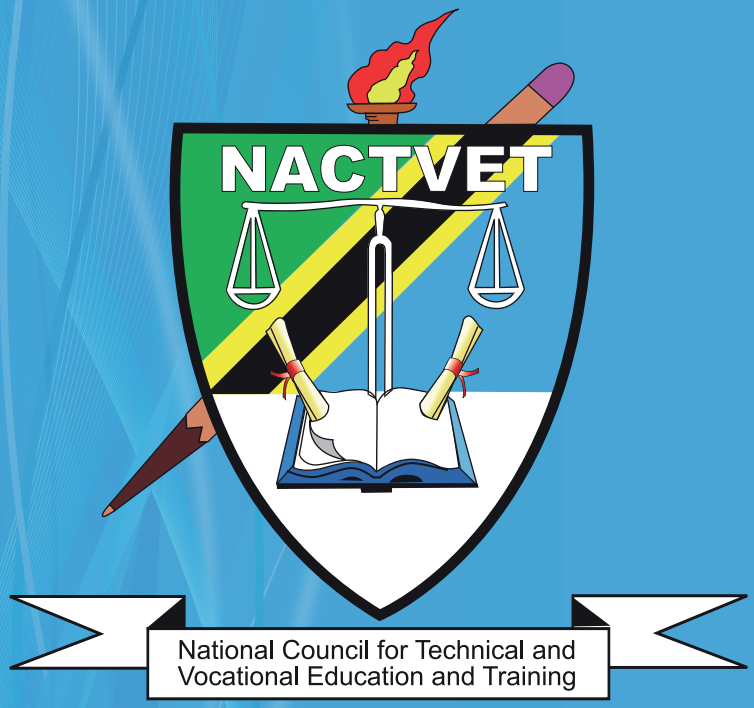
THE NATIONAL COUNCIL FOR TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING



STANDARDS FOR TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET) IN TANZANIA

2025

PREFACE

As the Executive Secretary of the National Council for Technical and Vocational Education and Training (NACTVET), it is with great enthusiasm that I introduce the revised Standards for Technical and Vocational Education and Training (TVET) in Tanzania, guided by the **Tanzania Education and Training Policy, 2014 the 2023 edition**. This critical policy framework underscores the government's commitment to aligning education and training systems with national development priorities, including Tanzania's Development Vision 2050.

The dawn of the Fourth Industrial Revolution (4IR) has fundamentally transformed the global industrial landscape through the integration of advanced technologies such as Artificial Intelligence (AI), Augmented Reality (AR), Virtual Reality (VR), the Internet of Things (IoT), and 3D printing. These advancements demand a highly skilled, adaptable workforce prepared to meet the rapidly evolving needs of modern industries. Recognizing this, the revised Education Policy of places a renewed emphasis on digitalization, innovation, and industry alignment within the education and training ecosystem.

NACTVET has undertaken a comprehensive review of the TVET standards to ensure that our graduates are equipped with relevant, cutting-edge skills and knowledge to thrive in the dynamic Labor market. This review is not merely a response to technological advancements but a strategic move to position Tanzania at the forefront of global competitiveness, as envisioned in the revised policy framework.

The updated standards emphasize entrepreneurship, self-employment, and employability as critical pathways to economic development. Our goal is to transform TVET institutions into hubs of excellence that produce a skilled, innovative workforce capable of driving economic growth. By aligning training programs with industry demands, we ensure that graduates are not only job-ready but also future-ready, capable of contributing meaningfully to Tanzania's industrialization agenda and global competitiveness.

Lifelong learning, a key pillar of the 2023 policy revision, is central to our approach. In a world where the shelf-life of skills is rapidly shrinking, fostering a culture of continuous learning is imperative. Through strong partnerships with industries and the adoption of upskilling and reskilling programs, we are equipping both graduates and trainers to remain agile in the face of evolving workplace demands.

Addressing the societal perception of TVET as inferior remains a priority. Guided by the principles outlined in the revised Tanzania Education Policy, NACTVET is spearheading strategic public awareness campaigns and policy actions to elevate TVET's status. This effort highlights its critical role in national development and ensures it is regarded as a prestigious and essential component of Tanzania's education and economic systems.

In conclusion, I extend my deepest gratitude to all stakeholders, partners, and contributors who have supported this critical review process. Together, guided by the Tanzania Education and Training Policy (2014, 2023 Edition), we are shaping a brighter future for Tanzania—one where our workforce is competitive, future-ready, and poised to thrive in the global economy.

Dr. Mwajuma I. Lingwanda
Executive Secretary, NACTVET

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ACRONYMS AND ABBREVIATIONS

AR	Augmented Reality
AU	African Union
BRELA	Business Registration and Licensing Agency
EAC	East African Community
ERB	Engineers Registration Board
IQA	Internal Quality Assurance
MAT	Medical Association of Tanzania
MCT	Media Council of Tanganyika
MoH	Ministry of Health
NACTVET	National Council for Technical and Vocational Education and Training
NBS	National Bureau of Statistics
NCT	National College of Tourism
NECTA	National Examinations Council of Tanzania
NSSF	National Social Security Fund
NTA	National Technical Award
NVA	National Vocational Award
PO-RALG	President's Office – Regional Administration and Local Government
QMS	Quality Management System
TAEC	Tanzania Atomic Energy Commission
TANESCO	Tanzania Electric Supply Company
TCRA	Tanzania Communications Regulatory Authority
TCU	Tanzania Commission for Universities
TEA	Tanzania Education Authority
TECU	Tanzania Employers' Confederation
TFNC	Tanzania Food and Nutrition Centre
TLC	Health Laboratory Practitioners Council
TNMC	Tanzania Nursing and Midwifery Council
TPA	Tanzania Ports Authority
PC	Pharmacy Council
TPSF	Tanzania Private Sector Foundation
TRA	Tanzania Revenue Authority
TVET	Technical and Vocational Education and Training
UN	United Nations
VETA	Vocational Education and Training Authority
VR	Virtual Reality

DEFINITION OF TERMS

Accreditation	A quality assurance process through which TVET institutions and programs are evaluated and recognized for meeting specific standards set by the accrediting body.
Audit	A systematic examination and evaluation of TVET institutions and programs to ensure compliance with established standards.
Best Practices	The most effective and efficient methods and techniques in TVET, identified through benchmarking and research.
Capacity Building	Activities and initiatives aimed at improving the abilities of institutions and individuals to meet quality standards.
Compliance	Adherence to established standards and regulations in TVET programs and institutions.
Continuous Improvement	Ongoing efforts to enhance the quality and effectiveness of TVET programs and institutions.
Curriculum Development	The process of designing and development educational content to meet industry needs and standards.
Curriculum Review	The process of updating educational and/or training content to meet industry needs and standards.
Teachers Qualifications	The educational background, professional experience, and competencies required for instructors in TVET institutions.
Inclusion	Ensuring that TVET programs are accessible and meet the needs of all learners, including marginalized and disadvantaged groups.
Industry Needs	The specific skills and competencies employers require in various sectors to ensure productivity and growth.
Industrial training/attachment	A structured program designed to provide students or trainees with practical work experience in their field of study or specialization.
Infrastructure	The physical and organizational structures needed for the operation of TVET institutions, including buildings, equipment, and technology.
Institutional Readiness	The preparedness of educational institutions to implement and maintain quality standards, including infrastructure, faculty, and resources.

Keeping-up with Technology	Ensuring that: (i) curricula cover the most modern technologies used in the relevant industry; (ii) there is forward looking with coverage of emerging technologies and practices; and (iii) modern technology is used for training, laboratory and workshop practice, and industrial attachment.
Monitoring and Evaluation	Processes used to track the implementation of standards, assess their effectiveness, and make necessary adjustments.
Performance Metrics	Quantitative and qualitative indicators used to measure the effectiveness of TVET programs and institutions.
Professional Pedagogy Qualification	Relevant Teaching certification course on methods and practices of delivering training content to trainees.
Quality Assurance	Processes and procedures in place to ensure that TVET institutions and programs meet specified quality standards consistently.
Quality Standards	Specific criteria and benchmarks established to ensure the quality and effectiveness of TVET programs.
Registration	The formal process by which TVET institutions are officially recognized and allowed to operate by the regulatory body.
Stakeholder Engagement Standard(s)	The process of involving relevant parties in the development and implementation of TVET standards.
Student Outcomes	The results achieved by students in terms of skills acquisition, employability, and career advancement after completing TVET programs.
Sustainability	The ability of TVET programs and institutions to maintain quality and relevance over the long term, considering economic, social, and environmental factors.

CHAPTER ONE

1.0 BACKGROUND AND INTRODUCTION

1.1 Introduction and Concepts

Technical and Vocational Education and Training (TVET) refer to aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life (UNESCO,1984 & 2015). In today's rapidly changing technological landscape and industrial revolution where skilled labour is more crucial, TVET has provided the skilled human resource. TVET equips individuals with the competencies needed to thrive in various industries – as innovators, entrepreneurs and employees.

In order to realize its goals, TVET encompasses a broad spectrum, which includes:

(i) Formal TVET – is comprised of accredited programs offered by regulated institutions, leading to awards such as diplomas, certificates, etc;
(ii) Non-formal TVET – provides industry-specific training through organized workshops or short courses;
(iii) Informal TVET – involves learning by doing, such as apprenticeships or on-the-job training;

The three types of TVET above complement each other in the real world, creating a *skills-chain* across all levels of each particular industry.

The National Council for Technical and Vocational Education and Training (NACTVET), is mandated to oversee and regulate the TVET sector – as per the revised NACTVET Act 2021 and its regulations. This mandate is divided into three roles, which are:

(i) **Regulatory** – to establish and maintain the regulatory framework for technical and vocational education and training, leading to quality-assured qualifications;

(ii) **Quality Assurance** – to assist TVET institutions in improving and maintaining high-quality training offered and to ensure that their programs' meet labour market demands by guiding and monitoring their adherence to the regulatory framework; and
(iii) **Policy Advisory** – to advise the Government on the strategic development of TVET so that it can make informed decisions with regard to policy making.

