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**Promoting critical knowledge, skills and
qualifications for sustainable development in
Africa: How to design and implement an effective
response by education and training systems**

Sub-theme 2

**Lifelong technical and
vocational skills development
for sustainable socioeconomic
growth in Africa**

**Reform of TVET Teacher Education in Kenya:
Overcoming the Challenges of Quality and Relevance**

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Working Document

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Acronyms and abbreviations

TVET	Technical Vocational Education and Training
TIVET	Technical Industrial Vocational Entrepreneurship and Training
VET	Vocational Education and Training
TSC	Teachers Service Commission
ILO	International Labour Organization
ICT	Information Communication Technology
IST	Institute of Science and Technology
TTI	Technical Training Institute
NGOs	Non Governmental Organizations
KTTC	Kenya Technical Teachers College

1. ABSTRACT

1. Quality of Education and training is a major consideration worldwide. It is even a more crucial issue in the technical vocation Education and training (TVET). The determinants of the quality of education and training include among others the quality of teachers, learners, the learning environment, facilities for learning and the curricula organization. This report articulates the historical development of the TVET teacher training in Kenya with a view to highlighting how quality of education and training may be promoted. It looks at the organisation of the education and training and lessons that may be advanced for the other developing countries. It is based on literature review for historical developments and an analytical survey that was carried out to establish the views of the presently serving TVET teachers in Kenya. The report argues that there is a need for continuous reform and upgrading of the skills that teachers possess, that the facilities for training should be as close and similar to the facilities found at the workplace, and that the institution–industry link should be made more mutually beneficial.

2. EXECUTIVE SUMMARY

2. In the 1980s Kenyan government abolished the advanced level (A Level) in the education cycle and introduced the 8-4-4 system (8 years of primary, 4 years of secondary and at least 4 years of University education). The 8-4-4 curriculum was vocationalized with the expectation that those who exited from the system at each cycle would have acquired essentials skills to be able to find salaried employment or self-employment. This approach did not work and most of the vocational subjects introduced have been quietly let to fallow due to the cost of implementation and sustainability.

3. In pre-colonial Kenya, learning for each generation of youth was through traditional apprenticeship where learners observed masters and gradually developed abilities to execute required tasks. The elders were the instructors and ensured that youth were introduced to the fundamentals of their community and the practical aspects of the group. At colonisation, the territory, which later became known as Kenya, was under the influence of European missionaries and government from 1884 until independence in 1963. The missionaries introduced formal education to the people of Kenya as a strategy for their evangelical campaign. Their main aim was to make converts and catechists as well as the creation of labour for the exploitation of the natural resources. To achieve this goal all African schools in addition to basic literacy, were required to teach vocational subjects such as carpentry, masonry and agriculture. Education was not at all supposed to make people self-reliant, as it would then jeopardize the availability of cheap labour. Segregated European and Asian schools were not mandated to teach vocational subjects.

4. The period between 1960 and 1985 witnessed rapid change in the development of TVET. The new government wanted to put in place a strong economic base but was limited by the availability of adequate technical skills. This was compounded by departing skilled expatriates who chose to leave the country. Various commissions were set up to provide insight on the way forward. In 1981, the Mackay Commission recommended the establishment of a second university in Kenya that would be technology-based, which was a useful step towards rationalising vocational education and training. Further, the commission recommended far reaching changes to the education structure from 7:4:2:3 to 8:4:4, which was implemented in 1985 and is still the system in place. A major goal of this system was to produce self-reliant, all-round individuals who could fit easily into any working condition.

5. TVET in the early 80s received major focus from the government, which was facing a serious unemployment problem and turned to skilled training as a solution to the problem. In tandem with stimulating the informal sector, the government re-introduced technical education within the newly established 8-4-4 curriculum. The introduction to the 8-4-4 system of education was done without adequate consultation with key stakeholders. Even though the new system was a boost to vocational education, as emphasis was placed for its provision at both primary and secondary levels, the cost of construction of workshops, equipment, teaching and learning requirements was too heavy on parents as they were required to avail these under the policy of cost sharing.

6. As the country enters the second decade of the new millennium, it is facing the challenges of a world in which skills and knowledge have become the engines of economic growth and social development. Globalisation and the rise of communication and information

technology are having marked impact on organisations and the individuals who work within them. It is no longer adequate for one to receive training that would sustain them throughout their working career. Training and education must now be viewed as a lifelong endeavour for one to remain relevant and marketable. Workers need to develop the ability to learn rapidly and to be innovative. This requirement puts a lot of pressure on quality training and the need for the trainers to be more adaptive to the changes in technology. This imperative is captured in the country's development blueprint, in which it aspires to reach middle income status by the year 2030. In Kenya's Vision 2030 Science, Technology and Innovation have been proposed as key drivers to achieving its desired goals. Consequently the reform of education and training are essential for the alignment of the curriculum and training methodologies to realize these aspirations. In the design and implementation of a curriculum the role of the teacher and especially the TVET teacher is crucial.

7. To understand how the TVET trainers would be involved in the education and training reform, it was necessary to conduct a survey. The survey covered the whole of Kenya but with emphasis on the areas where the TVET educationists and practitioners are more concentrated. The study concerned itself with the institutional challenges in relation to the workplace requirements, financing of TVET programs, the role of informal sector training, and skills challenges in relation to the TVET teacher training.

