TVET Response to Global Challenges of Sustainable Development

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Abstract

The concept of sustainable development is central to the future of humanity. Since any meaningful change in society, environment or economy can only be driven by and through education, then Technical and Vocational Education and Training (TVET) has gained more prominence in international debates on sustainable development. The central focus of this paper is to review global practices to show how TVET has responded to the global challenges of sustainable development. The paper used secondary research or desktop research methodology to review data from existing resources and relevant literature in defining and contextualizing the concepts of TVET, global challenges and sustainable development. The paper then drew from global practices to discuss TVET's response to global challenges of Sustainable Development that include fostering peace; the green skills agenda and the fight against global warming; responding to poverty and reducing inequalities; and fostering local appropriate technologies to solve challenges of the present and future. Through the detailing of TVET's key role in enabling nations to tailor their development in consideration of their societies, economies and environment, the paper makes a strong case for nations to; promote and improve quality TVET, reorient TVET programmes, build public understanding and awareness of TVET, enact green frameworks, and governments to invest in the subsector.

Keywords: TVET response, global challenges, sustainable development

INTRODUCTION

The United Nations General Assembly adopted the 2030 Agenda for Sustainable Development that includes seventeen sustainable developments goals. Among these goals is that on ensuring equitable and inclusive quality education (goal 4); promoting economic growth that is inclusive and sustainable (goal 8); and goal 11 that is on ensuring safe, resilient and sustainable cities and settlements (United Nations, 2019). Aspiration Number 1 of the Africa Agenda 2063 points to sustainable development and inclusive growth as the basis for a prosperous Africa. The aspiration is that the continent of Africa should be prosperous by the year 2063 with the resources to direct her own development in a sustainable manner and with among others: a citizenry that is well skilled in science, technology and innovation; and where discrimination and poverty don't deny any child access to school (African Union Commission, 2015). It is evident in the two strategic plans (World and Africa respectively) that the concept of sustainable development is central to the future of humanity.

In the 21st century, several developing countries are increasingly relaying on TVET as a means to realize sustainable development. To do this, TVET is playing two crucial roles: provision of training opportunities and career advancement avenues for the increased school leavers; and provision of a skilled manpower needed at different

levels of the economy. The expectation is that, in the absence of salaried employment, the developed skills should be able to usher in an era of self-reliance that in turn enhance the industrialization process.

TVET refers to education and training geared towards equipping a person with skills related to a profession and as such enable them get a job and/or livelihood (TVET Journal, 2021). The term is defined by UNESCO cited in Kingombe (2012), as a comprehensive term that refers to those aspects of the educational process that in addition to general education, involve the study of technologies and related sciences, and the acquisition of practical skills, attitudes, knowledge and understanding related to occupations in the various sectors of economic and social life (Kingombe, 2012). This definition, whereas comprehensive and all-inclusive, remains silent on the nature of future jobs where all signs show will be altered by technology. This is where the European Commission definition goes into detail. They defined TVET as "learning pathways which aim to equip people with knowledge, know-how, skills and/or competencies required in particular occupations or more broadly in the labour market' for the jobs of today and tomorrow" (European Commission, 2014). This forward-looking and progressive definition of TVET lays emphasis (as it should) on jobs not only being for today but also tomorrow. This is a very important observation, especially in these times when the technological revolution we are witnessing constantly redefines the type and nature of jobs available.

Global Challenges are multinational in nature and require solutions that are trans-institutional. Global challenges require collective interventions from intercontinental organisations, governments, non-government organisations, corporations, universities and citizens (The Millennium Project, 2020). The fifteen global challenges include: 1- addressing global climate change while working towards achieving sustainable development; 2- clean water for everyone while avoiding conflict; 3- balancing resources and population growth; 4- emerging from authoritarian regimes to genuine democracy; 5- integrating improved global foresight in enhancing decision making for accelerated change; 6- converging communication and information technologies globally to work for everyone; 7- reducing the gap between the rich and poor through encouraging ethical market economies; 8- keeping the threat of immune micro-organisms, new and reemerging diseases under control; 9- Education that makes humanity knowledgeable and intelligent enough to solve emerging challenges; 10- through shared security strategies and values, reduce ethnic conflicts, use of weapons of mass destruction and terrorism; 11- Changing the status of women as a way of improving the human condition; 12- Keeping organized crime networks under check and thus stopping them from turning into supplicated global enterprises; 13- safely and efficiently meeting the growing energy demands; 14- improving the human condition through the acceleration of scientific and technological breakthroughs; and 15- ensuring that ethics are considered when making global decisions.