To execute its mandate, Section 5 (1) (e) of the NACTVET Act, empowers the Council to establish awards in TVET that are consistent in standard and comparable to similar awards both within Tanzania and internationally. Furthermore, the Act emphasizes the importance of quality assurance by mandating the development and implementation of rigorous standards, regulations, and guidelines for TVET provision. The central focus is to ensure that the quality of TVET education in Tanzania aligns with global standards, fostering skills development that

meets local and international labour market demands. Through robust internal and external quality assurance mechanisms, NACTVET guarantees that TVET institutions maintain high levels of training in their quality and relevance.

1.2 Key National, Regional and Global Strategies Driving TVET

The Tanzania TVET Quality Assurance Framework is firmly rooted in national, regional and international policy and strategic frameworks, as illustrated in the few examples below, and others in Appendix I.

1.2.1 Tanzania Vision 2050

The Tanzania Vision 2050 calls for:

i) Widespread adoption of technologies, including emerging ones to harness emerging opportunities, address threats, enhance efficiency, and drive change.
ii) Nationwide access to reliable and affordable communication services and high-speed internet.
iii) Innovation hubs which support local innovations throughout the entire lifecycle, from ideation to commercialization.
iv) Widespread data commercialization to maximize economic value, foster new business models, and creating jobs.

1.2.2 EAC Vision 2050

The vision prioritizes the development of human capital that is well-educated, enlightened and is healthy. It prioritizes education and skills development for effective and efficient invention, adaptation, manufacturing and utilization of modern technologies and innovations.

The vision calls for:

(i) Universal access to quality education that responds and delivers necessary and sufficient manpower to pursue the goal of economic transformation and development;
(ii) Training programs which prepare students for careers in fields related to technologies, industrialization and entrepreneurship under the 4th Industrial Revolution (4IR);
(iii) Effective use of ICTs and other modern technologies for enhancing learning outcomes;
(iv) Strong lateral linkages across the training levels of tertiary, vocational, secondary, primary and early childhood education; and
(v) Region-wide harmonized educational and skills system with mutual regional-level recognition of the qualifications to facilitate the free movement of human resources leading to an enhanced employability of TVET graduates within the EAC.

1.2.3 AU Vision 2063

The vision calls for TVET systems that promote skills acquisition through practical training focused on building critical capacity (in quantity and quality) for innovation and entrepreneurship, through:

(i) Efficient and cost-effective systems of quality TVET;
(ii) Ensured relevance of training concerning industry demand locally, continentally and globally;
(iii) Development of capacities for creativity, innovation and entrepreneurship.
(iv) Enhanced apprenticeship and industry-based learning; and
(v) Strengthened status and attractiveness of TVET institutions and their students and graduates.

1.2.4 UN Sustainable Development Goals (SDGs)

Goal number 4 set a target for nations to realise by 2030 a substantial increase in the number of youths and adults who have relevant skills (including technical and vocational) for employability (in modern decent jobs), and in entrepreneurship. Enhanced employability also assists in delivering SDG-8 (decent work and economic growth), while enterprising TVET graduates contribute to innovation and creativity, in response to SDG-9 (Innovation, Industry and Infrastructure). To effectively contribute to these three SDGs, TVET programs requires hands-on skills.

1.2.5 Rationale for Review of Standards

Section 5(1)(k) of the NACTVET Act empowers the Council to regularly update the TVET Standards so as to always address the needs of a broad range of stakeholders, particularly professional boards and regulatory bodies both regionally and internationally. This inclusive approach ensures that the standards meet professional and regulatory expectations, thereby enhancing the quality and credibility of Tanzania's technical vocational education and training system.

1.2.6 Types and Roles of Quality Assurance

Conceptually, quality assurance framework encompasses both internal and external quality management activities, adhering to the established standards, regulations, and guidelines. It is a comprehensive approach that ensures the training provided and skills developed meet defined and measurable standards of excellence and relevance. It involves both internal and external mechanisms to monitor, evaluate, and improve the quality of TVET programs, institutions, and outcomes. This integrated approach ensures that the standards are consistently comparable to international standards. This allows local TVET programs and awards to maintain the credibility, recognition and competitiveness among employers, students, and the broader community both nationally and internationally.

1.2.7 Internal Quality Assurance

This involves processes and practices implemented by each TVET institution in Tanzania to continuously monitor and improve their educational and training programs/activities. These include, but are not limited to:

(i) Self-assessments;
(ii) Feedback systems from students, employers and other stakeholders.
(iii) Internal audits;
(iv) Curriculum reviews; and
(v) Development and/or modernization of programs.

The goal is to create a culture of continuous improvement where the institution regularly evaluates its performance against its objectives and benchmarks, identifying areas for enhancement and implementing necessary changes. The key aspects are:

(i) Legal Requirement

Every institution shall implement internal systems to uphold the standards, quality, and relevance of training programs. TVET institutions are responsible for maintaining these standards and ensuring continuous quality assurance. Each institution shall establish its own internal quality assurance policy, systems, and mechanisms as per prescribed guidelines. TVET institutions shall also be required to consider standards specific to the unique requirements of regulatory Boards/Councils and sectoral ministries as updated from time to time.

Every institution shall: -

(i) Analyse trainee performance through various methods, including formal testing, project or experimental work, or other appropriate means, and use the results to improve trainees' performance.
(ii) Utilize the results of trainee assessments to evaluate and continually revise the curriculum and delivery methodology.
(iii) Ensure the confidentiality of tests, assessments, and their results.
(iv) Regularly monitor the trainee assessment procedures to ensure their adequacy and accuracy.

(ii) Establishment of Internal Quality Assurance System

The institution shall have a quality assurance committee chaired by the Principal or Rector with the following roles:

(i) Coordinate the development and implementation of the IQA policy;
(ii) Develop and coordinate implementation of the IQA annual work plan;
(iii) Conduct internal quality audits;
(iv) Prepare internal quality audit reports;
(v) Conduct institution self-evaluation;
(vi) Analyse internal and external audit reports and make recommendations to management;
(vii) Ensure implementation of corrective and preventive actions;
(viii) Conduct reviews on TVET Quality Management System (QMS); and
(ix) Identify potential risks and make recommendations for improvement.

(iii) Submission of annual returns to NACTVET in a prescribed format to include but not limited to the following

The institution shall ensure they submit to NACTVET the following:

(i) Data on trainees that will enable NACTVET systems to determine if trainees have met admission requirements;
(ii) Data on staff for suitability for training roles;
(iii) Programs and annual timetable;
(iv) Industrial linkages and collaborations;
(v) Reports on trainees' graduation rate and their employment placement rate;
(vi) Details of developments made in the institution's physical infrastructure and training;
(vii) Annual submission of examinations results; and
(viii) Any other reports related to compliance with NACTVET regulations as shall be required from time to time.

1.2.8 External Quality Assurance

Section 9 of the NACTVET ACT 2021 mandates the Council to be the external quality assurance agency in all matters of TVET. The process of external quality assurance involves the development of standards, regulations and guidelines for the purposes of:

(i) Inspection of TVET institutions for registration;
(ii) Inspection of TVET institutions for accreditation of programmes;
(iii) Quality audit of a TVET institutions at least once with three years for compliance and monitoring;
(iv) Evaluation of trainers for registration/licensing;
(v) Evaluation of programmes for effectiveness;

The purpose is to assess processes and practices implemented within TVET institutions in Tanzania to continuously monitor and improve their educational programs/activities (see 1.4.1 above).

In carrying out its mandate as stipulated under Section 5(1)(r), NACTVET may collaborate with stakeholders such as Professional Boards/Councils and independent auditors to ensure that TVET institutions adhere to established standards and regulation. These external reviews provide/facilitate:

(i) An objective assessment of the institution's performance, ensuring transparency and accountability;

(ii) Facilitate the recognition of TVET qualifications both nationally and internationally by ensuring that they meet consistent and comparable standards.

(iii) Ensure that TVET programs are relevant to the needs of the labour market; and deliver high-quality education and training, and are responsive to the evolving demands of both the formal and informal sectors.

In aligning with the revised TVET Standards, the Tanzania TVET quality assurance framework (Figure 1) is designed to ensure the effectiveness of technical and vocational education and training through a comprehensive approach that integrates inputs, processes, outputs, and impacts as follows;

(i) **Inputs**: This includes robust policies, governance structures, resources, and active stakeholder engagement;

(ii) **The processes**: This covers the accreditation, curriculum development, teaching and assessment strategies, and ongoing quality improvements; and

(iii) **Outputs**: Focuses on graduates and their qualifications, quality of programs and institutions, and satisfaction of stakeholders.

Ultimately, the framework aims to create a competent workforce, foster economic growth, drive social development, and support innovation and sustainable development, aligning with both national and international standards.

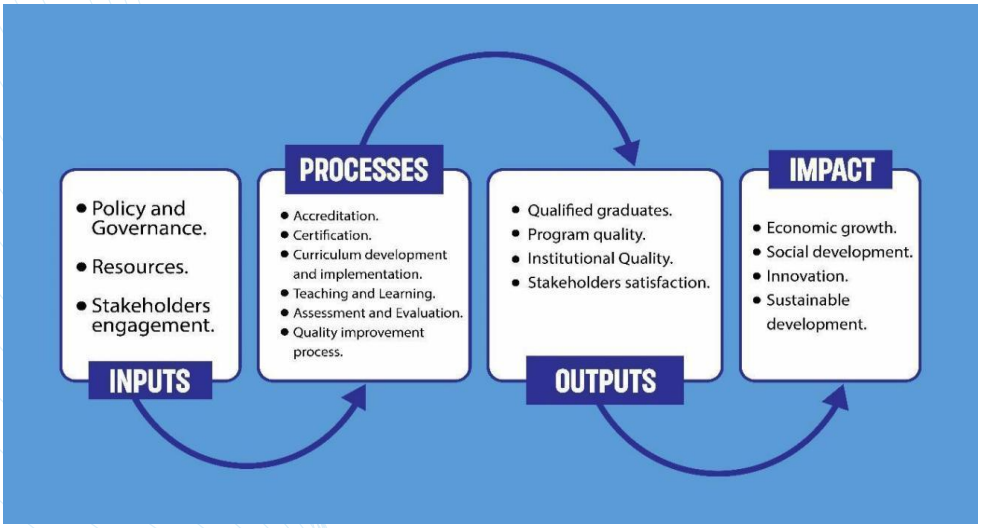

Figure 1: Tanzania TVET Quality Assurance Framework

1.2.9 Registration of TVET Institutions

Registration is the formal process through which NACTVET recognizes and affirms that an institution fully meets the legal requirements for establishment and possesses the requisite infrastructure, qualified human resources, physical facilities, and financial capacity to sustainably deliver TVET. Upon receiving an application, NACTVET evaluates it against established standards, as well as any additional considerations deemed necessary by the relevant committee or an accredited auditor appointed by NACTVET.

