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Education in Times of Climate Change

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Incubating TVET Policies in Uganda

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Summary

This paper draws on research in Uganda about technical and vocational education and training (TVET) and sustainable livelihoods, arguing for a shift in TVET policy and practice to include solutions for climate resilience and incubate sustainable entrepreneurial solutions that can drive Uganda's employment and sustainable and inclusive economic development.

Keywords

Climate Change
Tvet Policy
Sustainability
Training

Introduction

It is widely accepted that climate change education build collective climate consciousness and resilience as climate change intensifies the pressure on livelihoods and the world of work. The International Centre for Technical and Vocational Education and Training ([UNEVOC, 2017](#)) proposes that countries, including Uganda, mainstream climate change education into technical and vocational education and training (TVET). According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), this would boost TVET's potential to provide adaptive capacities by skilling learners and upskilling professionals to facilitate the development of green sectors ([UNEVOC, 2017](#)). Uganda is already experiencing climate change impacts, and it has limited capacity to cope with this crisis (National Planning Authority, 2013). These effects are projected to be devastating to priority sectors, especially agriculture, where 80% of the country's rural population is directly or indirectly engaged ([Food and Agricultural Organisation, 2020](#)).

[UNESCO's \(2016\)](#) TVET strategy hinges on three pillars: 1) youth entrepreneurship and employability, 2) equity and gender equality and 3) facilitating the transition to a green economy. These could support developing countries, including Uganda, build resilience to climate change in pursuit of their individual national development goals. However, the last pillar diverges significantly from Uganda's TVET policy implementation guidelines ([Ministry of Education and Sports, 2019](#)). Uganda's TVET policy is not in line with UNESCO because it makes no mention of climate change. Except for the mission and vision, which refers to the environment, climate change is not mentioned in the main policy. Instead, it focuses on job creation, innovation, business and entrepreneurship as the priorities of TVET in Uganda ([Ministry of Education and Sports, 2019](#)).

Climate change education is also missing in the national plans that could inform Uganda's TVET policy. For instance, Uganda's Vision 2040 (NPA, 2013) recognises the climate change crisis, yet there is no mention of mainstreaming climate change in TVET or in formal education. Instead, it mentions mainstreaming Information Communication Technologies in education and harnessing TVET to equip the young population with hands-on skills for local and global competitiveness (NPA, 2013). Like the TVET policy, Vision 2040 (NPA, 2013) focuses on boosting employment and growing the economy into middle-income status with a very narrow focus on climate education in TVET. Furthermore, the updated Ugandan biennial report on climate change (Ministry of Water and Environment, 2019) to the United Nations Framework for Climate Change Communication (UNFCCC) does not mention TVET among those that the Ministry of Education is working closely with when it comes to mainstreaming climate change in the learning and training. The biennial report attributes this failure in mainstreaming climate change into education and training in higher learning institutions to the lack of financial and technical capacity.

Making the Case for a Policy Connection to TVET

Uganda has set ambitious goals for development, as seen in its Vision 2040 (NPA, 2013), in which the country intends to create a green economy and increase employment to achieve middle-income status. According to the International Institute for Sustainable Development (IISD, 2018), through its Nationally Determined Contribution (NDC) on climate mitigation and adaptation, Uganda aims to reduce greenhouse emissions by 22% by 2030, and this includes gender-responsive policy for climate governance. On the other hand, Uganda depends on TVET to supply a skilled and competent workforce that is globally competitive, responsive to national needs and able to support sustainable development (Ministry of Education and Sports, 2019).

It will be challenging for Uganda to realise most of these ambitious plans unless climate change responsiveness or action becomes central to education, particularly within TVET. TVET is essential for developing practical skills and knowledge for sustainable development and climate action. UNESCO (2012), for instance, suggests that a combination of Education for Sustainable Development (ESD) and TVET is uniquely positioned to provide skills and knowledge for sustainable economic growth and development. The UNESCO (2016) strategy for TVET focuses on the environment, emphasising sustainable development, decent work, entrepreneurship and lifelong learning. Regarding priority sectors like agriculture, there is a need to incorporate climate education and action in TVET agricultural curricula because TVET graduates (such as agricultural extension officers) play a significant role in supporting farmers. Supporting the acquisition of sustainability and climate action skills

and knowledge will help farmers build climate resilience. The International Labour Organisation (2018) proposes that Uganda develops green skills for jobs in agriculture, construction, energy and transport and waste management, among other sectors of the economy. Most of these skills are produced in TVET institutions, hence the need to integrate climate education into Uganda's TVET.

