households. Gabon scores relatively low (0.45) in the Human Capital Index due to low performance in education and limited access to safe sanitation and drinking water. Unemployment is highly prevalent, particularly among high school educated youth and women. The informal sector accounts for over half of employment and the rest is mostly through the public sector. Slow and erratic growth, plagued by heavy dependence on oil and weak governance, did not create jobs and has constrained fiscal space for productive investment in human development.

³⁴⁴ <https://www.worldbank.org/en/country/gabon/overview>

³⁴⁵ African Economic Outlook, country notes, Gabon p.155

³⁴⁶ African Economic Outlook, country notes, Gabon p.155 <https://www.afdb.org/en/documents/african-economic-outlook-2020>

The decline in oil price and the effects of the COVID-19 pandemic are predicted to lead to negative economic growth on a per capita basis. About 60 percent of the vulnerable population who live around the poverty line work in informal services, retail trade and self-employment. Their income is expected to decline by about 8 percent due to the COVID-19 pandemic, causing them to fall further below the poverty line. The decline in remittances and the reduction of fiscal resources for social spending could further exacerbate poverty and vulnerability.³⁴⁷

Labour market structure and outcome

The informal sector

Key findings of the World Bank Report 2015 show that formal employment in Gabon declined steadily between 1986 and 2010, and one in every five members of the labour force was unemployed. Young people, women, and the highly educated are particularly affected. The unemployment rate is 35.7% for young people between the ages of 15 and 24, and 26% for the labour force aged 25 to 34. It is twice as high for women as for men. Close to one quarter of the labour force with a secondary school education is unemployed; proof that a diploma provides no protection against unemployment.

The oil industry is the country's leading source of growth. However, it is anything but labour-intensive. The report reveals that the oil industry alone accounts for more than 40% of national value added and more than 60% of government revenue, yet its total workforce amounts to less than 5% of formal employment. The report also notes that the education system is not attuned to labour market needs, and young graduates lack the skills sought by businesses. Despite a net enrolment rate of 92%, the grade repetition rate in Gabon is 37%, one of the world's highest.³⁴⁸

Gabon has a high unemployment rate, especially of young people and young graduates. The decade of strong economic growth that the country experienced in the 2000s did not create jobs. As a result, the informal sector predominates. In the formal sector of the economy, salaried employment is the predominant form of employment, with also a preponderance of management in the formal sector, especially in the public sector.³⁴⁹

The **National Employment Office (ONE)**, the public employment service, is responsible for connecting jobseekers and businesses. However, it cannot cover all needs because it only has five branches throughout the country. Due to this low coverage, and the lack of synergy with other key sectoral ministries and training centres and institutes, private competitors have settled and developed. Figures for the number of registrants with these private companies are not known.³⁵⁰

The structure of the active population reveals great differences by sex. In 2010, the total labour force was 494,000 people, including 209,000 women (42 percent). Unemployment, on the other hand, strikes women and men equally (MEEDD, 2012). It is often long-term unemployment and more often affects young people (the rate is double). The employed labour force is therefore reduced (393,000, including 149,000 women); it is essentially urban and informal. The breakdown of employed workers by industry shows the predominance of services (68 percent), followed by trade (15 percent) and agriculture (11 percent). The industrial sector absorbs barely 7 percent of the workforce (MEEDD, 2012).³⁵¹

Historical sectors such as wood and palm oil are growing again, even if this turning point was taken belatedly. Other structural factors which have contributed to the historical preponderance of oil are deficiencies in technical and vocational education and training, the low rate of transition to tertiary

³⁴⁷ Poverty & equity Brief, April 2020. https://databank.worldbank.org/data/download/poverty/33EF03BB-9722-4AE2-ABC7-AA2972D68AFE/Global_POVEQ_GAB.pdf

³⁴⁸ Gabon's Unemployment Conundrum: Why Economic Growth is not Leading to More Jobs, The World Bank, 2015 <https://www.worldbank.org/en/news/feature/2015/03/31/gabons-unemployment-conundrum-why-economic-growth-is-not-leading-to-more-jobs>

³⁴⁹ State of Skills: Gabon, ILO 2019/20, Pg. 13

³⁵⁰ Ibid

³⁵¹ Ibid

education, a restrictive business climate, and legislation rigid work which protects those who have a job but which tends to curb new hires.³⁵²

Gabon lacks skills in sectors such as agriculture, woodworking, eco-tourism, new information and communication technologies, and even in the development of petroleum.³⁵³

The Education and Training system

According to statistics, 9.7 percent of the population over 3 years old have a higher education level, 39.3 percent a secondary education, 28 percent a primary education, 5.7 percent a pre-primary education and 17.3 percent have received no education at all. Besides, 6.3 per cent of individuals aged between 15 and 17 have never been to school and about 10 percent of the population of school age remain to be educated.³⁵⁴

Despite improved enrollment in basic education, with increased access among girls, the quality of basic education remains low with negative implications for skills development. As described above, Gabon has made significant strides towards universal enrollment, achieving a basic education net enrollment rate of 96.4 percent in 2012 and a national literacy rate of 88 percent in 2010. However, the continued overcrowding of primary schools, high secondary school dropout rates (particularly among girls who constitute a large numbers of “school-leavers”) and the poor working conditions of teachers continue to undermine educational achievement. The overall quality of the education system does not meet the needs of the labour market, leading to a structural labour shortage particularly in sectors requiring technical specialization. Gabon’s technical and vocational education and training (TVET) system is characterized by: (i) high repetition rates and high dropout rates; (ii) capacity constraints that may potentially limit access moving forward; and (iii) problems associated with insufficient and inefficient budgetary allocations.³⁵⁵

The TVET sector in Gabon is comprised of both technical and vocational education, each focusing on providing a different level of skills. Vocational education targets workers and technicians with lower levels of skills, while technical education provides more advanced technical training, and is intended to serve as a pathway towards further technical education and potential enrollment in advanced degrees.³⁵⁶

There is a lack of skilled labour in many sectors in Gabon, including expanding economic sectors. A consequence of the rent-based economy based on petroleum extraction is that the school and the technical and vocational education and training systems have not been prepared to provide the necessary skills for the desired emerging economy. Employers regularly report on the difficulties they have in recruiting and the low skill level of recruits they end up hiring or picking up on trial basis. Data from the National Employment Office indicate a significant mismatch between supply and demand for jobs at all skill levels. Demand for jobs is greater than supply and more two-thirds of job offers from companies are not filled due to lack of suitable profiles (Table 3)³⁵⁷.

³⁵² Ibid p. 15

³⁵³ State of Skills: Gabon, ILO 2019/20, Pg. 16

³⁵⁴ Ibid p. 12

³⁵⁵ Gabon skills development project. Project information document, p. 3

<http://documents1.worldbank.org/curated/en/845631468030322760/pdf/PID-Appraisal-Print-P146152-12-09-2015-1449702697840.pdf>

³⁵⁶ Ibid p. 3

³⁵⁷ State of Skills: Gabon, ILO 2019/20, Pg. 22

Table 3: Demand and offer of skills at different levels

	Demand	Offer	Offer met	%age offer satisfied	%age demand satisfied
Engineers/Cadres	971	188	64	34.0	6.6
High skilled Technicians	1324	321	149	46.4	11.2
Technicians	302	217	68	31.3	22.5
High Skilled artisans	1086	82	19	23.2	1.7
Skilled artisans	835	142	67	47.2	8.0
Low skills	142	42	25	59.5	17.6
Total	4660	992	392	39.5	8.4

Source: State of Skills: Gabon, ILO 2019/20, Pg. 23

TVET reform plans

Gabon has launched several projects to reform its skills anticipation and development system.

- **Merger of ministries**

A first reform concerned the restructuring of the ministries, with the merger of the Ministry of Employment, Youth, Vocational Training, Integration and Reintegration (MEJFPIR) with that of the Public Service, Innovation, Civil Service and Labour to form the **Ministry of Employment, Public Service, Labour and Vocational Training, responsible for Social Dialogue**. The Directorate of Human Resources Branch also integrated this new Ministry. It is responsible of creating and recognizing skills.³⁵⁸

- **Strategic Plan**

The emerging Gabon Strategic Plan (Plan stratégique Gabon emergent), also addresses the question of skills. It planned to set up an Education Management Information System (EMIS) (Gabonese Republic, 2012, p. 65), the creation of a school identity card, the development of school and university infrastructure, a reform of education and training programs, and study duration.³⁵⁹

- **The Skills and Employability Development Project**

The Skills and Employability Development Project (PRODECE) was implemented by the Ministry of Labour, Employment, Technical and Vocational Training and Youth Integration, with the assistance of the World Bank. Initially planned to be effective between 2016 and December 2021, it was launched in 2017. It targeted young adults between the ages of 18 and 34 who have had little or no education. Its objectives were multiple. It concerned improvement in the supply of technical and vocational education and training with the creation of new training centres - including one in building construction and public works, and another one in new information and Communications Technologies and structures like technical high schools. It also comprised improving the integration and employability of young people through the development of entrepreneurial skills.³⁶⁰

³⁵⁸ State of Skills: Gabon, ILO 2019/20, p. 24

³⁵⁹ Ibid p. 25

³⁶⁰ State of Skills: Gabon, ILO 2019/20, Pg. 25

- **Technical support to the GRAINE Project (PAPG1)**

Technical support to The GRAINE Program (Phase 1) (Projet d'appui au programme GRAINE Phase 1), set up by the Ministry of Agriculture, with funding from the African Development Bank and technical assistance from the ILO, aimed to improve employability in the agriculture sector, promote access to the sector, develop the offer of the National School of Rural Development and create jobs for young rural people. Proposed in September 2017, this program was launched on October 4, 2019 by the Prime Minister's Office.³⁶¹

- **Train my generation - Gabon 5000**

The "Train my generation - Gabon 5000" program was part of UNESCO's policy for skills development, to facilitate access to employment and the creation of businesses. UNESCO supported the Gabonese State in the development of skills through the development of a technical and vocational education and training policy, with also the creation of training centers in the fields of Information and Communications Technology. The provisional management of employment and skills (GPEC) was proposed in 2018, as part of the project to support administrative reforms of the World Bank.³⁶²

Governance

The skills development system is overseen by several institutions, and there is little cooperation in between them all; synergies exist but they are little exploited because the technical and financial partners cannot agree on a common action plan. There is the Ministry of National Education responsible for civic education. There is also the National Agency for Training and Professional Development (ANFPP). It is attached to the ministry in charge of vocational training. It develops training for adults. Also involved in this governance are the Ministry of Higher Education, Scientific Research and Technology Transfer (general training) and the Ministry of Employment, Public Service, Labour and Vocational Training (for technical and professional training). Finally, the National Employment Office is also involved in developing the skills of job seekers. Vocational training centres indulge in the skills development system at local level.³⁶³

