Work, Innovation and Skills Competition Based Learning System

Development

Concept and Project Plan Outline

Focus: *Development of* ***Internationally Competitive Skilled Persons.***

Prepared by:

Office of the Director General

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Executive Summary

The Technical Education, Vocational and Entrepreneurship Training (TEVET) system has been operating in an environment influenced by Government policy measures and other key factors which have included the following:

a) Industrialization and Job Creation Strategy[1] with due reference to Vision 2030 and industrialized or developed nation status by 2064;
b) Introduction of the Vocational Education and Training as part of the General Education system, with TEVETA providing the required assessment and certifications services;
c) Signing of a multi-stakeholder National Skills Development MoU whose purpose was to reduce *"the skills gap between graduates from training institutions and expectations from industry in order to enhance productivity, employability, innovation for Zambia's economic development;"*
d) The national and global level interplay of population growth, climate volatility and sustained innovations in technology;

This document presents the Concept and Project Plan outline for a regulatory initiative to enable the Technical Education, Vocational and Entrepreneurship Training Authority (TEVETA) and TEVET service providers respond to environmental opportunities and threats. The initiative is focused on re-engineering the system for delivering or providing Technical Education, Vocational and Entrepreneurship Training (TEVET) services so that learning takes place mainly through a combination of **Work, Innovation, and Skills Competitions.** This is to involve **simulation of industrial, commercial** and/or **public sector management experiences** within the various learning environments, using **"School-to-Work Skills" Clubs and related Cooperative Enterprises** and a TEVET curriculum linked national skills competition system as the core elements of proposed learning system. The primary objective being the development of **internationally competitive skilled persons** instilled with the following attributes among others:

a) International skills excellence standard performer
b) Critical thinker
c) Entrepreneurial and Innovative problem solver
d) Effective and ethical leader
e) Productive and responsible Citizen
f) Science, Technology, Engineering Mathematics (STEM) literate
g) Climate change resilience and adaptation agent

The **Work, Innovation, and Skills Competitions** learning system shall **integrate internships** within the learning activities so as to **progressively escalate the performance** of learners from the competences associated with Labour market entry learning outcome standards inherent in national curricula, to the international skills excellence standards essential for a TEVET learner or graduate to secure a job if pursuing the **salaried worker career pathway**, or to competitively secure an Order for a product and/or service from a customer, if pursuing the **entrepreneur/employer career pathway**. The initiative is a measure to actualize TEVETA's Vision for Zambia which is: ***A world class Technical Education, Vocational and Entrepreneurship Training (TEVET) system that drives skills empowerment for sustainable national development."*** Local and international best practices have guided conceptualization of the idea. Proposals have been for re-structuring and re-organizing the TEVET service delivery systems by qualification level, specialization and institutional excellence. A variety of financing sources will be deployed to support the re-engineering process. A number of activities have also been identified which would the result of having a TEVET system for which learning takes place through a combination of Work, Innovation, and Skills Competitions.

[1] Strategy Paper on Industrialization and job creation (2012) Ministry of Commerce, Trade and Industry.

1.0 Introduction

This document presents the Concept and Project Plan outline for a regulatory initiative to re-engineer the system for delivering or providing Technical Education, Vocational and Entrepreneurship Training (TEVET) services so that learning takes place mainly through a combination of **Work, Innovation, and Skills Competitions.** This is to involve **simulation of industrial, commercial** and/or **public sector management experiences** within the various learning environments, using **"School-to-Work Skills" Clubs and related Cooperative Enterprises** as the core elements of proposed learning system. The primary objective being the development of **internationally competitive skilled persons** instilled with the following attributes among others:

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Table 1: Performance Descriptor comparison of national curricula and related qualification, with WorldSkills International Excellence standard.

National curriculum Competence: ***the ability to:***	**WSI skills Excellence:** ***the ability to:***
Perform routine tasks as trained	Perform routine and **exceptional tasks**
Respond satisfactorily where the demands and context are clear	Respond satisfactorily or **better where the demands and context are ambiguous**
Perform satisfactorily under control and supervision	Respond satisfactorily or **better without control or supervision**
Perform satisfactorily in predictable circumstances	Respond satisfactorily or **better in unpredictable circumstances**
Likely performance standard in a typical skills competition of WorldSkills International	
Performance of this nature should achieve at least ***10% of*** *set Excellence standard*	*Performance of this nature should achieve at least* ***90%*** *of set Excellence standard*
Source: *Jenny Shackleton (Jan. 2017) – Standards and Assessment Adviser WorldSkills International – Training workshop presentation for WorldSkills Zambia/TEVETA Skills Competition Advisers/Skill Assessors*	

The proposed re-engineering of the TEVET system is in response to TEVETA's Vision for Zambia as set by the Board of the Authority during the formulation of 2017 to 2019 Strategic Plan. The Vision was crafted as follows:

"A World-class Technical Education, Vocational and Entrepreneurship Training (TEVET) System that Drives skills empowerment for sustainable Development."

In setting the Vision, the TEVETA Board was responding to Government's policy measures and other key external environment factors which included the following:

e) Industrialization and Job Creation Strategy[2] with due reference to Vision 2030 and industrialized or developed nation status by 2064;
f) Introduction of the Vocational Education and Training as part of the General Education system, with TEVETA providing the required assessment and certifications services;
g) Signing of a multi-stakeholder National Skills Development MoU whose purpose was to reduce *"the skills gap between graduates from training institutions and expectations from industry in order to enhance productivity, employability, innovation for Zambia's economic development;"*
h) The national and global level interplay of population growth, climate volatility and sustained innovations in technology;

TEVETA's stake and interest in responding to various Government policies and legislation pieces is guided by its statutory mandate as provided for under Section 5 Sub-Section 1 of Technical Education, Vocational and Entrepreneurship Training (TEVET) Act No. 13 of 1998. which prescribes the general function of TEVETA as follows: *"to regulate, coordinate and monitor technical education, vocational and entrepreneurship training in consultation with industry, employers, employees and other stakeholders."* Appendix 1 provides the specific functions of TEVETA.

Among the enabling inputs in this TEVET system re-engineering initiative will be adopting the **Unit of Competence** *(ie. for learning content associated with a specific skill set recognized and tradable in the Labour market)* and the corresponding **Skills Award[3]** *(ie. for learning achievement authentication)* as the smallest building block for a TEVETA curriculum based Qualification.

2.0 Rationale:

The national development aspirations mentioned earlier have been set against a number of skills development related binding constraints which have included the following:

a) skills gap between graduates from training institutions and expectations from industry in order to enhance productivity, employability, innovation for Zambia's economic development that have been flagged by industry;
b) Sustained increase in the of number of Secondary Schools offering VET from 2017 onwards will grow from 32 to a total of 252, while for the Trades Training institutions the number will grow by at least three (3) to a minimum total of seven (7). This will give a minimum total of 259 learning institutions offering Secondary School VET, with the number of Trade Test candidates approaching 17,000 by December 2018, from just under 2,000 at inception in 2014. resulting in a combined Trade Test Assessment candidature total of about **28,000** by 2018, given that for 2016 post-Secondary School TEVET Trade Test candidature was **11,376**. The overall TEVETA Assessment and Certification candidature for all qualification levels, will therefore be approaching **43,000** by December 2018. It is envisaged that the Authority's annual assessment and certification capacity for Trade Test alone should by 2021 least be 2 million. This is estimate is based on the fact the 2015 total enrolment for pupils between Grade 5 and Grade 12 was about 1.9 million.
c) A need to provide authentic learning environments mimicking industrial, commercial and/or public sector management workplace experiences for all learning pathways;

[2] Strategy Paper on Industrialization and job creation (2012) Ministry of Commerce, Trade and Industry.
[3] ***Skills Award*** *– This an instrument for* ***authenticating learning achievement*** *associated with the smallest set of competences within a TEVETA curriculum that is recognized and tradable in the Labour market.*

d) International skills excellence standards gap of the Zambian TEVET system and industry exposed by Zambia's first time participation in the 2015 world skills championships organized every two (2) years by WorldSkills International;

e) The emergence of a population group with prime demand for TEVETA and Training provider services comprising age group 5 years to 39 years, with an estimated population of 10 million according to the 2014 Labour Force Survey Report;

f) Low educational attainment levels and low access to (formal) skills training by Employed persons within the Labour force population, as highlighted by the 2014 Labour Force Survey Report where only 3.7% had a certificate educational attainment level, and 18.6% out of a total 5,859,225 Employed Persons had received (formal) skills training, implying that 81.4% (ie. 4,769,409) had not;

g) A near stagnation pattern of two (2) Labour force population groups that are supposed to play lead roles in the industrialization and job creation capacity development of any economy. These population groups are: Self Employed persons proportion and Employer *(ie. Entrepreneur)* proportion; *(**NB**. A serious constraint on productivity and innovation for the Zambian economy);*

Table 2 presents the statistics in question for the period 2008 to 2014

Table 2: 2008 to 2014 growth trends for lead actor populations for industrialization and job creation

Year	Total Employed Persons	Proportion of Self-Employed Persons	Proportion of Employer *(ie. Entrepreneurs)*
2008	**4,606,846**	2,117,103 [44.1%]	14,124 [0.28%]
2012	**5,499,673**	2,428,105 [38.5%]	15,384 [0.28%]
2014	**5,859,225**	2,432,12 4 [41.4%]	20,734 [0.4%]

Appendix 4 provides a framework illustrating the TEVET/skills development problem relative to 2030 and 2064 national development aspirations.

3.0 Background to Work, Innovation and Skills Competition based learning system development.

The idea of developing a **Work, Innovation and Skills Competitions** based learning system is based on the knowledge and experiences TEVETA has accumulated since its inception in 2000. **Appendix 2** provides some historical highlights of innovative practices which had some or all the elements of the proposed learning system. These experiences have been complemented by literature review of international best practice which involved the 2015 UNESCO General Assembly Recommendation on TVET, and a comparator sample made up of the following countries:

a) Finland;
b) Malaysia;
c) Singapore;
d) Sweden,
e) United Kingdom.

Appendix 3 provides Definitions and Conceptual information based on TVET profiling of the above listed countries.

4.0 Functional elements of the Work, Innovation and Skills Competition based Learning system

The framework for the **Work, Innovation and Skills Competition based Learning system** has been conceptualized as a closed loop with regard to the flow of people and/or activity information. **Appendix 5** provides the graphical illustration of the system operating in a closed loop cycle, with respect to the flow of people, knowledge, and/or information.