Key findings

8. Based on the results of the survey the following important lessons can be gleaned:
- i. The average TVET teacher in the system is young or in mid-career with the majority being diploma holders. This has implication on the kinds of in- service training or further education that could be organized to ensure that teachers are continually exposed to new technology, teaching strategies and industrial work experience.
 - ii. Most teachers expressed the desirability of active links between training institutions and the labour market to ensure the relevance of their training programmes. Unfortunately the same teachers reported weak links currently existing between the two. Indeed institution managers and policy makers speak about this situation often. Much needs to be done to achieve the desired cooperation between institutions and the labour market.
 - iii. The majority of teachers had a small work experience, which is clearly an undesirable situation. With the reported weak institution-industry links, these teachers are unlikely to find viable opportunities for acquiring more work experience.
 - iv. A good number of TVET teachers had taken advantage of existing opportunities in the country to further their professional training mostly at their own cost and time. The government needs to provide incentives and rewards for TVET teachers to access further training. This is absolutely critical in a TVET teachers' profession due the rapidly developing technology.
 - v. Nearly half of the respondents used the internet to access information about new technology. This is important in cultivating the concept of lifelong learning, relevance of TVET training and appreciation of the developments of ICT. They also indicated that they used the acquired knowledge directly in their teaching without having to wait for syllabus changes. This is a positive development as curriculum changes tend to lag behind technological changes. Teachers of necessity must be managers of their own learning and the teaching and learning environment of their trainees.
 - vi. The model of training most preferred by the respondents was one where an individual first acquired subject matter expertise and industrial work experience before undertaking pedagogical training. This has the advantage of individuals entering the teaching profession when they are more mature to make the right career decision. Care must be taken however, in

the selection of would-be trainees. From the puny industrial work experience cited it would appear that many entered the profession immediately after acquiring their technician diploma without any work experience.

3. BACKGROUND

3.1 The Political, Social and Economic Context

9. Kenya celebrated its 47th year of nationhood in December 2010. Since attaining independence in 1963 the country has experienced various changes in its social, economic and political development. In the first ten years there was rapid economic growth at an average of 6.6%. Promotion of access to education also saw the rapid increase in enrolment at all levels of education. To accommodate the increase in enrolment the government encouraged communities to build school facilities through ‘harambee’ spirit (pulling together). This involved communities raising funds to put up the facilities while the government assisted by supplying the teachers and in later years the running costs. The following 20 years saw lower growth in the economy which coupled with the rapid growth in population resulted in rapid rise in unemployment. The government resorted to different measures to try to alleviate the problem. In the 80s for example government abolished the advanced level (A Level) in the education cycle and introduced the 8-4-4 system (8 years of primary, 4 years of secondary and at least 4 years of University education). The 8-4-4 curriculum was vocationalized with the expectation that those who exited from the system at each cycle would have acquired essentials skills to be able to find salaried employment or self-employment. This approach did not work and most of the vocational subjects introduced have been quietly let to fallow due to the cost of implementation and sustainability.

10. Since 2002 there has been a relative steady growth in the economy which was partially interrupted by the post-election violence of late 2007 to early 2008. The country has since returned to improved political and economic stability which culminated in the approval of a new constitution in August 2010. The adoption of the new constitution is a key pillar of the country’s vision 2030. The new constitution calls for a devolved government structure and more accountability by public officials. Corruption, which has bedevilled the country since independence, is expected to be better controlled under the new constitution. Other important measures called for by the constitution are the setting up of relevant institutions to guide the country towards a middle level economy by year 2030.

3.2 The Development of TVET in Kenya

3.2.1 *The Pre-Colonial period*

11. In pre-colonial Kenya, learning for each generation of youth was through traditional apprenticeship where learners observed masters and gradually developed abilities to execute required tasks. Fathers, through organized groups of elders and villagers, facilitated and implemented African traditional education. The elders were the instructors and ensured that youth were introduced to the fundamentals of their tribe, religion and the practical aspects of the group. Some of the skills that were taught were in farming, fishing and hunting. Each group or tribe taught to the young the trade that was relevant to what was considered as the traditional domain of that particular group. These skills were a means of survival, hence responded to the quest for purposeful education. The curriculum, though not written down, was in forms of activities and experiences that provided youth with knowledge of survival tactics, craftsmanship, farming and oral number work. Use of the physical environment of the child was encouraged. This form of education was based on need. Fathers taught their children what they thought would be relevant in life. The key issue in this era was the situated relevance of education to the close society and the needs of the time.

3.2.2 The Colonial Period

12. The territory, which later became known as Kenya, was under the influence of European missionaries and government from 1884 until independence in 1963. The missionaries introduced formal education to the people of Kenya as a strategy for their evangelical campaign. The missionaries dominated the provision and administration of education throughout the colonial period (Eshiwani, 1990). They had low regard for African traditional education, a notion that was meant to disorganize the Africans in order to convert them to Christianity. Some of the other goals that missionary education was to serve were to enhance social stratification (Kivuva, 2002) for the different groups in the country. Education was utilized in preparing people of different races for their appropriate roles in society. The missionaries with indirect colonial government help shaped education educational developments in the territory. Their main aim was to make converts and catechists as well as the creation of labour for the exploitation of the natural resources. Education and training as a way of improving the livelihood of the locals was never of a serious consideration. This stratification created differential political, economic, social and academic facilitation, with the Africans getting the least even though they were the majority. The Europeans and the Asians were treated differently and better. During this time it was wrong for an African to attempt to aspire to equality with the colonial masters (Eshiwani, 1990). Education was not at all supposed to make people self-reliant, as it would then jeopardize the availability of cheap labour.

