

THE ROLE OF TECHNOLOGICAL INSTITUTIONS IN THE PRODUCTION OF SKILLFUL WORKFORCE WITH REFERENCE TO LOWER, MIDDLE AND HIGH-LEVEL MANPOWER

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ABSTRACT

Developing Nigeria in both economic and human resource capital represents a recurring theme in both National development and transformation plans of the country over the years. Technical education, with its emphasis on exploration of career options, support of basic academic, leadership and skill provision for industry-defined work represents a viable and urgent alternative in achieving these objectives. The potential of Technical and Vocational education in providing a qualitative national pool of skilled and self-reliant craftsmen, technicians and presents a route to achieving the development plans. This paper studies some of the issues affecting the production of middle level manpower in Nigeria and, reviews existing programmes, challenges and opportunities as they exist. As a general approach, it reviews the subsisting practices in other countries, examines the existing facilities in Nigeria which are charged with producing this middle level manpower

Introduction:

In every society, technology is the primary engine of economic growth and provides the key to unlocking any country's potential. According to Nelson and Kuh (2005) technology refers to the purposeful application of [information](#) in the [design](#), [production](#), and [utilization](#) of [goods](#) and [services](#), and in the [organization](#) of human [activities](#). Clearly, technological institutions therefore exist to facilitate the development of the country by providing both the know-how and expertise needed to do this. Education takes prime importance in the attainment of these aspirations and in driving

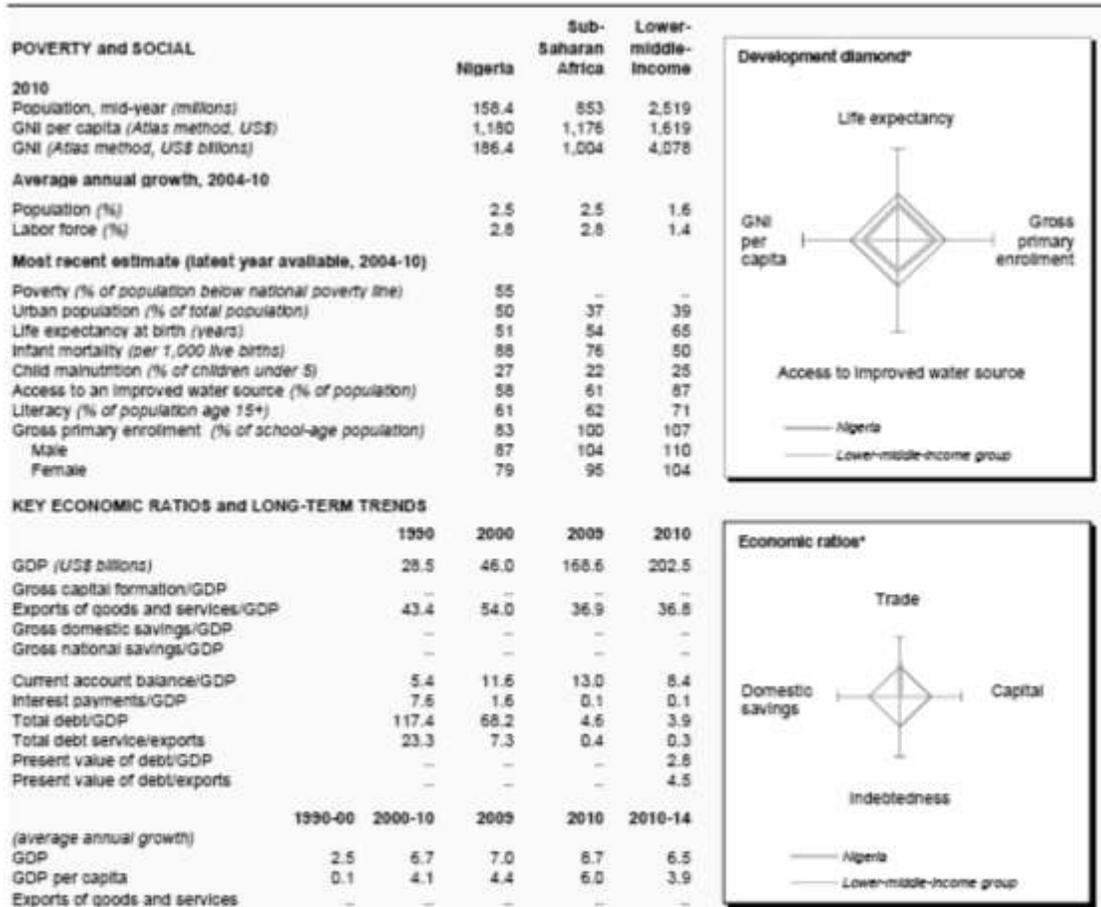
and recommends policy approaches which could assist in achieving these objectives.