Development is defined as the actualization of an implicit potentiality (Fagerlind & Saha, 1989). The simplest example of this definition of Development is the patterned growth and maturation of a seed or an initial germ–cell, to the full adult. Thomas and Potter cited in Alam (2009), go on to argue that "All definitions of development contain the central notion of a process of change from a less desirable to a more desirable kind of society". This summary of the concept of development seems clear cut, but also raises questions such as; development of what? How is desirable defined? By whom? How is progression to be achieved? Etc.
In the quest for development, it is important to ensure that the pursuit of one's need does not blind us from the negative impacts such a development may have on future

generations. This is why the concept of sustainable development has globally taken centre stage in discussions on development. Sustainability is thus a progressive concept that places emphasis on past actions shaping the realities of the present while keeping the future in focus. The concept calls for the eradication of poverty and inequality by enabling citizens to shape own economic and income situation through the creation of productive capacities and decent work (International Labour Organization, 2018). It is thus a concept that seeks to balance between the pursuit of a society's development and an improved quality of life with the environmental, economic and social future of the society in mind (UNESCO, 2012).

Desai (2002) referred to sustainable development as an emerging paradigm of development that integrates social development, economic growth and conservation of the environment as interrelated and interdependent elements. He adds that, in terms of policy formulation and implementation, sustainable development requires a multiple stakeholder and citizen participation approach; and in terms of resources, both public and private resources should be mobilized so as to make good use of the knowledge, skills and energy of the society's future (United Nations, 2002).

At the core of sustainable development is the balance between the realities of the environmental, economic and social limitations that we face as a society today, against our numerous and often competing needs for survival (Sustainable Development Commission, 2011). This view clearly points to the fact that existing and future communities should meet their diverse needs sustainably through creating equal opportunity for all, social cohesion and inclusion, and promoting personal wellbeing.

METHODOLOGY

Secondary research or desktop research methodology was used to review data from existing resources and literature in defining and contextualizing the concepts of TVET, global challenges and sustainable development. Hox and Boeije (2005) contend that data collected by researchers for other purposes can be used to answer some social research questions. Andrews et al. cited in Johnston (2014) attribute the prevalence of utilizing existing data for research to the vast amounts of data that has been collected and archived by researchers in the recent past. They add that, the utilization of such data is a viable option (Johnston, 2014). As such the paper explored existing data on global practices to discuss TVET's response to global challenges of Sustainable Development before making some key recommendations that shall enable TVET to effectively continue to respond to the global challenges of sustainability.

RESULTS AND DISCUSSION

In the last decade, TVET has gained more prominence and attracted more attention globally as a vehicle for sustainable development. International discourse on issues of global societies, economic development and conservation of the world's environment are all featuring TVET as a plausible response in terms of tangible solutions and awareness creation. Gradually, countries are integrating education strategies, tools and national targets into their sustainable development strategies (UNESCO, 2014). Globally, there is now a movement towards making TVET more relevant to the social, economic and environmental challenges that our planet faces today. It is thus hoped that quality education for sustainable development, such as TVET, can respond to global challenges through reinforcing societies' sense of responsibility as global citizens and preparing them for the world they will inherit (UNESCO, 2014).

TVET that responds to the challenges of sustainable development should address itself to the three pillars of Society, Economy and Environment (Ecology). This means that the provision and planning for TVET should shift from: TVET for development to TVET for sustainable livelihoods; TVET for the formal economy to TVET for the informal economy; and work being defined as employment to work defined as livelihood activities (Kotze, 2008). TVET for sustainable development should therefore focus on responding to issues such as: poverty; gender equity and equality; a healthy society; a clean and safe environment; a peaceful society; sustainable means of production; Culture; and indigenous technologies.

The Bonn Declaration on Learning for Work, Citizenship and Sustainability (2004), resolved that "Since education is considered the key to effective development strategies, TVET must be the master key that can alleviate poverty, promote peace, conserve the environment, improve the quality of life for all and help achieve sustainable development." It further emphasized the "equipping of people with the knowledge, competencies, skills, values and attitudes to become productive and responsible citizens who appreciate the dignity of work and contribute to sustainable societies" (UNESCO-UNEVOC, 2004). TVET's core response to these challenges is to ensure that individuals leave universities and institutions to go out into the world of work with the right values and understanding of the principles of sustainability. Thus, for a society to develop sustainably, TVET graduates trained based on the principles of sustainability need to be at the center of such a transformation (Karmel, 2009).