13. In 1911, the directorate of education was established. The colonial government intended to use education as an instrument for change. The educational goals and policies for Africans were the basics of reading, writing and arithmetic. This was relevant education for the creation of clerks and office messengers. By 1934, formal education with a strong emphasis on vocational education was taking shape, but with a lot of negative feelings among the colonised. For the African child, emphases were on Christian religion, a little reading and writing in the vernacular, arithmetic and elementary hygiene. In the practical group (Okech & Asiachi, 1992), subjects included rural agriculture, arts and crafts, rural carpentry and domestic science. These subjects were taught not for the benefits of the African but to form a strong workforce for the colonialists. As a result, the Africans formed negative attitudes towards vocational education as these subjects were not taught at the Asian and European schools. The colonised saw these subjects as a tool by the Europeans to achieve their goals. However, this formed the highest level of education for an African child at that particular time.

14. The Beecher report of 1949 recommended some changes. A small, selected group of African children were to be allowed to taste secondary education after which they would go back to the rural areas to help their fellow Africans or be given junior clerical jobs in offices. The other reason for this change was that there were enough European establishments in Kenya that needed people with formal education for better production to serve the needs of the masters (Eshiwani, 1990). The 1950s were a period of political, economic and social change. Kenyans were beginning to see the need to have the right to decide on matters affecting their lives. The needs for education, freedom, better housing and health, and economic and social development were striking. At this time, the struggle for independence was open and in force. This pressure persisted until independence in 1963. The guiding principle in this era was education to serve the needs of colonial masters and to make the colonized understand the master as more powerful, able, righteous and so on. These small things led to the establishment of a primacy effect that has hindered the formation of positive views about vocational education and training.

3.2.3 Independence to 1985

15. The period between 1963 and 1985 witnessed rapid change in the development of TVET. The new government wanted to put in place a strong economic base but was limited by available

qualified technical skills. This was compounded by departing skilled expatriates who chose to leave the country. Various commissions were set up to provide insight on the way forward with human resource development. A continent that was throwing off the yoke of colonialism was alive to the need of trained human resources. In 1961 for instance, there was an Education Minister's conference held in Addis Ababa, Ethiopia. One of the recommendations was that African countries were to develop trained manpower as a priority for education. Enrolment targets for schools, which were to be achieved by the year 1980, were set (Okech & Asiachi, 1992). Education in this case was to be used as an instrument for change and Kenya followed these recommendations.

16. Soon after independence, the Ominde Commission was appointed. The Ominde Report of 1964 had the main recommendation that the curriculum should be revised to make it more relevant to the Kenyan child. There was to be more emphasis placed on practical subjects. In order to provide the manpower that was needed, the Commission recommended that education should be planned in relation to employment opportunities (Okech & Asiachi, 1992). These recommendations were helpful, but they did not deal with the situated view of practical education that had been established before. Some Kenyans thought that it was their time to take the place of the colonizers; hence education was not seen as a liberator of the mind but as a tool for taking advantage over others, especially the illiterate. Over-emphasized was the esteem of white-collar jobs compared with blue-collar jobs.

17. Technical secondary schools were established in the 60s following the recommendations of the Ominde Commission. This was initially achieved by converting existing two-year vocational schools (Trade Schools) into 4-year Technical Secondary Schools from around 1966. Secondly additional institutions were built across the country to bring the total number to about 20 towards the second decade after independence.

18. The Gachathi Commission of 1976 resulted in a report that addressed the issue of national development and educational objectives. It is also known as the National Commission on Educational Objectives and Policies (NCEOP). It redefined the Ominde Report and promoted a number of educational objectives (Okech & Asiachi, 1992). The Gachathi Report contained the following notable recommendations. There was a need to revise the general school curriculum to make it more practically oriented. It also recommended that there was a need to extend primary education from seven to nine years, and abolish two extra years of secondary school, thus leaving only four. It was from this report's recommendation that the third and fourth development plans were mooted. The third developmental plan emphasised, among other things, the teaching of vocational subjects in the technical, agricultural and business fields.

19. A consequence of the rapid development of general education after independence was the creation of a large number of youths who completed primary education and could not find secondary school placing. There were not enough schools to admit all primary graduates. The National Christian Council of Kenya (NCCCK) conceived the idea of Village Polytechnics to mitigate this problem. These institutions were located close to the rural communities for easy access and provided skilled training to meet the needs of these communities. Courses whose duration ranged from a few months to two years included building construction trades, auto mechanics, welding and fabrication, electrical wiring, agriculture and so on.

3.2.4 The Post 8-4-4 Period

20. The recommendations of the Gachathi Report (1976) were not implemented in the fourth developmental plan but they had impact on the next plan of action. The government appointed a working party for the establishment of a second university in Kenya, the Mackay Commission of 1981 (Okech & Asiachi, 1992). The university was to be technology-based, which was a useful step towards rationalising vocational education and training. This working party recommended change to the education structure from 7:4:2:3 to 8:4:4, which was implemented in 1985 and is still the system in

place. The introduction of the 8-4-4 system was one of the most radical attempted educational reforms in the country. A major goal of this system was to produce self-reliant, all-round individuals who could fit easily into any working condition. Vocational subjects were proposed to be introduced in primary and secondary schools to meet this goal. The examinable subjects in primary and secondary schools were increased. Another notable change was the conversion of the former technical secondary schools to technical training institutes. As the number of these institutions and enrolment increased the cost of running them had become unsustainable due to the high cost of materials used in training. In the mid 80s the government took the decision to convert the technical secondary schools to tertiary institutes where their contribution to national training pool was expected to be more relevant. In addition the government also took over the 20 or so institutions that were built by communities around the country through ‘Harambee’ effort to provide TVET education in their communities. Many of the communities found it difficult to provide for the recurrent costs of operating them.

21. TVET in the early 80s received major focus from the government. The country faced a serious shortage of employment and the leadership felt that skilled training could be the panacea to the problem. In tandem with stimulating the informal sector, the government re-introduced technical education within the newly established 8-4-4 curriculum. This initiative required all schools in the country, both primary and secondary, to establish appropriate facilities through community effort, for the teaching of vocational subjects. These were to be compulsory and would be tested by the Kenya National Examination Council.