Greening TVET More Inclusively

Uganda could borrow ideas from the literature that has emerged regarding strategic planning for TVET greening in countries such as Kenya and South Africa. In the South African context, Ramsarup and Lotz-Sisitka describe boundaryless careers and transitions through a focus on transferable skills training. In their workbook on developing and implementing green skills in the labour market, they argue that "skills development plays a crucial role in seizing opportunities and unlocking the potential of green jobs" (2017, p. 15). In this context, green jobs are more than just a response to climate change: they are the drivers of future development. If governments like Uganda capitalised on this, transformed vocational education and training (VET) could play an essential role in transforming the country. Of course, there are also the genuine considerations about preventing catastrophic climate change as well, here through climate actions such as mitigation and adaptation.

We conducted extensive interviews and curricular reviews with formal and informal TVET institutions in Gulu in Northern Uganda as part of the VET Africa 4.0 Collective research (McGrath et al., 2020; VET Africa 4.0 Collective, in press). We have found that youth in the informal space recognise the dangers of climate change for their futures and see climate action as an opportunity for doing things differently through entrepreneurship and innovation. We can see the emergence of youth learning networks of innovation in the TVET sector (McGrath et al., 2022).

An excellent example of this is Takataka plastics, a small-scale but growing company that has designed a prototype for transforming plastic into floor tiles. Using their vocational (welding and engineering) skills, the founders developed and built their own 3D printers, which use recycled plastic. There is now a broad network of youth not only scouring the streets for plastic but conducting education about recycling. As a further component of our research, we partnered with Takataka to pilot a TVET innovation programme with eight interns to develop business solutions to waste management in Gulu. We took the interns to on-site visits and taught prototyping and basic business skills including registering a company, introducing them to potential mentors or investors. All of their business ideas received start-up funding. We think this is a strong indicator that there is the potential for creative solutions that develop livelihoods in the present and sustain

them for the future. Such training could easily be included in TVET curricula; it would help transform the overly theoretical and static curricula into an agentic process of lifelong learning that develops critical thinkers and designers of the future.

The African Union Environmental Education and Training Action Plan, 2015–2025 (Lotz-Sisitka et al., 2016) suggests that schools and vocational training institutions need to lead a paradigm shift by developing green learning-centred models and include environmental procurement processes. They should expand partnerships with businesses; train TVET developers (policymakers, administrators, curriculum designers and instructors), add an element of ranking institutions according to environmental practice, standardise green competency-based models, provide green career guidance and counselling, train government officials and decision makers and study and increase investments in green facilities. This can be made possible by expanding practices such as those briefly outlined above via our VET 4.0 research.

Policy Recommendations

This brief article has suggested that the government of Uganda, through the Ministry of Education and Sports, should incorporate climate change into national TVET policy by first introducing climate change into the curriculum (including into teacher education) and, second, by challenging and rewarding students and vocational technical institutes to innovate green solutions to local problems. This could include power alternatives, which would also lower costs and overcome unreliable power supply at training institutes. Third, they could facilitate partnerships between research institutions, such as universities, vocational technical institutes, private sector innovators (such as Takataka plastics), community-based organisations and the youth-driven informal economy, which is doing much of this work already.

Conclusion

TVET remains in the grip of colonial era, supply-driven training that is largely disconnected from the market, and also from the needs of society, the environment and young people, and it is slow to adopt new technologies and technical innovation processes. We suggest that a government-led paradigm shift in TVET towards a green economy has enormous potential to usher in a period of innovation, development and economic growth. This could also provide routes to enterprise development, such as in the examples above. Such a paradigm shift goes beyond skills training to teaching flexibility, adaptability, creativity and lifelong learning (boundaryless careers) in order to engage with fast-changing technology, entrepreneurship and innovation, which are needed for climate action and sustainable development. The goal we advocate for is also to facilitate a paradigm shift around the TVET approach by strengthening and professionalising it within a framework that takes into account society and the environment, as well as the economy. As indicated above, we see the informal sector already charging ahead with such a paradigm shift because new opportunities for livelihoods open up within a sustainable development paradigm. It remains to be seen whether the Ugandan and other governments elsewhere can capitalise on such movements to develop relevant TVET programmes that meet the needs of the future.

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