Employers' organizations are regularly invited to contribute to the debate. This is a logical consequence of the acceptance by Gabon of one of the ILO recommendations on the consultation of the social partners. Their level of involvement in technical and vocational education and training is however low, in particular in the development of study and training programs, apprenticeship training programs and in their active participation in management committees or boards of administration of training establishments. There are a number of factors that limit the engagement and relevance of employers' organizations. On the one hand, there are many (23) such organisations resulting in situation where a form of consensus between them seems difficult. On the other hand, they have very few in-house technical skills. Finally, most of the central trade unions have few resources and cannot, for example, recruit their own experts to monitor any casefiles.³⁶⁴

Governance is very centralized and there is no consideration that TVET can present local solutions to local issues. There is little coordination with private centres. In addition, due to the diversification of the offer by the different training centres, learning materials costs cannot be shared.³⁶⁵

Access and Equity

The enrolment rate in TVET institutions is low. Gabon has managed to significantly increase access to education in basic general education, but access to TVET remains very low. The ratio of the number

³⁶¹ Ibid p. 26

³⁶² Ibid p. 26

³⁶³ Ibid p. 29

³⁶⁴ State of Skills: Gabon, ILO 2019/20, Pg. 29

³⁶⁵ Ibid p. 37

of pupils enrolled in a technical and professional institution per 100,000 inhabitants, estimated at 377, is barely above the African average (364), more than three times lower than in Cameroon or Tunisia and 1.5 times lower than in Mauritius, for example. The Technical and Vocational Education and Training students account for only **8 percent** of the total education and training system (World Bank, 2013, p. 72).³⁶⁶

The low enrolment in TVET institutions is also confirmed in the Gabon Skills Development Project Information Document. At the same time, the most recent data for female enrollment in TVET (2013) indicate that, of the total number of students enrolled in TVET education, females students make up approximately 37 percent of the student body in technical education and 51 percent in vocational training.³⁶⁷

However, Gabon has been actively working to improve access to vocational training, as well as its offer. It has implemented a large number of programs, mainly aimed at young people.

- Implemented since 2016, the “one young person = one job” (un jeune = un métier) program aimed to enable young people aged 16 to 35, who lived in very precarious conditions (“street youth”), to reintegrate themselves through three-month apprenticeship training in a promising sector.
- In addition to the PRODECE programme (apprenticeship program for young people aged 16 to 24) the National Employment Office set up two programs³⁶⁸:
 - The first, the Gabon Energy and Water Program (SEEG), concerned around thirty young Gabonese graduates between the ages of 18 and 34. Thanks to this program, these young people had the possibility of doing internships, as well as training in the water, electricity and customer relations professions.
 - The second, the Youth Apprenticeship Contract (Contrat d’Apprentissage Jeunesse) (CAJ) whose objective was to promote adapted training, financed by the World Bank.
- Finally, the Ministry of Employment, Public Service, Labor and Vocational Training is trying to make plausible its objective of providing Gabon with a qualified work force of 10,000 young people by 2023. For this, five vocational training establishments were under construction and were meant to be delivered as from March 2020. They were being built in five different provinces and would cover sectors corresponding to technical trades in demand, in industry and processing namely³⁶⁹

TVET Delivery

The Project Information Document of December 2015 mentioned that Vocational training was being provided through 9 public vocational training centers while technical education (in which 7,000 students are enrolled) was provided through 12 public institutions for technical education (11 technical institutions and one national business school). In addition to public TVET institutions, private training institutions and centers run by private firms provided training for youth and on-the-job training for workers; however the capacity and outcomes of these programs has not been accurately measured.³⁷⁰

In the public system, technical and vocational education and training offer forty-three (43) programs, seventeen (17) of which are in the tertiary sector, but the sectors remain traditional with low enrolment, even though the learners are concentrated in a geographically fairly small area.³⁷¹

³⁶⁶ Ibid p. 38

³⁶⁷ Gabon Skills Development Project, Project Information Document (PID), Pg. 3

<http://documents1.worldbank.org/curated/en/845631468030322760/pdf/PID-Appraisal-Print-P146152-12-09-2015-1449702697840.pdf>

³⁶⁸ State of Skills: Gabon, ILO 2019/20, Pg. 40

³⁶⁹ State of Skills: Gabon, ILO 2019/20, Pg. 41

³⁷⁰ Gabon Skills Development Project, Project Information Document (PID), Pg. 3

<http://documents1.worldbank.org/curated/en/845631468030322760/pdf/PID-Appraisal-Print-P146152-12-09-2015-1449702697840.pdf>

³⁷¹ State of Skills: Gabon, ILO 2019/20, Pg. 37

TVET Funding

Out of the 2019 budget of 1,907,871 million CFAF, 2,296 million CFAF was allocated to Training (Formation pour l'emploi), out of which 1,865 million CFAF (81%) was used up at the end of December 2019.³⁷²

Several international organizations contribute to funding skills development. There is, for example, the African Development Bank, which finances the following projects: Capacity building for youth employability and improvement of social protection (RC / EJPS) and the Support Project to the GRAINE Phase 1 (Projet d'appui au programme GRAINE Phase 1) program with ILO participation for improving employability, entrepreneurship and productivity companies in the agriculture sector. There is also the World Bank which notably finances the PRODECE program.³⁷³

In addition, following a meeting in August 2018 between the Ministry of Labour and the Director of Operations of the World Bank, an investment of 55 billion CFA francs was to be made in professional training and especially in the creation of training centers. The European Union is also present in Gabon. It finances in particular the training of 3,000 young people without jobs or qualifications. Finally, UNESCO participates financially and pedagogically in various projects including the "Gabon 5000" Program.³⁷⁴

The Ministry of Labour remains the main financing at the local level. Education budget accounted for 13.4 percent of total government spending or 2.7 percent of Gross Domestic Product in 2009 (World Bank, 2013), a figure is below the average of sub-Saharan African countries. These data are somewhat old, but between 2012 and today no policy focused on education has been put in place. In 2019, Gabon announced, for its finance bill, measures that will allow for the improvement of funding for technical education and professional training. The professional training and development centres could finance themselves, up to certain level, by indulging into production in parallel to training.³⁷⁵

Quality and Relevance

Three key factors underlying poor returns to TVET education in Gabon are: (i) TVET programs offered do not provide skills needed by the labor market in key growth sectors (forestry, wood-processing, mining, tourism, ICT, and food processing); (ii) public institutions are poorly equipped; and (iii) poorly trained staff and outdated curricula undermine the quality of training delivered to students. Current curricula place too heavy an emphasis on theoretical knowledge with limited opportunity for practical application of newly acquired knowledge and skills.³⁷⁶

The TVET system is poorly calibrated, in terms of quality, quantity and equity. In particular, there is a poor geographical distribution of training opportunities, an absence of modern training specialities requested by employers, an absence of training in transversal skills, an absence of practical work in sufficient quantity and too theoretical professional preparation. There is also a high level of gender inequity. The training offer in Gabon is at the same time scattered, poorly optimized and lacking in quality assurance.³⁷⁷

As there are many private institutions and companies have been running internal training by using these private institutions, the certification, the quality and level of those training programs are not harmonized. Quality is not effectively controlled: there are no attempts to establish a link between the learners' supposed achievements and their subsequent performance on the labour market. There is no assessment on the internal efficiency as well.³⁷⁸

³⁷² Rapport d'Execution Budgetaire, Quatrieme Trimestre 2019, Pg. 6 <http://www.dgbfip.budget.gouv.ga/publication/4>

³⁷³ State of Skills: Gabon, ILO 2019/20, Pg. 30/31

³⁷⁴ State of Skills: Gabon, ILO 2019/20, Pg. 31

³⁷⁵ Ibid p. 31

³⁷⁶ Ibid p. 4

³⁷⁷ Ibid p. 36

³⁷⁸ State of Skills: Gabon, ILO 2019/20, p. 38

The Gabonese certification system provides certification at five levels in TVET. Each level of certification relates to the job that the graduates can perform. Besides, it is the highest level of education achieved that determines the entry into a given certifying cycle of technical education and vocational training. This matching approach, which strongly links the level of certification and employment, seems almost societal in Gabon (for example, people with a high level of certification have high expectations in terms of entry into the public service). However, this matching system in general is problematic because it does not take into account the recruitment strategies of companies that can promote workers internally based on their experience and / or proven skills.³⁷⁹

The certification system issued in Gabon suffers from a lack of recognition by economic operators; partly because the training programs (curricula) used are poorly known to operators or because they do not meet their expectations, in particular in regards to the balance between theoretical knowledge, practical know-how and transversal skills.³⁸⁰

In brief, there are no tools or formal framework for implementing a quality assurance approach in TVET in Gabon. There is little transparency on the learning outcomes and skills of TVET graduates. There is therefore no real confidence in the certification issued in the Gabonese system.³⁸¹

The absence of an effective orientation and transparency mechanism on the actual skill level of graduates, as well as the negative experiences reported by employers who recruit young graduates, contributes to giving a negative image of the TVET system.³⁸²

Curriculum

The training programs (curricula) are old and there are no mechanisms for updating these programs to be in line with developments in the labour market and meet employers' expectations. New approaches, new methods and new tools are therefore poorly understood by TVET graduates. It is not clear whether the Trainers themselves master these novelties, mainly due to the lack of continuous training.³⁸³

According to the Gabon Skills Development Project Information Document, Gabon's TVET institutions offer many types of training across a range of sectors rather than taking a sector-specific approach by institution. Currently TVET institutions deliver 43 secondary programs and 17 programs focused on tertiary sector activities. The secondary sector caters predominantly to: motor vehicle training (6 centres); carpentry and cabinetmaking (5 centres); industrial electricity (5 centres); and electrical and building training (4 centres). In the tertiary sector, secretarial and accounting training is the most commonly offered course of study, and is offered in 4 centres. The Basile Ondimba Professional Training and Development Centre provides the most courses of study, with a total of 23 distinct programs.³⁸⁴

TVET Reforms

As mentioned earlier, Gabon has developed a series of TVET reform plans.

The Strategic Plan Emerging Gabon (PSGE) which was published in 2012 referred to strategies and policies implemented from 2011, with a vision for 2025. To allow the development of jobs, the PSGE planned in particular to promote access to employment, to fight against exclusion and to facilitate entrepreneurship and social dialogue.³⁸⁵

³⁷⁹ Ibid p. 42

³⁸⁰ State of Skills: Gabon, ILO 2019/20, Pg. 42

³⁸¹ Ibid p. 43

³⁸² Ibid p. 45

³⁸³ Ibid p. 45

³⁸⁴ Gabon Skills Development Project, Project Information Document (PID), Pg. 3)

<http://documents1.worldbank.org/curated/en/845631468030322760/pdf/PID-Appraisal-Print-P146152-12-09-2015-1449702697840.pdf>

³⁸⁵ State of Skills: Gabon, ILO 2019/20, Pg. 17

Gabon also has a Policy for National Employment and Vocational Training. The policy was published in 2018, with the support of the International Labour Office (ILO) and the International Children's Fund (UNICEF) and it gave an uncompromising assessment of the state of employment in Gabon. The latter are based on the established diagnosis and the government's vision, with: improving the absorption capacity of the workforce by the national economy; support for the development of the private sector and entrepreneurship; improving the employability of the workforce; and improving and modernizing labour market governance.³⁸⁶

The role of international development agencies in the national TVET system

Various international development agencies, namely the AFDB, ILO, World Bank, EU, UNESCO, have been financing/supporting different projects in Gabon with respect to TVET.