Keywords: *Vocational and technical education, middle level manpower, skillful workforce Nigerian government, technological development, strength sand weaknesses.*

Science, industry and business in any society. Aferti posits that in recognition of this and in line with the stated aim of transformation of the entire society as contained in the 2nd National Development Plan Nigeria established technological institutions in various parts of the country. These included Polytechnics, Universities and Innovative Enterprise Institutions. The National Policy on Education of the Federal Republic of Nigeria, which is the major document charting developmental and educational aspirations of the country states, inter alia, that Nigeria's philosophy of education is based on the integration of the individual into a sound and effective citizenry . The philosophy is geared towards ensuring:

- i. a free and democratic society,
- ii. A just and egalitarian society,
- iii. A united, strong and self-reliant nation,
- iv. A great and dynamic economy, and
- v. A land of bright and full opportunities for all citizens.

Education is a major instrument for national development and the development of the individual into a sound and effective citizen. The truism in this statement is reflected in the state the nation finds itself today. The Human Development Index (HDI) for Nigeria which is a comparative measure of life expectancy, literacy, education, and standards of living for countries worldwide places it at 142nd and also categorizes it as one of the Low Human Development Countries (UNDP, 2011). This places Nigeria below such countries as Kenya, Equatorial Guinea and Madagascar.



Source: World Bank (2012)

Clearly, the challenges of employing technology as means of national empowerment to stimulate and sustain national development, enhance employment, improve the quality of life, hinder poverty and promote a culture of peace, freedom and democracy becomes even more imperative. The federal ministry of education National Master plan for Technology education contains a comprehensive roadmap for revitalizing and strengthening technology education in Nigeria. It recognizes that as a result of the global trend and emerging challenges caused by globalization and the tremendous changes in the field of Information/ Communication Technology, the response of technology education delivery process presents a major and huge undertaking. The technological institutions in Nigeria take on a role as a result, that cannot be over-emphasized. The roles Technology institutes in Nigeria

The roles of Technology Institutions in the production of skillful workforce at lower, middle and higher-level manpower is intertwined with the national aspirations and the policies which are intended to actualize them. Educational institutions are the major vehicles for achieving the stated National Goal of using technology to engineer major progress in the country (Federal Ministry of Education, 2010). In line with this, the federal government established polytechnics and federal universities of technology to serve as the main sources of actualizing these goals.

The federal government of Nigeria, in its National Master plan for Technical and Vocational Education in the country terms technology as “public knowledge, skills and procedures for making, using and doing things in specifiable and reproducible ways” (FME,2000). Its further structures technology education into levels each with its purposes, administrative and delivery institutions. These levels are:

- i. Prevocational education: at primary and secondary schools for general technological awareness, acquisition of technological literacy and general technical versatility
- ii. Vocational education: at job specific vocational schools for the production of craftsman level of manpower
- iii. Technical education: at polytechnic institutions for the production of technician/ technologist level of manpower
- iv. Professional education: at university intuitions for the production of manpower at professional level

The principles and objectives of establishment of technological institutions in Nigeria are contained succinctly in the Polytechnic act of 1987 which states under the *Functions of the Polytechnic* that the polytechnic shall be to provide full-time or part time courses of instruction and training-

- i. In technology, applied science, commerce and management
- ii. In such other fields of applied learning relevant to the needs of the development of Nigeria in the areas of industrial and agricultural production and distribution and for research in the development and adaptation of techniques as the Council may from time to time determine

The whole principle of technology education is the provision of vocational education. This is referred to by Aladejana, (1990) as any form of education whose primary purpose is to prepare persons for employment in their recognized occupations. Section 8 of the National Policy states the three goals of tertiary education to include among others to be:

- a. Contribute to national development through high level relevant manpower training;
- b. Develop and inculcate proper values for the survival of the individual and society;
- c. Develop the individual capability of individuals to understand and appreciate their local and external environments

Nigeria today has various Higher Educational Institutions (HEIs) which offer courses in technology with emphasis in both technical and practical application. Table 1 shows the breakdown of these tertiary educational institutions in Nigeria.