The main functional or operational elements for the Work, Innovation and Skills Competition based Learning system making up the process cycle will be as follows:

1. District or sector economic activity space in which skills excellence standards are deployed through trading activities;
2. Various Learning environments through which TEVET services are accessed;
3. "School-to-Work" Skills Clubs and related Cooperative Enterprises – (**NB.** *operating as co-curricular activities simulating workplace environments and simultaneously providing integrated Career exploration, Open learning and learner directed Formative assessment experiences;)*
4. A TEVET curriculum linked National skills competition system organized around a league of "School-to-Work" Skills Clubs and related Cooperative Enterprises - *incorporating TEVETA's Recognition of Prior Learning (RPL) Assessments at all stages of the competition up to national team selection stage for an international skills competition;*
5. An international skills competition event *(eg. the international skills competition organized by WorldSkills International every two years.);*
6. Post international skills competition knowledge and experience sharing starting at national level cascading down to the learning environment;
7. Skills Competition participant re-entry and participation in district or sector economic activities after each competition stage; or after each cascading de-briefing stage following an international skills competition event;
8. Skills practitioners or experts from district economic activities going into learning environments (eg. as mentors, trainers, etc.)
9. Learners and/or trainers participating in district economic activities through industrial visists.
10. Multi-stakeholder Skills Advisory Groups (SAGs);
11. Post-international skills competition event Skills Excellence legacy programme for incubating internationally competitive suppliers of goods and services to domestic households, public and/or private sector in, as well as new tax payers;
12. A stakeholder collaborative national Monitoring and Evaluation system that will revolve around the World Youth Skills day on 5th July *(ie. for technical or technology biased skills)*, and revolve around the third week of November when the Global Entrepreneurship Week is commemorated *(ie. for entrepreneurship, innovation and leadership biased skills)*.

World Youth Skills day on 15th July, and the Global Entrepreneurship Week every second week of November.

5.0 Development or "construction" of the Work, innovation and Skills competition based Learning system

The **Work, innovation and Skills competition based Learning system** will be mainly developed or "constructed" through the Annual Work Plan and Budget activities of all the Divisions of TEVETA, with the TEVET Research and

Innovation Division providing the experimental platforms for interrogating and developing new ideas into practical solutions for deployment. It is for example envisaged the Division will explore the possibility of making "School-to-Work Skills" Clubs and related cooperative enterprises as integral elements of TEVETA's Formative or Continuous Assessment system contributing to final certification. The activities will cover technical, entrepreneurship and leadership skills development. TEVETA has commenced an advocacy initiative public and private sector reserve procurement policies and schemes which can provide markets for the cooperative enterprises to support an entrepreneur incubation system using the **L**earn-**W**ork – **E**arn, **P**lay and **E**thical **P**ractice (**LWEPEP**) principle.

5.1 Historical outline on development of a TEVET curriculum linked National skills competition system.

Development of a TEVET curriculum linked National skills competition system commenced with stakeholder sensitization which was initiated by the WorldSkills Zambia Secretariat in partnership with TEVETA's Assessment and Qualifications Division – Trade Test Assessment Unit, through participation in the 2016 Annual General Meetings of the following respective professional bodies:

a) Home Economics Association of Zambia *(**NB.** Ministry of General Education subject teacher association);*
b) Zambia Association of Technology Education (ZATE); *(**NB.** Ministry of General Education subject teacher association for Design and Technology)*
c) Engineering Institution of Zambia;
d) Computer Society of Zambia;

In addition, between December 2015 and February 2017, three (3) orientation and training workshops focused on national skills competition system administration capacity development, were organized with lead facilitation by respective experts listed below from WorldSkills International:

a) Dr Michael Fung - Vice Chairperson of the Competitions Committee;
b) WorldSkills South Africa – led by their Technical Delegate to WorldSkills International;
c) Mr Kim Holm - Mechatronics skills competition expert from FESTO International[4] and former member of WorldSkills Finland;
d) Ms Jenny Shackleton Standards and Assessment Adviser for WorldSkills International;
e) Mr Richard Johnston – Chief Expert Aircraft Maintenance Engineering – WorldSkills International.

The foregoing activities were complemented by career talks to three (3) Lusaka based schools by Ms Kaleen McCabe an international advocate for Secondary School Vocational Education and Training, who also happened to be a USA based building contractor, Producer for Do-It-Yourself TV Programmes in the USA, and industry partner for Skills USA.

A cumulative number of over 1,500 Secondary School VET teachers, TEVET institution trainers, and industry professionals were sensitized and/or trained through these activities.

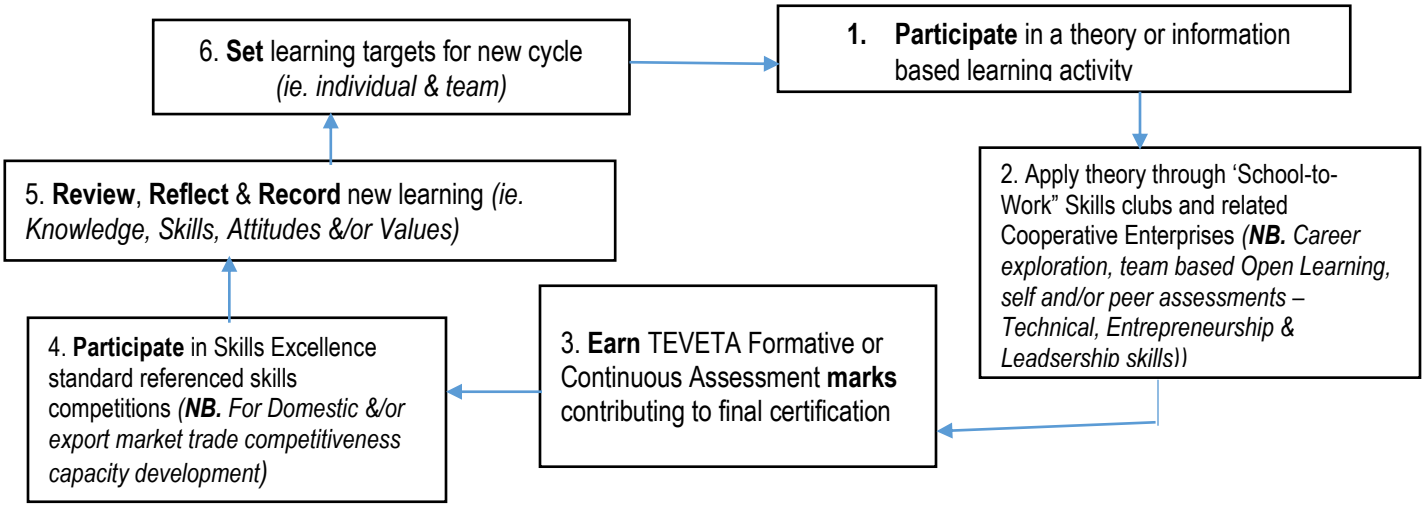
5.2 "School –to – Work" Skills Clubs and related Cooperative Enterprise sub-system

The **"School –to – Work" Skills Clubs and related Cooperative Enterprise sub-system** will be the catalyst and flagship element for stimulating the **Work, Innovation and Skills competitions** based learning system. Figure 1 provides an illustration of the career exploration, learning and assessment processes which will be embedded in the club activities. The Cooperative Enterprise element has been designed to provide opportunities for instilling practical

[4] **FESTO international** is a German based international company specializing in the design and manufacture of factory automation equipment, and associated training equipment. FESTO was the first and is currently the longest industry partner of WorldSkills International;

technical, entrepreneurship and leadership skills through production, service provisions and/or trading activities within the micro-economy of the learning institution and/or that of the district economy.

Figure 1: Basic Learning cycle for the "School –to – Work" Skills Clubs and related Cooperative Enterprise sub-system of the **Work, Innovation and Skills Competition based Learning system** *(**NB.** Learner experience perspective or view)*



6.0 How will the Work, Innovation and Skills Competition based Learning system operate?

As a regulatory instrument, the "School –to – Work" Skills Clubs and related Cooperative Enterprise programme shall be administered and coordinated through multi-stakeholder **Skills Advisory Groups (SAGs)** existing and operating at various levels of regional and national development economic activity. TEVETA registered training institutions inclusive of upper primary Schools and Secondary schools offering Vocational Education and Training, as stakeholder aggregation and coordination focal points.

6.1 Geographical and National skills competitions leading towards an international skills competition

1. Introduce learners to the basic knowledge, skills, attitudes and values pertaining to a professions, occupation, and/or career pathway through learning institution environments; *(ie. formal and non-formal);*

2. Establish learning institution based thematic skills clubs[5]; *(eg. Construction and Building services skills clubs, hospitality skills clubs, design and manufacturing skills)*

   *{**Note:** If viable models of deriving reliable and valid Continuous Assessment marks are developed using TEVET Research and Innovation efforts, Skills clubs will become mandatory for all TEVET learners, with some of the assessable projects financed through the TEVET Fund on an **entrepreneurship and innovation project based matching grant principle – that will also include commodity based barter payment system for low income communities**}*

[5] **Note**: *For non-formal learning environments such as those to be found in youth aggregation institutions such churches and/or local authority community development centers, the learning environments could be part of youth development programme initiatives;*

3. Conduct **learning institution level team based skills competitions** *(eg. using the inter-house sports competition principle - designed to select the best team or teams to represent the school at the next level of a competition, which in this case will be the Local Authority Ward)*;

4. Conduct Local Authority **Ward level skills competitions** to select teams for Constituency level skills competitions; *(**NB.** Will provide spin off opportunities for local talent identification to support the work of Ward Development Committees);*

5. Conduct **Constituency level skills competitions** to select teams for District level skills competitions; *(**NB.** Will provide spin off opportunities for local talent identification to support the work of Constituency level Development Committees)*

6. Conduct **District level skills competitions** to select teams for the Provincial level skills competitions; *(**NB.** Will provide spin off opportunities for local talent identification to support the work of District Development Committees)*

7. Conduct **Provincial level skills competitions** to select teams for the national level skills competitions; *(**NB.** Will provide spin off opportunities for local talent identification to support the work of District Development Coordinating Committees)*

8. Conduct **national level skills competitions** to select teams for international level skills competitions; *(**NB.** Will provide spin off opportunities for local talent identification to support the work of national industry and the National Development Planning Ministry)*

9. Prepare for and participate in relevant **international skills competitions** such as those under WorldSkills International.

6.2 International Skills Competition event

This will be governed by regulation and rules of WorldSkills International or any other similar body. Winners from the national skills competition with acceptable international skills excellence performance standards will make up the national skills team. According to prevailing rules and regulations of WorldSkills International, the makeup of a national team per team shall be as follows: Competitor (ie. TEVET learner), Team Leader *(ie. Competitor's mentor/chaplain)*, and skills expert *(ie. who will be part of judging team during a completion)*. The overall national skills team/delegation will include the following:

a) Official Delegate – *of a member country*;
b) Technical Delegate – *of a member country*;
c) Technical Delegate Assistant
d) Communications Officer
e) Team psychologist
f) Official Observers
g) Observers

Note: During the competition, roles a) to d) are integrated in the operational structures of WorldSkills International

Key documents for each skill on the competition floor, with national curriculum implications includes a Technical Description and an associated Infrastructure list.