Main challenges of TVET in Gabon:³⁸⁷

1. Lack of regulation of education and training and better coordination of the actions of development partners.
2. Lack of funding for TVET
3. Inadequate skills recognition system.
4. Inadequate qualitative and quantitative information and data collection system.
5. Poor diversification of skills.
6. Inadequate skills recognition system.

Potential solutions:³⁸⁸

1. Ensure better involvement of employers 'and workers' organizations in the definition / formulation of training programs.
2. Revisit the TVET system and improve careers guidance structures.
3. Adapt modern tools to the local context.
4. Collect data.
5. Establish partnerships between training providers

To note: Gabon has a Ministry of Communication and Digital Economy and a Ministry of Employment, Public Service, Labour, Vocational Training and Social Dialogue

³⁸⁶ Ibid p. 18

³⁸⁷ State of Skills: Gabon, ILO 2019 p. 55 - 59

³⁸⁸ State of Skills: Gabon, ILO 2019/20, Pg. 61 – 64 https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/genericdocument/wcms_736682.pdf

Liberia

Introduction

The Republic of Liberia is a country on the West African coast. It is bordered by Sierra Leone to its northwest, Guinea to its north, Côte d'Ivoire to its east, and the Atlantic Ocean to its south-southwest. It has a population of around 5 million and covers an area of 111,369 square kilometres (43,000 sq mi). English is the official language, but over 20 indigenous languages are spoken, representing the numerous ethnic groups who make up more than 95% of the population. The country's capital and largest city is Monrovia.



The Liberian flag and constitution were modeled after those of the U.S. Liberia is a member of two regional economic unions – the Mano River Union, a free trade group to which Sierra Leone and Guinea also belong, and the Economic Community of West African States (ECOWAS).

Economy and Labour market

Liberia was the first African republic to proclaim its independence and Africa's first and oldest republic, but it became known in the 1990s for its long-running, ruinous civil war and its role in a rebellion in neighbouring Sierra Leone. Around 250,000 people were killed in Liberia's civil war, and many thousands more fled the fighting).³⁸⁹

A peace agreement in 2003 led to democratic elections in 2005, in which Ellen Johnson Sirleaf was elected President, making history as the first female president in the continent. Liberia as a post-conflict nation still remains in a fragile state with young institutions and scarce resources in need of special attention and support. A week after Liberia's 173rd Independence Day celebration on July 26, 2020, the country was plunged into yet another violent turn, dealing a painful reminder of Liberia's bitter past compounded by an emerging crisis which has the potential to disrupt its hard-fought peace. Liberia is still struggling to find its footing.

Liberia is faced with worsening economic conditions, with negative growth (projected at -2.5 percent of Gross Domestic Product (GDP) for 2020), a high current account deficit and a decline in donor transfers.³⁹⁰ The GDP in Liberia was worth 3.22 billion US dollars in 2019, according to official data from the World Bank and projections from Trading Economics. It contracted 2.50 percent in 2019 from the previous year³⁹¹, following the modest growth of 1.2% in 2018. Inflation reached 31.3% by August 2019, up from 26.1% the previous year. The non-mining sector is expected to contract by 3.4 percent in 2019, on the back of contraction in services and manufacturing and weak performance in agriculture, while mining sector is expected to grow by 7.8% due to increased production of gold and ore.³⁹²

GDP - composition by sector is as follows for 2017 est³⁹³

- agriculture: 34% (2017 est.)
- industry: 13.8% (2017 est.)
- services: 52.2% (2017 est.)

³⁸⁹ <https://www.bbc.com/news/world-africa-13729504>

³⁹⁰ Liberia COVID-19 Education Emergency Response Plan p. 9

³⁹¹ <https://tradingeconomics.com/liberia/gdp-growth-annual>

³⁹² <https://www.worldbank.org/en/country/liberia/overview>

³⁹³ Agriculture includes farming, fishing, and forestry. Industry includes mining, manufacturing, energy production, and construction. Services cover government activities, communications, transportation, finance, and all other private economic activities that do not produce material goods. (Source: CIA World Factbook/https://www.indexmundi.com/liberia/gdp_composition_by_sector.html)

Liberia is primarily agricultural and about half the land area is suitable for cultivation, though a small percentage is actually cultivated. Agriculture is the leading sector of the economy. Raw materials, equipment, and consumer goods are imported. Production for export is carried out on a large scale through foreign investment in rubber, forestry, and mining. Liberia is rich in natural resources and minerals such as iron ore, diamonds, gold, lead, manganese, graphite, cyanite (a silicate of aluminum, with thin bladelike crystals), barite and there are possible oil reserves off the coast.

Liberia however remains one of the world's poorest countries, Liberia's HDI value for 2018 is 0.465 – which put the country in the low human development category – positioning it at 176 out of 189 countries and territories.³⁹⁴

The actual government has put into place its Pro-Poor Agenda for Prosperity and Development (PAPD) which is guided by four pillars focusing on empowering Liberians through education, health, youth development and social protection, enabling private sector-led economic growth, supporting a peaceful society, and creating an inclusive and accountable public sector.

Labour market structure and outcome

Liberia is a youthful country with 79% of the total population of 3,476,608 below the age of 36 years³⁹⁵. Youth make up a large part of the unemployed and underemployed.

2010 Liberia Labour Force Survey oozed out almost 78 percent of actors in the labour force are vulnerably employed.³⁹⁶ A core object of that alarming vulnerability is the dearth of marketable skills.³⁹⁷ The quality of the workforce is low, with more than half of those employed described as “uneducated”.³⁹⁸

According to the 2008 population census, of the 2.8 million Liberians of working age, only 37.5% were in formal employment with the rest unemployed, or in inactive or irregular and insecure occupations. Furthermore, the Liberia Labour Force Survey of 2010 estimates that 68% of the persons employed work in the informal sector without regular wages.³⁹⁹

Together with other international organisations like the United Nations (UN) but also the Liberian state, it frequently stresses that unemployed youth can cause instability and conflict.⁴⁰⁰ According to the Work4Youth report; “one in every three young persons in the labour force is unemployed in Liberia” (2013:1).⁴⁰¹ About half of Liberia's youths are employed, according to this research, but the quality of their work situations is often low (de Mel, Elder et al. 2013:1).⁴⁰² 33 per cent of the young work in fishery or agriculture (de Mel, Elder et al. 2013:2, 26).⁴⁰³

The Liberia Labour Force Survey 2010 (LLFS) found however that only 7.0 percent of the labour force faces unemployment or underemployment. The unemployment rate alone, according to this research, is 3.7 percent (LISGIS 2011:57).⁴⁰⁴

The national vision document, Liberia Rising 2030, which articulates the national blueprint for attaining middle income status by 2030 and the Government's Agenda for Transformation (Aft) both

³⁹⁴ UNDP Human Development Report 2019

³⁹⁵ Liberia National TVET Policy 2015-2020 p. 8

³⁹⁶ Liberia National TVET Policy 2015-2020 p. 6

³⁹⁷ Ibid

³⁹⁸ Liberia National TVET Policy 2015-2020 p. 11

³⁹⁹ Ibid

⁴⁰⁰ Youth and the Labour Market in Liberia p. 5

⁴⁰¹ Youth and the Labour Market in Liberia p. 7

⁴⁰² Ibid

⁴⁰³ Ibid p.24

⁴⁰⁴ (Youth and the Labour Market in Liberia p. 7)

emphasize the need for equipping the youth with employable skills. The human development pillar of the AfT recognizes that “Liberia’s youth are the country’s most valuable asset.”⁴⁰⁵

The Education and Training system

Education’s alignment to broader Government strategies

The Liberian education system is emerging from a prolonged and brutally destructive period of civil unrest. Long standing impacts from the war, compounded by the 2015 and 2020 school closure due to the Ebola Viral Disease (EVD) outbreak in Liberia and the current Coronavirus (COVID-19) pandemic respectively and the subsequent lockdown of the country continue to take a toll on the fragile education system, making matters worse. ‘Liberia is significantly behind most other African countries in nearly all education statistics. For example, the Primary School Net Enrollment Rate, the percentage of primary age students attending primary grades, is only 44 percent. After 14 years of civil war, which resulted in the destruction of much of the country’s trained workforce, Liberia is still in the process of rebuilding its educational system.’⁴⁰⁶

‘In rural areas, 65 percent of young women and 35 percent of young men aged 15-24 are illiterate. Across the country, 25 percent of 15-24 year-olds cannot read a single sentence. Just 20 percent of children who enrol in grade one, go on to complete grade 12’.⁴⁰⁷

‘Liberia has an estimated population of 4.94 million people with 54 percent of the population living below the poverty line⁴⁰⁸. The population is growing rapidly with a fertility rate of 4.6 children per woman in 2015.⁴⁰⁹ More than two-thirds of the population is under the age of 35 and nearly one-half of the population lives in urban areas. There are acute disparities in income, health and education outcomes between rural and urban populations, exacerbated by poor infrastructure and limited domestic investments. Severe malnutrition is also prevalent with almost one-third (32 percent) of children under five years old being stunted.’⁴¹⁰

‘Liberia’s human development outcomes are among the lowest in the world as evidenced by Liberia’s ranking on the World Bank’s Human Capital Index (HCI). The HCI estimates that a child born in Liberia today can expect to live to the age of 62, receive only 4.4 years of schooling, and be 32 percent as productive as they would have been had they had access to full, quality health and education services. The country ranks 153 out of 157 countries on the HCI with a score of 0.31.’⁴¹¹

Exact statistics on persons with disabilities are lacking. A 1997 experimental survey funded by UNICEF and conducted by the Center for the Rehabilitation of the Injured and Disabled (CRID) established that more than 16% of the Liberian population lives with a disability.⁴¹² Consequently, most Liberians with disabilities do not attend school and do not obtain opportunities to work. A National Action Plan for Disabilities 2018-2022 aims to align goals and affirm its commitment to the UN Convention on the Rights of Persons living with Disability (CRPD).