Table 1: Breakdown of these tertiary educational institutions in Nigeria.

| Type of institution | Number | Ownership | Certificates awarded |
|-----------------------------|--------|------------|-----------------------------------|
| University | 104 | 26 Federal | Degrees and diplomas |
| | | 44 State | |
| | | 44 Private | |
| Polytechnic/ Monotechnic | 121 | 21 Federal | Diplomas in technical disciplines |
| | | 36 State | |
| | | 64 Private | |
| Colleges of Education | 85 | 21 Federal | Teachers certificates |
| | | 43 State | |
| | | 85 Private | |

Source: UNESCO

The roles of these technological institutions in the production of lower, middle and high-level manpower can be studied by examining in detail what these levels of manpower constitute. A study of these levels of skilled manpower and the roles of the institutions requires careful identification of what they are.

High level manpower: this refers to a professional workforce which possesses very high expertise and is involved manipulation of very high intelligent technology and can combine both design and skillful application of technologists. The provision of this level of manpower is not among the principal objectives of most technology institutions as within the Nigerian context, this level of trained workforce is to be produced by the universities. Technological institutions are instead focused towards delivering vocational type of training which is defined by Okoro (1999) as any form of education whose primary purpose is to prepare persons for employment in their recognized occupations.

Middle Level Manpower: Middle Level manpower within the context of technology education refers to that largely technologists. These are defined as a group of skilled individuals who use scientific knowledge to solve practical problems. These levels of workers lie between the higher level and low-level manpower.

Low level manpower: [labor-intensive](#) technology that manipulates only coarse or [gross](#) matter and weaker forces. The basic framework for looking at the roles of the technology institutions in Nigeria within the role of manpower needs has to be on the basis of the existing needs and how far the institutions have succeeded or failed or succeeded in delivering them. This leads to the whole concept of the current provisions within the curriculum and the contemporary concept of Technical and Vocational Education and Training (TVET). UNESCO (1997) defines TVET as education and training to acquire the practical skills, know-how and understanding necessary for employment in a particular occupation, trade or group of occupations or trades. According to Aferti (2005), the need to link training to employment (either self or paid employment) is at the base of all the best practices and strategies observed world-wide. In recent years, in view of the rapid technological advances taking place in industry and the labour market in general, flexibility, adaptability, and life-long learning have become the second major objective of vocational and technical training. The third objective, which is particularly important for African countries, is to develop TVET as a vehicle for rapid industrialization, as well as economic empowerment and social mobility of the individual.

Technology institutes in Nigeria and Technology Education: structure and challenges

Within the current framework, higher level manpower requirements of the workforce as recognized by the skill and competency requirements are expected to be met largely by the universities while major training for the skilled middle and low-level manpower are met by the polytechnics, monotechnic and technical colleges. The technical colleges are expected to produce craftsmen who are expected to be both employable and self-employed and be able to accept academically. The polytechnics and monotechnic are to produce technicians, technologists and full professionals in various disciplines. Their curricula cover a wide range of fields having among other things, a core curriculum consisting of basic engineering, business and general education programs. According to Aworanti (2008), the objectives of technology institutes in Nigeria can be identified in the following points:

- Provision of trained manpower in engineering, applied science, technology and commerce at all professional grades;
- Provision of technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development;
- Provision of qualified and well-equipped personnel to apply scientific knowledge to the improvement and solution of environmental problems for use and convenience of man;
- Introduction of professional studies in engineering and other technologies
- Provision of training to impart the necessary skills leading to the production of craftsmen, technicians, technologists and engineers and other skilled personnel who will be enterprising and self-reliant; and
- Enabling men and women to have intellectual understanding of the increasing complexity of technology and the role technology plays in the world around them.