Prior to a competition, a Competition Preparation Week is organized in the hosting country. Attendance is mandatory if a country is fielding competitors.

6.3 Learning and Innovation loop

1. Hold a **national level post-mortem meeting** complemented by skills demonstrations where feasible, involving international skills competition participants, runner-up teams and other key stakeholders to learning transfer;

2. Establish national level Skills transfer and infusion teams

3. Facilitate provincial level information and experience sharing by national Skills transfer and infusion teams through skills shows;

3.1 Facilitate entrepreneurship and innovation training for national Skills transfer and infusion teams

4. Establish provincial level Skills transfer and infusion teams;

5. Facilitate district level information and experience sharing by provincial Skills transfer and infusion teams through skills shows;

5.1 Facilitate entrepreneurship and innovation training for provincial Skills transfer and infusion teams

6. Establish District level Skills transfer and infusion teams;

7. Facilitate Constituency level information and experience sharing by district Skills transfer and infusion teams through skills shows;

7.1 Facilitate entrepreneurship and innovation training for district Skills transfer and infusion teams

8. Establish Ward level Skills transfer and infusion teams;

9. Facilitate Ward level information and experience sharing by Ward Skills transfer and infusion teams through skills shows;

9.1 Facilitate entrepreneurship and innovation training for Ward level Skills transfer and infusion teams

10. Establish Village or Township level Skills transfer and infusion teams;

11. Facilitate Village or Township level information and experience sharing by Village or township Skills transfer and infusion teams through skills shows;

11.1 Facilitate entrepreneurship and innovation training for Village or township level Skills transfer and infusion teams

7.0 Project Outline for development of the Work, Innovation and Skills Competition based learning system.

Re-engineering the TEVET system so that the bulk of the learning takes place through a combination of **Work, Innovation and Skills Competitions** will be done using a Project approach. This section presents the Project Output within the context of TEVETA's 2017 to 2019 Strategic Plan as well as the Seventh National Development Plan. Appendix 9 provides the list of the Strategic Objectives.

7.1 The System Development Project Output:

A **Work, Innovation and Skills Competition based Learning system** for ensuring sustained development and supply of **internationally competitive skilled persons** to district economic activities developed and piloted by 31st December 2019. *(**Ref.:** Overall Strategic Objective and thematic Strategic Objectives of the Interim 2017 to 2019 TEVETA Strategic Plan)*

7.2 National development impact targets for a Work, innovation and Skills Competition based Learning TEVET system.

Development and deployment of the **Work, Innovation and Skills Competition based learning system** should enable the TEVET system to impact national development in a number of ways. Among these will be the following:

a) Increase the proportion of Employed persons within the Labour Force population that has received quality assured skills training pertaining to Labour market entry competence standards;

b) Increase the proportion of Self-Employed persons with internationally competitive technical and entrepreneurship skills standards;

c) Increase the proportion of Employers/Entrepreneurs with internationally competitive technical, entrepreneurship and leadership skills standards;

d) Increase the proportion of the Labour force population trained to the **medal band performance standards of WorldSkills International or equivalent**, in the following groups of skills essential to industrialization and sustainable enterprise development within a globalized and competitive trading:

   i) Construction and Building Technology;
   ii) Creative Arts and Fashion;
   iii) Information and Communication Technology;
   iv) Manufacturing and Engineering Technology;
   v) Social and Personal Services;
   vi) Transportation and Logistics;
   vii) Commercial Farming Technology; *(**NB.** National priority – not part of the WorldSkills International skills competition portfolio)*;
   viii) Water, Chemical and Energy Technology. *(**NB.** National priority – not part of the WorldSkills International skills competition portfolio);*

   *(**Ref.;** Appendix 6 for details of individual skills per category)*

The targets for the period 2017 to 2021 associated with the TEVETA's Strategic Plan and the Seventh National Development Plan represent the short term national development impact targets in as far development and supply of skilled person by the TEVET system is concerned. These have been set as outlined in the paragraphs 6.2.1 and

6.2.2. Statistics from the 2014 Labour Survey Report were used as the baseline, while the **SADC 2015 to 2063 Industrialization Strategy and Road map** to which Zambia is a signatory, was linked to Zambia's Centenary of Independence due in 2064 and then used to set the long term national development impact targets for a TEVET system whose operations will centered on learning experiences combining **Work, Innovation and Skills Competitions**. Vision 2030 represents the Medium term TEVET system national development impact targets.

7.2.1 2017 to 2019 TEVETA Strategic Plan TEVET system national development impact targets

a) Proportion of the Employed Labour force population that receives quality assured skills training to be at least **22.5%** *(ie. from 18.6% in 2014);*

b) Proportion of Self-Employed persons with internationally competitive technical and entrepreneurship skills standards to be at least **43.9%** *(ie. from 41.4% in 2014);*

c) Proportion of Employers/Entrepreneurs with internationally competitive technical, entrepreneurship and leadership skills standards to be at least **1.3%** *(ie. from 0.4% in 2014);*

d) Proportion of the Labour force population trained to the medal band performance standards of WorldSkills International or equivalent, in the following groups of skills essential for industrialization and sustainable enterprise development within a globalized and competitive trading environment is at least **1.28%** *(ie. 2014 Baseline = 0%):*

   i) Construction and Building Technology;

   ii) Creative Arts and Fashion;

   iii) Information and Communication Technology;

   iv) Manufacturing and Engineering Technology;

   v) Social and Personal Services;

   vi) Transportation and Logistics;

   vii) Commercial Farming Technology; (NB. National priority – not part of the WorldSkills International skills competition portfolio);

   viii) Water, Chemical and Energy Technology. (NB. National priority – not part of the WorldSkills International skills competition portfolio);

7.2.2 Seventh National Development Plan TEVET system impact targets

a) Proportion of the Employed Labour force population that receives quality assured skills training to be at least **25.1%** (ie. from 18.6% in 2014);

b) Proportion of Self-Employed persons with internationally competitive technical and entrepreneurship skills standards to be at least **45.5%** *(ie. from 41.4% in 2014)*;

c) Proportion of Employers/Entrepreneurs with internationally competitive technical, entrepreneurship and leadership skills standards to be at least **2.1%** *(ie. from 0.4% in 2014);*

d) Proportion of the Labour force population trained to the **medal band performance standards of WorldSkills International or equivalent**, in the following groups of skills essential to sustainable enterprise

development within a globalized and competitive trading environment is at least **2.15%** *(ie. 2014 Baseline = 0%)*:

i) Construction and Building Technology;
ii) Creative Arts and Fashion;
iii) Information and Communication Technology;
iv) Manufacturing and Engineering Technology;
v) Social and Personal Services;
vi) Transportation and Logistics;
vii) Commercial Farming Technology; *(**NB.** National priority – not part of the WorldSkills International skills competition portfolio);*
viii) Water, Chemical and Energy Technology. *(**NB.** National priority – not part of the WorldSkills International skills competition portfolio);*

7.3 Project Activities to develop and deploy the Work, Innovation, and Skills Competition based Learning system

Development of the **Work, Innovation, and Skills Competition based Learning system** will generally be done through activities in Annual Work Plans and Budgets of respective Divisions and Units of TEVETA, in line with their relevant respective mandates. The following will however be some of the specific Project activities to actualize the desired learning system:

1. Pilot "School-to-Work" Skills Clubs and related Cooperative enterprises to initiate development of the Work, innovation and Skills Competition based learning system.
   *{**NB.** Preparatory work was done in 2016 with support of UNESCO's Better Education for Africa's Rise (BEAR) Project through development of a **Manual** for School-to-Work Skills Clubs and related Cooperative Enterprises. The following were the institutions selected for Piloting:*
   a) Luangwa Secondary School;
   b) Chilanga Secondary School;
   c) Mazabuka School for Continuing Education;
   d) Chipata Trades Training Institute
   e) Choma Trades Training Institute
   f) Lukashya Trades Training Institute
   g) Mansa Trades Training Institute
   h) Nkumbi International College
   i) Ndola Girls Technical Secondary School
   j) Chileshe Chepela Special Education Secondary School
   k) National Vocational Rehabilitation Center

   ***Note:** Other Learning institutions will be availed manuals and will constitute the Control group during the pilot phase. The sample is a combination of institutions offering Secondary School VET and/or co-curricular skills club activities, those that contributed learners to the national skills team which represented Zambia at the 43rd world skills championships in Sao Paulo, Brazil in 2015.*

2. Develop and mount information campaigns for TEVET based career promotion based on use of the Work, Innovation and Skills Competition Learning systems and other TEVETA services;

3. Facilitate the sourcing and domestication of international skills excellence standards *(**NB.** through Zambia's participation in world skills championships of WorldSkills International (ie. 44th Oct. 2017 and 45th Kazan Russia in 2019) as well as national skills competitions of selected members of WorldSkills International)*;
4. Bench development and implementation of the Work, Innovation and Skills Competition based Learning system with selected member countries of WorldSkills International;
5. Facilitate and/or promote Skills shows *(**NB.** Incorporating skills competitions, Try-a-Skill Career explorations and Recognition of Prior Learning Assessments);*
6. Develop and implement Annual Work Plans and Budgets to support development and deployment of the Work, Innovation and Skills Competition based Learning system in the TEVET system;
7. Monitor and Evaluate progressive development and deployment of the Work, Innovation and Skills Competitions based learning system.

8.0 Proposal to Re-structure and re-organize the TEVET service delivery or provision system

In order to ensure successful re-engineering of the TEVET delivery system through sustained functionality of the Work, Innovation and Skills Competition based Learning system, in order to support the Life-long learning underpinning the TEVET and General Education policies respectively, it is proposed that system for TEVET service delivery be rationalized by re-structuring and introducing specializations. In is envisaged that these specializations should with sustained and innovative investments result in creation of thematic TEVET Centers of Excellence that will also act as repositories or reservoirs for international skills excellence by way of staffing and learning/training infrastructure. These Centers of Excellence should also act as part of a system for TEVET staff skills up-grading as well as Continuing Professional Development with due reference to the international skills excellence standards of WorldSkills International or similar relevant international best practice institutions. The proposed structure is based on the Zambia Qualifications Framework hierarchy as shown in Table 3. **Appendix 7** provides an illustrative framework.

Table 3: Proposed Qualification hierarchy re-structuring and re-organization of the TEVET service delivery system.