‘Liberia recognizes education as a top priority in its medium and long-term development. The Education Sector Plan 2010-2020 aimed to provide all Liberians with the opportunity to access and complete affordable, quality, relevant, appropriate education that meets the needs of the nation. This was reinforced by the Liberian Agenda for Transformation, the Liberia Education Law of 2001 and the Education Reform Act of 2011.’⁴¹³

⁴⁰⁵ Liberia National TVET Policy 2015-2020 p. 11

⁴⁰⁶ <https://www.usaid.gov/liberia/education>

⁴⁰⁷ Ministry of Education Liberia Inclusive Education Policy 2018 p. 15

⁴⁰⁸ www.World Bank.org/Liberia

⁴⁰⁹ <https://data.worldbank.org/indicator/SP.DYN.T.FRT.IN>

⁴¹⁰ (Liberia COVID-19 Education Emergency Response Plan p. 9)

⁴¹¹ (Liberia COVID-19 Education Emergency Response Plan p. 9)

⁴¹² UNICEF Piloted Survey on the Disabled and Injured in Liberia

⁴¹³ Ministry of Education Liberia Inclusive Education Policy 2018 p. 15

The Government, in 2015, initiated the new Getting to Best Education Sector Plan (G2B-ESP) with the agenda of delivering on identified priorities that emerged through several stakeholders' consultations via the Joint Education Sector Review and Education Round Table.⁴¹⁴

In 2016, Liberia's Ministry of Education announced the Partnership Schools for Liberia (PSL) initiative, a public-private partnership designed to transform the public education system. Education providers with proven track records in delivering high-quality education were paired with public primary schools across Liberia and they were chosen as one of the first government partners.⁴¹⁵

The Education Sector Policy Framework

'The Liberia Education Law of 2001 made primary education free and compulsory for all students, while the New Education Reform Act of 2011 established free and compulsory primary education and free and compulsory basic education through to ninth grade for all Liberian citizens.' Liberia has also developed a number of policies to guarantee gender equality and non-discrimination in education. While the legal framework is in place however, the operationalization and implementation of these policies is still a pending subject for the GoL.⁴¹⁶

Technical and Vocational Education and Training (TVET) is also a high priority. The Liberia Education Sector Plan 2010-2020 (ESP) took cognizance that the education system as a whole requires attention inclusive of an increase in the relevance, availability and improvement in the quality of skills training and TVET whereby adult literacy, technical and vocational education and teacher training are critical pillars in any effort to provide for a trained workforce and a teacher corps capable of educating the nation's students. The main Goal for TVET is to provide increased opportunities for the acquisition of relevant and appropriate technical and vocational education and skills training of quality ensuring that the TVET system not only meets present private sector demand but anticipates and responds to change.⁴¹⁷

The TVET Sector

The TVET sector suffers from a dearth of information and data. The Ministry of Education offers pre-vocational education at the senior high school level (Grade 10 to 12) alongside the general academic program. The Ministry of Youth and Sports (MYS) on the other hand operates vocational training centres which offer TVET courses at the basic and intermediate levels.⁴¹⁸

Private TVET providers target mainly basic skills acquisition for different categories of learners, including the urban poor, rural dwellers, early school leavers, and other vulnerable groups such as girls and young women with no livelihood skills. The courses offered by the private TVET institutions are generally of shorter duration and relate more to the business and service sectors. Almost all the TVET institutions have serious human and financial resource constraints.⁴¹⁹

Governance

To overhaul the state of the TVET sector which is still disappointing and suffers from a non-existent framework, the Pillar one of the National TVET Policy and operational plan which was validated in 2015 made reference to the importance of improving the governance, management and efficiency of the TVET system. The key strategy here is to establish a TVET governance and coordinating body to be known as the Liberia TVET Commission (LiTCOM) to coordinate and provide oversight responsibility for TVET and skills development in general in Liberia. It also mentioned that LiTCOM

⁴¹⁴ Ministry of Education Liberia Inclusive Education Policy 2018 p. 16

⁴¹⁵ <https://www.bridgeinternationalacademies.com/where-we-work/liberia/>

⁴¹⁶ Ministry of Education Liberia Inclusive Education Policy 2018 p. 15

⁴¹⁷ Liberia Education Sector Plan 2010-2020 p. 119

⁴¹⁸ Liberia National TVET Policy 2015-2020 p. 11-12

⁴¹⁹ Ibid p. 12

shall be imbued with legislative functions and powers to regulate and coordinate all forms of TVET towards the creation of a holistic and flexible system that is efficient and better managed.

As a result, LiTCOM is in the process of being established by Legislation to provide a legal framework for achieving the policy goals and objectives of the National TVET Policy and which will have the powers and authority to spearhead the process of implementation of the National TVET Policy; to establish the Governing Board for LiTCOM; to develop the Liberia TVET Qualifications Framework; to provide for the financing of TVET; and for other related matters.

Access

‘Overall, the 2010 LFS finds that 10 percent of youth have participated in vocational training (Figure 1). The rates are higher for males than for females, and for older youth as compared to younger youth. As participation in vocational training also increases with formal educational attainment, this suggests that for most youth it is a complement for formal schooling, not a substitute (Figure 2).’⁴²⁰

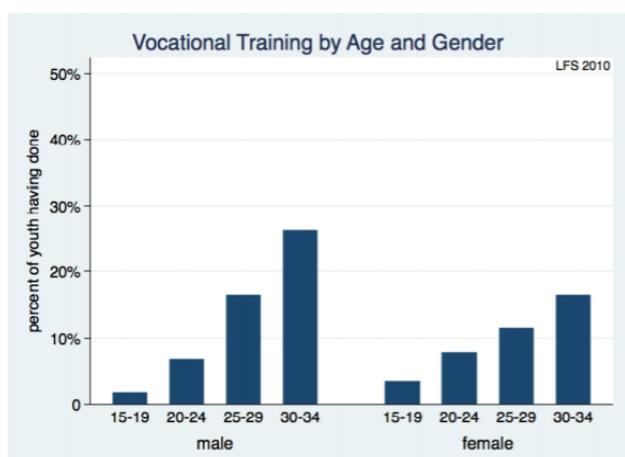


Figure 1: Vocational Training by Age and Gender (Liberia Skills Development Constraints for Youth in the Informal Sector 2016 p. 28)

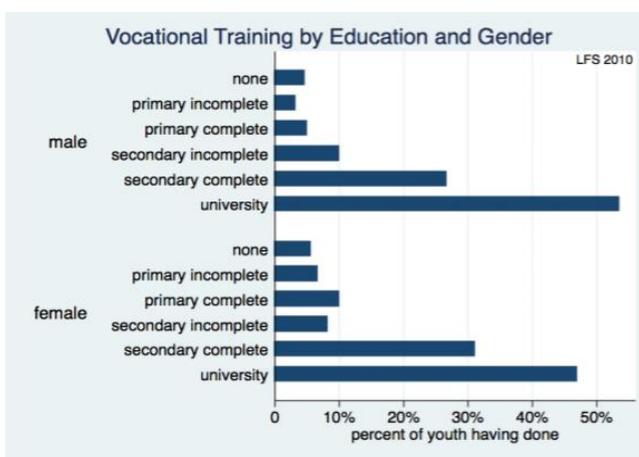


Figure 2: Vocational Training by Education and Gender (Liberia Skills Development Constraints for Youth in the Informal Sector 2016 p. 29)

TVET provision in Liberia is dominated by private providers.⁴²¹ ‘TVET provision is divided between public, private, faith-based and community providers. Currently, 148 TVET institutions in the country are formally registered with the MoE and MYS, which is an increase of 16 from the 132 TVET institutions registered in 2012. However, the 2015/2016 EMIS data collection revealed that far fewer institutions actively offer courses and have enrolled students. 65 active institutions were captured in the 2015/2016 EMIS data where the majority were private (63%) followed by public (20%), faith-based (11%) and community-owned (6%). The large majority of TVET institutions are in the more urban and densely populated areas including Montserrado (43%), followed by Nimba (23%) and Margibi (12%), which highlights the need to consider the imbalance in TVET access.’⁴²² ‘Enrollment in TVET institutions seems to be evenly divided between public and private institutions (Table 1). Although TVET provision is dominated by private providers, public TVET schools appear to be larger in size. Enrollment in TVET institutions is therefore evenly divided between public and private institutions. A total of 11,871 students were enrolled in a TVET institution of which 46.73% were female. This is a marked decrease in total enrollment from 18,032 in 2006 to 16,884 in 2012.’⁴²³

⁴²⁰ Liberia Skills Development Constraints for Youth in the Informal Sector 2016 p. 28

⁴²¹ (Liberia National TVET Policy 2015-2020 p. 12).

⁴²² Getting to Best Education Sector Plan 2017-2021 p. 189-190.

⁴²³ Getting to Best Education Sector Plan 2017-2021 p. 190

Table 1: Enrolment in TVET institutions by provider, 2015

Provider	Total	Male		Female	
		Count	% total	Count	% total
Public	4478	2922	65.25%	1556	34.75%
Private	4366	1877	42.99%	2489	57.01%
Faith-based	2156	987	45.78%	1169	54.22%
Community	871	538	61.77%	333	38.23%
Total	11871	6324	53.27%	5547	46.73%

Source: EMIS, 2015

According to the 2010 Labour Force Survey conducted by LISGIS, about 255,000, representing 14% of the population over the age of 15, had access to some form of formal TVET.⁴²⁴ Course content and tuition fees also influence access to training programs. For example, as most apprenticeships focus on manual trades there is low enrollment of females.⁴²⁵ The formal TVET courses thus see more equal enrollment in ICT and business skills by both genders which are more gender neutral. 'For males, the most common subjects are computers (24 percent), auto mechanic (11 percent), carpentry (11 percent) and masonry (11 percent). For females, they are tailoring (24 percent), computer (13 percent), pastry (13 percent) and tie and dye (12 percent).'⁴²⁶

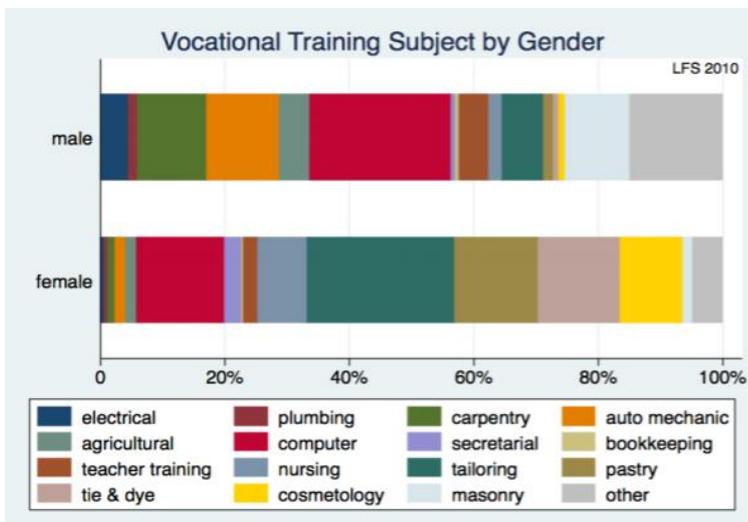


Figure 3: Vocational Training Subject by Gender (Liberia Skills Development Constraints for Youth in the Informal Sector 2016 p. 29)

It is worth noting that Liberia won the United Nations MDG 3 award in 2010 for outstanding leadership, commitment and progress toward the achievement of the MDG 3 through the promotion of gender equality and women's empowerment across the country and it is still persevering in its efforts to promote gender equality.