Institutions seeking registration are required to submit their curriculum programmes to NACTVET for approval. Each programme shall be assessed against competence-based standards and guidelines to ensure quality and relevance. The Council will maintain an official register of all approved programmes.

1.2.10 Registration and Licensing of TVET trainers/teachers and technicians

Any person intending to become a TVET trainer or technician is required to apply to the Council for licensing in a prescribed format as required by Section 5 (1) (a) of the NACTVET Act. A trainer must possess relevant academic (technical, trade area) qualifications, professional pedagogy qualification and industrial experience that are above the level taught. The trainer should renew their license after every three years subject to evidence of continuous professional development and industrial attachment. A register of licensed trainers shall be maintained and published by NACTVET.

1.2.11 Accreditation of Programs

Accreditation of programs refers to the process by which NACTVET evaluates and formally recognizes specific TVET programs as meeting established standards of quality and relevance. This process ensures that the programs provide the necessary skills and knowledge required by the industry and adequately prepare trainees for the industry. Each registered institution under the Act, shall within twelve months after obtaining the registration status be required to process for accreditation of its program(s). The applicant shall ensure that it has met the standards required for program accreditation before applying. Each institution wishing to offer TVET program shall be required by the Council to provide information on a Department or Departments to be recognized. In recognizing a department, the Council shall evaluate the department to satisfy itself as to compliance with the following criteria:

- **(i)** Name of the department;
- **(ii)** Educational leadership;
- **(iii)** Major resources i.e. financial, physical and human (in compliance with professional boards requirements where applicable);
- **(iv)** Academic, technical staff and other support personnel;
- **(v)** Self-Evaluation;
- **(vi)** Admission;
- **(vii)** Educational programme and curriculum;
- **(viii)** Advice and assistance; and
- **(ix)** Field supervision.

The accreditation certificate of the programme expires after five (5) years upon which the institution is required to seek accreditation.

1.2.12 Quality audit of TVET institutions for compliance and monitoring

This is the process by which NACTVET monitors and evaluates the compliance of a TVET institution with mandatory requirements. Compliance audit here is also known as quality audit. NACTVET shall from time to time collaborate with other regulatory bodies such as professional boards/councils and central government agencies to carry out regular or impromptu audits at the request of either party. In conducting the compliance audit, NACTVET shall evaluate the institution against the following audit criteria:

- **(i)** Leadership, Governance, and Management;
- **(ii)** Physical Facilities;
- **(iii)** Human Resources;
- **(iv)** Teaching and Learning;
- **(v)** Programme Evaluation;
- **(vi)** Trainee Support;
- **(vii)** Research, Innovation, and Co-operation
- **(viii)** Financial Sustainability; and
- **(ix)** Any other criteria to be determined by the Council from time to time depending on circumstances.

1.2.13 Audit process

The Council shall determine both the frequency and the manner for the conduct of a compliance audit.

(i) Every TVET institution shall pay an annual quality assurance fee (as set by the Council) per trainee enrolled at the institution;

(ii) The audit team shall prepare a report in the prescribed format and submit it to the Council, with feedback letters and a copy of reports sent to the institution;

(iii) If an institution scores less than the required threshold of 75% in any of the audit criteria, it is required to submit an action plan within one month. Failure to submit the action plan is considered non-compliance;

(iv) Any institution that refuses, hinders, or obstructs the audit team from carrying out the evaluation commits an offence against these Standards;

(v) If an institution is found to be in default of any set standards during the evaluation, it will be served with a written notice to comply;

(vi) Any institution that fails to comply with the served notice may be penalized; and

(vii) Any institution aggrieved by the decision of the Council to close an institution may appeal to the Minister responsible for Technical and Vocational Education and Training.

1.3 Consultations with Stakeholders for Review of these Standards

In reviewing these standards, two categories of stakeholders were engaged and consulted. These are (a) TVET providers in the public and private sector; and (b) Industry (employers of TVET graduates). The consultations were implemented through rapid appraisal surveys and short workshops. The purpose was twofold: first to assess and ascertain gaps in the existing standards from the point of view of the supply side and the user side; and secondly, to build confidence in stakeholders, for the process of reviewing the standards to gain their support. Quality and valuable feedback and innovative ideas were obtained from these consultations.

1.3.1 Supply Side (TVET Institutions)

In total, consultative workshops were implemented with 15 public institutions and 12 private sector institutions. The consultations covered the four main categories of TVET; namely:

(i) Vocational Education and Training (VET);

(ii) Business Tourism & Planning (BTP);
(iii) Health and Allied Sciences (HAS); and
(iv) Sciences and Allied technologies (SAT)

Qualitative content analysis was applied to the information gathered from the consultations to identify key priorities proposed and/or supported by stakeholders, for modernizing the TVET standards. The findings highlight the need to enhance governance frameworks, improve curriculum relevance, streamline administrative procedures, and ensure alignment with industry requirements.

The stakeholders recommended that the following aspect should be given priority in the revised standards:

(i) Digitization (digital infrastructure, modern technology, and human capacity) for training, learning and administrative processes;
(ii) Improved governance structures and automated curriculum processes;
(iii) Streamlined standards for staff levels and alignment with regulations of specific sectors;
(iv) Regular and timely review of curricula to keep up with changing technologies and demands of the industry;
(v) Allowing more flexible, market-driven short courses-specially to support life-long learning; and
(vi) Timely certification processes aligned with industry needs, and continuous professional development for staff.

1.3.2 Industry (Employers of TVET Graduates)

The involvement of stakeholders in the validation of TVET standards was held to ensure relevance, quality, and alignment with industry needs. Stakeholders, including industry representatives, employers, trainers, professional boards, TVET institutions, and learners, bring diverse perspectives that enrich the standard-setting process. Their participation ensured that the standards reflect the current and future demands of the labour market while addressing national development goals. By engaging stakeholders in consultations, workshops, and review sessions, the process fostered ownership, enhances transparency, and builds consensus. This collaborative approach also strengthened partnerships between TVET institutions and industries, ensuring that training programs are practical, demand-driven, and capable of producing a workforce equipped to thrive in a dynamic economic environment.

CHAPTER TWO

TVET QUALITY STANDARDS

2.1 Introduction

The specification of the standards includes a descriptor and specific and measurable minimum quality for ensuring that the TVET institutions are up-to-date and competitive globally with respect to most modern technologies in: the curriculum coverage in theory, practical and projects; and the approaches, facilities and tools used in training. The purpose is to ensure that all TVET institutions are always effective in preparing workforce with skills that match the current and future demands of the industry.

2.2 Standard 1: Strategy, Governance and Management

The Objective: To ensure that TVET institutions have structures, relationships and processes for effective governance, leadership and management. This standard defines and links the institution's policies, processes and mechanisms through which the institution's vision, mission, objectives and strategies are seamlessly linked and achieved.

Part I: Vision, Mission, Strategy and Structure

Performance Descriptor	Minimum Standards
(a) Vision and Mission Statements	(i) **Vision Statement** is brief and defines what the institution is contributing to at sectorial, national and/or global levels (where applicable); (ii) **Mission Statement** articulates what the institution does so as to effectively contribute to delivery of the priorities captured in the Vision Statement and with measurable outcomes; and (iii) **Vision and Mission** are communicated widely to all stakeholders.
(b) Strategic Plan	Up-to-date (less than Five-years old) Strategic Plan aligned with the institutional Vision Mission and having clear and measurable articulation of: i) Objectives that are "SMART" for the delivery of the Mission; ii) A budget, that is updated each year; iii) Implementation schedule with measurable targets; and iv) A comprehensive M&E Plan.
(c) Organizational Structure	Up-to-date Organogram, that clearly: (i) Illustrate key levels of the management structure; (ii) Define (with benchmarks) the qualifications and experience required for each position; and (iii) Define roles and responsibilities (in measurable terms).

Part II: Governance

Performance Descriptor	Minimum Standards
(a) Board Composition and Tenure	**(i)** Board Member qualifications - at least a Bachelor's Degree (*with exceptions for members from the industry – where experience and skills should be given priority*). **(ii)** Diversity in expertise to include: qualifications, skills and technical experience relevant to the programs offered; proven experience in management, administration, planning, finance and legal matters; **(iii)** Unless otherwise stipulated in a parliamentary act (for public institutions) or for NACTVET recognized cross-border programs; the Board size will not be of less than seven (7) members: **(a)** The Chairperson should be non-owner and non-Director of the institution; **(b)** Three (3) members should be from business operators in the relevant industries saved by the institution; **(c)** One member should be from a government department relevant to training offered by the institution; **(d)** Senior academic staff from another institution with similar programs; and **(e)** One member representing staffs of the institution. **(f)** Two (2) representative of students, 1 male and 1 female. ***(iv)*** Board composition should consider diversity in terms of gender and inclusivity; ***(v)*** Board Tenure should be 3 years and members can be reappointed for another one term; and **(vi)** No person from any authority responsible for regulating TVET should be a member of the Governing Board of a TVET institution.
(b) Board meetings	At least two (2) Regular board meetings per academic calendar year.
(c) Mandatory Board Committees	**(i)** Academic and Quality Assurance Committee; **(ii)** Finance, Planning and Administration Committee; **(iii)** Audit and Risk Committee; and **(iv)** Students' Welfare Committee.

Part III: Management

Performance Descriptor	Minimum Standards
(a) Senior Leaders of the Institution	For the Rector (or Principal), the deputy, and senior administrative staff – shall be as stipulated by the NACTVET Guidelines for Governance and Administration Technical and Vocational Institutions on the appointment process, and the required qualifications and experience
(b) Management	(i) Academic Committee;

Performance Descriptor	Minimum Standards
Committees	(ii) Quality Assurance Committee; (iii) Finance and Planning; (iv) Audit Committee; (v) Human Resource Management Committee; (vi) Students' Welfare Committee; and (vii) Industrial attachment committee.
(c) Institutional Quality Management System (IQMS)	(i) **M&E Framework**: is revised every 3 years and conforms with TVET standards, regulatory Boards/Councils, and sectoral ministries guidelines for the provision of training; (ii) **M&E Framework -** contains measurable baseline, targets, indicators; data to be collected; methods for measurement and analysis; and timing of the M&E Processes; (iii) **Findings are** used effectively for decision-making, transparency and accountability; and (iv) **Plans:** Internal quality assurance plans exist and are revised annually.
(d) Financial Management system	(i) Up-to-date Business Plan; (ii) Income and Expenses Reports; (iii) Balanced Cash Flow Records; (iv) Risk Management plan and its implementation; and (v) Annual Audit and actions in response to findings.