ZQF Level	Learning/Training Institution Category	Lead policy Ministry
6 - 10	Institute(s) of Applied Arts and Humanities	Ministry of Higher Education
	Institute(s) of Applied Natural Sciences, Technology and Engineering	
	Institute(s) of Applied Social Sciences	
	Institute(s) of Governance & Public Sector Management	
5 - 6	College(s) of Applied Arts and Humanities	
	College(s) of Applied Natural Sciences, Technology and Engineering	
	College(s) of Applied Social Sciences	
	College(s) of Governance & Public Sector Management	
4	Trades Training Institutes	
3	Skills Training Centers	
	On-The-Job Training systems - *for Out-of-School Youths*	
	Vocational Education and Training (VET) Secondary Schools	Ministry of General Education

9.0 Financing Strategies and 2017 financing requirements

It is envisaged that development of the Work, Innovation and Skills Competition based Learning system will be financed through sources which will include the following funding streams:

a. Government grants;
b. Skills Development Levy;
c. Regulatory service fees;
d. Fundraising projects; *(eg. Programme or activity sponsorships)*;

e. Donations
f. Donor funds;

10.0 Key enabling factors for Work, Innovation and Skills Competition based Learning system development.

10.1 **Maintenance of 2016 baseline organizational and operational capability levels** of TEVETA's operational Divisions and/or Units, with **performance enhancement through Continuous Improvement** management initiatives, re-structuring of the Development Division to establish a TEVET Research and Innovation Division to drive corporate and/or TEVET sector expansion.

10.2 Adopting the **Unit of Competence** *(ie. for learning content associated with a specific skill set recognized and tradable in the Labour market)* and the corresponding **Skills Award**[6] *(ie. for learning achievement authentication)* as the smallest building block for a TEVETA curriculum Module. Mastery in all the Modules is what will eventually lead to a full Qualification;

10.3 Development of a Government policy on Reserved Public procurement schemes for TEVET Learners and/or Graduates, to support **simulation of industry and/or commercial work place experiences within learning** environments through the **open and team based learning** activities through **"School-to-Work" Skills and related Enterprises Cooperative Enterprises**, with required supplier capability for prudent investment of public funds being developed through integrated internships driven by Skills Competitions;

10.3 Tax and non-tax incentives to the private sector to stimulate participation in **Reserved procurement schemes for TEVET Learners and/or Graduates**, to support **simulation of industry and/or commercial work place experiences within learning environments** through the open and team based learning activities through "School-to-Work" Skills and related Enterprises Cooperative Enterprises;

10.4 Skills Development Levy **fund inflow**

10.5 **Stakeholder buy-in and goodwill** cultivation for the innovation.

11.0 Conclusion

Re-engineering of the TEVET system such that the bulk of the learning takes place through a combination of **Work, Innovation and Skills Competitions**, has been designed as a response by the TEVET system to a number of social-economic factors making up the external environment of TEVETA. The idea has been informed by UNESCO's Recommendation on TVET and international best practices from local innovations the Authority has helped develop and/or explore. Local innovations have been complemented by international best practices that have demonstrated the viability of this approach to TEVET. Introduction of Secondary School Vocational Education and Training (VET) as part of the TEVET system through the 2014 General Education Curriculum policy framework, has created pressure for innovative regulatory initiatives and efforts centered on **simulation of industry and/or commercial work place environments within learning institutions**, as one way of closing the mismatch between graduates and Labour market requirements within the Zambian economy. It is envisaged that "School-to-Work" Skills Clubs and

[6] ***Skills Award*** *– This an instrument for* ***authenticating learning achievement*** *associated with the smallest set of competences within a TEVETA curriculum that is recognized and tradable in the Labour market.*

related cooperative enterprises will play catalytic role for the proposed system as the intention is to make them part of the Formative or Continuous Assessment system contributing marks to final certification. These clubs will also form the skills competition league of the TEVET curriculum linked nations skills competition system which will operate under auspices of WorldSkills International. The system will be designed to motivate progressions in individuals from the basic competence standards associated with attainment of a Qualification, to international skills standard excellence which is essential for one to competitively secure an Order from a customer. It is also the performance standard of WorldSkills International. Introduction of the proposed learning system should initiate the reversal of prevailing skilled Labour based binding constraints for industrialization and sustainable national development which has stifled efforts to improve the quality for the people of Zambia. Re-structuring and re-organizing the TEVET service delivery configuration based on skills specialization and skills excellence will be necessary to among other things help rationalize the investment of available resources. A variety of financing streams will be required to facilitate the development of the system. Investment in developing a TEVET system whose key feature are learning experiences involve a combination of Work, innovation and Skills Competitions should among other things lay a strong foundation for a TEVETA Assessment and Certification system capable of handling at least 2 million Trade Test level candidates by 2021, coming from both the Secondary School VET system and the out of school youth On-The-Job Training systems. Qualitatively, the investment should also lay a foundation for a TEVET system capable of sustainably developing and supplying **internationally competitive skilled persons** to the Zambian economy, whose attributes would include the following:

a) *International skills excellence standard performer;*
b) *Critical thinker*
c) *Entrepreneurial and Innovative problem solver*
d) *Effective and ethical leader*
e) *Productive and responsible Citizen*
f) *Science, Technology, Engineering Mathematics (STEM) literate;*
g) *Climate change resilience and adaptation agent*

Appendix 1: Statutory functions of the Authority are detailed in section 4 of TEVET *(Amendment)* Act No. 11:

(a) administer and manage the Technical Education, Vocational Entrepreneurship Training Fund;
(b) advise the Minister on the development of the quality of human resources in Zambia through technical education, vocational and entrepreneurship training;
(c) regulate and advise institutions established or registered under this Act;
(d) regulate and coordinate apprenticeship and trade testing systems;
(e) facilitate the provision of technical consultancy to institutions established or registered under the Act;
(f) facilitate the development of technical capacity in institutions established or registered under the Act;
(g) develop national curricula in consultation with stakeholders;
(h) set minimum standards and qualifications for any occupation, skill technology or trade in accordance with trends in industry
(i) provide guidelines for the development of institutional curricula;
(j) accredit local and foreign examinations to be taken by persons attending courses at an institution established or registered under the Act;
(k) regulate and conduct national examinations to be taken by persons attending courses at an institution stabled or registered under the Act;
(l) charge and collect fees in respect of examinations, assessments and other services provided by the Authority;
(m) award certificates to persons who succeed in examinations and assessment undertaken under this Act;
(n) Approve curricula and standards of certificates in institutions established or registered under this Act.
(o) register institutions
(p) cancel the registration of an institution established or registered under this Act;
(q) collect, manage and disseminate labour market information relating to technical education, vocational and entrepreneurship training;
(r) initiate, monitor and evaluate development programmes for the continued advancement of technical education, vocational and entrepreneurship training;
(s) determine the equivalencies of local and foreign qualifications;
(t) accredit and register trainers, examiners and assessors;
(u) in consultation with the Minister –
    (i) determine priority skills areas in technical education, vocational and entrepreneurship training for the purpose of enhancing social and economic development in Zambia; and
    (ii) mobilize financial and material resources for the provision of technical education, vocational and entrepreneurship training; and
(v) do all such things connected with or incidental to the functions of the Authority under this Act;

Appendix 2: Historical Highlights of Work, Innovation and Skills Competitions based learning system initiatives

From the various activities that TEVETA has carried out since its inception in 2000, the proposed combination is what has actually been obtaining in the out-of-school On-The-Job Training systems associated with informal sector economic activities as well as construction site artisan gangs or teams. For trading markets, typical examples include artisans working within the framework of urban market cooperatives, where social network based informal apprenticeship training systems operate in such a way that a learner absorbs all experiences of the trainer/entrepreneur as work orders are executed. Matriculation to an independent micro-enterprise owner/operator occurs within the same social-economic fabric. A typical construction gang or team has consists of members with skill levels varying between a team leader, and a general who is employed on a particular day. The general worker will learn through observation and practice as he/she is assigned daily tasks. Through interest and motivation, the learner will acquire competences progressively under a collaborative coaching and mentorship being provided by the members of the gang or team. With time and a number of projects, the learner will matriculate into being the team leader. As with trading market based artisans, learning through construction gang or team based activities, combines Work, Innovation and Skills Competitions, which take the form of daily task Labour performance contracts which determine the amount an individual will be paid for the day's work.

Although formal learning environments provided by registered training providers have tended to have weak links between learning, work, innovation and trade related competitions, there have been innovative institutions that TEVETA has encountered and/or worked with who have combined Work, Innovation and Competitions. These have included the following:

a) Twin Fountain Agriculture Training Institute in Kalomo, who operated a training/learning model whereby a learner once selected only paid the Registration fee. He/she was then assigned an horticultural plot for vegetable production which facilitated application of classroom theory into practice in a coherent and structured manner. The Training Institute brokered and secured market linkages for the produce. Each student had an account with the Institute against which sales money was sort of banked after each selling event, but credited against the Tuition and Board Fees account. Upon completion of the training, the learner/graduate was given any surplus against the total sales over the training programme period;

b) Mobile Mission Vocational Training Center – Ndola a Community based TEVET service provider based in the Monkey Fountain Zoo area of Ndola, participated in an Entrepreneurship-Training of Trainer programme which TEVETA facilitated between 2003 and 2005 with financing by the Sector Programme Support which was provided by the Danish Government, as part of the multi-donor TEVET Development Programme. A follow-up in September 2006, by the Authority through the then Entrepreneurship and Informal Sector Development Unit of the Development Division, exposed an innovative training and graduate internship system. The innovation was centered on the use of student companies as one way of applying entrepreneurship theory from classroom activities to practical situations. The internship part involved the carrying-over of some student companies after graduation.

The training institution also operated a system of sub-contracting of their Production Unit income generating projects to these student companies;

c) Ministry of General Education schools desk production by some training institutions under the then Ministry of Science, Technology, and Vocational Training. For example, during the period 2011/12 Choma Trades Training Institute secured orders and went on to supply 2,007 school desks to Kazungula District and 5,000 desks to Kafue district. Metal Machining students worked with Welding and metal fabrication students to produce frames, while carpentry students produced tops for the desks. Students were supervised by the trainers;

d) Preventive Maintenance skills clubs being implemented by Luangwa Secondary School in which pupils carry out minor repairs, as well as electrical and piping installation work of school infrastructure, under the supervision of teachers;

e) Build IT is a UK based Charity which is registered with TEVETA to provide men and women from the local communities with basic building skills training whilst building essential infrastructure for their respective community. They take TEVETA trades test in bricklaying once they are ready. On graduation day, the graduates get their qualification certificate and tool kit to help them secure paid employment in construction. Some of the graduates will go on to build houses and latrines on Build It community projects as contractors[7].

f) Practical integrating technical and entrepreneurship skills by Dzthandizeni Trade School in Lusaka, through an initiative whereby learners were requested to first identify market opportunities for tailoring products within their communities, buying the required raw materials and then going on to produce and sell the resulting outputs as part of the learning experience;

g) In the distant past, there have been historical narrations within TEVET professional circles that construction of structure's for David Kaunda Technical Secondary School and the neighbouring Lusaka Business and Technical College was done trainees under supervisor of their instructors.