Based on the above definitions of the term's global challenges and sustainable development, we can derive and summarize those global challenges that have an impact on sustainable development and thus deduce how TVET has responded to them. These challenges include; Fostering peace, the green skills agenda and the fight against global warming, responding to poverty and reducing inequalities, and fostering local appropriate technologies to solve challenges of the present and future.

Fostering peace: Globally, cases of gross human rights abuse, destruction of infrastructure, and nation-wide destruction of the social and economic fabric have mostly resulted from conflicts. Considering that development can never be attained without peace, then it is important to note that by fostering peace we are working towards sustainable development. The main structural causes of conflicts in many countries originate mainly from unemployment of particularly the youth, marginalization of some sections of the society, and historical injustices on economic, political, or ethnic reasons. It is the accumulation and explosion of such incidences that forms the foundation and cornerstone of conflicts and as such if TVET can address them in any way then it would have responded to a global challenge.

The sustainable Development Goals cited in UNDP (2022), are a universal call to action in ending poverty, protection of the planet, and enjoyment of peace and prosperity. Goal targets 4.7 and 4.4 commit that by the year 2030: learners should be acquiring knowledge and skills that promote sustainable development through sustainable lifestyles, gender equality, culture of non-violence and peace, human rights, promotion of cultural diversity, and global citizenry; and that the number of adults and youth with vocational and technical skills for employment, entrepreneurship and decent jobs should have increased substantially (UNDP, 2022).

In Africa, there is a quiet but prominent movement to shift education strategy to include approaches that foster peace on the continent. TVET systems have slowly evolved to the specific context of respective societies, and focused on addressing conflict and disaster, through addressing disparities such as equity and access. By

focusing on those aspects that promote actualization of the individual's abilities and human capital development, TVET systems are responding to the key drivers of conflict and violence. Once young people's skills are developed for meaningful and gainful employment, they will undoubtedly be absorbed into meaningful participation in their respective societies and as such stay away from being manipulated and drawn into conflicts and violent activities.

To address the challenge of a poorly skilled youthful population, the government of Uganda has strategized, through her Vision 2040, to equip the youth with skills that are competitive globally as an avenue for attracting Foreign Direct Investment and strategic human resource remuneration that is adequate (National Planning Authority, 2013). As a direct response to this strategy, the TVET Policy (2019) has sought to establish a mechanism for financial monitoring and accountability to guide utilization of resources in the delivery of TVET with focus and attention on the poor as a means of alleviating poverty (Government of Uganda, 2019). With the young people skilled and in involved in meaningful employment, then manipulating them into clandestine and subversive activities will slowly be mitigated and eventually eliminated.

The green skills agenda and the fight against global warming: The international sustainable development policy is now aligning with the global TVET policy in responding to the green skills and green economy agenda. In different parts of the world, TVET systems are undergoing transformations so as to best support the green economic development through provision of green skilled workers being demanded by the new green businesses in the private and public sectors (UNESCO, 2014). The UN climate Conference of Parties, pledged to limit greenhouse emissions to 4 Gtonnes by the year 2030. This shift from business as usual has signaled that technology change, capital investment and environmental policy shall now have to advance together (Sofroniou, 2015). The main cause of global warming is emission of greenhouse gasses and the resulting consequences are the sea levels that are rising, climate change and marine currents that are modified. Thus, if our generation is to pass on a sustainable planet to the next generations, then the need for measures to protect the planet has become more pronounced globally.

TVET institutions have also responded to the global environmental challenge by taking on the role of a model corporate citizen. Through partnerships with environment management bodies, TVET institutions have become key players in environmental leadership, and have been empowered to shape the environmental agenda. Karmel (2009) cites an example of such a partnership in Australia where a TVET institution (Kangan Batman Institute) has linked up with the Victorian Environmental Protection Authority with the aim of making the Victoria region more sustainable, utilize resources efficiently and with minimal ecological impact.

The environment being among the three facets of Sustainable Development (Society and the Economy as the other two), means that issues of climate change pose a serious global challenge and as such the greening of the world societies and their economies becomes key to achieving sustainable development. This inevitably means two things: first, that there is a dire need for global economies to evolve from high-to-low carbon intensive means of production through exploration and harnessing of alternative energy sources; and secondly, structural greening adjustments in occupations of various sectors of the economy, which in turn demands for green skills.

