

Haßler, B. | Haseloff, G. | Adam, T. | Akoojee, S. | Allier-Gagneur, Z. | Ayika, S. | Bahloul, K. | Changilwa Kigwilu, P. | Da Costa, D. | Damani, K. | Gordon, R. | Idris, A. | Iseje, F. | Jjuuko, R. | Kagambèga, A. | Khalayleh, A. | Konayuma, G. | Kunwufine, D. | Langat, K. | Lyimo, N. | Marsden, M. | Maseko, V. | McBurnie, C. | Orji, C. | Powell, L. | Schaffer, J. | Simiyu, J. | Stock, I. | Tawene, E. | Watson, J. | Winkler, E.

# Technical and Vocational Education and Training in Sub-Saharan Africa

A Systematic Review of the Research Landscape



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## Executive Summary<sup>1</sup>

This report reviews the state of research on technical and vocational education and training in sub-Saharan Africa (SSA). It is an extended and updated version of an earlier German report.<sup>2</sup> The original report features a systematic review of both academic and grey literature as well as other sources of information, such as other internet research. The present report extends the sources of information further by including interviews, focus groups and reflective artefact analysis. While both academic and grey literature offer significant insights, such other sources of information need to be considered, especially where sectors are under-researched. Our literature-based approach is, therefore, complemented by interviews, reflective artefact analysis—in the form of a structured community review—and focus groups. Overall, this report contributes to a deeper understanding of TVET research in SSA with a focus on the improvement and the development of TVET systems and research; ultimately it seeks to contribute to the achievement of the human development outcomes associated with technical and vocational education and training.

We note that we use the phrase ‘Technical and Vocational Education and Training’, abbreviated as TVET, in a broad sense that includes the range of approaches prevalent in SSA. This interpretation is not unique to this report (↑Lauterbach, et al., 2018)<sup>3</sup> but differs from other conceptions, such as the conception of TVET in Europe.<sup>4</sup> It should be emphasised that the present report provides a systematic overview of the available research on TVET in SSA between 2000 and mid-2019 (in English, French, Portuguese and German), following the methodology outlined and subject to the usual limitations

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2 ↑Haßler, et al. (2019). *Berufsbildung in Sub-Sahara Afrika: Stand der Forschung* (Berufsbildung in SSA). VET Repository, Bundesinstitut für Berufsbildung, Bonn, Germany. Available at: <https://lit.bibb.de/vufind/Record/DS-184013>

3 Lauterbach, U. (2018). Die Schritte zu einer internationalen und international vergleichenden Berufsbildungsforschung. In F. Rauner & P. Grollmann (Eds.), *Handbuch Berufsbildungsforschung* (3. aktual. u. erw., p. 52). UTB.

4 In other words, the term ‘beruflicher Bildung’ (used in German-speaking countries) is translated with ‘technical and vocational education and training’, as Lauterbach recommends (↑Lauterbach, et al., 2018). Lauterbach refers to the UNESCO decision to use this term for both “vocational education and training (VET)” and “technical vocational education and training (TVET)”. In the EU, however, a distinction is made between VET and TVET (↑ibid.).

of such reviews. Therefore, this broad review is not necessarily representative of in-depth research in any one country in SSA. For instance, there were some documents and research papers that we were not able to access because they were not available online and the authors did not respond to our enquiries; some communities of researchers may have well access to these, but we were unable to retrieve them.

The variety of TVET systems, as well as the lack of a clear overarching definition of TVET, does have important ramifications regarding harmonisation and compatibility of different systems. However, it also complicates research and systems analysis. In order to capture this variety, this report develops a reference framework covering several dimensions, which are described in Chapter 4. In any one country, it is likely that various concepts and several forms of TVET coexist. This includes various formal and informal approaches. Options for international cooperation and alignment across such approaches need to be considered in the future. We also note that in many countries in SSA—as well as in European (Germany) and North American countries—forms of ‘technical and vocational’ education and ‘academic’ (‘higher’/tertiary) education are merging; future research should adopt broad definitions of TVET, TVET institutions and TVET research.

The transition from school to work is not without problems for many young people; well-designed TVET can ease this transition by lowering the threshold for entry into the sphere of work. Therefore, a key aspect for TVET research is the transition from general education to TVET; this includes both initial TVET as well as further and continuing education. Indeed, many TVET researchers and TVET practitioners advocate meaningful, lifelong, professional learning that starts with general education and continues beyond initial TVET. However, in practice, many TVET systems and TVET institutions are not always able to meet these requirements.

It is important to note that this report is concerned with the state of TVET research in SSA, rather than purely with the state of TVET in SSA as such. While we are, of course, concerned with what TVET research has to say about the evidence regarding TVET, our overall focus is on issues surrounding TVET research. For example, we are not just concerned with TVET actors (and analysing the TVET system as such); we are also concerned with TVET researchers (and TVET research systems). The following sections will summarise the conclusions reached by taking this approach.

### **Themes, perspectives and current debates in TVET research**

The literature review, interviews and focus groups identified various themes, perspectives and current debates. Our first important observation is that there is no common definition and concept for TVET valid in all countries or regions in SSA. This is due to the fact that evidence-based insights from the reviewed publications stem mainly from research on specific interventions and TVET programmes with a national or international focus; they do not tend to research overarching definitions and do not seek to elaborate frameworks.

A clear theme is a need for TVET—as well as TVET-teacher professional development—to be as practical and as practice-focused as possible. Other themes include the tension between TVET policy and practice, the importance of researching

demand-driven TVET, and of research on future possibilities and aspirations for TVET: arguably, policy has not kept pace with such demands. Another important topic in TVET research is Information and Communication Technology (ICT). The publications reviewed analyse future possibilities, applications, benefits and costs of ICT in TVET. Utilising technology to evaluate TVET is also discussed as an important aspect. A further theme is the importance of evidence-based understanding of specific TVET interventions and TVET programmes, which is apparent in a significant number of publications.

Expert participants in our interviews and focus groups highlighted several additional current and emerging topics in TVET research. Greater access and equality in TVET were identified as requiring further research, particularly with regard to women and immigrants. Other topics raised were the aforementioned links between theoretical and practical elements in TVET, the perception of TVET, curriculum and skills development, TVET teacher education, policy and ICT. Green TVET is another research area highlighted as emerging by the participants. The topic appears to be gaining prominence because of UNESCO/UNEVOC advocacy for research in the field.

The expert participants also shared their own thematic interests and motivation for participating in TVET research. Participants expressed interest in research exploring the integration of theoretical and practical elements of TVET, the 'dual TVET system', increased focus on the professionalisation of the workforce and professional development with respect to TVET, and further collaboration between countries for the advancement of TVET within primary and secondary education. The relevance of TVET to everyday life and greater access and equality within TVET were also expressed as research interests.

Participants further noted that in order to motivate greater interest in TVET, there is a need for greater funding, capacity building and networking. This was suggested alongside changing the perception of TVET as only leading to low-class occupations and as not being a university-level pursuit.

### **TVET insights with high-quality evidence**

TVET research in SSA is not systematic and not always of high quality. Around 20% of the relevant publications reviewed were deemed as being of satisfactory relevance (and included on our 'H-list'), while less than 5% were considered to be of high relevance (and included on our 'U-list' of around 300 publications). Based on this categorisation, we identified the key challenges for TVET and TVET research identified in the higher-quality research, namely: the development of TVET institutions, the promotion and growth of TVET staff numbers, the improvement of the image and perception of TVET and the importance of ICT in TVET.

Within the reviewed publications, evidence regarding the impact of TVET on developmental processes, i.e., development impact, is often inadequately researched and, unfortunately, of limited validity. In particular, the evaluation of the impact of specific TVET programmes is limited. Deficiencies affecting the internal and external validity of the results are due to the low sample sizes and the failure to control statistically important variables. Often, only one-off surveys are carried out, using purely qualitative methods that rely only on self-reported data without triangulation. Studies with higher quality



designs produce diverse insights into the impact of the programmes. Although some successful results have been documented, this is far from being the case for all projects.

### **Insights into TVET policy**

There are a number of recommendations for TVET policy and policymakers. These recommendations include a broader investment in TVET resources, an intensified push for meaningful completion of TVET (i.e., meaningful qualifications), strengthened practice orientation of TVET, extended TVET-teacher education, increased networking of TVET providers including experts from industry and business, as well as greater attention to—and involvement with—the informal sector (informal work, informal TVET). With regard to TVET providers, greater emphasis on the more effective use of ICT in teaching and learning is demanded; it is clear that such use of ICT would also require a revision of existing TVET programmes. Ideas for further research include taking advantage of findings from fields adjacent to TVET (e.g., social science, education; also findings pertaining to higher education in general). Furthermore, there are opportunities for building on or extending findings from existing studies, particularly on the impact of policy.

### **Insights into TVET models**

TVET is undertaken in a variety of different models across SSA. There is no single conceptualisation of what TVET is, what a TVET model should entail, or indeed how TVET is implemented. TVET models differ in how they are delivered, including the place of delivery (e.g., college vs. workplace), and more generally in the balance between involved practical vs. theoretical elements within teaching. Models also differ in the level of formality of the programme (formal college enrolment vs. informal workplace learning). The colonial history of specific countries is also a factor. For example, there are similarities in the research literature regarding the types of TVET practised in francophone countries compared to anglophone countries; however, these similarities appear minor in comparison with differences between nations.

Despite these differences in the conceptualisation and practice of TVET, we have been able to group the various models into five categories, as described below. Where initial TVET is concerned, models can be classified according to the extent to which they focus on practice (cooperative dimension, 'K' based on the German term 'Kooperativ') into five overlapping models: K1, K2, K3, Z4 and Z5.

Type K1 models utilise a predominantly theory-based approach. This type of models is the second most common approach besides the K3 models. Such approaches are utilised, for example, in the health professions and the craft sector (as evidenced in South Africa, Cameroon, Uganda and Kenya).

Type K2 models are less common; they aim at college-based education with a large practical component. In such models, practical and theoretical components may be equally weighted. Such models share aspects with so-called 'dual TVET systems', which have been tested by a number of states in SSA (Ethiopia, Mozambique, Mali, Malawi, Botswana, Tanzania). 'Dual systems' recognising that both limited theoretical knowledge as well as inadequate practical experience obstruct the successful entry into professional life.

Type K3 models encompass informal education and can be found across SSA. As a rule, they consist entirely of informal work-based training, taking place almost exclusively at the workplace. Although this form of TVET is well established in many settings, it is often poorly recognised, and not addressed by TVET policy.

This classification of initial TVET is augmented by two further approaches that usually occur at later stages (temporal dimension, 'Z' based on the German term 'Zeit'). These are Type Z4 models, which focus on technology-supported distance learning (both initial and in-service), and Type Z5 models, which focus on in-service approaches and continuing professional development (CPD). This classification is not conceptual, but heuristic in nature, designed to capture the types of TVET discussed in the literature. Such programmes are of shorter duration, typically informal and used very widely; we did not detect specific patterns for some countries participating more than others.

We found that publications considering the pedagogical requirements of TVET educators and teachers typically come to the conclusion that a stronger emphasis must be placed on practice-focused TVET. The aim should be to offer interactive TVET, in which authentic practice-relevant tasks are solved. However, researchers' attention is not focused solely on the cost-effectiveness and relevance of TVET for the labour market. Additionally, TVET needs to be understood not as a narrowly focused acquisition of technical skills, but as opportunities for general education, which help learners to develop personally, to develop a critical understanding, and to take responsibility within society. This perspective offers opportunities for development and innovation not only from an economic but also from a societal perspective. While the personal development of learners is mentioned in conjunction with entrepreneurship, overall, the TVET sector appears to not place emphasis on the personal development of learners. Extending the perspective on general education to TVET, such perspectives can be realised by a pedagogical approach to TVET that is critical and competence-oriented; such an approach needs to promote student-centred teaching and reflective learning (Chapter 13). If the issue of personal development and education is neglected (as is often the case in informal education), students may become vulnerable to exploitation and ill-treatment in the workplace (Chapter 13).

### **Inclusion-related challenges**

There are far-reaching inclusion-related challenges in TVET and TVET policy (Chapter 9). For example, inclusion tends to focus on the extent to which women are included in TVET education but rarely consider broader discussions regarding gender identity that are prevalent in higher-income countries. We note that all of the gender-focused publications acknowledge that women's TVET-related skills and competencies are naturally the same as men's. Nevertheless, TVET and workplaces often do not recognise this. Publications from Ethiopia, Ghana, Uganda, Mozambique, Benin and Burkina Faso indicate that women are often unable to utilise their skills because the relevant opportunities for TVET are not always available to them. Researchers from Tanzania, Zambia and Zimbabwe found that women often do not even consider apprenticeships. Furthermore, when women do engage in workplace training, as in Western countries, it is less likely to be in a highly technical subject, such as engineering, and more likely to be in, for

example, healthcare (c.f., publications from Ghana, Kenya, Benin, Congo, Burkina Faso and Mozambique). Teachers/educators play a central role in addressing gender equity, so their education should become an important field of research (c.f., publications from Ghana, Nigeria, Sierra Leone, Gambia, Liberia and Malawi).

Studies from Ghana, Ethiopia, Tanzania, South Africa and in particular Kenya, focus on both the right to and availability of equitable access to TVET for all people, thus touching on inclusion issues that focus on TVET for people with disabilities. According to these studies, disability issues are neglected in both education policy and in the necessary statutory provisions.

Refugees in SSA must also be considered partly as vulnerable groups in terms of TVET. Indeed, TVET may offer opportunities for refugees to improve their circumstances. Refugee status can also have an impact on inclusion. One study from Uganda indicates that TVET for refugees can be a way to integrate them into a new community. The expert participants in the interviews also highlighted the current focus of research exploring TVET programmes for immigrants in Nigeria, who themselves are often vulnerable.

We emphasise, however, that young people—including those with formal TVET—may be disadvantaged compared to older people in the labour market. This is due, in part, to the overly theoretical TVET available to young people and—on completion of the TVET—their limited experience in the workplace.

We note that most of the documents reviewed in this report simply indicate that access to TVET needs to be facilitated for minority groups and that governments and state authorities should be encouraged to do so. However, specific suggestions as to how this could be implemented in practice—or has already been implemented—are rarely found in the literature, and even then are often not very informative.

Overall, we recommend mainstreaming gender aspects and gender equality issues in future research, and developing targeted support for vulnerable groups, including young people and refugees.

### **Key stakeholders in TVET**

Another important topic of this report is key stakeholders in TVET (Chapter 10). For selected countries (Botswana, Ghana, Kenya and Nigeria), the chapter provides a review of the institutions involved in the planning, implementation and evaluation of TVET and those that manage the administration of the corresponding TVET-related processes. Such stakeholders are also direct users of research results. For example, the Botswana Training Authority (BOTA) is developing guidelines and strategic plans for the country's TVET system.

Our internet research indicates that, in most SSA countries, the Ministry of Education and/or the Ministry of Labour are the main governmental authorities for the decision-making and management of the TVET system at the national level. However, specific ministries are often responsible for the provision and delivery of TVET programmes that relate to their specific economic sector. This complicates the overarching educational design and delivery of TVET.

There is research on TVET policy in the four countries considered. However, there is no evidence of the research findings have had any actual impact on TVET policy or on the action of key stakeholders—either at the national or regional levels. Future TVET research should explore how the impact of key-stakeholder research can be better utilised in the administration of TVET processes.

A demographic overview of the key stakeholders in TVET research is also available (Chapter 5). This includes leading institutions and countries in TVET, as well as the academic faculties and departments that participate in TVET research.

### **Non-state actors**

Chapter 11 sets out the role of non-state actors in TVET in selected countries (Ethiopia, Botswana, Ghana, Kenya, Nigeria, Tanzania and Uganda). There is a notable presence of non-state-controlled and private TVET providers in these countries. Such providers often already have—or seek—a degree of influence on the national TVET system. The non-governmental sector comprises large companies, nonprofit organisations, voluntary organisations and NGOs. They have varying degrees of involvement in formulating policy, developing curricula, determining priorities for occupational standards, forecasting future labour demand, and setting indicators for curricula and the quality of work-based education. A good example is Nigeria, where non-governmental bodies offer a real alternative to state providers of higher education for teachers and curriculum development. In Kenya, there is evidence that remarkable work is being done in the private TVET sector. In both Kenya and Botswana, state efforts are being made to involve industry and other stakeholders in the design of TVET.

We note that these insights come from internet research, and it is important to note that data on private TVET providers are inconsistent throughout our dataset. In particular, we did not come across research on the role of the industry as a promoter and beneficiary of TVET. Clearly, furthering cooperation efforts between public and non-governmental TVET institutions would be beneficial and profitable for all those involved in TVET.

We did not discern any evidence of influence on TVET by non-governmental partners, such as unions or (crafts-)guilds. However, it should be remembered that unions certainly play an important national role in SSA, despite not appearing in the TVET literature we reviewed.

### **National standards, guidelines and regulations**

The reviewed literature does not provide much insight into national standards for TVET in SSA (Chapter 12). However, some states in SSA have informative, well-structured and well-maintained websites on all aspects of their TVET systems. However, there were other states where the government websites were not functioning, could only be accessed intermittently, or were not accessible at all.

Botswana, Ghana, Kenya, Mauritius, Malawi, Nigeria, Uganda, South Africa and Tanzania all have national qualifications frameworks for education. Such qualifications set minimum requirements for the classification, registration and accreditation of national

qualifications and certificates. In some countries (Ghana, Kenya, Uganda and Tanzania), the frameworks also detail the educational approaches to be followed. In each of these countries, competence-oriented education is recommended. Qualification frameworks specifically for TVET were found only in Botswana, Ghana and Uganda.

Information is provided on some governmental websites (Botswana, Ghana, Kenya, Nigeria, Uganda and South Africa) regarding their responsibility for regulating, accrediting and monitoring TVET. These governments have developed standards for TVET, the quality requirements for which they publish (partially), and for which they monitor compliance (partially).

Whenever the pedagogical approach was mentioned in official documents, competency-based education was unanimously the preferred choice. Although the definition of 'competency-based' is not explicitly clarified, it can be seen from the contexts that the Anglo-Saxon competency-based approach is the inspiration in most cases.

### **Challenges to policy implementation**

Several promising and viable approaches to TVET governance were apparent in a number of countries (Chapter 13). While there is some general research on education policy, few publications are concerned with the adequacy, development and testing of TVET policies or standards. Reports often state that evaluation processes are taking place, but do not describe how these studies are structured and carried out methodologically. It appears that such research has had little impact on national standards and guidelines for TVET. Further research is necessary.

In the evaluated publications, it becomes clear that some of the states involved in the study set themselves very ambitious goals in TVET—including the development of work-focused and competence-oriented TVET. In particular, the effects of TVET policy changes on the classroom-pedagogical level are examined. In Kenya, for example, significant changes in classroom activity can be identified as an outcome of the change in pedagogical guidelines. It is clear, however, that the implementation of these changes poses a great challenge for states in SSA and their TVET authorities. This is an important area for future research.

Publications also mention that the insufficient (and often neglected) financing of the TVET sector compared to other areas of education acts as a barrier to the implementation of reforms (Chapter 13). If competency- and job-oriented education is desired, greater engagement is needed with the private sector and the job market, and their engagement with the TVET system.

There is a limited number of research papers on the different effects of informal education. Young people value informal education because it is considered cost-effective and easily accessible. In addition, it often appears to offer better employment opportunities than formal education. However, insights from Nigeria also highlight the dangers of the unrestrained exploitation of the vulnerable groups that are enabled through informal education. TVET agencies tend to be aware of the opportunities and dangers of TVET without state quality assurance mechanisms. Research into the impacts and the models



used could help to understand and further develop informal approaches; this might be helpful in developing guidelines for the protection of vulnerable groups.

The effectiveness of government policy on inclusion-related goals is unclear. One of the few studies available found that there is still a significant segmentation by ethnicity and gender within the TVET sector (South Africa, see Chapter 13). TVET systems much desire positive changes towards gender mainstreaming and equality for all people; however, the development and implementation of measures that contribute to this is barely controlled or supported. This is another important area for future research.

### **Insights regarding institutional frameworks and research capacity**

The interview and focus groups participants provided insights into institutional frameworks and research capacity-building (Chapter 14). They particularly noted the challenges associated with unfavourable institutional framework conditions and research capacities, as well as how those challenges might be addressed. Currently, the main challenge is insufficient funds for conducting research; funding limitations are related to an inability to provide competitive salaries to highly-skilled researchers and appropriate equipment for research and conference attendance sponsorship. Other challenges are a lack of clear institutional leadership surrounding the TVET research agenda, as well as insufficient regard for the importance of research. Skills shortage in the region is an issue, specifically, a shortage of quantitative research skill expertise, and expertise in working with large datasets.

Participants suggested a range of measures to address the challenges facing institutional frameworks and research capacity building. One suggestion is to undertake more conferences and other events, as well as utilising other tools that facilitate networking and the sharing of ideas. Such activities would also contribute to filling current skills gaps.

### **Actors and networks in TVET research**

TVET research in SSA is not well developed. For example, we found no TVET-related publications for almost one-third of the nations in SSA (13 nations). Therefore, the question of actors and networks in TVET research in SSA is a particularly important one. TVET is conducted at state and private universities as well as independent institutes across various disciplines. A large percentage of the publications relate to TVET in East Africa and Southern Africa (including South Africa). While Ghana and Nigeria (in West Africa) have some of the highest numbers of TVET-related research publications of all SSA nations, overall there are relatively few publications from West and Central Africa.

The agencies that fund TVET research include the United Kingdom Department for International Development (DFID), the United Nations International Children's Fund (UNICEF) and The Fogarty International Center. Regarding SSA-led TVET research networks, our interviews and internet research found some evidence of their existence (Chapter 15). However, the identification of such networks was not an easy task; networks are not centrally recorded; nor are they a focus for donors.

The most commonly found networks (e.g., UNEVOC) focus on all aspects of TVET and not specifically TVET research. Two networks, the Réseau Africain des Institutions de Formation de Formateurs de l'Enseignement Technique (RAIFFERT) and the European Research Network on Vocational Education and Training (VET-Net) focus on TVET-research in SSA (Chapter 15). The International Conference for the professional development of French-speaking engineers and technicians (CITEF) was also mentioned as a conference that facilitates international collaboration. Also mentioned were a number of organisations and conferences that facilitate networking around TVET within the SSA region more exclusively. Of particular interest is the network initiated by Kenya's Technical and Vocational Education and Training Authority (TVETA). There are, of course, also intergovernmental organisations that are not necessarily TVET focused, but that do address TVET concerns to varying degrees. Examples of these include the African Union, the European Centre for Development Policy Management, and the New Partnership for Africa's Development (NEPAD).

While we were unable to find many or indeed large networks other than UNEVOC, the need for networking opportunities is a clear outcome of the interview and focus groups. The focus groups and interviews not only explored what TVET networks and networking opportunities exist, but also how those networks help to build research capacity in SSA. Generally speaking, participants noted that networks are an important factor in improving research capacity across SSA. Networks and networking are considered helpful in knowledge and skills exchange and research dissemination. However, there is a shared understanding that the need to build and sustain research networks is plagued by a lack of resources – financial, human and material. Further limitations to networking efforts include the lack of awareness of networks and networking opportunities that currently exist. Concerning networking, we also note the apparent lack of connections between anglophone and francophone countries, which should be explored. Barriers due to the colonial past still exist, and prevent joint research and development in TVET, despite often very similar settings.

In response to these limitations, participants in the focus groups discussed creating a 'virtual' research community. Instead of intensifying commitment to research in a small selection of countries or institutions, a 'virtual' research community can be made up of participants from different African countries and institutions. We appreciate, however, that even with the promise of virtual research networks, there is a desire, and need, for face-to-face opportunities for networking. In light of this, the focus group participants suggest that efforts should be made to create a list of relevant TVET conferences and researchers across SSA, work toward securing more financial support to facilitate networking opportunities, and present research results more actively, as well as to conduct workshops on research and research methods.

## Chapter 1. Introduction: TVET Research in Sub-Saharan Africa<sup>1</sup>

By 2050, the number of inhabitants of sub-Saharan Africa (SSA) is expected to double to two billion people. Some of the challenges related to population growth include meeting food needs, increased urbanisation without adequate energy and transport infrastructure, and an increased strain on the environment. The average age on the continent is 18 years, and youth unemployment is high (↑Desjardins, 2019; ↑World Bank, 2020). The result of all of this is that many people see migration within Africa, to Europe and beyond, as their easiest option. Therefore, to realise the continent's potential, citizens need to acquire skills that will enable them to engage in gainful employment or embark upon their own enterprises.

### 1.1. Education and research in SSA

Excellent education and research systems are prerequisites for innovation, social participation, employment and economic growth; the acquisition of professional skills and qualifications enhances an individual's social and economic status. Many African countries have developed functioning higher education systems. Still, they have faced difficulties in promoting mid-level occupations, technical and vocational occupations, as well as the associated technical and vocational education and training (TVET) systems. TVET is a type of education pathway that provides individuals with occupation-specific knowledge, practical skills and attitudes that are independent of the place, content, and the provider of education (see Chapter 4.1 for a more detailed discussion). This lack of support for the transition to the labour market can be called the 'missing middle in post-school education' (↑Lolwana, 2017). Effectively, this missing middle results in a large proportion of young people in SSA being neither in education nor in employment due to a lack of opportunities that correspond to the skills they acquired during their education. Eliminating this shortage of skilled workers in SSA is both the subject of specific Sustainable Development Goals (SDGs) and essential for the achievement of SDGs in general. TVET enables the national economic development and the realisation of the populations' full potentials—potentials that many countries in SSA desperately

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<sup>1</sup> Citation for this chapter: Haßler, Haseloff, et al. (2020). *Chapter 1. Introduction: TVET Research in Sub-Saharan Africa*. In: Haßler, Haseloff, et al. (2020). *Technical and Vocational Education and Training in Sub-Saharan Africa: A Systematic Review of the Research Landscape*. VET Repository, Bundesinstitut für Berufsbildung, Bonn, Germany. <https://doi.org/10.5281/zenodo.3843342>

need to address challenges. However, the development of TVET faces multiple challenges, for reasons both political and practical, such as underfunding, a lack of interest from employers, and the stigmatisation of the TVET sector (e.g., [†Lolwana, 2017](#); [†Papier, 2017](#); see also Chapter 7.3).

## 1.2. Systems approach and theory of change

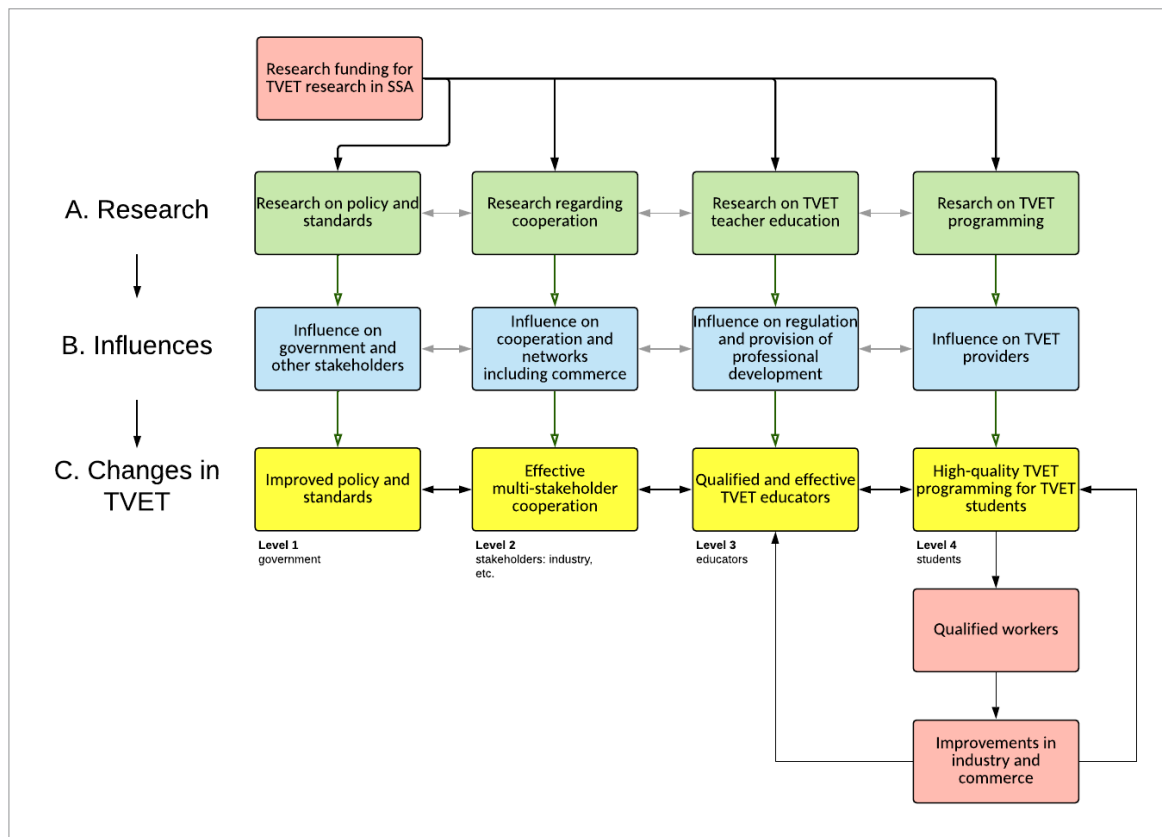
TVET plays a vital role in the realisation of SDGs. Traditional occupations (teachers, nurses, craftsmen, etc.) are essential, as are new occupations, such as logistics for medical care. For example, robotics companies, such as Zipline in Rwanda, require ([†CNBC, 2018](#)) appropriately trained mechanics and logistics professionals.

The following figure is a simplified systems overview of TVET. There are four levels: government, stakeholders (such as industry), TVET educators and TVET students. The figure suggests that research funding furthers research, on the four levels shown: policy, cooperation, teacher education and TVET programming (A., green). The next level shows aspects of the system that are being influenced (B., blue), leading to outcomes at those four levels (C., yellow). Such outcomes include better policies, better cooperation, better support for TVET teachers / educators and better TVET programming for students. The horizontal arrows indicate the interdependence between the levels. For example, the provision of high-quality TVET programming requires the presence of effective TVET educators, the effective cooperation of stakeholders, and high-quality policy and standards.

At the bottom right, the figure indicates the ultimate impact: High-quality TVET programming leads to more qualified workers (as empowered citizens). They, in turn, contribute to (e.g.) industry and commerce. A better functioning commercial sector feeds back into the availability of TVET educators and better TVET programming.

Figure 1.1 is a simplified illustration of the influence of research on the TVET system at four levels, namely: policy and policy standards, cooperation, teacher education and TVET programming (A., green). The research results can influence the design of various aspects at these levels (examples in B., blue) and lead to changes in TVET (C., yellow). These can be: better policies, better cooperation, better support for TVET teachers / educators and better TVET programming for students. The horizontal arrows indicate the interdependence between the levels. For example, the provision of high-quality TVET programming requires the presence of effective TVET educators, the effective cooperation of stakeholders and high-quality policy and standards. At the bottom right, the figure indicates the ultimate impact: High-quality TVET programming leads to more qualified workers (as empowered citizens). In turn, they contribute to (e.g.) innovations in industry and trade. A highly developed economic sector then requires ongoing development of TVET teachers and vocational training programmes. To this end, corresponding vocational training standards and cooperation with industry must be further developed.

**Figure 1.1. A simple schematic of the impact of TVET research on the TVET system.**



Our Theory of Change ([↑Weiss, 1995](#); also [↑Stein & Valters, 2012](#); [↑White, 2018](#)) implies that the systematic review of the status of TVET research in SSA, combined with the use of policy recommendations, will influence the system as illustrated in Figure 1.1.

### 1.3. The German Federal Government and TVET in SSA

SSA is an important focus of interest for the German Federal Government. In 2017 it adopted the key paper, 'Economic Development in Africa—Challenges and Options' ([↑Bundeskanzleramt, 2017](#)), containing 16 measures designed to strengthen economic relations with Africa and promote sustainable development with an emphasis on the education and training of professionals. As part of its G20 presidency in 2017, it has committed to new partnerships in SSA, encouraging the integration of TVET components into infrastructure projects, using the latter as a means to promote TVET.

TVET in the Federal Republic of Germany itself is characterised by low youth unemployment, in part due to the success of its TVET system, known as the 'dual system' (German: 'duales System'). Work-based learning accounts for a high percentage of this system. Table 1.2. describes the five core elements of the German system, which aid the interaction between state TVET institutions and company-based training.

**Table 1.2. TVET in the Federal Republic of Germany**

The five core elements of TVET in the German dual education system (see also †Schwarz, et al., 2016, in English; and †Schwarz, et al., 2016, in German; p. 12.):

1. Cooperation between government and the economic sector (business, trade unions and employers' organisations);
2. Learning as part of the work process;
3. Acceptance of national standards;
4. Qualified TVET staff;
5. Institutional research and advisory services.

Key to the sustainability of the German dual TVET system is the TVET research undertaken by the Federal Institute for Vocational Education (BIBB) and a broad network of research institutes and universities. This research is the basis for evidence-based policy decisions and is increasingly valued in international TVET cooperation.

The vision for TVET is to offer young people an opportunity for self-determination and to support democratic attitudes and values that contribute to the good of the community. It also ensures that a country has qualified professionals, essential for a prosperous economy.

The German Federal Ministry of Education and Research<sup>2</sup> (Bundesministerium für Bildung und Forschung, BMBF) seeks to support the partner countries in modernising their TVET systems. This was set out in 2013 and renewed in 2019 in the 'Federal Government Strategy Paper: TVET co-operation from a single source'<sup>3</sup>. In 2013, the German Office for International Cooperation in TVET (†BIBB)<sup>4</sup> was set up at the Federal Institute for Vocational Education and Training (BIBB). On behalf of the German Federal Ministry of Education and Research, GOVET supports TVET cooperation worldwide, serves as a one-stop-shop for information exchange; moreover, GOVET is the secretariat of the 'Round Table for International TVET Cooperation'<sup>5</sup>.

There are, of course, existing co-operations already, such as partnerships with TVET institutions and company-based training in several countries in SSA (†BMBF, editorial office), including Ghana and South Africa. In South Africa, the Federal Institute for Vocational Education and Training has been engaged in bilateral cooperation with the Department of Higher Education and Training (DHET) since 2013. The primary goal is

2 †BMBF-Internetredaktion, Home, available at <https://www.bmbf.de/>

3 †Strategiepapier der Bundesregierung zur internationalen Berufsbildungszusammenarbeit, 2013; †Strategiepapier der Bundesregierung zur internationalen Berufsbildungszusammenarbeit, 2019

4 †GOVET - Zentralstelle der Bundesregierung für internationale Berufsbildungskoooperation, Home, available at <https://www.bibb.de/govet/de/index.php>

5 †GOVET, Tasks and Objectives, available at <https://www.bibb.de/govet/en/2352.php>

to make TVET in South Africa more practical, in line with the German dual model. There are also international cooperations, including cooperation between GOVET and COTVET (Ghana).

The German Federal Ministry commissioned GOVET to build on such work by commissioning this report. In this report, we seek to offer insights into future directions for TVET in SSA, with a focus not only on research insights but also on research operationalisation (evidence-based decision making). The overall objective of this study is to provide a systematic review of the state of research on TVET in SSA. The findings presented here are based on an analysis of the research literature and consultations with relevant stakeholders through interviews and focus groups, and a structured community review of the literature findings. The aim is to contribute to a better understanding of TVET research in the region, intending to improve it, further develop TVET education and, ultimately, achieving TVET-associated development outcomes. We note that throughout the report, we use the abbreviation TVET as a broad category referring to any type of technical (and vocational) education and training (TVET/VET), vocational training, apprenticeships, etc. (cf. Chapter 6).

## **1.4. Purpose and aim of this study**

This report – commissioned by BMBF / GOVET in July 2018 and completed in January 2020 – sought to undertake a systematic review of the state of research on TVET in SSA, as well as to shed light on possible avenues for future TVET research in SSA and its operationalisation. However, because of national and regional differences in education systems and TVET systems in SSA, a general and comprehensive problem analysis cannot possibly do justice to the complexity of the local conditions. Indeed, while there is already a variety of studies and project reports available at national and international levels, these are scattered across many institutions located within varied regions; they differ in terms of research issues, empirical scope, and methodology. Because of this complexity, the present study was designed to develop robust hypotheses and — to the extent possible — to do so with the utmost transparency. In this way, other researchers can evaluate our conclusions and build on them as new research becomes available. The emphasis of our work — based on an inevitably limited evidence base — is on usability and expansion in the context of future research.

### **1.4.1. Systematic review of the state of research on TVET in SSA**

Our study places particular emphasis on developing a systematic overview of the current international state of research into TVET in SSA. The term ‘TVET’ in the sense of our report is broad and includes ‘dual TVET’, ‘apprenticeship’, ‘technical education’, ‘vocational education’, etc. This systematic review aims to clarify what institutional research capacities exist in the area of TVET research in SSA, in which institutional frameworks they operate, and to what extent they can influence the development of TVET systems. It is essential to ask whether, and to what extent, data collection tools and TVET policy planning exist at the national and regional levels. Consideration should also be given to which (international/regional/national) TVET research networks



already exist in Africa and to what extent African research institutions and personalities are involved in them.

We note that while we operate across languages, specialised terms even within English do not necessarily reconcile across contexts. Such terms (even when used in the same language) reflect country-specific nuances that vary according to the particular implementation of TVET in that context. Even more so, when terms are translated, the meaning needs to be carefully examined, rather than making assumptions about a specific context in SSA and much less so drawing on European ideas of TVET. Finally, we note that the purpose of this research is to determine the current institutional framework and the international state of research in TVET in SSA. Our systematic literature review searched for documents published between the year 2000 and mid-2019.

### **1.4.2. Engagement with the community of TVET researchers and practitioners in SSA**

However, just searching the literature is not enough. There is much unpublished knowledge that researchers and practitioners hold. Further, given our research questions (see Chapter 2), we will see that it is not possible to answer all questions through a literature review alone. In order to develop an adequate overall picture, further approaches are required. These include interviews, and we used this method alongside a structured community review, across our community of research participants. The term ‘community’ used here refers to both TVET researchers and TVET trainers. The first stage of our community data collection process was the interviews, which followed an initial email survey. The second stage was the structured community review, which similarly followed another email survey.

## **1.5. Focus on TVET research in SSA**

Countries outside SSA dominate the discourse on TVET and TVET research, primarily focussing on European and Southeast Asian countries. This observation contrasts with the stated ambitions of many education systems in SSA<sup>6</sup> which have recognised the need to improve their TVET. At present, TVET research in SSA is not systematic or large scale. For example, there is a systematic overview of TVET research authored by [Tripney & Hombrados \(2013\)](#) in which only one study from SSA met the inclusion criteria. The study by Hicks and colleagues focused on the labour market returns of providing young people in Kenya with vouchers for TVET ([Hicks, et al., 2011](#)).

While results from TVET research appear limited overall, it would be a grave mistake simply to dismiss all TVET research from SSA at the outset. There are existing studies that do provide valuable insights and the basis for additional work and TVET developments. We must assume that a significant amount of research is not readily available because it is not available online (Chapter 3.5.3). However, given the overall literature

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<sup>6</sup> Author's (B.H.) personal discussion with Ministers and State Secretaries at the Conference of Education Ministers (Commonwealth Secretariat, Fiji, February 2018).



available — even if there is a lack of high-quality and empirical research — we can nevertheless draw conclusions about the state of research on TVET in SSA. In our research questions (Chapter 2.1), we, therefore, focus on the state of research while also mapping out the messages on TVET in SSA that are currently available.

We close this introductory **Chapter 1** with a preview of the following chapters. **Chapter 2** presents the research design (methodological approach) of this report, including the research questions. It details our approach to systematic literature reviews (including search terms / keywords, databases, grey literature) with an overview of the search methods employed (automated, opportunistic; email survey). Also included is the systematic review methodology, classification and coding (screening; relevance criteria, quality criteria) of the research publications. We close Chapter 2 with comments on the project languages and ethical issues.

**Chapter 3** offers an overview of the quality and relevance of the publications found on TVET. After a broad and systematic search, around 300 of over 2,000 publications were classified as relevant to our research questions and therefore examined in more detail. About 5% of these were classified as particularly high-quality research and about 20% as high quality.

The 300 publications come from different categories; around half of these are publications from peer-reviewed journals (primary research and literature research). Other categories include edited books, dissertations and (project) reports. The chapter closes with an analysis of the choice of topics and examples of the diverse range of topics found.

**Chapter 4** deals with the conception and practice of TVET. This chapter aims to create a common framework that unites different dimensions of TVET. The large number of TVET systems means that an analysis of their characteristics is complicated. The lack of a clear, comprehensive reference framework for TVET in SSA is particularly problematic from a research perspective. These dimensions are taken up again in various later chapters and discussed further.

**Chapter 5** examines the various stakeholders in TVET research and their networks, e.g., the institutions that are involved in TVET and TVET research (e.g., faculties at universities as well as non-university and non-state colleges). We consider the motivations provided by TVET researchers as well as the countries or regions to which the publications on TVET research refer.

**Chapter 6** deals with topics, perspectives and current debates of TVET research in SSA. The most important topics are selected from the earlier thematic analysis and discussed in detail. One of the issues is the definition and conceptualisation of TVET itself, providing additional context to Chapter 4. Starting from our own position (Chapter 4), we now look at additional perspectives, taking into account the opinions of TVET researchers, as well as the opinions of TVET students and TVET teachers.

**Chapter 7** carries out a systematic review of the studies on TVET in SSA, i.e., it examines reliable statements made about TVET in relevant research publications. In Chapter 7,

our subject of research is no longer the character of the research literature itself, but the content of the studies themselves.