⁴²⁴ Strategic Plan for TVET Implementation: 2015-2020

⁴²⁵ Liberia Skills Development Constraints for Youth in the Informal Sector 2016 p. 29

⁴²⁶ Ibid

In 2018, the government of Liberia and the European Union have signed a US\$24 million financial agreement for Technical and Vocational Education Training (TVET) and the support for civil society in which the agreement sees US\$20M for TVET programs.⁴²⁷

'The 'EU Support to Technical Vocational Education and Training (TVET) for Young People in Liberia 'Youth Rising' project sought to strengthen the Liberian TVET sector in its capacity to deliver equitable and gender-balanced access to high-quality and demand-driven TVET. This is being done by supporting capacity development at central and TVET provider level, and by strengthening links with the private sector. The intervention addresses equity issues with emphasis on remote South East rural areas and vulnerable youth, including people with disabilities.⁴²⁸ Special measures are being taken at all levels of TVET delivery to ensure educational equity related to gender, ability/disability, and regional balance in the availability of resources and opportunities for value chain, business creation and productive activities development.⁴²⁹

Quality and Relevance

'The quality of TVET delivery in Liberia is compromised gravely by inadequate and poorly maintained equipment and training facilities, as well as the generally weak background of learners in science, mathematics, computer, reading comprehension, life coping skills and writing. The quality of instruction is poor, and the curricula are theory-dominated and not adequate. In addition, performance standards are unclear or non-existent. More importantly, a significant mismatch exists between the skills offered by training providers and those in demand in the labour market or required by employers or self-employment. This occurs because of the weak linkage between training institutions and employers and industry in general.⁴³⁰

LiTCOM, once established, shall be responsible for quality assurance procedures, the accreditation of training providers, the registration of trainers, the development of occupational standards, and the monitoring and evaluation of the TVET system. Quality assurance shall be embedded in the management, delivery, and assessment of TVET activities.⁴³¹

Trainers

The years of conflict have significantly impacted the level of experience offered by trainers in TVET institutions. There are not enough adequately qualified instructors with practical or workplace experience, and funding levels are low.⁴³² Trainers with little teaching or industry experience may decrease the effectiveness of training programs. 'In contrast to formal TVET trainers, apprenticeship and on-the-job training providers almost all have at least five years of industry experience.⁴³³

A key Strategy of the Liberia National TVET Policy 2015-2020 is to build a demand-driven TVET system in partnership with industry which would be provisioned with qualified teachers, appropriate training equipment, adequate teaching and learning materials.⁴³⁴

LNQF

A holistic and inclusive TVET provision would require an assessment and certification system that can validate and certify skills and qualifications acquired from different learning environments, whether formal, non-formal or informal. In this regard, a Liberian National Qualifications Framework (LNQF) shall be created under LiTCOM to bring all basic and post-basic occupation-oriented training into a unified qualifications framework. The LNQF shall ensure uniform skill standards and quality of

⁴²⁷ (<https://frontpageafricaonline.com/news/liberia-eu-seal-us24-million-agreement-for-tvet-civil-society-organizations/>)

⁴²⁸ <https://lkdfacility.org/youth-rising/>

⁴²⁹ Liberia National TVET Policy 2015-2020 p. 15

⁴³⁰ Liberia National TVET Policy 2015-2020 p. 19

⁴³¹ Ibid p. 15

⁴³² Ibid p. 12

⁴³³ Ibid p. 55

⁴³⁴ Ibid p. 19

provision, and facilitate articulation and access to continuous learning for all, including operators in the informal sector, while promoting up-skilling, re-skilling, multi-skilling, and lifelong learning.⁴³⁵

'Few TVET institutions currently track their students so it is hard to evaluate the success of their training programs.'⁴³⁶

ICT in TVET

ICT courses are popular and many of these are basic computer courses which include typing and web browsing, as well as subject-specific courses such as ICT for accounting, payroll or logistics. However, many of the institutions providing ICT courses lack equipment and facilities, such as computers and internet connectivity. The Liberia Skills Development Constraints for Youth in the Informal Sector 2016 document quotes that access to a standardized curriculum, library, ICT facilities and internet connectivity remains a serious challenge both inside and outside Montserrado.⁴³⁷

The Liberia Vision 2030 document, which is the nation's comprehensive development agenda and roadmap, recognizes Information and Communication Technologies as a lynchpin toward a knowledge-based economy in post-war Liberia. The strategies and policy actions at national level equally put forth clear direction to building capacity in the ICT sector to enhance competitiveness.⁴³⁸

TVET Funding

'TVET providers repeatedly noted a lack of financial resources as a constraint to delivering courses. Donor-funded institutions are vulnerable to funding cycles, and TVET providers who rely on these funds cease to provide training when their funding ends, leaving the youth in these communities underserved. Though nonprofit institutions generally provide training free of charge, they often require trainees to supply their own learning materials. For example, cosmetology trainees must bring their own hair dressing equipment. If students are unable to acquire such materials they often drop-out of the training program. Private and for-profit institutions in the counties compensate for a lack of financing from students by decreasing training cost, which negatively affects training quality. This is reflected in both trainers' and trainees' comments on the lack of adequate tools and equipment.'⁴³⁹

'Skills training and technical education are more expensive than normal schooling and are difficult to sustain because of the ever-increasing maintenance and replacement cost of machines and technical equipment. Notwithstanding the foregoing, the potential cost of not providing skills training vocational and technical education far outweigh the cost of making some provision hence the increasing emphasis on this sub-sector by the Government.'⁴⁴⁰

'The public TVET institutions rely heavily on government funding, whilst the other providers are financed mainly through tuition fees, donations from external benefactors, and production and sale of goods they produce. The MOE has allocated around 5% percent of overall education expenditure on average to TVET for the period 2012-2015. Many TVET institutions are not included in education budget, rather under MYS.'⁴⁴¹

'The GoL provides some subsidy to selected TVET institutions, although subsidies appear to be granted on an ad hoc basis. Students tend to pay a fee ranging between USD 50-100 to enroll, which for many is difficult to meet. There have been no major procurements of materials to TVET schools and no distribution of a national curriculum or teaching resources.'⁴⁴²

⁴³⁵ Liberia National TVET Policy 2015-2020 p. 17

⁴³⁶ Liberia Skills Development Constraints for Youth in the Informal Sector 2016 p. 54

⁴³⁷ Liberia Skills Development Constraints for Youth in the Informal Sector 2016 p. 58

⁴³⁸ Liberia National TVET Policy 2015-2020 p. 28

⁴³⁹ Liberia Skills Development Constraints for Youth in the Informal Sector 2016 p. 59

⁴⁴⁰ Liberia Education Sector Plan p. 113

⁴⁴¹ Getting to Best Education Sector Plan 2017-2021p. 193

⁴⁴² Ibid p. 194

Key challenges in the Education and Training sector⁴⁴³

Getting to Best Education Sector Plan 2017-2021 under Ministry of Education outlined a series of challenges faced the TVET which are as follows:

Challenge 1: Outdated and limited equipment

Many TVET institutions lack the modern training equipment and facilities to provide the job ready skills demanded by employers. Moreover, most TVET schools have basic infrastructural constraints including lack of power and insufficient access to water and sanitation. Where limited equipment exists, improved management structures are needed to ensure effective and appropriate use of equipment.

Challenge 2: Lack of adequately trained and incentivized trained teachers

Assessment studies (Identification and formulation of the 11th EDF support to education sector in Liberia (2016)) reveal that the TVET instructors and trainers are aging, unskilled, poorly compensated and motivated. There is no training and recruitment plan to replace the aging workforce and many current instructors do not have access to continued training and exposure to more modern and advanced TVET technologies and capabilities. Furthermore, modest salaries lead to low retention of teachers. At the same time, there is also an overwhelming need for new teachers. Some schools have addressed this shortage by using volunteers or contractors.

Challenge 3: Lack of an accreditation system and standardized TVET curricula

The absence of a credible institutional accreditation system and standardized TVET curricula has prevented the development and implementation of a nationally certified qualifications system. In some cases, TVET programs with similar titles have substantially different course content and duration in different institutions. Often, the level at which the program is delivered is not specified. Consequently, the certificates delivered alone are not enough to evaluate the skills competence level attained by the trainee or certificate holder and thereby limit employability.

Challenge 4: Weak linkages between TVET curricula and the productive sectors of the economy

A significant mismatch exists between the skills offered by training providers and those in demand in the labor market or required by employers or self-employment. This is due to a combination of factors including (i) Theory-dominated curricula leaving learners unprepared for the labor market, (ii) Lack of skills-gap analysis and tracer studies; (iii) Lack of public private partnerships and; (iv) Lack of involvement of the private sector in TVET governance or provision.

Challenge 5: Low management capacity at central and local levels

The current centralized structure leaves little autonomy to the public schools. Public TVET institutions are often understaffed and the management staff is poorly skilled, with low capacity in generating additional revenue and promoting local partnerships with the private sector. A decentralized administration of TVET institutions with strong linkages with the private sector could contribute to improve the management of the system. At the same time, the capacity by line Ministries to monitor program interventions, planning and management, including end user monitoring of supplies, and governing the teacher body needs to be strengthened.

Challenge 6: Challenge of coordination among TVET stakeholders

The TVET system is highly fragmented thereby compromising coherence and accountability. The coordination of activities administered by different government ministries and agencies, as well as private sector and NGOs, is not supported by an appropriate legal framework and a strong relationship between the government and the private sector is lacking. While the LiTCOM will be established as a

⁴⁴³ Rwanda ESSP 2018 p. 14

semi-autonomous agency in the longer term to coordinate and oversee all aspects of skills development in the country, there is an immediate need to improve coordination for assuring standardization of provision and avoiding costly duplication of training programs.

Challenge 7: Lack of defined pathways into and from TVET

As a result of the lack of coordination in the TVET system, the pathways into and from TVET in the education system are unclear. Information provided to students is either missing or weak thereby contributing to low demand for TVET skills. There is currently a lack of clarity and connection between the education system and TVET as well as between TVET and the workplace. Ultimately, a flexible transition and clear pathways between basic and higher level or specialized skills development programs and qualification will be crucial for the TVET sector.

Challenge 8: Negative public perception of TVET

Although recognized in official policy documents for several years, TVET continues to have negative perceptions to the public and is perceived to be a second-best choice for young people. TVET is often perceived as a dead-end choice as skills attained are considered not to be adaptable to other vocations and to lead to an inflexible employment position.