The problems arise today because universities, Polytechnics, Monotechnic and Colleges of Education have not produced the type and quality of skilled worker that the Nigerian economy requires largely because of defective curricula. There is a wide gap between the theoretical curriculum taught in tertiary institutions and the practical skill needed by employers of labor. The disconnect between the educational system and the world of work is one of the major challenges facing Nigeria today. Kayode (2009), while examining this problem, posits that skill refers to an expertise or ability developed in the course of training and

experience. It includes not only trade and craft skills acquired by apprenticeship, but high-grade performance in many fields, such as professional practice, the arts, games, and athletics. He asserts that a 'skill gap' exists in Nigeria which has led to unemployment and general national waste. It is clearly identifiable that the technology institutions face enormous challenges in the provision of all categories of workers but also in contributing to the national economy. Nigeria's stated goal is to be among the first 20 countries in terms of industrialization, democracy and human resources by the year 2020.

International and African best practices and strategies

Johanson and Adams (2007) summarize the best practices on Technical and vocational education strategies in Africa and elsewhere and lessons learned from this (Table 2).

Table 2: Innovations and best practices from African and international experiences.

| <i>Country</i> | <i>Innovation</i> | <i>Impact</i> | <i>Lessons</i> |
|---------------------|--|--|---|
| South Africa | National Qualifications Framework (NQF) established to provide mechanism for awarding qualifications based on achievement of specified learning outcomes. Implementation of the NQF, which includes recognition of prior learning, lies with the South African Qualifications Authority (SAQA). Learning outcomes are specified by employer- | Effective co-ordination of the TVET system, better coherence of the qualification structure, including accumulation of credits and recognition of prior learning. Greater market relevance of training programmes and financial involvement of | The introduction of the NQF has been slow due to bureaucratic bottlenecks. Sustainability of the training levy depends on the |

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| | <p>dominated Sector Education and Training Authorities (SETAs). A skills development fund, alimented by a 1% levy on enterprise payrolls, has been instituted. Eighty percent of the levy goes to the SETAs for sector-specific training programmes while 20% is used to finance other skills development initiatives outside the enterprises being levied – principle of “cross-subsidization”.</p> | <p>industry in the development of skills.</p> | |
| <p>Ghana</p> | <p>An apex body known as the Council for technical and vocational education and training (COTVET) has been established by an Act of Parliament under the Ministry of Education to oversee all TVET activities. A National Apprenticeship Training Board is to be established under COTVET to handle issues concerning registration, training content, duration and</p> | <p>COTVET is expected to address the issue of multiplicity of oversight responsibility and testing standards within the TVET system. Government has pledged to assume full responsibility for the first year of apprenticeship training. The NVTI initiative has allowed for</p> | <p>It is early days yet to assess the effectiveness of COTVET. However, policy measures are needed to ensure that the proposed registration and regulation of private training providers does not result in the creation of a parallel formal system and a loss</p> |

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| | <p>certification under the auspices of the Ghana National Training Authority. The National Vocational Training Institute (NVTI) currently allows for the proficiency testing of illiterate trainees, including traditional apprentices, who submit their skills to practical, non-written evaluation. The Opportunities Industrialisation Centres (OICs) provide post-training support and follow-up services to their trainees.</p> | <p>illiterate trainees to enter the formal job market on the basis of their skills proficiency certificates. The transition from school to the world of work is eased by the OIC post-training support system.</p> | <p>of diversity in training provision.</p> |
| <p>Tanzania</p> | <p>The Vocational Education and Training Authority (VETA) that has overall responsibility for coordinating vocational education and training has developed and tested new training approaches for the informal sector. The concept involved designing an integrated training programme (technical and</p> | <p>The quality of goods and services produced by the informal sector trainees involved in the programme improved, and sales and profits increased.</p> | <p>For the informal sector, a mix of technical and business skills (record-keeping, pricing, marketing, and customer relations) and literacy (if necessary) should be provided.</p> |