**Chapter 8** examines models for the design, development and delivery of TVET. For example, educational programme designs are examined with particular attention to practical components.

**Chapter 9** looks at gender issues in TVET in SSA, as well as inclusion challenges and strategies. Publications from selected countries in SSA enable us to analyse governmental policies relating to the right of inclusion.

**Chapter 10** looks at key state actors in TVET (state authorities and key policies) for four countries: Botswana, Ghana, Kenya and Nigeria. These countries reflect a diverse variety of TVET system structures.

**Chapter 11** examines the importance of non-governmental actors in TVET from a range of countries where information was available, including Ethiopia, Botswana, Ghana, Kenya, Nigeria, Uganda and Tanzania.

**Chapter 12** looks at national standards, guidelines and quality frameworks in TVET in SSA. We examine the role that politics, trade unions and other interest groups play in TVET.

**Chapter 13** focuses on the challenges that arise when implementing guidelines and political decisions. We raise issues regarding the differences, opportunities and risks associated with the possible development of formal and informal TVET.

**Chapter 14** focuses on how institutional framework conditions can be influenced to increase research capacity and performance. It also explores what the research interests and motivations of TVET researchers are in SSA, alongside the current and emerging TVET topics in the region.

In **Chapter 15**, we focus on networks for research into TVET. The chapter explores the networks and networking opportunities that are present across and beyond SSA and considers how those could be strengthened. Insights on the topic are presented from the experts who participated in our focus group discussions.

In **Chapter 16**, we offer a summary and—based on this—direct our attention to possible future developments regarding TVET and TVET research.

A number of appendices present additional information, such as an annotated bibliography, the full bibliography for the report, the methodology for the interviews and structured community review, the results of the structured community review (including focus group; i.e. the critique of an earlier version of this report), recommendations for thematic priorities in research, and the TVETSSA-R-Framework, as well as an expanded causal loops diagram.

## 1.6. Note for the reader

We note that this report is an extended and updated version of a German version of this report ([↑Haßler, et al., 2019](#)). Further details about the different stages of the report are available in Appendices 2 and 3.

## 1.7. Chapter bibliography

This bibliography can be accessed from the [entry for this document in our evidence library](#).

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## Chapter 2. Research Design<sup>1</sup>

This chapter introduces the research design of this report, starting with the research questions. After presenting our methodological approach, we describe our systematic literature search (search terms / keywords, databases, grey literature) together with an overview of the search method (automated and opportunistic; e-mail survey). We then go into a discussion of the systematic review, including the classification and evaluation of the selected research publications (relevance criteria for screening, quality criteria). This chapter concludes with brief comments on the languages used in this project and the ethical considerations. We note that this research design (published first in the German version of this report, †Haßler, et al., 2019), is now also utilised by a new research programme focusing on the use of technology in education in low-income countries.<sup>2</sup> This expanded research design is detailed in †Haßler, et al. (2019), and we refer the reader to that work for further details, including flow charts.

Our analysis focuses on the state of research on technical and vocational education and training in SSA. Throughout the report, we use ‘TVET’ as a broad category, covering all types of technical and vocational education and training — including apprenticeships, ‘dual’ approaches, etc. Our search for evidence includes relevant documents dealing with any forms of TVET in SSA in English, French, Portuguese and German.

We analyse both formal scientific publications and ‘grey literature’ (strategy papers, briefings, project reports, evaluations, etc.). Although we consider all documents related to TVET in SSA (published worldwide), documents by African (co-)authors are given special attention.

The research design presented here details the keywords and databases used in our discovery of relevant literature, including both automated and manual searches that were complemented by a process known as ‘snowballing’ (see below). Email surveys to experts were also used to identify relevant literature. The list of references obtained was carefully examined and the documents classified as ultra-high, high, medium or low priority according to several criteria that assessed their relevance and quality. All references considered to be ultra-high were coded, analysed and summarised in this report.

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1 Citation for this chapter: Haßler, Haseloff, et al. (2020). *Chapter 2. Research Design*. In: Haßler, Haseloff, et al. (2020). *Technical and Vocational Education and Training in Sub-Saharan Africa: A Systematic Review of the Research Landscape*. VET Repository, Bundesinstitut für Berufsbildung, Bonn, Germany. <https://doi.org/10.5281/zenodo.3843344>

2 †EdTech Hub, Home, available at <https://edtechhub.org/>

The information found in the literature review is further built on through interviews and the structured community review, of which we provide details of the participating organisations.

## 2.1. Research questions

We divided the research questions into four parts (A, B, C, D) organised broadly by focus scope. We do not reproduce the research questions here, but refer the reader to the appendix of this chapter (Section 2.6.). The four parts for the research questions are:

**Part A.** About the research, research papers and reports;

**Part B.** Research findings: Themes, perspectives and current debates;

**Part C.** Research sector mapping and actor analysis;

**Part D.** National standards and regulations.

We now describe each part in turn.

### 2.1.1. Part A. About the research, research papers and reports

The research questions in Part A cover the analysis of TVET research, publications and reports (RQ1, RQ2). These research questions consider how such research can be categorised and mapped according to specific criteria (pertaining to the background of the research, regions where the research takes place, specific focus areas). This includes the examination of academic disciplines and industrial sectors/branches; we further examine the motivations of the researchers to embark on those specific research projects. We consider definitions and interpretations of TVET, e.g. as apprenticeship, 'apprentis-sage', 'Berufsbildung/Berufsausbildung').

### 2.1.2. Part B. Themes, perspectives and current debates

The research questions in Part B examine the topics, perspectives and current debates regarding TVET (RQ3). We consider the goals of the research projects and their focus (RQ4, RQ5). Furthermore, we consider the research designs and the quality of the results (RQ6). We examine the findings and conclusions regarding the effects of TVET programmes (RQ9) — as described in the literature and particularly on the participants and wider society (RQ10).

The research questions in Part B also analyse approaches to TVET models (RQ7). They extract the most important findings for the design, development and implementation of TVET models, including the pedagogical or programmatic designs. The practical aspects of TVET programmes are particularly important.

Further, the research questions in Part B also consider the participation and role of business in TVET (RQ8). We examine the willingness of businesses to participate in national dialogues to develop and implement (new) TVET systems. Finally, Part B deals

with relevant infrastructural, technological, socio-cultural, economic and legal factors (RQ11), as well as major inclusion-related challenges (gender issues, disability) in TVET (RQ12).

### **2.1.3. Part C. Sector-mapping and actor analysis**

The research questions in Part C relate to sector-mapping and actor analysis. Different sectors (e.g., companies, government, NGOs) and actors (e.g., researchers, institutions, donors) are considered with regard to their role in TVET policy, in systemic decisions, research, programme delivery and evaluation. We integrate the evidence available across SSA into a high-level overview and proceed to a detailed analysis for selected countries. The research questions are aimed at actors in the research landscape, leading experts, institutions and their capacities (RQ13), the institutional framework in which they operate (RQ15), and specific funding sources for TVET research (RQ17). Part C also deals with the analysis of TVET research networks (RQ14).

The geographical analysis (RQ16) aims to identify regions and countries to which research projects refer. We consider evidence clusters as well as the lack of research findings for certain countries, certain forms of TVET and certain occupations.

### **2.1.4. Part D. National standards and regulations**

The research questions in Part D examine national standards and regulations. They focus on countries that have national standards for TVET and training. We determine to whom such standards apply and how they are monitored (RQ18). Furthermore, we consider the different actors in TVET policy and in decision-making bodies in education (RQ19). We look at the impact of policy on the provision and evaluation of TVET programmes (RQ20) and on national standards of inclusion (RQ21).

## **2.2. Overall research design**

We note that the overall research design for our analysis is sequential, with a mixed-methods approach ([↑Creswell, 2013](#)). A limited focus on one type of data alone is becoming increasingly inadequate in international development fields. Our methodology includes both qualitative and quantitative approaches, e.g., in the analysis of the publications (quantitative evaluation of the dataset of publications) as well as interviews and focus groups (qualitative, usually not part of a literature search). The results of the various methods are integrated within the analysis ([↑Creswell, 2013](#)).

Our review is conducted by a team of researchers with the intention of informing others—including policymakers and practitioners. We look at published research literature (officially published in journals, books, dissertations, conference proceedings, etc.) as well as grey literature (working papers, policy papers, project reports, reviews, conference papers, etc.). Through stakeholder consultation, we continue to have access to unpublished grey literature (e.g., internal project reports and project plans). Other documents, such as notes, e-mails, files and texts of all kinds were also used to interpret the research results, as [↑Strauss & Corbin \(1997\)](#) recommend. We employ a systematic



literature review in accordance with the general features of systematic literature review (e.g., [†Waddington, et al., 2018](#), and [†Kitchenham & Charters, 2007](#)).

We also used semi-structured interviews and online focus group discussions to complete our insights. This expands the literature research (i.e., the ‘state of research according to the literature’) to the actual state of research. The procedures adopted in each of these cases are described in Sections 2.4. and 2.4.3. respectively, with further details being available in Appendix 2.

The sequential design was implemented in consecutive phases (with parallel components) and culminated in a final synthesis of the results. The research phases carried out are shown in the following figure.

**Figure 2.1. Overview of the phases in our research design. An expanded version focusing on the community involvement is available in Appendix 2.**

Overview of the phases in our research design
<ul style="list-style-type: none"> <li>• <b>Phase 1: Literature research (Section 2.3.)</b> <ul style="list-style-type: none"> <li>• <b>Activity 1a. Literature discovery and analysis</b> (Section 2.3.1.)</li> <li>• <b>Activity 1b. Literature scoping (Online survey 1)</b> (Section 2.3.2.)</li> <li>• <b>Activity 1c. Literature analysis and synthesis</b> (Section 2.3.3.)</li> </ul> </li> <li>• <b>Phase 2: Interviews, surveys, review, focus groups (Section 2.4.)</b> <ul style="list-style-type: none"> <li>• <b>Activity 2a. Interviews</b> (Section 2.4.1.)</li> <li>• <b>Activity 2b. Online survey 2</b> (Section 2.4.2.)</li> <li>• <b>Activity 2c. Structured community review</b> (Section 2.4.3.)</li> <li>• <b>Activity 2d. Focus groups</b> (Section 2.4.4.)</li> </ul> </li> </ul>

## 2.3. Phase 1: Literature review

This first Phase consists of three main activities: Literature search and analysis (Section 2.3.1.) Literature scoping (Online survey 1; Section 2.3.2.) and literature analysis (Section 2.3.3.).

### 2.3.1. Activity 1a: Literature discovery and analysis

This section has three parts: a systematic literature search, opportunistic literature search, and analysis of the discovered literature. Searching for literature that is not available digitally across sub-Saharan Africa is outside the scope of a report of this nature. Hence, we note that the literature review described here includes only internet-available resources. We recognise that these methods result in some degree of bias, as they do not take into account literature that can have an important value locally. However, it is the internet that enables this kind of review work. Moreover, if access to a publication could not be obtained, we would be unable to make it available to the

TVET research community via the Zotero<sup>3</sup> folder. One of the aims of this report is to be a gateway to the available literature on which we hope researchers in sub-Saharan Africa can build.

Our approach uses extensive research through online databases with various search terms (see below). Our overall inclusion strategy considers PICO ('population, intervention, comparator and outcome'; ↑Higgins & Green, 2011; ↑Waddington, et al., 2012), specifically focusing on:

1. Population: Sub-Saharan Africa;
2. Intervention: any kind of TVET;
3. Comparator: open (e.g., no comparator or control group, etc., depending on the study);
4. Outcome: insights on TVET research.

Our detailed data extraction approach follows guidelines from the EPPI Centre's 'Extracting data and quality assessing primary studies in educational research' (↑2003, updated 2017). Our keywording strategy also follows the ↑EPPI Centre guidelines (2001, updated 2017).

## Keywords

This refers to the inclusion of key search terms, including variations that are also used in alternative languages. From the general research mission (TVET in SSA) as well as the specific research questions, search terms were developed to identify relevant publications. Table 2.2. (below) shows the search terms—including variations—that were used in all four languages. We note that our search covered significant publications concerned with TVET modalities in the following languages: English, German, French and Portuguese. These were selected because they are the languages in which the majority of the research is published, with the exception of German, which was included because of the location of BIBB who commissioned the research. As will be discussed later, in the end, only very few non-English sources were relevant and, for this reason, Arabic was not included in the search.

We analysed both formal scientific publications and grey literature, including policy papers, project reports, peer-reviewed journal papers, books, etc. While we considered all documents regarding TVET in SSA (published worldwide), we were mindful to ensure a voice for African authors and researchers situated in Africa.

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<sup>3</sup> Zotero is an open source reference management software. that allowed us to store the documents reviewed and make them available to our readers. ↑Open Development & Education, Zotero Library, available at [https://www.zotero.org/groups/2317526/oden\\_tvetr-ssa/library](https://www.zotero.org/groups/2317526/oden_tvetr-ssa/library)

Table 2.2. Search terms

Key term	Variations
<b>Technical and vocational education and training (TVET)</b> (terms, T)	<p><b>English:</b> TVET; vocational education and training; vocational training; vocational education; technical education; technical-vocational education/TVE; occupational education/OE; professional and vocational education / PVE; career and technical education / CTE; workforce education; workplace education / WE; school-based TVET; dual TVET; informal-based TVET; technical and vocational education and training; TVET; informal training; firm-based training; apprenticeship; apprenticeship training; apprentice; apprentices; trainee; studentship; training at work</p> <p><b>German:</b> Berufsbildung; Berufsausbildung; berufliche Bildung; technische Bildung; technisch-berufliche Bildung; professionelle und berufliche Bildung; Karriere und technische Bildung; Arbeitsplatz-Bildung; schulische Berufsbildung; duale Berufsbildung; Weiterbildung; Ausbildung; Lehrling; Lehrlingsausbildung; Auszubildende; Auszubildender; Studentenschaft; Ausbildung am Arbeitsplatz; informelle Ausbildung</p> <p>Similarly for <b>French</b> and <b>Portuguese</b></p>
<b>Professions (P), Education-related terms (Q)</b>	<p><b>English:</b> teachers, nurses, car mechanics, etc.</p> <p><b>German:</b> LehrerIn, Krankenschwestern/-pfleger, AutomechanikerIn/KFZ-MechatronikerIn, etc.</p> <p>Similarly for <b>French</b> and <b>Portuguese</b></p>
<b>Regions in Sub-Saharan Africa (areas, A)</b> <b>Countries (C)</b>	<p><b>English:</b> Africa; Sub-Saharan Africa; East/West/Southern Africa; developing context(s); developing country/-ies; developing nation(s); less developed country/-ies; lesser developed country/-ies; low-income country/-ies; middle-income country/-ies; LMIC(s); Global South</p> <p>Countries (49): Angola, Benin, Botswana, Burkina Faso, ...</p> <p><b>German:</b> Afrika; Subsahara-Afrika; Ost-/West-/Südliches Afrika; Entwicklungskontext(e); Entwicklungsland/-länder; Entwicklungsnation(en); weniger entwickeltes Land; Land/Länder niedrigen Einkommens; Land/Länder mittleren Einkommens; LMIC(s); Globaler Süden</p> <p>Individuelle Länder (49): Angola, Benin, Botsuana, Burkina Faso, ...</p> <p>Similarly for <b>French</b> and <b>Portuguese</b></p>
<b>Databases</b>	Google Scholar, DOAJ, JOLIS, ERIC, ESSA, Web of Science, Science Direct, Scopus, ProQuest, 3ie, BMBF. <sup>4</sup>

4 <sup>†</sup>BMBF-Internetredaktion (no date), available at <https://www.bmbf.de/publikationen/>

## Literature discovery using automated approaches

We developed our own, in-house algorithms in order to automate the search process and provide comprehensive search results. Table 2.2 illustrates the need for these algorithms. The first term ('TVET') has about 40 variations in German, plus specific associated professions. With variations across four languages, this results in more than 160 terms. The third term ('Sub-Saharan Africa') has 27 variations, plus 49 countries in Sub-Saharan Africa (76) in four languages. This means that more than 10,000 combinations per database need to be applied. For 11 databases that means more than 100,000 queries. Our in-house algorithm does this search completely automatically. Duplicates are largely automatically eliminated.

This differs from existing approaches that either utilise

1. a complex query (for an example, see, e.g., [↑Kenya: Tripney & Hombrados, 2013](#));
2. a small part of the search space intuitively; or
3. a combination of (1) and (2), e.g., a complex query in ProQuest with intuitive search in Google Scholar.

Approach (1) has certain advantages, including the fact that only one (albeit complex) request has to be made and results can be achieved very quickly (for example, 100 queries are possible to complete in only one hour). By comparison, 10,000 (automatic) requests must be made in our process, which may take several days. But approach (1) also has disadvantages that do not occur in our approach. For example, approach (1) is limited to portals that allow complex queries. Our approach, on the other hand, uses flexible requests that can run across a large number of portals. For each portal—depending on the characteristics of the portal—enquiries can be made either simple or complex. In particular, our approach works well where no API is available (i.e., where metadata needs to be read directly from web pages). Furthermore, approach (1) gives no indication of which combinations of expressions lead to which search results. It is therefore impossible to discover special combinations that provide a small number of important results (e.g., Malawi + TVET + electrician). Our approach can dynamically reuse metadata (such as other references in the sense of snowballing). However, these differences do not mean that one or the other approach is better: depending on the circumstances, it may be advantageous to use the more productive approach or to vary the complexity of the requests in our approach (and therefore compromise on speed and detail).

## Databases

In line with the usual practice of systematic literature research, our search was carried out across several literature search platforms. Any single platform search is inadequate because '*no database contains the complete set of published materials*' ([↑Xiao & Watson, 2017:11](#)). Our search covers Google Scholar, Web of Science, ProQuest, ERIC, the common libraries of the World Bank and IMF database ([↑International Monetary Fund & World Bank](#); JOLIS) and the database of 3IE for impact evaluation.

In order to ensure the adequate representation of publications by African researchers and institutions from SSA, we also consulted the ‘Mapping Education Research in Sub-Saharan Africa’ database<sup>5</sup>. Since policy-relevant research in educational research (including TVET) is not easy to find, this project has put together a dedicated database in order to increase the visibility and impact of African educational research. It currently contains about 3,000 selected entries with contributions by African researchers and researchers based in Africa.

## Grey literature

Our literature review also includes the discovery of grey literature, the *“diverse and heterogeneous material that is not subject to the traditional academic peer review process”* (†Adams, et al., 2017:433). This is particularly beneficial in relation to the study of TVET: our knowledge of this sector shows that many important activities are not recorded in journals. Blogs, presentations, informal publications and other communications play an important role. The literature search of the grey literature follows the same methodology as for the scientific literature but uses conventional search engines (Google search/‘Google Custom Search Engine’). As with formal literature, the identified grey literature must meet the basic criteria. In this way, the grey literature then *“supplements and complements”* the formal literature (†ibid:448).

## Opportunistic literature search

Our systematic search is supported by an opportunistic literature search and by the snowball sampling. The opportunistic literature search is, therefore, subjective and includes already known or proposed papers. The search involves *“reviewing and tracking references in previously identified papers”* (†Waddington, et al., 2012:363). Our snowballing is bidirectional: on the one hand, references are traced in previously identified papers, and on the other hand, papers are being sought that cite already identified papers (†Xiao & Watson, 2017).

## Systematic review, classification and commentary

The search method just presented leads to a large number of search results. The search engines of different databases have different levels of accuracy, and it is therefore quite possible that irrelevant publications also appear in the search results. Identified papers and documents are checked for duplications and included on the ‘long list’ according to a number of basic criteria. These include:

1. The paper / document included the search term TVET (or variations, see above).
2. The paper / document was related to a country or region in SSA.
3. The paper / document was published after the year 2000.

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5 †University of Cambridge Faculty of Education, Mapping Education Research in Sub-Saharan Africa, available at <https://www.educ.cam.ac.uk/centres/real/researchthemes/highereducation/mappingeducation/>

'Paper includes' means that a search term appears either in the title, abstract or under the keywords of the paper (but not if the search term appears only in the text of the publication itself, as this is not indexed).

## Screening and relevance criteria

Following the initial assembly of the 'long list', we undertook a deeper analysis of the retrieved references. All documents on the 'long list' were reviewed and coded based on their quality and relevance (low, medium, high, ultra-high). This review was carried out by two researchers working independently. The references were then re-evaluated to ensure consistency between different reviewers ([↑Kitchenham & Charters, 2007](#); inter-coder agreement: [↑Jimenez, et al., 2018](#)).

We classify the relevance using upper-case letters U / H / M / L as follows:

**U ('ultra-high')**: clearly satisfactory and selected for coding;

**H ('high')**: clearly satisfactory;

**M ('medium')**: unclear / contentious;

**L ('low')**: clearly unsatisfactory.

Documents from the 'long list' with relevance criteria H/H (assigned independently by two researchers) are included in the draft 'shortlist'. Cases of M/H and H/M are reviewed to reach intercoder agreement. In some cases, M/M papers are also considered for re-classifying as H if the disciplinary background and/or region would otherwise not be adequately represented. Among the H papers, a further selection is made (by three researchers), deciding which papers should be coded 'U-literature' (ultra-high).

In this phase, further criteria for the systematic recording and clustering of the state of research around different TVET contexts and sub-contexts were developed in preparation for Phase 2. Quality assessment also provides the first insight into the research capacity of institutions. However, thoroughly coding and establishing the quality of the research goes beyond the simple concepts noted in the Phase 1 automated screening. We, therefore, also considered the studies' abstracts and main texts. Further topics, perspectives and current debates are explored, and the criteria for systematic recording/clustering are developed further.

## Quality criteria

Normally the selection criteria are based on relevance *and* quality. However, we need to bear in mind that this study is not about a literature review comparing, e.g., TVET models with regard to their effectiveness. To make such statements based on a literature review, the underlying papers must be of high quality themselves. Here, we were interested in presenting the state of research itself—including the state of research quality. We, therefore, consider relevant papers of *any* quality so that, for example, statements about necessary professional development for researchers can be made.

We, therefore, set criteria for quality, but generally do not use these to exclude papers (with Chapter 7 as an exception).

We classify papers regarding quality using lower-case letters u / h / m / l as follows:

**u ('ultra-high')** Indicates a well-referenced publication with good structure, appropriate methodology, a thorough analysis and a clear discussion of conclusive findings;

**h ('high')** indicates a publication with a good structure and reasonable, evidence-based conclusions; Methods are clearly described (for both primary or secondary research) and implemented (e.g., sample data is clearly specified), and the conclusions are derived from the data;

**m ('medium')** indicates that the publication has a structure that compromises the clarity of the findings; Methods are clear (primary or secondary research), but the implementation or conclusions raise methodological issues;

**l ('low')** indicates a publication with a poor structure, which results in reasoning that is difficult to follow; they may be no obvious methods.

This review process also examines the strengths and weaknesses of the study design presented in the documents (target group selection, cohort formation, data collection, and analysis) as well as detailed contexts (see [†Haßler, et al., 2015](#), based on [†Gough, 2007](#); see also [†Gough, et al., 2012](#). For further details, see Chapter 7.

### 2.3.2. Activity 1b: Literature scoping: online survey 1

Experience shows that information about ongoing projects or initiatives is often not yet available on the internet. We, therefore, use various methods to consult researchers and other stakeholders directly. Our first such consultation takes the form of an e-mail survey (Table 2.3). The survey focuses on unpublished reports and ongoing projects, and on substantive issues according to our research questions. All materials identified in this survey are added to the results of the systematic search in the 'long list'.

**Table 2.3. Email questionnaire**

1. What are the most important TVET organisations / institutes?
2. Who are the most important TVET researchers?
3. Which key non-formal or formal TVET literature must be considered (including review articles / special issues)?
4. To which of the following major occupational groups (as defined by the [ILO](#)) is TVET applicable?
  - a. Managers
  - b. Professional
  - c. Technicians and associate professionals
  - d. Clerical support workers
  - e. Service and sales workers
  - f. Skilled agricultural, forestry and fishery workers
  - g. Craft and related trades workers
  - h. Plant and machine operators and assemblers
  - i. Elementary occupations
  - j. Armed forces occupations
  - k. All the above
5. If you consider TVET to be applicable to b, 'professional' occupations, to which of the following sub-groups of professionals is TVET applicable?
  - i. Science and engineering professionals
  - ii. Health professionals
  - iii. Teaching professionals
  - iv. Business and administration professionals
  - v. Information and communications technology professionals
  - vi. Legal, social and cultural professionals
  - vii. All the above
6. Which areas of TVET should be researched (including areas that would assist your efforts within the TVET sector)?

We note that some of these occupations (such as managers and armed forces occupations) may not be considered to be part of TVET in all education systems. However, the purpose of providing this list of occupational groups was to explore the range of professions that various national systems consider to be part of TVET or not.



### 2.3.3. Activity 1c: Literature analysis and synthesis

In Phase 3, we utilised our initial thematic coding and identification of the topics, perspectives and current debates. The U-documents were added to our analysis software ([↑NVIVO](#)), and content analysis was conducted. The content analysis consisted of cycles with deductive and inductive stages.

1. First, a deductive content analysis was undertaken according to the research questions (see Tables 2.5. and 2.6. with research questions, Section 2.6). The analysis included the typology of TVET models. According to the research questions (e.g., RQ7, 10, 11, 12), the following characteristics were also covered:
  - the theoretical approach;
  - the implementation of TVET;
  - the costs;
  - the learning effect;
  - the inclusion and
  - the equity challenges.
2. The main parts of the publications were also coded in Level 1 (RQ4, 5, 6, 9: Objectives of the research projects, substantive questions, research questions, findings and conclusions of the publications considered, see Table 2.1 Research questions, appendix to this chapter, Section 2.6). These main parts were then inductively examined in stage 2 to discern additional topics.
3. Keywords for the topics were catalogued. Through full-text searches, other citations were discovered and coded in the publications.
4. The results were then compared and correlated with the research priorities of [↑Mulder \(2018\)](#).

Results of the thematic analysis are presented in Chapter 3.7.

## 2.4. Interviews, surveys, reviews, focus groups

There are several research questions that cannot be answered through the extensive literature search. Therefore, a set of interviews, a community survey and a structured community review (SCR), as well as focus groups, were utilised to offer additional data to address the research questions.

We note that further information on the community engagement aspects of the research design is available in Appendix 2. A data reference with all quotes and the respective attributions to focus group sessions and interviews is available, see further materials in Appendix 5.

### 2.4.1. Activity 2a: interviews

The usual procedures for interview invitation, appointment and analysis were followed. These included providing information on the purpose of the research, making available contact information for answering queries, ensuring participants can consent to the

interview and have the opportunity to approve interview notes and withdraw contributions, and communicating research findings to participants.

We sent interview invitations by email to a total of 94 stakeholders and successfully engaged with 27 stakeholders, which was 29% of invitations submitted. The interviews were carried out by two researchers: one conducted the interview while the other took notes. Once completed, the notes were checked with the interviewer and proofread, then a copy was submitted by email to the participants for their approval. Reminders were sent to those interviewees that had not returned the interview notes with their comments after two weeks. In the end, we received the confirmation of the accuracy of our notes from a total of 12 of the stakeholders that were interviewed. The appendices provide further information on the methodology for these phases (Appendices 3 and 4). Results and analysis of the interviews are included throughout the following chapters. However, Chapters 14 and 15, in particular, are based on the interviews and focus groups.

### **List of interview questions**

The interview questions are divided into six sections:

1. Part A. About the interviewee;
2. Part B. TVET in SSA;
3. Part C. TVET Research in SSA;
4. Part D. The Impact of TVET Research in SSA;
5. Part E. TVET Research networks in SSA;
6. Part F. Relevance of outcomes of the present project.

Part A collects some general demographic details. Part B asked about current topics and debates regarding TVET in SSA, the countries that are leading in TVET implementation and the existence of regional trends. We enquired about the factors influencing the success or failure of TVET projects and asked participants to name any major project they were aware of in SSA. The questions posed in this section also aimed to collect information about businesses, industry and commerce participation in the TVET system and about their influence in policy and curriculum design.

The questions included in Part C intended to map the SSA countries that are leading TVET research and to identify the leading experts and institutions. In this section, we aimed to understand the institutional frameworks in which researchers operate and how they can influence the development of the education systems.

The impact of research currently being carried out in SSA was addressed in Part D, where we enquired about the areas within the TVET system where there is an urgent need for research support. Institutional framework conditions can be challenging and include: institutional embedding, degree of organisation, specialisation, personnel and financial resources, research or university policy framework. Acknowledging institutional framework conditions, we requested that interviewees discuss how these conditions can be influenced with a view to increasing research capacity and performance.

Part E focused on research networks. The literature review carried out in Phase 1 provided very little information on the state of research networks in development. Hence, participants were asked about the possibilities for the expansion of already existing co-operations and the potential for new network formation. We were also interested in identifying the other approaches, apart from networks, that are able to structure fruitful engagement within the research community.

Part F concluded the interviews by asking what interviewees needed to get out of this research project and what opportunities they foresaw for it. We also provided space for any additional comments they might have had, including on topics we did not cover that they thought we should address.

### **2.4.2. Activity 2b: online survey 2**

All those that were interested in accessing the literature review report were asked to fill in a five-part questionnaire from which data on the participants' experience, skills and qualifications were collected. The questionnaire was composed of open-ended and multiple-choice questions. Invitations to take part in the structured community review (SCR) and have access to the literature review report were sent to all those we had contacted during the previous stages of this research and to some key institutions that would be able to share the invitations among their members (e.g., KATTI, CITEF, UNEVOC Forum). Fifty-two people registered to join the SCR. Apart from one person who informed us she was representing her organisation, all participants answered the questionnaire indicating they participated in this discussion in a personal capacity.

The SCR considered the origin of the participants (demographic and by organisation), the main research areas, and the reasons for participating in the SCR. The personal information collected included participants' age cohort, their professional identity, their qualifications and research experience, and their familiarity with Zotero and Google Docs (including access to Google Docs via smartphone or tablet). Furthermore, there were open questions about the research priorities of the participants.

Additionally, we requested that participants provide us with a list of relevant publications authored by them or their colleagues. Finally, we asked to be informed of the kind of resources that they might be able to share with others through the SCR. The questionnaire also included language preferences, and asked participants to describe how they might be able to contribute to the review.

### **Participants' organisations**

Stakeholders working with TVET in SSA were given the opportunity to access the first report and to take part in the structured community review. Most participants were affiliated with organisations based in Africa, or at least headquartered there (42 in total, countries listed in the table below). An additional 6 participants worked for organisations with headquarters in Europe (Germany, Norway, Italy and the United Kingdom), and three in Asia (Pakistan, Hong Kong and India).

**Table 2.3. African countries with organisations that are represented in the SCR**

African countries with organisations that are represented in the SCR		
Cameroon (3)	Madagascar (1)	Nigeria (10)
Ghana (3)	Malawi (2)	South Africa (11)
Ethiopia (5)	Mozambique (1)	Tanzania (2)
Kenya (5)	Namibia (2)	Zambia (1)

South Africa (11), Nigeria (10), Ethiopia (5) and Kenya (5) were the countries most represented in this sample, followed by Cameroon and Ghana with 3 participants each. Organisations in Malawi, Namibia, Tanzania and Uganda each had 2 representatives, and Botswana, Madagascar, Mozambique, Senegal, Sierra Leone, Sudan and Zambia had one each.

The organisations included TVET providers, universities and governmental departments (see Table 3). Other types of organisation included Zizi Afrique (Kenya), Vocational Centre for International Development, Lattanzio KIBS, Education and Development Initiatives Uganda, IIT BSUIR, UNESCO, GIZ and IIPE-Pôle de Dakar. At least 18 participants were from organisations that are UNEVOC Centres (another 15 people did not know, which could slightly increase this number).

**Table 2.4. Training providers, universities and government departments represented in the SCR**

TVET providers	
Ken Saro-Wiwa Polytechnic (Nigeria)	Buffalo City TVET College (South Africa)
Malawi Polytechnic (Malawi)	Ekurhuleni East TVET College (South Africa)
Eldoret National Polytechnic (Kenya)	South West Gauteng TVET College (South Africa)
National Vocational Training Institute (Ghana)	Port Elizabeth TVET College (South Africa)
Arusha Technical College (Tanzania)	Yaba College of Technology (Nigeria)
	Dept of Fine and Applied Arts, College of Education (Nigeria)
Universities	
Durban University of Technology (South Africa)	Technische Universität Dresden (Germany)
Nelson Mandela University (South Africa)	Oslo Metropolitan University (Norway)
University of Nigeria	University of Nottingham (United Kingdom)
University of Abuja (Nigeria)	Pedagogical University of Mozambique
Michael Okpara University of Agriculture (Nigeria)	University of Malawi
University of Eldoret (Kenya)	Higher Institute of Technology Antsir-anana (Madagascar)
United States International University –Africa (Kenya)	Jimma University (Ethiopia)

Government departments
National Board for Technical Education (Nigeria)
National Commission for Colleges of Education (Nigeria)
Namibia Training Authority (Namibia)
Ghana Education Service (Ghana)
National Vocational Training Institute (Ghana)
Ministry of Higher Education (Zambia)
TVET Authority (Kenya)
Inspectorate of Pedagogy for Industrial Education, Ministry of Secondary Education (Cameroon)
Ministry of Professional Education and Employment (Tunisia)
Technical Education and Vocational Training Authority (Pakistan)

As can be observed in Table 3, education providers compose the largest group among the organisations in this sample. Thus, it should come as no surprise that most respondents were lecturers, assistant professors, teachers or instructors (18). Many were also in managerial positions, where 4 identified themselves as director, deputy director or executive director; 3 as dean or head of department; and a further 4 respondents stated they were managers or deputy managers. An additional 4 were directors or coordinators of a UNEVOC Centre. Other roles include research assistant, research chair or researcher (4), consultant (3) and subject specialist, curriculum specialist or technical adviser (5).

### 2.4.3. Activity 2c: structured community review

Apart from the initial survey and literature review, we also conducted a structured community review. This review involved TVET experts from across SSA and beyond. These experts gave reflective, knowledge-based critiques and additional insights into TVET beyond what we could find from the literature review and the initial survey. Specifically, these insights took the form of commentary on a previous version of the present report, such that the present version now benefits from the critical analysis of multiple experts. The SCR was more cost-effective compared to other methods of accessing additional insights from TVET researchers such as country visits, and the online nature of the review allowed researchers from multiple locales to work simultaneously and collaboratively on reviewing the previous version of the report. Such online collaborative work helps ensure that the participants can respond to and build on each others' insights in close to real-time, leading to rigorous, iterative feedback on the report. Details on the insights gained from this process can be read in Appendix 3.

### 2.4.4. Activity 2d: focus groups

Focus groups were another method that we used to further validate the findings of the literature review. These focus groups, like the SCR, were made up of TVET experts. However, unlike the SCR, the focus groups were conducted over WhatsApp, and did not specifically aim to review a previous version of the report, but instead to give additional insights on particular topics. Further details of the focus groups can be found in Appendix 2.

## 2.5. Further considerations

This short section discusses the project languages used and addresses ethical issues that have arisen from the work on this study.

### 2.5.1. Project languages

A variety of project languages were necessary for the literature research, our online survey, interviews and site assessments. Therefore, as explained above, search terms were used in multiple languages. For Phase 2, we used English as the main language for interviews to facilitate the analysis. However, interviews with French-/Portuguese-speaking participants were conducted by researchers who are proficient in these languages, as well as in English. This allowed us to clarify and compare certain terms immediately, ensuring a good balance between non-English-speaking participants expressing themselves easily, and allowing for good linguistic comparability in the analysis. We note that our search included German as a language, as this work was commissioned by the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung).

### 2.5.2. Ethical issues

All research in this project is governed by the guidelines of the British Education Research Association<sup>6</sup> which include responsibilities to research participants and funders, a responsibility to the community of educational researchers, and accountability to policymakers and the general public. No children participated in this study; nevertheless, we are mindful of the UN Convention on the Rights of the Child<sup>7</sup> and international / national child protection guidelines.

Following these guidelines, all actors participating in this research followed our established consent procedure and were advised that they could withdraw their consent to participate at any time. In addition, the notes and analyses were sent to all individual respondents for validation. Upon completion of the research process, all participants received full-length summaries and reports.

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6 †BERA, Ethics and Guidance, available at <https://www.bera.ac.uk/resources/all-publications/resources-for-researchers>

7 †UN Convention on the Rights of the Child (UNCRC), available at <https://www.unicef.org.uk/what-we-do/un-convention-child-rights/>

## 2.6. Chapter appendix

### 2.6.1. Research questions

We begin by presenting the research questions in Tables 2.5. and 2.6. below. Please note the following:

1. The term 'research question' is abbreviated as RQ.
2. Actual research questions are in square brackets, e.g., [RQ2] or [RQ3.a].
3. Some research questions are grouped, with the actual question referred to being in brackets, e.g., [RQ3.a]. In those cases, the title of the group is not a research question; 'RQ' is still used, but the number is not put in parentheses such 'RQ3' (without parentheses).

Note that some research questions were added after the literature review for further consideration during the interviews and focus groups. The questions are marked through the use of italics and an explanatory footnote.

**Table 2.5. Research questions for the literature review**

<b>Part A. About the research, research papers and reports</b>	
	<p><b>Overview of Part A.</b> The research questions in Part A are aimed at mapping research, research papers and reports in SSA, including categorisation according to specific criteria, such as their background and focus areas.</p>
	<p><b>RQ1. Overall background</b> to research that is evidenced in publications or evidenced otherwise.</p> <p><b>[RQ1.a]</b> In what <b>contexts</b> have studies been / are studies being generated in SSA? For example, what is the institutional setting (e.g., NGO vs. university vs. government vs. industry)?</p> <p><b>[RQ1.b]</b> Are there specific <b>academic disciplines</b> that are more pronounced? If so, what are the academic disciplines (economic research vs. social research)?</p> <p><b>[RQ1.c]</b> Are specific <b>industrial sectors / branches</b> apparent? If so, what are those industrial sectors (e.g., the electronics sector, construction, tourism)?</p> <p><b>[RQ1.d]</b> Is the <b>motivation</b> of researchers or research projects discernable (e.g., in the background provided within research papers)? If so, what is the motivation of the study or researchers?</p>
	<p><b>[RQ2.]</b> Which <b>definition of TVET</b> (i.e., TVET, apprenticeship, 'Berufsbildung', 'apprentissage', ...) is used? Which (possibly divergent) terms are used? Where are such terms used (geographies) and how?</p>
<b>Part B. Research findings: Themes, perspectives and current debates</b>	
	<p><b>Overview of Part B.</b> The research questions in Part B offer both a bird's eye view of the topics, perspectives and current debates, and detailed insight into goals and substantive questions, research designs and TVET models (including designs and cooperation).</p>
	<p><b>RQ3. Topics, perspectives, current debates.</b></p> <p><b>[RQ3.a]</b> What are the <b>topics, perspectives and current debates</b> concerning TVET that can be identified? Are there <b>special topics</b> that stand out? (For example: 'informal apprenticeship'?)</p> <p><b>[RQ3.b]</b> Are there <b>trends and correlations in regions</b> or groups of countries, or on the topics of advancement opportunities, informal sector and TVET, social inequality, labour market integration of young people, etc.?</p>
	<p><b>[RQ4.]</b> What are the <b>overall goals of the research project</b> and the <b>substantive questions</b> pursued by researchers? For example: key concerns, overarching research questions or other priorities for the research project. What are the disciplinary priorities?</p>



	<p><b>[RQ5.]</b> What are the <b>research questions</b> pursued in the papers? What specific TVET issues or problems are being tackled in the research?</p>
	<p><b>RQ6.</b> Research design and quality of results (in the publications considered).</p> <p><b>[RQ6.a]</b> What are the research designs in the publications considered? What are the research methods used?</p> <p><b>[RQ6.b]</b> What are the quality of reporting and the quality of results?</p>
	<p><b>RQ7. TVET models</b> that are discernable in the literature; the <b>main lessons</b> in designing, developing and delivering TVET models.</p> <p><b>[RQ7.a]</b> What <b>pedagogical or programmatic designs</b> are researched in the literature? Which models of TVET are used (or planned) in SSA? For example: distance learning, blended learning, in-service, pre-service (college), work-based, school-based, formal vs. informal.</p> <p><b>[RQ7.b]</b> What are the <b>key features</b> related to designing, developing and delivering TVET models?</p> <p><b>[RQ7.c]</b> Is the <b>formality of TVET education and TVET education programmes</b> (formality vs. informality) in each context a differentiating feature?</p> <p><b>[RQ7.d]</b> What <b>pedagogical / classroom approaches</b> are being used to deliver TVET?</p> <p><b>[RQ7.e]</b> Are the <b>practical components</b> of programmes a factor that make them stand out in any way? (For example: cooperation between college and business as places of learning.) Are there already dual approaches that have been considered? Is the degree of practical components (e.g., cooperation school-enterprise) in each context a differentiator?</p>
	<p><b>RQ8.</b> The participation and role of <b>industry and commerce</b> (engagement / relationship of the TVET system in business / industry / commerce).</p> <p><b>[RQ8.a]</b> To what <b>extent are</b> industry or the commercial sector involved in any kind of TVET?</p> <p><b>[RQ8.b]</b> Is this involvement part of <b>national TVET development and practice</b>? For example, is this involvement nationally organised? Is it part of public TVET provision?</p> <p><b>[RQ8.c]</b> How pronounced is the <b>willingness of the business/industry/commerce community to participate</b> in national dialogues for the development of a TVET-focused education system and in its implementation?</p> <p><b>[RQ8.d] Differentiating factors:</b> Is the participation in TVET focused on specific areas/professions?</p>

	<p><b>RQ9. Findings and conclusions</b> of publications considered.</p> <p><b>[RQ9.a]</b> What are the main <b>findings</b> of the publication?</p> <p><b>[RQ9.b]</b> What <b>recommendations for further research</b> are evidenced (in the publication: articles, web pages, policies)?</p> <p><b>[RQ9.c]</b> What <b>recommendations for education policy</b> are evidenced (in the publication: articles, web pages, policies)?</p>
	<p><b>[RQ10.]</b> What do publications report about the <b>impact of TVET programmes</b> on participants and the wider society (impact / growth / sustainability / Sustainable Development Goals)?</p>
	<p><b>[RQ11.]</b> What are the <b>relevant infrastructural, technological, socio-cultural, economic and legal factors</b>? Which contextual (and regional) factors can increase or decrease the impact / growth / sustainability?</p>
	<p><b>[RQ12.]</b> What are the main <b>inclusion-related challenges</b> (equal treatment, e.g., gender, disability) in TVET in SSA? What are the successes and failures with respect to inclusion in TVET implementations?</p>
<p><b>Part C. Research sector mapping and actor analysis</b></p>	
	<p><b>Overview of Part C.</b> Part C offers a sector mapping and actor analysis. Various sectors (business, government, NGOs, etc.) and actors (researchers, institutions, funders, etc.) are considered regarding their role in TVET policy, system decision-making, research, programme delivery and programme evaluation. We undertake a broad analysis across SSA, as well as more detailed analysis for selected countries and regions.</p>

**RQ13. Stakeholders in the research landscape, leading experts and institutions:** The role of research institutions in the TVET actor landscape; institutional research capacities (in TVET, in SSA).