[7] http://www.builditinternational.org/projects/

Appendix 3: Conceptual Outline of the Work, Innovation and Skills Competition based TEVET Learning system

1.0 UNESCO definition of TVET.

The TEVET learner or graduate attributes are to be gained through various learning environments, reflect international best practice trends such as those under, the United Nations Education, Scientific, and Cultural Organization (UNESCO) conventions. The UNESCO 2015 General Conference for example, adopted a Recommendation for the definition of Technical and Vocational Education and Training (TVET as follows:

*"… 'technical and vocational education and training' (hereinafter "TVET") is understood as **comprising education, training and skills development** relating to a wide range of occupational fields, production, services and livelihoods. TVET, as part of lifelong learning, can take place at secondary, post-secondary and tertiary levels and includes **work-based learning** and continuing training and professional development which may lead to qualifications. TVET also includes a wide range of skills development opportunities attuned to **national and local contexts**. Learning to learn, the development of literacy and numeracy skills, transversal skills and citizenship skills are integral components of TVET."*

For Zambia, the TVET Recommendation has been and continues to be implemented through the Technical education, Vocational and Entrepreneurship Training (TEVET) policy.

One specific recommendation pertaining to the quality and relevance of learning processes which was adopted by the General Conference was as follows:
*"Member States should, according to their specific conditions, governing structures and constitutional provisions, encourage **a variety of learning opportunities**, whether in public and private TVET institutions, workplaces, homes, or other settings. Informal learning, whether self-directed, peer-to-peer or through other forms of social learning, should be encouraged and, if appropriate, made visible through recognition and validation mechanisms."*

Although the existing Zambian TEVET and General Education policy environments include all the key elements of 2015 UNESCO Recommendation on TVET, the fact that that TEVET based learning leading to among other things the acquisition of skills, can and does take place in workplace and/or home based settings, has not received formal recognition through national assessment and certification. It is against the foregoing that that the Authority seeks to re-engineer the TEVET system so that learning takes place mainly through a combination of **Work, Innovation and Skills competitions.**

2.0 Definition of Key Terms related to the Work, Innovation and Skills Competition based learning system.

a) Skill

Refers to the *ability to carry out tasks and duties of a* ***job***; while a **job** refers to *a set tasks and duties performed or meant to be performed by one person, including for an employer or in self-employment*. [8]

b) Competition

a situation in which someone is trying to win something or be more successful than someone else:[9]

c) Learning

gain or acquire knowledge of or skill in (something) by study, experience, or being taught.[10]

d) Team

A group of people with a full set of complementary skills required to complete a task, job, or project.[11]

e) Skills Competition

An event consisting of task performance challenges or projects set against a defined set of criteria or standards

f) Learning team

A collection of individuals who voluntarily or by some form of persuasion or compulsion come together with a shared objective of gaining or acquiring knowledge of or a skill in (something) by study, experience, or being taught

g) Reflective Learning

Reflective learning *is a way of allowing students to step back from their learning experience to help them develop critical thinking skills and improve on future performance by analysing their experience. This type of learning, which helps move the student from surface to deep learning, can include a range of activities, including self-review, peer review, and Personal Development Planning.*[12]

h) Cooperative learning

Cooperative learning *is a teaching strategy in which* ***small teams****, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject. Each member of a team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement.*[13]

i) **Work**

Physical or mental effort or activity directed toward the production or accomplishment of something[14]

3.0 Elaboration on the Work, Innovation and Skills competition based Learning system concept.

3.1 Work Based Learning system definitions

[8] http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf
[9] http://dictionary.cambridge.org/dictionary/english/competition
[10] https://www.google.co.zm/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=What+is+Learning
[11] http://www.businessdictionary.com/definition/team.html
[12] https://www.sheffield.ac.uk/lets/toolkit/learning/reflective
[13] http://www2.ed.gov/pubs/OR/ConsumerGuides/cooplear.html
[14] http://www.thefreedictionary.com/work

Work-Based Learning (WBL)[15] may be defined as *"an educational strategy that provides students with real-life work experiences where they can apply academic and technical skills and develop employability skills. …. Work-based learning strategies provide career awareness, career exploration opportunities, career planning activities, and help students reach competencies such as positive work attitudes and employability skills."*

The following are some alternative definitions of Work Based Learning that bring out the various aspects as reported by the European Training Foundation[16] ……

a) *"….. learning that occurs through undertaking real work, through the production of real goods and services, whether this work is paid or unpaid. It needs to be clearly distinguished from learning that takes place in enterprise-based training workshops and training classrooms. The latter is not work-based learning, but simply classroom-based learning that takes place in an enterprise rather than in an educational institution.' (Sweet, 2011)*

b) *"Acquisition of knowledge and skills through carrying out—and reflecting on—tasks in a vocational context, either at the workplace (such as alternative training) or in a vocational education and training (VET) institution."* (Cedefop, 2011c)

c) *"Programmes for both secondary and post-secondary students that provide opportunities to achieve employment-related competencies in the workplace. Work-based learning is often undertaken in conjunction with classroom or related learning, and may take the form of work placements, work experience, workplace mentoring, instruction in general workplace competencies and broad instruction in all aspects of industry."* (Naidu,2011)

3.2 Innovation Based Learning definition and examples

Innovations based learning refers to the acquisition of knowledge, skills, attitudes and values through creatively working on and developing a specific idea, within and outside formal learning environments.

Sweden has been cited in various literature, as one of the leading countries for this form of learning. It is reported to have been anchored in its Research and Innovation policy and legislation. In order to encourage young people's interest in technology and entrepreneurship, Swedish schools are reported to be working with a variety of organisations that include the following[17]:

a) Finn upp

Finn upp combines an **inventing-based teaching method** for schools, and Sweden's largest **inventors' competition for young people in grades 6-9**. Held every three years, the competition aims *to* ***stimulate the power of young ideas and inspire a new generation*** *of inventors, innovators and entrepreneurs*. **Finn upp** was founded in 1979 by the engineering interest group Ingenjörsamfundet.

b) Ung Företagsamhet

[15] http://www.ncpublicschools.org/cte/curriculum/work-based/ - Department of Instruction, State Board of Education, Public Schools of North Carolina *(website article)*

[16] http://www.etf.europa.eu/webatt.nsf/0/576199725ED683BBC1257BE8005DCF99/$file/Work-based%20learning_Literature%20review.pdf - ***WORK-BASED LEARNING:*** *BENEFITS AND OBSTACLES A LITERATURE REVIEW FOR POLICY MAKERS AND SOCIAL PARTNERS IN ETF PARTNER COUNTRIES*

[17] https://sweden.se/business/innovation-in-sweden/

The non-profit organisation Ung Företagsamhet *('young entrepreneurship')* works in partnership with Swedish schools. Older students, aged 16-20, have the opportunity to **run their own company during the school year as part of their upper secondary (high school) studies**. A 2010 survey shows that 8 out of 10 participants felt they learned something about running a business. They also indicated that they had developed more **self-confidence** and a greater **ability to take decisions**, **solve problems**, and **work with others**.

c) Snilleblixtarna

The non-profit association Snilleblixtarna *('flashes of genius')* is geared to schoolchildren from pre-school to fifth grade. The goal is ***to encourage children's interest in technology, the natural sciences and entrepreneurship***. Snilleblixtarna provides teachers and educators with tools and a working model to *stimulate children's curiosity*, *desire to learn and ability to think critically*

3.3 Skills Competition based learning system definition and examples

Skills Competition based learning is embedded in the process of a participant or a team of participants conforming to set rules and regulations of a given contest, as well as taking part in the actual challenge or game of focus. The case study summaries from selected countries illustrates and validates the notion of learning through skills competitions.

3.3.1 Singapore

Fulu (2014) [18] a Lecturer at the Ngee Ann Polytechnic in Singapore, reported the following from an instructional and learning initiative involving ICT students who were encouraged to participate in the Microsoft Office Specialist Program competition among other things:

d) Students join a competition with the desire to win. As a result they are highly motivated and prepared to spend time outside their regular school hours to train for the competition;
e) Whether it is a competition involving programming or debating, participants will learn a great deal beyond their regular curriculum during the process of preparation;

Fulu (2014) reported that during the training for the competitions over a five (5) year period following learning outcomes were observed:

a) The students had a sense of ownership for their own learning; they were motivated and took responsibility for developing the skills;
b) Students became more skilled at managing their time commitments, having to juggle between regular school work and learning the new skills required for the competition;
c) Students were found to be very enthusiastic in learning the new skills through the hands-on practice tests.
d) An online assessment was helpful in boosting the students' confidence and it encouraged them to close any skill gaps that they found;
e) Students developed a cooperative learning approach. The trainees formed a "learning community" among themselves and naturally adopted cooperative learning during the training period leading to the competition. Cooperative learning is a learning strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve all team members' understanding of a subject. Each member of a team is responsible not only for learning what is taught but also for helping team-mates learn, thus creating an atmosphere of achievement;
f) Students shared their knowledge and helped each other to prepare for the competition, even though they were going to compete as individuals. There was a sense that they wanted fellow Ngee Ann Polytechnic students to be in the top 10 rankings for this competition, so they naturally formed self-help groups;

[18] http://www.learnerstogether.net/home/2007/11/14/enhancing-learning-through-competitions.html

g) *In the process of helping each other to acquire the necessary skills, the students consolidated their own learning. They needed to think through the vocabulary used, the steps required and the correct order of those steps. They then needed to share that knowledge, and as a consequence, they learned the knowledge more thoroughly;*
h) *The self-esteem of students was enhanced they scored full marks in the competition;*
i) *Students were introduced and inducted in building skills for life-long learning;*

3.3.2 Malaysia case

Azizan et. al (2013) [19] conducted a research whose purpose was to find out about the effectiveness of learning through the Malaysian Skills competition system, that was perceived to enhance a student's level of skills. It was reported that the *"Malaysia Skills Competition (PKM) was a skills competition organized by the Department of Skills Development (JPK) and Kementerian Kerja Raya (KKR) with the sole purpose of identifying and acknowledging the Malaysian youths with ultimate skills that may represent Malaysia in the ASEAN Skills Competition (ASC) and World Skills Competition (WSC) after going through several selection and evaluation processes that has been set. …. the main vision of the Malaysia Skills Competition is to produce skillful and competent work force that is of international standard while at the same time promoting a skill training culture and giving acknowledgement to skillful worker through strategic cooperation and commitment to the industry."*

The following were among the reportedly observed outcomes:

a) the student's individual skills improved in terms of their communication, management aspect, time management aspect, and working environment. This was because the training involved trainers from industry which included knowledge beyond the content of the syllabus set by their colleges which put them at a higher level professionally and in turn boosted their confidence level;
b) the provision of appropriate and adequate equipment also played a role in improving skills. This was because without the proper and adequate equipment student were not able to perform a given task perfectly;

3.3.3 United Kingdom[20]

The National Apprenticeship Service (NAS) of the United Kingdom working together with WorldSkills UK, is reported to have commissioned the ESRC Centre on Skills, Knowledge and Organisational Performance (SKOPE) of Oxford University's Department of Education to investigate and better understand how participation by the United Kingdome (UK) in World Skills Competitions contributed to NAS's aim of promoting skills development and improving the skills base in the UK. A research brief describing work done within SKOPE highlighted the following as indicators of the learning associated with participation in skills competitions:

a) Benefits for learners/competitors

    i) The WorldSkills experience helped competitors to develop technical skills and 'soft' skills that were crucial for their career progression. Most competitors claimed that the **WorldSkills training helped them to achieve excellence in their respective professions**, and to also acquire and develop communication and interpersonal skills that allowed them to present their expertise more effectively.