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| | <p>managerial skills, and literacy if necessary) and finding local training providers for implementation. Attempts were made to link up trainees with credit and business development providers.</p> | | |
| <p>Kenya</p> | <p>The Kenyan NGO SITE (Strengthening Informal Training and Enterprise) ran a project to improve traditional apprenticeship training using master craftsmen recruited through Jua Kali associations as host trainers. The basic skills (technical skills, business skills, and teaching methods) of the host trainers were first upgraded. The objective was to strengthen the capacity of master craftsmen to provide quality training to their apprentices. In all, 420 master craftsmen were trained and 1400 apprentices received</p> | <p>Host trainers improved their training of apprentices by improving content and quality and concentrating on productive activities. The number of their apprentices increased by between 15 percent and 20 percent.</p> | <p>Master craftsmen are not enthusiastic if training is only about technical skills. Also, collaboration with informal sector trade associations in the design and implementation of training programmes is of prime importance.</p> |

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| | improved training from the trained host trainers. | | |
| Benin | The Bureau d'Appui aux Artisans (BAA) seeks to complete the training of traditional apprentices. The BAA works through the various trade associations. The BAA links the master craftsmen and apprentices who are members of the trade associations to reputable public or private sector training providers for complementary training. The BAA's role is limited to that of financier and technical adviser while the trade associations implement and supervise the training through activities such as collaborating in the development of new training modules, participating in the selection of trainees, negotiating the fee for the instructors, monitoring the | The training changed the approach and improved the methods of training of the master craftsmen. The apprentices who have received complementary training became more precise, responsible and confident. | The notion of complementary training of their apprentices is new to master craftsmen, so they need to be "hooked" to the idea. Public and private sector providers of complementary training need to be well endowed with excellent training equipment and instructors with enhanced technical skills and well adapted teaching methodologies. |

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| | <p>attendance of the apprentices, co-organising the trade test at the end of the training, and participating in the evaluation of the training. Master craftspersons also benefited from the training, especially skills upgrading, but such training took place in the workshop of one of the participating master craftspersons</p> | | |
| <p>Singapore</p> | <p>A National Manpower Council brings together the Ministries of Manpower, Education, and Trade and Industry to determine manpower targets from the Institutes for Technical Education, the Universities and Polytechnics. The Ministry of Education has the primary responsibility for ensuring longer term supply of skills in relation to national development targets. Training also involves</p> | <p>Training is relevant to labour market needs. Attention to attitude development leads to a hardworking and disciplined workforce.</p> | <p>Social capital or the development of shared national values is as important as human capital or technical skills formation.</p> |

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| | <p>the inculcation of shared cultural values and attitude development.</p> | | |
| <p>Germany</p> | <p>The dual system of vocational training in Germany allows for learning to take place in a vocational school and in production facilities or in the service industry concurrently. Trainees receive training in a company three or four days per week and at a part-time vocational school one or two days per week. Training in the dual system is open to all young people. Job centres help in arranging placements for training and companies themselves also offer trainee positions. Training agreements must be signed between the company and the trainee. The purpose of the tuition received at the vocational school is to supplement the training received by</p> | <p>Approximately 70% of all school leavers, aged 15 – 19 years undergo training under the dual system. Vocational training is linked closely to the world of work.</p> | <p>Dual training requires an industrial fabric that does not exist in many African countries. In-company training can be expensive and companies must be willing to offer training.</p> |

students in companies at a theoretical level and to fill gaps in general education. The dual system is governed by legislation under the Vocational Training Act.

Source: Johnson & Adams (2007)

Nigeria: the prevailing status of Technology Education

The national blueprint and master plan on technical and vocational education recognizes that as a requirement for the manpower needs and the general development of the economy, Nigerians need to be able to rise to their potentials by imbibing the qualities of initiative, creativity, critical thinking, entrepreneurial skills, democratic values and appreciation of the world of work (FME, 2010). The priority areas as identified by the blueprint can be described as:

- Access and equity
- Curriculum and curriculum delivery
- Facilities rehabilitation and expansion
- Teacher production and certification
- Teacher remuneration and incentives
- Qualifications framework
- Monitoring, research and evaluation
- Enhancement
- Upward mobility

Aferti makes a general analysis of the status of technology education in sub-Saharan Africa and includes Nigeria as reflecting the characteristics which are reflected by the following indicators:

- i) Weak national economies characterized by low job growth, high population growth, and a growing labour force
- ii) Shrinking or stagnant wage employment opportunities especially in the industrial sector
- iii) Huge numbers of poorly educated, unskilled and unemployed youth:
- iv) Educated but unemployed college and university graduates:

- v) Uncoordinated, unregulated and fragmented TVET delivery systems:
- vi) Low quality:
- vii) Geographical, gender and economic inequities:
- viii) Poor public perception
- ix) Weak monitoring and evaluation:
- x) Inadequate financing:
- xi) Public versus private provision of TVET:

Strategic Policy Framework

How then can technical and vocational training be promoted in Africa in order to achieve the strategic policy goal of stimulating industrial and economic growth? In my opinion, five broad strategic objectives will have to be met. These are: enhancing the quality of training, assuring relevance and employability of trainees, improving coherence and management of training provision, promoting flexibility of training and life-long learning, and enhancing the status and attractiveness of TVET.

i) Enhancing the quality of training

Training for high-quality skills requires appropriate training equipment and tools, adequate supply of training materials, and practice by the learners. Other requirements include relevant textbooks and training manuals and qualified instructors with experience in enterprises. Well-qualified instructors with industry-based experience are hard to come by, since such categories of workers are also in high demand in the labour market. But they could be suitably motivated to offer part-time instruction in technical and vocational schools.

Technical education is expensive, and quality comes at a price. There is no substitute for adequate funding when it comes to delivering quality vocational education and training. In this regard, a training fund can be established to support TVET from payroll levies on employers. Training levies are in effect taxes imposed on enterprises to support skills development. Although the tax level is generally less than 2 percent of the enterprise payroll, the cooperation of employers is necessary for the successful implementation of such a scheme. Training levies are in operation in several African countries, including Cote d'Ivoire, Mauritius, Mali, South Africa, and Tanzania.

Competency Based Training (CBT) can also enhance quality. The concept of competency-based training is not new to Africa. Traditional apprenticeship,

particularly as practiced in West Africa, is competency based. A competency is the aggregate of knowledge, skills and attitudes; it is the ability to perform a prescribed professional task. CBT is actually learning by doing and by coaching. It is necessary to incorporate the principles and methodology of CBT into the formal technical and vocational education system. However, since the development and implementation of competency-based qualifications (involving standards, levels, skills recognition and institutional arrangements) are very costly in terms of training infrastructure and staff capacity, piloting of the CBT approach in a few economic and employment growth areas is recommended, rather than a wholesale training reform strategy. Vocational students should be encouraged to build a portfolio of projects undertaken or items produced during training as evidence of proficiency and proof of ability to perform prescribed professional tasks.

Quality should be seen as “fit for purpose”, rather than as measuring up to an ill-defined standard. Quality that is fit for purpose is dynamic and improves as the purpose or the job to be done moves up to a higher plane. A decentralized and diverse TVET system that includes school-based training, enterprise-based training, and apprenticeship training (both non-formal and informal) requires a strong regulatory framework for overseeing training curricula, standards, qualifications and funding. A suitable qualifications framework and inspection system will provide the necessary quality assurance and control mechanism within such a diverse system.

ii) Assuring relevance and employability of trainees

Assuring the employability of trainees begins with effective guidance and counselling of potential learners in the choice of training programmes in relation to their aptitude and academic background. Employability presupposes the acquisition of employable skills that are related to the demands of the labour market. Labour market information systems and tracer studies which track the destination of graduates in the job market can provide useful feedback for the revision of training programmes so as to enhance the employability of trainees.

iii) Improving coherence and management of training provision

In order to ensure coherence and management of training provision, it will be necessary to establish a national agency or body to coordinate and drive the entire TVET system. Depending on the country, this agency could be under the umbrella of the ministry of education and vocational training or stand on its own

as an autonomous body. In either case, the coordinating agency should include representation from all relevant stakeholders, including government policy makers, employers, public and private training providers, civil society, alumni associations, and development partners.