**[RQ13.a]** Who are the **designated experts** for TVET in SSA? Where are they located (country / institution)?

**[RQ13.b]** Which **research organisations** in each geographic region / country covered have particular expertise and capacity in TVET education research (in both SSA and internationally)?

**[RQ13.c]** What **institutional research capacities** exist in TVET research in SSA?

**[RQ13.d]** In which **institutional frameworks** do individuals and institutions operate, and how does this framework influence the development of the (TVET) education system?

**[RQ22.a]** *For which **areas within the TVET system** (in specific countries / regions, sectors or organisations) is there an urgent need for research support?*<sup>8</sup>

**[RQ22.b]** *For which **research questions** is there still the greatest need for research (including RQs on improvement of TVET)?*<sup>9</sup>

**RQ14. Analysis of TVET networks.**

**[RQ14.a]** What **research networks** on TVET in SSA already exist, and what is the extent of African research institutions' and professionals' contributions / involvement?

**[RQ14.b]** What **international networks** exist between African and European countries, or networks involving outstanding international research institutions?

**[RQ14.c]** *Which potentials for **network formation** can be identified?*<sup>10</sup>

<sup>8</sup> *This research question — shown in italics — was added after the literature review, with a view to answering it through the interviews and focus-groups.*

<sup>9</sup> *As for previous footnote.*

<sup>10</sup> *As for previous footnote.*

	<p><b>RQ15. Institutional framework conditions.</b></p> <p><b>[RQ15.a]</b> Which <b>institutional framework conditions</b> in TVET research (institutional connection, degree of organisation, specialisation, personnel and financial resources, research/university policy framework, etc.) influence research performance?</p> <p><b>[RQ15.b]</b> <i>Given institutional framework conditions (institutional connection, degree of organisation, specialisation, personnel and financial resources, research/university policy framework, etc.) and their influence on research capacity and performance: How can those framework conditions be influenced to increase research capacity and performance?</i><sup>11</sup></p> <p><b>[RQ15.c]</b> What potential exists for the <b>development of institutional TVET research capacities</b> or what possibilities exist for the expansion of already existing cooperations?<sup>12</sup></p>
	<p><b>RQ16. Geographic analysis and geographic distribution.</b></p> <p><b>[RQ16.a]</b> What are the <b>regions and countries</b> that can be identified in the literature search (places where research is situated)?</p> <p><b>[RQ16.b] Distribution:</b> For which countries are most of the research findings available, and for which countries are there few findings? Which forms of TVET and which professions occur in which locations?</p> <p><b>[RQ16.c]</b> Where are the <b>researchers and institutions</b> who undertake this research, located?</p> <p><b>[RQ16.d]</b> <b>Current TVET projects and their locations.</b> <i>What are the major TVET projects in SSA? Are there major TVET projects elsewhere that would be worth trialing in SSA?</i><sup>13</sup></p>
	<p><b>[RQ17.]</b> Are any specific <b>research funders</b> identified? In other words, who are the funders of TVET research and of TVET projects?</p>

<sup>11</sup> As for previous footnote.

<sup>12</sup> As for previous footnote.

<sup>13</sup> As for previous footnote.

## Part D. National standards and regulations

**Overview of Part D.** Part D presents national standards and regulations. It undertakes a TVET stakeholder analysis. Furthermore, policy implications regarding TVET programmes are presented with a particular focus on inclusion.

### RQ18. National standards and policies.

**[RQ18.a]** Which countries have **national standards** for TVET? How were they produced and to whom do they apply? E.g., students, educators, educators located at the workplace, pedagogy specialists, institutions.

**[RQ18.b]** How are national TVET standards **monitored**? To what extent do data collection and policy planning tools exist at national or regional levels?

**[RQ18.c]** Within these countries, which **state authorities** are involved in TVET?

**[RQ18.d]** To what extent / how have **national TVET systems been formalised** (i.e., embedded in the formal education or employment system)? To what extent are the described forms of training integrated into the formal system of the respective country? What measures were recommended and possibly implemented in this regard?

**RQ19. Actor analysis: Stakeholders in TVET policy** and education system decision making.

**[RQ19.a]** Who are the **key players** shaping TVET politics?

**[RQ19.b]** Which **state authorities** are decisive for TVET and how is the (technical and vocational) education system managed?

**[RQ19.c]** Is everything in state hands, or if not, what relevance do **private education providers** have within the system?

**[RQ19.d]** Do **businesses** play a role in TVET and do they influence TVET policy (participation, consultation, design)?

**[RQ19.e]** Do **trade unions** play a role?

**[RQ19.f]** Is there an extended, relevant system of (merchants' / artisans') **guilds**? Does it play a role regarding TVET?

**[RQ19.g]** What role does **TVET research** play in the respective national/regional education policies?

	<p><b>RQ20. State regulation of TVET and impact of policy on TVET programme delivery and evaluation.</b></p> <p><b>[RQ20.a]</b> To what extent are institutions delivering TVET education (e.g., non-governmental organisations, state schools, colleges) <b>subject to state policies and regulations</b> (on TVET and otherwise; national infrastructure; economic and legal factors)?</p> <p><b>[RQ20.b]</b> How is <b>policy implementation</b> evaluated? Who assesses implementation? What are the quality indicators?</p> <p><b>[RQ20.c]</b> Are the policies and regulations effective? Is the <b>impact of policy</b> discernable (e.g., in the publications examined or within the web search)?</p>
	<p><b>[RQ21.]</b> <b>How do national standards relate to inclusion</b> (equal treatment, e.g., gender, disability) in TVET in SSA?</p>

## 2.6.2. Research questions for the interviews and focus groups

The following research questions were utilised during the interviews and focus groups. Some of these research questions had already been designed for the literature review, but were not answered conclusively. Therefore, they were used again during the interviews and focus groups. Such questions are shown in italics.

However, a number of questions were added after the literature review and only utilised during the interviews and focus groups. These are non-italic, namely RQ15.b/c, RQ14.c and RQ22.a/b. In the full list above (2.6.1.) all of these questions have been added to Part C (research sector mapping and actor analysis).

Table 2.6. Research questions for the interviews and focus groups

Experts and research capacity
<p><b>[RQ13.a]</b> Who are the <b>designated experts</b> in TVET in SSA? Where are they located?</p> <p><b>[RQ13.c]</b> What <b>institutional research capacities</b> exist in TVET research in SSA? In which institutional frameworks do they operate, and how can they influence the development of education systems?</p> <p><b>[RQ16.d]</b> <b>Current TVET projects and their locations.</b> What are the major TVET projects in SSA? Are there major TVET projects elsewhere that would be worth trialling in SSA?</p>
The role of TVET research and the capacity for TVET research in SSA
<p><b>[RQ22.a]</b> For which <b>areas within the TVET system</b> (in specific countries / regions, sectors / organisations) is there an urgent need for research support?</p> <p><b>[RQ22.b]</b> For which <b>research questions</b> is there still the greatest need for research (including RQs on the improvement of TVET)?</p> <p><b>[RQ13.d]</b> In which <b>institutional frameworks</b> do individuals and institutions operate, and how can they influence the development of the (TVET) education system?</p> <p><b>[RQ15.a]</b> Which <b>institutional framework conditions</b> in TVET research (institutional connection, degree of organisation, specialisation, personnel and financial resources, research / university policy framework, etc.) influence the research performance?</p> <p><b>[RQ15.b]</b> Given <b>institutional framework conditions</b> (institutional connection, degree of organisation, specialisation, personnel and financial resources, research / university policy framework, etc.) and their influence on research capacity and performance: How can those <b>framework conditions be influenced</b> to increase research capacity and performance?</p> <p><b>[RQ15.c]</b> What potential exists for the <b>development of institutional TVET research capacities</b> or what possibilities exist for the expansion of already existing cooperations?</p> <p><b>[RQ16.d]</b> <b>Current TVET projects and their locations.</b> What are the major TVET projects in SSA? Are there major TVET projects elsewhere that would be worth trialling in SSA?</p>
Analysis of TVET networks
<p><b>RQ14.</b> <i>Analysis of TVET networks.</i></p> <p><b>[RQ14.a]</b> What research networks on TVET in Africa already exist, and what is the extent of African research institutions' and professionals' contributions / involvement?</p> <p><b>[RQ14.b]</b> What <b>international networks</b> exist between African and European countries, or networks involving outstanding international research institutions?</p> <p><b>[RQ14.c]</b> Which potentials for <b>network formation</b> can be identified?</p>

### 2.6.3. Discussion of the research questions

While working on this study, there were frequent discussions about the research questions. Part of this is reflected in the following questions and comments in order to focus on various further aspects of the research questions.

#### Comments on RQ2

Are there differences that can be traced back to the different (colonial) histories? It may be the case that there are similarities between the current TVET system in a specific country in SSA and its former colonial power. This may also shape aspects of current cooperation between different countries (such as an interest, or not, in Germany's 'dual' system). Similarly, we expect the TVET system to be shaped by other transnational factors, such as donor funding since the end of colonial rule (see also RQ13.d.).

#### Comments on RQ7

Please note that RQ7, 8 and 19 are linked. The notes on those questions should be read together.

[RQ7.a.] To what extent do the five quality characteristics of German dual TVET appear in research? (See [↑multilingual GOVET presentations](#)) 'Place-of-learning cooperation' and the 'dual principle' are important, but are likely only found where there are German, Austrian or Swiss influences.

[RQ7.c.] To what extent is the TVET education opportunity (that is considered in the publication) formal or informal? That is to say: formal / informal regarding overall programme structure, or lack thereof. What is the context of the informal / formal model described, i.e., country, rural vs. urban, gender, socio-economic status, background of apprentices, etc.? Within the overall programme, how formal are the practical parts?

[RQ7.e.] Are there any practical components at all? Practical components might involve students going into industry. However, they could also mean going on to be an apprentice in a craft profession. Note that RQ8 and RQ19 are about whether industry / commerce is engaging with TVET, which might include the kind of engagement discussed here (e.g., practical TVET placements), but generally focuses on the wider engagement (e.g., engagement with national policy).

As for RQ2, we consider the extent to which dual approaches are reflected in TVET definitions. This includes 'dual approaches' that are labelled (by the author) but also includes those that are clearly dual in the sense of also having a strong practical off-site component (with significant time allocation). If there are dual approaches, is this a differentiator, e.g., between different degrees (nurse vs. teacher vs. carpenter) or between countries?



### Comments on RQ8

This question deals with the interaction with politics, the economy and social partners with regard to, e.g., examination standards, TVET standards, etc. Note that questions about learning in the working process (e.g., company-based TVET) are discussed in RQ7.e., while questions regarding national standards (e.g., TVET standards, chamber certificates, etc.) are considered in RQ19.

Attention must also be paid to the availability of qualified TVET staff (e.g., company-based TVET staff and educators based in companies). We also consider whether commercial entities are involved in research and consulting (e.g., data reports, TVET reports, TVET standards).

### Comments on RQ13

[RQ13.a.] There is a TVET research community in Germany, not least because TVET and business education is established as a chair at universities. Elsewhere (for example, in SSA), it is often more general sociologists or educational researchers who focus on TVET as part of their research.

[RQ13.c.] Do they act regionally, nationally or internationally? Why is that? Is it due to development aid (c.f. RQ17)?

[RQ13.d.] Are there differences between francophone, anglophone and lusophone countries? (Cf. also [RQ2] in terms of regional differences in the definition of TVET.)

### Comments on RQ15

As framework conditions, the priorities of German development cooperation must also be taken into account (see [↑Wolf, 2009](#), on the waves of TVET in development cooperation).

### Comments on RQ19

One has to look at three aspects of engagement: the education system itself, the industrial angle and special laboratories that exist in many schools. Training centres in Germany also play an important role as inter-company TVET centres and count towards the industrial aspect. The relevant regulations describe how in the construction industry, for example, certain TVET content should be learned in those special laboratories: for example, the GOVET presentation on the German dual system, which provides an overview of the advantages the dual system offers ([↑GOVET, 2018](#); the HWK Cologne is an interesting example, [↑Bildungszentrum Butzweilerhof](#)).

We recall Table 1.1, with the five core elements of TVET in the German dual education system:

1. Cooperation between government and the wider economy (business, trade unions and employers' organisations; e.g., examination committees, TVET standards);

2. Learning as part of the work process (e.g., 70% work-based education and 30% learning in vocational schools or colleges);
3. (System-wide) acceptance of national standards (e.g., TVET standards, guild certificates<sup>14</sup>);
4. Qualified TVET personnel (e.g., company-based TVET staff and TVET teachers);
5. Institutional research and advice (for example, data reports, TVET publications / reports, educational standards).

We note the following regarding the role of institutions: Based on these five core elements, commerce and the wider economy play an important role in Germany; without such cooperation partners, it is impossible to implement 'dual models'. However, the German case is only one such model, and it may be possible that the necessary functions can also be fulfilled in other ways. A key question for SSA is, therefore, which institutions take on specific tasks such as the organisation of examinations, engagement with companies, etc.

Please note again that RQ7, 8 and 19 are linked. The notes to those questions should be read together.

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<sup>14</sup> Also, German, 'Handelskammern'.

### 2.6.4. Research questions and chapters

Table 2.7 below lists the chapters in this report, together with the research questions that are addressed in those chapters.

**Table 2.7. Research questions and chapters**

Chapter number	Chapter name	Research questions
1	Introduction	N/A
2	Research Design	N/A
3	Overview of the Discovered Publications	N/A
4	The Conception and Practice of TVET in SSA	3.a; 2; 7a
5	TVET Actors	1; 13; 16
6	Themes, Perspectives and Current Debates in TVET Research	3; 4; 5
7	Systematic Review of TVET Research	6; 7; 9; 10; 11; 12
8	Models for Designing, Developing and Delivering TVET	7a–e
9	Inclusion-related Challenges and Policies	12
10	State Authorities for TVET Management	19.a–b
11	Non-state TVET Providers	8, 19.c–f
12	National Standards and Regulations	18 a–d
13	Challenges to Policy Implementation	19g; 20
14	Insights Regarding Institutional Frameworks and Research Capacity	3.a, 13.c, 13.d, 15, 22.a, 22.b
15	Research Networks and Capacity Building	14
16	Perspectives on Future TVET Research	N/A

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## Chapter 3. Overview of the Discovered Publications<sup>1</sup>

This chapter describes the different sources that were used to obtain the literature that is analysed and discussed in this study. It describes the process of automated literature discovery in a particularly high level of detail, since it was the most extensive source for the information that is discussed in this study. Selection criteria and procedures reduced the number of publications from an initial ‘long list’ of over 2,000 to a shortlist of 324 references (judged to be of ‘ultra-high’ relevance), which were then coded in detail. The analysis provides details of the publications’ genres. For an insight into the underlying definitions of TVET and other related terms used by the researchers, see Chapter @4. For an insight into the background, focus and context in which the publications were generated in SSA, as well as the industrial sectors that are being researched, see Chapter @5.

This chapter includes a thematic analysis; the list of themes includes both high-occurrence topics (more than 50%) and selected topics that occur less frequently (less than 50%). Additionally, an overview of the target countries for the internet search is included, which is used for the TVET policies analysis. This chapter also clarifies a number of terminologies used in this report, describes the different genres of the publications, and discusses the non-English language materials that were used.

We note that all bibliographic data used in this report is available in our [evidence library](#)<sup>2</sup> as well as in a dedicated [Zotero library](#)<sup>3</sup>. In the digital version of this report, all references are clickable and lead to the corresponding entry in the Open Development & Education evidence library; in other words, for all publications discussed in this report, basic bibliographic information is available for review. No username or password is required to look up the publications and their details. Some extended functionalities are available after login; users are invited to register [here](#)<sup>4</sup> to join the shared library.

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1 Citation for this chapter: Haßler, Haseloff, et al. (2020). *Chapter 3. Overview of the Discovered Publications*. In: Haßler, Haseloff, et al. (2020). *Technical and Vocational Education and Training in Sub-Saharan Africa: A Systematic Review of the Research Landscape*. VET Repository, Bundesinstitut für Berufsbildung, Bonn, Germany. <https://doi.org/10.5281/zenodo.3843346>

2 †Open Development & Education, Evidence Library, available at <https://docs.opendeved.net/lib/>

3 †Open Development & Education, Zotero Library, available at [https://www.zotero.org/groups/2317526/oden\\_tvetr-ssa/library](https://www.zotero.org/groups/2317526/oden_tvetr-ssa/library)

4 †Open Development & Education, TVET Zotero Library Registration, available at [https://www.zotero.org/groups/2317526/oden\\_tvetr-ssa?](https://www.zotero.org/groups/2317526/oden_tvetr-ssa?)

### 3.1. Sources of evidence

We consulted the following sources of evidence.

1. **Known publications.** Publications already known to the authors, as well as publications referred to in the call for proposals.
2. **Intuitive literature search.** In preparation for the automated literature search, intuitive searches were undertaken. These helped to determine the correct set of keywords and keyword combinations. However, important literature was recorded and serves as a source of evidence.
3. **Automated search and discovery.** As described in detail in the research design, an extensive, cross-repository search was undertaken.
4. **Recommendations from TVET colleagues and experts.** New literature was recommended by scientists working in the area of TVET, both through the email survey and through separate recommendations.
5. **Web-search.** Particularly in order to discover policies, we also undertook extensive web searches.
6. **Snowballing.** Where literature discovered through sources 1–5 referenced further interesting papers, ‘snowballing’ was also included (see research design in Chapter @2).

### 3.2. Automated search and discovery

The most extensive source of literature was the automated discovery process. Initially, the process resulted in around 40,000 publications (including duplicates). However, search engines can return irrelevant results (false positives), and this search needs to be automatically screened to ensure that at least one search term occurred in the title or abstract. After this automated screening and the automated elimination of duplicates, 12,000 publications remained. As this review specifically focuses on TVET in SSA, we only retained publications that include at least one TVET-related term and a country/region-term related to SSA. This further reduced the number to around 2,000.

These 2,000 articles were then manually reviewed; the title and abstract were manually inspected. The review took place in the order of a relevance score, automatically computed from the occurrence of key terms in the abstract and title. We initially expected that the automated relevance score would be an accurate enough measure of relevance so that the manual review could be stopped beyond a certain score. However, this turned out not to be the case, and so all 2,000 articles were manually reviewed.

As discussed in the research design (Chapter @2), articles were ranked ultra-high, high, medium, low. Due to a large number of publications, we employed the following scale:

1. **‘low’:** the publication is clearly not relevant to our research questions;
2. **‘medium’:** the degree of relevance is not immediately clear;
3. **‘high’:** the publication appears relevant;
4. **‘ultra-high’:** clearly satisfactory and selected for coding.



Publications with low relevance were discarded, and articles of medium relevance were reviewed with regard to the intercoder agreement. All publications to be reviewed further were labelled as 'high'. The publications in the category 'high' numbered around 700 (Table #3.1). As there were too many to review the full texts manually, the high-relevance publications were reviewed again and placed in a new category: 'U'. Category 'U' (ultra-high) covers those publications that were particularly relevant to the research questions, and would merit manual coding (full text). The publications in the U category numbered 324 (see Table #3.1). Where discovered publications were multi-chapter volumes, these were broken up into chapters and treated individually in the full-text review.

**Table 3.1. Number of publications in the various relevance categories**

Relevance	Number of publications		Relevance: Subdivision of H
L	1297		
M	192		
H	709	385	H-not-U
		324	U (H and U)
<b>Total</b>	<b>2151</b>		

The papers in the U-category were either:

1. annotated in Adobe Acrobat: this was used if the article makes specific relevant points, but does not warrant full coding;
2. fully coded in NVIVO: this was used if the article was relevant throughout.

### 3.2.1. Evaluation of research quality

Exactly half (i.e., 162) of the 324 U-publications were peer-reviewed. These 162 peer-reviewed U-publications were rated for quality (see Chapter @2, Research design). The quality ranking for these publications is shown in Table #3.2.

**Table 3.2. Number of publications in the different research quality categories**

Relevance	Number of publications	Peer-review	Number	Quality	Number
<b>U</b> (‘ultra-high’)	<b>324</b>	<b>Yes</b>	<b>162</b>	‘u’ (ultra-high)	14
				‘h’ (‘h’ without ‘u’)	63
				‘m’ (medium)	46
				‘l’ (low)	39 (22 of which were a high ‘l’)
		<b>No</b> (e.g., reports, dissertations, etc.)	<b>162</b>		

The detailed results on research quality—and discussion of those publications—can be found in Chapter @7.

### 3.3. Terminology used in this report

This section summarises a number of important conventions used in this report.

#### 3.3.1. The U-list and the H-list

In this report, we will refer to publications that were categorised as ‘H’ as ‘H-publications’, or ‘publications on the H-list’. Where those publications are papers, we may say ‘H-papers’. Similarly, publications that were categorised as ‘U’ are referred to as ‘U-publications’, or ‘publications on the U-list’. Note that a U-publication is always an H-publication too. In other words, ‘H’ includes ‘U’.

#### 3.3.2. Assessment of research quality

The research quality is discussed in more detail in Chapter @7. However, for clarity, we will describe our notation here. As mentioned in @Chapter 2, Research Design, the criteria for research quality are denoted by lowercase letters (i.e.: u, h, m, l). This is to distinguish them from the relevance criteria for which uppercase letters are used (ie: Q, H, M, L). The symbols are then combined with quotation marks, e.g., ‘U.u’ is a publication with a relevance categorisation of ‘U’ and a quality categorisation of ‘u’. For visual clarity, the abbreviation is superscripted and delimited with a slash (e.g., <sup>†</sup>U.u/Cameroon: Lange, 2014). Only peer-reviewed publications were classified. Other publications, such as

reports and dissertations, have not been rated in terms of quality and are subsequently given a ‘-’ (e.g., ‘U.-’ such as [↑U-/Tanzania: Machumu, et al., 2016](#)).

### 3.3.3. Citations and countries

We use the following citation format. All citations are clickable hyperlinks; this is indicated by the symbol ‘↑’ appearing before the link. To aid readability as well as in the translations of this report, we found it advantageous to place references at the end of sentences. Therefore, when constructing sentences, we refer to the publication using the author’s name, and we place that actual reference at the end. For example, we might state that Ackah-Baidoo undertook work in Ghana, and place the full reference at the end of the sentence ([↑Ghana: Ackah-Baidoo, 2016](#)). Similarly, we refer to the work of two authors by naming both authors, such as the work by Mulder and Roelofs, and again place the reference at the end of the sentence ([↑South Africa, Ghana: Mulder & Roelofs, 2012](#)). Finally, where more than two authors collaborated, we use the phrase ‘and colleagues’ in the sentence, but use ‘et al.’ in the reference. For example, Kluve and *colleagues* collaborated to write an article ([↑South Africa, Uganda, Kenya, Liberia, Malawi, Ethiopia: Kluve, et al., 2016](#)). Mainly in lists and tables, publications are also listed with the author outside brackets, as the list below in Section @3.5.1 illustrates.

Note that the SSA country to which the work pertains is included in the citation. However, where publications cover additional countries outside SSA, those additional countries are listed only if necessary to make a specific point.

### 3.3.4. LMICs

Note that we use the term ‘*low- and middle-income country/-ies*’, abbreviated as LMIC(s), instead of older terminology such as ‘*developing countries*’ or ‘*Global South*’. The term LMIC is preferred because the concept of developing country or Global South is increasingly inaccurate. The divide is no longer between developed and developing countries but, more often, between more affluent and more deprived regions or areas within the same country, such as a rural-urban divide. Typically, there are additionally non-geographical divides, of which gender is one. There is no clear North-South divide in terms of countries, though it may be worth noting that in certain countries there may well be economic divides that map onto geographical divides. One example is Ghana, where the North has fewer opportunities or reduced access to trade due to the greater distance from the coast and the more arid climate. The group of LMICs, of course, includes many countries from SSA, but we only use the term LMICs if we wish to refer to the whole global group explicitly. Where we just focus on SSA, we always use the term SSA.

### 3.3.5. Effectiveness and efficiency

The terms effectiveness and efficiency are used in the usual senses.

Effectiveness is a measure of outcomes and impact. An intervention is effective if it results in, e.g., an increase in the level of education or the socioeconomic status of the participants—ideally in comparison to a (real or hypothetical) control group.

Efficiency is a measure of the results and impacts relative to the effort 'inputs'. This includes results relative to both general and quantifiable expense (e.g., financial, 'value for money'). This distinction is important, as global cooperation often only considers effectiveness. However, efficiency (in our definition) is crucial for social justice and equity, scalability and sustainability.

### 3.3.6. Gender-neutral language

The German-language report ([†Haßler, et al., 2019](#)) used gender-sensitive language. Similarly, this English-language report uses gender-sensitive language, including non-binary gender. For example, we avoid 'he' and 'she' in favour of 'they'; we avoid 'craftsmen' in favour of 'craftspeople'.

## 3.4. Description of genres

The discovered literature falls into the usual range of genres occurring in academic publishing. It can be divided into:

1. **Articles.** Short-form publications (up to around 20–30 pages):
  - a. Articles featuring primary research or other article-format contributions (such as book chapters);
  - b. Literature reviews.
2. **Volumes.** Long-form publications:
  - a. Multi-author volumes such as multi-author/edited books on specific topics;
  - b. Conference proceedings;
  - c. Special issue journal volumes.
3. Other long-form publications:
  - a. **Dissertations** (masters and PhD);
  - b. **Reports** (research reports, project descriptions; authored collectively as a report);
  - c. **Books** and monographs (often developed on the basis of a PhD thesis; otherwise authored collectively).

Where relevant to our work, multi-author volumes and conference proceedings were broken up into chapters (i.e., short-form publications). We now describe the key genres in turn.

## 3.5. Description of various publications by genre

In this section, we offer a brief overview of the genres that have relatively few publications.

### 3.5.1. Description of the literature reviews

We discovered 14 English literature reviews pertaining to SSA. An additional reference was suggested to us by one of the participants of the SCR. As noted above, the SSA countries covered in the review are listed in brackets in the list below. The 14 reviews were:

1. †Ghana: Ackah-Baidoo (2016);
2. †Tanzania: Baker, et al. (2013);
3. †South Africa, Nigeria, Uganda, Kenya: Couper, et al. (2018);
4. †various: Hartl (2009);
5. †South Africa, Namibia, Mauritius, Seychelles: Hlongwane (2018);
6. †South Africa, Uganda, Kenya, Liberia, Malawi, Ethiopia: Kluve, et al. (2016);
7. †Sierra Leone: Kingombe (2011);
8. †South Africa: Kim, et al. (2014);
9. †various: Mulder & Roelofs (2011);
10. †South Africa, Ghana: Mulder & Roelofs (2012);
11. †Kenya: Tripney & Hombrados (2013);
12. †Nigeria: Oluwafemi, et al. (2015);
13. †South Africa, Uganda, Rwanda: Ridge, et al. (2018);
14. †Uganda, Ghana, Malawi: Wellard, et al. (2013);

In addition, two reviews focusing on countries outside Africa were considered because they had relevant content, and will be referred back to later:

15. †Schaap, et al. (2012) on Students' Learning Processes during School-Based Learning and Workplace Learning in Vocational Education;
16. †Yasak & Alias (2015) on ICT integration in TVET.

All of these reviews are part of our U-list. We note that:

- We did not find any rigorous literature reviews in German, French or Portuguese.
- We did not find any reviews prior to 2009.

### 3.5.2. Multi-author volumes

There were several multi-author volumes, such as edited volumes, conference proceedings and special issues. From the following volumes, several chapters were reviewed:

1. †Maclean & Lai (2011);
2. †Botswana, eSwatini, Lesotho, Mauritius, Mozambique, Namibia, South Africa: Akoojee, et al. (2005);
3. †Various: Latchem (2017);
4. †Namibia: Eicker, et al. (2017);
5. †General: Akoojee (2013);
6. †JOVACET (Vol 1, No 1, 2018).

These volumes, and several chapters selected from them, are part of our U-list. From the following two volumes we used one publication each:

7. [↑General: Schmidt, et al. \(2017, German\)](#): We primarily used one article; ([↑General: Bauer and Kühnrich, 2017, German](#)). However, we note that other articles are generally relevant to promoting TVET, entrepreneurship as trade in SSA. This volume and article are on the U-list;
8. [↑Central African Republic, Gabon, Ivory Coast, Senegal, Tunisia: Ginestié, et al. \(2012, French\)](#): We primarily used one article [↑General: Lebatteux \(2012, French\)](#); however, the volume in itself is of interest.

Only one article was used from each of these volumes:

9. [↑Ghana, South Africa, West Africa: Maclean & Wilson \(2009\)](#);
  - a. Article used: [↑West Africa: Ahadzie \(2009\)](#);
10. [↑Kaiser & Krugmann \(2017\), conference proceedings](#);
  - a. Article used: [↑Various: Eicker, et al. \(2017\)](#);
11. [↑Global: Kaiser & Krugmann \(2018\), special issue](#);
  - a. Article used: [↑General: Kaiser & Krugmann \(2018\)](#);
12. [↑Global, South Africa: Latiner Raby \(2018\)](#);
  - a. Article used: [↑Various: Assignon \(2018\)](#).

The above volumes and indicated articles are on the U-list.

The following two volumes were of interest (and are on the U-list), but no specific articles were extracted:

13. [↑South Africa: Moran & Rumble \(2004\)](#);
14. [↑Burkina Faso: Ndoye & Walther \(2012\), conference proceedings, French](#).

### 3.5.3. Additional materials in Portuguese, French and German

This section details additional materials available in Portuguese, French and German. As noted in Chapter @2.5., our search included German as one of the languages, as this work was commissioned by the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF).

#### Doctoral dissertations in Portuguese

There were very few articles in Portuguese (see below). However, due to the Brazilian policy of publishing PhD theses online, there was a comparatively large number of PhD theses in Portuguese, including:

1. [↑Various: Rubio \(2012, Portuguese\)](#);
2. [↑General: Bittencourt \(2017, Portuguese\)](#);
3. [↑Cape Verde: Andrade & others \(2009, Portuguese\)](#);
4. [↑Cape Verde: Mendonça \(2014, Portuguese\)](#);
5. [↑Alvim \(2016, Portuguese\)](#).

## Reports in Portuguese

We also highlight the following reports in Portuguese:

1. †[South Africa: Bilo & others \(2017, Portuguese\)](#);
2. †[Angola, Lesotho, Mozambique, Namibia, eSwatini: Aitchison \(2012, Portuguese\)](#);
3. †[Guinea, Guinea-Bissau, Cape Verde: Cá & Ocuni Cá \(2015, Portuguese\)](#).

## Articles in Portuguese and French

The articles in English are provided in the chapter bibliographies and are too numerous to list here. They are discussed in the following chapters. However, there are fewer journal articles in Portuguese and French. We highlight the following ones:

1. †[Gabon: Moussone & Metougue Nang \(2018, French\)](#);
2. †[Ghana, Burkina Faso, Ivory Coast: Azoh, et al. \(2012, French\)](#);
3. †[Angola: Veloso & Rodrigues \(2016, Portuguese\)](#);
4. †[General: Vieira \(2015, Portuguese\)](#).

## Publications in German

Our search did not find German-language publications in peer-reviewed journals. We came across relevant German publications in trade journals (*Fachzeitschriften*), which were not available online. We were not able to obtain copies for review.

The following doctoral theses were also included:

- †[Ethiopia, Mozambique, South Africa: Haseloff \(2017\)](#);
- †[Nigeria: Raji \(2012\)](#);
- †[Sudan: Ahmed \(2011\)](#).

In interviews, we received information about a (small) number of other doctoral theses. However, it was not possible for us to locate and review these.

### 3.5.4. Introductory publications

In this section, we offer a subjective selection of publications which are particularly suitable for an introduction to the topic of this report. In addition to the above literature reviews (Section 3.5.1.) and journals (Section 3.5.2, for example, †[Various: Tripney & Hombrados \(2013\)](#); †[Namibia: Eicker, et al., 2017](#); JOVACET<sup>5</sup>), we recommend the following publications:

- †[Various: Assignon, et al. \(2018\)](#);
- †[South Africa: Bijl & Taylor \(2018\)](#);
- †[Botswana, Ghana, South Africa: Eichhorst, et al., \(2012\)](#);
- †[Cameroon, Ghana, South Africa, Tanzania: Grijpstra \(2015\)](#);

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<sup>5</sup> †JOVACET, Home, available at <http://jovacet.ac.za/index.php?journal=JOVACET>

- †South Africa: Oketch (2007);
- †Kenya, Ghana and Botswana: Oketch (2017).

### **3.6. Internet search and policy analysis**

For our internet search, we selected specific countries based on their occurrence in a number of publications. As part of our criteria, in addition to the number of publications, we also considered the language(s) spoken and whether there were any indications of a dual system. In Table #3.3, the countries are listed in order of number of publications (cf. Chapter @5), followed by the coverage of that country in this report, followed by a note on the dual system (if available in that country) and the language(s) spoken. For more information on the use of the dual system, see Section @8.1.2.



**Table 3.3. Countries included in internet search and policy analysis**

Countries	Covered in our policy analysis chapters	Dual system <sup>6</sup>	Colonial language spoken
Benin	no		fr
Botswana	yes	possibly	en
Burkina Faso	no		fr
Cameroon	no		fr/en
Ethiopia	(partially)	possibly	-
Ghana	yes		en
Kenya	yes		en
Malawi	(little information online)	possibly	en
Mali	no	possibly	fr
Mozambique	no	possibly	pt
Namibia	(little information online)		en
Nigeria	yes		en
Rwanda	not covered		en
Senegal	no		fr
Sierra Leone	(little information online)		en
South Africa	(partially)		en
Tanzania	yes		en
Uganda	yes		en
Zambia	(little information online)		en
Zimbabwe	no		en

<sup>6</sup> The term 'dual system' (German: 'duales System') in this report refers to courses with a high percentage of work-based learning. This model will be further discussed in Chapter @8, under programmatic and pedagogical designs categorised as Type K2 (involving approximately 70% workplace-based activity and 30% of activity at a dedicated learning centre) and Type K3 (almost entirely workplace-based, with limited learning centre engagement).

### 3.7. Thematic analysis

The topics that emerged from the content analysis (see Chapter @2) are shown in Table #3.4. The research question (RQ) is stated for each of the topics. Topics are derived deductively from the research questions, as well as inductively from the publications. Inductive topics are marked as such. The total number of publications is 324 (U-list).

The following subdivisions have been used: L1 (research question, e.g., RQ7), L2 (sub-question, e.g., RQ8.a), and L3 (according to inductive analysis). 'P%' indicates the percentage of releases coded accordingly (not exclusive between categories). 'P#' indicates the number of publications with this code.

Themes with high occurrence (more than 50%) include: programme design, types of TVET, key features, practical programme components, pedagogy (RQ7), and technological, social, economic, legal factors or challenges (RQ11).

Themes with low occurrence (less than 50%), often determined inductively, include: Integration enablers or barriers (RQ12), EdTech, E-learning, M-learning, ICT (inductive topic), policy impact (RQ20.c), career development (for all employees, inductive), impact and effectiveness of TVET (RQ10), level of industry involvement in TVET (RQ8.a, b, c), TVET reform (inductive topic), research and evaluation (inductive topic), general development issues and SDGs (inductive topic) and networks (inductive topic).

We note that Table #3.4 references research questions. Table #2.7 in Section @2.6.4. can be used to find the corresponding chapters, with Chapters @8 to @13 focusing primarily on the outcomes of the content analysis.

In the following chapters, specific themes are expanded and literature analysis is undertaken: for example, in the context of 'training for the informal sector' or the 'role of TVET in development' (e.g., [↑McGrath, 2012](#), [↑McGrath & Powell, 2016](#); [↑Powell & McGrath, 2019](#)).

**Table 3.4. Thematic analysis. For the various topics, the research question (RQ) is stated (both for the deductive analysis and the inductive analysis; cf. Section @3.7).**

L1	L2	L3	Notes	P%	P#
			<b>Programme design, types of TVET, main features, practical programme components, pedagogy (RQ7)</b>	<b>70%</b>	<b>212</b>
			<b>Programme design, types of TVET, key features (RQ7.a)</b>	<b>57%</b>	<b>172</b>
		Provision of TVET, TVET delivery and TVET systems (including: Formality vs. informality, RQ7.c)	<p><b>Mode of education provision (10%)</b></p> <ul style="list-style-type: none"> <li>• Informal apprenticeship (includes: formalisation thereof)</li> <li>• Informal sectoral conditions</li> <li>• Regional differences: <ul style="list-style-type: none"> <li>• Coastal West Africa: informal–formal</li> <li>• Sahel: informal–family</li> <li>• Tanzania: informal–informal.</li> </ul> </li> </ul> <p><b>Dual system (2%)</b></p> <p>Justification, advantages and disadvantages, successes and failures of the <i>‘export of the dual system’</i>, dual system experiments in different countries (Botswana, Ethiopia, Mali).</p> <p><b>Provision of TVET (2%)</b></p> <p>Distance learning (and international partnerships), company-based training and its impact on productivity, holistic models, flexible approaches.</p>	<b>13%</b>	<b>39</b>
		Curriculum	Curriculum reform, adaptation of curricula (abandonment of colonial curricula), need for participatory and decentralised curriculum development, qualifications and attitudes of graduates, reform of in-service courses for ICT-based workplace requirements and ICT in society.	<b>7%</b>	<b>21</b>

	Provision of TVET (General)	TVET, design and implementation of TVET, TVET (Small Business and TVET), Post-Training Intervention, Practical Learning, Quality of Teaching and Learning, TVET is commonly geared towards formal employment (not helpful).	6%	17
	<b>Practical parts of programmes (especially 'off-site', 'A-B', dual; RQ7.e).</b> Work-integrated learning (WIL), relationships between TVET and industry.		26%	79
	<b>Pedagogy (RQ7.d)</b>		22%	67
	<b>Technological, social, economic, legal factors or challenges (RQ11)</b>		<b>53%</b>	<b>160</b>
	<b>Economic Barriers and Financing</b>		9%	26
	Infrastructure, lack of resources, Open Education Resources (OER), personnel / educators (e.g., salary and incentives; shortages of qualified teaching), potential for public-private partnerships (including local relationships at the locations of colleges).			
	<b>Supply and Demand</b>		4%	11
	Changing supply-side systems to modern on-demand TVET systems, skills needed compared to provision of programmes, staff turnover.			
	<b>Social factors</b>		3%	10
	Perception of TVET, self-perceived educational needs, colonial factors (adoption of colonial attitudes and post-independence curricula), purpose of TVET (e.g., economic development vs. equity and poverty-reduction measures), perception of TVET in SSA vs. perception of SSA refugees in Germany.			
	<b>Other topics</b>			
	Relationships between companies and universities (including micro and informal enterprises), context realities, expectations of graduates.			
	<b>Integration enablers or challenges (RQ12)</b>		<b>20%</b>	<b>61</b>
	<b>Gender</b> (gender-based violence, sexual and reproductive health, women's roles)		5%	15
	<b>Social justice</b>		2%	5
	<b>Inclusion and disability</b>		1%	3
	<b>EdTech, E-Learning, M-Learning, IKT (inductive topic)</b>		<b>18%</b>	<b>55</b>
	EdTech, e-learning, m-learning, mobile learning, ICT for student learning, ICT for teacher learning, optimal/fair technology, allocation of ICT for teaching and learning with organisations (colleges), unrealised and unrealistic expectations regarding the impact of EdTech.			