2.3 Standard 2: Human Resources

The Objective: The purpose is to ensure that institutions have adequate training and administrative staff to deliver quality training programs as guided by these standards as well as by standards set by professional boards/councils. Given the rapid advancements of technologies and practices in the industries, as well as for training, the skills of human resource must be upgraded continuously.

Part I: Training Staff

Performance Descriptor	Minimum Standards
(a) Qualification and Continuous Upgrading	(i) Except for vocational centres, a teaching staff shall have a qualification of one level above in the qualification currently taught (e.g. Bachelor, Master, PhD, etc); (ii) Pedagogical competence; (iii) Appropriate certification and registration by professional Boards/Councils; (iv) TVET trainer or technician is required to be registered and licensed for such by NACTVET; (v) Industrial experience of not less than twelve (12) months on first appointment; (vi) Capacity to train for skills required by the most modern technologies in the industry, requiring that, at any time, the lag behind technological advancements is: (a) Not more than years for digital systems; and (b) Not more than 3 years for other technologies. (vii) Continuous training programs (at *least 3 months within 2 years)* for trainers to stay up to date with respect to the latest technologies and teaching methods; (viii) Industrial attachment *(in a relevant and modern industry)* for each trainer/lecturer/instructor/tutor, at full-time for a month per year, to build hands-on experience for emerging technologies in the industry of her/his specialization; and (ix) Promotions of trainers/tutors/lecturer/instructors are driven by enhanced capacity/qualifications for training in, and using, the most modern (*less than five years old*) technologies of the relevant industry of specialization.
(b) Workload	(i) 40 hours per week distributed to include at least 4 hours for industrial linkages/attachment (or, as prescribed by professional Boards/Councils); and (ii) Three-quarters (75%) of time is utilized in hands-on practical training.
(c) Trainer to student ratio	(i) For programs with practical components, 1 trainer to 20 trainees or where professional Boards/Councils specify, their standards shall prevail (if they are higher); (ii) For other programs, the trainer/student ratio should not exceed 1:45; and (iii) Where technology aided training is used, the manufacturer's specification on number of students that can be covered at once, shall be adhered to.

(d) Technician to student ratio	(i) For **programs with practical** components - 1:10 (or where professional Boards/Councils exist, their standards shall prevail provided their standard is higher); (ii) For other programs - 1:20; and (iii) Where **technology aided training** is used, the manufacturer's specification on number of students that can be covered at once, shall be adhered to.
(e) Staff disposition	Ratio of 1:2:1 for senior to middle to junior staff depending on level of training offered.

Part II: Administrative Staff

Performance Descriptor	**Minimum Standards**
Administrative support	(i) Staff - qualifications and experience, meet prevailing scheme of service for public institutions and/or requirement from professional bodies; and (ii) External contractors to the TVET institution must also deploy staff with the required qualifications.

Part III: Staff Regulations

(a) Performance Descriptor	**Minimum Standards**
(c) HR Policy and Procedures	Clear, detailed and where possible benchmarked and quantified: (i) Criteria and procedures for selection, recruitment and/or appointment to various positions; (ii) Disciplinary measures; (iii) Remuneration and incentives; (iv) Promotion criteria; (v) Leaves periods: (annual, sabbatical and unpaid); (vi) Staff development plans; and (vii) Termination procedures.

2.4 Standard 3: TVET Programs

The Objective: is to ensure that all TVET programs in Tanzania are well developed and implemented to deliver graduates who have the competencies demanded of them (as employees or entrepreneurs) by the current and future markets. Therefore, this standard provides guidance and criteria for three types of actions:

(i) Dropping outdated programs;
(ii) Maintaining current programs, with continuous improvements;
(iii) Developing new programs in response to changed demand - due to emerging new markets, technologies, and/or industrial practices.

Therefore, all decisions on the type and content of programs should be guided by (i) market demand for employees or entrepreneurs; and (ii) technological changes for the target sector at national and international levels. Such attention is critical in ensuring that TVET institutions, at any one time, are preparing graduates with skills that match the current and/or future demands of the industry.

Part I: Curriculum and Its Delivery

Performance Descriptor	Minimum Standards
(a) Curricula Development and/or revision	(i) The process is guided by: (a) National and sectoral visions and strategies; (b) Most recent Independent Assessment of needs and demands, of the relevant industry (as employers or investors); (c) Technological changes and future outlook for the particular sector – especially for emerging skills gaps and opportunities; (d) Focus on the acquisition of both technical and soft skills; and (e) National Occupational Standards (NOS) and International Occupation standards where NOS is missing. (ii) Industry players are involved in curriculum development, to ensure maximum focus on competencies required by the industry (currently and in the future); (iii) Relevant regulatory bodies and important stakeholders are involved; (iv) Endorsement by the relevant professional/industry Boards/Councils, where applicable; (v) Approval by Institutional Governing Board/Council or Ministry (where applicable); (vi) The process of developing and/or updating curricula, adheres to NACTVET guidelines for curriculum development; and (vii) For approved curricula major review should be done after every two complete cycles of implementation.
(b) Curriculum Approval and Accreditation	NACTVET approval, accreditation and certification.
(c) Innovative and Strategic Components of the Curricula	(i) Coverage, is up-to-date with respect to current and future cutting-edge of the technology used in the industry – such that, at any time, the lag against technological advancements is: (a) Not more than 2 years for digital systems; and (b) Not more than 3 years for other technologies. (ii) Coverage includes building extra skills for entrepreneurship and/or employability – such as: (a) **Soft Skills (**such as communication, critical thinking, problem-solving, team-work and imagination)**,** which for hospitality industry should be at least 40% of training and not less than 20% for other industries; (b) **Lifelong-Learning,** building capacity for continuous

Performance Descriptor	Minimum Standards
	learning and skills upgrading. (iii) 100% building of relevant ICT and digital skills, as per competencies and proficiency demanded by the relevant industries/trade; (iv) The instructional methods prioritize student - cantered learning, innovation, mentorship and the generation of evidence-based concepts; and (v) Duo apprenticeship system.
(d) Cross-border programs	(i) Adheres to NACTVET guidelines for Cross-border programs; and (ii) Abide by Tanzania's local content regulations for both students and staff.
(e) Delivery	(i) Delivery is by innovative pedagogy (blending: theory lectures; assignments; and project-based group work); (ii) Competency-based mode of delivery (7.5:2.5 ratios of practical vs theory) - so that at least 75% of the content is delivered in a practical setting (such as in a factory, workshop, laboratory, project sites, hospital/clinic, offices, hotels, etc.); (iii) Integration of Learning Management System (LMS) with traditional learning materials and equipment; (iv) At least 5% of the delivery of training is digitized (e.g. using VR and AR and simulations etc); (v) Delivery through Open and Distance Learning (OdeL) must adhere to the relevant guidelines of NACTVET; and (vi) Lessons are attended as time-tabled, and attendance is monitored through Biometric Class Attendance Registers (BCAR) for trainers and trainees.
(f) Learning Methodology	(i) Flexible and modular programs that implement the curriculum in ways that respond to the diverse needs of learners, sectors and the labour market; and (ii) Inclusiveness by 100% attention to special needs of trainees, resulting from gender; learning difficulties; and/or living with disability.
(g) Instructional Materials	(i) All learning materials (course outline, lesson/session plan) are available in a modern Learning Management System (LMS). (ii) The instructional materials should cover special needs students.
(h) Students' enrolment capacity [1]	Determining the number of students (college capacity) to be admitted depends on several factors, which differ slightly for training programs with practical components (e.g., engineering, medical, agriculture) and business programmes; These factors include: **(i) Infrastructure and Facilities** (a) **Practical Training Programmes:** Availability of specialized facilities such as laboratories, workshops,

[1] Detailed determination of admission capacity is shown in appendix 3.

Performance Descriptor	Minimum Standards
	equipment, medical labs, farm plots, or engineering tools. (b) **Business Tourism and Hospitality Programmes:** Classroom space, availability of IT laboratories, and access to relevant business software or resources. (ii) **Trainer-to-Student Ratio** (a) **Practical Training Programs:** Requires a lower trainer-to-student ratio due to the hands- on nature of learning and safety considerations (1;20) (b) **Business Tourism and Hospitality Programmes:** Can accommodate a higher trainer-to-student ratio since the training typically involves lectures and case studies (1;45). (iii) **Availability of Training Materials** (a) **Practical Training Programmes:** Equipment, consumables (e.g., medical supplies, seeds, machinery), and protective gear. (b) **Business Tourism and Hospitality Programmes:** Books, case studies, and digital resources. (iv) **Practical Placement Opportunities:** (a) **Practical Training Programmes:** Internship, industrial placement, or clinical rotation availability in industries, hospitals, farms, or engineering firms. (b) **Business Tourism and Hospitality Programmes**: Opportunities for field attachments in businesses, consulting firms, or financial institutions. (v) **Budget and Funding:** Adequate financial resources to maintain equipment, hire qualified trainers, and purchase consumables impact the capacity. (vi) **Safety and Health Considerations** (a) **Practical Training Programs:** Adherence to safety regulations (e.g., maximum laboratory occupancy). (b) **Business Tourism and Hospitality Programmes:** Compliance with general health and safety regulations in classrooms. (vii) **Student Demand and Industry Needs:** Programs are tailored based on demand and the labour market's absorptive capacity to avoid overproducing graduates in specific fields. **(viii) ICT Infrastructure and Online Learning Options:** For business programs, blended or online learning can increase capacity. This is less applicable for fields with significant practical components.