TVET Systems are at the forefront of ensuring the evolution of sustainable means of production and skills training that is configured for the changes in the greening

employment landscape. Globally, TVET systems have been responding to the greenhouse gas emissions challenge (which is the number one cause for global warming) through adoption and implementation of curriculum and training practices of knowledge, skills, and attitudes that are geared towards developing human and social capital for the world of work that fosters environmentally sound sustainable development. This ongoing response to the ever-changing job landscape and green skills requirement, has made TVET the leader in addressing the green development agenda. Thus, TVET systems have been called upon, to supply responsible and well-informed workforce that is creative, competent, and capable of being agents for sustainability in the society and workplace (ILO, 2021).

In Uganda, the green economy concept is one of the tools being considered to achieve sustainable development and poverty eradication through utilization of the environmental and natural resources sustainably. Its envisioned that the improvement of human welfare, sustainable economic growth, enhanced social inclusion, and opportunities for employment and decent work for all, can all be achieved through the green economy while maintaining healthy functioning ecosystems (National Planning Authority, 2013). The Kenya TVETA strategic plan 2018-2022 has envisioned the inclusion of green values and attitudes in TVET training programmes through: (a) Training TVET lecturers in energy efficient technologies and renewable energy; (b) incorporating energy efficient technologies and renewable energy as a new optional subject in the curriculum; and (c) originating various sustainable development awareness-raising initiatives and activities that green TVET institutions (TVETA, 2018).

Responding to poverty and reducing inequalities: The World Bank's broader conceptualization of poverty as cited in King and Palmer (2007) considers poverty in a multidimensional manner. They regard poverty as going beyond income (such as its reference to those surviving on below one dollar a day) to include other parameters such as education achievement, risk exposure, vulnerability, health, and voice-lessness. They add that whereas the phrases 'skills development' and 'poverty reduction' are buzzwords, they have not only been rarely used for much of the past decade, but the former is more employed by development agencies whereas the latter is largely a donor term (King & Palmer, 2007). The wider relationship between the two terms is crucial in responding to inequalities and poverty eradication strategies of the developing and poorer transition economies.

Considering that the leading cause of poverty in many nations is unemployment, then by equipping the youth with employable skills, TVET responds to the global concern of poverty since the graduates enter the workforce immediately after graduation. Whereas action in a single economic sub-sector such as TVET may have limited impact on reducing inequalities and fighting against poverty on its own, in situations where such action has been embedded within a dynamic enabling environment, it has responded to the economic uplifting of the poor, through equipping them with skills for own enterprises or meaningful employment. King and Palmer (2007) opined that the initiative of alleviating poverty through skills development should be dependent on jump starting economic growth which in return can impact positively on poverty levels. Uganda has already committed to revising her curriculum, instruction methodology, and examination structure to align and make them responsive to the demands of the job market (National Planning Authority, 2013). The lower secondary curriculum has been reviewed to produce a secondary school graduate with employable skills that are competitive in the job market (NCDC, 2020). Concurrently, through the TVET policy (2019), the government of Uganda is in the process of reforming the TVET system to

respond to the country's skilling challenges so as to address the labour market efficiency, technological readiness and increased productivity (Government of Uganda, 2019).

Across the border, Kenya aims to achieve national cohesion, socio-economic development and upward social mobility primarily through education and training. The country has aspired, through her vision 2030, for a linkage between entrepreneurial skills, competencies required by the labour market and education and training. To actualize this aspiration, a policy for the TVET sector has been enacted to redirect focus towards meeting the needs of the workforce and self-employment through competence-based education and training (Kenya Vision 2030 Delivery Board, 2018). Obwoge et al. (2013) noted that major reforms especially in linking up TVET institutions with industry through policies enacted by government in consultation with the respective stakeholders, is key for the Kenya TVET sector to meet the demands of the country and also keep at par with global technological challenges.

TVET Systems and institutions are also ensuring equal and inclusive access to all individuals in need of skills regardless of their backgrounds, age or gender, and also mainstreaming the vulnerable members of the society (UNESCO-UNEVOC, 2021). To align with SDG goal 4, TVET systems across the globe have mainstreamed equality in access and training as a way of emphasizing equity and inclusivity of training and lifelong learning for all in need of skills regardless of gender, disabilities, culture, religion and social class. This response to the global challenge of inequalities, has given a free rein for TVET to address the issues of prejudiced practices, unfair authority relations, belief systems, and society's beliefs underpinning inequalities and societal segregations. The ever-increasing number of women and girls, marginalized communities and people with disabilities that continue to be enrolled into TVET institutions globally guarantees the well-being of their respective families and is a clear response of TVET to one of the global challenges of sustainable development.