<b>Impact of policy (RQ20c)</b>		<b>14%</b>	<b>42</b>
<b>Policy</b>		4%	13
	Lack of impact of policies, harmonisation of TVET policies with other policies (e.g., measures to promote small businesses), recognition of prior learning (RPL), institutional learning and strategic framework for TVET.		
<b>TVET development (for all employees, inductive topic)</b>		<b>16%</b>	<b>47</b>
<b>Professional development of TVET educators</b>		13%	39
	Educators delivering TVET (teaching at TVET colleges, teaching TVET in schools, lecturers, trainers, instructors), professional development must be practice-oriented, specific professional development programmes, entrepreneurship, teacher training, general human resource development, professional development for researchers, teaching style, links between TVET colleges and tertiary education, qualifications for TVET college teachers.		
<b>Professional development for leadership and management</b>		3%	10
	Leadership and management in general, leadership and management at TVET colleges, leadership curriculum, leadership education, leadership for micro and small business managers (managing their business activities: South Africa, Burkina Faso and other countries).		
<b>Professional development for masters</b> (occupational development needs for crafts people, master crafts people, artisans)		1%	2
<b>Impact and effectiveness of TVET (RQ10)</b>		<b>16%</b>	<b>47</b>
<b>Impact of youth employment programmes on the labour market</b>		4%	12
	(Lack of) employment, employability, labour market opportunities, adaptation of TVET to the needs of the labour market, labour market information systems.		
<b>Programme efficiency (lessons learned)</b>		2%	7
<b>Degree of industry participation in TVET (RQ8.a, b, c)</b>		<b>13%</b>	<b>38</b>
<b>TVET reforms (inductive topic)</b>		<b>8%</b>	<b>24</b>
<b>Innovation</b> (innovation in general, allocation systems for apprenticeship places or employment, 'massification' of education)		3%	8
<b>New ideas</b>		3%	10
	TVET reforms for enabling interdisciplinary work, renaming of 'TVET' in the context of modernising TVET, improvement of TVET system responsiveness, 'three party' model, broader skills for apprentices (such as nonviolent communication (NVC) for social inclusion and self-confidence).		
<b>Transition to work</b> , support for graduates in business, entrepreneurship, change in the qualifications framework (TVET qualifications should be upgradable to university qualification)		1%	3
<b>Upgradeable repositioning of TVET to meet challenges</b> (for and against certain TVET programmes, TVET, education vs. general education)		1%	3

<b>Research and evaluation (inductive topic)</b>		<b>8%</b>	<b>25</b>
<b>Need for research and data collection</b>		<b>6%</b>	<b>18</b>
	Need for better data (both programmes and systems, EMIS), need for TVET research, need to improve research capacity, capacity building programmes for TVET research.		
<b>Research priorities</b>		<b>2%</b>	<b>7</b>
	Identification of facts based on sound research (vs. reference to second-hand improvement), specific interventions to be explored, research has to be relevant to practice, the existing type of research (findings) are not consistent with the needs on the ground (i.e., existing research does not serve to inform actual policy and practice).		
<b>Research methods</b>		<b>1%</b>	<b>3</b>
	Few concrete proposals on research methods; action research, human/user-centered design.		
<b>General development issues and SDGs (Inductive topic)</b>		<b>5%</b>	<b>15</b>
<b>Contemporary international development practices</b>		<b>4%</b>	<b>12</b>
	Few concrete proposals for contemporary approaches in international cooperation; adaptive/agile management, the need for cooperation and donor coordination, evidence-based measures (or their absence), general barriers to intervention in national systems, good intentions that cannot be translated into change, focus on results (or lack thereof), scalability, sustainability, causal loop diagrams, Theory of Change.		
<b>Sustainable Development Goals</b>		<b>1%</b>	<b>2</b>
	Few goals for sustainable development, environmental sustainability, health (HIV/AIDS).		
<b>Networking (Inductive Topic)</b>		<b>4%</b>	<b>13</b>
	Benefits of networking, partnerships with civil society, ECOWAS, RAIFFT, college–industry networks.		

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## Chapter 4. The Conception and Practice of TVET in Sub-Saharan Africa<sup>1</sup>

This chapter is based on our systematic review of the literature (as detailed in later chapters), drawing on TVET definitions, reference frameworks (RQ2) and TVET models (RQ7.a). The chapter begins by addressing our working definition of TVET. We then present a number of different interpretations of the concept and practice of TVET which we found in the literature. We draw out specific dimensions of these interpretations and highlight their similarities. We also consider national differences in what is and what is not considered TVET. The goal of this chapter, however, is not to compare or evaluate different definitions. Instead, we seek to develop a common reference framework which encompasses a range of definitions and types of TVET.

This chapter forms the basis for the analysis of publications — regarding the definition of TVET and any diverging reference terms (RQ2) and the approaches to vocational training models (RQ7.a) — in later chapters.

We note that it is difficult to review and analyse TVET research due to the wide variety of TVET systems, as well as the lack of a clear overarching definition of TVET. Beyond research, we may consider the question of the compatibility of different systems, which is of utmost importance for labour migration. If one accepts the plurality of TVET definitions, the obvious conclusion is to seek a common reference framework. Such a reference framework requires the categorisation of TVET definitions according to a number of dimensions which are presented in this chapter.

### Research questions considered in this chapter

The research questions relevant to this chapter are listed in the box below. In this chapter, the role of the research questions is slightly different as it is difficult—if not impossible—to answer RQ2. Instead of answering RQ2 directly, we offer a framework. RQ3.a and RQ7.a are relevant to this framework and therefore listed in the box below. However, they recur in later chapters where they are fully answered (cf., Chapter 6 and Chapter 8.).

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### Research questions considered in this chapter

**[RQ2]** Which **definition of TVET** (i.e., TVET, apprenticeship, 'Berufsbildung', 'apprentissage', etc.) is used? Which (possibly divergent) terms are used? Where are such terms used (geographies) and how?

**RQ3. Topics, perspectives, current debates.**

**[RQ3.a]** What are the **topics, perspectives and current debates** concerning TVET that can be identified? Are there **special topics** that stand out (e.g., 'informal apprenticeship')?

**RQ7. TVET models** that are discernable in the literature; the **main lessons** in designing, developing and delivering TVET models.

**[RQ7.a]** What **pedagogical or programmatic designs** are researched in the literature? Which models of TVET are used (or planned) in SSA (e.g., distance learning, blended learning, in-service, pre-service, work-based, school-based, formal vs. informal)?

### Conclusions of this chapter regarding the concept and practice of TVET in SSA

The variety of TVET systems and the lack of a clear, overarching definition of TVET may not affect how it works within countries where a local definition may be sufficient. However, it does mean that there are concerns about the compatibility of different systems and the potential constraints on international labour migration. The harmonisation of career paths and the standardisation of common post-TVET skill levels are important, at least at a regional level.

This chapter argues that it makes sense—and that it is possible—to unify conceptually the many forms of TVET in a common reference framework, despite the diverse terminology used to describe TVET in the literature. The reference framework offered here covers several dimensions (RQ3.a):

1. the formality of the provision (Section 4.3);
2. the cooperative/transversal dimension (cooperation among different places of learning; 'Lernortkooperation') (Section 4.4.1);
3. the temporal/longitudinal dimension (Section 4.4.2);
4. the formality of the sector of work;
5. the breadth of education offered: 'expansive' vs. 'restrictive' (Section 4.5).

To illustrate the utility of the reference framework, we considered competency-based TVET. Sometimes, competency-based approaches include a narrow set of skills and are therefore placed at the 'restrictive' end of the spectrum, for instance in anglophone systems. However, other competency-based approaches seek to evolve how TVET systems operate; this includes changing self-perceptions of teachers as professionals (e.g., for teachers, [†Haßler, et al., 2018](#) and references therein).<sup>2</sup> Such approaches

<sup>2</sup> For further discussion on competency-based approaches see [†Bremer \(2005\)](#).



lie at the expansive end of the spectrum, and are much closer to some of the values of the current German dual system. Therefore, we argue that—within international research—labels (such as ‘*competency-based*’ or ‘*dual*’) are less meaningful than a categorisation of TVET along the above dimensions. We also note that the above dimensions bear similarities to other TVET characteristics, including conceptual work in high-income contexts ([†Kim, et al., 2014](#)) and the German core elements pillars ([†Schwarz, et al., 2016](#)).

This Chapter 4 focuses on the various dimensions of TVET that appear in the set of U-publications analysed in this report. We note that the underlying definition of TVET is not stated in many publications. Research from Ghana, Kenya, Cameroon, Nigeria and Tanzania considers both formal and informal TVET and concludes that a sharp separation between the two forms is not always possible, necessary or, indeed, helpful (RQ3.b). Broader perspectives that consider how to connect formal and informal education are needed.

These publications (from Ghana, Cameroon, Nigeria, South Africa and Tanzania) pay particular attention to the transition from general education to TVET (and further education in general). Researchers advocate meaningful, lifelong, professional learning that starts in general education and does not end with TVET. At the same time, it is clear that institutions are not always able to respond to such broad requirements.

This chapter presents the most important professions for which TVET is provided in SSA (according to the research under consideration). Differences are clear, and can be traced to different educational histories; the range of professions that are considered TVET in SSA differs from the range of professions that are considered TVET in Europe (RQ3.b). In some countries in SSA, for example, the teaching profession is considered as a TVET profession<sup>3,4</sup>.

As with the other chapters, the following sections offer additional details of the points discussed in the summary above.

At this point we note that in SSA the term TVET is generally used for technical and vocational education and training, whereas in OECD contexts the term VET is used (c.f. [†Eichhorst, et al., 2012](#)). We define TVET as follows.

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3 The education takes place in a ‘college’, whereby ‘colleges’ in SSA are located in the post-secondary not in the tertiary area.

4 It is important to note that even in European contexts some of these divisions are softening. Once clearly defined tracks of ‘professional education’ and ‘academic education’ are merging in Europe and North America. The Beruflichen Hochschule in Hamburg, for example, is developing a new concept to enable students to complete a Bachelor’s degree alongside TVET from 2021 ([†Pressestelle Hamburger Senat, 2019](#)).

## 4.1. Working definition of TVET

Our working definition of TVET is shown in Figure 4.1 immediately below.

**Figure 4.1. Definition of TVET**

TVET is a pathway both to personal development, and to participation in and co-shaping work and society. TVET thus enables participants to exercise social, economic and environmental responsibility. TVET focuses on occupation-specific knowledge, practical skills and attitudes that are independent of the place, content, and provider of education.

This definition overlaps with the definition of the German Conference of Ministers of Education and Cultural Affairs ([↑Kultusministerkonferenz, 2017: 2](#)). We think this definition is suitable because it places the individual — the learner — at the centre of TVET efforts. It states that TVET processes are based on work- and technology-related social, economic and ecological conditions. The definition refers to a self-determined and independent responsible action and design of the TVET students (or learners) in work processes, pointing to the competence orientation of the educational processes. With TVET, the trainees acquire competencies for a specific profession. We note that while others<sup>5</sup> focus solely on initial TVET and the issuance of qualifications, we look at all educational pathways (initial and continuing). Therefore, we consider the type of qualification as subordinate, and include literature regardless of a focus on recognised certifications. In SSA, the knowledge and experience attested formal certifications are often misleading as courses often fail to provide up-to-date, applicable knowledge and practical job-related skills ([↑Global Monitoring Report, 2014](#)).

Our working definition of TVET acknowledges the five quality criteria for TVET in Germany, which are considered direction-setting in international TVET cooperation.<sup>6</sup> We also make reference to the UN's Sustainable Development Goals, which nations in SSA have committed to implement.

Our definition also aligns with UNESCO's concept of TVET ([↑Grijpstra, 2015:18](#)):

*'those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to **occupations** in various sectors of economic and social life' ([↑ibid.:18](#)).*

To distinguish our overarching definition from other definitions—including German or European definitions—we always use the acronym 'TVET' to refer to our working

<sup>5</sup> For example, [↑Eichhorst, et al. \(2012:1\)](#) consider initial TVET and therefore focus on educational pathways that lead to a qualification.

<sup>6</sup> [↑Bundesinstitut für Berufsbildung, TVET Quality Criteria \(2017\)](#), available at [https://www.bibb.de/dokumente/pdf/ab12\\_fachtagung\\_10-qualitaetsmerkmale\\_20160926.pdf](https://www.bibb.de/dokumente/pdf/ab12_fachtagung_10-qualitaetsmerkmale_20160926.pdf)



definition. Otherwise, we specifically refer to ‘German TVET’<sup>7</sup> or ‘European TVET’<sup>8</sup>. It is important to note that many types of TVET in sub-Saharan Africa (SSA) do not necessarily follow European models. The corresponding models in SSA are clearly shaped by national legislation and national circumstances. Although European influences can be seen, there is no European model per se that operates in SSA. Finally, we note that the terms TVET and VET are used interchangeably in the literature ([↑Eichhorst, et al., 2012:1](#)).

#### 4.1.1. Working definition: TVET college

We use the term ‘college’ as the place in which (technical and vocational) education and training occurs (i.e., ‘technical college’, ‘college of health’, or ‘college of education’). College is not synonymous with vocational school in Germany.<sup>9</sup>

Our focus here is on secondary vocational education or TVET following secondary education. Only a few of the U-publications provide a clear definition of TVET or definitions of related terms such as education or teaching. There are a number of reasons why this may be the case. For example — as noted elsewhere — many of the U-publications only deal with a specific part of TVET, such as a specific profession, and therefore do not need to be concerned with overarching questions.

## 4.2. Definition of TVET in the literature

The U-publications consist of articles written by various authors across the globe who focus on TVET in SSA; the U-publications are ranked U in terms of relevance (‘ultra-high relevant’) and were therefore coded. Just over 20% of the U-publications provide information on the question of a TVET definition. However, very few of these publications share a clear definition of TVET, or indeed related terms, such as apprenticeship. There are a number of reasons why this may be the case. It appears to be primarily because articles typically focus on a specific subset of TVET (e.g., nursing education, initial teacher education, etc.). The authors of such articles do not explicitly link their research to the wider area of TVET, which means that they do not provide a definition for TVET.

We highlight (cf., overview Chapter 3) the small number of papers in languages other than English (with a limited exception for French). Therefore, the terminology used in

7 We note that in our use of the acronym ‘TVET’ can refer to either of the German terms ‘Berufsbildung’ and ‘Berufsausbildung’. The connection between those terms from the German Vocational Training Act is as follows: *“Vocational training is a part of the education system in Germany, specifically adult education.”* According to §1 of the Vocational Training Act (BBiG), a distinction is made between (1) preparation for vocational training (‘Berufsausbildungsvorbereitung’), (2) vocational training (‘Berufsausbildung’), (3) further vocational training (‘berufliche Fortbildung’) and (4) vocational retraining (‘berufliche Umschulung’) as parts of vocational training ([↑Berufsbildungsgesetz \(BBiG\), 1](#)). [↑Pütz \(2003\)](#) offers an informative English-language overview of the German system.

8 We note that the acronym ‘VET’ is commonly used in Europe. We do not use the acronym ‘VET’ here, but use ‘TVET’, as this is more common in sub-Saharan Africa. Lauterbach notes *“Um den im deutschen Sprachraum mit beruflicher Bildung definierten Bereich darstellen zu können wird deshalb im Englischen die Bezeichnung ‘Technical and Vocational Education and Training’ (TVET) verwendet. Die UNESCO hat sich für diese Definition entschieden.”* (p. 45, Lauterbach, 2005; updated in: [↑Lauterbach, et al., 2018](#)). As we have noted, in the EU a distinction is made between VET and TVET ([↑ibid.](#)). Also, see [↑Baumann, 2012](#).

this report is based on English-language terminology. However, importantly, this use of language reflects African realities rather than European realities.

#### 4.2.1. TVET: differing terms, same concept

In our analysis, it became clear that different forms of TVET — described using different working definitions — can nevertheless be based on a common understanding. Walker and Hofstetter recognised that different authors and institutions have employed different terms for concepts with the same underlying definition ([↑Ethiopia, Benin: Walker & Hofstetter, 2016](#)). A programme in agricultural vocational training in Ethiopia, for example, is sometimes referred to as *“ATVET, agricultural education and training, or vocational training in agriculture”* ([↑ibid., 8](#)). However, the reviewed literature shows that the term ‘agricultural TVET’ (ATVET) is most appropriate, as it is also used in further discussion on TVET in studies from low- and middle-income countries ([↑Kenya, Guinea, Burkina Faso: Lancy, 2012](#)). In addition, we came across terms for functions or issues that are identical, but have a slightly different meaning in different countries.

In contrast, however, at national level there are also TVET-related terms that have clear interpretations. In Kenya, for example, the Kenyan National Industrial Training Standards (Kenya: Government, 2015) define ‘apprentice’ as follows:

*“Apprentice means a person who is bound by a written contract to serve an employer for such period as the board shall determine, with a view to acquiring knowledge, including theory and practice, of a trade in which the employer is reciprocally bound to instruct that person”* ([↑Government of Kenya, 2015:ii](#)).

Another example is ‘learnerships’. This term very precisely describes in-company training in South Africa that leads to a nationally recognised qualification ([↑South Africa: Davies & Farquharson, 2004](#)).

### National particularities

In most countries (including high-income countries), vocational education and training is by definition clearly distinguished from other paths (e.g., academic educational paths). However, the educational pathways to entering certain occupations are not always uniform. For example, teachers in general and TVET schools in Germany must have completed higher education<sup>10</sup>. In many African countries, the educational pathway to

<sup>10</sup> In Germany, apprentices (‘Auszubildende’) are supervised by skilled workers (‘Fachkräften’) throughout their training. At vocational schools (‘beruflichen Schulen’), teachers (‘Lehrende’) who have completed tertiary education take over this task. During the practical phases — in companies — the apprentices are supervised by trainers (‘AusbilderInnen’) who have to meet certain requirements: Anyone who wants to provide qualified training has to pass the instructor aptitude test (‘Ausbildereignungsprüfung’) according to the Ordinance on Trainer Aptitude ([↑‘Ausbildereignungsverordnung’, ‘AEVO’, 2009](#)). This is not a higher education qualification, nor does it require a university degree as a prerequisite. In addition, § 30 (2) of the Vocational Training Act ([↑Berufsbildungsgesetz](#)) requires that trainers must have the necessary vocational skills (‘berufliche Fertigkeiten’), knowledge (‘Kenntnisse’) and capabilities (‘Fähigkeiten’) as well as personal aptitude (‘persönliche Eignung’). The authorization to train according to AEVO is granted in Germany by the responsible Chamber of Industry and Commerce (‘Industrie- und

become a teacher (such as a ‘technology teacher’) in vocational education and training is regarded as vocational training. Decisive for classification as an academic or non-academic profession is usually the character of the educational institution that was attended. These classifications vary, in part depending on the nation, and can change according to political (and other) guidelines. Moreover, a profession can be regarded as TVET at a certain point in time, but if the educational path changes — or in some cases even just the place of education (from college to university) — the same TVET path is assigned to higher / university education. Such shifts often occur for educational policy reasons (for example, responsibility for TVET moves away from the Ministry of Labour to the Ministry of Education). This may be due to a change in national circumstances, depending on national needs in the various sectors.

TVET teacher training in many countries in SSA also has to submit to a sometimes difficult to follow ‘allocation and development process’ in which the national vocational training is located. For example, teacher education in Ghana was considered to be post-secondary and therefore located in the General Education Services division of the Ministry, alongside primary and secondary schools. However, the teacher education colleges have migrated to the National Council for Tertiary Education and now sit alongside universities. Technical vocational schools continue to belong to the separate ‘Council for Technical and Vocational Education and Training’ (COTVET, Ghana).

### **Example: teacher education**

In SSA, teacher colleges sometimes fall under the same ministry or directorate as tertiary institutions, but they may also be in the same ministry or directorate as primary and secondary schools. In Kenya, primary school teachers are trained in colleges, secondary school teachers are trained in universities, and there are specialised universities that train technical teachers. All the institutions are under Kenya’s Ministry of Education. However, in Burkina Faso, teacher education is not part of the Ministry of Higher Education.

In SSA, the education of TVET lecturers often takes place at ‘teacher training institutes’, just like teacher education for teachers in primary and secondary schools. Such education is not considered as university education or higher education. For example, teacher education for general education and TVET in Germany is only offered at university level (access with a university entrance qualification)<sup>11</sup>. In the UK, teacher training used to take place at colleges and then moved to university. There has recently been an attempt in the UK to enable teachers to receive initial training at special training institutes (‘Teach First’). A Bachelor degree is awarded in these institutes, which (in all disciplines) is sufficient to teach at primary / secondary schools. There is a current discussion in European

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Handelskammer’, IHK) or Chamber of Crafts (‘Handwerkskammer’, HWK) as approval authority. There are, however, other (tertiary) oaths to obtain a training qualification. For example, it can also be acquired by studying business education (‘Wirtschaftspädagogik’), engineering education (‘Ingenieurpädagogik’) or technical education (‘Technikpädagogik’, i.e., industrial teacher, ‘Gewerbelehrer’).

<sup>11</sup> The profession of ‘ErzieherIn’ (Kindergarten teacher), however, is obtained through TVET. Nevertheless, ‘ErzieherInnen’ also teach in pre-schools.

VET research about the quality and usefulness of the various training paths for teachers ([†Hayward, 2018](#)), which would be enriched by further international experience.

Given that many teachers are already successfully teaching in schools without formal qualifications (e.g., [†Global Monitoring Report, 2014](#)), it is reasonable to suggest that the content of education programmes (and how it improves student learning outcomes) is a more important factor in teacher education than where such training takes place. In summary, we thus note that it is hardly meaningful to assign certain professions *a priori* to TVET or academic education. Similarly, an academic qualification should not be considered superior. Quality depends on both the content and execution of the education programme.

### 4.3. TVET: formal and informal

In this chapter we discuss specific dimensions of TVET in SSA that have emerged from the research we have examined. The distinction between ‘TVET in the formal sector’ and ‘TVET in the informal or so-called traditional sector’ ([†Greinert, 2008](#)) is evident in the literature on TVET. For example, in Kenya, the traditional Jua Kali sector<sup>12</sup> is described in one study as encompassing all work done outside of the formal sector, with TVET defined as focusing on vocational skills that cannot ordinarily be acquired in mainstream education, and require specific training ([†Kenya: Momanyi, 2015](#)). Other studies also loosely defined TVET as informal learning, understood as being a lifelong process in which participants acquire skills and develop by performing different roles ([†Cameroon: Wohlfahrt, 2018](#)).

However, when discussing the differences between formal and informal TVET, the following distinctions must be made in relation to specific sectors:

1. formal employment sector: formal government-regulated, taxed economy
2. informal employment sector: the ‘grey economy’<sup>13</sup>, beyond direct governance, including traditional roles (such as basket weaving, pottery, etc).

The following distinctions between types of provision are also necessary:

- formal provision: regulated by regulatory bodies;
- informal provision:
  - either some other indicators of formality (such as written agreements), but without government regulation, or
  - few or no indicators of formality.

Within the informal work sector, the literature from SSA explains that these ‘informal provisions’ are based on loose agreements (such as verbal agreements) between the skilled (‘professionals’) and those requiring skills (‘apprentices’). We note that the nature of provision, from informal to formal, is a spectrum. While informal provision

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12 The words ‘jua kali’ (Swahili) mean ‘hot sun’ and refer to the informal sector that includes informal traders and artisans (those that normally work by the roadside in the ‘jua kali’).

13 Also ‘shadow economy’.

does not result in government-recognised certifications, it may nevertheless include other indicators of formality (†[Ghana: Gondwe & Walenkamp, 2011](#); †[Ghana: Alagarsa & Arthur-Mensah, 2013](#)). For example, in traditional eye practice apprenticeships in Benin-city, Nigeria, 18% of apprentices have a signed agreement (including payments of money: †[Nigeria: Ebeigbe, 2013](#)). While this training may include other indicators of 'formality', it does not result in government-recognised certification (e.g., †[Cameroon: Wohlfahrt, 2018](#)).

Other systematic training programmes include more formal elements, but still occupy a position outside of the formal education system and do not have governmental accreditation. Such programmes may meet the specific needs of children and adults (life skills training), which is useful for work in the informal sector. These are typically provided by both governmental and non-governmental bodies, and aim to be flexible by being delivered anywhere that is convenient for learners. They should be flexible and offered at a location that enables participants to maintain their everyday working and living habits—at the same time securing their own livelihood during the education.

We also note that a number of studies do not distinguish between the type of education (i.e., formal or informal) with reference to a definition of TVET. Instead, the study references a practical goal, e.g., provision of training and retraining to ensure adequate employment and employability (†[Tanzania: Machumu, et al., 2016](#)).

Some research papers demand that TVET should prepare apprentices for both the formal and the informal labour market. If apprentices are to have a good chance of succeeding in a highly volatile work environment, then preparing for formal and informal employment must go hand-in-hand. (†[Nigeria: Olabiyi, 2014](#)).

Table 4.2 presents the different combinations of formal/informal employment and the dimension of formal/informal training<sup>14</sup>.

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14 The 'non-formal' descriptor is not mentioned here!

What about full or part-time study at the convenience of the apprentice or even following a restrictive time table as decided by the provider, etc [are these not captured by the studies as parameters of informal, non-formal, formal]?

**Table 4.2. Two related dimensions: The dimension of the formal/informal sector of work (employment) and the dimension of formal/informal provision of TVET (also see Chapter 8). Importantly, in any one country, these types co-exist.**

	<b>Formal employment sector:</b> formal, government-regulated, taxed economy	<b>Informal work sector:</b> grey economy, beyond direct governance, traditional roles
<b>Formal TVET provision:</b> regulated by regulatory bodies	E.g., initial TVET education / apprenticeship in many countries in SSA and elsewhere	<i>(non-existent)</i>
<b>Informal TVET provision:</b> some other indicators of formality (such as written agreements), but without government regulation	Formal continuing professional development (CPD); programmes taken at the practitioner's / craftsman's discretion	This includes the 'informal coastal type' in West Africa (cf., <a href="#">Walther, 2006</a> ; <a href="#">Walther, 2008</a> )
<b>Informal provision:</b> few or no indicators of formality	E.g., 'on-the-job learning', 'mentoring' in many countries in SSA	This includes the 'Sahel type' ( <a href="#">Walther, 2006</a> ; <a href="#">Walther, 2008</a> ) as well as types of TVET in Tanzania ( <a href="#">Höjlund, 2013</a> )

A number of studies do not use the work-place situation (i.e., formal or informal employment) of the TVET student in the labour market to inform their definition of TVET; instead, the definition focuses on the main goal of providing skills training and retraining, i.e., to maintain decent employment and employability in any sector ([Tanzania: Machumu, et al., 2016](#)). Only some definitions encompass the notion that TVET should prepare learners for work in both the formal and informal labour markets, which would help every individual to compete and excel in rapidly changing labour markets ([Nigeria: Olabiye, 2014](#)).

#### 4.4. The cooperative and temporal dimensions

To introduce the cooperative and temporal dimensions of TVET, we briefly review Grijpstra's concept of TVET:

*"This conceptual definition of TVET cuts across educational levels (post-primary, secondary, and even tertiary) and sectors (formal or school-based, non-formal or enterprise-based, and informal or traditional apprenticeship) as preparation for employment and further life [and] is one of the functions of every educational system. It is therefore important to take into account the transversal and longitudinal nature of TVET in any strategic policy framework" ([Cameroon, Egypt, Ghana, South Africa, Tanzania: Grijpstra, 2015:18](#)).*

The notion of cutting ‘across educational levels’ is thus referred to as longitudinal (temporal) while the nature of TVET across sectors is referred to as transversal. Expanding [†Grijpstra \(2015:18\)](#), and using the terms cooperative and temporal, we suggest these definitions:

1. **Cooperative (transversal):** cross-sector engagement represented by different workplaces (both formal and informal) and with links to TVET locations;
2. **Temporal (longitudinal):** different TVET institutions as places for learning, at different points in the career of the learner. This includes TVET-oriented secondary schools, TVET colleges (post-secondary or tertiary), TVET laboratories/TVET centres, as well as distance education; this also includes lifelong learning and continuing education.

We first investigate the cooperative dimension before turning to the temporal dimension in the next section.

#### 4.4.1. The dimension of cooperation

The name ‘dimension of cooperation’ borrows from the German ‘Lernortkooperation’, i.e., cooperation between different places of learning<sup>15</sup>. In brief, aspects of the cooperative dimension (RQ7.a) are well-evidenced in the U-publications. Colleges or schools sit at one end of this dimension while the workplace sits at the other. Thus we characterise points along this dimension as

1. **Type K1.** Formalised college-based courses;
2. **Type K2.** Formalised dual system approaches;
3. **Type K3.** Apprenticeship-only approaches.

Type K1 and K2 designs are necessarily classified as formal (see above), while Type K3 designs can be formal or informal. These designs are discussed further in Chapters 6 and 8.

#### 4.4.2. Untangling the temporal dimension

This dimension takes into account professional development throughout professional life, including the transition from general to initial TVET and continuing TVET. The U-publications criticise — but also recognise — a range of ideas regarding the concepts of lifelong learning and flexible TVET<sup>16</sup>.

TVET was most frequently referred to as something that happens during a single period in time, rather than being a continuous process. This narrow ‘single-period-in-time’ definition of TVET lacks the scope of continuing professional development (CPD). Clearly, CPD can fall within the scope of TVET, and definitions of TVET should include the full spectrum from initial TVET to continuing TVET (CPD).

We also argue that the notion (often employed in teacher education) of **pre-service** versus **in-service** is not helpful because it emphasises the nature of ‘formal service’

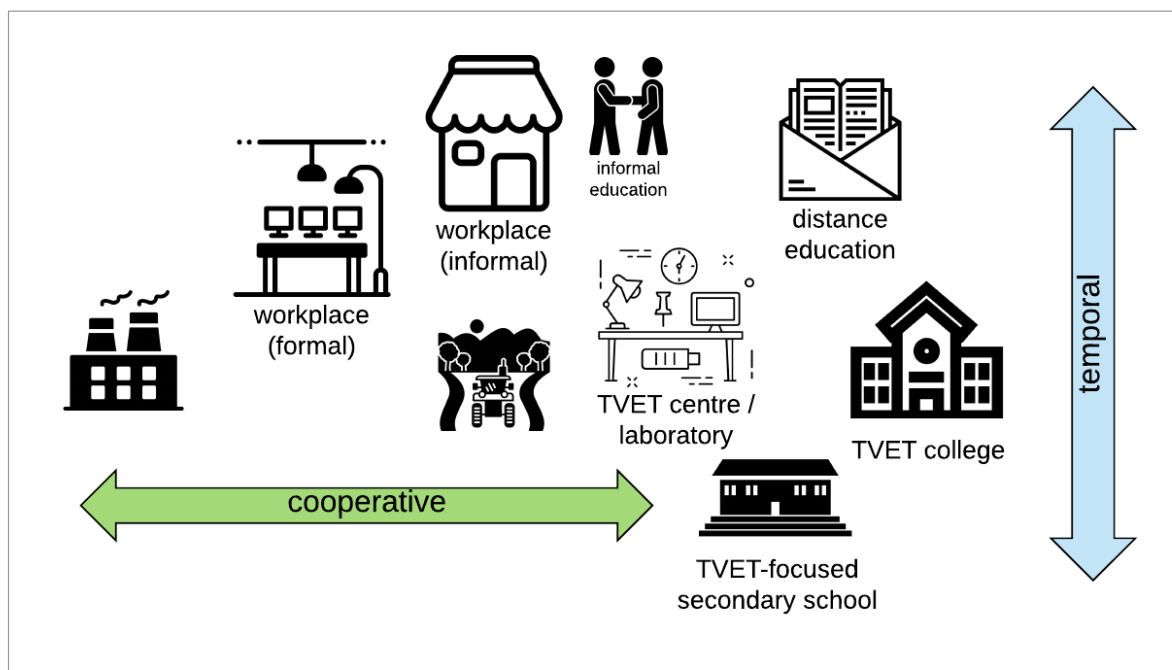


(into which the teacher enters after qualification) rather than the continuous nature of learning. Instead, we use the notions of

1. **initial technical and vocational education ('initial T/VET', '1TVET', '1VET'):** TVET that a participant enrolls in at the start of their career path and which usually happens over a period of one or more years (regardless of whether this training takes place in the workplace or in a college), i.e., an initial contiguous professional learning experience; and
2. **continuing professional development ('continuing T/VET', 'CVET', 'CTVET'):** TVET that takes place at various periods throughout the participant's working life, beyond the start of their career; this may accompany full- or part-time employment, or may take place during brief periods of unemployment to gain additional skills.

The two dimensions are illustrated in the figure below.

**Figure 4.2. The cooperative dimension (cross-sectoral and between workplace and college; transversal) and the temporal (longitudinal) dimensions of TVET.**



#### 4.5. TVET: 'expansive' and 'restrictive'

Other than placing emphasis on the workplace as the place of learning, 'apprenticeship' does not represent a homogenous concept that can be clearly distinguished from other concepts. Sometimes it simply signifies the understanding that effective TVET must connect formal study (e.g., in a college) and workplace learning (e.g., in a company). The terms 'expansive apprenticeship' and 'restrictive apprenticeship' were coined by Safford



and colleagues ([†Malawi: Safford, et al., 2013](#)); they offer a helpful perspective on the scope of apprenticeships and TVET in general.

**Expansive apprenticeship.** The term ‘expansive apprenticeship’ ([†Malawi: Safford, et al., 2013](#)) refers to workforce development in which participants acquire knowledge and skills that equip them both for their current (or intended) roles within the workplace, as well as (in as much as possible) for a future workplace setting. This relates to the question of ‘whether to vocationalise or not’ and the appropriate balance between specific and generic skills ([†South Africa: Oketch, 2007](#)). Related to this definition of an ‘expansive apprenticeship’ is the idea that TVET is a resilient model of learning that can evolve and adapt to different contexts and demands, and is able to stretch to respond to both political and economic challenges ([†Fuller & Unwin, 2011, cited in: Safford, et al., 2013](#)). This relates closely to the definitions of TVET outlined in other studies, which are described below.

**Restrictive apprenticeship.** The opposite term, ‘restrictive apprenticeships’, only helps apprentices in their current workforce position and does not provide opportunities for wider learning. This could be considered to be the prevalent definition for apprenticeships in SSA, where the term ‘apprenticeship’ reflects an approach characterised by narrowly defined workforce roles ([†Malawi: Safford, et al., 2013](#)). According to Safford (*ibid.*) this definition is related to the way in which apprenticeship training was conducted in the past in Malawi, where the vast majority of workers were trained through a formal or informal apprenticeship system. In this system, there are usually private arrangements between parents/apprentices and a knowledgeable person who agrees to provide training and employment. This kind of apprenticeship can suffer from a weak educational approach, as many apprentices do not complete formal educational cycles and are only trained in a narrow skillset ([†ibid.](#)).

This definition of ‘restrictive apprenticeship’ is similar to the definition of ‘learnerships’ in South Africa, where students have a route to a nationally recognised qualification that relates to a specific occupation, and has a structured experience ([†South Africa: Davies & Farquharson, 2004](#)). These definitions relate to the more restricted definition of TVET, usually found in older studies ([†United Republic of Tanzania, 2008; cited in Machumu, et al., 2016](#)), and restrict TVET to a narrow and specific profession, with limited flexibility in an evolving labour market.

## 4.6. TVET: education for a ‘skilled, adaptable labour force’?

The overall theme that emerges from our survey of the literature is that definitions of TVET are generally focused around the outcome of providing a ‘*skilled, adaptable labour force*’ that can respond to the changing environment in an economy in a holistic sense ([†Nigeria: Olukanni, et al., 2014](#); also see [†Uganda, Kenya: Evoh, 2014](#); [†Ethiopia: Lee, 2010](#)). This resonates with the overall narrative around ‘expansive apprenticeships’ (see above; [†Malawi: Safford, et al., 2013](#)). Other research recognises the need for streamlining, which is defined as preparing an individual with a narrower set of skills that

enables them to fulfil the immediate needs of the labour market (in informal or formal sectors).

This restrictive definition of TVET appears to have also been used in SSA. However, it is clear that shifts in thinking have taken place. For example, a number of studies referred to the changing definitions of TVET in SSA, acknowledging its role in training a diverse and flexible workforce that is able to adapt to the needs of the labour market rather than being restricted to one profession/sector (↑[Kenya, Tanzania: Malle, 2016](#)). This is more in line with the definitions of ‘expansive apprenticeships’ and ADEA’s<sup>17</sup> definition of TVET, which is concerned with the acquisition of knowledge and skills for the world of work – a concept that is more wide-ranging in scope (↑[Sierra Leone: Kingombe, 2011](#)). The UN’s Conflict and Education Research Group sees TVET defined in line with our working definition, and suggests that TVET should offer opportunities for personal development and social participation beyond gainful employment. It suggests that TVET should be seen as

*“a learning system in which both ‘soft’ and ‘hard’ skills are developed to promote livelihoods and inclusion that support community and individual agency”* (↑[South Sudan: Atari & McKague, 2015:171](#)).

This adoption of wider definitions of TVET in South Sudan is indicative of the concept beginning to be understood more broadly: these wider definitions appear more often in the more recent literature, which suggests a shift in how TVET is understood around the world.

## 4.7. Professions and sectors of work included in TVET

The U-literature does not offer a conclusive picture of which professions are included in TVET. Similarly, our survey of researchers in SSA (Botswana, Ethiopia, Kenya, Malawi, Namibia, Nigeria, and South Africa) did not uncover a clear answer, as we now illustrate. The email survey was sent to 43 stakeholders and was answered by 16 people, representing a response rate of 37%.

### 4.7.1. Researcher survey: professions included in TVET

Our survey asked, ‘To which of the major occupational groups is the notion of TVET applicable?’. Those occupational groups were defined with reference to the ↑[International Labour Organisation \(2007\)](#); they are presented in the following table.

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17 ↑ [Association for the Development of Education in Africa, Home](http://www.adeanet.org/), available at <http://www.adeanet.org/>

**Table 4.4. Major occupations according to the [International Labour Organisation](#).**

Major occupation groups
Group 1. managers
Group 2. professional
Group 3. technicians and associate professionals
Group 4. clerical support workers
Group 5. service and sales workers
Group 6. skilled agricultural, forestry and fishery workers
Group 7. crafts and related trades workers
Group 8. plant and machine operators and assemblers
Group 9. elementary occupations
Group 10. armed forces occupations

Among the respondents to our researcher survey (with responses from Botswana, Ethiopia, Kenya, Malawi, Namibia, Nigeria and South Africa), there was broad agreement that all of the above occupational groups fit within TVET. However, some respondents excluded certain groups. The following groups were excluded at least once: clerical support workers; service and sales workers; crafts and related trades workers; armed forces occupations.

Some respondents felt that broader inclusivity is necessary for TVET; for example, one respondent stated that it may be better to speak of '*skills development*' because using the term TVET may limit actors to the ministries of labour and/or education, and therefore exclude other important stakeholders. Similarly, another respondent stated that TVET applies to almost all occupations. Another respondent stated that TVET should respond flexibly to market demand and gaps in skills.

#### **4.7.2. Subgroups of the major occupational group referred to as 'professional'**

To obtain additional insight, we asked about the subgroups of the major occupational group, 'professional'. These subgroups include:

**Table 4.5. Subgroups of Group 2 'professionals' (see Table 4.4)**

Subgroups of Group 2 'professionals'
Group 2.1. science and engineering professionals
Group 2. 1. health professionals
Group 2. 1. teaching professionals
Group 2. 1. business and administration professionals
Group 2. 1. information and communications technology professionals
Group 2. 1. legal, social and cultural professionals

In general, there was broad agreement from respondents (from the same group of countries outlined above). However, some respondents excluded certain groups. The following groups were excluded at least once: health professionals; business and administration professionals; information and communications technology professionals; legal, social and cultural professionals.

However, all such definitions of TVET are ultimately defined by the curriculum associated with those TVET programmes. Indeed, the respondent from South Africa mentioned specific challenges around the outdated curriculum for information and communications technology.

#### 4.7.3. Frequently occurring occupations in the research

A number of occupations and industries regularly recur in the U-literature, including

- **Area 1: health, teacher education, agriculture** ('health', 'teachers', 'agriculture'):
  1. health (nurses/health care assistants, midwives, TVET for health, TVET interpreted as education of health professionals);
  2. teacher education (elementary school, lower and upper secondary, TVET interpreted as initial and continuing school-teacher education);
  3. agriculture and food production (ATVET, agricultural technical and vocational education).
- **Area 2: crafts, artisans, technical professions, trade, services and others** (craft and artisanal education, technical professions, trade, service industry), e.g.:
  1. tourism
  2. construction (bricklayer, etc.)
  3. entrepreneurship
  4. craft and craft trades.

(cf., Table 4.4 above).

It is not surprising that Area 1 (health, education and agriculture) is among the most frequently occurring in the U-literature. The imperative for action in these areas has long been recognised; they are core areas of the Sustainable Development Goals and have been comparatively well funded. Because of this long-term attention and financial support, this area occupies a special position and forms clear sectors of TVET in SSA. Area 1 corresponds to 'professionals in health, education and agriculture' (Groups 2.2, 2.3 and 6). Area 2 contains the remainder of Tables 4.3 and 4.4.

What is surprising is the large number of studies that deal with the topic of entrepreneurship. We have therefore classified those as a separate category. Although there are a number of publications on trade and crafts, they do not focus on specific crafts. It is noticeable that there are only a few publications concerning the construction industry. The number of publications on industrial production is also unexpectedly low.

We also point out that our automated screening revealed the almost complete absence of certain occupations in the U-literature. This includes some traditional occupations (bricklayer, electrician), as well as the most important new occupations of computer specialist or IT expert.

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## Chapter 5. TVET Actors<sup>1</sup>

This chapter considers the organisations and individuals who participate in TVET research in SSA. It focuses on who conducts TVET research, their motivation for doing so, and their geographical location of interest. This chapter also discusses the organisations concerned with funding TVET research, as well as the range of academic disciplines engaged in TVET research. At the end of the chapter, we discuss current TVET projects and their locations. Considering such research participants as a population, we may say that this chapter considers the demographics of TVET research.