Part II: Industrial Attachment and Job Market Linkages

Performance Descriptor	Minimum Standards
(i) **Industrial Attachment Framework**	(ii) **Industrial Attachment Plan**: Is in line with the approved curricula, and/or where applicable, is as stipulated by respective sectoral ministries or by standards of professional Board's/Council; (iii) **Effective Coordination Committee** for Industrial Attachment; (iv) **Industrial placement is guaranteed** by ensuring availability of placement of each student, through either: (a) The owner of the TVET institution also owns relevant industries (e.g. teaching hospital; construction company, or manufacturing industry), and uses them for industrial attachment; (b) The TVET institution has a "water-tight" MoU (minimum of five years) with owners of relevant companies for industrial attachment; (c) The TVET institution maintains continuous engagement partnerships with relevant industry partners to develop synergies, collaboration and win-win partnerships beyond the industrial attachments of students; or (d) Where placement opportunities are limited – the Industrial Attachment Program is spread across the entire academic year, so as to ensure each student obtain a placement for 100% hand-on industrial learning and experience; and (e) The number of students enrolled per program is not more than the guaranteed vacancies for Industrial Attachment. (v) Compliance with NACTVET Guidelines for the Establishment of Programmes in Training Institutions (e.g., *Clinical Dentistry, Nursing and Midwifery, Pharmaceutical Sciences, Health Laboratory*).
(b) **Conduct of attachment for Industrial training**	(i) TVET institutions shall have their own facility for industrial training or have a legal MoU with relevant industry; for Health and Allied Science which require rotational practical training should own; hospital or as stipulated by medical related Boards and or Councils; (ii) Students must be covered by Workplace Compensation Insurance; and (iii) Assessment must be relevant and fair for learning, and regular review of programs.
(c) **Tracer Studies**	(i) Maintaining updated databases with graduates' contact information and employment records; (ii) Regular follow-ups with graduates at specified intervals (e.g., 6 months, 1 year, 3 years) to gather data on employment, job relevance to training, income levels, and career progression; and (iii) Feedback Mechanism for results of tracer studies to provide inputs for the review of curriculum, teaching methods, and institutional policies to continuously improve training programs.

Part III: Assessment

Performance Descriptor	Minimum Standards
(a) **Assessment Policy**	(i) Adherence to NACTVET assessment and examination regulations for trainers and trainees; (ii) 100% focus on Competency based assessment (CBA); and (iii) The self TVET institution's assessment and/or examination regulations/guidelines must be approved by NACTVET.
(b) **Conduct and Reporting of Assessment**	(i) Rules for preparation, execution, marking and publication of examination results, adhere to NACTVET's regulations for assessment and examination for trainers and trainees; (ii) Results verification and certification process is in place; (iii) Examination results are timely uploaded in the NACTVET system and submitted to NACTVET; (iv) Safe and secure storage of assessment materials (e.g., written exams, practical skills assessments, logbooks grading, strong room etc.); and (v) Copies of submitted results are available.
(c) **External Examiners**	(i) There should be external examiners relevant to the programs to provide an external eye on the assessment and examination process; (ii) TVET Institutions should appoint external examiners approved by NACTVET every after three years for not more than two terms; and (iii) External Examiners yearly reports should be submitted to NACTVET.

Part IV: Certification

Performance Descriptor	Minimum Standards
(a) Certification procedures	ii) Certificate template is as approved by NACTVET; iii) International certifications of TVET programs must be approved by NACTVET; iv) Recognition of Prior Learning (RPL) in certification should be implemented as per NACTVET guidelines for RPL; v) Award Verification Number must be issued to all eligible graduates; vi) Any on-the-job training and certification must be approved by NACTVET; and vii) Any cross-border certification of competence must be approved by NACTVET. viii) Foreign Award Evaluation Letter/Certificate must be issued by NAVCTVET

2.5 Standard 4: Trainee Services

Scope and Objective: These services provide mechanisms for addressing the academic, personal, social, and career development needs of trainees. The purpose is to ensure that trainees have the necessary tools and environmental support to succeed in their educational, personal, social, and professional growth**.**

Part I: Admission System

Performance Descriptor	Minimum Standards
(a) **Admission of Students**	(i) Adheres to NACTVET Regulations and Guidelines for students' admission; (ii) Ensure that all students enrolled for studies are enrolled in the NACTVET Database; and (iii) Smart Portal for comprehensive handling of Students' admissions.
(b) **Enrolment of Students**	(i) Enrolment of students per program shall be as prescribed by the respective curriculum and shown in the Admissions Guidebooks of the respective academic year; (ii) Up-to-date records/database of admitted and enrolled students.
(c) **Transfer of Students**	Transfer of new and continuing students must conform with Admission Regulations and Guidelines for Students' Admission Transfer.

Part II: Students Information

Performance Descriptor	Minimum Standards
(a) Accessibility of Information	(i) A digital online system for managing and disseminating institutional information with logs, user access records, and system performance reports; (ii) Up-to-date prospectus, curricular and almanac are in digital formats accessible to students (prospective and current) as well as the public; and (iii) 95% or higher of the information is accessible online.

Part III: Guidance and Support Services

Performance Descriptor	Minimum Standards
(a) **Provision of personal guidance and counselling services**	(i) Up-to-date (not more than 3 years old) Policy on Students' mentorship; (ii) Wardens and offices, with modern digital systems; (iii) Mentoring team is adequate to ensure a maximum of 5 students per mentor per day; (iv) Active Support Groups and Forums; and (v) Provision of career guidance;
(b) **Association of Students**	(i) Constitution for Students' Association; (ii) Policies and by-laws for Students' Association and Its governance; and (iii) Active and Functioning Students Leadership

(c) **Sports and Recreational Services**	(i) Facilities with the ability to cater for at least 70% of the student population at once; (ii) The facilities provide provisions for all major sports and games; (iii) The facilities are inclusive to cater for people with special needs; and (iv) Well management time slots for sports and games to ensure adequate time for each student without reducing time for studies.
(d) **Support for Persons Living with Disability**	(i) The infrastructure allows for wheelchair-accessibility. (ii) Necessary facilities in classrooms, laboratories and workshops to support students living with visual and hearing impairments; (iii) Sports and recreation facilities cater for persons living with disability.
(e) **Disciplinary procedure**	(i) Student by-laws, verified through institutional records, policy documents, and official approval stamps; and (ii) Existence and accessibility of formally approved discipline procedures, confirmed through official documents, policy manuals, and procedural guidelines.
(f) **Grievances redress procedure**	(i) Suggestion boxes in accessible locations within the institution; (ii) Online help desk; (iii) Operational related gender-related issues; and (iv) Updated complaints register.
(g) **Accommodation and Food Services**	(i) If accommodation service is provided; the priority should be to students under 20 years of age; (ii) Secure, safe and hygienic accommodation; (iii) Guaranteed services for safe and healthy food, and (iv) Guaranteed provision of health services.

2.5 **Standard 5: Physical Resources**

The TVET institution must identify, provide, and maintain the infrastructure required to deliver quality training following the prescribed standards. Similarly, TVET providers must have strong and efficient management systems in place to effectively utilize, manage and maintain those resources and facilities. Any **superior standards** set and being enforced by relevant Professional Boards shall apply.

Part I: Physical Infrastructure

Performance Descriptor	Minimum Standards
(i) Ownership	(i) Owned or leased for at least 5 years, by the owner of the institution; and (ii) All buildings have proven structural integrity fit for the purpose;
(ii) Security	(i) Secure fence around the entire perimeter of the Campus; (ii) Security lighting in all buildings; (iii) Adequate security guards; and (iv) Operational CCTV cameras at key locations such as, but not limited to entrance, examination rooms, administrative block, computer rooms, examination strong-room and laboratories and workshops
(iii) Supply of Safe Domestic Water	(i) Guaranteed supply of safe water at 50 litres per person per day; and (ii) Water stored in reserve tanks is adequate for three (3) days.
(iv) Electrical Power Supply	(i) Connection to national power grid or reliable source of power; and (ii) Back-up power system with capacity to supply at least 50% of peak power consumption.
(v) Waste Disposal	(i) An incinerator where applicable; (ii) Adequate facilities for disposal of solid waste; and (iii) Adequate facilities for disposal of wastewater and other liquid wastes.
(vi) Health and Safety	(i) Institutionalized and up-to-date health and safety policy; (ii) Well-serviced, modern fire-fighting equipment at each building and certified by the Fire Department; (iii) Lightning arrestor are operational on each building; (iv) Labelled emergency exits in all the buildings; (v) Emergency assembly point and signage; (vi) Protective equipment and wear for tutors; technicians and students, during practical works; and (vii) Provision of vaccinations as appropriate.
(vii) Environment	(i) Environment protection as per national standards. (ii) Efficient drainage system for rain runoff; (iii) Outdoor study areas (e.g. *Vimbwete*), capable of accommodating at least 20% of students at one time; (iv) Well-maintained lawns and hedges; (v) Pathways for accessibility of facilities within the campus; (vi) Clear signage within the campus; (vii) Annual fire safety inspection and drills;
(viii) Playgrounds	(i) Diverse indoor and outdoor recreational and fitness facilities for both genders (football, volleyball, netball, basketball, table tennis, pool table, gym, etc.); and (ii) Facilities to support shower and other basic needs during recreation (changing rooms; clean drinking water

	etc); and (iii) if not available on institutional premises, operational MoU with an External provider ensures adequate availability/ and access.
(ix)Infrastructure Management and maintenance	(i) Annual plans for maintenance; (ii) Adequate Insurance cover; and (iii) Digital system for inventory management**.**

Part II: Administrative Offices

Performance Descriptor	Minimum Standards
(a) **Offices for Senior Administration officials**	(i) Three (3) labelled non-shared offices for senior management (1 for Rector/Principal and 2 for th two deputies); (ii) Each office has 5 - 40 sqm space; (iii) Ergonomic executive chairs, Lockable desk, executive table, and additional furniture to support meetings; and (iv) Each office has a separate room for the secretary.
(b) **Guidance and Counselling Facilities**	(i) Labelled and lockable office of guidance and counselling; (ii) Location of the office provides necessary and sufficient privacy; (iii) Ergonomic chairs and Lockable desk; (iv) At least two chairs for visitors in the counselling room; (v) At least one lockable cabinet; and (vi) Active online anonymous Counselling Therapy Platforms
(c) **Secure custody of documents for financial and procurement transactions**	(i) Labelled office for bursar or accountant with strong-room; (ii) Digital Financial Management System; (iii) Ergonomic chairs and lockable desk draw; (iv) Adequate and working installations for security (CCTV and Locks (biometric, electronic deadbolts, smart Locks, multi-points, and/or hidden); and (v) Fire-resistant safety cabinet for storing (cash, cheque-books, receipts, and reports).
(d) **Offices for Heads of Departments and/or Units**	(i) Labelled separate offices (of 16 – 5 sqm) for each head of departments or unit; (ii) Ergonomic chairs and Lockable desks; (iii) Modern computer and printer; (iv) Adequate shelves and lockable cabinets; and (v) Fireproof file cabinets.
(e) **Office space for staff to perform academic activities professionally**	(i) Labelled office, (10 – 16 sqm for single; occupancy) and (16 – 5 sqm for double occupancy); (ii) Ergonomic chairs and Lockable desk; (iii) Modern computer and printer; (iv) Adequate shelves and lockable cabinets; and