Challenge 9: Lack of gender-sensitive measures in TVET

Challenging gender perceptions in TVET and providing incentives for women to opt for traditionally ‘male’ training options is currently lacking. Young women from poor communities face access constraints to TVET due to community or family beliefs that undermine the potential role women can play to contribute to sustainable and productive livelihoods (Women and TVET (2011), UNESCO). Available training opportunities in Liberia are furthermore often confined to ‘feminine’ areas, which may not necessarily lead to profitable work. Even when enrolled in training courses in more male dominated areas, girls and women can face barriers, e.g. when the learning environments are demotivating and do not take into account their specific needs.

Challenge 10: Insufficient financing for TVET

The lack of assured, predictable and sustained public financing of TVET is a major problem to achieving robust outcomes in TVET development. The lack of a coherent and transparent subsidy policy has further highlighted the disparities in TVET funding. Opportunities for private financing for TVET and public-private partnerships remain untapped. At the same time, TVET programs are deemed very costly with high unit costs (notwithstanding that most of the TVET institutions need physical rehabilitation, new equipment, and training of teachers).

Actions for TVET Reform

Technical and Vocational Education and Training Program as per same report of Ministry of Education, Getting to Best Education Sector Plan 2017-2021 are summarized in the table below:

Strategic Priorities	Outcomes
1. Improve the TVET information base	1.1 Improve demand-side information base 1.2 Improve supply-side information base
2. Improve the quality of TVET delivery	2.1 Build the capacity of TVET teachers 2.2 Build the capacity of TVET training providers
3. Lay the foundation for a national qualification framework for agriculture	3.1 Develop a TVET curriculum for agriculture for certificate levels 1 and 2 of the Liberian National Qualifications Framework (LNQF)

and another area of high demand	<p>3.2 Lay the foundation for an independent testing agency to approve certificates in agriculture</p> <p>3.3 Establish pre-requisites for entering each qualification level in the LNQF for agriculture</p> <p>3.4 Identify another area of high demand and replicate above steps activities</p>
---------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Cross cutting issues

The following are cross cutting issues and are present throughout the system in all levels of the education sector. They are:

- Gender, SEN and inclusive education
- School health, hygiene, sanitation, environmental protection and climate change
- HIV/AIDS prevention, life skills and sports
- Institutional capacity building
- Regional integration and international benchmarking

Monitoring and Evaluation

Fragmented data on TVET supply and ad-hoc labour market information collection limits the government capacity to monitor the TVET sector across ministries. (Education report Getting to Best Education Sector Plan 2017-2021 p. 187). The Bureau of Vocational and Technical Education is the arm of the MOE responsible for implementing vocational and technical education programs at the pre-tertiary level in the public school systems. It has a supervisory oversight responsibility of TVET in the private sector as well as the responsibility to ensure that national standards are met. Under the revised TVET law, the responsibility for regulating and monitoring TVET in both private and public sectors will rest with a national commission. **LITCOM, once established, shall be responsible for quality assurance** procedures, the **accreditation of training providers**, and the **registration of trainers**, the **development of occupational standards**, and the **monitoring and evaluation** of the TVET system.

Conclusion

As the country continues to rebuild, in addition to quality primary education, functional literacy and numeracy skills for adults and those out of school are high priorities in order to enable citizens to contribute successfully to the country's growth and reduction of poverty. GoL is pursuing a revitalization of TVET as a response to the youth employment challenge, MoE will work in partnership with relevant Ministries, institutions and employers to prioritize, streamline and coordinate efforts in the sector. Responsibilities for TVET are shared across a number of Ministries. While the MOE and Ministry of Youth and Sport (MYS) are key training providers, other Ministries, NGOs and private sector providers play a substantial role. The major weakness of the TVET system in the country is the absence legal framework to guide, direct, and oversee skills development. As a result, the TVET delivery system remains largely fragmented, supply-driven and under-resourced. Notwithstanding the condition a variety of TVET training institutions continue to exist. The TVET system in Liberia is complex and fragmented both in terms of providers and data. However, the need for equipping this large number of unemployed young adults with some form of basic education and skills training to prevent them from becoming a further destabilizing factor in an already fragile society is unquestionable. It must be underlined that the GOL is working on a National TVET Authority (LITCOM) to regulate, coordinate and monitor which will enhance the Governance, efficiency and effectiveness of TVET in Liberia.

Bibliography

1. Ministry of Education Liberia Inclusive Education Policy 2018

2. Liberia COVID-19 Education Emergency Response Plan 2020
3. Ministry of Education Republic of Liberia Getting to Best Education Sector Plan 2017-2021
4. Republic of Liberia Liberia Skills Development Constraints for Youth in the Informal Sector 2016
5. Republic of Liberia National Policy for Technical and Vocational Education and Training (TVET) 2015-2020
6. Report on the Liberia Labour Force Survey 2010
7. Human Development Report 2019
8. Youth and the Labour Market in Liberia – on history, state structures and spheres of informalities Emy Lindberg 2014
9. Liberia Education Sector Plan 2010

Morocco

Introduction

The kingdom of Morocco, a North African country bordering the Atlantic Ocean and Mediterranean Sea, is distinguished by its Berber, Arabian and European cultural influences. It is one of only three nations (along with Spain and France) to have both Atlantic and **Mediterranean** coastlines. It has a population of over 35 million with the majority living in urban areas.⁴⁴⁴ Over the past two decades, Morocco has achieved significant social and economic progress due to large public investments, structural reforms, along with measures to ensure macroeconomic stability. The resulting growth has led to dramatic improvements towards eradicating extreme poverty; increased life expectancy; greater access to basic public services, and significant public infrastructure development. These have enabled the country to narrow the standard-of-living gap with southern European countries.



Morocco has capitalized on its proximity to Europe and relatively low labor costs to work towards building a diverse, open, market-oriented economy. Key sectors of the economy include agriculture, tourism, aerospace, automotive, phosphates, textiles, apparel, and subcomponents. Morocco has increased investment in its port, transportation, and industrial infrastructure to position itself as a center and broker for business throughout Africa. Industrial development strategies and infrastructure improvements - most visibly illustrated by a new port and free trade zone near Tangier - are improving Morocco's competitiveness. Its GNI per capita stood at \$3190 in 2019.⁴⁴⁵

The UN Development Program's 2019 Human Development Index has ranked Morocco as the 121st most developed country out of 189 countries. With a score of 0.676, Morocco has "medium human development." The 2019 report focused on inequalities among people. Perhaps the most stark inequalities in Morocco are between men and women in labour force participation and time spent on domestic work. Although 70% of Moroccan men are active in the labour force, only 21% of women are. Meanwhile, women reported they spend over five hours per day on unpaid domestic chores, seven times the time that men spend.⁴⁴⁶

Adult Moroccan men are more likely to have "some" secondary education than women: 36% of men and 29% of women advanced beyond primary education. UNDP describes 19% of Morocco's labor force as "skilled" and said 49% are in vulnerable employment.

Young adults (persons aged 15-29) make up almost 16% of the total population and represent a potential economic asset if they can be gainfully employed. Currently, however, many youths are unemployed because Morocco's job creation rate has not kept pace with the growth of its working-age population. Most youths who have jobs work in the informal sector with little security or benefits.⁴⁴⁷ Its unemployment rate was 9.3% in 2016.

The COVID-19 shock is, however, abruptly pushing the economy into a severe recession, the first one since 1995. The economy is expected to be doubly impacted by domestic and external economic

⁴⁴⁴ The world Fact book

⁴⁴⁵ World Bank data

⁴⁴⁶ UN Development Report 2019

⁴⁴⁷ The world Fact book. (<https://www.cia.gov/library/publications/the-world-factbook/geos/mo.html>)

shocks. Real GDP is projected to contract by 4 percent in 2020 in the baseline scenario, a sharp contrast to the 3.6 percent expansion projected before the outbreak. Few sectors have been spared but the contraction is primarily driven by a drop in the production of goods and services, a reduction in exports, disruption of global value chains, as well as a decline in tourism due to travel restrictions and border lockdowns. Further extensions of the lockdown would have a further negative short-term impact on real GDP growth. The labour market is facing a shock of historical proportion, with vulnerable workers, including those in the informal sector being particularly affected. Enterprises have faced disruption of value chains, workers' mobility, temporary closures as well as slowing global demand.

TVET in Morocco

Strategic Vision for Reform (2015 - 2030)

Ever since Morocco became independent, its education system has undergone a long series of reforms that have followed each other without achieving the desired objectives. It is not sufficiently aligned with the requirements of businesses. Graduates are poorly prepared for employment, with the majority of cooperative TVET in Morocco still being solely school-based.⁴⁴⁸ It must be said, though, that Morocco has always looked up to TVET. It is even engraved in article 31 of the constitution.

The National Education and Training Charter, brought a turning point in the evolution of the Moroccan educational system. However, despite undeniable progress, the fact remains that the issue of the quality of education, although mentioned in the Charter, has been relegated to the background.⁴⁴⁹ Accordingly, a new strategy was proposed by the Higher Council for Education, Training and Scientific Research (CSEFRS), namely the 2015-2030 strategic vision aimed at upgrading the education and training system. The strategic vision is articulated around four areas at its core including the priority for quality education. A total of seven initiatives were devoted to this area. The four areas are:⁴⁵⁰

- Equity and equality of opportunity;
- Quality for all;
- The promotion of the individual and society
- Efficient leadership

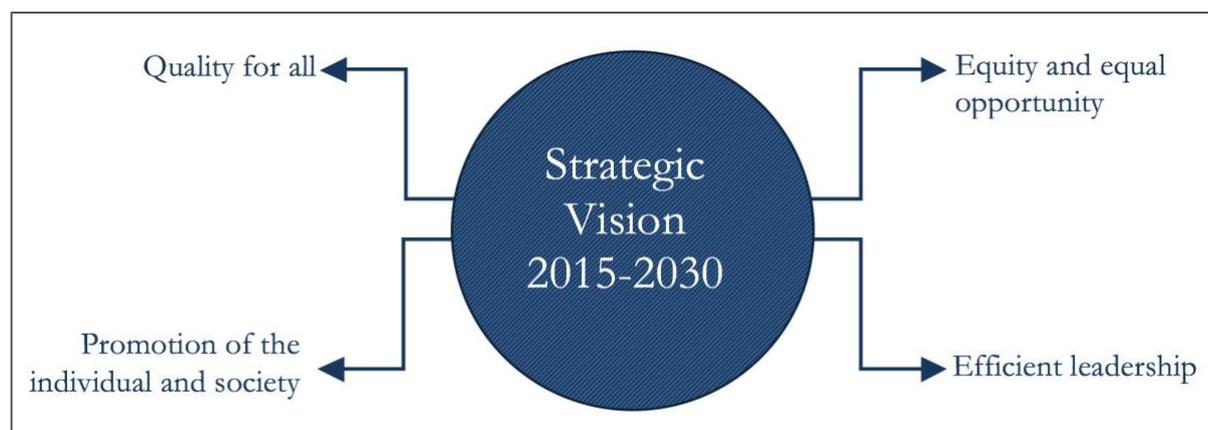


Figure 1: The four areas of the strategic vision 2015-2030

In May 2016, the Ministry of national education and vocational training, adopted a "National Vocational Training Strategy for 2021", the implementation of which was initiated by the signing of program contracts with the various VET operators. The National Vocational Training Strategy 2021 (NPS 2021) is an integral part of 23 priority measures of the 2015-2030 strategic vision for reform of the Higher

⁴⁴⁸ BMZ, Support of the implementation of the National Strategy for Vocational Training, 2019-21

⁴⁴⁹ Aomar Ibourk, OCP Policy center Policy brief 2016 learning achievement in Morocco: a status assessment

⁴⁵⁰ Aomar Ibourk, OCP Policy center Policy brief 2016 learning achievement in Morocco: a status assessment p. 2

Council for Education, Training and Scientific Research (CSEFRS) and aims to ensure and guarantee lifelong learning and education for all.