### Research questions considered in this chapter

We investigate who participates in TVET research (RQ1, RQ13) and in which places/institutions TVET research takes place (RQ16). Information on who funds TVET research in SSA and the networks that can currently be found are also included here. The research questions considered in this chapter are listed below.

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### Research questions considered in this chapter

**RQ1. Overall background** to research that is evidenced in publications or evidenced otherwise.

**[RQ1.a]** In what **contexts** have studies been (or are being) generated in SSA? For example, what is the institutional setting (e.g., NGO vs. university vs. government vs. industry)?

**[RQ1.b]** Are there specific **academic disciplines** that are more pronounced? If so, what are the academic disciplines (economic research vs. social research)?

**[RQ1.c]** Are specific **industrial sectors / branches** apparent? If so, what are those industrial sectors (e.g., the electronics sector, construction, tourism)?

**[RQ1.d]** Is the **motivation** of researchers or research projects discernable (e.g., in the background provided within research papers)? If so, what is the motivation of the study or researchers?

**RQ13. Stakeholders in the research landscape, leading experts and institutions:** the role of research institutions in the TVET actor landscape; institutional research capacities (in TVET, in SSA).

**[RQ13.a]** Who are the **designated experts** for TVET in SSA? Where are they located (country / institution)?

**[RQ13.b]** Which **research organisations** in each geographic region / country covered have particular expertise and capacity in TVET education research (in both SSA and internationally)?

**[RQ13.c]** What **institutionalised research capacities** exist in TVET research in SSA?

**[RQ13.d]** In which **institutional frameworks** do individuals and institutions operate and how does this framework influence the development of the (TVET) education system?

**RQ16. Geographic analysis and geographic distribution.**

**[RQ16.a]** What are the **regions and countries** that can be identified in the literature search (places where research is situated)?

**[RQ16.b] Distribution:** for which countries are most of the research findings available, and for which countries are there few findings? Which forms of training and professional fields occur in which locations?

**[RQ16.c]** What are the locations of the **researchers and institutions** who undertake this research?

**[RQ16.d] Current TVET projects and their locations:** what are the major TVET projects in SSA? Are there major TVET projects elsewhere that would be worth trialling in SSA?

We note that in contrast to the earlier German-language report ([↑Haßler, et al., 2019](#)), the question of TVET networks (RQ14) is considered in Chapter 15 instead of in this chapter. Notably as well, additional exploration of RQ13 on stakeholders in the TVET

research landscape, specifically what the Structured Community Review (SCR) participants said on the topic, are presented in Chapter 14.

## Conclusions of this chapter

The analysed publications show that research on TVET is carried out at state and non-state universities and independent institutions in various sectors — particularly in health care, education and engineering (with reference to new technologies). There are a significant number of publications about the design of TVET concepts (Burkina Faso, Senegal) and in the area of teacher education ('teacher training'; Ethiopia, Cameroon, Uganda, Kenya, Tanzania, Mozambique; RQ1.b, RQ1.c).

In answering RQ1.d, we found that the motivations for researchers are societal challenges related to the achievement of the Sustainable Development Goals (SDGs). Examples include research on agriculture (Benin, Uganda), the health sector (Ghana, Zimbabwe, Uganda, Tanzania, South Africa, Ethiopia, Malawi), education (Zambia, Ghana, Nigeria), new technology (Zambia, Tanzania, Mozambique, Botswana, South Africa, Kenya) and environmental issues (Tanzania).

Naturally, gaps in research also lead to new approaches. This is evident in studies on healthcare (South Africa), tourism and hotel management (Kenya, Uganda), entrepreneurship (Senegal, Ghana) and the internationalisation of TVET (Kenya).

In terms of the geographic distribution of TVET research, a question probed by RQ16, a large number of publications focus on East and Southern Africa (including South Africa). With the exception of Ghana and Nigeria, there are only a few research publications from West and Central Africa (when compared to East and Southern Africa). At the same time, Ghana and Nigeria have the highest number of research publications (19 and 18 respectively per country).

The Fogarty International Center, the United Kingdom's Department for International Development (DFID) and the United Nations International Children's Fund (UNICEF) are prominent funders of research. Curiously, the reviewed literature does not highlight the role of active German TVET sponsors such as the Federal Ministry of Education and Research (BMBF) and the German Academic Exchange Service (DAAD).

At the end of this chapter we present current TVET programmes (RQ16.d) and an overview of countries, institutions, and experts / researchers (RQ13). Chapter 15 considers the important point of networks. Internationally initiated networks for TVET in SSA (e.g., UNEVOC and VET-Net) are included, which also include research-related institutions such as universities. We briefly note that — with the exception of ERNWACA (Educational Research Network for West and Central Africa) — the U-publications mention no African-initiated research networks. The vast majority of identified networks focus on all aspects of VET rather than research on TVET. Similarly, apart from VET-Net (Ethiopia, Mozambique, South Africa: Haseloff, 2017), there does not appear to be any significant international cooperation between German and African researchers. Even though there are examples of partnerships, we do not find any specific research networks between African and other European countries, or networks in which other important

international research institutions are involved. Overall, the identification of existing networks was not an easy process, as these are difficult to find (including via the internet), and are not centrally recorded. However, the fact that corresponding information is unavailable does not necessarily mean that no other networks are active. Chapter 15 also lists some studies that make reference to smaller, network-like cooperations, which have limited duration and pertain only to one research project.

As in the other chapters, the following sections represent individual aspects of the chapter summary above.

## 5.1. Participants in TVET research

In this section we examine the specific academic disciplines of researchers who study TVET in SSA (RQ1b). Based on the U-publications, we have recorded the institutional links of the authors (faculties and departments). Our analysis shows a wide range of researcher / institute locations, including those embedded in international organisations, research foundations and other NGOs across Africa and America (as well as a sole contribution from a UNICEF worker located in Myanmar). Those working in national ministries and TVET institutions were predominantly located in African nations. The largest group of contributors, however, were those based in university or college departments across the globe (with a particular emphasis on the USA, the UK and multiple African nations). The table below (Table 5.1.) lists the total number of references to each faculty / department in the reviewed U-studies.

We list the TVET projects that are currently being developed in SSA and note that the majority are funded by international organisations and / or being carried out in multiple nations.

**Table 5.1. Number of references to different faculties and departments in the U-publications**

Faculty or department	Total	Total (SSA)
Education (including departments that focus specifically on TVET)	21	5
Health	27	16
Global health	2	0
Economics	3	1
Business or entrepreneurship	2	2
Engineering	9	4
Technology (including 'science and technology')	6	5
Miscellaneous	16	7

**Table 5.2. Number of references to non-university and non-college entities in the U-publications**

Other non-university and non-college entities	Number (all)	Number (SSA)
International organisations, research foundations and other non-university and non-college, not-for-profit institutions	16	10
TVET training institutions	1	1
National ministries, organisations and institutes	9	8

In Table 5.2, we note the high number of national ministries, which often act as collaboration partners.

## 5.2. Reasons for and factors in research in TVET

We will now consider the motivations cited by researchers for their involvement (RQ.1d). Some researchers explicitly identify their motivations. We distinguish between a personal motivation (e.g., based on previous work or a known research gap) and research that is carried out within the framework of specific commissions or projects. In this chapter, we call the former ‘researcher motivation’ and the latter ‘project motivation’. From the large number of motivational statements on publications considered for this report, this section selects a few examples that have been identified as typical for the type of motivations appearing in the U-literature.

### 5.2.1. Societal challenges as motivation

Where researchers give their reasons for doing research, it becomes clear that social and ecological challenges (e.g., poverty, unemployment, health, education, technological change, environment) are important motivational factors for undertaking research in SSA. To a large extent, such challenges relate to Sustainable Development Goals (SDGs). Below we list the SDGs for which research work could be recorded.

#### Agriculture (SDG 2)

A focus on agricultural TVET is justified, as the majority of SSA’s population who live below the minimum subsistence level reside in rural areas. Here, the primary source of employment is agriculture (Benin, Ethiopia: [†Walker & Hofstetter, 2016](#)). Rivera points out that

*“the development of human capital now constitutes a major constraint in Africa’s agricultural advancement, and leads to the conclusion that greater attention should be given to strengthening institutional capacities for technical and professional education for the agricultural sector, especially at the post-secondary level”* ([†South Africa: Rivera, 2008:54](#)).

Researchers are striving to develop concepts for improving conditions for employment and income through TVET. The Japanese Agency for International Cooperation (JICA) is one example of an organisation supporting research on — and seeking to further develop TVET for — agriculture. The published findings were obtained in a

*“...project on lowland rice production in Eastern Uganda that provides training to rice farmers on lowland rice cultivation practices based on the Asian experience” (↑Uganda: Kijima, et al., 2012:161).*

### **Nursing education and health-related motivations (SDG 3)**

Improvements in the health sector were cited as a motivation in some papers. In many regions of SSA, the training of specialised staff is considered inadequate. Miceli states that *“advances in health professional education have been slow to materialise in many developing countries”* (↑Uganda: Miceli, et al., 2012:70).

Papers on TVET courses for nurses note drastic personnel shortages (↑Ghana: Bell, et al., 2014; ↑Nigeria: Salami, et al., 2016; ↑Zimbabwe: Abas, et al., 2014). This is despite the fact that nurses are

*“[numerically] the largest group of healthcare workers and [form] the backbone of healthcare delivery in Africa”* (↑Tanzania: Cunningham, et al., 2017:1).

Other publications focus on the topic of emergency care. For example,

*“inadequate training prevents nurses from providing optimal emergency care”* (↑South Africa: Dulandas & Brysiewicz, 2018:84).

Another project is developing a trauma team training programme that covers trauma assessment and resuscitation to address the fact that (in SSA). They report that

*“...injury is responsible for more deaths and disability-adjusted life years than AIDS and malaria combined”* (↑Ethiopia: Belwal, et al., 2010:879).

Regarding psychosocial health issues, another publication explicitly examines how such issues are addressed. Researching the impact of training on the motivation of teachers and students, Kutcher and colleagues report that

*“...successful application of a school MHL curriculum resource may be an effective way to increase teacher MHL and therefore help to improve mental health outcomes for students”* (↑Tanzania: Kutcher, et al., 2016:1).

### **Education (SDG 4)**

Various articles that broadly focus on the education sector emphasise the importance of teacher education for quality education as a motivation for research (Cameroon: ↑Lange & Benavot, 2016; Uganda, Kenya, Tanzania: ↑Hardman, et al., 2011; and Mozambique: ↑Mucauque, 2010). Examples include reports on

- curriculum development for the training of academic TVET staff for vocational training in the fields of renewable energies and photovoltaics (TU Dresden, Germany; GIZ, PERACOD<sup>2</sup>, ↑Hartman & Sawadogo, 2016) and
- subject-related partnership for the establishment of a Master's programme (Master en Techniques et Formations Professionnelles, MTFP, at the University of Koudougou, Burkina Faso; TU Dresden, Germany).

The situation is described in more detail in the relevant literature (see ↑General: Global Monitoring Report, 2014; ↑Zambia: Haßler, et al., 2018). A few researchers focus on the training of TVET-teachers (e.g., ↑South Africa, Mozambique, Ethiopia: Eicker, 2017).

## Employability and entrepreneurship (SDG 8)

The high unemployment rate of young people in Zambia motivated researchers to consider informal apprenticeships more closely than before, because they *“offer young people access to both affordable training and future employment”* (↑Zambia: Ryan, 2015:1).

Another key motivator is the perception of opportunities associated with training that focuses strongly on entrepreneurship. One publication examines the central role of questions about entrepreneurial action in training in order to demonstrate that employees trained in this way contribute to the success of companies (↑Ghana: Dzisi, et al., 2018). A similar motivation underlies another publication that analyses the role of entrepreneurship as an important driver of national development (↑Nigeria: Eze & Nwali, 2012).

## The marine environment (SDG 14)

The issue of environmental conservation in relation to TVET motivates researchers to work in this field for various reasons. In SSA countries bordering the sea, professions related to the marine environment are of great importance. A country's proximity to and dependence on the sea make it necessary to deal with the conservation and use of the marine environment at different levels. For example, the research on the marine environment initiated by Howe justifies the provision of systematically developed specific TVET (↑Tanzania: Howe, 2001).

## The potential of new technologies (SDG 4.4)

The introduction or use of new technologies leads to new approaches in TVET and is thus a source of motivation for TVET research. Among the opportunities offered by new technologies are Open Educational Resources (OER), Open and Distance Learning (ODL), technology-based learning, flexible learning and Information and Communication Technologies (ICT).

A substantial proportion of the coded literature that we surveyed indicated a motivation to explore the role of these new technologies for programme design, teaching approaches, data review and, in general, methods for enhancing TVET.

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<sup>2</sup> ↑GIZ, Programme for the promotion of renewable energy, energy efficiency and access to energy services (PERACOD), available at <https://www.giz.de/en/worldwide/20886.html> ↑



For example, the availability of conventional teaching and learning materials for entrepreneurship students poses challenges to TVET in Zambia, while

*“the availability of Open Educational Resources [...] offer[s] an opportunity to address [such ongoing issues]”* (†Zambia: Konayuma, 2013:2).

A number of papers consider the availability of ODL to enhance the delivery of TVET (e.g., †Mozambique: Romiszowski, 2015; †Tanzania: Nartker, 2010). Policymakers acknowledge that ODL might provide a

*“cost-effective means of tackling the challenges of access, equity and quality in education”* (†Botswana, Namibia, South Africa, Zambia: Hoosen, 2017:185).

The overall importance of ICT in TVET instruction is the main justification for several researchers' work (†Kenya, Rwanda: Agufana, et al., 2018; †eSwatini: Hlophe & Mindebele, 2001). ICT is also being studied with the intention of informing policymakers of the difficulties encountered by teachers in TVET colleges in implementing adequate models for ICT use (†Kenya: Agufana, 2015).

Finally, flexible teaching is currently employed by multiple institutions in Kenya, but this occurs *“at a low level”* (which limits the effect of this pedagogic approach; †Kenya: Tiony, 2016:2). We did not find any studies that ask explicitly whether new technologies also require new pedagogical approaches in TVET.

### 5.2.2. Research gaps as motivation

In the studies that we surveyed, researchers and research projects were often motivated by knowledge gaps they had identified in the literature. Such knowledge gaps were identified in various areas, including the following.

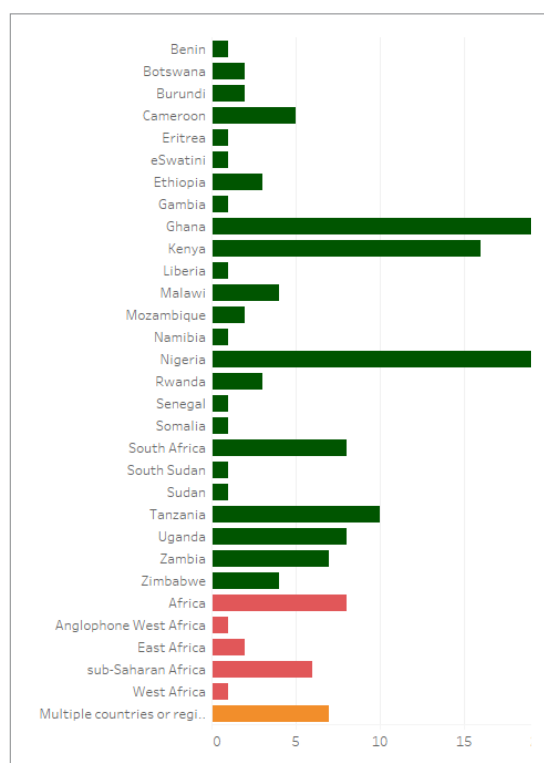
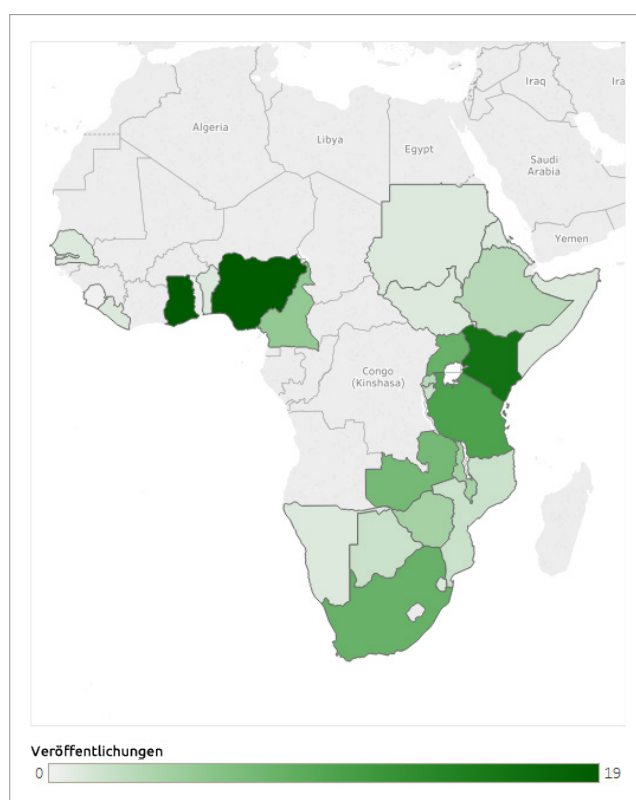
1. Prior to 2006, no studies concerning company-/firm-based training had been carried out in SSA (†Ghana, Kenya, Tanzania, Uganda: Kweka, et al., 2006).
2. Delivery of nursing training through an SMS-based approach has not yet been tested (†South Africa: Duys, et al., 2017).
3. Kenya's tourism industry *“has been the subject of little previous investigation either in Kenya or internationally”* (†Kenya: Mayaka, 2002:112). The same applies to the hotel sector in Uganda. *“Despite the centrality of students' motivations and industry perceptions to the success of education,”* there is little research on this topic (Uganda: †Tukamushaba & Xiao, 2012:334). More research is required in these areas.
4. There is limited empirical research concerning training and development among mid-level managers in the Global South region (†Ghana: Abugre & Adebola, 2015).
5. While prior studies in developed contexts have considered the effects of entrepreneurship programmes on *“participating students' entrepreneurship potential”*, there has been an absence of corresponding research in LMICs (†Senegal: Garcia-Rodriguez, et al., 2017).

6. More comparative research is needed regarding teacher training, *"including the culturally determined differences of its social value and status, as well as the national peculiarities of educational thinking and underlying traditions still waiting for an in-depth analysis"* (†Deissinger, et al., 2014:105).
7. It is important to support the design of curricula and, more specifically, of teaching through research. The focus should be on existing practice-relevant issues and further development of practical aspects (†Deissinger, et al., 2014).
8. A paucity of research on China's role in education and training in Africa was identified (†Kenya: King, 2010). We note that China has a steadily growing role in Kenya and other countries in SSA. The publication highlights China's role in TVET in the context of China's cooperation with Kenya. Research should further ask how international cooperation can be made advantageous for all partners involved.
9. Very few studies assess the impact of technical training for artisans, particularly in rural areas (†Kenya: Ndegwa, 2015).
10. More research is required in the areas of hospitality and tourism education: *"despite the centrality of students' motivations and industry perceptions to the success of education"* (†Uganda: Tukamushaba & Xiao, 2012:334).
11. More research into the indigenous philosophy of adult education is needed (†Ghana: Fordjor, et al., 2003).

We note that research gaps necessarily relate to a specific moment in time, and subsequent research needs to be examined to determine whether previous gaps have been addressed.

### 5.3. Locations for TVET research

In this section, we illustrate the countries (or regions) in the U-literature where research is being undertaken (RQ16). This literature focused on multiple geographic areas within SSA (or the African region as a whole), with 33 distinct nations or regions recognised (in addition to a small number of articles concerning multiple nations or subregions).

**Figure 5.1. Bar chart of the distribution of publications (by research location)****Figure 5.2. Map of the distribution of publications (by research location)**

**Table 5.3. Publications from selected countries. Benin, Liberia, South Sudan only have one publication each focusing on TVET, compared to a wide selection from Ghana and Nigeria. The papers are ordered by year of publication; we note the rapid increase of papers since 2010.**

Countries (examples)	
<b>Benin</b>	↑Okry, et al., 2014
<b>Liberia</b>	↑Forh, 2014
<b>South Sudan</b>	↑Atari & McKague, 2015
<b>Ghana</b>	↑Nyadu-Addo & Mensah, 2018 ↑Dzisi, et al., 2018 ↑Ayentimi, et al., 2018 ↑Wolf, 2018 ↑Abugre & Adebola, 2015 ↑Adogpa, 2015 ↑Owusu-Daaku, 2014 ↑Bell, et al., 2014 ↑Amedorme, 2013 ↑Bonsu, 2013 ↑Smith, et al., 2013 ↑Ntim, 2013 ↑Alagaraja & Arthur-Mensah, 2013 ↑Boateng, 2012 ↑Mano, et al., 2012 ↑David & Asamoah, 2011 ↑Ayarkwa, 2011
<b>Nigeria</b>	↑Oyebola, et al., 2018 ↑Olaniran, et al., 2016 ↑Moses, et al., 2016 ↑Salami, et al., 2016 ↑Alade, 2015 ↑Ismail & Mohammed, 2015 ↑Oluwafemi, 2015 ↑Okoye, 2014 ↑Olukanni, et al., 2014 ↑Sharehu, 2014 ↑Chukwuedo, 2013 ↑Okoye, 2013 ↑Okoye, 2013 ↑Ebeigbe, 2013 ↑Okpor, 2012 ↑Eze & Nwali, 2012 ↑Idris, 2012

## 5.4. Financing TVET research

We now consider specific funders of TVET research. We note that this question is answered on the basis of the U-literature. Therefore, this section does not provide an overview of who funds all TVET research or TVET projects. Instead, it provides information on TVET research or TVET project funding that the published literature has acknowledged. If a funder did not publish details of their financial engagement (and does not appear in the literature), they will not be included in the present study. Our main finding is that there is a relatively small number of funders (whose financial engagements follow no clear pattern). These funders included the Fogarty International Center, UNICEF and the UK's DFID. Other funders were only identified on one occasion. The funders of research and projects are listed below, under the headings of 'Funders appearing multiple times' and 'Funders appearing once'.

We note in particular that national governments (and the specific ministries in charge of research) did not appear in the list of funders. Furthermore, only the DAAD (one dissertation) is visible as a German funder. We also note that although the DAAD has funded further research on the subject of vocational training in SSA, this was not visible in the literature we researched. As already mentioned, this may be explained by the insufficient use of corresponding academic (search) portals and online libraries by the authors and their institutions. As a result, there is a lack of availability of the publications produced.

### Funders appearing multiple times:

#### 1. The Fogarty International Center<sup>3</sup>

- a. **Research:** The Fogarty International Center funded research for an investigation into the training and retention of psychiatrists in Zimbabwe (through a grant to the University of Zimbabwe; [↑Zimbabwe: Abas, et al., 2014](#)).
- b. **Project:** A separate TVET project received funding support from the Fogarty International Center (see above, RQ7; [↑Ghana: Bell, et al., 2014](#)). In this instance, project funding supported a collaborative project between the University of Michigan, Kwame Nkrumah University of Science and Technology, the Ghanaian Ministry of Health, the Ghana College of Physicians and Surgeons and Komfo Anokye Teaching Hospital *"to introduce and build the specialty of emergency medicine"* ([↑Ghana: Bell, et al., 2014](#)).

#### 2. UK Department for International Development (DFID)<sup>4</sup>

- a. **Research:** DFID and The Marple Charitable Trust funded research into the education of pre-service kindergarten teachers ([↑Ghana: Wolf, 2018](#)).
- b. **Research:** Other studies have acknowledged financial support from DFID and the British Council (regarding construction craft skills training) ([↑Zambia: Muya, et al., 2006](#)).

<sup>3</sup> [↑Fogarty International Center, Home, available at \(↑anon. Fogarty International Center, no date\)](#).

<sup>4</sup> [↑Department for International Development, Home, available at \(↑anon. Department for International Development, no date\)](#).

- c. **Project:** Outside of research, DFID has funded teacher development initiatives in Kenya (↑[Uganda, Kenya, Tanzania: Hardman, et al., 2011](#)).

3. **United Nations International Children's Emergency Fund (UNICEF)**<sup>5</sup>

- a. **Project:** UNICEF has supported teacher development projects in Tanzania and Uganda (↑[Uganda, Kenya, Tanzania: Hardman, et al., 2011](#)).
- b. **Research:** Hardman et al. also acknowledged the role of UNICEF in supporting teacher education research (when considering the reform of teacher education in Tanzania) (↑[Tanzania: Hardman, et al., 2012](#)).

Funders appearing once:

- 4. The European Commission, through its funding of the PERFORM project (↑[Uganda, Tanzania, Ghana: Mshelia, et al., 2016](#)).
- 5. The Swiss Agency for Development and Cooperation (SDC) (↑[Kenya: Ndegwa, 2015](#)).
- 6. The Japan International Cooperation Agency Research Institute (JICA-RI), the Japan International Research Centre for Agricultural Sciences (JIRCAS), and the Japan Society for the Promotion of Science (JSPS) (↑[Tanzania: Nakano, et al., 2018](#)).
- 7. The Canadian International Development Agency (CIDA), Plan International Canada and the Social Sciences and Humanities Research Council of Canada (↑[South Sudan: Atari & McKague, 2015](#)).
- 8. The Cambridge Africa Partnership for Research Excellence – CAPREx, which itself was funded by the Carnegie Corporation of New York, the Isaac Newton Trust and the ALBORADA Trust (↑[Uganda: Okiror, 2017](#)). In addition, the Fogarty International Center deserves mention, since it contributed to raising awareness for CAPREx.
- 9. The African Development Bank (AfDB; ↑[Tanzania, Madagascar, Ethiopia: Achandi, et al., 2018](#)).
- 10. Der Deutsche akademische Austauschdienst (DAAD; Dissertation: Nigeria: Raji Moromoke Nimota, 2012).

As already mentioned, this list only contains funders that appear in the literature we researched. We note that a large proportion of the funders, especially German funders, are not very visible internationally.

## 5.5. Current TVET projects

Before we move to describing TVET research, we now briefly describe a number of TVET projects in which research takes place (RQ16.d). Of the TVET projects currently being undertaken in SSA, the vast majority are funded by international organisations and/or are being carried out in multiple nations. The only exceptions were Christina Boateng (University of Cape Coast, Ghana) discussing COTVET's Youth Engagement Skill

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5 ↑UNICEF UK, Home, available at <https://www.unicef.org.uk/>.

Development Fund as a significant scheme taking place in Ghana, and John Aitchison (University of KwaZulu-Natal, South Africa) citing the DHET's projects. Among international projects, participants have informed us of the following:

- WorldSkills<sup>6</sup> is an advocacy strategy for the TVET sector. The African country members are: South Africa, Namibia, Zambia, Ghana, Morocco, Tunisia and Egypt.
- Educata Ghana<sup>7</sup> (first conference in 2018, planned for October 2020). The conference is organised by the German Chambers of Commerce Abroad (Auslandshandelskammer) Accra and two foundations: the Konrad Adenauer Stiftung und the Sparkassen Stiftung.
- The Southern African Development Community Qualifications Framework (SADCQF) promotes standardised learning outcomes and quality assurance principles for aligning qualifications in the region. The member states are: Angola, Botswana, Comoros, Democratic Republic of Congo, eSwatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Tanzania, Zambia and Zimbabwe. Member countries are expected to ensure alignment with UNESCO strategy 2016–2020 and to UNESCO Agenda 2063 for Sustainability for Africa. The SADCQF<sup>8</sup> is currently being implemented and piloted in six countries (↑Various: UNESCO, 2018).
- The Pan African Sector on Education and Technology provides training to promote greater coordination in TVET research. However, as noted already, there is a lack of researchers with expertise in TVET research.
- The UNESCO Institute for Lifelong Learning<sup>9</sup> (UIL) has been involved in TVET in SSA in various ways, mainly through adult learning. It has a monitoring role, having done a lot of work in accreditation and the establishment of flexible learning pathways.
- The German Volkswagen Foundation<sup>10</sup> finances TVET conferences in SSA.
- The Porticus Foundation<sup>11</sup> in the Netherlands supports TVET projects in SSA.
- Learning Cities<sup>12</sup> operates in over 200 cities and includes entrepreneurship education as one of its focal areas. The global network of learning cities 174 active member cities from 55 countries. Cities in sub-Saharan Africa include: Ibadan (Nigeria), Olamze (Cameroon), Zomba City (Malawi) and Mayo-Baléo (Cameroon) (↑UNESCO Institute for Lifelong Learning, 2017).
- The World Bank funds the Regional TVET Centres of Excellence Initiative in 16 TVET institutions. The first phase was conducted in Kenya, Tanzania and Ethiopia (↑World Bank, no date).

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6 ↑WorldSkills, Home, available at <https://worldskills.org>.

7 ↑Educata Ghana 2020 available at <https://educataghana.com>.

8 ↑Southern African Development Community Qualifications Framework (n.d.).

9 ↑UNESCO, available at <https://uil.unesco.org/>.

10 ↑VolkswagenStiftung, available at <https://www.volkswagenstiftung.de/en/foundation>

11 ↑Proticus, available at <https://www.porticus.com/en/home/>

12 ↑UNESCO Institute for Lifelong Learning, available at <https://uil.unesco.org/lifelong-learning/learning-cities>

- Participants also reported that in Ethiopia, UNESCO and the African Union projects are active.
- In Ghana, the T-TEL<sup>13</sup> project focuses on institutional capacity building. It aims to restructure the teacher education curriculum and will provide courses in TVET for all trainees of Colleges of Education.
- In Ghana, the AFDB<sup>14</sup> funds a Competency-Based Training Programme.
- In Kenya, NEPAD<sup>15</sup> supports programmes that aim to improve employment with a particular focus on remote areas. It aims to support skills development to solve a range of problems in targeted regions.
- The African Union strategy to guide policy has been used in Kenya.
- DAAD and NGOs fund a number of TVET projects in Kenya.
- In Nigeria, the Tuning Africa Project<sup>16</sup> aims to develop standards and principles to harmonise quality in higher education in Africa. During Phase II, the Teacher Education Subject Area Group adopted the M.Tech Education Programme to apply their tuning methodology to joint degrees. Participating African universities include the University of Nigeria, the Makerere University in Uganda, the University of Tanzania and the Open University of Nigeria.
- The International Fund for Agricultural Development (IFAD) funds projects in Uganda (see note in †Ghana, Seychelles, Senegal, Botswana, Zimbabwe: Hartl, 2009).

## 5.6. TVET research: leading countries, institutions and experts

We now consider RQ13, which focuses on stakeholders in the research landscape, leading experts and institutions. We specifically consider the leading countries, institutions and experts in TVET in SSA as evidenced by the SCR participants. The leading countries were Kenya, Mauritius, Ghana and South Africa. Both the leading institutions and leading experts were, however, less clear, as participants had varying views and often named organisations instead. More information on leading countries, institutions and experts are detailed in the sub-sections below.

### 5.6.1. Leading countries

Kenya was cited as the leading country regarding TVET provision, and it appears to be a leader in terms of TVET research, too (cf. Chapter 15). Kenya was the most referenced country, named by six participants. Four participants mentioned Mauritius, Ghana and South Africa while three highlighted Nigeria, and a couple of stakeholders suggested that Zambia and Zimbabwe had prominent research on TVET. Other countries mentioned included Botswana, Cameroon, Egypt, Ivory Coast, Malawi, Rwanda and Uganda.

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13 †T-TEL, available at <https://www.t-tel.org/home>



### 5.6.2. Leading institutions

Contrary to their clear message on the countries that lead TVET provision and research, the SCR participants had diverging views on the institutions that have made the most significant contributions to the development of TVET research in SSA. Most of the institutions mentioned were TVET providers, such as universities, colleges or institutes.<sup>17</sup> A few associations and government agencies were also highlighted, such as the International Vocational Education Teacher Association (IVETA), the Principals Association in Kenya and the Ethiopian Federal TVET agency. The JOVACET journal and the Joint Education Trust (JET) were also mentioned.

### 5.6.3. Leading experts

When asked to name African experts in TVET, many participants suggested the organisations they would approach in order to find the relevant experts. Amon Haufiku (Namibia Training Authority), for example, stated that Namibia relies heavily on UNESCO to identify experts based on their needs. Lova Zakariasy (Higher Institute of Technology of Antsiranana, Madagascar) usually turns to French-speaking TVET networks such as CITEF (Conférence Internationale des Formations d'Ingénieurset de Techniciens d'Expression Française). She also mentioned the UNEVOC network. John W. Simiyu (University of Eldoret, Kenya) also suggested any UNEVOC Centre team leader in Tanzania, Uganda, Rwanda, Cameroon, Malawi, Zambia, Mauritius or Zimbabwe.

An interesting point brought out by Christina Boateng (University of Cape Coast, Ghana) is that there is no organised database of TVET experts. She explained that

*“usually, the people that call themselves TVET experts are not really experts in TVET. They do not necessarily understand what TVET is. TVET is not just about crafts or technical skills. It is training for employment”.*

A different perspective, but one that also highlights the problematic nature of identifying TVET experts, was provided by John Aitchison (University of KwaZulu-Natal, South Africa). He noted that the breadth of research skills of TVET researchers tends to be limited, and is associated with a weak tradition of education research in South Africa. Quantitative research skills seem to be particularly lacking, as most researchers are only competent in descriptive qualitative analysis. We also note that among the experts specifically named by participants, most were either invited to be interviewed in or participated in the other stages of this report's research.

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17 Examples of this kind of institution include: the National Polytechnic School at the University of Yaoundé 1 in Cameroon, the Higher Teacher Training College at the University of Dschang in Cameroon, the National Advanced School of Public Works, the Rift Valley Technical Training Institute in Kenya, the Department of Technical Education at the Malawi Polytechnic, Joy Papier's Centre at the University of West Cape and the Centre for Research in Education and Labour at the University of Witwatersrand in South Africa.

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## Chapter 6. Themes, Perspectives and Current Debates in TVET Research<sup>1</sup>

This chapter reviews the themes and goals of TVET research in SSA (see Table 3.4 in Section 3.7). It summarises key perspectives and current debates (RQ3); discusses a number of objectives of specific research projects and substantive TVET research questions (RQ4 and RQ5) and considers research goals in sequence. It structures these goals according to the following topics:

- Evidence-based understanding of specific interventions and programming (Section 6.1.)
- Types of TVET (Section 6.2.)
- Region-specific features of TVET (Section 6.3.)
- TVET in relation to ICT (Section 6.4.)
- Institutions and personnel in TVET (Section 6.5.)
- Studies with recommendations for TVET research (Section 6.6.)

Note that these topics are used as headings in the following sections as indicated in parentheses.

As described in the methodology (Chapter 2), the present chapter only considers the relevance of the publications to the various themes and objectives. Therefore, this chapter does not – and does not seek to – offer any evidence-based statements about TVET as such. Instead, it reviews themes appearing in the U-publications in order to shed light on the interests of the TVET researchers involved.

By contrast, Chapter 7 undertakes a qualitative evaluation of the U-publications in order to offer an evidence-based perspective on TVET in sub-Saharan Africa (SSA). Chapters 8 and 9 then consider specific topics that appear in the U-publications: TVET models (Chapter 8, RQ7) and inclusion (Chapter 9, RQ12). Nevertheless, since these issues also appear among the general topics, they are initially (albeit briefly) addressed in this chapter, with a fuller presentation following in Chapters 8 and 9.

It should be noted at this point that there is no uniform concept of TVET in SSA, nor is there or can there be a uniform view of the concept of TVET (that exists in the regions; cf., Chapter 4, RQ2). Depending on the expert group interviewed – including providers or users of TVET – such conceptualisations varied. The U-publications considered here

enable us to better define and understand the perspectives of different TVET actors (Section 6.6.2.).

## Research questions considered in this chapter

The research questions considered in this chapter are listed in the box below. Each section in this chapter corresponds to one of the research questions (RQ3 with 6.1; RQ4 with 6.2; RQ5 with 6.3).

### Research questions considered in this chapter

#### RQ3. Topics, perspectives, current debates.

**[RQ3.a]** What are the **topics, perspectives and current debates** concerning TVET that can be identified? Are there **special topics** that stand out? (For example: 'informal apprenticeship'?)

**[RQ3.b]** Are there **trends and correlations in regions** or groups of countries, or on the topics of advancement opportunities, informal sector and TVET, social inequality, labour market integration of young people, etc.?

**[RQ4.]** What are the **overall goals of the research project** and the **substantive questions** pursued by researchers? For example: key concerns, overarching research questions or other priorities for the research project. What are the disciplinary priorities?

**[RQ5.]** What are the **research questions** pursued in the papers? What specific TVET issues or problems are being tackled in the research?

## Conclusions of this chapter

Chapter 6 provides an overview of the current themes and objectives of TVET research in SSA. In summary, we conclude that:

- The U-publications we considered deal, in part, with the definition and conceptualisation of TVET. Some seek to understand the conceptualisation of TVET by students and educators, whereas others focus on how TVET could be conceptualised in relation to specific training needs. While publications usually do not define the *term* TVET, some examine and define the *concept* of TVET. These can be broadly categorised according to the level of formality associated with the education or training in question, e.g., college-based courses, dual system approaches or apprenticeship-only approaches. However, there is no common definition or concept for TVET that is valid across all SSA regions. Instead, the authors of the present report propose a framework that can be used to classify the different definitions and concepts (cf., Chapter 4).
- Evidence-based insights (from the U-publications) stem from studies on specific interventions or programmes. This includes meta-analyses and case studies across countries, national-level investigations, and identification of learning outcomes or participant outcomes from specific TVET programmes.



- Efforts to ensure that TVET for trainees and teachers is as practice-oriented as possible are recognised as an important field of research.
- An equally important research focus is the tension between TVET policy and practice. The understanding of the importance of demand-oriented TVET is frequently considered, alongside the consideration of future-pointing possibilities and requirements for TVET, which have hitherto been underrepresented within policy-making.
- Several papers discuss or make policy recommendations. Besides the wish for more comprehensive and long-term financing of TVET than has been the case so far, these recommendations include changes in government policy (Zambia: [↑Ryan, 2015](#)) and measures for TVET providers (Kenya: [↑Agufana, 2015](#)), as well as further recommendations to address the lack of human and material resources in TVET (e.g., for Ghana: [↑Amedorme & Fiagbe, 2013](#)).
- Political recommendations are discussed or made in several papers. In addition to the desire for more comprehensive and long-term funding of TVET, these recommendations also include changes in government policy (Zambia: [↑Ryan, 2015](#)) and measures for TVET providers (Kenya: [↑Agufana, 2015](#)), as well as further recommendations regarding the lack of human and material resources in training (e.g., for Ghana: [↑Amedorme & Fiagbe, 2013](#)).
- Another important topic in TVET research is ICT. Questions on the possibilities, applications, benefits and costs of ICT in TVET are analysed in the U-publications. ICT is also discussed as an instrument for evaluating TVET research (Chapter 7).

We note that the specific insights in the U-literature regarding regions and countries reflect, at times, a colonial history. One example of this – at the research level – is the language barriers that have hampered research cooperation between regions. Clearly, TVET systems for any country may still exhibit elements related to their colonial past (e.g. French, British, etc.). However, participants in the Structured Community Review (SCR) stated that the differences between countries are greater than those due to regional or indeed colonial differences. These, and other findings on regional trends in TVET, are discussed in the final section of this chapter, where insights from participants in both the SCR and the U-literature are considered. These insights lead to considerations about expanding comparative research.

As with the other chapters, the subsequent sections offer additional details on the points discussed in the summary above.

## **6.1. Theme: Evidence-based understanding of specific interventions and programming**

A second key goal of TVET research is to advance an evidence-based understanding of TVET. This research involved providing evidence on TVET across multiple countries and within individual countries, as well as examining specific programmes.



### 6.1.1. Focus: Evidence of the impact across and within countries

There were a number of reviews of the evidence of the effects of TVET across countries. One of these reviews, a meta-analysis ([↑Various: Kluve, et al., 2016](#)) that sought to assess evidence of the impact of youth employment programmes on the labour market from around the globe, found that

*“more than one-third of youth employment programme evaluations worldwide show a significant positive impact on labour market outcomes – either employment rates or earnings”* ([↑ibid:25](#)).

This was supported by results from a random-effects model, which showed that *“youth employment interventions have a positive and statistically significant effect”* (although this is not consistent across all intervention sub-groups; [↑ibid:25](#)).

Hardman and colleagues are also making their mark with evidence-based research in this area ([↑Uganda, Kenya, Tanzania: Hardman, et al., 2011](#)). They explore the challenges faced by Kenya, Tanzania and Uganda in order to provide evidence about what constitutes a successful professional development programme.

In addition, a case study approach was used by some studies to compare evidence, in an international context, of the current trends and discussions around TVET for specific sectors, (e.g., [↑Benin and Ethiopia: Walker & Hofstetter, 2016](#)).

Evidence on the effects of TVET within countries is provided in studies by Oluwafemi et al. ([↑Nigeria: 2015](#)) and Kingombe ([↑Sierra Leone: 2011](#)). Oluwafemi arrived at the broad conclusion that each successive Nigerian government has *“good thoughts”* for the education sector, but has achieved limited success ([↑Nigeria: Oluwafemi, et. al., 2015](#)). These limitations were partly attributed to the divergence between educational decisions and cultural contexts (particularly regarding colonial educational policies ([↑ibid.](#))). In a wide-ranging review of TVET in Sierra Leone, Kingome’s most poignant finding identified the pivotal role played by TVET in a

*“...reintegration that creates and facilitates new opportunities and livelihoods for ex-combatants and for communities by enabling the possibility of building realities that differ considerably from pre-conflict ones”* ([↑Kingome, 2011](#)).

Further information on international and national research results can be found in Chapter 7.