	(v) Dust bin in the staff room
(f) **Office for Head of Quality Assurance**	Similar to Offices for Heads of Departments (described in (iv) *above*).
(g) **Secure Handling of Examinations**	(i) Special office for the handling of examinations; (ii) Secure room with a double lockable door in a secure location within the relevant Administration Building; (iii) Dedicated computer and printer; (iv) Enhanced and updated Cyber and Digital Security for Computers used to set and process examinations; and (v) Additional security features (CCTV, Biometric Locks, Electronic Deadbolts, Smart Locks, Multi point Locking Systems, and/or Hidden Locking Systems)

Part III: Auditorium, Lecture Rooms, Studios and Seminar Rooms

Performance Descriptor	Minimum Standards
(a) Size	Area of 1.85 – 2m² per trainee, with adequate doors opening out-wards and a floor with concrete slab.
(b) Modern Technology and Digital Facilities for Teaching, Instructions and learning	(i) Adequate and functioning technologically modern facilities to support theory sessions (e.g. Smart Boards, Multimedia Projectors, and White Boards, and PA system for large classes) and (ii) Modern laptop for each student capable of supporting access to digital libraries; (iii) Optimal internet connectivity (at least 10- 5 Mbps per student); and (iv) **At least 50% Classrooms are smart** (e.g. with interactive whiteboards and other smart devices).
(c) Adequate Furniture (*in size, safety and inclusion*)	(i) Flexible and adequate furniture arrangement; (ii) Changeable seating configurations; (iii) Chairs and desks at the front rows provide privacy for girls; (iv) For foldable writing surfaces, 10% of chairs should cater for left-handed trainees; and (v) Designated wheelchair spaces in the classrooms (2% to 4% classroom seating to be set aside for wheelchairs).
(d) Adequate installations	(i) General lighting (300 Lux) and task lighting (500 lux) for presentations and note taking (natural and electricity); (ii) Sound-absorbing materials on walls and ceilings to minimize noise (maximum 35 dB) distractions and promote clear communication; (iii) Well-ventilated with natural/fresh air circulation and temperature control through large windows or air conditioners or roof fans; (iv) Window space with an area of not less than 20% of the floor area and 75% openable to external air; (v) Comfortable room temperature for learning (around 20 – 25⁰C); (vi) Electrical outlets match the electrical equipment used for training and learning; and (vii) Adequate Safety measures (smart fire extinguishers, escape windows and doors).

Part IV: General and Practical Laboratories and Workshop

Performance Descriptor	Minimum Standards
(a) **Technological Modernity of Equipment, Facilities, and Software used in Laboratories and Workshops**	Equipment/facilities/software meet the standards used in the industry, in the following ratios: (i) **60%** are in the category of established and widely used technologies, (ii) **30%** is emerging technologies, and (iii) Limited use of technologies (type or quality) that

	are no longer used in modern industry; (iv) **At least 30%** of practical training is done virtually (e.g. by simulation of training using tools such as Virtual Reality (VR), and Augmented Reality (AR) Laboratories).
(b) Number, Size and Safety of Laboratories and Workshops	(i) At least one workshop/laboratory for each practically oriented course being offered with specifications as per the Regulating/Professional Boards and Councils – and not below international standards; (ii) Well-ventilated with natural/fresh air circulation and temperature control through large windows or air conditioners or roof fans**:** (a) Window space covers an area of not less than 20% of the floor area; (b) 75% of the window are openable to external air; and (c) Room temperature is at all times comfortable for learning (around 20 – 25^{0}C). (iii) Accessibility to persons with disability; (iv) Number of electrical outlets matches the electrical equipment used for training and learning; (v) Appropriate safety measures: (a) Training on safety procedures and proper handling of equipment is prioritized and examinable for students. (b) Full availability of protocols, signage, supplies, and emergency exits (*all doors are installed to open outwards and their locks can be opened from inside without a need for keys*) according to safety regulations, (c) Smart fire extinguishers are adequate and serviced as required. (d) Adequate eyewash stations and safety showers where necessary. (e) Ventilation to remove hazardous fumes or dust as per national standards. (f) Adequate facilities for safe and secure storage of hazardous materials. (g) System for safe and responsible disposal of laboratory and workshop waste according to Tanzanian environmental regulations. (vi) Adequate space for safe storage equipment, chemicals, tools, materials, and student projects; and Sound-absorbing materials on walls and ceilings to minimize noise (maximum decibels).
(c) Management of Tools, Equipment and Materials	Digital system for inventory Management; (i) Updated inventory reports; (ii) Budget lines for maintenance, safety and disposal of equipment and materials; and (iii) Maintenance schedules are up-to-date and adhered to.

Part V: Digitalization

Performance Descriptor	Minimum Standards
i) Connectivity Across the Campus is Up-To-Date in hardware and software.	a) Modern communication devices for each student capable of supporting access to digital libraries and other requirements of the relevant TVET program; and b) Optimal internet connectivity: (i) At least 10 -15 Mbps per student for both download and upload to ensure smooth performance for High-Definition video conferencing, streaming, and interactive simulations; and **(ii)** At least 5 Mbps per student for both download and upload if engaging in data-intensive activities like 4K streaming, advanced simulations, or Virtual Reality training facilities.
ii) ICT Laboratory	a) Adequate audio-visual aids in each class and laboratory, to support theory sessions (Smart Boards, Multimedia projectors, white boards for writing, and PA system for lecture theatres); b) Availability of Internet connectivity in all computers. c) Security measures to protect computer equipment, software, and student data (Passwords, CCTV, Biometric Locks, Electronic Deadbolts, Smart Locks, Multi-point Locking Systems, Hidden Locking Systems); and d) All other standards of laboratories and workshops as defined in Standard D(a) (*Number, Size and Safety of Laboratories and Workshops*)

Part VI: Library

Performance Descriptor	Minimum Standards
(a) Digitization	(i) More than 60% of the library information resources are digitized and accessible across the Campus; (ii) Use of Digital Library Platforms and software with unlimited access as specified in C(b)(iii) and
	(iii) Optimal internet connectivity (as defined in standard E(a)(ii))
(b) Reading Space/Stack Area	(i) Presence of designated areas for quiet study, group work, computer use, and accessing library resources; (ii) Reading space with seating capacity for at least 10 % of enrolled trainees; (iii) Presence of Library management system; (iv) Presence of security measures to protect library resources; and

	(v) All other standards of laboratories and workshops as defined in Standard D(b) (*Number, Size and Safety of Laboratories and Workshops*)
(c) Collections and Resources	(i) Well-curated collection of books, journals, and other materials relevant to the TVET programs offered; (ii) 75% of the collection is digital; and (iii) Subscription to relevant online Databases, information gateways offering industry-specific resources, tutorials, or simulations.

Part VII: Dining facilities

Performance Descriptor	Minimum Standards
(a) Dining Hall/Canteen/Cafeteria	tion at once; tandard and all open outwards; and oilets.
(b) Kitchen	(i) Proximity to dining hall; (ii) Environmentally friendly cooking energy utilization; (iii) Water taps or any other means allowing to keep clean water; (iv) A suitable working area; (v) A washable floor; (vi) Waste disposal bins; (vii) Storage room; and (viii) Cold room or refrigeration equipment.

Part VIII: Toilets

Performance Descriptor	Minimum Standards
(a) Number	(i) 1 toilet per 10–15 staff members (ii) 1 toilet + 1 urinal per 25 students – Males
	(c) 1 toilet per 20 students for females
(b) Room Size	(iii) Staff - 2m^2 (iv) For Students – 1.5m^2
(c) Special facilities for People Living with Physical Disabilities	At each building with toilet facilities – Two toilet room facilities (one for each gender) with international standards specifications

(d) Other facilities	(i) Urinals: 1 per 10 males; (ii) Sanitary bin in each toilet room for females; (iii) Hand washing basin 1 per 20 persons; (iv) Provision of showers and changing rooms for workshops; (v) Handwashing facilities with soap and running water; and (vi) Adequate lighting and ventilation to ensure a clean and comfortable environment.

2.6 Standard 6: Special Minimum Standards for VET Institutions

Vocational training centres in Tanzania are classified into four categories based on the number of occupations they train for, staff qualification levels, and resource endowment. Category A centres, including Regional Vocational Centers, meet the highest standards with extensive programs and resources. Category B centres specialize in specific industries, while Category C centres provide moderate training with adequate resources. Smaller Category D centres offer limited training and operate under different standards due to size constraints, ensuring vocational education is accessible and meets the diverse needs of the labour market. The following are minimum standards for Vocational Education and Training.

Part I: Governance

Performance Descriptor	Minimum Standards
(a) Board Composition and Tenure	**(i)** Board Member qualification - Relevant occupational experience is essential. A minimum of a Bachelor's degree will be considered an added advantage. **(ii)** Tenure of three years which can be renewed; **(iii)** Diversity in expertise to include: (i) qualification/skills relevant to the programs offered, (ii) management/administration, (iii) finance and planning and (iv) legal; **(iv)** Board size of not less than seven (7) members for Category A and B while Categories C and D shall have a minimum of three members, and may constitute the following: (a) Chairperson; (b) Representative of Parents; (c) Representative specializing in the occupations being offered; (d) Government (at District or Divisional Level) (e) Owner (f) Representative of Staff; (g) Representative of Students; and (h) Principal – as Secretary to the Board.