22. The initiative created major implementation problems. Most schools, especially in the rural areas could not afford the cost of putting up the necessary infrastructure while the government itself could not produce adequate teachers in time. Eventually the cost of providing teaching and learning materials become too difficult to sustain for most schools. There was also a hue and cry over the large number of examinable subjects the children were being exposed to. The review of the curriculum inevitably followed and eventually vocational subjects were made optional.

23. The implementation of the 8-4-4 system of education was done without adequate consultation with key stakeholders, such as teachers, the teachers’ union and the public in general. Even though the new system was a boost to vocational education as emphasis was placed for its provision at both primary and secondary levels, the costs of construction of workshops, equipment, teaching and learning requirements were too heavy on parents as they were required to avail these under the policy of cost sharing. This led to increased dropout rates and discontent within the population. For instance, on 3 January 2003, the Kenya National Union of Teachers called for the new government to overhaul the 8:4:4 system of education, complaining that teachers had been neglected in the formulation of the system, which was further criticized for being burdensome to both parents and students (Chisaka, 2003).

24. In 1998, another commission was appointed to review the state of affairs under the 8:4:4 system of education. The recommendations of this commission (Koech Commission) were never officially implemented. However, in 2000, the Minister of Education and Human Resource Development announced that, in both primary and secondary schools, the number of examinable subjects were to be reduced, starting from January 2001. This was a short-lived remedy to a system that required complete overhaul. Aduda (2000) calls it “massaging rather than diagnosing” and reforming the education system.

3.2.5 Current Trends in TVET in Kenya

25. Technical, Vocational Education and Training (TVET) in Kenya is viewed as the kind of education that provides learners with the technical skills that can be used generally in technical fields. The localized term, Technical, Industrial, Vocational, Entrepreneurship and Training (TIVET) is used to describe all the TVET programmes under the Ministry of Higher Education, Science and

Technology. These programmes are designed to prepare skilled personnel for various positions in industry and the informal sector. These subjects differ significantly at different levels. However, the main offering of the TVET subjects is at the National Polytechnics, Institutes of Science and Technology (IST), Technical Training Institutes (TTIs) and Youth Polytechnics. National Polytechnics in Kenya offer diplomas, higher national diplomas and certificate TVET. Those designated as IST were formerly institutions constructed through community efforts and TTIs are the upgraded technical secondary schools. In practice there is little difference in what IST and TTIs offer which is generally diploma and certificate courses. There is a healthy enrolment of students in these TVET institutions ensuring that they can raise adequate resources to run their affairs. Enrolment is, however, skewed towards more academic programmes such as ICT, human resources, accounting, management and other business courses. Enrolment in the more practical courses such as mechanical, automotives, building construction trades are much lower. Youth Polytechnics have generally admitted post primary school leavers into courses that culminate in a trade certificate.

26. At the present time TVET is provided by several government departments in addition to the Ministry of Higher Education. These include the Ministries of Defence; Youth and Sports; and Labour. The government has developed a blue print to establish an independent TVET authority that is yet to be approved by the Legislature. The umbrella body would coordinate all TVET activities under one organization to be known as TIVET Authority or in short TIVETA. Clearly there is room for expansion at all levels as increased access to general education has created a large pool of youth looking for training in various fields. Although University education is the preferred choice of the larger proportion of the youth, the sheer number of those completing secondary education with the minimum entry requirement cannot find places in higher education. TVET institutions remain the alternative choice for most. There are also initiatives to improve the Youth Polytechnics (formerly known as Village Polytechnics) to bring them to standards that would enable them to provide training to post-secondary applicants. In the past they catered to mostly primary school leavers.

3.2.6 The Workplace Today

27. While TVET overlaps general education, it has a distinctive feature because it links more directly with the workplace (Keating, 1995). It is important that some trends at the work place are mentioned here to form the basis for the planned reforms. The work place is one of the fastest changing in the world today; skills and knowledge are the engines of economic growth and social development (ILO, 2003). The shift is towards high technology, service-oriented and self-directed work teams (Hull, 1997). Globalisation and the rise of communication and information technology are having marked impact on organisations and the individuals who work within them (Mitchell, Wood & Young 2001). The nature of work practice is also changing, thereby demanding changing skill levels (Billett, 2001; ILO, 2003) that require education and training throughout life. The workplace is highly susceptible to technological changes. In fact, technological changes and other changes stemming from globalisation of economies around the world are not only having a profound impact on the nature of work but also in the way it is organised and the required skills (Virgona, Waterhouse, Sefton & Sanguinetti 2003; Robinson 2000; Billett, 2001). As technology changes, there is need for training institutions to change their ways of training (Virgona, Waterhouse, Sefton & Sanguinetti, 2003) and incorporate flexible scheduling. The bottom line is the establishment of a culture of lifelong learning.

28. Kenya is no exception to the global trends affecting the workplace. Industries hiring TVET graduates must of necessity train them on the use of modern equipment they might have but are not available in training institutions. In the Kenyan context, however, there is the feature that in reality only a minority of the graduates do find employment in large organizations that operate at levels that are comparable to others globally. The majority of the graduates find employment within the informal sector or within small establishments that might still operate on older technological systems. Institutions at the very best can only hope to provide learners with the basic principles and skills and leave the final fine tuning of competencies to the workplaces that the learners will find

themselves. Other graduates find themselves in self employment perhaps sooner than they might have wished. For these individuals the entrepreneurship course that is now compulsory in all TVET institutions would come in handy as they grope for a foothold in a very competitive environment.