### 6.1.2. Focus: Evidence from and impact of TVET programmes

The main goal of other studies was to learn from existing TVET programmes. These studies focused on evaluating the success of particular countries’ TVET programmes in order to identify learning outcomes ([↑Burundi: Scanga, et al., 2018](#); [↑Côte d’Ivoire, Mali, Senegal and Guinea-Bissau: Cáceres, et al., 2017](#); [↑Malawi: Safford, et al., 2013](#); [↑Senegal: Garcia-Rodriguez, et al., 2017](#); [↑Ghana: Dzisi, et al., 2018](#), [↑Ghana: Wolf, et al., 2018](#); [↑Benin: Okry, et al., 2014](#); [↑Botswana: Odora, 2011](#)).

The scope of these studies often goes beyond a mere assessment of TVET programmes. For example, one such study examined whether the specific training and development provided by financial institutions in multiple countries made a difference to the performance of mid-level managers in those institutions (†[Abugre & Adebola, 2015](#)). Another study produced detailed empirical findings of cascade training in Cameroon in order to assess whether it works and whether it contributes to the improvement of teaching quality (†[Cameroon: Lange & Benavot, 2016](#)). The majority of these rather broad studies were from West and Southern Africa. The goal of many of the studies that focused on training programmes was to determine the outcomes for participants. One such study used a tracer survey of graduates of artisan apprenticeship (†[Tanzania: Bennell, et al., 2006](#)). Other studies explored whether training had an impact on livelihood practices (†[Ethiopia: Baraki & van Kemenade, 2013](#)). For example, one study assessed the impact of a training programme on the cultivation practices associated with rice farming (†[Uganda: Kijima, et al., 2012](#)), and another examined the effects of the training of trauma teams in terms of developing their knowledge of trauma and improving their performance (†[Tanzania: Bergman, et al., 2008](#)). A number of other studies assessed the impact of TVET programmes on learning, performance and income (†[Kenya: Ndegwa, et al., 2015](#); †[Tanzania: Nakano, et al., 2018](#); †[Cameroon Anglophone part: Lange, 2014](#); †[Ghana: Mano, et al., 2012](#); †[Zambia: Prager, et al., 2012](#)).

## 6.2. Theme: Types of TVET

In this section, we will provide a detailed examination of studies that attempt to define the concept of TVET. Although the publications usually do not define the *term* TVET, there are still some publications that examine and define the *concept*. In addition to the definition of the concept, these studies consider the sub-components of on-the-job training, apprenticeships, occupational education, career and technical education TVET, technical/vocational colleges and secondary schools, and sector-specific TVET (for example †[Nigeria: Sharehu, 2014](#)). The purpose of TVET (or any particular sub-component of TVET) is identified by Idris & Rajuddin as providing learners with the requisite knowledge and skills to enable them to participate in industry (†[Nigeria: Idris & Rajuddin, 2012](#); †[Ghana: Adogba, 2015](#)). In the studies that we surveyed, TVET was considered to be applicable to a wide range of industries. This was evidenced both by the wide range of academic disciplines represented by the contributing authors (see RQ1.b, Section 5.1.) as well as by responses that we received to a stakeholder survey, in which there was broad agreement that all occupational groups recognised by the ILO were applicable to TVET (RQ2).

These studies aim to deepen the conceptual understanding of TVET, for example with regard to aspects of TVET programme design (RQ7). Such aspects mentioned in the U-literature can be broadly grouped in terms of their cooperative dimension into three categories, depending on the extent to which they involve practical components.<sup>2</sup> These categories are defined as follows:

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<sup>2</sup> Two further categories of vocational training are described in chapter 7. These categories focus on technology-supported distance learning and continuing training approaches (Type Z4), as well as continuing TVET (CPD; Type Z5).

- **Type K1.** Formalised, college-based courses that focus on theoretical teaching.
- **Type K2.** Formalised dual-system approaches that include significant work-based activities (e.g., 50%–70% work-based activities, similar to the German dual model);
- **Type K3.** Apprenticeship-only approaches that are almost entirely work-based.

(also see Chapters 4 and 7). The approaches of types K1 and K3 appear often in U-publications. Examples of formalised type K1 TVET programmes are identified in several countries / economic sectors, e.g., in the education sector in Cameroon ([↑Cameroon: Wohlfahrt, 2018](#)), in agriculture in Ethiopia and Benin ([↑Ethiopia, Benin: Walker & Hofstetter, 2016](#)), in the pharmaceutical sector in South Africa ([↑South Africa: Summers, et al., 2001](#)), in the health and care sector in Uganda ([↑Miceli, et al., 2012](#)), and in training programmes for entrepreneurs and craftspeople in Ghana ([↑Hanson, 2005](#)).

Similarly, apprenticeship-only approaches (Type K3) were, with varying levels of formality, reported on in diverse settings, for example in traditional eye medicine ([↑Nigeria: Ebeigbe, 2013](#)) and in pottery ([↑Cameroon: Wallaert, 2008](#)).

Dual-system approaches (Type K2) were also mentioned, although they appeared with less frequency.

For example, type K2 is found at a national level (macro-level) in Ethiopia ([↑Krishnan & Shaorshadze, 2013](#)) and Mozambique ([↑Sandirasegarane, et al., 2016](#)), at programme level (meso-level) in Malawi ([↑Malawi: Safford, et al., 2013](#)), and at the educational level (micro-level) in Mali ([↑Sierra Leone: Kingombe, 2011](#)) and Botswana ([↑Preckler Galguera, 2018](#)). For further details, see Section 8.1.2.

The design, significance and usefulness of practical or work-related components in TVET is a frequently addressed topic in the U-literature. It has also been addressed in studies of programmes where practical components in TVET have been scarce or non-existent. These consider the neglect of the 'practical side' of training. Compared to other topics, the far-reaching and multifaceted discussion of practical or work-related (components in) TVET (e.g., 'workplace-oriented learning', 'work-based learning', 'work-integrated learning', 'internships') in the TVET literature underlines the importance of the role that researchers assign to this topic in the conceptualisation of TVET.

### 6.2.1. Focus: TVET Policy

The majority of publications in the field of TVET policy aim to highlight the interrelation between TVET policy and practice. The studies mentioned in this section seek to understand the relationship between TVET policy and practice. This involves taking existing TVET practice and situating it within current or future government policies. Full in-depth discussion on the relationship between TVET policy and practice is presented across Chapters 10 through 13. Other publications on TVET policy focus on the broader policy framework for TVET in a region or country. Such publications examine, for example, whether and how TVET meets the requirements expected by the responsible

government agencies. They include analysis of the results achieved and consider how TVET opportunities fit into the overall education system of the region or country. The studies also examine whether and which changes are possible through political influence in terms of an improved professional policy, and how these could be initiated.

Some studies deal specifically with TVET policy-making, including critical reflection on the policy dimensions of TVET ([↑Kenya: Mayaka & Akama, 2007](#)). Others focus on developing entrepreneurship education tailored to different capacities (e.g., financial) and incorporating it into formal curricula ([↑Nigeria: Eze & Nwali, 2012](#)). Others focus on developing entrepreneurial training tailored to different skills (e.g., financial) and incorporating this into formal curricula ([↑Nigeria: Eze & Nwali, 2012](#)).

One multi-country study in East Africa specifically aims to deliver policy-relevant results, particularly on professional skills ([↑Kenya, Ghana, Uganda, Tanzania: Ndlovu, et al., 2006](#)).

### **6.2.2. Focus: Regulating supply and demand through vocational training policy**

One regional study explored the origins of apprenticeship to see whether it is on track to meet the wider socio-economic and labour market challenges ([↑Akoojee, 2013](#)). Other studies look at whether the (educational) provision of TVET meets the requirements of national legislation and the guidelines derived from it, as well as the needs of the market (and more rarely, those of learners; [↑Kenya: Mayaka, et al., 2002](#); [↑Nigeria and UK: Awe, et al., 2009](#); [↑Ghana: Adogba, 2015](#); [↑Ghana: Amedorme & Fiagbe, 2013](#)). Mayaka and King ask if provision meets the requirements of national legislation and identifies policy gaps ([↑Kenya: Mayaka & King, 2002](#)).

Some studies examine the range of tourism education and training on offer in order to determine the extent to which the current range of training is up to date. They also assess the extent of training provision, and analyse whether the quality of education and training meets the needs of the industry experts involved in this study. Another study in Liberia looked at how rural community members perceive their influence on their government's TVET policies ([↑Liberia: Forh, 2014](#)).

### **6.2.3. Focus: TVET — a 'blind spot' of education policy**

Some studies examine why TVET in SSA is neglected by education policy compared to other areas of education. For example, one study has considered the strong preference for academic (non-work-based) education ([↑Tanzania: Kahyarara & Teal, 2008](#)). Other studies examine the results of existing government policy on TVET. ([↑Sierra Leone: Kingombe, 2011](#)). Another study aimed to assess the degree to which TVET policies (and legal frameworks) have successfully included those with disabilities ([↑Kenya and Tanzania: Malle, 2016](#)). There was only one study that specifically aimed to understand the instructional use of ICT in TVET and the role that government policy plays in its use

(†Kenya: Agufana, et al., 2018). However, the role of ICT in TVET was frequently considered outside the scope of government policy.

### 6.3. Theme: Region-specific features in TVET

Research question RQ3.b asked if there were trends and correlations in regions or groups of countries, or on topics such as advancement opportunities, informal sector and vocational training, social inequality, and the labour market integration of young people (among other topics). The literature review was not informative in this regard, as there was no research dedicated to analysing regional differences or trends within SSA. Hence, the information on regional trends that follows below was retrieved mainly from the SCR.

Participants in the SCR stated that in TVET systems and TVET research, there are more differences between countries than within the African regions. Participants noted that the type of TVET in SSA countries is primarily based on their colonial history. Mpofu and colleagues, for example, noted in the SCR that the differences among the countries studied are *“explained by their historical difference and also by current national and international influences”* (†Various: Mpofu, et al., 2007:228). There are, therefore, some commonalities within the circle of French- and English-speaking countries regarding TVET concepts and research. For example, the English-speaking countries Kenya, Tanzania, Uganda and Rwanda have similar TVET systems, and have a dialogue with each other. Burkina Faso and Senegal have close cultural links and similarities between their educational systems. By contrast, similarities and exchanges between French- and English-speaking countries are rare. According to Joy Papier (University of the Western Cape, South Africa), language barriers have hampered research efforts between these countries.

Peliwe Lolwana (University of the Witwatersrand, South Africa) is another participant who brought up the difference in attitude between local technicians and immigrants. She has found that people coming from other parts of SSA are more active and entrepreneurial than South Africans, who tend to be more reliant on the government. She researched the skills acquired through the informal sector in South Africa and was surprised to see many migrants (from Zambia, Kenya, Mozambique, Zimbabwe and Congo) leading the companies in this sector, and stated that people who are likely to migrate seem to be stronger and more resilient.

In East Africa, the TVET systems of Tanzania and Ethiopia have a few similarities with the German TVET system. Some elements of dual TVET have been adopted: for example, the connection between workshop and classroom in vocational colleges in Ethiopia (†Eicker, et al., 2017). In addition, future teachers for TVET colleges must complete a mandatory internship during their studies in Ethiopia (ibid.).

Namibia and South Africa have similar trends in terms of TVET challenges (†Eicker, et al., 2017). The work of Eicker and Haseloff (2017) also points to similarities between South Africa and Mozambique.

## 6.4. Theme: TVET in relation to ICT

The use of technology is another goal identified in TVET research. Papers presented findings on ICT use, methods of promoting ICT use, and the delivery of TVET through ICT-based programmes. These studies were conducted in all regions of SSA.

Continuing from the previous section's discussion of ICT policy within the TVET realm, this section explores the goal of dealing with the role of ICT in TVET. A number of studies evaluated specific TVET programmes that used technology and ICT as part of their provision ([↑Malawi: Mastellos, et al., 2018](#); [↑Zimbabwe: Musarurwa, 2011](#); [↑Kenya: Butt, et al., 2013](#); [↑high-income countries and Benin and Senegal: Mègnigbêto, 2007](#); [↑South Africa: Duys, et al., 2017](#); [↑Nigeria: Gloria & Oluwadara, 2016](#); [↑Tanzania: Sanga, et al., 2016](#); and [↑Saudi, et al., 2011](#)).

The large majority of studies explore how TVET provision can be improved through focusing on the potential of ICT within TVET.<sup>3</sup> The following studies investigate the accessibility, current utilisation and feasibility of ICT use, as well as the electronic resources in a number of areas to inform future programming ([↑Nigeria: Olaniran, et al., 2016](#); [↑Mozambique: Romiszowski, 2015](#); [↑Nigeria: Olabiyi, 2014](#); [↑Rwanda: Harerimana, et al., 2016](#); [↑Nigeria: Sharehu & Achor, 2014](#); [↑Zambia: Hennessy, et al., 2016](#)).

A number of studies focus on the justification for using ICT in TVET. For example, Romiszowski analyses the current TVET situation in Mozambique in order to evaluate the need for and viability of employing open and distance learning, particularly e-learning ([↑Mozambique: Romiszowski, 2015](#)). Olabiyi also assesses the relevance of ICT in the field of TVET ([↑Nigeria: Olabiyi, 2014](#)).

Harerimana and colleagues analyse the utilisation of e-learning in nursing campuses ([↑Rwanda: Harerimana, et al., 2016](#)), whereas Dodds discusses open and distance learning for supporting health workers in general ([↑Gambia: Dodds, 2011](#)). Sharehu and Achor examine ICT strategies regarding entrepreneurship-focused TVET ([↑Nigeria: Sharehu & Achor, 2014](#)).

One study focusing on SSA as a whole presented an innovative approach to ICT skills training in order to identify and propose promising ways in which ICT can be used to improve TVET ([↑General: Evoh, 2012](#)). Another study evaluated ICT usage in teaching and learning to highlight the factors that influence the effective integration of ICT in these contexts ([↑Ghana: Bonsu, et al., 2013](#)). Saud and colleagues' literature review also provides an overview of the challenges and factors influencing the effective integration of ICT in TVET, concluding that adequate planning and management of ICT resources are required to properly address the challenges of integrating ICT ([↑General: Saud, et al., 2011](#)).

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<sup>3</sup> We note that the OER4Schools approach is unique, in that the full programme is freely available (as an Open Educational Resource) alongside research publications spanning an extended period of time. It is, therefore, possible to relate the research outcomes back to the exact resources that were used in achieving this outcome ([↑Haßler, et al., 2018](#); and references therein).



### 6.4.1. Focus: ICT use by teachers and institutions

A number of studies focus on teachers. Olaniran investigated accessibility to, and utilisation of, electronic resources among pre-service teachers, evaluating the viability of employing open and distance learning and e-Learning in particular ([†Nigeria: Olaniran, et al., 2016](#)). Hennessy and colleagues explored the feasibility of using ICT to support more interactive forms of subject teaching and learning ([†Zambia: Hennessy, et al., 2016](#)). Hlophe and Mindebele focused on assessing the computer literacy skills of teachers (in agriculture, commerce, home economics and technical studies) in order to determine the feasibility of ICT education ([†eSwatini: Hlophe & Mindebele, 2001](#)).

Other studies look at the frequency of ICT use by teachers. For example, Agufana reported that ICT was used with relative frequency by TVET lecturers ([†Kenya: Agufana, 2015](#)). Authors considered the use of ICT to be positive (see, for example, [†Kenya, Rwanda: Agufana, 2018](#)), and methods for increasing its use were advocated ([†eSwatini: Hlophe & Mindebele, 2001](#)). However, ICT facilities or materials were considered to be inadequate ([†Mozambique: Romiszowski, 2015](#); [†Nigeria: Olaniran, et al., 2016](#)).

### 6.4.2. Focus: Costs for the use of ICT and ODL

We note that there is little discourse around the cost of ICT and ODL usage. Speaking generally, David and Asamoah state that programmes that delivered content using technology were viewed favourably, in part because of their low costs ([†Ghana: David & Asamoah, 2011](#)). However, quite often, such programmes do not account for all costs, and when full cost analysis is undertaken, they compare less favourably.

While not reporting on a research project, Hoose and Butcher describe costing approaches to open and distance learning and ICTs, and extrapolate these findings to apply to the TVET context ([†General: Hoosen & Butcher, 2017](#); in [†General: Latchem, 2017](#)).

## 6.5. Theme: Institutions and personnel in TVET

The U-literature often discusses the diverse range of challenges facing TVET in practice. The main challenges discussed in these studies include facilities ([†Uganda: Tukamushaba & Xiao, 2012](#)), TVET teachers or staff ([†Uganda: Bananuka, 2008](#)), and the perception of TVET.

It is often pointed out that the institutions and concepts for teacher professional development are lacking or, if they exist, are operating at a low level. One related study found, for example, that employers thought that graduates of the Botswana Technical Education Programme had less than satisfactory skills, a possible outcome of the challenges plaguing TVET in practice ([†Botswana: Odora, 2011](#)). This is one of the reasons why there are hardly enough qualified personnel available for the implementation of TVET programmes. Another problem that contributes to the low interest in training to become a TVET teacher is the stigma attached to it. It is regarded as “a *low-prestige career pathway*” (Ghana: [†Ayentimi, et al., 2018:409](#)), which is why candidates for TVET

often do not want to take it up. These problems are expanded upon in Section 7.3. The SCR participants also expand on these issues in Chapter 14.

### 6.5.1. Focus: Further perspectives on TVET

Another noticeable topic in the U-publications is the definition and conceptualisation of TVET. In Chapter 4, we introduced an overarching scheme that was designed to capture and conceptualise all types of TVET worldwide. Although Chapter 4 was primarily concerned with conceptualising TVET, it always draws from the publications from our literature search. Up to this point, we have mainly presented the perspective of researchers on TVET. In the publications we examined, this has often been the perspective adopted by Idris and Rajuddin. According to them, TVET (or a specific component of TVET) is designed to provide learners with the knowledge and skills necessary to participate in working life ([↑Nigeria: Idris & Rajuddin, 2012](#); [↑Ghana: Adogpa, 2015](#)). In our opinion (Working Definition, Section 4.1.), this view does not go far enough to be able to identify and develop the possibilities of TVET (Chapter 4.). Section 6.6. discusses how different TVET students, teachers (Section 6.6.1.) and representatives from the business community (Section 6.6.2.) understand the conceptualisation of TVET.

### 6.5.2. Focus: Perspectives of TVET students and TVET educators

The goal of some studies was to understand the conceptualisation of TVET by students and educators ([↑Nigeria: Idris & Rajuddin, 2012](#)).<sup>4</sup> It is important to note that the conceptualisation of TVET is not uniform (RQ2). and that differences occur depending on which group – whether TVET providers or users – has been surveyed. These studies are therefore important to improving our understanding of how different actors define and understand TVET. For example, Tukamushaba and Xiao conducted an integrative analysis of students' motivations when choosing hospitality and tourism programmes, as well as industry perceptions of graduates' qualifications for employment in Uganda ([↑Uganda: Tukamushaba & Xiao, 2012](#)). One project in Malawi looks at teachers' views about, and practices in, technical education in Malawi in order to better understand the way in which they conceptualise technical education ([↑Malawi: Chikasanda, et al., 2011](#)).

### 6.5.3. Focus: The business perspective on TVET

Various studies deal with the benefits and functions of TVET from an economic perspective. One such study examines how the quality and availability of skills are perceived by skilled construction workers in the construction industry in Zambia. It identifies where and how vocational training is used and when this is useful ([↑Zambia: Muya, et al., 2006](#)). Other studies focus on the specific training needs for different sectors or contexts in order to understand how TVET in each area could be conceptualised and used ([↑South Africa: Dulandas & Brysiewicz, 2018](#); [↑Uganda: Okiror, et al., 2017](#); [↑Uganda: Miceli, et al.,](#)

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<sup>4</sup> Other studies aimed to understand these stakeholders' conceptualisations of learning include [↑Tanzania: Machumu, et al., 2016](#); [↑Uganda: Tukamushaba & Xiao, 2012](#).



2012). Another study details the processes that had already been used to develop TVET in Ghana ([↑Ghana: Bell, et al., 2014](#)).

## 6.6. Theme: Studies with recommendations for TVET research

This section looks at studies that develop recommendations for TVET research. The overall findings and the challenges identified in these studies lead to recommendations for the improvement of future TVET research and policy. The policy recommendations provided can be grouped into the following three categories:

1. Government policy changes / amendment of existing policy ([↑Zambia: Ryan, 2015](#));
2. TVET provider policy ([↑Kenya: Agufana, 2015](#));
3. General / other policy ([↑Ghana: Amedorme & Fiagbe, 2013](#); see also Section 7.5.).

Additionally, authors' recommendations for further research advocated additional investigation into the topic(s) within the area under (their) consideration ([↑Botswana: Coker & Majuta, 2015](#); [↑Ghana: David & Asamoah, 2011](#); [↑South Africa: Ogunniyi, 2011](#)). At times, this included more research into a specific intervention, event or setting that was considered as part of the study ([↑Belwal, et al., 2010](#)), or even direct replication of the study design being employed ([↑Kenya: Mayaka & Akama, 2007](#)).

## 6.7. Chapter bibliography

This bibliography can be accessed from the [entry for this document in our evidence library](#).

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- Adedoja, G., & Oluwadara, A. (2016). Influence of Mobile Learning Training on Pre-Service Social Studies Teachers' Technology and Mobile Phone Self-Efficacies. *Journal of Education and Practice*. (↑record)
- Adogpa, J. N. (2015). Technical-Vocational Education and Language Policy in Ghana. *International Journal of Educational Administration and Policy Studies*. (↑record)
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## Chapter 7. Systematic Review of TVET Research<sup>1</sup>

This chapter focuses on research evidence regarding TVET in SSA. Instead of concentrating on the general research interests and goals of TVET, we now turn to the content of the studies (RQ6). We thus present a systematic review of the results in publications on TVET (RQ9, RQ10, RQ11). This chapter also discusses the research design and methodology of the U-publications under consideration (RQ6). We have included only those publications that are relevant in terms of the research mandate of this study (U-publications), and that are of high research quality (i.e., the U-publications). Later in the chapter, we present key challenges for TVET in SSA (RQ11), findings on TVET in relation to ICT (Section 7.4.), TVET education policy (Section 7.5.), and finally, suggestions that were made for TVET policy and further research (Section 7.6.; RQ9).

We note that it was not possible to synthesise all relevant research findings and research topics; the focus of themes for this chapter (and for Chapters 8 and 9) is based on the selection of research questions rather than frequencies drawn from the thematic analysis (Chapter 2).

Following on from the analysis in this chapter, Chapters 8 and 9 consider research that responds to key challenges for TVET: models for design, development and provision of TVET (Chapter 8, RQ7) and inclusion-related challenges and strategies (Chapter 9, RQ12).

### Research questions considered in this chapter

The research questions considered in this chapter are listed in the box below.

#### Research questions considered in this chapter

**RQ6.** Research design and quality of results (in the publications considered).

**[RQ6.a]** What are the research designs in the publications considered? What are the research methods used?

**[RQ6.b]** What is the quality of reporting and the quality of results?

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**RQ9. Findings and conclusions** of publications considered.

**[RQ9.a]** What are the main **findings** of the publication?

**[RQ9.b]** What **recommendations for further research** are evidenced (in the publication: articles, web pages, policies)?

**[RQ9.c]** What **recommendations for education policy** are evidenced (in the publication: articles, web pages, policies)?

**[RQ10.]** What do publications report about the **impact of TVET programmes** on participants and the wider society (impact/growth/sustainability/Sustainable Development Goals)?

**[RQ11.]** What are the **relevant infrastructural, technological, socio-cultural, economic and legal factors**? Which contextual (and regional) factors can increase or decrease the impact / growth / sustainability?

**[RQ12.]** What are the main **inclusion-related challenges** (equal treatment, e.g., gender, disability) in TVET in SSA? What are the successes and failures with respect to inclusion in TVET implementations?

## Conclusions of this chapter

In this chapter, we present our system for the evaluation of the existing research literature, on the basis of which we systematically classified the research according to well-founded qualitative criteria on a scale from 'low' (l) to 'ultra high' (u).

Out of a total of 324 U-publications – publications that are relevant to our overall report – 162 were peer-reviewed. Of these 162 publications, only 14 (5%) were categorised as being of an especially high quality of research ('u') while 63 (just under 20%) were categorised as being of high quality ('h'). The remaining 75% were classified lower as 'm' or 'l'.

This chapter goes on to explore the research designs and methods drawn upon in the publications under consideration. We note significant research design limitations of both qualitative and quantitative studies, and methodological limitations concerning sampling and data collection. Shortcomings are also noteworthy in terms of structure, clarity of writing, referencing and analysis.

We then consider results from some studies that we consider to be particularly reliable. These studies made it possible to identify the key challenges for TVET training and research, namely: developing TVET institutions, promoting and increasing the number of TVET personnel, and improving the image of TVET. ICT is a recurring theme, and therefore a section of this chapter has been dedicated to the growing importance of ICT in Vocational Education and Training.

As we are considering reliable insights obtained from high-quality research, it is possible to make recommendations for TVET policy and TVET providers in SSA. Extensive government policy changes in the TVET system are occasionally recommended in the publications. These include: greater investment in TVET resources, stronger practice orientation,

intensification of teacher education and further education, the involvement of experts from outside (for example from companies), a greater focus on apprenticeship opportunities in the informal sector, and the promotion of ICT use in teaching and learning.

With regard to TVET providers, this report calls for a more intensive integration of ICT in teaching and learning provision and stresses the importance of qualified and experienced teaching staff.

Finally, this chapter deals with ideas and recommendations for conducting further TVET research. Firstly, we recommend relevant research that makes use of findings from related research areas. Secondly, we discuss the need for further research on existing studies to either deepen insights or to investigate the impact of changes made since the original studies.

As with the other chapters, the subsequent sections offer additional details of the points discussed in the summary above. Appendix 1.2 provides descriptions for the ultra-high-quality publications discussed in this chapter.

## 7.1. Design and methods in the U-publications (RQ6)

This section explores the methodology and quality of the publications that we assessed. It presents a summary of our criteria for the classification of publications as of either low, medium, high or ultra-high quality. After a brief overview of the publications that we considered, we present summaries of the structure, clarity of writing, referencing and types of research done in those publications. This section also details the types of analyses used in the publications, as well as their overall research design and the common methodological limitations of the publications that were considered.

### 7.1.1. Overview of publication quality

The process by which we assessed the quality of the publications is described in this report's research design (Chapter 2). For ease of reference, however, we briefly summarise the methodology we developed to structure the wealth of literature found, using well-founded criteria for quality assessment:

***u ('ultra-high')*** Indicates a well-referenced publication with good structure, appropriate methodology, a thorough analysis and a clear discussion of conclusive findings;

***h ('high')*** indicates a publication with a good structure and reasonable evidence-based conclusions; Methods are clearly described (for both primary or secondary research) and implemented (e.g., sample data is clearly specified), and the conclusions are derived from the data;

***m ('medium')*** indicates that the publication has a structure that compromises the clarity of the findings; Methods are clear (primary or secondary research), but the implementation or conclusions raise methodological issues;

***l ('low')*** indicates a publication with a poor structure, which results in reasoning that is difficult to follow; they may be no obvious methods.

We note that as with the relevance setting 'u' is conceived as a subcategory of 'h' ('h' includes all of 'u'), Occasionally '*hm*' and '*ml*' are used for publications on the respective boundaries. As before, the relevance of the publications is classified using upper-case letters U / H / M / L as follows:

***U ('ultra-high')***: clearly satisfactory and selected for coding;

***H ('high')***: clearly satisfactory;

***M ('medium')***: unclear / contentious;

***L ('low')***: clearly unsatisfactory.

The symbols are then combined, e.g., '*U.u*' represents a publication with a relevance classification of 'U' and a quality classification of u. To improve legibility, abbreviations are superscripted and delineated with a slash (e.g., <sup>†</sup>*U.u*/Cameroon: Lange, 2014, with relevance '*U*', quality '*u*'). Only peer-reviewed publications were classified in terms of quality. As mentioned in the Introduction, exactly half (162) of the 324 U-publications were peer-reviewed. The other half (162) contains U-publications that are not peer-reviewed, including books, reports, dissertations or conceptual pieces. Such publications were not rated regarding quality, and are denoted with a '-' instead of a lower-case latter (e.g., '*U.-*' such as <sup>†</sup>*U.-*/Tanzania: Machumu, et al., 2016).

The quality rankings for the 162 peer-reviewed publications (all of ultra-high relevance) was as follows:

- Peer-reviewed publications with ultra-high relevance and ultra-high quality ('*U.u*', included in '*U.h*'): 14;
- Peer-reviewed publications with ultra-high relevance and high quality, but not ultra-high quality ('*U.h*', not including '*U.u*'): 63;
- Peer-reviewed publications with ultra-high relevance and medium quality ('*U.m*'): 46 (half of these were a high '*m*', i.e., '*U.mh*');)
- Peer-reviewed publications with ultra-high relevance and low quality ('*U.l*'): 39 (of which 22 were a high '*l*', i.e., '*U.lm*').

The quality assessment conducted here corresponds to the aspect of 'rigour' within the UK Research Excellence Framework. However, the Framework contains two further components: 'significance' and 'originality'. While this chapter mainly draws on '*U.u*' publications, we note that it felt insufficient to only draw on '*U.u*' publications (i.e., quality as 'rigour'). Occasionally other 'U' publications ('*U.h*', '*U.m*', '*U.l*') offer valuable additional insights (with regard to 'significance' or 'originality'), and it felt warranted to include these.

Finally, remind the reader that this is the only chapter that indicates quality ratings in this way. This is because the focus of this chapter is about the quality and rigour of selected publications, and what this means for TVET practice. In other chapters, our

focus is on TVET research, where our quality of publications is only one aspect among many.

### 7.1.2. Research design and methods

Nearly two-thirds of the publications used qualitative methods. Among these are many works that examine documents (including government documents), policies, archival material or concepts by evaluating them using qualitative methods (mostly text and content analysis), such as the analysis of government documents by Alagaraja and Arthur-Mensah ([↑U.mh/Ghana: Alagaraja & Arthur-Mensah, 2013](#)), or the analysis of archival material by Atari and McKague ([↑U.h/South Sudan: Atari & McKague, 2015](#)).

The qualitative studies that collected primary data used methods common to social sciences such as interviews, focus groups and/or observations (e.g., semi-structured interviews; [↑U.h/Zimbabwe: Abas, 2014](#)). These methods are used, for example, to record the opinions of TVET teachers, or to determine the impact of research projects on specific groups (for example: [↑U.h/Kenya: Appiagyei, et al., 2014](#)).

About a sixth of the publications examined used quantitative methods. Among the quantitative studies collecting primary data, questionnaires were often used, such as a highly structured questionnaire on the training needs of nurses in South Africa ([↑U./South Africa: Dulandas & Brysiewicz, 2018](#)).

The remaining sixth used mixed methods. For example, Muganyizi and colleagues generated both quantitative and qualitative data to be analysed in their study ([↑U.u/Muganyizi, et al., 2014:838](#)). However, they did not explicitly describe their study as using ‘mixed methods’. Such mixed-method approaches were also used by Appiagyei and colleagues in their investigation into pre-service nurse training ([↑U.h/Kenya: Appiagyei, et al., 2014](#)). This study analyses quantitative data from the Kenyan ‘Regulatory Human Resources Information System’ and the ‘Kenya Health Workforce Information System’ on student enrolment and job distribution. This data was used alongside

*“qualitative data from key informant interviews with nurse training institution educators and/or administrators”* ([↑U.h/Kenya: Appiagyei, et al., 2014:1](#)).

Similarly, Mayaka and King used both an employee survey and semi-structured interviews

*“to determine where current provision [in training within the tour-operating sector] is deficient and what is needed to address such deficiencies”* ([↑U.h/Kenya: Mayaka & King, 2002:112](#)).

Several purely qualitative studies validated their results by triangulating them with desk-based analysis using qualitative data from interviews and structured community reviews. For example, in a study on the position of the International Accreditation Organisation on informal education, researchers combined a survey (interviews) in 60 companies with an analysis of the available literature and archive materials on this topic ([↑U./Zambia: Ryan, 2015](#)).

Some researchers are developing proposals to apply new research methods in their respective fields. For example, Coker and Majuta emphasise the need to explore group counselling practice with culturally appropriate indigenous research methods ([†U.m/Botswana: Coker & Majuta, 2015](#)).

### 7.1.3. Methodical limitations in the analysed publications

Issues that detracted from the quality of the papers often related to their methodology. Moreover, a number of publications do not attempt to consider the reliability of the studies, given the limitations of their methodology. In some studies, we noted flaws in the analysis (e.g., the failure to control important variables in the statistical analysis; [†U.h/Kenya: Sambo, 2016](#)).

Information about the type or method of analysis is sometimes missing or not presented clearly. Although many publications indicate the methods used for data collection e.g., structured interviews or questionnaires, they do not provide details of the methods used to analyse the data collected. Furthermore, relevant information is often missing, e.g., on how indicator scales and questionnaires were created, validated and piloted. In addition, causal claims, which cannot be justified by the methodology and analysis used, are sometimes made.

It is noteworthy that a number of mixed-method studies contain detailed methodological descriptions of one method used, but do not include similarly detailed descriptions of other methods used. For instance, at times the quantitative methodology and analysis are adequately described, but not the qualitative ones (or vice versa).

Methodological limitations are sometimes recognised by the authors themselves. For example, a comparison between two methods of ICT training for community health workers (CHWs) shows that

*“no difference between blended and traditional learning in the acquisition of actual ICT knowledge by CHWs in rural areas in low- and middle-income settings”* ([†U.u/Malawi: Mastellos, et al., 2018](#)).

However, the authors do note that the failure to identify significant results in this case is partly due to the specifications of the design of the randomized controlled trial (RCT), in which Mastellos and colleagues used only a small stratified sample (n = 40; [†ibid.](#)).

### 7.1.4. Sampling

Sampling methods were often at least partially reported. The most common information given about the sample tended to be where the sample came from (such as region or institution). The number of overall participants was also commonly reported. However, less frequently included in publications was a full description of the sampling method, i.e., how individuals or institutions were selected (e.g., purposively, randomly, convenience). Where sampling methods were reported, convenience and purposive sampling were common. In addition, the reasons for choosing a particular sample and sampling

method were often omitted. Examination of very small samples was not uncommon ([↑U.u/Malawi: Mastellos, et al., 2018](#)).

### **7.1.5. Data collection instruments**

Our discussion of the methodological limitations of the studies ends with a brief consideration of the data collection instruments used. Publications often made note of the data collection method, for example, structured interviews or questionnaires. However, further details on exact interview questions, questionnaires or interview structure were often omitted. Relevant information, including how indicator scales and questionnaires were constructed, validated and piloted, were often omitted.

### **7.1.6. Structure and genre of the analysed publications**

Most publications scored medium or high for the quality assessment based on their structure alone. In this respect, they meet the internationally recognised requirements for academic writing. This includes sections such as the introduction, literature review, methodology, findings, discussion and conclusion. However, some authors combined sections, with the result that the sections do not always correspond to the sections mentioned above. Nevertheless, the sections as such were easily discernible.

By contrast, research questions were not always clearly signposted, and were difficult to identify within some publications. Particularly for descriptive publications that primarily describe specific situations related to TVET and national contexts, as opposed to seeking answers for specific problems, research questions were often poorly articulated.

Examples of well-structured publications include the study by Lange and the study by Machumu and colleagues. Lange presents a well-structured quantitative study on the effect of professional development on teachers' attitudes towards teaching, and towards learning how to improve their teaching([↑U.u/Cameroon: Lange, 2014](#)). Machumu and colleagues produced a well-structured qualitative study that explored blended learning in the TVET-system in Tanzania ([↑U.u/Tanzania: Machumu, et al., 2016](#)).

A substantial minority of publications had no clear structure, or an atypical structure for a research publication. Such publications were predominantly discussion or opinion pieces, or publications that focused on document analysis and literature reviews.

### **7.1.7. Clarity of writing and typographic aspects**

The writing style of the research contributions is usually appropriate. However, the text of some publications had easily noticeable deficiencies in the clarity and style of writing. These publications had typically been either translated from another language or written by non-native English speakers.

Other publications were written clearly but contained noticeable typographical errors. Typographical errors were more common in lower-quality publications.



### 7.1.8. Referencing

Most publications referenced at least a moderate number of sources. Even where citations are used in accordance with applicable rules, unfounded statements in studies are not isolated cases. Additionally, information on how and where literature was searched for was often not included.

Moreover, the scope of the literature search was occasionally found to be too narrow. The issue of searches being too narrow in scope is especially prevalent in desk-based research publications that reviewed existing literature.

### 7.1.9. Note on descriptive publications

Many publications were descriptive in nature. While descriptive research is certainly necessary, especially in under-researched contexts where most of the publications originate, their descriptive nature meant that they lacked in-depth analysis and discussion. However, it is acknowledged that it is difficult to conduct in-depth, rigorous research without the basic descriptive groundwork having been conducted first.

The description of detailed scenarios or problems is the primary scientific contribution made by many of these publications. However, they offered few empirical insights into why problems might exist within a certain context, or how such problems might be addressed.

## 7.2. Studies with reliable results (14 studies)

Having examined the design and methods of the high relevance and high quality publications in order to discuss the overall quality of the publications, this section now focuses on the results of the papers of ultra-high relevance and quality.

The 14 U.u publications classified as most reliable focus on the effects of TVET programmes or training measures. We briefly present some results as examples.

A study on TVET programmes for rice producers identifies the impact of these programmes (<sup>†</sup>U.u/Uganda: Kijima, et al., 2012). The results suggested that the programmes “*had significant positive impacts on rice profits*”. The researchers therefore went on to consider the impact of these programmes on the teachers concerned, and on the rice yield itself.

The study with the most positive findings concerning the impact of TVET (high reliability), is based on a robust difference-in-differences model (to analyse a 5-year, household-level panel data set). It reported that following agricultural training, “*technologies diffused gradually from the key farmers and intermediate farmers to the ordinary farmers*” (<sup>†</sup>U.u/Tanzania: Nakano, et al., 2018:13).<sup>2</sup> This ultimately led to a situation in which

*“the paddy yield of the key farmers substantially increased from 3.1 tonnes per hectare to 5.3 tonnes per hectare, while that of the ordinary farmers was noticeably boosted from 2.6 tonnes per hectare to 3.7 tonnes per hectare”* (<sup>†</sup>ibid.:13).

A study by Wolf found that supplemental pre-service teacher training in Ghana had a positive impact on teacher motivations, but this training produced *“no impacts on the student outcomes that were assessed”* (†<sup>U.u</sup>/Ghana: Wolf, 2018:26). An older study examining the financial impact of apprenticeship in Ghana states that only self-employed workers really benefit from apprenticeship training (†<sup>U.u</sup>/Ghana: Frazer & Frazer, 2006).

While only the 14 U.u publications are presented below, we note that these studies are well supported by insights in U.h publications. This contributes to external validity. For example, the following U.h-categorised Ndegwa study offers complementary results to the U.u publications by Frazer & Frazer (above). Although craftspeople trained under the Efficient Grain Storage Project (EGSP) can prove they have acquired new skills, a comparison of 58 trained craftspeople with 123 unskilled craftspeople indicates that despite the training, *“the income of employed craftsmen has not been significantly increased.”* (†<sup>U.h</sup>/Kenya: Ndegwa, 2015).

For the purposes of clarity, the 14 U.u publications are tabulated in the final section of this chapter.

Please note that the quality classification (H/M/L) for all U-releases can be viewed in our Zotero library.

### 7.3. Results of studies regarding key challenges of TVET (RQ11)

The reliable research results presented in the previous section must be considered in light of the diverse range of challenges facing TVET, which have also been identified in the literature. Inadequate equipment, under-qualified staff and even the poor image of TVET itself may have influenced findings on the impact, growth and sustainability of TVET programming. TVET often faces challenges (RQ11) whatever the prevailing national infrastructural, technological, socio-cultural, economic and legal factors. The analysis that follows considers the following key challenges:

1. TVET facilities (†<sup>U.h</sup>/Uganda: Tukamushaba & Xiao, 2012);
2. TVET teachers / educators (†<sup>U.-</sup>/Uganda: Bananuka, 2008);
3. Perception of TVET (†<sup>U.h</sup>/Ghana: Ayentimi, et al., 2018).

#### 7.3.1. TVET facilities

Many articles reported that TVET facilities were of substandard quality, or entirely absent. For hospitality and tourism courses, low-quality or dated equipment was often used. Industrial companies also complain of

*“confusion for fresh graduates when they find new equipment in the industry that they have never used or operated before”* (†<sup>U.h</sup>/Uganda: Tukamushaba & Xiao, 2012:349).

Similarly, a review of agricultural TVET in Benin, Ethiopia, Namibia and Sierra Leone identified *“inadequate and outdated training materials and equipment”* (†<sup>U.-</sup>/Namibia, Sierra Leone, Ethiopia, Benin: NEPAD, 2013:10).

Other articles found training facilities to be lacking entirely. For example, a study by [†Salami, et al. \(2016\)](#) reported an absence of teaching resources for a training programme for nurses in Nigeria, including nursing laboratory equipment, as well as of academic journals and medical technology.

Challenges relating to technological resources featured prominently in studies that focused on facilities. For example, the absence of video equipment was found to hinder a participatory action project concerning social work in Ghana ([†U.m/Ghana: Kreitzer, et al., 2009](#)). Another study reported that a lack of computer access had obstructed distance-learning TVET projects ([†U.h/Tanzania: Nartker, 2010](#)).