Part II: Occupations

Performance Descriptor	Minimum Standards			
	CATEGORY A	**CATEGORY B**	**CATEGORY C**	**CATEGORY D**
(a) Number of Occupation	(i) Eight (8) occupations for multi-sectoral centres or (ii) Four (4) for sector-specific Centres.	(i) Five (5) occupations for multi-sectoral centres or (ii) Two (2) for sector-specific Centers.	One (1) occupation.	One (1) occupation.
(b) **Qualifications Levels.**	Four (4) occupations offered above level II.	Two (2) occupations offered above level II.	One (1) occupation offered up to level II.	One (1) occupation up to level I.

Part III: Staff Qualifications

Performance Descriptor	Minimum Standards				
		CATEGORY A	CATEGORY B	CATEGORY C	CATEGORY D
(a) Principal	(i) Academic qualifications	For Category A; Form VI or equivalent.	For Category B; Form VI or equivalent.	For Category C; Form VI or equivalent.	For Category D; Form IV or equivalent.
	(ii) Professional qualifications.	For Category A; 1st Degree in relevant technical/vocational education or equivalent for VTCs with training up to NTA level IV and Master above level IV.	For Category B; 1st Degree in relevant technical/vocational education or equivalent for VTCs with training up to NTA level IV and Master above level IV.	For Category C; Relevant experience of not less 5 years or equivalent for VTCs with training up to NVA level III	For Category D; Relevant experience of not less 3 years or equivalent for VTCs with training up to NVA level I
	(iii) Work Experience in relevant occupation.	For Category A; Three (3) years.	For Category B; Three (3) years	For Category C; Three (3) years	For Category D; Three (3) years.
(b) Vocational Teacher	(i) Academic qualifications.	For Category A; Form IV.	For Category B; Three (3) years	For Category C; Three (3) years	For Category D; NA
	(ii) Professional qualifications.	For Category A; one level above the level taught in a relevant occupation. For Category A; TEACHER MINIMUM LEVEL III.	For Category B; One level above the level taught in a relevant occupation. For Category B; TEACHER MINIMUM LEVEL III.	For Category C; One level above the level taught in a relevant occupation.	For Category D; National vocational certificate of competence or equivalent
	(iii) Teaching qualifications of at least Teacher's Certificate in Education for Category A, B, &C.				For Category D; Instructional Methods Certificate (IMC).
	(iv) Work Experience of Three (3) years in relevant occupation For Category A, B, & C.				For Category D; Five (5) years in a relevant occupation.

Performance Descriptor	Minimum Standards				
		CATEGORY A	CATEGORY B	CATEGORY C	CATEGORY D
(c) Vocational Technician	(i) Academic Qualification	For Category A; Forms IV			
	(ii) Experience	For Category A; 3 years			
(d) Training Coordinator/ Registrar	(i) Academic qualifications	For Category A; Form IV.	Three (3) years	Three (3) years	NA
	(ii) Professional qualifications.	For Category A; Ordinary Diploma in technical occupation or equivalent for VTCs with training up to level IV and 1st Degree above level IV.	Ordinary Diploma in technical occupation or equivalent for VTCs with training up to level IV.	Equivalent of VTCs with training up to level IV	NA
	(iii) Work Experience in training of at least Three (3) years For Category A, B, & C;				For Category D; NA
(e) Accountant	(i) Academic qualifications.	For Category A; Form VI.	For Category B; Form IV.	For Category C, NA.	For Category D; NA
	(ii) Professional qualifications	For Category A; Diploma or equivalent in relevant occupation	For Category B; Diploma or equivalent in relevant occupation	For Category C; Certificate equivalent in relevant occupation	For Category D; NA
	(iii) Work Experience in relevant occupation of at least Three (3) years For Category A, B, & C.				For Category D; NA

Part IV: Centre Capacity

Performance Descriptor	Minimum Standards			
	CATEGORY A	CATEGORY B	CATEGORY C	CATEGORY D
(a) Teacher-trainee's ratio per class in core subjects of at most 1:20 for Category A, B, & C.				For Category D; 1:5
(b) Teacher-trainee's ratio in related subjects of at most 1:40 for Category A, B, & C.				For Category D; 1:5
(c) Technician of at most 1:20 for Category A, B, & C.				1:5
(d) Teacher Trainee's ratio with technology of at most 1:50 for Category A, B, & C.	1:5	1:50	1:5	1:5
(e) Infrastructure as per the Manual for establishing VET Centres in the specific category.				For Category D; Enough for five (5)
(f) Tools and equipment as per the Manual for establishing VET Centres in the specific category.				For Category D; Enough for five (5) trainees

CHAPTER THREE

IMPLEMENTATION OF TVET QUALITY STANDARDS

3.1 Overview

The implementation of TVET (Technical and Vocational Education and Training) quality standards in Tanzania is essential to ensure the provision of high-quality education and training that meets industry needs and enhances the employability of graduates. The conditions of implementation play a crucial role in successful adherence to Standards.

3.2 Institutional Readiness

Institutions must be adequately prepared to implement quality standards. This involves:

(i) **Infrastructure**: Ensuring that facilities and equipment meet the required standards.
(ii) **Faculty**: Recruiting and retaining qualified instructors with industry experience and pedagogical skills.
(iii) **Curriculum**: Developing and updating curricula that align with industry requirements and international best practices.
(iv) **Resources**: Providing sufficient human, financial and material resources to support teaching and learning activities.
(v) Stakeholder Engagement

3.3 Effective implementation

Requires the active involvement of various stakeholders, including: -

i) **Government Agencies:** Collaboration with professional and training regulatory bodies play a pivotal role in setting and enforcing standards.
ii) **Industry Partners:** Collaborating with employers to ensure training programs meet labour market needs.
iii) **Educational Institutions:** TVET institutions must commit to continuous improvement and compliance with standards.
iv) **Community and Students:** Engaging the community and students to ensure programs are accessible and meet learners' needs.

3.4 Establishing a Baseline

Before implementing new standards, it is crucial for institutions to establish a baseline information on the current state of TVET institutions. This involves: -

i) **Assessment of Current Standards**: Reviewing existing quality standards and their effectiveness.
ii) **Institutional Audits**: Conducting comprehensive self-assessment to assess infrastructure, faculty qualifications, curricula, and student outcomes.
iii) **Data Collection**: Gathering data on enrolment rates, graduation rates, employment outcomes, and stakeholder satisfaction.
iv) Benchmarking against national and international standards helps identify gaps and areas for improvement.

3.5 Setting a Timeline

Timely implementation of TVET quality standards is critical to achieving desired outcomes. This involves:

i) **Phased Implementation**: Rolling out standards in phases to manage the process effectively and allow for adjustments based on feedback.

ii) **Clear Milestones**: Setting clear, achievable milestones and deadlines for each phase of implementation.
iii) **Monitoring Progress:** Regularly monitoring progress against the timeline to ensure adherence and address any delays promptly.

3.6 Continuous Monitoring and Evaluation

Continuous monitoring and evaluation are essential to ensure that TVET institutions comply with quality standards and make necessary improvements. This will include:

i) **Regular Inspections**: Conducting periodic inspections of institutions to assess compliance with standards.
ii) **Performance Metrics**: Establishing performance metrics to measure the effectiveness of training programs and institutional performance.
iii) **Feedback Mechanisms**: Implementing mechanisms for receiving and acting on feedback from students, faculty, and industry partners.

3.7 Accountability

Ensuring accountability at all levels is crucial for the successful implementation of quality standards. This will involve:

(i) **Institutional Accountability:** TVET institutions shall be held accountable for meeting quality standards through performance reviews and audits**;**
(ii) **Individual Accountability:** Ensuring that faculty and staff are accountable for their roles in maintaining quality;
(iii) **Reporting:** TVET institutions will be required to report on their compliance with standards and improvement efforts annually;
(iv) **Capacity Building:** TVET institutions shall be required to ensure the capacity building of staff is vital for sustaining quality improvements;
(v) **Professional Development:** The TVET institutions shall be required to continuously offer professional development opportunities and linkages to industry for faculty and administrative staff;
(vi) **Technical Support**: Providing technical support and resources to institutions to help them meet and maintain standards.

3.8 Implementation

The implementation of TVET quality standards in Tanzania requires a comprehensive approach that addresses institutional readiness, stakeholder engagement, baseline establishment, timely implementation, continuous monitoring, capacity building, and flexibility. By adhering to these principles, Tanzania is expected to enhance the quality and relevance of its TVET system, thereby improving the employability of its graduates and contributing to the country's economic development.

4.0 APPENDICES

Appendix 1: Demand by Global Development

1.1 Enhanced Relevance of TVET in Economic Development

The 4IR has ushered and mainstreamed industrial processes that quickly react to rapid changes in market demand for technology and services. This is driven by industries that have highly integrated digitization and automation of all their aspects – using modern technologies such as intelligent robots, Artificial Intelligence (AI), Augmented Reality (AR), Virtual Reality (VR), Internet of Things (IoT), Internet of Service (IoS), and 3D printing – just to mention a few. Worldwide, these revolutions are driven by highly adaptable Technical and Vocational Education and Training (TVET).

These changes and advancements in technology make it critically important that TVET graduates must be equipped with skills and knowledge that match the demands of current and future workplaces. The most critical skills are those for enabling/ensuring entrepreneurship, self-employment and/or employability, in the rapidly modernizing sectors. To achieve this, there is an urgent need for TVET standards to take account of technological changes, as well as the ICT (including AI), which are driving rapid automation that is continuing to completely and radically change the role of humans in most industries.

Consequently, the Standards prioritize a focus on preparing a high-skilled workforce that can quickly learn and adapt to technological revolutions. This calls for very modern TVET Quality Standards that are also updated continuously. This is because, the demand from industry, for TVET skills and expertise, is changing very rapidly under the 4IR. Therefore, continuous review and improvement of quality standards, as well as the TVET syllabuses, cannot be overemphasized.

However, what is critically important for all stakeholders, but more importantly the national leaders – is to eliminate the inherent "discrimination" of TVET. The sector is heavily and wrongly regarded as *inferior compared to academic education, and/or is for school drop-outs*. NACTVET shall mobilize political and policy action to change this negative mindset. A starting point will be a serious public awareness campaign.

The purpose of the quality standards is to enable NACTVET to ensure that the TVET sector is operating at the front-line of technological advancements in response to increased competition in the global economy – leading to rapid changes in competence and skills required in the labour market. This requires dynamic and regular improvements in the quality and relevance of TVET. It is from this perspective that these upgraded Quality Standards, Audit and Assurance, give special attention to the enhancement of synergies between TVET institutions and industry.