3.3 The Growth of Informal Sector Training

29. Due to lack of employment opportunities in a shrinking formal economic sector, more and more people have continued to seek an alternative livelihood in the informal sector. The informal sector was first officially identified by a 1972 landmark ILO study in Kenya that confirmed the existence of a parallel economy dominated by small businesses that absorbed a large number of persons that would otherwise be recorded as unemployed by economic surveys (ILO, 1972). The informal sector is described as consisting of “... all small-scale activities that are normally semi-organized and unregulated, and use simple labour-intensive technology... undertaken by artisans, traders and operators in work-sites such as open yards, market stalls, undeveloped plots, residential houses and street pavements... not registered with the Register of Companies, they may or may not have licenses from local authorities for carrying out a variety of businesses” (GOK, 1997: p 72). The informal sector has been efficient at utilizing waste materials such as old tyres, scrap metal, etc. to produce goods that have found a ready market in the low-income sector of the society and, increasingly, the middle classes. The innovativeness and ingenuity of the craftsmen in the informal sector have been responsible for services being provided to the society that would have been imported or otherwise too expensive (Darrow and Saxenian, 1986). Numerous studies have shown that these small businesses have often been started with little capital by individuals and with virtually no support from government or non-governmental organizations (King, 1977; House et al., 1990; McCormick, 1988).

30. Their founders often start small businesses in the informal sector as self-employment ventures. Enterprises in the informal sector are not homogeneous in size, in capital base or infrastructure. At the lower end of the sector, single or a minimal number of employees with a very small investment base characterize enterprises, while at the higher end they are often as well structured as any similar-sized formal-sector business. In Kenya, there has been a concerted effort by the government to encourage individuals to enter into self-employment as an alternative to wage employment, and to also create employment for others. Several non-governmental organizations have also been formed that focus on specific areas of the small business sector (Ferej, 2000). Within the informal sector a training system based on the apprenticeship model is thriving. It is estimated that the sector provides training to more youth than all the formal systems put together.

31. The informal (traditional) apprenticeship system in Kenya has its roots in the Indian craftsmen imported into the country at the turn of the century to help the British Colonial Government construct a railway line linking the seaport of Mombasa with the interior of the country (King, 1977). With the completion of the railway line, the Indian craftsmen stayed and formed the basis of skilled technical manpower in the country. Their skills were needed to maintain the railway system, operate and maintain factories that were being started to provide goods and services, and construct buildings for the settler community (King, 1977). People from the local communities were initially engaged as labourers on the railway construction project but gradually, by working alongside the Indians, acquired enough trade skills to work as semi-skilled and, later, as skilled workers.

32. A key characteristic of informal skill training in Kenya has been its relative ease of entry. According to King (1977), people in the East African region had not developed long traditions of craftsmanship and the inherent need to protect the skills from others in order to ensure continued patronage, had not been ingrained in them. Entry then, as now, was based on kinship, friendship, and philanthropy (Ferej, 1994). Informal apprenticeship in Kenya has no rigid rules or time constraints about the duration an apprentice would take to learn the trade. Once a learner entered into an apprenticeship his acquisition of skills would depend entirely on his aptitude, and the quantity and

variety of work the owner/trainer was undertaking. A trainee could exit and seek employment elsewhere or start his or her own business, at any point he or she felt ready. In some cases the owner/trainer re-negotiated with the apprentice new terms, as the apprentice became more skilled. The fee structure too is quite flexible as the fees may range from nothing to amounts sometimes equivalent to high school annual fees (King, 1977; Ferej, 1994). Another characteristic of the Kenyan apprenticeship system is the low regard for formal certification. The worth of the craftsman is measured in the quality of work he does (King, 1977).

33. With this flexible, non-protectionist mentality, trade skills have spread very rapidly in Kenya. The public has been the beneficiary of the abundance of skills as technical services are fairly cheap to obtain within the informal sector. The abundance of skilled craftsmen has helped to provide some essential skills in the rural regions of the country as well. Some of the skilled workers return to their rural village homes and set themselves up to offer services that were either unavailable or too expensive to obtain. Another important contribution of the informal apprenticeship system is the opportunity for large numbers of youth to obtain skill training with little cost to both the learner and employer, and at no cost to the taxpayer. It would be impossible for the current training capacity to absorb all the youth that are now obtaining training from the informal apprenticeship system (Ferej, 2000).

3.4 The Skills Challenge

34. Balancing supply of skills with demand in the labour market constitutes one of the fundamental issues in skills development policy. Historically, however, since economic and technological change worldwide accelerated in the 1980s the inability of most TVET systems to adequately respond to these challenges can mostly be seen as a skills mismatch due to an insufficient demand orientation in TVET. This is even more troublesome, since the demand for skilled labour has risen significantly as a result of globalization, changes in technology, the organization of work, new development policies, including the transition to a low carbon economy, and the recent international financial crises and subsequent worldwide recession.

35. In the present environment, many observers contend that different individual skills sets are needed. A more complete skills mix incorporates many generic skills such as the ability to think logically, to plan precisely, to anticipate difficulties and to be innovative and creative so as to develop and update the —necessary capacities and skills [individuals] need to enable them to be productively employed for their personal fulfillment and the common well-be in (ILO, 2008b: 9). This skill mix in turn forms an essential component of a sustainable institutional and economic environment in which public and private enterprises enable growth, the generation of greater employment and income opportunities for all citizens, and whereby societies achieve their goals of economic development, good living standards and social progress. Consequently, there is a demand for a more skilled labour force, with more autonomous, adaptable and multi-functional workers. But the question remains: what incentives can be established to encourage training providers to organize training around this enhanced labour market and societal orientation?