Strengthening the management and coherence of training provision cannot be complete without a National Vocational Qualifications Framework (NVQF) that ensures the transfer of learning credits and mutual recognition of qualifications within the entire system. The South African National Qualifications Framework provides such a mechanism for awarding qualifications based on the achievement of specified learning outcomes prescribed by industry. The framework allows for accumulation of credits and recognition of prior learning, which promotes the culture of life-long learning. The development of a qualification's framework is not an easy task. It involves the active involvement of industry practitioners, teachers, and policy makers. Some countries have a single qualifications framework that embraces both vocational and general education and extends beyond vocational qualifications. As an example, Tanzania is developing 10-level national qualifications framework (NQF), ranging from craftsman qualifications (level 1 – 3) through technician, diploma, and bachelor's degree qualifications to master's degree (level 9) and doctorate degree award at level 10. It is, however, too early to evaluate the Tanzanian experience or recommend it to other countries.

iv) Flexibility of training and life-long learning

Life-long learning has a beneficial effect on the development of a high quality TVET system. This is because the skills of the workforce can be continually upgraded through a life-long learning approach. This also means that learners who have had limited access to training in the past can have a second chance to build on their skills and competences. Life-long learning also involves the recognition of prior learning, whether in the formal or non-formal system. A National Qualifications Framework can provide the needed flexibility and coherent framework for life-long learning within the entire TVET system through the creation of equivalent qualifications across all the sub-sectors of vocational and technical training: formal, non-formal and informal.

v) Status and attractiveness of TVET

Enhancing the status and attractiveness of TVET will involve changing perceptions and attitudes of the public about technical and vocational education.

For this to happen, the use of role models in TVET and the involvement of successful entrepreneurs in motivation campaigns, especially in schools, will be necessary. An embarrassing shortage of role models is one of the banes of TVET. Technical and vocational education should be seen as a valid passport to a good job and not as a second-best choice or the only educational route for the academically less endowed.

The status of technical and vocational education can also be enhanced by upgrading polytechnics and polytechnic-type non-university institutions to offer technical or “skills” degrees. The trend world-wide is to strengthen polytechnic institutions and their role in industrial and technological development, re-engineer their training programmes for greater relevance and higher quality, and generally raise their status and attractiveness as higher institutions of choice for senior secondary school leavers. Japan, Korea and Singapore have been awarding “skills” degrees for many years now and Ghana has recently granted accreditation to two of its polytechnics to start offering degree programmes in a few technological areas. The Kenya Government has also decided to follow this positive trend of revitalizing polytechnic education and promoting skills training to the highest level possible.

Key policy issues

i) Linkage with other national policies and strategies

Since technical and vocational education constitutes only one item of many on a country’s development agenda, it will be necessary for each country to define and specify clear articulation lines between TVET and other sectors of the national economy in order to effectively link its TVET policy to other national strategies and policies in the area of education and training at all levels, employment, and socio-economic development. This means that national TVET strategies in Africa must give priority to training in areas such as agriculture, ICT, and modern infrastructure development. An efficient transport and communication network, a reliable energy and water supply system, adequate housing, and national food security are basic requirements for industrialization.

ii) Linkage with regional and international policies

In the inter-connected world of today, no country is an island. It is therefore important for national TVET policies to create room for possible dovetailing into existing regional and international education and training policy frameworks and

protocols. National TVET strategies should take into account the education and training protocols of regional groupings like ECOWAS, SADC, and COMESA (where they exist), and those of acknowledged international agencies involved in education and skills training, such as UNESCO, ADEA, and ILO.

iii) Linkage with the world of work

Since the ultimate objective of TVET is employability and employment promotion, it is necessary to link training to the needs of the labour market. TVET must be relevant and demand-driven, rather than supply-driven and a stand-alone activity. In order to do this, data is required on the actual employability of TVET graduates, available job opportunities, and the evolving skills demands on the labour front. Determining the demand for skills is best achieved through country specific Labour Market Information Systems (LMIS) and other survey instruments. The function of a labour market information system or labour market “observatory” is to collect, process and make employment projections from information provided by employment ministries and agencies and from demographic surveys, tracer studies that track the employment destination of TVET graduates, labour market related reports produced by economic think-tanks, and feedback from employers. An effective LMIS will be difficult to establish and operate now in many African countries for the simple reason that there is a paucity of data and information from which labour market trends can be captured, as well as lack of trained research staff with adequate technical expertise to run the system. In the short term, however, indicative labour market information can be gathered from trade and employer associations, NGOs, employment agencies, as well as large public and private sector employers. Training institutions can also conduct local labour market surveys in and around their localities. Information so gathered and analyzed would then serve as inputs for the development of new or revised courses and training programmes, equipment and learning materials selection, instructor formation, and guidance and counselling of students and trainees.

iv) Instructor training and professionalization of TVET staff

The professional and pedagogical competence of the technical teacher is crucial to the successful implementation of any TVET strategy. Governments should therefore make conscious efforts, not only to train but also to retain technical teachers in the system. Technical teachers may be suitably motivated through equitable remuneration packages and incentive schemes that may include

government subventions and loans to teacher associations and special credit facilities for the teachers to acquire cars, houses, etc.