1.2 Very Dynamic and Globalized Labor Market under the 4IR

The World Economic Forum's *Future of Jobs Report 2023*, estimated that *44% of workers' current skills will be obsolete in the next five years* – which means that more than 40% of those (2023) workers require retraining to retain employment by 2027. This indicates that, at the moment, skills relevance in the job market does not exceed 12 years. It is most likely that this gestation period will go down even further due to the high speed at which new technologies and products are being created under the 4IR. This calls for a TVET that focuses on building skills for (i) future jobs, ii) market responsive TVET and (ii) life-long learning.

a) **Training for Future Jobs**: Tanzania faces a significant challenge of widespread unemployment and underemployment among graduates from non-TVET education systems, including universities. This affects graduates at all levels, contrasting with the high employment rates of skilled craftspeople ("fundis") trained through apprenticeships. TVET graduates are also negatively affected by a mismatch between their skills and the rapidly changing needs of the industry. To address this critical issue, TVET standards must undergo timely and continuous and strategic improvements.

b) **Ensuring Market-Responsive TVET**:

i) **Regular reviews and studies**: to be conducted continuously so as to identify future skills demanded by industries and investment markets. So as ensure that TVET programs are at all times aligned with evolving technological advancements and labor needs.

ii) **Curriculum modernization in response to market demands**: TVET programs, syllabuses, and standards will be subject to timely reviews, upgrades, or changes. This ensures graduates possess the relevant skills and knowledge to be competitive in the job market.

iii) **Global Employability Focus**: The goal is to equip graduates with the skills and knowledge to be not only employable domestically but also competitive in international markets (both current and future). This recognizes the increasing globalization of jobs and investment opportunities.

(i) Need for Lifelong Learning:

The Fourth Industrial Revolution (4IR) and the digital revolution are rapidly reshaping skill requirements across numerous occupations. This rapid pace of change demands a shift from traditional, terminal training to a focus on lifelong learning. Nearly all professions experience rapid skillset transformations, with some skills becoming obsolete and new ones emerging. Lifelong learning empowers TVET graduates to adapt, upskill, or re-skill within their chosen profession or even transition to entirely new careers. By prioritizing lifelong learning and adopting flexible training models, TVET systems can equip graduates with the adaptability and skills necessary to thrive in an ever-evolving job market. Therefore, so as to build a lifelong learning culture, TVET programs must: -

(i) Foster a growth mindset and develop self-directed learning skills to equip graduates with the capacity for continuous learning.

(ii) Move beyond solely college-based training focused on current skills. Instead, the focus should shift to preparing graduates for lifelong learning through collaboration with industries to integrate work-based learning opportunities into TVET programs and leveraging community resources to provide practical learning experiences.

(iii) Establish a framework for recognizing and certifying industry-based, work-based, and community-based lifelong learning experiences.

1.4 Rapid Modernization of Technologies for Training

The TVET standards in Tanzania are designed to leverage rapid technological advancements for efficient and effective training. This empowers institutions to deliver high-quality, internationally relevant training at a reduced cost of time, resources, and finances. These improvements emphasize the positive impact of technology on TVET while acknowledging potential challenges. Here are two prime examples of digital technology: -

a) **Digital Libraries**: Easy access to digital libraries, even by moderately priced smartphones, makes physical libraries less essential. The Advantages:
   - **i)** Enables instant and affordable access to the latest learning materials for students and instructors,
   - **ii)** Very low cost per individual user, and
   - **iii)** Frees up resources previously allocated to buildings, furniture, and physical books.

b) **Virtual and Extended Reality (VR/XR) Labs:** VR/XR labs are becoming a global standard in TVET due to their numerous benefits:
   - i) Cost-effective: They offer significantly lower investment and consumable costs per student training hour compared to traditional methods.
   - ii) Adaptability: VR/XR labs can be easily and cheaply upgraded to reflect changes in industry-demanded skills or equipment modernization.
   - iii) Personalized Learning: Students can learn at their own pace and repeat practices as needed for optimal learning.
   - iv) Enhanced Assessment: VR/XR labs automatically collect performance data, allowing for immediate feedback for students and instructors.

Appendix 2: Benchmarking with Best Practices at the Global Level

2.1 An overview

The Tanzania TVET Quality Assurance Standards are meticulously benchmarked against global best practices to ensure the highest level of technical and vocational education and training. These standards are designed to elevate Tanzania's TVET sector by aligning it with international excellence, thus fostering a competitive and skilled workforce. The table below highlights some of the key criteria and the corresponding global best practices that serve as benchmarks for our standards.

Criteria/ Standard	Best Practices	Country
Vision, Mission and Strategy	**Vision** defines your relevance – by describing the future you want to contribute to. Examples of the best Vision Statements - Microsoft = "***A computer on every desk in every office and home.***" VETA **= *"Tanzania with sufficient and competent artisans"***	USA and Tanzania (VETA)
	Mission defines your contribution towards realizing the Vision. As also illustrated by Microsoft, the mission is about your contribution = "***to provide the software that will enable people and businesses throughout the world to realize/benefit from the full potential of their computers***	**USA**
	Strategy should focus on what needs to be done to deliver the mission - setting specific targets, investments, action, and measurable indicators - for achieving the mission.	**South Africa and Global**
Governance, Leadership and	**Strong Organizational Structure, that clearly:** (a) **Define Roles and Responsibilities –** with	

Criteria/ Standard	Best Practices	Country
Management	Clear delineation of roles, responsibilities, and authority at all levels of the institution. (b) **Apply Accountability Mechanisms:** such as regular audits and performance evaluations.	South Africa and Global
Human Resources	TVET instructors have **substantial real life industry experience** and pedagogical training.	Germany
	TVET instructors are involved in research and innovation – and thus have a deeper understanding of their Technical and Vocational specialization.	Finland
Education and Skills Program	**a)** Programs are based on, and driven, by Industry needs. **b)** Not less than 70% of training is through practical hands-on learning.	Germany
	c) Industry players are involved in curriculum development, to ensure maximum focus on competencies required by the industry (currently and in the future).	Switzerland
		UK
	d) Relevant sectoral ministries are involved in the development and/or review of curricular	Japan
	e) The Syllabuses are timely reviewed to up-grade training to always focus and cover cutting-edge technologies.	South Korea
Institutional Effectiveness	**f)** Programs prioritize the development of key soft skills to enhance employability and/or entrepreneurship for/by the graduates.	Australia
	g) At least 30% of training is based in the industry and uses apprentice approaches of training (*enabling early specialization*).	Australia
	h) Training is focused on acquiring competencies through project-based learning	Finland
	i) Personalized Education: flexible individualized pathways and plans tailored to the needs and career aspirations of students (individually and/or in groups).	Finland
	j) TVET programs are regulated at Provincial levels, to ensure that training meets the NEEDS of local industry and natural resources.	Canada
Student Recruitment, Admission, Certification	**k)** Certifications for each sector are standardized at the national level and all are recognized by all industrial players.	Germany
	l) Lifelong Learning: Singapore's ***Skills Future*** initiative promotes continuous learning and skills upgrading across all ages.	Singapore
Physical Resources	**m)** Adequate funding is guaranteed for TVET institutions to ensure high-quality	South Korea and General International

Criteria/ Standard	Best Practices	Country
	infrastructure and resources.	Guidelines (UNICEF/WHO, UNESCO, etc.)
Financial Resources	**n)** PPP schemes are used to enable private sector investment in TVET,	France
	Availability of resources for continuous improvement – is ***ring-fenced*** by Act of Congress.	USA
Digitization	**Virtual and Augmented Reality (VR/AR)**: Use of VR and AR for immersive training experiences, allowing students to practice complex tasks in a simulated environment. Also known as, **Digital Twins:** Creation of digital twins (virtual replicas) of physical assets and systems for advanced training in areas like engineering and construction.	Germany Norway
	AI and Data Analytics: Utilizing AI and data analytics to personalize learning experiences and track student progress more effectively.	Norway
	Smart Campus: enhanced smart campuses, though, for example: high-speed internet, IoT devices, and digital collaboration tools.	South Korea
Keeping up with Technology	Continuous assessment and updates to curricula based on technological advancements and industry needs, to ensure timely modernization of training.	Germany

Appendix 3: Determining Admission Capacity of a TVET Institution

To calculate the admission capacity (CCC) of a college for a specific program, we can use a formula that considers key determinants such as infrastructure, trainer-to-student ratio, resource availability, and safety regulations:

$$C = \min\left(\frac{I}{S}, \frac{T}{R}, \frac{M}{Ms}, P\right)$$

Where:

C = Admission capacity of the program.
I= Total infrastructure capacity (e.g., available seats in classrooms, lab stations, workshop equipment).
S = Space required per student (e.g., area or workstation size based on standards for specific programs).
T = Number of qualified trainers available for the program.
R = Trainer-to-student ratio required (e.g., 1:20 for practical programs, 1:45 for business programs).
M= Available training materials/resources (e.g., machines, tools, consumables).
Ms = Materials required per student (based on curriculum needs).

P = Placement or internship opportunities available (for programs requiring industry placements).

Explanation of the Formula:

The formula ensures that capacity is determined by the limiting factor across multiple constraints.

1. I/S: Ensures that infrastructure is not overcrowded
2. T/R: Guarantees compliance with trainer-to-student ratios
3. M/Ms : Accounts for resource sufficiency for quality training
4. P: Considers the availability of industry placements or practical opportunities, particularly critical for programs with mandatory hands-on components

Suppose a TVET institution is determining capacity for an engineering program:

Total classroom and workshop capacity (I) = 100 seats.
Space required per student (S) = 5 seats.
Number of trainers (T) = 10.
Required trainer-to-student ratio (R) = 1:20.
Total machines available (M) = 0.
Machines required per student (Ms) = 1.
Internship opportunities (P) = 15.

Step 1: Using formula, calculate components

$$C = \min\left(\frac{100}{5}, \frac{10}{20}, \frac{20}{1}, 15\right)$$

Step: Identify the Limiting Factor

C=min (20,10,20,15)
Infrastructure Capacity = 0 students.
Trainer Capacity = 10 students.
Resource Capacity = 0 students.
Placement Capacity = 15 students.
The **limiting factor** is **trainer capacity**, which allows for only **10 students**.

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