It is based on contract-programmes and cooperation agreements with all ministries, major providers, social partners and the civil society. It sets a wide reform agenda and prioritises apprenticeship development and increased employability of vocational education and training (VET) graduates. The vision set out in the National Strategy for Vocational Training (2021) states the leading objective as 'quality VET for all and throughout life, to support development, to increase the value of human capital and boost competitiveness.'⁴⁵¹

Following the strategic vision 2015-2030 report, a group within the Higher Council was assigned the task to delve on the case of Initial Training in Morocco. The report launched in March 2019, made reference to four major challenges facing the Initial Training, namely:

- Training and development of human capital in the digital age.⁴⁵²
- Aligning socio economic development and skills needs for the different sectoral development plans and major economic projects
- A better integration between TVET and general education system on the one hand and the World of Work on the other hand as a preferred platform for acquiring competencies
- Contribution to social and professional integration of different categories of people to ensure equity and equal opportunities

The report of March 2019 made a detailed analysis of the prevailing situation of the TVET system and proposed a series of recommendations and procedures for their operationalisation.⁴⁵³

They are as follows:

Recommendations	Impact
1. Integration of TVET within the Education system	<ul style="list-style-type: none"> • Implementation of a new integrated career path architecture • Reorganisation of the educational model • Revamping of careers guidance to have work ready TVET graduates • Strengthening the professional capacities of Trainers • Reform of governance and funding system
2. Recognition and valorization of TVET	<ul style="list-style-type: none"> • Better visibility of TVET outputs • The recognition of the principle of positive discrimination as a lever for equity and equal opportunities • Improving employability and adapting to labour market demands • Definition of a Policy for lifelong learning • Promotion of international cooperation
3. Prerequisites for the reform of TVET	<ul style="list-style-type: none"> • Upgrading of TVET providers to help them integrate the transformations induced by the TVET reform • Activating roles of the regions by transferring to them the attributions and the necessary financial and human resources • Enhancing link with labour market • Integrating TVET policies with Employment policies

⁴⁵¹ Ministry of National Education and Vocational Training, *Stratégie nationale de la formation professionnelle, 2021*, <http://dfp.gov.ma/images/pdfdocs/2016/Strategie%20Formation%20FR.pdf>

⁴⁵² Strategic vision of the Higher Council for Education, Training and Scientific Research 2015-2030 p. 14

⁴⁵³ Ibid p. 16

	<ul style="list-style-type: none"> • Implementing social support policy for the benefit of out-of-school youth and without any professional qualifications • Increase support to TVET graduates wishing to create their own enterprise • Upgrading the legal framework of TVET
--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

The Education and Training structure

It is interesting to see how TVET evolved in Morocco. At independence in 1961, there were only 1300 trainees in the TVET stream. The various ministerial departments decided to set up their own training units and in 1974 the OFPPT was created. The 1984 reform and the introduction of ‘Technicien specialise’ in 1993 was a turning point in the evolution of TVET in Morocco. This allowed a greater variety of training programmes together with an increase in enrolment. Today, enrolment stands at over 400,000.

New modes of training, dual training mode or apprenticeship mode of training were introduced in 1996 and in 2000 to integrate industry further in TVET delivery and qualifications. Since then there have been 4 streams of training, namely ‘diplômes de Spécialisation, de Qualification, de Technicien et de Technicien Spécialisé’ (Refer to Figure 2 below). The modes of training are either through full time mode, dual training mode and apprenticeship mode.

In April 2019 the government unveiled a project to establish professional training clusters (cités des métiers et des compétences, CMCs) throughout the kingdom. Each of Morocco’s 12 regions will host a CMC, which will be made up of a set of professional training centres tailored to meet the labour needs of the surrounding region. The project sought to accommodate 34,000 trainees, divided into groups of 20.

The CMCs will provide training in a number of areas: agriculture; agro-industry; fishing; tourism and hospitality; health; crafts; industry; digital technologies, artificial intelligence; offshoring; and customer service. For example, the CMC for the Oriental region will aim to accommodate 2420 trainees and provide training in industry, digital technologies, agriculture and agro-industry, tourism and hospitality, and health. Training in digital technologies is expected to be available in all CMCs, while education focusing on artificial intelligence will only be accessible in the Rabat-Salé- Kénitra and Casablanca-Settat clusters

In August 2019 the Parliament approved a long awaited education framework law which aims to increase the quality and accessibility of the education system. The new law, officially known as framework law 51.17, put into motion proposals recommended in its 15-year plan for the education sector, which runs from 2015 to 2030.⁴⁵⁴

The new law made a number of important changes to the structure of Morocco’s education system. Under the law, primary education, which covers six years, will be made available to pupils as young as four years old. Previously, primary education began at age six, and schooling before that point was considered pre-primary. Secondary education is divided in two three-year stages. The first stage, known as lower secondary, is compulsory, as is primary education. The second stage, known as qualifying secondary, is optional. While students in qualifying secondary schools have the choice to follow a general or technical track, the law outlines measures facilitating access to vocational training for students in lower secondary and improving such training for those pursuing it in qualifying secondary.

⁴⁵⁴ New framework law in Morocco aims to increase quality and accessibility of education

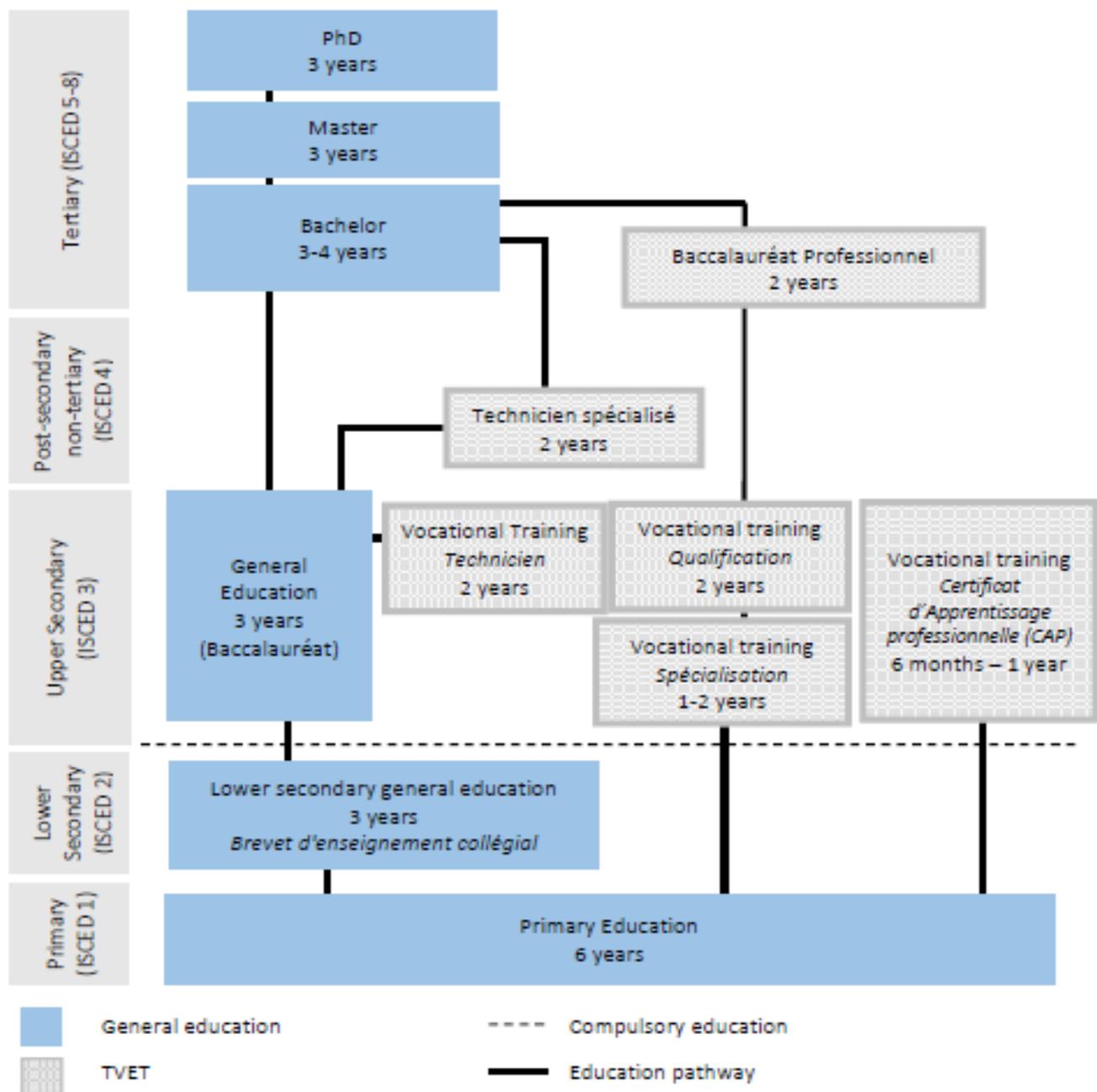


Figure 2: TVET in the Moroccan Education system

Governance⁴⁵⁵

In Morocco the Ministry of National Education of Vocational Training, Vocational Education and Scientific Research – and the State Secretariat for Vocational Training, is responsible for the design of the TVET policy.

The TVET system is marked by a diversity of stakeholders, under the guidance of the ministerial department in charge of vocational training. This diversity is in itself an asset in that it has allowed the development of varied trainings and the setting up of different coordination mechanisms.

⁴⁵⁵ UNESCO/UNEVOC TVET country profile Morocco p. 9

The major actors in this sector can be divided into three main categories:

- The State Secretariat for Vocational Training, a ministerial entity responsible for coordinating general policies on vocational training, is entrusted with a mission of planning, guiding and evaluating the strategies implemented for the promotion of the system. This Department is relayed at the regional level by external services;
- Training Actors imparting TVET courses: These include public entities such as the Office for Vocational training and Work promotion and sectoral training programs (Agriculture and Maritime Fisheries, Crafts, Tourism, Health ...), as well as private providers of TVET programmes;
- Strategic partners whose involvement promotes the development of this sector and its anchoring in its socio-economic environment (some of them provide training). These are, on the one hand, organizations, branches and professional corporations and on the other associations and actors of civil society.