The delivery of quality TVET is also closely linked to the building of strong management and leadership capacity to drive the entire system. TVET system managers, professionals and policy deciders will therefore also have to be trained and their skills upgraded to enable them confidently to drive the system with its various implementation structures, including qualifications framework, accreditation standards, assessment guidelines, quality assurance and accountability frameworks.

v) Funding and equipping TVET institutions

On a per student basis and compared with other levels of education, in particular primary and secondary education, TVET is much more expensive to deliver. There is need therefore to spread the funding net as wide as possible to include:

- National Governments: Governments should allocate a respectable percentage of their national budgets to the TVET sector
- Employers: Employers, both public and private, should contribute to a training levy based on a percentage of their enterprise payrolls.
- Development Partners: The World Bank and the African Development Bank, for example, can support country-specific projects, multinational projects, and micro-financing schemes.
- Trainees: Equitable cost-sharing mechanisms and fees paid by students and trainees should help offset their training costs
- Training Providers: Training providers and institutions can raise funds internally through the operations of their production and commercial units
- Community: Local communities can make cash and non-cash contributions in the form of land and through community fundraising activities.
- Donors: Individuals or groups (e.g. wealthy individuals, churches or faith-based organisations, NGOs) can support TVET through donations and endowments.

POLICY ROLES AND RECOMMENDATIONS

| Governments | Educational Institutions and Training Providers | Parents and Guardians | Donors and Development Partners |
|--|--|--|--|
| <ul style="list-style-type: none"> • Develop and support implementation of national TVET policies; • Improve coherence of governance and management of TVET; • Introduce policies and incentives that will support increased private sector participation in TVET delivery; • Improve capital investment in TVET; • Establish TVET management information systems for education and training, including labour market information system; • Institute measures to reduce gender, economic, and | <ul style="list-style-type: none"> • Provide training within national policy framework; • Deliver a flexible and demand-driven training; • Develop business plans to support training activities; • Establish strong linkages and collaboration with employers and industry; • Mainstream gender into training activities and programmes; • Introduce ICT into training • Institute bursary schemes for poor trainees; • Strengthen guidance and counselling services to trainees; | <ul style="list-style-type: none"> • Support children and wards to choose the vocational education track; • Reject perception that TVET is for the less academically endowed; • Lobby politicians in favour of TVET; <p>Support activities of educational institutions and training providers</p> | <ul style="list-style-type: none"> • Support development and implementation of national TVET policies and strategies; • Fund small business development research; • Fund acquisition of training equipment; • Support post-training employment support services for TVET graduates, including business start-ups; • Support capacity building in TVET sector – instructor training, management training, technical assistance, etc. |

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| <p>geographical inequities in TVET provision;</p> <ul style="list-style-type: none"> • Introduce sustainable financing schemes for TVET; • Increase funding support to the sector; • Build leadership and management capacity to drive TVET system; • Mainstream vocational education into the general education system, so that the vocational track is less dead-end; • Introduce ICT into TVET • Constantly monitor and periodically evaluate the performance of the system and apply corrective measures accordingly. | <ul style="list-style-type: none"> • Network and bench-mark with other training providers; • Involve community, parents and guardians in training activities. • Training institutions should be encouraged to be profit-oriented and to become active operators in the training market; | | <ul style="list-style-type: none"> • Help in identifying and disseminating best practices in TVET; <p>Support TVET advocacy initiatives, motivation campaigns and programmes</p> |
| <p>Employers</p> | | | |
| <p>Deliver workplace training to employees</p> | | | |

- Contribute financially to national training fund
- Provide opportunities in industry for TVET teachers to regularly update their workplace experience;
- Provide opportunities for industrial attachment and internships for trainees
- Contribute to the development of national skills standards.

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