[19] http://www.ijlt.org/uploadfile/2015/0825/20150825062916693.pdf - Azzizan et. al **Learning Through Competition – A Case Study Research in Competition Skills Malaysia 2013, Field of Culinary Arts and Food Services**, Sungai Petani Community College, Sungai Petani, Malaysia

[20] http://vocationalexcellence.education.ox.ac.uk/wordpress/wp-content/uploads/2014/02/Project-3-Research-brief.pdf - **Benefits of Developing Vocational Excellence through Skills Competitions** – National Apprenticeship Service UK and Oxford University SKOPE project

ii) Almost 25% of the competitors interviewed became self-employed. Freedom in professional decision making was named as one of the primary reasons. The majority indicated that they would not have started their own businesses without the WorldSkills training, which gave them the necessary confidence, self-esteem and people skills. A few competitors also spoke of entrepreneurial opportunities with their current employers. For example, one competitor talked of spearheading a new section of the company with the ideas and skills he developed through WorldSkills UK;

b) Benefits for Employers and Industry

i) Employee **performance was enhanced**;
ii) The presence of a competitor in a workplace team, **influenced the drive and aspirations of colleagues**, thereby benefitting the whole team;
iii) Some employers mentioned that the **competitor brought back new ideas and information** from the World Skills Competition training and experience. Some competitors **learned new work-related skills** that they showed to colleagues;
iv) As the World Skills Competition brings together highly skilled professionals from all over the world, it is not surprising that **it facilitated advances in industry standards**. This **occurred most prominently through participation of competitors**.

c) Benefits for Colleges and College Tutors

i) Further Education college tutors reportedly **developed new methods and strategies of teaching** through their involvement in WorldSkills training;
ii) The presence of a competitor at a Further Education college was seen as **a very positive influence on other students**;

d) Benefits of industry Training Managers

They named such benefits as: professional satisfaction, career benefits, **awareness of the latest development in industry, improvement of teaching and training skills and learning from international exchanges.**

3.3.4 Finland integration of Skills Competitions in TVET system – an example for Zambia.

Finland has within the circles of WorldSkills International been reported to be one country that has integrated skills competitions in TVET system, in a manner similar to what Zambia through TEVETA is developing by introducing the Work, Innovation and Skills Competition based learning system. Literature scans[21] have flagged the Finnish Academy for Skills Excellence based at Hame University of Applied Sciences, as some kind of hub for this integration. It was established to provide a wide range of training required for vocational competition activities, which include developing vocational teacher education and teacher competence through competitions. The Academy is reported to be also involved with in training Finnish national team experts for the national skills competition as well as the EuroSkills regional competition and international competitions of WorldSkills International. The training is collaboratively with a stakeholder network which includes Skills Finland, TVET institutions, the Ministry of Education and Culture, Finnish National Board of Education, coaching units/teams formed through international competitions, employer and employee unions, companies, universities, and individuals who might be TVET teachers, former competitors, and work place representatives.

[21] https://www.theseus.fi/bitstream/handle/10024/105999/HAMK_FAME-kilpailut_2016_ejulkaisu.pdf?sequence=1

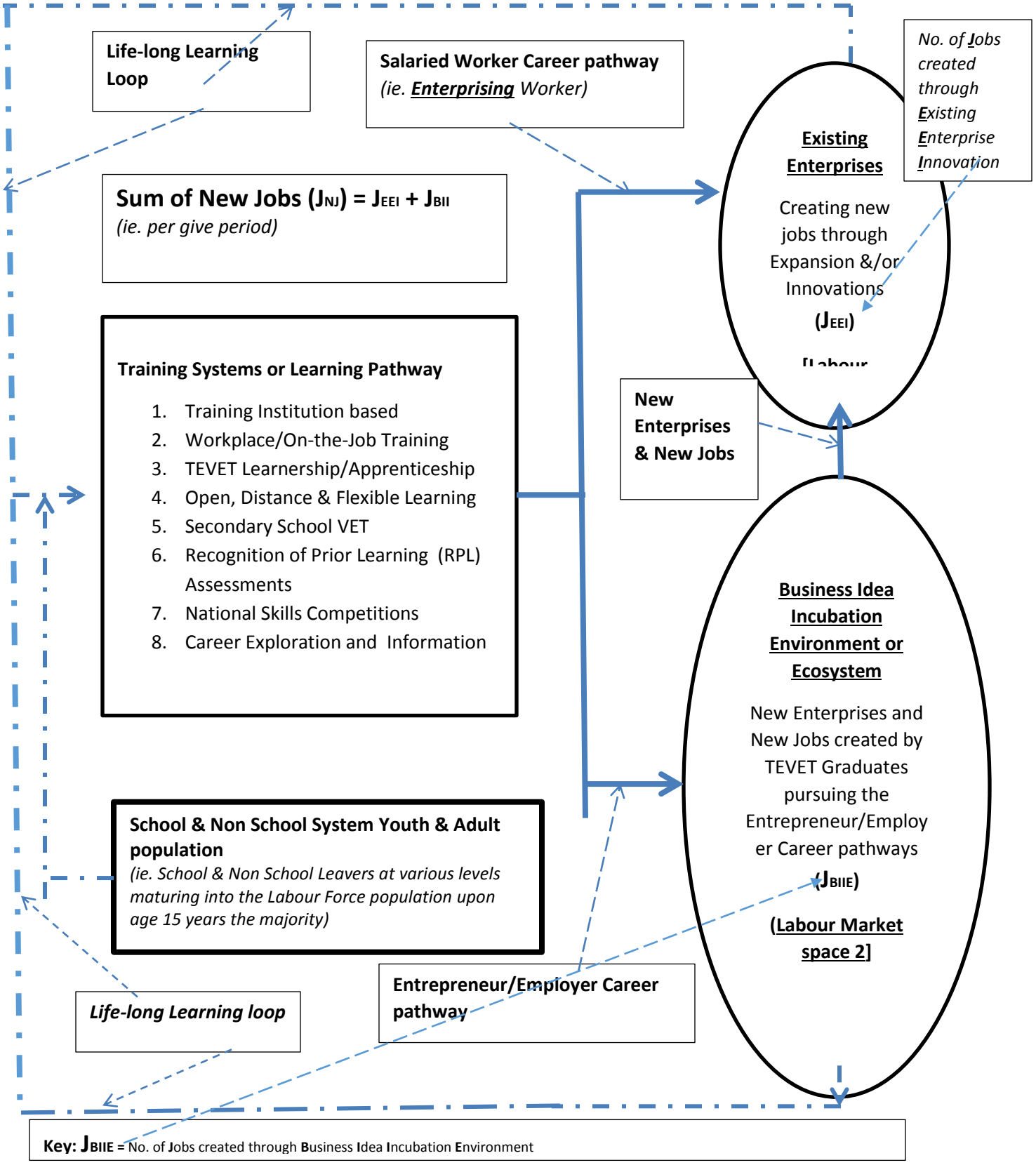
Note:

Collectively, the Zambian examples highlighted earlier on in Section 2.1, incorporated a combination of Work, Innovation and Skills Competition based learning. Skills competitions for example were inherent in the whole ability and process of an entrepreneur or micro enterprise owner/operator, qualifying for consideration, and ultimately securing an order from a customer. During the period of TEVETA's training related interactions with trading market based artisans, and community based training institutions innovation base learning examples have included the following:

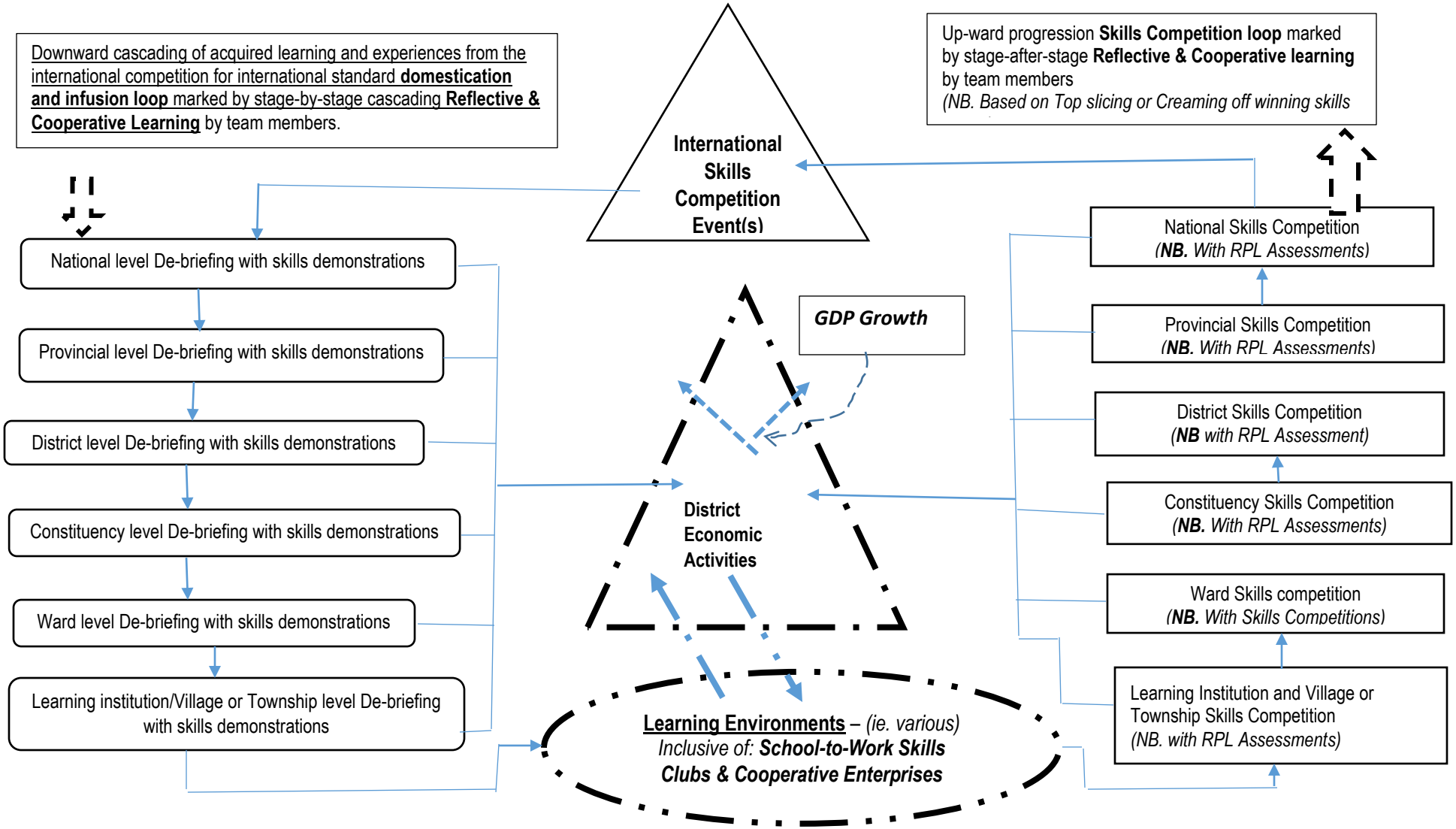
a) Migration from voice based mobile phone communication to Whats-Up social media based communication to update a UK based customer on a Lusaka site based house repair project by a Carpenter operating at Mwasauka in Garden Compound;
b) A market based artisan at Mwasauka market who had acquired carpentry skills through informal sector on-the-job apprenticeship training, going to design and make portable power tools for timber plaining;