36. In many countries, TVET and existing labour market policies do not always facilitate the school to work transition, thereby handicapping young people especially in obtaining a head start in working life. For TVET systems to become more flexible and responsive to new skill demands, which tend to be difficult to foresee and increasingly diversified, there must be certain incentives for the stakeholders in the training system as well as those in key employment planning and decision-making roles. The latter would include employment services, a labour market institution that is a crucial link between the training provided, labour requirements and responsiveness to labour market conditions, therefore also for teachers/trainers and students in order to make informed choices in the teaching/training dynamics. The key questions accordingly are what kinds of reforms are needed to address the lack of cooperation and create greater synergies between training and skills development

producers, and employers, public and private, in ways that render the transition from education and training to employment more responsive to labour market needs.

37. One set of responses has been provided in a recent ILO policy dialogue forum on sectoral training strategies. Examining global drivers of long-term change that bear on the provision of training and skills, a strategic framework that creates bridges between training and the world of work, and the essential building blocks of a robust training strategy, the strategy emphasizes the cornerstones of policies to expand skills and broaden access to skill formation:

- quality education as a foundation for future training;
- a close matching of skill supply to the needs of enterprises and labour markets;
- enabling workers and enterprises to adjust to changes in technology and markets; and
- anticipating and preparing for the skills of the future.

38. The strategy insists that, when applied successfully, this approach nurtures a virtuous circle in which more and better education and training fuels innovation, investment, economic diversification and competitiveness, as well as social and occupational mobility – and thus the creation of more but also more productive and rewarding jobs (ILO, 2010).

39. Kenya faces a more complex skills challenge. While globalization demands that the country upgrades its trainings systems to effectively compete, a large number of industries still operate on older technologies. This requires an eclectic approach to training that creates graduates who are flexible enough to adapt to varying work environments. The situation is further complicated by the presence of the informal sector which currently absorbs the majority of TVET graduates while at the same being the largest skills training ground through its informal apprenticeship. Going forward TVET institutions need to widen their catchment area by making their programs more attractive to those who have acquired their training through the informal apprenticeship system.

3.5 Financing of TVET

40. The overall cost of education is on the increase. Kenya in particular, in spite of short term economic crises, still needs to compete in an era of rapid economic and technical change (Bolina, 1996). TVET programs are expensive to run compared to general education, as it has been estimated that the cost of one technical school is equivalent to three schools offering general education (Kerre, 1997). Kenya is therefore getting more concerned about financing of TVET to meet the new and emerging labour markets requirements. Various financing strategies are practiced in different parts of the world, and Kenya is no exception. UNEVOC (1996) classifies some of the well-known financing mechanisms which includes; Public financing, private and public sponsored financing and international donor assistance. In the Kenyan context students pay fees annually broken into three terms to supplement government grants.

41. Each year the government provides some funds to each TVET institution to meet its running costs. Instructors who are registered with the Teachers Service Commission (TSC) are paid their salaries which are also derived from national annual budget. Some institutions, however, hire teachers through the institutions management boards where they have needs to meet and an instructor not posted by the TSC. Each TVET institution, depending on location and ingenuity of its leadership raise revenue independently through income generation activities. These activities include running extra courses where students pay higher fees than government stipulated rates. Other activities might be farming, service and repair and consultancy. Income generation is now so crucial that most TVET institutions depend on it for survival as direct government funds for recurrent expenditure is quite limited.

42. The government is faced with a shortage of resources and would like individuals, non-governmental organizations (NGOs) and the general public to share the financial responsibility for

TVET. The Kenyan government introduced a cost-sharing policy in 1988 when it called upon the communities, parents and beneficiaries of TVET to assist in raising additional funds to accelerate the expansion of training opportunities to increase access without compromising quality and relevance (Kerre, 1997). In addition, the government charges training levy to all industries to cater for the human resource development. However the demand for funds far outstrips available government resources.

43. Donor support plays an important role in development of TVET systems. In many developing countries such as Kenya, the large amount of international aid has contributed to the setting up of a base of training capacity (UNEVOC, 1996). Infrastructure and facilities have been created, staff trained and instructional systems implemented through donor assistance. Most donors provide financial resources for capital costs which is limited and for short periods (Herschbach, 1993).

44. Training institutions and the systems that support them are expensive, with the costs including the infrastructure, consumables and human resources. In Kenya, most TVET institutions are owned by Government and they are funded by the government. However, because of the increase in the demand for Technical education and existing high decadence in the infrastructure, the effect of the increase in funding could not be noticed substantially. The figure in the table 1 below shows the trends in the financing of technical education for 2002-2007. These are government allocations to the sub-sector mainly towards recurrent financing. The overall allocation has been increasing over the years but low despite its potential in transforming the quality of human resource for socio-economic development of the country. These have direct contribution on the production of competent technicians as facilities have not been able to keep up with changing workplace requirements in terms of equipment.

Table 1: Public Financing of TVET Institutions

Item/ year	01/02	02/03	03/04	04/05	05/06	06/07
Recurrent (Kshs)	888.33	889.94	1,171.40	1,449.38	1,865.23	2,113
Development (Kshs)	0.00	0.00	0.00	0.00	70.00	100.8
Total (Kshs)	888.34	889.94	1,171.40	1,449.38	1,935.23	2,214.39

Source MOE, 2010

3.6 TVET Teacher Training

45. The training of TVET teachers for the various levels and programs have evolved as the TVET has developed in the country. The following section reviews the key training systems that have been put in place over time to meet the needs of the TVET institutions. As stated before the colonial government mandated compulsory vocational training in segregated primary schools for the Africans. This schools offered carpentry and agriculture in most rural schools. Teachers of agriculture were prepared in primary school teacher training colleges around the country. Those who taught carpentry were trained at Jeans School in Kabete near Nairobi. There is scant literature on this programme. But it could be expected that they were trained in the trade as well as instructional techniques. Instructors in two-year post primary trade schools were usually holders of government trade test in their area of competence. These teachers often lacked pedagogical training.