Fostering local appropriate technologies to solve community challenges: As an ever-changing concept, sustainable development strives for the betterment of everyone's quality of life, while taking future generations into consideration and a reconciliation of social development, economic growth and environmental conservation. In a world where issues of sustainability are driven majorly through the economy as opposed to the education system, TVET through its emphasis on local appropriate technologies as opposed to foreign and imported technologies, has become a timely response to global challenges of sustainability through the 'generation of own solutions to own problems'. Karmel (2009) alludes to how organisations and enterprises facing prices of raw materials that are in scarcity as a result of environmental regulations and implications. As a remedy to this challenge, organisation and enterprises are seeking economically efficient technologies as a way of minimizing their costs. Thus, it's those employees with a good understanding of the relevant environmental regulations and green technologies needed to address these new emerging issues that are being sought after by organisations and enterprises (Karmel, 2009).

Through fostering the adoption, adaptation and then mastery of locally generated technologies that utilize locally available raw materials to modify the natural world to suit the local needs and conditions of the respective society, TVET systems, especially in the developing nations of the world, are responding to the global challenge of fast-tracking breakthroughs in technology and science so as to actualize progress of the human condition. This response is in several forms and opportunities that include: catalyzing the economic growth of a nation along with providing employment

opportunities to citizens; enabling nations to attain self-reliance in the technological arena through provision of ample opportunity for innovation, modernization and technological competitiveness; stimulation of industrial development, domestic capacity building and demand for the local technology in the global market; increasing opportunities in the field of agriculture (especially for developing nations); and imposing checks on the imports from overseas.

CONCLUSION

The evidences reviewed and discussed in this paper have clearly shown that TVET has become a moral leader, in championing responses to global challenges of sustainable development. The discussions have shown that TVET has played a key role in fostering peace through development of young people's skills for meaningful and gainful employment, enabling them to be absorbed into active participation in their societies and as such stay away from being manipulated and drawn into conflicts and violent activities. TVET has also promoted the green skills agenda and the fight against global warming through exploration and harnessing of alternative energy sources and structural greening adjustments in occupations of various sectors of the economy, which in turn demands for green skills; responding to poverty and reducing inequalities by tackling the issues of prejudiced practices, unfair power relations, belief systems, and social norms underpinning inequalities and societal segregations. In addition, TVET has fostered local appropriate technologies to solve challenges of the present and the future through adoption, adaptation and mastery of locally generated technologies that utilize locally available raw materials to modify the natural world to suit the local needs and conditions of the respective society.

As presented in this paper, TVET has thus far responded well to the global challenges of sustainability and there is enough evidence to show that its role will grow stronger in the future. Through TVET, the globe is ushering in a generation that seeks not the extension of humanity's ability and power over nature, but one that constantly ponders on whether its ensuing technologies are needed, simplify life for everyone; and are acceptable culturally to all concerned.

RECOMMENDATIONS

In order for TVET to effectively continue to respond to the global challenges of sustainable development, it will continuously have to go through structural and systemic transformations especially in the following areas:
   a) Promoting and improving quality TVET in the context of encouraging citizens' livelihoods that are sustainable;
   b) Restructuring TVET programmes to green the TVET curriculum by refocusing it towards knowledge, skills and attitudes related to sustainable societies, economies and environments. TVET should address society's context and as such be in a position to address issues of inequalities, equity and conflicts.
   c) A robust mechanism to build public awareness of TVET through among other avenues: community sensitizations and dedicated media campaigns; emphasizing practical training that empowers trainees and workers of all sectors with knowledge, skills and attitudes required to perform work and make decisions in a sustainable manner.
   d) Enacting green frameworks – to guide the transition from high-to-low carbon-intensive manufacturing systems. Governments shall require to enact greening policies that compel and incentivize industries and enterprises to adopt green

methods of production and as such enable TVET systems to supply the required workforce that is aligned with the ensuing green changes in the employment landscape.

e) Initiatives that foster innovation and entrepreneurship in the green transition should be prioritized in budget allocations by governments. Such initiatives would promote diversification into green goods and services and this green growth would lead to a path of sustainable development.

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