Youths belonging to the Garden Association of the Self-Employed (GASE) inventing a bitumen based wood finishing stain that would imitate a mukwa hard wood surface finish. The innovation was said to have been motivated by certain customers who were negotiating for solid mukwa hardwood finishes, at a below profit price to the carpenters or furniture producers. The innovation was made known to TEVETA during a wood product finishing quality improvement training course the Authority organized for GASE members and carpentry trainers from selected training institutions.

Appendix 4: TEVET/Skills development framework for Zambia Middle Income by **2030** and industrialised by **2064.**



Appendix 5: Framework for learning through **Work, Innovation and Skills Competition based Learning system** for **development of internationally competitive skilled persons**.



Appendix 6: Priority skills for Industrialization and job creation capacity development[22]
*(**NB.** to guide allocation of Learning institution skills specialization and progression to TEVET Centers of Excellence)*

1.0 Construction and Building Technology

1. Architectural Stonemasonry
2. Bricklaying
3. Cabinetmaking
4. Carpentry
5. Concrete Construction
6. Electrical Installations
7. Joinery
8. Landscape Gardening
9. Painting and Decorating
10. Plastering and Drywall Systems
11. Plumbing and Heating
12. Refrigeration and Air Conditioning
13. Wall and Floor Tiling
14. *Grass Thatching (**NB.** National priority – not part of the WorldSkills International skills competition portfolio)*;

2.0 Creative Arts and Fashion

1) Fashion Technology
2) Floristry
3) Graphic Design Technology
4) Jewelry
5) Visual Merchandising/Window Dressing

3.0 Information and Communication Technology

1) Information Network Cabling
2) IT Network Systems Administration
3) IT Software Solutions for Business
4) Print Media Technology
5) Web Design
6) *Digital Media (ie. proposed for Abu Dhabi competition ???)*

[22] https://en.wikipedia.org/wiki/WorldSkills - (*NB. based on list of Skills Competed for at the 43rd championships of WorldSkills International in Sao Paulo, Brazil 2015.)*

7) *Animation (ie. proposed for Abu Dhabi competition ???)*
8) *Geomatics Engineering (**NB.** National priority – not part of the WorldSkills International skills competition portfolio)**;***

4.0 Manufacturing and Engineering Technology

1) CNC Milling
2) CNC Turning
3) Construction Metal Work
4) Electronics
5) Manufacturing Team Challenge
6) Mechanical Engineering Design - CAD
7) Mechatronics
8) Mobile Robotics
9) Plastic Die Engineering
10) Poly-mechanics/Automation
11) Prototype Modelling
12) Sheet Metal Technology
13) Welding
14) *3 D Printing (**NB.** National priority – not part of the WorldSkills International skills competition portfolio)*;
15) *Natural Fiber Basketry Technology (**NB.** National priority – not part of the WorldSkills International skills competition portfolio)*;

5.0 Social and Personal Services

1) Beauty Therapy
2) Confectioner/Pastry Cook
3) Cooking
4) Hairdressing
5) Health and Social Care
6) Restaurant Service

6.0 Transportation and Logistics

1) Aircraft Maintenance
2) Auto body Repair
3) Automobile Technology
4) Car Painting
5) Heavy Equipment Repair;
6) *Drone/Un-Manned Vehicle technology (**NB.** National priority – not part of the WorldSkills International skills competition portfolio);*
7) Inland water transportation *technology (**NB.** National priority – not part of the WorldSkills International skills competition portfolio);*
8)

……

National priority Skills groups– *not part of the WorldSkills International skills competition portfolio*; ***(ie. proposed)***