46. At independence, the new government appreciated the need to accelerate the development of qualified human resources to lead the in the economic expansion that was necessary for the development of the nascent nation. Education in general and TVET in particular was seen as key to this vision. To provide teachers for the rapidly growing technical institutions in the 60s, the government created the Technical Teacher Training department at the Kenya Polytechnic in 1969 to address the problem. The department admitted students who had completed secondary level education either from the technical schools or general secondary schools. The adopted model took about 5 years for a trainee to complete the Technical Teachers Certificate. In the first three years trainees completed an approved technician course alongside regular trainees sponsored by industry. When industry

students returned to their employers during college vacations or during scheduled work phase part of the training, the teacher trainees were posted to various industries for work experience commonly known as industrial attachment.

47. After the successful completion of the technician training, trainees were posted on a full time basis with an industry for about one year of work internship. They then return to college a for a one year pedagogical training. Upon graduation the new TVET teachers were posted to technical secondary schools. In parallel with the long five-year programme and to accelerate the production of TVET teachers, qualified technicians were recruited from industry to join the one year teacher training. Untrained technical teachers with appropriate technicians also joined the programme for pedagogical training. Due to the difficulties of attracting qualified individuals for technical training, the government offered major incentives to the trainees. They received free education as well attractive stipends while on training. As demand for TVET teachers reduced, the incentives gradually removed.

3.7 TVET Diploma Teacher Training Programme

48. The programme at Kenya Polytechnic was transferred to the purpose built Kenya Technical Teachers College (KTTC) in 1978. The KTTC model initially adopted by KTTC was different to the Polytechnic one. In this model the technical competencies, industrial work experience and pedagogy were integrated. Nevertheless TVET teacher trainees still took about 5 years to complete their programme. Trainees in business and industrial arts took about 3 years to complete their training as the industrial attachment component was not part of their training. Trainees graduated with a diploma in technical education for engineering, business and catering teachers. In addition short instructor training was offered for all cadres of fields. Many of the trained instructors were sponsored by Youth Polytechnics, industries and security services that have TVET training programmes. In subsequent years with the adequate supply of qualified technicians, KTTC programme has reverted to the one year pedagogical training model similar to the old Kenya Polytechnic system.

3.9 Technology Education Degree Programme

49. With the adoption of compulsory of vocational education in the 8-4-4 system of education in 1985, the demand for qualified teachers to handle the courses became acute. The supply of new teachers from KTTC was inadequate to meet the demand for teachers required in the thousands of secondary and primary schools in the country. As a response to this critical demand the first four year degree programme in Kenya for Technology Education teachers was established at the Moi University in 1989. The Moi University programme follows the integrated model. The Moi University programme also provided upgrading opportunities for TVET teachers already in the field. TVET teacher training is an integral component of national skills development. Without effective and efficient teachers achieving the objectives of Vision 2030 of being a middle income economy might not be realized. Evaluating the performance the TVET teacher system in the country is critical towards the implementation of TVET reform.

4. EVALUATION of the TVET TEACHER TRAINING

4.1 Introduction

50. TVET teacher training has been offered in Kenya in one form or another since independence in 1963 to date. During this period different models have been implemented, changes introduced, variations made but without adequate feedback on the effectiveness of each model. This study conducted a quantitative and qualitative evaluation of the TVET teacher training system in Kenya. As the country marches forward with its implementation of Vision 2030, it must improve the quality of its human resource development. Vision 2030 has placed great stock in the improvement and provision of TVET as an important objective in achieving economic progress. To ensure quality TVET programmes the quality of the teacher as critical among other important considerations such as training equipment and learning and teaching materials.

51. This study covered the whole of Kenya but with emphasis on the areas where the TVET educationists and practitioners are more concentrated such as Nairobi, Kisumu, Nakuru, Mombasa, Eldoret and Nyeri. The respondents of the study were TVET trainers; Employers of TVET graduates; TVET teacher trainers; TVET administrators and policy makers; TVET Curriculum developers; TVET quality assurance officers; Industry representatives, civic and informal sector representatives. In total 150 respondents were reached to provide data for the study.

4.2 Analysis of Data

4.21 Profile of the TVET Teacher

52. The TVET teacher in the study was likely to be between the ages of 26 and 39 (57%), predominantly male (71%) and holder of Diploma certificate 37% or degree 33%. About 20% and 10% respectively held a certificate and a Masters degree as their highest qualification. As much as the profile is one of youthfulness there is a good blend of maturity as 41% were reported to be in the ages between 40 and 60. The duration of teaching was almost equally divided between those who have logged 5 years or less at 44% and those greater than 5 years at 56%. Over 95% of the TVET teachers interviewed were found to be employed at the tertiary level. A large number had undertaken their training at KTTC, 42%, Moi University 21% and the remaining in various colleges and universities in the country. Underpinning the youthfulness of the TVET teacher, 59% had completed their training between the years 2000 and 2011.