Lastly, the cost and speed of internet access have consistently hampered learning in almost all facilities. Interest in distance learning in Malawi, for example, has been inhibited by *“slow and expensive Internet access”* ([†M.-/Malawi: Mains, et al., 2011](#)). Only 3.3% of the population had access to the internet when the study was published, and only 6.5% in 2016, the latest data available ([†Malawi Internet Users](#)). Similarly, a review of distance learning programmes in Tanzania found that *“students’ poor computer access... high cost and slow speed of internet access... and unreliable electricity coverage”* created obstacles to learning ([†U.h/Tanzania: Nartker & Stevens, 2010:7](#)).

### 7.3.2. TVET teachers / educators

Studies also often reported on the problems posed by the absence or unprofessionalism of TVET staff. A common concern was the number of unqualified staff associated with these programmes. In their consideration of university courses in leisure, hospitality and tourism, Tukamushaba and Xiao noted that it was uncommon to find academic staff with relevant doctoral degrees ([†U.h/Tukamushaba & Xiao \(Uganda: 2012\)](#)). Similarly, a review of agricultural TVET found a *“lack of skilled and qualified trainers in training institutions”* ([†U.-/Namibia, Sierra Leone, Ethiopia, Benin: NEPAD, 2013:10](#)). In Uganda, Bananuka and Katahoire found that trainers in the non-formal education sector possess a *“lack of specialised training”* ([†U.-/Uganda: Bananuka & Katahoire, 2008:ix](#)). Indeed, these are often

*“a cadre of volunteers and school leavers from [a] FE (formal education) system and lack the very basics of adult learning facilitation and ability to structure materials on a flexible-learner based approach”* ([†ibid.:22](#)).

Ghana provides another example: social work lecturers who have been educated abroad but are practising in Ghana often lack awareness of the realities of practice:

*“[those returning] from Europe, the US and Canada to teach were unaware of local issues in Ghana and posed examples from their experiences in the western world”* ([†U.m/Ghana: Kreitzer, et al., 2009:157](#)).

In a similar vein, Hardman reported on the issues associated with seeking to adopt international best practices in teacher education, with these often ignoring the

*“everyday realities of the classroom, and the motivations, capacity and cultural beliefs of the teachers charged with delivering such reforms”* (†[U.h/Tanzania: Hardman, 2012:827](#)).

In the SCR, Joy Papier (University of Western Cape, South Africa) mentioned that South Africa was far ahead in terms of policies of teacher development (because the country standardised teacher education). According to her, most countries in Africa are trying to standardise their qualifications.

### 7.3.3. Perceptions of TVET

The issue that we consider in this section is the poor public image of TVET. In Ghana, TVET is commonly understood to be *“a route for those who are not able to function within an academic setting”* (†[Ghana: U.lm/Boateng, 2012:112](#)). Boateng asserts that negative public perceptions are reinforced by the *“lack of progression routes from vocational-technical education into higher education”* (†[ibid.](#)). In the same national context, TVET is *“branded as a low-prestige career pathway”*, comprised of students who are unable to reach the academic level required for entrance to *“mainstream schools”* (†[U.h/Ghana: Ayentimi, et al., 2018](#)). Additionally, Yangben and Seniwoliba found that

*“most parents also deny their wards that have the passion for technical courses and rather prescribe technical education for their children who are academically weak”* (†[U.-/Ghana: Yangben & Seniwoliba, 2014:22](#)).

Similarly, Bolarina states that to many in Nigeria, TVET *“was construed to mean education for the less privileged in society”*, and some believe it to be *“for the mentally retarded, physically handicapped and socially maladjusted students”* (†[U.h/Nigeria: Bolarina & Akinyle, 2018:4](#)). Hence, the perception of TVET as a segment of education designed for dropouts or academically poor individuals is also predominant in Nigeria (†[U.lm/Nigeria: Ogbondah, & Wobi, 2014](#)). According to Maigida and Sabato,

*“modern society has conditioned the youth into believing that the only route to success is university education. This has compiled many youth to prefer university as the best place to acquire education. This is followed by Polytechnics and then Colleges of Education. Policymakers at the Ministry of Education (FME) reflect this belief in the manner of allocation of fund for tertiary education with a bias towards university education in ratio of 3:1”* (†[U.lm/Nigeria: Maigida & Saba, 2013:307](#)).

Some articles do little to dispel the negative perceptions about TVET. For example, one study reported that the majority of prospective teachers participating in initial education possessed only *“the minimal qualifications necessary for entrance”*, with tutors also reporting that trainees’ competence in both Kiswahili and English was limited (†[U.h/Tanzania: Hardman, et al., 2012](#)).

To address this issue, †[U.h/Latchem \(2017:223\)](#) recommends convincing *“students, employers, communities and funding agencies that TVET is future-oriented”*. The author asserts that TVET needs to use the internet and social media to rebrand and reposition itself in the educational hierarchy, portray itself as innovative and customer-responsive,

increase its market share, internationalise its programmes, and develop strategically important partnerships.

There have also been other attempts to help change the poor perception of TVET. The African Union's Continental Education Strategy for Africa 2016–2025

*“aims to bring a paradigm shift in TVET by developing the idea that TVET prepares youth to become more of job creators than job seekers so that the public discard the idea that TVET is a refuge for those who failed in general education”*(†African Union, 2015:16).

Augustine and colleagues were commissioned to conduct a study (with TVET graduates who wanted to enter higher education via a bridging course) in this context. The study sought to *“establish formal, proper and correct progression pathways of TVET graduates for further studies”* (†U.h/Tanzania: Augustine, et al., 2017:4). Students who had already attended a bridging course were asked about their willingness to continue their studies:

*“100% of students recommended the bridging course continue because it is helpful regardless of constraints they are facing. Seventy one percent recommended the bridging course to continue because it is the only entry route that exists for them [to enter higher education institutions]”* (†ibid.:7).

This research does not directly address the image problems of TVET in SSA. However, it confirms how helpful it is to make TVET pathways permeable, as well as the level of demand there is for doing so – not least in order to increase the attractiveness of TVET (†ibid.).

## 7.4. Results of studies regarding TVET and ICT

As mentioned earlier in the report, many publications address the topic of ICT in relation to TVET, and we therefore devote this section to discussing this topic.

Within the findings concerning technology, various prominent sub-topics are identifiable. This review covers the following sub-topics: the level of ICT use, the methods of promoting ICT use, and the delivery of TVET through ICT-based programmes. For additional discussion on the role of ICT in TVET, see Chapter 6.

### 7.4.1. The level of ICT use

Understanding of current ICT use was among the objectives of multiple papers (e.g., †U.h/Rwanda: Harerimana, et al., 2016; †U.h/Nigeria: Olaniran, et al., 2016; †U.h/Ghana: Bonsu, et al., 2013). These studies presented findings on the impact of TVET on workers in a variety of settings. These included TVET lecturers, teachers and healthcare workers. A quantitative survey comprising part of a doctoral thesis by Agufana found that lecturers in Kenya's TVET colleges commonly used ICT on a daily basis for the purposes of instruction (with 40% of respondents doing so), and that ICT was perceived as having *“ease of use”* (†U-/Kenya: Agufana, 2015).

In Mozambique, however, a baseline study of the five TVET institutions participating in the National Directorate for Technical and Professional Education (DINET) project found that the three TVET colleges that offered distance education laboratories (described as *“well-resourced video-conference rooms”*) had only been seldom used ([↑U./Mozambique: Romiszowski, 2015:3](#)). All five institutions had a computer laboratory, but the quality of internet connectivity varied ([↑ibid.](#)). Similarly, Hashim and Abubakar found the ICT facilities at the five TVET institutions researched to be inadequate and the internet service weak and unreliable ([↑U.mh/Nigeria: Hashim & Abubakar, 2017](#)).

When investigating the use of e-learning resources by trainees prior to teacher training in Nigeria, Olaniran and colleagues noted that the *“majority of the respondents expressed dissatisfaction in respect of the pre-recorded video materials”*<sup>3</sup> ([↑U.h/Nigeria: Olaniran, et al., 2016:234](#)). Furthermore, the use of e-learning resources was impeded by poor internet connectivity and electricity problems ([↑ibid.](#)). In addition to poor internet connectivity, another problem faced by many in SSA is the cost of internet access which is not always free for the academics, administrative staff and students. For example, Minishi-Majanja and Ocholla, who researched library and information science education in Kenya, found that only 57% of the courses provided internet access for free ([↑U.h/Kenya: Minishi-Majanja & Ocholla, 2003](#)).

The level of ICT training received by health professionals, as well as the practical use of ICT, was also considered. Ajuwon and Rhine found internet access in work settings to be high among respondents (85%), but their use of ICT was largely the product of self-teaching: 61% had initially trained themselves in the use of ICT, and 70% had received no recent formal ICT training ([↑U.h/South Africa, Kenya: Ajuwon & Rhine, 2008](#)).

#### 7.4.2. Methods for promoting ICT use

The publications are largely positive about the use of ICT in TVET programmes (see, for example, [↑U.h/Kenya, Rwanda: Agufana, 2018](#); [↑U.h/South Africa, Kenya: Ajuwon & Rhine, 2008](#)), so it is therefore unsurprising that methods of promoting or increasing ICT use are also considered. For example, Hlophe and Mindebele ([↑U.u/eSwatini, 2001:348](#)) call for the provision of *“comprehensive ongoing professional development opportunities for school teachers, in particular, vocational teachers”*. In another example, Mastellos and colleagues conducted a randomized, controlled trial to test a blended learning method against a traditional learning method of ICT training delivery among health care workers ([↑U.u/Malawi: Mastellos, et al., 2018](#)). While both training methods led to significant increases in participant ICT knowledge, there was no significant difference between approaches. The authors, therefore, expressed a preference for blended learning because this *“combination of traditional face-to-face learning with other types of content delivery, often using digital media”* was more suitable for overcoming the resource constraints present in rural Malawi ([↑ibid.:3](#)).

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<sup>3</sup> However, a wide range of other resources was available to prospective teachers participating in distance learning.



Another method to develop capacity in the online use of educational media and technology was the Innovation in Vocational Education and Skills Training in Africa (INVEST Africa) programme. Established in 2010 by the Commonwealth of Learning (COL) in partnership with the Commonwealth Association of Polytechnics in Africa (CAPA), its aim was to help TVET institutions to install the technology and infrastructure, and to institutionalise the new online-based forms of development and delivery of education. Isaacs analysed the implementation of the programme in two colleges: one in Kenya and another in Zambia ([↑U.u/Kenya; Zambia: Isaacs, 2017](#)). The author concludes that both colleges benefited from

*“training and supporting the early adopters of technology to become champions within the community, the use of cascading training to diffuse knowledge and skills, the strong will to win and lead shown by the institutional leaders and the support of the national governments”* ([↑ibid.:151](#)).

One of the main conclusions drawn from the book on using ICT and blended learning in TVET edited by [↑U.u/Latchem \(2017\)](#) was that

*“it requires the creation of a training ecosystem wherein all of the stakeholders in the internal and external organisational ecosystems agree, collaborate and share resources, information and services”* ([↑ibid.:201](#)).

The author stresses that the requirements necessary for successful ICT application in TVET education include the following:

- leadership;
- resource planning and costing;
- collaboration and networking;
- professional development;
- knowledge and skills in instructional design for adult learning, self-directed learning and experiential learning;
- selection of appropriate media (such as text, audio, images, animation, video, games, etc) and methods for delivering ICT-based courses and programmes;
- learner support;
- research and evaluation.

### **7.4.3. Examples of delivery of TVET through ICT-based programmes**

ICT is itself the subject of training, and is often used to implement TVET programmes. One example of this is training based on ‘Zoom’ (video conference format ‘video over IP [internet protocol]’). The videos produced by the video conferencing are perceived as follows:

*“easy to use, helped everyone remain engaged with the project, and allowed for ongoing, timely, and relevant professional development”* (†[U.h/Burundi: Scanga, et al., 2018:3](#)).<sup>4</sup>

In Ghana, too, video clips are used as a tool for training (here in agriculture; †[U.mh/David & Asamoah, 2011:12](#)). Findings demonstrated that

*“the video viewing club is an effective [and] relatively low-cost interactive training method for providing low literacy populations with skills, information and knowledge on complex technical topics”* (†[ibid.: 38](#)).

The study identified that farmers had improved their knowledge despite any apparent gains in yield size, which was partly attributed to the methodological approach selected (†[ibid.](#)).

## 7.5. Recommendations regarding TVET policy

The second thematic area of results from the publications that we review in this chapter is TVET education policy. The information found in the coded articles relating to recommendations for education policy is broadly organised into two sections:

1. recommendations concerning TVET policy;
2. recommendations concerning TVET.

This review does not include the numerous policy suggestions that emerged in answers to other research questions. These include, for example, recommendations for a greater emphasis on practical skills. A more detailed discussion of what the U-publications noted about policy can be found in Chapters 10 through 13.

### 7.5.1. Recommendations regarding TVET policy

Some of these recommendations have broad objectives. Iyengar and colleagues suggested that TVET courses should be preceded by a mandatory 100 days of basic literacy in response to Nigeria’s low rate of adult literacy (†[U.-/Nigeria, Senegal, Mali, Guinea, Mauritania: Iyengar, et al., 2014:16](#)). The authors justify this by noting that *“basic literacy could help in the skill development of any other vocational skill”* (†[ibid.](#)). Iyengar, however, does not provide any explanation as to why this is the case, or how this broad change could be implemented (†[ibid.](#)).

Amedorme and Fiagbe proposed a similarly ambitious policy change, suggesting that *“the government should build [at least 20] more technical institutes in the country”* (†[U./Ghana: Amedorme & Fiagbe, 2013:255](#)). Amedorme and Fiagbe acknowledge the government’s intention to build more community senior high schools, some of which could instead become TVET institutions (†[U./Ghana: Amedorme & Fiagbe, 2013](#)). The authors also briefly employ review-based evidence to show the positive effect that this could ultimately have on employment.

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<sup>4</sup> This method of delivery warrants further exploration, given the occasional direct involvement of international personnel in training.



Recommendations for government policy included suggestions for both the creation of new policies and the amendment of existing ones. The latter is found in a study by Ryan, who advocates the revitalisation of the Apprenticeship Act 1965 in Zambia to support informal apprenticeships (particularly within the nation's capital, Lusaka). The Apprenticeship Act concerns *"the contractual obligations of formally registered companies and their apprentices"* ([↑U./Zambia: Ryan, 2015:16](#)). Despite the positive direction of a subsequent policy document, the TEVET (Technical Education, Vocational and Entrepreneurship Training) Policy 1996, Ryan stressed that the Apprenticeship Act itself should be reviewed ([↑ibid.](#)). Discussions were reportedly ongoing at the time of his report's publication. Ryan considers this a necessity due to the failure of the Apprenticeship Act to focus sufficiently on apprenticeship opportunities in the informal sector ([↑ibid.](#)).

Among the diverse suggestions for new policies, this review also notes the work of Kijima and colleagues, who suggest broader policy changes to enhance the impact of training ([↑U.u/Uganda: Kijima, et al., 2012](#)).

For example, they write that while further training for farmers is useful, they do not consider it sufficient. Vocational training policy must offer other support measures in addition to training, e.g., investment in technology for agricultural equipment that would complement training projects (the study focused on rice producers ([↑U.u/Uganda: Kijima, et al., 2012:1616](#))).

Similarly, an investigation into the requirements for construction craft skills found that government funding of worker training would be best supplemented by a sector-specific levy upon businesses ([↑U.h/Zambia: Muya, et al., 2006](#)).

Notably, Davis and colleagues, speaking on agricultural education and training, suggest that creating the right policy environment in SSA would require,

*"among other things, developing courses on research and technology management and facilitating policy dialogue among different actors in the innovation system that put policy-makers into direct contact with researchers, research managers, private firms, and civil society"* ([↑U.mh/Mozambique: Davis, et al., 2008](#)).

Policy recommendations for ICT – a frequent theme throughout this review – also re-emerged in these studies, with Konayuma calling for the promotion of Open Education Resources (OERs) and wikis<sup>5</sup> in Zambia by government departments / authorities, including the Ministry of Science, Technology and TVET and the TVET Authority ([↑U.h/Zambia: Konayuma, 2013](#)).

### 7.5.2. Recommendations regarding TVET providers

When considering policy recommendations for TVET providers, the use of ICT and ICT training was again a common theme. Researchers advocated the use of technology by lecturers in TVET departments ([↑U.h/Kenya: Agufana, 2015](#); [↑U.h/Kenya, Rwanda: Agufana, 2018](#)). A recommendation was made by Hlophe and Mindebele for arts teachers in vocational schools to be provided with ICT training ([↑U.u/eSwatini: Hlophe & Mindebele,](#)

2001). Studies also suggested that those providing TVET should employ lecturers with a *“higher education qualification”*, who, according to Agafuna, *“would be more skilled and comfortable with ICT”* (†<sup>U.h</sup>/Kenya: 2015).

Furthermore, the importance of qualifications among those delivering TVET was emphasised, even in the absence of ICT. Alade stated that a

*“postgraduate diploma certificate in education should be a condition before higher technicians could be employed in technical education curriculum delivery”* (†<sup>U.w</sup>/Nigeria: Alade, 2015:74).

Policy recommendations relating to the delivery of TVET initiatives also noted the importance of teachers' experience in the relevant industry. This is evidenced in the suggestion that experienced artisans should play a greater role in TVET education (†<sup>ibid.</sup>).

## 7.6. Recommendations of the studies regarding further research

We now consider those U-publications which recommend further research. The level of specificity of these recommendations for further research differs, and we have grouped the studies accordingly:

1. publications that suggest further research on the general area being considered;
2. publications that advocate obtaining follow-up information on the specific intervention / event being considered;
3. publications that call for replication (or an expanded replication) of the study design employed.

### 7.6.1. Recommendations regarding research in cognate areas

Studies that involved a synthesis of the research commonly fell into this category because they identified research gaps across differing topics. One such study by Colley found there to be

*“a huge shortage of peer-reviewed, published research on all aspect[s] of teacher education and training in The Gambia, Liberia, and Sierra Leone”* (†<sup>U.-</sup>/Nigeria, Gambia, Ghana, Liberia, Sierra Leone: Colley, 2014:226).

Chiksanda also believes that there is a need for broader research to address existing gaps in research; in his field of research he has identified a lack of

*“research towards a better understanding of pedagogical practices in technical education classrooms in sub-Saharan African countries”* (†<sup>U.h</sup>/Malawi: Chiksanda, 2011:368).

Hoosen and Butcher highlight a lack of evidence on the effect of ICTs on the efficiency of TVET programmes, and therefore recommend further research (†<sup>U.-</sup>/South Africa, Zambia, Namibia, Botswana: Hoosen & Butcher, 2017).

### 7.6.2. Recommendations for follow-up research

Other studies suggest further treatment of topics that are directly relevant to the study that has already been undertaken. Coker and Majuta, for example, proposed a number of topics beyond the scope of their initial investigation into group counselling in Botswana ([†U.m/Botswana: Coker & Majuta, 2015:114](#)). Focusing on consultants born in Ghana and trained in the USA, they ask:

*“what cultural transitions and adjustment do [participants] make in order to fit back into their native-born society, while at the same time attend[ing] to their professional identities as U.S. trained professional counsellors and educators?”* ([†U.m/Botswana: Coker & Majuta, 2015:114](#)).

David and Asamoah also suggested additional research into a topic immediately connected to their investigation ([†U.mh/Ghana: David & Asamoah, 2011](#)). Their study emphasised the need for more research into aspects of video-led TVET, focusing on

*“the impact of participatory versus conventionally produced videos and the cost”, and the “effectiveness and scalability of video training relative to other face-to-face, interactive methods such as farmer field schools”* ([†U.mh/Ghana: David & Asamoah, 2011](#)).

Occasional suggestions were made by researchers for exploring particular research methods in the context of the topic under discussion. Similarly, Coker and Majuta highlighted the need

*“to explore culturally appropriate indigenous research methods”* for group counselling practice ([†U.m/Botswana: Coker & Majuta, 2015:114](#)).

Studies also considered the need for research on corresponding interventions (within the same topic area). These included Mano and colleagues who, in their investigation of the impact of basic managerial training, noted the importance of subsequent investigation on advanced training in order

*“to explore what factors help industrial clusters enter the quality improvement phase successfully”* ([†U.h/Ghana: Mano, et al., 2012:24](#)).

### 7.6.2. Recommendations for replication studies

Many papers called for further investigation into the specific event or intervention under consideration. For example, research concerning the trauma team training programme in Tanzania recommended further evaluation in future years *“as the course becomes better established”*, in addition to consideration of the same intervention in rural areas ([†U.h/Belwal, et al., 2010:883](#)). The aforementioned study by David and Asamoah also called for research on a larger scale to provide additional, more conclusive, information on the impact of a video club initiative ([†U.mh/Ghana: David & Asamoah, 2011](#)). Lastly, a study concerning hospitality and tourism education suggested further, more extensive, research into the very issue under investigation, involving a greater number of universities ([†U.h/Uganda: Tukamushaba & Xiao, 2012](#)).

Some authors were even more explicit in their recommendations for future research, and called for a replication of the research design they had applied. These included authors in Kenya, who called for the replication of their study on tourism education in the same context but with a larger sample, and suggested it could be extended to include additional tourism sectors ([↑U.m/Kenya: Mayaka & Akama, 2007](#)). Lange and Benavot also recommended additional research to “*replicate the presented results*” ([↑U.-/Came-roon: Lange & Benavot, 2016:190](#)).

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## Chapter 8. Models for Designing, Developing and Delivering TVET<sup>1</sup>

This chapter presents an overview of the TVET models that are discussed in the research literature, and looks at issues relating to them. This includes aspects of the design, development and delivery of TVET, including pedagogical or programmatic proposals (RQ7.a, RQ7.d, Chapter 4.3.). We also consider the characteristic dimensions of TVET, such as the cooperative dimension and the temporal dimension (distance learning, blended learning, collaborative learning, in-service, work-based, school learning, RQ7.b/RQ7.e, Chapter 4.3), as well as the two dimensions of formality (formal vs. informal) of teaching and learning (RQ7.c, Chapter 4.3). This discussion necessarily requires the repetition of some elements from the presentation in Chapter 4.4.1. and in Chapter 6.

### **Research questions considered in this chapter**

The research questions considered in this chapter are listed in the box below.

### Research questions considered in this chapter

**RQ7. TVET models** that are discernable in the literature; the **main lessons** in designing, developing and delivering TVET models.

**[RQ7.a]** What **pedagogical or programmatic designs** are researched in the literature? Which models of TVET are used (or planned) in SSA? For example: distance learning, blended learning, in-service, pre-service (college), work-based, school-based, formal vs. informal.

**[RQ7.b]** What are the **key features** related to designing, developing and delivering TVET models?

**[RQ7.c]** Is the **formality of TVET education and TVET education programmes** (formality vs. informality) in each context a differentiating feature?

**[RQ7.d]** What **pedagogical / classroom approaches** are being used to deliver TVET?

**[RQ7.e]** Are the **practical components** of programmes a factor that makes them stand out in any way? (For example: cooperation between college and business as places of learning.) Are there already dual approaches that have been considered? Is the degree of practical components (e.g., cooperation school-enterprise) in each context a differentiator?

### Conclusions of this chapter

Since a practice-oriented TVET approach is favoured across all studies, we classify those TVET models currently being used according to their degree of practice-orientation (cooperative dimension). We divided them into three different categories: Type K1 Models with a predominantly theoretical profile and little practical experience, Type K2 Models with approximately 70% workplace-based activity and 30% of activity at a devoted learning centre, and Type K3 with almost entirely workplace-based education.

We identify examples of alternative models of TVET that highlight the ways in which the aforementioned models could be enhanced. Firstly, distance learning models highlight the use of ICT in TVET, evidenced in several settings (e.g., in Uganda, Nigeria, South Africa, Gambia).

Additionally, CPD and in-service approaches also emerge in the literature, including short-term courses on current topics, mentoring-based courses, informal literacy courses to increase the educational maturity in the informal sector, and multiplier models. Such approaches can be used to make TVET more relevant to the working environment, without utilising drastic system-change-type transformations.

A discussion of pedagogical approaches employed in TVET follows. Whilst non-interactive approaches are still commonplace, interactive and ICT-enhanced pedagogies are regularly emphasised. Findings relating to practical training suggest that greater emphasis must be put on practice-focused educator / teacher professional development. This was identified across multiple sectors, multiple types of courses and for both the formal and informal sectors. The aim – this is explained in several of the studies

– should be to offer an interactive TVET in which authentic practice-relevant tasks are solved. The large informal education sector must also be included. As with the other chapters, the subsequent sections offer additional details of the points discussed in the summary above.

## 8.1. Programmatic and pedagogical designs

This section considers programmatic and pedagogical designs (RQ7.a). The literature indicates that a number of programmatic designs are being employed in SSA. Broadly, initial TVET approaches can be categorised by the extent to which they involve practical components (cooperative dimension). For congruence with the German version of this report, we use the letter ‘K’ with reference to the German term ‘kooperativ’. Doing so, we obtained three overlapping models: K1, K2, K3.

1. **Type K1.** Formalised college-based courses (focusing on theoretical teaching, with, for example, the vast majority consisting of theoretical lessons (say 80%) and a small amount of workplace learning (say 20%, in or outside the college). The K1 approaches are predominantly to be found in the health sector (evidenced in South Africa, Cameroon, Uganda and Kenya).
2. **Type K2.** Formalised, dual-system approaches (involving approximately 70% workplace-based activity and 30% of activity at a devoted learning centre, following the proportions identified in Ethiopia ([†Ethiopia: Krishnan & Shaorshadze, 2013](#)). Type K2 models aim at college-based education with a large practical component (at times equivalently weighted), and share aspects with dual systems. Such models have been tested by many SSA states (Ethiopia, Mozambique, Mali, Malawi, Botswana, Tanzania), but as yet have not been implemented at larger scales.
3. **Type K3.** Apprenticeship-only approaches (which are almost entirely workplace-based, with little or no theoretical component). Type K3 models encompass informal education and can be found across SSA. As a rule, they consist entirely of informal work-based training situated almost exclusively at the workplace. Although this form of TVET is well established in many settings, it is often poorly recognised and not included in TVET policy.

Overall, these three types correspond to different points within the cooperative (transversal) dimension (Chapter 4.4). On the formality dimension, Type 3 designs could be categorised as both formal and informal, depending on both the formality of the TVET sector (whether relevant to a government-regulated economy or the grey economy) and the formality of TVET provision (Chapter 4.3). Any of these types could be expansive or restrictive definitions of apprenticeship (Chapter 4.4.1). In addition to types K1, K2 and K3, the analysis of U-literature suggested two more categories (Z4 and Z5) that are related to both the cooperative and temporal dimensions:

4. **Type Z4.** Technology-supported distance learning (both initial and in-service);
5. **Type Z5.** In-service approaches and continuing professional development (CPD).

Here the letter ‘Z’ refers to the German term ‘Zeit’. Naturally, this list does not cover all possible approaches. However, those five models (K1, K2, K3, Z4, Z5) occur most frequently in the literature.

### 8.1.1. Examples of formalised, college-based courses (Type K1)

Formalised theory- and degree-based K1 approaches (evidenced in South Africa, Cameroon, Uganda and Kenya) were frequently considered in the literature that we surveyed. Various examples within numerous sectors have been found, some of which we provide further details of here.

For example, in the health sector, there is a four-year course (involving one year of basic science and three years of professional studies) for pharmaceutical workers in South Africa ([↑South Africa: Summers, et al., 2001](#)). Similarly, within the education sector, formalised approaches are also commonly evidenced. This is, for example, true of initial teacher education (‘ITE’) with a duration of one to three years in Cameroon (e.g., [↑Cameroon: Wohlfahrt, 2018](#); see also, [↑Uganda: Tukamushaba & Xiao, 2012](#)), as well as of additional courses at state, private or church vocational schools, e.g., in Zimbabwe ([↑Zimbabwe: Samkange, 2013](#)). Pupils who aspire to an agricultural education (‘ATVET’, ‘agricultural technical and vocational education’ ([↑Ethiopia, Benin: Walker & Hofstetter, 2016](#)), or who would like to work in the tourism sector ([↑Uganda: Tukamushaba & Xiao, 2012](#)), can also generally take advantage of formal, vocational school offers. This also applies to many skilled trades. Approximately 150 rural craft schools in Cameroon offer two-year courses in carpentry, pottery, masonry and agriculture ([↑Cameroon: Che, 2007](#)).<sup>2</sup>

In Zambia, teachers and managers can attend formalised, theory-based programmes in the field of TVET. The basis for these offers is a collaboration between the University of Bolton (UK) and the Ministry of Science, Technology and Vocational Training (MSTVT; [↑Zambia: Smith, 2010](#)).

### 8.1.2. Examples of formalised, dual-system approaches (Type K2)

Within the U-literature, approaches labelled explicitly as ‘dual approaches’ were discussed in only three instances. National-level, dual-system approaches are currently evident in Ethiopia ([↑Ethiopia: Krishnan & Shaorshadze, 2013](#)) and Mozambique ([↑Mozambique: Sandirasegarane, et al., 2016](#)). At the programme level, an explicit dual-system approach was only considered in one instance: Malawi ([↑Malawi: Safford, et al., 2013](#)). Additional evidence for dual-system-type approaches are available for Mali and Botswana ([↑Mali: Kingombe, 2011](#); [↑Botswana: Galguera, 2018](#)). Company-based TVET is also reported to form a key component of TVET education in Uganda (Uganda: [↑Bananuka & Katahoire, 2008](#)). We note that aspects of Type K2 are also discussed in Section 4.4.1. The

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<sup>2</sup> In 2007, rural craft schools operated in a nation that *“does not have a government-controlled dual track system for general and vocational education”*. No further information on the model specification of the craft schools is provided ([↑Cameroon: Che, 2007](#)).



discussion below necessarily requires the repetition of some elements presented in those sections.<sup>3</sup>

### Status of the dual system in Ethiopia

According to a study by Krishnan and Shaorshadze ([†Ethiopia: Krishnan & Shaorshadze, 2013](#)), Ethiopia is interested in applying dual models for TVET at least partially, tailored to its own national context.

*“TVET students in Ethiopia have to apprentice 70% of the time spent in the programme”, with TVET colleges “tasked by the government to identify potential employers who can provide apprenticeship experience” (†ibid.:18).*

While this article acknowledges that the German dual system is internationally admired, it reports that a

*“challenge in implementing the dual system is that a company has to be convinced that participating in the apprenticeship scheme is ultimately to its own benefit” (†ibid:7).*

This is reflected in Ethiopia, where despite successes in engaging (often government-based) employers from particular industries, *“other companies resist [participation] and see TVET apprentices as a burden” (†ibid:18)*. This was reflected in the differing responses from interviewees who were members of public and private organisations. While public enterprise leaders *“expressed satisfaction with the TVET system and the quality of its graduates”*, a manager of a large private company stated *“that he would not participate in the apprenticeship”* and was even opposed to hiring TVET graduates in some instances. People who were not dual-trained were, in his opinion, *“less expensive and less liable to be ‘poached’” (†ibid:18)*.

### Status of the dual system in Mozambique

At the Universidade Pedagógica in Maputo, technical teachers are trained to provide work-related instruction at technical colleges. However, this cannot quite be equated with a dual approach. Overall, information on developments in Mozambique is sparse. Looking at the available research reports that can be found online, it becomes clear that Mozambique

*“runs a dual vocational education and training programme as a culmination of elementary and secondary-school TVET programmes” (†South Africa, Guinea: Sandirasegarane, et al., 2016:108).*

Grade 6 pupils spend

*“three years in limited practical training for a profession and then another three years in more advanced theoretical and practical training” (†ibid.).*

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<sup>3</sup> The term ‘apprenticeship’ can also refer to the practical component of formalised dual-system approaches (c.f. Ethiopia; also the German dual system, i.e., Type K2).

Students in Grade 10 enter a four-year educational training programme ([↑ibid.](#)). As in Ethiopia, the level of success is limited; these programmes are beset by problems including inadequate funding, inadequate provision of specialist educational or technical instruction – neither of which are at an internationally recognised level of knowledge, and dated curricula ([↑Mozambique: Mucauque, 2010](#)).

In 2010, Mucauque published far-reaching proposals in his dissertation for reforming vocational training in Mozambique which were yet to be implemented ([↑ibid.](#)). Overall, the information on developments in Mozambique is sparse.

### Status of the dual system in Malawi

An apprenticeship programme for women in rural areas reportedly possessed “*dual academic–vocational components*”, through its delivery of “*simultaneous access to work, access to study and opportunities for reflection on learning*” ([↑Malawi: Safford, et al., 2013:197](#)). The Malawi Access to Teaching Saltire Scholarship (MATSS) scholars work four mornings per week as classroom assistants in rural primary schools, then revise for their school teaching certificate for the rest of the working day (priority subjects: mathematics, physical science, biology and English).

This is similar to the project for training school assistants, which is also common in the Federal German state of Saxony (graduates with a technical degree or a master’s degree in technical professions already work as assistants to vocational school teachers at a vocational school during their teacher training studies at the TU Dresden.<sup>4</sup> The Malawian classroom assistants receive a bursary, have access to highly structured distance study materials for work experience and for academic subjects, and are mentored by experienced practitioners ([↑Malawi: Safford, et al., 2013](#)). The programme began in 2011 with two cohorts each working with 500 women across four districts. A detailed account of this programme’s implementation can be found in the conference paper of [↑Wolfenden and colleagues \(2011\)](#). Further details on this programme are provided below.

### Status of the dual system in Mali

A much-cited report provides insight into the dual system in Mali ([↑South Africa, Ethiopia, Benin, Cameroon, Angola, Senegal, Mali: Walther, 2008](#), summarised in [↑de Largentaye, 2009](#), and [↑Sierra Leone, Mali: Kingombe, 2011](#)). According to [↑Kingombe \(2011\)](#),

*“in Mali, the effort to address the needs of the real economy has led to support a [...] dual training system”* ([↑ibid.:37](#)).

This system was formally introduced in 1997, and combines apprentices’ work being supervised by a trained artisan (80% of the time) with formal courses in TVET centres (20% of the time). Despite the evaluations showing significant improvement of skills, as well as its contribution to social inclusion and an improved employment rate, the scope of the dual system in Mali remains small:

*“with about one thousand apprentices graduating every year, as compared to the 300,000 or so entering the labour market”* [↑Sierra Leone: Kingombe, 2011:38](#)).

To scale up the dual training system in Mali, de Largentay has a variety of suggestions, such as better control of costs per annum and the implementation of a proper training certification system (†Mali: de Largentaye, 2009).

### Status of the dual system in Botswana

In Botswana, an attempt was made at the end of the 1980s to introduce dual approaches with the support of the (then) Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ, now the Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ). However, it appears that the introduction was less successful than expected (†Botswana, Namibia: Galguera, 2018). Galguera states that Botswana

*“failed in its adoption of the German dual system due to its weak industrial base at that time” (†ibid.:108).*

Wilson writes that efforts to develop a TVET-friendly corporate culture in Botswana have failed, and that it has been impossible to achieve the level of integration of the elements of the German system (i.e., collaboration with social partners and companies) (†Botswana: Wilson, 2000).

### 8.1.3. Approaches to TVET entirely at the workplace (Type K3)

Apprenticeship models of Type K3 were frequently referenced in the studies we considered. This model plays a large role across SSA, particularly in the informal sector. For example, in Uganda, it is an important part of TVET (†Uganda: Bananuka & Katahoire, 2008). According to Hanson, most workers in Ghana in the informal sector learned their trades in this manner (†Ghana: Hanson, 2005). He writes that the role of apprenticeship programmes goes beyond professional education, because of their *“remarkable blend of work, practical training and moral upbringing”* (†ibid.:167). We note that the notion of *“moral upbringing”* is not defined in more detail, and should be viewed critically.

Informal learning also takes place in the training of future traditional ophthalmic practitioners in Nigeria (†Nigeria: Ebeigbe, 2013). These were found to be organised in a predominantly informal manner, with 46% of apprentices being trained through father-to-son tutelage and 37% learning from relatives (†ibid.). Only 18% of these apprenticeships possessed what might be considered as more ‘formal’ characteristics (specifically, a signed agreement and payment of money to the apprentice) (†ibid.).

Another example of informal TVET in the informal economy is the training of potters – starting in childhood – in Cameroon (†Cameroon: Wallaert, 2008). Through a multi-stage observation, and repetition-dominated processes, the apprentice completes her training when she reaches 15 years of age. Subject to an initiation process and the apprentices’ engagement to a future husband, this point is

*“marked by a celebration that implies that the apprentice is capable of making every type of vessel” (†ibid.:2).*

In Wallaert's view, this type of K3 TVET is an essential component in the *social maturation* of the trainees. According to Wallaert, this can be seen as a form of more comprehensive learning (†[ibid.](#)).

We note that this publication is a book chapter in †[Stark and colleagues \(2008\)](#). Unfortunately, the whole book was not available to us, so we cannot determine whether and to what extent child protection is discussed. In our view, this form of TVET must also be discussed from an ethical point of view and in terms of child protection.

Apprenticeships can possess formal characteristics too. Company-based TVET Type K3, for example, can clearly take place in regulated / taxed industries. This form of TVET is used by some companies in SSA in response to skills shortages and *"as a strategy for enhancing their competitiveness by adapting to new skills and technology"* (†[Ghana, Kenya, Tanzania, Uganda: Kweka, et al., 2006:2](#)).

Atchoarena and Delluc mention different forms of TVET that take place only in the workplace (type K3) (†[Atchoarena & Delluc, 2002](#), cited in †[Oketch, 2007](#); also see †[Mali, Senegal: Atchoarena & Esquieu, 2002](#)). In their opinion, the differences are regional. This means that certain characteristics are more common in francophone or anglophone countries (†[ibid.](#)). However, on the basis of the U-literature (since 2000), this distinction is not very noticeable.

Walther states that in West Africa,

*"existing studies on traditional (or informal) apprenticeship generally distinguish between two major types of apprenticeship: Sahelian apprenticeship and coastal apprenticeship"* (†[Walther, 2008](#)).

Sahelian apprenticeship (Burkina Faso, Mali, Niger, etc.) is

*"characterised by being underpinned by the substitution of family relationships by relations between employers and children", i.e., it is an informal-family-type TVET* (†[ibid.](#)).

In contrast to Sahelian-type apprenticeship, the *"coastal apprenticeship"* (in, according to Walther, Benin, Togo and Senegal in West Africa),

*"is paid for and is thus based on a commercial relationship between employers, apprentices and their families"* i.e., an informal-formal-type learning (cf. Chapter 6; †[Walther, 2008](#)).

According to Walther, some of the difficulties with both schemes are

*"the insufficient qualification of master craftsmen and their inability to theorise certain concepts or techniques"* and the *"lack of training methodologies that suit the educational levels and learning cycles of the young people being trained"* (†[Walter, 2008](#)).

Höjlund contrasts the West African traditional apprenticeship (with *"formal contracts, training periods and certification"*) with the traditional apprenticeships in Tanzania,

which are less formal (i.e., informal-informal, c.f. Chapter 6) ([↑Höjlund, 2013](#); cf., [↑Palmer, 2009](#)).

#### 8.1.4. Examples of technology-driven and distance learning (Type Z4)

Distance learning was considered for teacher education ([↑Zimbabwe: Samkange, 2013](#); [↑South Africa: Mubika, & Bukaliya, 2013](#); [↑General: Moon, 2008](#)), for education for healthcare employees ([↑Tanzania: Nartker & Stevens, 2010](#)) and for TVET in various other disciplines (supported by higher education institutions including Makerere University, the University of Nairobi, Addis Ababa University and the University of Dar-es-Salaam ([↑Uganda: Openjuru, 2011](#))).

Some studies consider distance learning in terms of the utilisation of specific technologies such as mobile phones. Examples include the training of social studies teachers ([↑Nigeria: Adedoya & Oluwadara, 2016](#)) and nurses (with SMS messages—on the topic of anaesthesia—sent daily for one month; [↑South Africa: Duys, et al., 2017](#)).

Technology is an important feature in itself, with the literature frequently considering programmes supported by technology. For example, one study acknowledged that apprentices in electrical engineering

*“need to [update] their knowledge beyond what is learnt in the classroom or workshop” (due in part to “challenges of insufficient resources” in the aforementioned settings ([↑Nigeria: Chukwuedo, 2013:122](#))).*

Other programmes surveyed include, for example, e-learning courses provided by higher education institutions to adult learners ([↑Uganda: Openjuru, 2011](#)) and a short-term, computer-based training package for health professionals ([↑Gambia: Dawson & Joof, 2005](#)).