7.0 Commercial Farming Technology *(NB. to be populated)*

8.0 Water, Chemical and Energy Technology *(**NB.** To be populated further)*

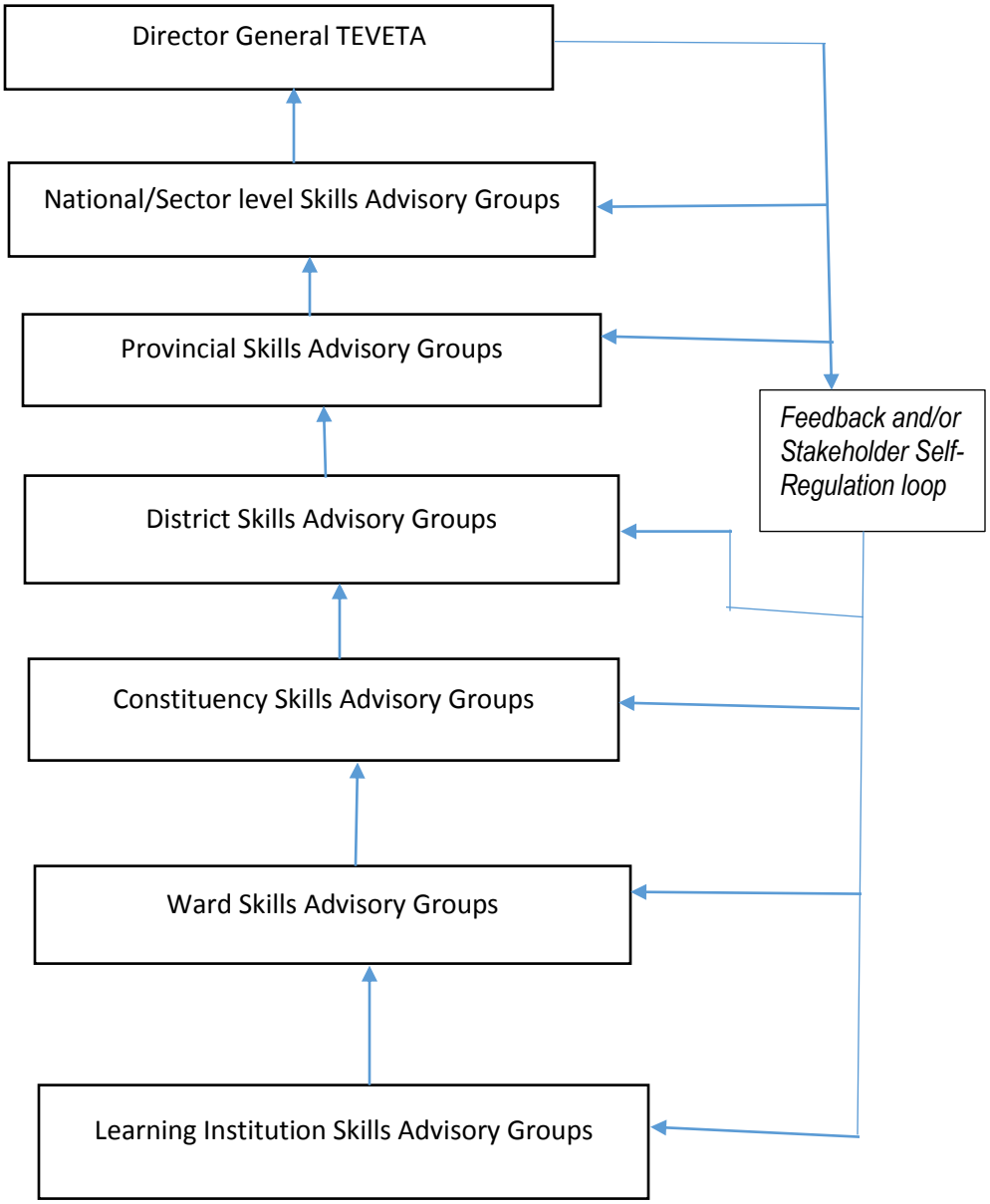
8.1 Food Engineering

8.2 Off-grid energy technologies

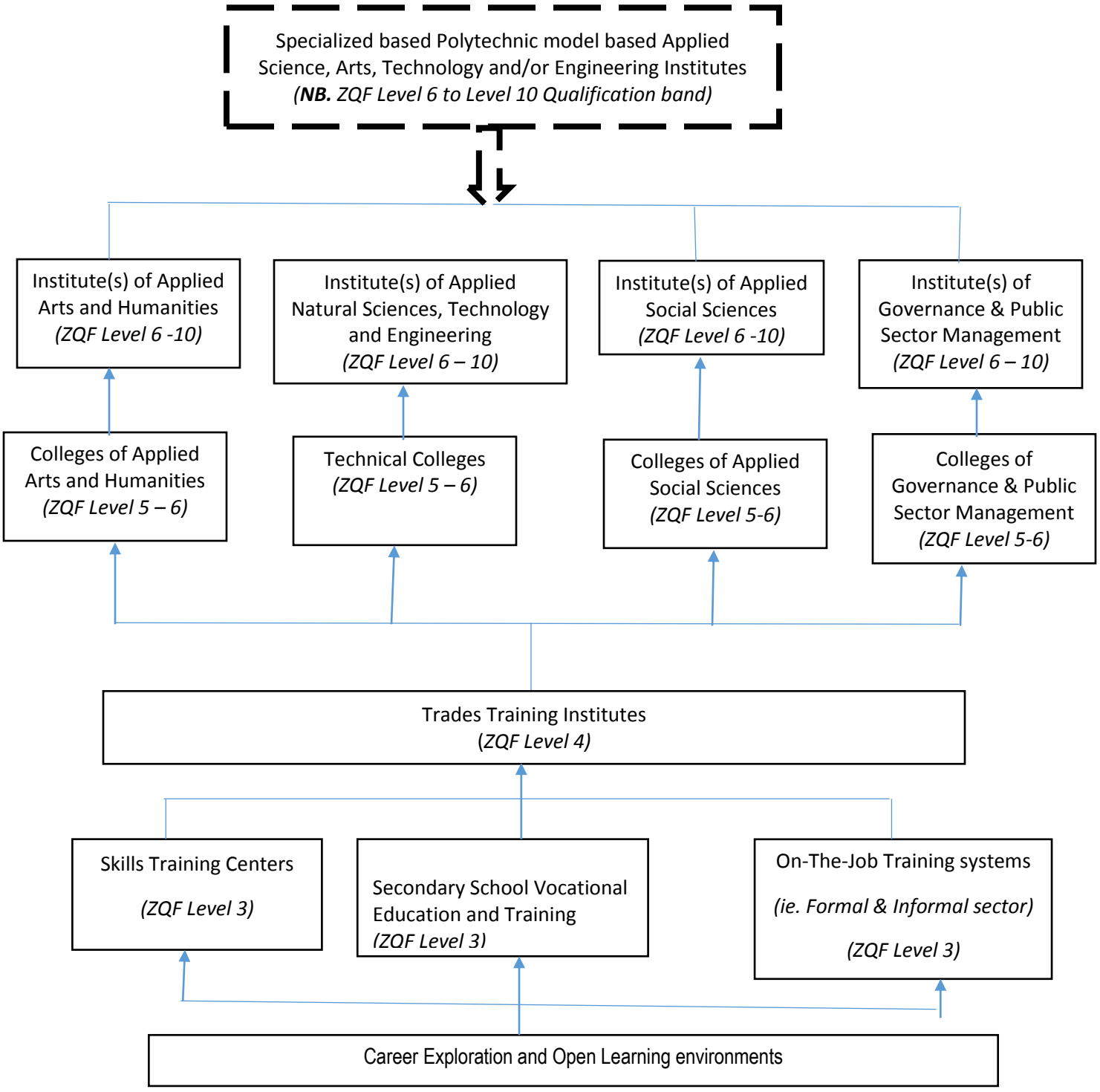
8.3 Aquatronics

8.4 Nuclear Engineering technology.

Appendix 7: Skills Advisory Group cascading functional structure



Appendix 8: Proposed Framework for re-restructuring and re-organizing the TEVET service delivery system by Qualification hierarchy.



Appendix 9: 2017 to 2019 Interim TEVETA Strategic Plan Objectives and Outputs.

TEVETA's Interim[23] 2017 to 2019 Strategic Plan has seven (7) thematic Strategic Objectives with each having one or more of Outputs. The Plan has been designed improve the capability of TEVETA and the TEVET service delivery system in terms **quality of services offered** as well as **responsiveness to client and/or stakeholder** needs and demands:

Strategic Objective 1.

To continuously improve service quality and responsiveness with reference to relevant international best practices and/or standards of management;

Output 1.1:

Continuous improvement in service Quality, Responsiveness, & risk minimization effected through adoption of Lean Management and Enterprise Risk management practices and benchmarking with TEVET systems of top seven (7) medal winning countries in in international skills competitions of WorldSkills International;

Output 1.2:

TEVETA assessment and certification system service quality, capacity and responsiveness improved relevant to growing demand;

Output 1.3:

TEVETA Management Information System (MIS) expanded with improved integration and internet interface capabilities;

Output 1.4

TEVETA and TEVET institution staff trained and instilled with mind sets and abilities to apply Lean Management – inclusive of Kaizen practice and other international best practice methods in their daily work;

Output 1.5

A system for Audio-Visual materials design, production & distribution for: Career information seekers, Career Explorers, Learners, Interns, & skilled persons, developed and deployed

Strategic Objective 2:

To develop and continuously improve the capacity, efficiency and effectiveness of the TEVET system in order to ensure ***supply of internationally competitive skilled persons****.*

Output 2.1:

A system for instilling mind-sets and abilities for world class standard skills excellence, productivity and innovation in learners, through sourcing, domesticating and banking international skills standards using Skills competition based learning teams starting at Ward Development Committee social-economic activity level, developed and implemented;

Strategic Objective 3:

[23] The TEVETA Board approved the plan subject to review and alignment once the Seventh National Development Plan had been approved by Government.

To promote entrepreneurship and nurture ***creation of sustainable enterprises at district economic activity level****.*

Output 3.1*:*

A system for instilling mind sets and abilities for entrepreneurial industrialist and new job creator careers using Science, Technology, Engineering, Mathematics, Entrepreneurship & Leadership (STEMEL) Learning systems developed and piloted in selected raw material value chains and trading markets;

Output 3.2

A system for instilling mindsets and abilities for future careers as tax payers and internationally competitive suppliers of goods and services to public and/or private sector institutions developed and piloted using the principle of: Learn – Work – Earn – Play and Ethical Practice (LWEPEP) learning system;

Strategic Objective 4:

To ensure financial sustainability of TEVETA and prudent investment in skills.

Output 4.1:

TEVETA financing expanded and diversified through improved collection efficiency, and design, production and distribution of "soft regulation" knowledge and information based instruments in the form of Learning and/or Career Exploration support materials, targeting age group 5 years to 39 years, which in the 2014 Labour Force was estimated at 10,340,179;

Strategic Objective 5:

To develop a TEVET Research and Innovation system that will promote and facilitate empirical evidence based policy and/or technical decision making.

Output 5.1:

A TEVET Research and Innovation Division with a "Skills Park" based laboratory infrastructure established as a research and development Hub linked to a network of training institution or industry based satellite research centers with thematic and/or periodic study sites to generate practical evidence based solutions for policy and/or technical level decision making;

Strategic Objective 6:

To monitor and improve the image of TEVET and skilled persons in order to attract career explorers and sustain stakeholder goodwill.

Output 6.1

A multi-stakeholder National Development Plan linked collaborative Risk Management, Monitoring and Evaluation system for the qualitative and quantitative performance of the TEVET system developed and implemented.

Objective 7:

To promote integration and mainstreaming of pertinent cross cutting issues in TEVET;

Output 7.1:

Cross cutting issues such as: HIV/AIDS, Gender, Disability, sustainable Environment, Climate Change, and civic competences integrated and mainstreamed into the TEVET system;

Appendix 10: Short Term, Medium and Long term national development impact targets for the TEVET system.

1.0 Long-term (ie. 2064) national development impact targets:

a) Proportion of the Employed Labour force population that receives quality assured skills training to be at least **80%** *(ie. from 18.6% in 2014)*;

b) Proportion of Self-Employed persons with internationally competitive technical and entrepreneurship skills standards to be at least **80%** *(ie. from 41.4% in 2014);*

c) Proportion of Employers/Entrepreneurs with internationally competitive technical, entrepreneurship and leadership skills standards to be at least **20%** *(ie. from 0.4% in 2014);*

d) Proportion of the Labour force population trained to the medal band performance standards of WorldSkills International or equivalent, in the following groups of skills essential to industrialization and sustainable enterprise development within a globalized and competitive trading environment is at least 20% (ie. 2014 Baseline = 0%)

i) Construction and Building Technology;

ii) Creative Arts and Fashion;

iii) Information and Communication Technology;

iv) Manufacturing and Engineering Technology;

v) Social and Personal Services;

vi) Transportation and Logistics;

vii) Commercial Farming Technology; (NB. National priority – not part of the WorldSkills International skills competition portfolio);

viii) Water, Chemical and Energy Technology. (NB. National priority – not part of the WorldSkills International skills competition portfolio);

2.0 Vision 2030 national development targets

a) Proportion of the Employed Labour force population that receives quality assured skills training to be at least **35.6%** *(ie. from 18.6% in 2014);*

b) Proportion of Self-Employed persons with internationally competitive technical and entrepreneurship skills standards to be at least **52.06%** *(ie. from 41.4% in 2014)*;

c) Proportion of Employers/Entrepreneurs with internationally competitive technical, entrepreneurship and leadership skills standards to be at least **5.6%** *(ie. from 0.4% in 2014)*;

d) Proportion of the Labour force population trained to the medal band performance standards of WorldSkills International or equivalent, in the following groups of skills essential for industrialization and sustainable enterprise development within a globalized and competitive trading environment is at least **5.59%** *(ie. 2014 Baseline = 0%):*

i) Construction and Building Technology;

ii) Creative Arts and Fashion;

iii) Information and Communication Technology;

iv) Manufacturing and Engineering Technology;

v) Social and Personal Services;

vi) Transportation and Logistics;

vii) Commercial Farming Technology; (NB. National priority – not part of the WorldSkills International skills competition portfolio);

viii) Water, Chemical and Energy Technology. (NB. National priority – not part of the WorldSkills International skills competition portfolio);

3.0 2021 Seventh National Development Plan targets

a) Proportion of the Employed Labour force population that receives quality assured skills training to be at least **25.1%** *(ie. from 18.6% in 2014);*

b) Proportion of Self-Employed persons with internationally competitive technical and entrepreneurship skills standards to be at least **45.5%** *(ie. from 41.4% in 2014);*

c) Proportion of Employers/Entrepreneurs with internationally competitive technical, entrepreneurship and leadership skills standards to be at least **2.1%** *(ie. from 0.4% in 2014)*;

d) Proportion of the Labour force population trained to the medal band performance standards of WorldSkills International or equivalent, in the following groups of skills essential to sustainable enterprise development within a globalized and competitive trading environment is at least 2.15% (ie. 2014 Baseline = 0%):

i) Construction and Building Technology;

ii) Creative Arts and Fashion;

iii) Information and Communication Technology;

iv) Manufacturing and Engineering Technology;

v) Social and Personal Services;

vi) Transportation and Logistics;

vii) Commercial Farming Technology; (NB. National priority – not part of the WorldSkills International skills competition portfolio);

viii) Water, Chemical and Energy Technology. (NB. National priority – not part of the WorldSkills International skills competition portfolio);

4.0 2017 to 2019 TEVETA Strategic Plan targets

a) Proportion of the Employed Labour force population that receives quality assured skills training to be at least **22.5%** *(ie. from 18.6% in 2014);*

b) Proportion of Self-Employed persons with internationally competitive technical and entrepreneurship skills standards to be at least **43.9%** *(ie. from 41.4% in 2014);*

c) Proportion of Employers/Entrepreneurs with internationally competitive technical, entrepreneurship and leadership skills standards to be at least **1.3%** *(ie. from 0.4% in 2014);*

d) Proportion of the Labour force population trained to the medal band performance standards of WorldSkills International or equivalent, in the following groups of skills essential for industrialization and sustainable enterprise development within a globalized and competitive trading environment is at least **1.28%** *(ie. 2014 Baseline = 0%):*

   i) Construction and Building Technology;

   ii) Creative Arts and Fashion;

   iii) Information and Communication Technology;

   iv) Manufacturing and Engineering Technology;

   v) Social and Personal Services;

   vi) Transportation and Logistics;

   vii) Commercial Farming Technology; (NB. National priority – not part of the WorldSkills International skills competition portfolio);

   viii) Water, Chemical and Energy Technology. (NB. National priority – not part of the WorldSkills International skills competition portfolio);