4.22 Model of TVET Teacher Training Undertaken

53. Kenya has generally practiced two types of TVET teacher training. The first is where trainees are recruited after secondary cycle of education and put through an integrated curriculum featuring, subject matter specialization, pedagogical courses and industrial attachment before one is certified as a diploma or degree holder TVET teacher. The second model is where the trainees initially obtained subject matter specialization and industrial work experience before undertaking pedagogical training to become a TVET teacher. In the survey, 54% of the respondents had undertaken their teacher training after acquiring their subject specialization while 19% undertook the integrated model, 23% were degree holders that passed through an integrated model with only 5% taking a post graduate teacher training. The majority, 84% indicated that undertaking pedagogical training after acquiring subject matter expertise was the most effective model for training TVET

teachers. This model allows the trainees to complete their technical training, undertake a prescribed period of work experience before committing to a career in TVET teaching. At this point the trainee is more mature and presumably in a better position to identify teaching as a career of their choice unlike the integrated model where the learner is usually a school leaver with little knowledge of careers.

4.23 Further Training of TVET Teachers

54. Since completing the initial training, 44% of TVET teachers indicated that they had subsequently upgraded their qualifications. The most popular routes being the Bachelor of Education in Technology at Moi University or Higher Diploma at one of the National Polytechnics. The majority (84%) of those who had not taken further training or upgraded their qualifications gave lack of finance as their reason for not doing so. Slightly less than half indicated that there were incentives for professional upgrading that included paid leave, salary increments and promotions.

4.24 Work Experience of the TVET teacher

55. A large number of TVET teachers interviewed, 38%, reported that they had acquired industrial work experience of only 6 months or less; 26% had work experience of between 12 months and 36 months and 16% had work experience of over 36 months. The majority of the respondents worked at the tertiary level and were responsible for training learners preparing for direct entry into the workforce. All the teachers acknowledged the importance of industrial work experience. Without adequate initial work experience and regular updating a teacher will fail to reflect and demonstrate the appropriate work context to his or her students. It is encouraging, however, that a good proportion of teachers, 53%, reported that they have had at least 3 months industrial work experience since they started teaching, while 25% reported to have had more than a year of industrial experience. Industrial attachment was also ranked the highest at 81% as the most effective way of staying in contact with industry. A full two thirds of the respondents indicated they felt more comfortable teaching theory than practical. This could be a reflection of an inadequate industrial work experience.

56. In spite of reporting relevance of industry as important to their professional development, most of the respondents, 89%, indicated that their links with industry was either weak or very weak. Clearly much needs to be done to improve links and better working partnership between institutions and industry to ensure training remains relevant. To improve relations with the labour market, respondents proposed that industrial attachment 30%, exchange programmes 24%, providing market driven curriculum 20% and quality of training 19% were the strategies to adopt.

4.25 Coping with Technological Change

57. TVET teachers constantly face changes in technology within their teaching domain. This aspect of the profession is inherent and every TVET teacher needs to adapt to ensure that their trainees meet the needs of the labour market. The alternative is to gradually become irrelevant professionally. Respondents indicated that they stayed up to date with changing technology through the Internet 54%, workshops and seminars 34% and through research 7%. It is interesting that over half of the respondents proposed the internet as their avenue for staying in touch. It would be the most up to date in the materials available but more importantly allows for individually driven self-learning, clearly suggesting that respondents are already aware of the need to personally be responsible for their lifelong learning. When asked how they reflected new technology in their teaching, 30% of the respondents said they would wait for it to be reflected in the syllabus while 48% said they would update their teaching notes and 15% citing appropriate examples. Clearly the majority appreciates the need to adjust the contents of their teaching and not necessarily wait for curriculum changes which have generally a longer revision cycle than the evolving technology.

5. CONCLUSION

58. This paper examined the TVET trends in Kenya over several decades with emphasis placed on developments since the country gained independence in 1963. It specifically incorporates findings from TVET teachers on the models of teacher training used to prepare practitioners in the field and what needs to be done to improve quality to better address market demands. Based on the results of the survey the following important lessons can be gleaned.

59. The average TVET teacher in the system is young or in mid-career with the majority being diploma holders. This has implication on the kinds of in service training or further education that could be organized to ensure that teachers are continually exposed to new technology, teaching strategies and industrial work experience. A good number of TVET teachers had taken advantage of existing opportunities in the country to further their professional training, mostly at their own cost and time. The government needs to provide incentives and rewards for TVET teachers to access further training. This is absolutely critical in a TVET teachers' profession due the rapidly developing technology. Lifelong learning must be made an integral part of the life of TVET teachers.

60. Most teachers expressed the desirability of establishing active links between training institutions and the labour market to ensure the relevance of their training programmes. Unfortunately the same teachers reported weak links currently existed between their institutions and the labour market. Indeed institution managers and policymakers speak about this situation often. Much needs to be done to achieve the desired cooperation between institutions and the labour market. Clearly the initiative must come from the institutions reaching out to industry or the labour market.

61. The majority of teachers had inadequate work experience, which is clearly an undesirable situation. With the reported weak institution-industry links, these teachers are unlikely to find viable and conducive opportunities for acquiring more work experience. Every effort should be made to ensure that before recruitment into the TVET teaching profession trainees have been exposed to a prescribed working experience in relevant environment. This will form the necessary threshold to build upon once they become teachers.

62. Although the respondents have passed through various models of teacher training, most preferred by the was one where an individual first acquired subject matter expertise and industrial work experience before undertaking pedagogical training. This has the advantage of individuals entering the teaching profession when they are more mature to make the right career decision. Care must be taken however, in the selection of would-be trainees. From the puny industrial work experience cited it would appear that many entered the profession immediately after acquiring their technician diploma without any work experience.

63. Finally it was observed that nearly half of the respondents used the internet to access information about new technology. This is important in cultivating the concept of lifelong learning, maintaining the relevance of TVET training and appreciating the developments of ICT. The acquired knowledge was used directly in teaching without having to wait for syllabus changes. This is a positive development as curriculum changes tend to lag behind technological changes. Teachers, of necessity therefore, must be managers of their own learning and the teaching and learning environment of their trainees to ensure the relevance of training offered.

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