In addition to the aforementioned, other national, regional and local organizations contribute to the management of formal and non-formal TVET systems.

Financing

The Ministry of Economy and Finance is responsible for funding formal and non-formal TVET and it does so through the following main sources of funding: public, private and development assistance. The budget allocated to the vocational training sector is estimated at around 0.5% of GDP.⁴⁵⁶ It is characterized by its complexity in terms of the multitude of stakeholders in this sector and the diversity of funding sources, plus the difficulty of identifying the actual allocation of these resources in the absence of an accounting framework specific to vocational training.

However, it can be considered that the financing of vocational training comes from the following sources:

- State budget allocations;
- Proceeds of the vocational training tax – Tax de la Formation Professionnelle (TFP);
- International cooperation and donor assistance;
- Household contributions or enrolment fees.

As of 2016, the State allocated budget was as follows:⁴⁵⁷

Table 1: Budget for Vocational Training

Budget for Vocational Training	Budget (millions) 2016	%age
Department of Professional/Vocational Training	308	10%
Office for Vocational training and Work promotion	2493	78%
Other ministerial Departments	384	12%
Total	3185	100%

The products of the vocational training tax, which represent 1.6% of the payroll, are distributed as follows:⁴⁵⁸

⁴⁵⁶ Strategic vision of the Higher Council for Education, Training and Scientific Research 2015-2030 p. 32

⁴⁵⁷ Strategic vision of the Higher Council for Education, Training and Scientific Research 2015-2030 p. 33

⁴⁵⁸ UNESCO/UNEVOC TVET country profile Morocco p. 10/11

- 70% finances the operation of the Office for Vocational Training and Work Promotion (OFPPT);
- 30% finances the mechanisms put in place by the public authorities for the development of on-the-job training [i.e. Special Training Contracts - *Contrats Spéciaux de Formation (CSF)* and the Interprofessional Association of Consultants - *Groupements Interprofessionnels d'Aides au Conseils (GIAC)*].

In addition, International cooperation and donor assistance is one of the most important sources of financing TVET in Morocco through donation and subvention. On the other hand, household contributions or enrolment fees contribute an important percentage to the financing of TVET.

TVET teachers/trainers and trainees

The core of the training program is its human resources, in particular trainers who are able to translate the training objectives into knowledge, skills and attitudes necessary for the qualification of trainees and their insertion in the workplace. The vocational training system now has 19,500 trainers, including 9,000 in public VET schools/institutions.⁴⁵⁹

The average supervision ratio is 38 trainees / permanent trainer with an average of 41 for VET schools/institutions in ministerial departments, a rate of 52 trainees / permanent trainer for public VET schools/institutions and 19 for private VET schools/institutions.

These numbers include permanent trainers as well as temporary trainers who represent 46% of the workforce in the private sector and 42% for the OFPPT in 2017-2018. For the ministerial departments, the rate of vacancies remains very variable from one department to another with 100% for the equipment department and no vacancy at the level of the department of tourism.

On the subject of training for trainers, qualification, pedagogical and professional upgrading of trainers are at the heart of the question of the quality of the training provided. Apart from the training of trainers efforts carried out by some operators, the trainers are recruited without prior training qualifying them to practice the profession and are often newly graduates. The professional experience of the trainers is essential to the exercise of this profession even if the VET institutions resort to individual contractors. The training of trainers and the certification of their skills remain very limited. The system currently presents inequalities in the recruitment procedures of the teachers / trainers between public and private VET schools.⁴⁶⁰

Table 2: Number of TVET trainers⁴⁶¹

TVET providers	Number of Trainers	%age of females
OFPPT	9211(42% P/T)	22%
Other public providers	1902 (60% P/T)	39%
Private providers	9043 (46% P/T)	35%
Total	20156 (49% P/T)	30%

The above table shows that the number of female trainer is low (30%) as compared with the number of male trainers both in public or private providers. The rate varies from 22% in OFPPT to 39% in other public providers. 49% of the Trainers are part time trainers.⁴⁶² This ratio goes from 42% for OFPPT to 60% for other public providers. With respect to private providers, 46% of the Trainers are

⁴⁵⁹ Strategic vision of the Higher Council for Education, Training and Scientific Research 2015-2030 p. 29

⁴⁶⁰ Strategic vision of the Higher Council for Education, Training and Scientific Research 2015-2030 p. 30

⁴⁶¹ Ibid p. 40

⁴⁶² Ministry of national education, vocational Training, Higher Education and Scientific Research; "la formation professionnelle en chiffres 2018/19" p. 42

part timers. For the other public providers, the ratio of part time to full time trainers varies from department to department rising up to 100% for the tourism department.⁴⁶³ The ratio trainees/Trainers is on the high side with an average of 38 trainees per full time trainer. This ratio goes up to 52 for the OFPPT.

Table 3: Number of Training providers/Trainers/Trainees⁴⁶⁴

	Number of Trainers (Formateurs)	Number of Trainees (Stagiaires)	Number of Training Providers (EFP)	Ratio Trainees/Full time Trainers
OFPPT	9520	330334 (77%)	368 (18%)	52
Other public TCs	2021		321 (15%)	41
Private TCs	9075	96124 (23%)	1372 (67%)	19
Total	20616	426458	2051	38

From the above table, it can be seen that a greater proportion of trainees (77%) enroll in public training providers (33%) though there are many more private providers (67%). Certainly, the private providers are smaller in capacity than the public providers. In 2018/19 the most popular fields for vocational and professional study were administration, management and business (93,600 trainees); metallurgic, mechanical and electric industries (80,380); construction and public works (49,650); and tourism and hospitality (34,750).⁴⁶⁵

However, the percentage of students enrolled in vocational programmes in secondary education, both sexes was only 8% in 2017 with 33.9% of that figure being females.⁴⁶⁶ On the other hand, there is not enough capacity in the training centres to absorb all the TVET applicants most particularly at the 'Technicien Supérieur' level as shown in Table below. For the 'Specialisation programme', there are barely enough applicants whereas the 'Technicien Supérieur' is over subscribed.

Table 4: Capacity of training centres in the different programmes⁴⁶⁷

	S	Q	T	TS	Total
Number of applicants	39428	97998	116111	172329	425866
Number of places available	41443	56856	60415	72550	231264
	1.0	1.7	1.9	2.4	1,8

Qualification system and quality assurance

National Qualification Framework (NQF)

Although the National Qualifications Framework in Morocco is in the development phase, there is an Accreditation System in place which authorizes private VET institutions to hold exams and award diplomas. Accredited private VET schools or institutions are required to apply trainee assessment methodology based, for practical purposes, on examinations supervised by juries to which participation of professionals is mandatory and on continuous examinations and final evaluation.

⁴⁶³ Strategic vision of the Higher Council for Education, Training and Scientific Research 2015-2030 p. 27

⁴⁶⁴ Ministry of national education, vocational Training, Higher Education and Scientific Research; "la formation professionnelle en chiffres 2018/19" p.3/6

⁴⁶⁵ New framework law in Morocco aims to increase quality and accessibility of education. <https://oxfordbusinessgroup.com/search-results?sector=52387&country=all&keywords=>

⁴⁶⁶ UNESCO/UNEVOC TVET country profile Morocco p. 4

⁴⁶⁷ Dep FR(2)

The accreditation of private vocational training institutions and its monitoring and evaluation is organized annually by the Department of Vocational Training under the supervision of the National Sectoral Commissions of Private Vocational Training (*CNSFPP - Commissions Nationales Sectorielles de la Formation Professionnelle Privée*) set up for this purpose. The mechanism is structured as follows:

The accreditation of the private vocational training institutions consists in authorizing private institutions to organize examinations for trainees who have completed their training in these institutions and to issue diplomas recognized by the state.

Eligibility conditions of the private vocational training institutions are:

- They are in a regular situation with regards to regulatory and administrative obligations;
- They have obtained the qualification of all the training courses provided;
- They comply with the rules of organization and management of examinations set by the Administration.

Quality Assurance

There is no real national quality assurance policy in the professional/vocational training sector in Morocco. However, the State Secretariat in Charge of Professional Training (*abbreviated as SEFP - Secrétariat d'Etat Chargé de la Formation Professionnelle*) is responsible for the development, maintenance and quality of the TVET curriculum.

In order to be accredited, public vocational education and training establishments have to specify the levels of training, sectors, programs, and training periods to the certifying authorities. Private institutions must have an authorization to open and then seek an approval for the sectoral qualifications they wish to offer before they can receive an accreditation of the institution and the programmes offered.

One important element to evaluate the quality and responsiveness of the TVET delivered is the employment rate of the TVET graduates. According to the Ministry of National Education, Vocational Training, Higher Education and Scientific Research; "la formation professionnelle en chiffres 2018/19", the employment rate of TVET graduates for the 5 different levels from the year from 2012 to 2015 inclusive was of the order of just above 62% nine months after graduation.⁴⁶⁸ However, there has been an improvement in the employment rate of the TVET graduates of 2016 cohort with a rate of 67.1% (68.0% for males and 65.7% for females).⁴⁶⁹

Challenges to be addressed⁴⁷⁰

According to National Strategy for Vocational Training 2021, Morocco is facing the following challenges to the TVET system, which need to be addressed: -

Inclusion

Particular attention to be given to populations from rural areas, poor neighbourhoods or limited income families. Access to public vocational training institutions should be given to young people from all backgrounds.

Demand-Driven Training Offer

The training offered should be more responsive to the demands of the labour market and employment driven.

⁴⁶⁸ Ministry of national education, vocational Training, Higher Education and Scientific Research; "la formation professionnelle en chiffres 2018/19" p. 34

⁴⁶⁹ DEP FR(2)

⁴⁷⁰ UNESCO/UNEVOC TVET country profile Morocco p. 12

Continuous Quality Improvement

In quantitative terms, the vocational training system has made significant progress, in particular through the investment efforts of the past 15 years. However, in terms of quality, there are still constraints and the qualifications of the trainee are still subject to criticism from employers, and a significant number of young people leave the vocational training system without a diploma or qualification.

Governance

The diversity of actors in the management of the vocational training system and in the implementation of public policy, the complexity of the funding model and the dispersal of decision-making centres for resource allocation make the planning tasks, coordination and monitoring, difficult and often ineffective.

Roles and responsibilities that are not clearly defined, for their part, are an important source of difficulties and inefficiencies in the governance of the system, resulting in weak coordination between existing actors and lack of regulation of the supply chain.

Attractiveness of the vocational training system

The attractiveness of the vocational training system remains deficient compared to the populations concerned, who, for the most part, see it as a path reserved for students in a situation of academic failure and not as a choice for personal success.

The main remaining weaknesses in the attractiveness of the system are, in particular, its weak capacity to demonstrate the opportunities it offers in terms of social inclusion and professional success.