#### 8.1.5. Examples of other continuing professional development and in-service approaches (Type Z5)

Additional continuing professional development (CPD) and in-service TVET approaches (which do not fall into Types K1–K3 or Z4) also emerge in the U-literature. These include for example:

1. Participant-to-participant schemes (or cascade models), through which a number of active professionals in a sector pass on their newly acquired knowledge to others. This occurred in the industrial context of rice farming in Tanzania ([↑Tanzania: Nakano, et al., 2018:2](#)). Here,

*“20 farmers ... were trained on new cultivation technologies at a nearby training institute for 12 days”. These ‘key farmers’ then “held training sessions at a demonstration plot, [where they were] responsible for inviting five additional farmers [who] were expected to later train other non-trained ‘ordinary farmers’”.*

2. Non-formal education for illiterate adults and girls who have not completed school, using a model where  
*“parents and children learn together on the basis that there is a strong link between the educational achievements of young people and their mothers’ levels of education”* (†Ghana: Gaidzanwa, 2008: 20).
3. Mentorship-based TVET, which was combined with ‘in-class’ coaching and experiential learning for participating kindergarten teachers in Ghana (†Ghana: Wolf, 2018).
4. Short courses to provide specific competencies (lasting as little as 10 days) targeted at those participating in TVET courses, such as Kenya-based apprentices (with regards to solar panel systems) (†Kenya: Simiyu, et al., 2014). Such short courses can be found in different educational sectors.
5. Other CPD courses, often aimed at teachers. This includes those provided in an ad hoc manner across a number of different subjects and teacher-specific topics, including *“pedagogical skills”* and *“new curriculum programmes”* (†Kenya: Onderi & Croll, 2008:365; also cf., †Cameroon: Lange, 2014; †Cameroon: Lange & Benavot, 2016; †Various: Briquet-Duhazé, 2014).<sup>5</sup>

The diversity of other CPD and in-service approaches are representative of the wide array of TVET types found in the U-literature. This is likely to be a reflection of the diverse nature of TVET providers (see RQ19) and country contexts (see RQ16). One clear pattern is the lack of TVET approaches that are specifically ‘dual’ (Type K2). This may indicate that models that thrive in Western contexts might not necessarily be suited to sub-Saharan socio-economic settings, where problems such as limited private company participation (†Ethiopia: Krishnan & Shaorshadze, 2013) and inadequate funding (†South Africa, Guinea: Sandirasegarane, et al., 2016) were identified, which hinder implementation.

### 8.1.6. Recognising informal TVET

We also note that a number of countries do recognise prior informal learning (‘recognition of prior learning’, abbreviated as ‘RPL’).<sup>6</sup> According to Hlongwane, South Africa has the most developed system of accrediting prior learning, compared to its sub-Saharan African peers (†South Africa, Mauritius, Namibia, Seychelles: Hlongwane, 2018). Nduna states that, in 2015, South Africa published the Draft Recognition of Prior Learning Policy for the Higher Education Qualifications Sub-Framework (HEQSF; †South Africa: Nduna, 2017). This framework enables individuals to move within and between non-completed qualifications, while providing them the opportunity to advance within qualification programmes and to complete them (†ibid.). The author adds that this also

<sup>5</sup> From outside SSA, we note that Everingham and colleagues specifically addressed TVET teacher education, analysing the challenges of scholarship and industry currency in the sector (†Australia: Everingham, et al., 2018). However, the project was a pilot in Australia.

<sup>6</sup> The term RPL is used synonymously by some authors for recognition of informal learning.



accelerated *“the redress of past unfair discrimination in education, training and employment opportunities”* (†[ibid.:285](#)).

For Peliwe Lolwana (University of the Witwatersrand, South Africa; participant in the SCR focus group), however, South Africa neglects the informal sector, which she considers to be a constraint in the country. In her opinion, they might have the resources, but the neglect of the informal sector is a limitation for TVET development. In contrast, she names Ethiopia, a country that has progressed in TVET in a way that South Africa would not have been able to do.

Mauritius, Namibia and Seychelles have also developed national policy guidelines for the recognition of prior learning. In Namibia, the Community Skill Development Centres (COSDEC), created to address the high TVET dropout rates, have introduced a research-based approach to curriculum development regarding the inclusion of informal learning (see also Burkina Faso: †[Sawadogo, 2012](#)). Local market assessment and studies were used

*“to develop training programmes that are reflective of the real market opportunities available to their learners”* (†[Namibia: Galguera, 2018:133](#)).

Based on this information, COSDEC have diversified their training, implementing both long and short courses, with different skills and product focuses. Surveys carried out in seven countries support this approach showing that, for informal training schemes to be effective, they need to be tailored to the social and economic situations they are supposed to improve or develop (†[Walther & Filipiak, 2007](#)).

Through policy analysis, we found that the Uganda Vocational Qualification Framework includes the assessment of prior learning and recognition of formal and non-formal training (†[Government of Uganda, 2008](#)). The country’s ‘Formal Education Pathways’ indicate that those in non-formal skills training can obtain the ‘Trade Test Certificate’, which gives them access to technical schools, farm schools and community polytechnics. This, in turn, allows students to progress to university degrees and postgraduate studies (†[Government of Uganda](#)).

Another example is the recognition of previous learning in Kenya (KNQA)<sup>7</sup>. We also refer to the publication of the UN’s International Labour Office, which covers the topic of informal education and its recognition (†[International Labour Office, 2012](#)). Also within this thematic area are the publications of Palmer (†[Ghana: Palmer, 2009](#)) and Sawadogo (Burkina Faso: †[Sawadogo, 2012](#)).

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7 †Kenya National Qualifications Authority, *Recognition of Prior Learning*, available at <http://www.knqa.go.ke/recognizing-prior-learning/>



## 8.2. Pedagogical approaches

In this section, we look at teaching approaches within the college / classroom setting, as well as its practical components (RQ7.e). With regards to the key teaching approaches and classroom activities occurring within TVET programmes, the U-literature showed there to be:

1. regular emphasis on interactive pedagogy;
2. employment of non-interactive (lecture-focused) approaches that occasionally centre on lectures from foreign guests;
3. an interest in the employment of ICT for teaching and learning.

### 8.2.1. Interactive pedagogy: authentic tasks

There were frequent references to interactive learning in the publications we surveyed. However, they lacked clear information on the manner in which interactive practices were employed, which may be representative of an overly theoretical focus within the surveyed education literature.<sup>8</sup>

Two publications mention pedagogical approaches with clear details on practical implementation:

1. Safford and colleagues note that importance is placed on *“Engeström’s key ‘ingredients’ for effective learning”*, which include *“authentic tasks<sup>9</sup> and interactions with others”* (†Malawi: Safford, et al., 2013:197).
2. Lange and Benavot characterise notions of *“learner-oriented teaching”* as being central to a particular model for teacher education (†Cameroon: Lange & Benavot, 2016:21).

Cunningham and colleagues specifically detail the active learning provided (†Tanzania: Cunningham, et al., 2017). Here, information on the development of an emergency nursing course in Tanzania was based on an *“active learning approach”* and purportedly followed andragogic<sup>10</sup> principles, such as considering a person’s past experiences

*“when applying new information that may contradict current standard practices at facilities”.*

A clear indication of how this occurred was then provided. In this case,

*“participants were encouraged to share their experiences, challenges, and daily situations regarding the learning activities”, to enable them to “blend their past and new knowledge”.*

The course remained consistently interactive through a combination of activities and simulation.

A discussion on the potentials of contemporary learning theories for designing quality TVET is provided by †Sarfo (Ghana: 2016). The author proposes the integration of aspects of four learning theories for designing effective, good-quality TVET teaching

and learning for the 21st century: Behavioural, Cognitive, Situated Cognition, and Constructivist.

### 8.2.2. Non-interactive (lecture-focused) approaches

Non-interactive (lecture-focused) approaches appear to be dominant in college-based education. This is supported by evidence from the U-literature, including a UNEVOC-report:

*“Strongly established examination-oriented approach to curricula implementation is one more obstacle preventing Nigerian TVET from due development”* (†UNESCO-UNEVOC, 2012:12).

In Tanzania, pre-service teacher education was found to be predominantly lecture-based and delivered by trainers who lacked *“experience and expertise in primary education”*, thereby creating a gap between theory and practice (†Tanzania: Hardman, et al., 2012:827). An investigation into the practices of lectures at Sunyani Polytechnic—a Ghanaian institution providing TVET programmes—also showed that the majority of lecturers were most comfortable *“using traditional ways of teaching (chalk and blackboard and handouts dictating notes)”* (†Ghana: Bonsu, et al., 2013:16).

Bell discusses educational lectures by international guest lecturers at a TVET college that trains nurses (†Ghana: Bell, et al., 2014). As is often the case with guest lecturers, they present alternative pedagogical methods with technology-based approaches (†South Africa: Duys, et al., 2017). This can, of course, help to make college teachers think more thoroughly about pedagogy in the courses they offer. However, if the lectures offered by the guest lecturer are themselves barely interactive, the college teachers will hardly benefit from them in this respect, in order to support emergency nursing training in Ghana) (†Ghana: Bell, et al., 2014).

### 8.2.3. Information and communication technologies (ICT)

In line with global trends in ICT in education, many papers considered the application of ICT to TVET education, and a full account is provided in Chapter 6. In this section, we mention papers that looked at ICT specifically in relation to pedagogy. One was a descriptive quantitative investigation into the use of technology by TVET lecturers in Kenya, which suggested that

*“90% of lecturers agreed ... that instructional use of ICT greatly improved the instruction they gave”* (†Kenya, Rwanda: Agufana, et al., 2015:85).

In addition, video-mediated learning in Benin enabled insight into local practices

*“by having farmers show and explain how the concerned technology works”* (†Benin: Okry, et al., 2014:28).

In Malawi, the use of ICT was not only considered as a means of delivering TVET: it was a programme outcome in itself, because healthcare workers were being trained to solve working tasks with the ICT tools in the programme (†Malawi: Mastellos, et al., 2018).

We note that the OER4Schools<sup>11</sup> approach is unique, in that the full programme is freely available (as an Open Educational Resource) alongside research publications spanning an extended period of time. It is, therefore, possible to relate the research outcomes back to the exact resources that were used in achieving this outcome (†Haßler, et al., 2018; and references therein).

### 8.3. Findings relating to practical components of TVET

We now look at practical components within TVET, which are closely related to the cooperative (transversal) dimension (Chapter 4.4). In many of the programmes considered in the surveyed publications, no practical components have been discovered (see Chapter 8.3.4.). Despite this, there are instances where they are utilised. Sectors that have practical TVET components include education and health. Home-based entrepreneurs and artisans have also been found to offer practical components in their TVET. Further detail on these findings are presented in the sections below.

#### 8.3.1. Education sector: initial teacher professional learning

There is a broad body of literature considering the importance of practical experiences in teacher professional development (†Haßler, et al., 2018, and references therein). Within the U-literature, the cascade model of teacher training considered by Lange and Benavot was reported to include ample opportunity for knowledge application through practice (†Cameroon: Lange & Benavot, 2016). During teacher training, theoretical modules were “*followed by practical modules in programme schools*” (†ibid.). State Initial Teacher Education courses were generally reported to include practical components, with Zimbabwean teacher trainees, for example, completing a four-month practical period during their two-year course (reported in an article considering the integration of ICT into teacher education (†Mozambique, Zimbabwe: Musarurwa, 2011). Other programmes in the education sector sought to impart knowledge to participants through the observation of teaching practice by school mentors (†Malawi: Safford, et al., 2013).

#### 8.3.2. Health sector: practical components

Within the health sector, some of the publications deal with the use of practical components in various TVET programmes. These programmes require practical work (not always at the future place of work), in which what has been learned is applied. One example of this approach described a clinical exercise book for a nine-month programme in rural Uganda (†Uganda: Miceli, et al., 2012).

Another example is the training of midwives in several countries. The training involves supervised practice procedures on anatomical models and consenting patients (†Zambia: Prager, et al., 2012), and learning to provide pre- and post-natal care to

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11 †OER4Schools Professional Learning Resource available at [www.oer4schools.org](http://www.oer4schools.org); publications at <https://bjohas.de/Publications>

mothers (↑Ethiopia, South Sudan, Uganda: Cabridens & Tolve, 2012). Other training for nurses, provided through accredited institutions in Kenya, involves varying levels of on-site and off-site practical training elements. However, the scope of these practice units varies according to the type of programme (↑Kenya: Appiagyei, et al., 2014).

### 8.3.3. Practical components in apprenticeship contracts in Ghana

Hanson's study offers a fascinating perspective on urban livelihoods and apprenticeship contracts of the early 2000s in Koforidua, Ghana (↑Ghana: Hanson, 2005:163). We note that the artisans and entrepreneurs who offer such apprenticeship contracts include woodworkers, refrigerator repair-people, metalworkers, tailors, hairdressers and seams-tresses (↑Ghana: Hanson, 2005). The apprenticeships share common practical components and provide a *"hands-on, practical approach to training"* (↑ibid.:167). However, practical learning is largely provided to learners in exchange for fees (which conflicts with other interpretations of apprenticeships, in which apprentices receive remuneration during training). In Koforidua, Ghana, these apprenticeship arrangements are formalised by contracts established between apprentices and tutors that entitle the tutor to a fixed sum before, during or after completion of an apprenticeship (with further indirect remuneration also obtained through the 'free labour' provided by an apprentice) (↑ibid.).

Hanson analyses local-level apprenticeship contracts and associated networks, and notes that such contracts can have negative consequences. For instance,

*"demands of reciprocity or support from co-network members, neighbours and family, can be so taxing that some individuals opt out of the network".* Nevertheless, Hanson contends that *"apprenticeship contracts and the network spaces they create have created a new social cohesion and community that transcend the traditionally known spaces of social support, i.e., ethnic ties, family ties or even institutional support"* (↑ibid.).

### 8.3.4. The lack of practical components in pre-service programmes

Work-oriented components are often missing from training programmes. As noted above, such a lack of practical components is commonly considered to be a programme limitation (RQ7a). The surveyed literature characterised certain programmes as being centred on 'theoretical' teaching (see, for example, a study that focused on nursing education in Tanzania: ↑Muganyizi, et al., 2014).

In their consideration of tourism education and training, Mayaka and King note that there is a lack of formal training incorporating *"on-the-job experience [which] poses a challenge for both industry operators and education-providers"* (↑Kenya: Mayaka & King, 2002:130). It was noted that a Bachelor's degree course<sup>12</sup> in Catering and Hotel Manage-

12 As noted above, we are including programmes irrespective of the qualification, as long as they fit into our operational definition of TVET, cf. Chapter 4. This course effectively fits the description of 'initial TVET' and is thus included here.

ment provided no facilities to teach practical skills (although these still appeared to be learnt by students) (†Uganda: Tukamushaba & Xiao, 2012).

In considering TVET teachers' perspectives on technical education, Chikasanda and colleagues report that interviewees wanted their students to *"be given more time to practice"*, with a *"work-oriented approach"* being considered more suitable than an examination-focused one, particularly in the study of metalwork and woodwork (†Malawi: Chikasanda, et al., 2011:374). There is also a reported consensus among Sudanese teachers *"that the practical training during their initial education is too weak"* (†Sudan: Ahmed, 2010:116).

Similarly, an analysis of family planning (FP) teaching in clinical and nursing education found that *"none of the assessed practical modules or sessions in all [evaluated] schools was devoted for family planning"* (†Tanzania: Muganyizi, et al., 2014:5). Furthermore, less than one in four of the evaluated schools had practice rooms (although three in four were connected or linked with a family planning clinic). The resultant lack of opportunity for practical exposure was identified as being of concern to FP teachers.

Finally, it was recommended that TVET teacher training programmes in Ethiopia had both an inbuilt 'industrial practicum'—where prospective teachers could practise what they had learned *"in an authentic workplace setting"*—and an inbuilt 'school practicum'

*"in which teacher training students go to TVET schools for direct observation, mentorship and actual teaching practice with critical supervision"* (†Ethiopia: Solomon, 2016:72).

### 8.3.5. Short courses (CPD)

Practical training in the form of short courses (continuous professional development, 'CPD') were also identified in Kenya. For example, training of professionals in the use of solar panels (over a 10-day total period) consisted of five practical sessions:

*"module mounting, solar cell/module characterisation, storage batteries, system sizing, wiring, installation and commissioning"* (†Kenya: Simiyu, et al., 2014:821).

After practical sessions, the small groups that participated spent one hour discussing and presenting their experiences (†ibid.).

Similarly, a five-week training course for Ebola preparedness among district surveillance officers in Côte d'Ivoire, Guinea-Bissau, Senegal and Mali, included two field projects:

*"conducting a data quality audit by visiting a minimum of 3 health posts in their district" and "drafting a surveillance summary report of nationally reportable diseases"* (†Nigeria, Guinea-Bissau, Sierra Leone, Senegal, Liberia, Mali, Guinea: Cáceres, et al., 2017:175).

Field-based training for Ugandan rice farmers was also mentioned in the literature. The participants are involved in the creation of an experimental demonstration rice field, the

construction of school beds and irrigation canals, and in harvesting the crop ([↑Uganda: Kijima, et al., 2012](#)).

Finally, we note that sometimes, short courses are associated with companies outside SSA, such as training for road construction provided by Chinese enterprises in Kenya ([↑Kenya: King, 2010](#)).

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## Chapter 9. Inclusion-related Challenges and Policies<sup>1</sup>

This chapter considers inclusion and gender issues in TVET in SSA, as well as related challenges and strategies (RQ12). Here, we present an analysis of the state guidelines of some countries in SSA that are related to the laws and regulations on inclusion. The following discussion offers information on institutional guidelines and strategic plans evidenced through our internet search (RQ21). In Chapter 13 we discuss challenges to implementing these inclusion-related policies.

### Research questions considered in this chapter

The research question considered in this chapter is listed in the box below.

#### Research questions considered in this chapter

**[RQ12.]** What are the main **inclusion-related challenges** (equal treatment, e.g., gender, disability) in TVET in SSA? What are the successes and failures with respect to inclusion in TVET implementations?

### Conclusions of this chapter

All of the research on gender in the studies we reviewed emphasises acceptance of the fact that women have the same capabilities for acquiring professional skills and competences as men. Yet despite this, publications from Ethiopia, Ghana, Uganda, Mozambique, Benin and Burkina Faso indicate that women are often unable to utilise their skills because the relevant opportunities for TVET are not always available to them. Researchers from Tanzania, Zambia and Zimbabwe found that women often do not even consider apprenticeships. The same structural gender inequalities (e.g., caring responsibilities and low participation of women in mathematics, computer science, science and technology subjects – so-called STEM subjects) affect the choice of occupations and TVET as in Western Europe. This is shown by studies from Ghana, Kenya, Benin, Congo, Burkina Faso and Mozambique. It is established that teachers / educators play a central role in addressing gender inequity, so their education should become an important field of research (cf., publications from Ghana, Nigeria, Sierra Leone, Gambia, Liberia and Malawi). Kenyan studies, in particular, examine the right to — and the available opportunities for — free and equal access to TVET for all people.



This chapter also discusses the disadvantages of other vulnerable groups in society. Some people have fewer opportunities for education than others because of their economic status, locality, age, ethnicity, religion and sexual orientation. One study from Uganda indicates that TVET for refugees can be a way to integrate them into a new community (Section 9.4.6). In terms of access to the labour market, SSA often also considers young people to be disadvantaged (Section 9.3.5.).

Even those young people who have TVET may still be disadvantaged when entering the labour market due to having only been taught overly theoretical TVET, and having limited experience in the workplace compared to older people (Section 9.3.5.).

We note that most of the documents we have reviewed simply indicate that access to TVET needs to be facilitated for minority groups and that governments and state authorities should be encouraged to do so. However, specific suggestions as to how this could be implemented in practice— or has already been implemented — are rarely found. Section 9.3. presents some examples from Ghana, Botswana, Kenya and Eritrea.

In employment relationships, and thus also in TVET in industrialised countries, approaches to equal opportunities and integration have long played an important role ([↑Hobler, et al., 2020](#)). According to a study from the Institute of Economic and Social Research in Düsseldorf, even in countries with the highest standard of living, progress towards integration has been slow, and is far from complete ([↑ibid.](#)).

In addition to social, societal and family aspects, cultural aspects also have a far-reaching influence on the current status and future development opportunities ([↑ibid.](#)). Certainly it is the case that there are significant cultural obstacles regarding equality of opportunity and integration. Arguably, these existing overarching conditions rarely permit a direct replacement of existing approaches ([↑Kleefeldt, 2018](#)). Nevertheless, the focus should be on exploring how experiences in other countries and cultures could contribute to driving forward progress on the pertinent issues, avoiding potential delays and dead-ends.

As with the other chapters, the subsequent sections offer additional details of the points discussed in the summary above.

## 9.1. Gender

We now consider women's access to education. We note that none of the documents we discovered contain any discussions on non-binary gender.

### 9.1.1. Women's access to education

Mulder and Roelofs' review notes that over the last 20 years, the presence of women in TVET programmes has increased all over the world ([↑South Africa, Ghana: Mulder & Roelofs, 2012](#)). Alade examines the acquisition of professional skills and basic professional knowledge in technical training, and cannot demonstrate any significant gender differences ([↑Nigeria: Alade, 2015](#)). Thus, Alade asserts that

*“the low enrollment of females in technical education programmes in Nigeria is probably the result of the belief that technical education is mostly for males” (†ibid.:65).*

In Mozambique, Romiszowski states that

*“the officially verified figure for the proportion of females in the formal, public-sector, secondary TVET system in 2011 was 34.1%” (†Mozambique: Romiszowski, 2015).*

Ethiopia, Botswana and Uganda stand out as the only countries where we are able to find official state documents dedicated specifically to addressing the issue of gender in education. In Ethiopia, there are two documents that were both published in 2014: the Gender Strategy for the Education and Training Sector (†Government of Ethiopia, 2014) and the Gender Responsive Pedagogy Manual (†Government of Ethiopia, 2014). The latter is an adaptation to the Ethiopian context of the Teachers’ Handbook on Gender-Responsive Pedagogy, a document developed by the Forum for African Women Educationalists to be used as a practical guide for developing learning and teaching processes that are gender-responsive within an African context (†FAWE). According to the study by Galukande et al., measures for gender justice in secondary education should not be the only focus (†Uganda: Galukande, et al., 2018).

It is important to ensure that girls have equal access to education early in their educational careers. According to Galukande and colleagues, schools should be sensitised to the topic, and developments

*“such as improving access at the secondary level for science subjects for girls and rural children need to be consolidated if we are to expect real change” (†ibid.:94).*

For similar reasons, the Revised National Youth Policy in Botswana includes gender as a cross-cutting issue, stating that

*“progress has been made with gender equality but challenges remain and need to be addressed” (†Government of Botswana, 2010: 3).*

It establishes strategies aimed at altering the disadvantages faced by women, which are listed as follows:

*“Women have long been disadvantaged in many respects, in education, training, income, economic rights and decision-making. Young women face particular difficulties in society such as higher levels of unemployment as compared to young men, few occupational opportunities and high number of pregnancies” (†ibid.:25).*

We note that this quote describes a *“high number of pregnancies”* as a *“particular difficulty”*.

Uganda also has a Gender in Education Policy, currently in its second edition (†Government of Uganda, 2016). The first policy was published in September 2010 and

was intended to last for six years. The current Gender in Education Policy has the following main goals and objectives:

1. Enhance equal participation for all in the education system;
2. Promote the provision of relevant knowledge and skills equally to males and females;
3. Ensure gender-responsive planning, budgeting, programming, monitoring and evaluation of education;
4. Promote an enabling and protective environment for all persons.

The Ministry of Education in Uganda stresses that the introduction of gender equality in education is a task in which all partners involved in education must participate:

*“The successful implementation of the Second Gender in Education Policy will depend on the synergistic and collective actions of all stakeholders including the Education Development Partners (EDPs), Ministries, Agencies and Local Governments (MALGs), Religious Institutions, Cultural Institutions, Satellite Institutions, Civil Society Organisations (CSOs), Private Sector and all Ugandans.”* (†Government of Uganda, 2016:i).

### 9.1.2. Women in TVET

According to the reviewed literature, women are under-represented in TVET. Vandenbosch’s review found that, while women play an important role in agriculture, they are still under-represented in agricultural education and training (†Ghana, Uganda, Benin, Ethiopia, Burkina Faso: Vandenbosch, 2006). NEPAD’s literature review found that, for agricultural TVET to reach youth and women, education and capacity-building programmes must be defined in a more participatory way, and gender aspects must be taken into consideration when deciding the themes and setting the timing of these trainings (†Benin, Ethiopia, Namibia and Sierra Leone: NEPAD, 2013). The study suggests that this could be achieved by creating youth platforms that would determine training and capacity-building needs. NEPAD’s review also concludes that there should be a focus on agricultural best practices and knowledge sharing. As Vandenbosch notes, gender issues must be considered explicitly because

*“there is little or no guarantee that men actually transfer agricultural information, knowledge and skills to women farmers”* (†Ghana, Uganda, Benin, Ethiopia, Burkina Faso: Vandenbosch, 2006:10).

According to Vandenbosch, it is important to enshrine the rights of women and under-represented groups in law so that women can claim these rights (†ibid.). Acknowledging this, the Kenyan Technical and Vocational Education and Training Act determines that the Authority (TVETA)

*“shall have regard to the objectives and needs of development of technical and vocational education and training and shall ensure that there are balanced competencies, gender equity, inclusion of persons with disabilities, the marginalised and other minority groups”* (†Government of Kenya, 2013:11).

Additionally, the second strategic objective of the TVET Strategic Plan 2018–2022 aims to promote gender equity and equal opportunities in TVET in Kenya. The activities suggested to achieve this goal include

*“advocating gender balance across institutions and programmes; advocating gender mainstreaming in programmes and to advocate gender friendly learning environments; [and] to advocate policies for disadvantaged groups in TVET”* (†Government of Kenya, 2018:31).

Achandi and colleagues point out the situation in Ethiopia (†Ethiopia, Madagascar, Tanzania: Achandi, et al., 2018). In agricultural households, only the mostly male heads of household are entitled to TVET or further training (†ibid.).

In Tanzania however,

*“extension services are provided to both male and female farmers by the government, international organisations such as Oxfam, through direct interaction with farmers”* (†Tanzania, Ethiopia, Madagascar: Achandi, et al., 2018:188).

As a result, the authors concluded,

*“empowerment of women in decision making at the household level can enhance women’s access and engagement in better farming practices suggested under extension advisory services. This is specifically true where women are able to overcome the hurdles of acquisition of extension training and access to the improved technologies”* (†Tanzania, Ethiopia, Madagascar: Achandi, et al., 2018:188).

Apart from the poorer access to TVET, it is also more difficult for women to complete the TVET, once it has started, without physical and psychological impairments, as the STEP study shows (†UNESCO, 2018).<sup>2</sup> STEP carried out a situational analysis on the status of sexual and reproductive health of students and gender-based violence in three technical and vocational colleges in Malawi. The study identified that respondents did not fully understand the term gender-based violence (GBV) and its dimensions. STEP’s qualitative analysis unveiled an extensive list of sexual, emotional and physical gender-based violence experienced by respondents, which has led it to conclude that

*“both male and female students are vulnerable to GBV with female students, especially those from poor households, being the most vulnerable”* (†UNESCO, 2018:36).

Justina Ashiyana (SCR participant, Namibia) notes that a number of TVET institutions in Namibia have a low number of female students compared to male students — in most of these cases, female students account for less than 10%. However, she notes that

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<sup>2</sup> This situational analysis study was commissioned by UNESCO’s HIV and Health Education Unit in collaboration with Skills and Technical Education Programme (STEP), an initiative implemented by UNESCO with funding from the European Union.

there are some success stories. For example, in joinery and cabinet making, there are a significant number of women in TVET, perhaps almost as many as men.

### 9.1.3. Women's employment and the labour market

Women's under-representation in TVET may be related to local labour market characteristics, for even those women who had the necessary skills were frequently identified as facing difficulties in gaining employment (†Zambia: Muya, et al., 2006; †Tanzania: Bennell, et al., 2006). Muya and colleagues indicated that during the 2002/2003 financial year analysed, about 50% of the larger-sized companies in Zambia did not employ skilled female craftspeople (†Zambia: Muya, et al., 2006). In a survey of 2000 graduates in Tanzania in early 2002, Bennell and colleagues found that only 22% were in an occupation related to their training; they state that *"female graduates have had considerably more difficulty utilising their occupational knowledge and skills"* (†Tanzania: Bennell, et al., 2006:79–80). They suggest that:

1. training-related employment rates are lowest for trades with the highest levels of formal sector employment (e.g., few secretarial and computing graduates worked in occupations related to their training), while
2. training-related employment rates are highest for trades, which have low formal sector employment but a high incidence of self-employment (e.g., carpentry and tailoring).

Asare and colleagues (2015), who analysed gender issues in micro, small and medium enterprises in Ghana and the implications for economic growth, found that women

*"were constrained by ineffective marketing strategies, lack of capital, inadequate equipment and machinery, lack of improved technology, inadequate training and low skill development"* (†Ghana: Asare, et al., 2015:34).

Achandi and colleagues show that patriarchal structures often prevent women from acquiring the relevant skills for more highly valued jobs (†ibid.; also cf., Section 9.1.2.). As a result, they are also less well educated and take lower rated jobs, as Kambarami notes:

*"because of patriarchy, women tend to occupy peripheral jobs in the economy because they lack relevant skills for important occupations"* (†Zimbabwe: Kambarami, 2006, cited in Wonder, 2017: 64).

In Zimbabwe, women are often confined to the informal sector (†ibid.:54). Wonder found that

*"As a result of gender role socialisation, most women tend to engage in informal trading within the informal industry while most men are into manufacturing. Moreover, all informal apprentices but one in the informal industry were found to be female. It would seem the informal industry adopts the Women in Development (WID) approach without reorienting the patriarchal structures in the informal industry. This implies that, although the industry*

*has reconstituted in terms of gender, the culturally embedded gender stereotypical roles tend to permeate the informal industry.” (†ibid.).*

Vandenbosch recommends, therefore, that gender aspects be more explicitly included in education reforms in the field; gender-sensitised and more targeted recruitment policies should be developed specifically to reach women (†Ghana, Uganda, Benin, Ethiopia, Burkina Faso: Vandenbosch, 2006).

Finally, Justina Ashiyana (SCR participant, Namibia) notes that most technical work is seen, culturally, as a male profession regardless of the fact that women are both mentally and physically fit to perform equally well. However, based on these cultural prejudices, the industry prefers to employ male over female workers. The equal treatment of women remains a challenge.

#### 9.1.4. Gender-based roles, career choices and gender stereotypes

In many countries, some sectors are dominated by women, such as healthcare. Sectors that are mostly classified as technical are generally dominated by men. According to Romiszowski, courses that generally appeal most to girls are in the commercial, management, administrative, hotel and tourism sectors; on the other hand technical vocations, for example, engineering courses, mostly attract boys (†Mozambique: Romiszowski, 2015). The African Union stresses that

*“some TVET programmes like dressmaking, hairdressing, and cookery are associated with girls – very often girls who are less gifted academically”*  
(†Ghana, Kenya, Benin, Democratic Republic of the Congo, Burkina Faso: African Union, 2007:8).

The African Union’s strategy to revitalise TVET education in Africa, released in 2007, therefore highlights gender stereotyping as one of the key issues to be addressed. According to Masinire (†Zimbabwe: Masinire, 2015), the government of Zimbabwe took steps to equalise educational opportunities between boys and girls after political independence in 1980. The author explored the experiences of boys and girls in Foods and Nutrition and Metal Technology TVET courses in rural areas. The findings suggest that despite these subjects being seen by teachers as offering possibilities for dismantling students’ understanding and preferences for non-traditional colonial subject choices, at the practical level, the TVET curriculum worked in ways that continued to structure and construct traditional gender hierarchies, roles and career expectations for boys and girls. The author concludes that

*“In order to understand gender inequality in the Voc-Tech curriculum, educators need to understand how sociocultural perceptions of gender are constructed and embodied at the level of classroom interaction among students and teachers. Such insights provide a deeper understanding for addressing gender inequality in Voc-Tech subjects that moves beyond current structural and institutional barriers within a rural African context” (†ibid.: 618).*



Outside the immediate scope of TVET, we note an interesting study by Rogers and colleagues concerning tertiary education ([†South Africa, Ghana: Rogers, Creed & Searle, 2012; cited in Mulder & Roelofs, 2012](#)). The study looked at gender differences in how junior doctors chose specialisms; it found that, in general, the professional choices of women are more lifestyle-friendly, e.g., choosing to work part-time. Women also feel they lack support and opportunities to learn, and — more so than men — have to create alternative development opportunities on their own. Mulder & Roelofs also make the point that men may benefit from being in the minority within the workplace (e.g., one male teacher among a group of otherwise female teachers), while women are disadvantaged and undervalued by comparison (e.g., one female construction worker among a group of male construction workers) ([†South Africa, Ghana: Mulder & Roelofs, 2012](#)).

We note that these findings can also be confirmed by gender research in Germany.<sup>3</sup> The same structural gender inequalities also occur here (e.g., Responsibility for care, low participation of women in *"Mathematics, Informatics, Science and Technology"*, STEM, subjects; ([†BMBF](#)).

### 9.1.5. Gender and teacher education

Colley points to *"gender and teacher education"* as one of the themes that emerged from his research synthesis; it merits further consideration within future research ([†Ghana, Nigeria, Sierra Leone, Gambia, Liberia: Colley, 2014](#)).

In Malawi, Safford and colleagues state that teaching is a male-dominated profession, it being common

*"for schools to have no female teachers and for girls never to experience a woman teacher as a role model; gender discrimination, harassment and the exclusion of girls can go unchallenged in these kinds of learning environments."* ([†Malawi: Safford, et al., 2013:194](#)).

Future teachers would have to cope with the problems that Safford identifies: the isolation of rural life, gender violence, and family-imposed barriers ([†ibid.](#)). Many young girls and women are more at risk than young men, and face multiple disadvantages because of too much housework, unequal treatment compared to male classmates and long distances to school, as well as forced marriages and sexual abuse ([†ibid.](#), [†UNESCO, 2018](#)).

In Ethiopia, women comprise less than 20% of secondary school teachers, which led Abay to investigate why many women who enter university do not make it into teaching in school, and why many of those who enter teaching do not stay in the profession ([†Ethiopia: Abay, 2016](#)). The author found that the persistent fear of sexual harassment, its continuing incidence and the poor response of institutions were among the primary factors, concluding that

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3 [†Bundesministerium für Bildung und Forschung, Genderforschung](https://www.bmbf.de/de/genderforschung-222.html), available at <https://www.bmbf.de/de/genderforschung-222.html>



*“Much work is needed, therefore, to improve current approaches to addressing sexual harassment, to counter the backlash of faculty and others who believe it is a thing of the past, and to support Gender Offices in their roles to address not only these more extreme manifestations but also other prevalent gender biases and discriminatory practices” (†Ethiopia: Abay, 2016:263).*

## 9.2. People with disabilities

Overall, we encountered few studies on people with disabilities. People with disabilities are negatively affected in access and use of TVET programmes, due to the inaccessible design of such programmes. Mulder and Roelofs show that people with disabilities are affected by a low level of education and low key competencies (†South Africa, Ghana: Mulder & Roelofs, 2012). Since education plays a key role in getting employment, it is no surprise that the findings also point to the low level of job-participation within this group (†ibid.). The chances of a self-determined life with full participation in all social activities are thus reduced. Recommendations include the implementation of inclusive education followed by socially supported employment. We are particularly interested in a study by Malle (†Kenya, Tanzania: Malle, 2016). Among the research projects we have examined, this one deals with the topic of handicap and TVET most comprehensively.

Malle finds that

*“the participation of students with disabilities in vocational education programmes in Kenya and Tanzania was insignificant due to their limited access to the services (related to teaching and training) of TVET colleges” (†ibid.:60).*

The following factors negatively affect the participation of students with disabilities in formal TVET in Kenya and Tanzania, where, Malle stresses, there has been no concrete progress made regarding access:

1. negative attitude of society and of the parents of children with disabilities, in particular towards the potential and capacity of students with disabilities;
2. lack of an adapted and modified curriculum responsive to the special educational and training needs of students with disabilities;
3. lack of specialised and adaptive equipment and technologies;
4. lack of clear guidelines on the provision of adaptive skills and equipment such as sign language interpretation and assistive devices;
5. lack of funding allocated for the promotion of inclusive education and training regardless of the availability of disability support allowance in Kenya;
6. inaccessibility of the physical environment and accommodation services of TVET centres and institutions;
7. lack of proper integration of trainees with disabilities in the regular training system;
8. lack of adequate ICT qualified staff, trained in special needs education (†ibid.:59).

The literature demonstrates that the issue of disability is not adequately addressed in either education policies or in policy implementation. The findings reported by Malle ([†Kenya, Tanzania: Malle, 2016](#)) indicate that

*“regardless of the political goodwill observed on the part of the governments of the study countries [Kenya, Tanzania], including Ethiopia, the commitment to the implementation of those disability-mainstreamed policies and legal instruments remains limited. This limitation continues to adversely affect the educational and training rights of persons with disabilities as well as their full and effective participation in the regular vocational education systems”* ([†ibid.: 61](#)).

The participants of Malle’s study made the following recommendations for enhancing the participation of students with disabilities in regular TVET programmes:

1. Adapt and modify the curriculum according to the special educational training needs of students with disabilities.
2. Mainstream special needs education as a compulsory course in the curriculum of education programmes for trainers.
3. Carry out research on the issue of disability and TVET.
4. Allocate adequate resources, being mindful of the special educational and training needs of students with disabilities.
5. Increase the availability of specialised facilities, equipment, technology and assistive devices.
6. Provide special funds for alumni with disabilities to enable them to engage in self-employment or income-generating activities (by starting a business) after completing their education.
7. Conduct policy reviews and amend the national policy and legal documents with the objective of being more inclusive of special educational and training needs and the rights of people with disabilities.
8. Make communities aware of the basic, as well as specific, needs and rights of people with disabilities.

([†ibid.:60](#)).

Some studies identify approaches that could be used to meet these recommendations. In Somalia, ongoing civil war has increased the prevalence of disabilities, which is estimated to affect between 15% and 20% of the population. According to [†Maina \(2016\)](#), the country has identified and prioritised the needs of people with disabilities and special educational needs, and has worked on plans for collaboration and partnership that have led to four areas of interventions: improving access to education; providing micro-grants; improving access to sustainable livelihoods for young people with disabilities; and capacity-building for local disabled people’s organisations in advocacy and resource mobilisation.

In policies and through state authorities in Uganda, we found instructions for arrangements to support those with special needs in taking their TVET examinations ([†Government of Uganda, 2014](#)).

Another example comes from Nigeria, where the Education Act No. 16, dating from 1985, states that a Minister should consult with interested parties before prescribing any minimum standards in respect of special and adult and non-formal education, and *“may set up such committees as he considers appropriate to advise him”* ([†Government of Nigeria, 1985](#)). The document includes sections on minimum standards with respect to special and adult education. Therefore, in Nigeria, special needs education has been included in the policy debate since the 1980s. In Kenya, the Ministry of Education has been implementing the National Special Needs Education Policy Framework since 2009. According to this policy, inclusive education for learners with physical, visual, hearing, speech and other impairments is to be encouraged and strengthened.

### 9.3. Vulnerable groups

This section looks at research findings that present government procedures and strategies to support vulnerable groups in TVET. In our understanding, vulnerable groups are those at risk due to their economic status, geographical location, age, ethnicity, religion and sexual orientation. This includes refugees, asylum seekers and internally displaced people. There is little literature available on this, so we limit ourselves to examples in Ghana, Botswana, Kenya and Eritrea.

#### 9.3.1. National qualifications programmes in Ghana

Sonnenberg has been monitoring the informal sector in Ghana. He claims that Ghana's Ministry of Employment and Labour Relations has identified high unemployment rates among vulnerable groups (including young people, women, and people with disabilities) as one of the main challenges for employment policy ([†Ghana, Senegal: Sonnenberg, 2012](#)). Those in charge would know that vulnerable and excluded people should be included as productive members of the economy ([†Ghana, Senegal: National Employment Policy, quoted in Sonnenberg, 2012](#)). Based on their findings, the author argues,

*“national skills training programmes such as Ghana’s NAP [National Adaptation Plan] have generally targeted youth in urban areas and those with a minimum of basic education. Therefore, it is difficult to gauge the extent to which these initiatives have improved access to skills training for those who currently have little education. Moreover, it is not clear whether these initiatives have improved the basic education levels of youth with no prior education or who have dropped out of basic education”* ([†Ghana, Senegal: National Employment Policy, quoted in Sonnenberg, 2012:101](#)).

### 9.3.2. Affordable fees for disadvantaged students in Kenya

Nganyi and colleagues state that the challenges that affect students' access to TVET institutions in Kenya are yet to be mitigated ([↑Nganyi, et al., 2014](#)). The authors analysed the methods devised by Kenyan TVET Institutions geared toward boosting high enrolment rates. To assist needy students in accessing TVET, some Kenyan institutions (National Polytechnics, Technical Training Institutes and Institutes of Technology) have started bursary schemes. The expectation was that all those who came from low socioeconomic backgrounds should apply for these funds. Other strategies investigated by the study were the following: good performance, advertisement, attractiveness, opening of more learning centres in towns and open and distance education. They found that

*"The factors that seem to be highly used to attract students are affordable fees (57.5%), marketability of courses (55%) and advertisement of courses (39%). The strategies that have least impact on access include use of distance and on-line learning (69.5%) and opening of study centres/campuses (24.5%)" ([↑ibid.:72](#)).*

As affordability is one of the main factors attracting students to TVET, fees subsidy is also discussed. This can be applied in terms of work-study, waiving fees for students, and institutional bursaries. Regarding bursaries, the authors assert that the amount spent on this subsidy can influence access to TVET to a large extent. However, this study revealed that only 5.25% of the respondents applied for a bursary provided by the education institution, and of these applicants, only 33.3% actually received the bursary. The authors stress that *"this is such a small number that the effect may not be felt"* ([↑ibid.:70](#)).

### 9.3.3. Media education in Eritrea

The government of Eritrea created a five-year plan that laid out its vision for education, addressing the gaps to access, equity, quality and the relevance of the education system. According to [↑Murthy \(2006\)](#), this document included

*"plans to construct classrooms in under-served areas of population, to increase recruitment of female teachers, to implement community-based campaigns, to raise gender awareness within communities and the teaching force, to revise the curricula and the teaching materials in keeping with gender-sensitive policies, to open boarding schools and hostels for girls in remote areas and to ensure grade I entry at the right age" ([↑Eritrea: Murthy, 2006:184](#)).*

The author asserts that the Eritrean Government decided to invest significantly in media education as a sustainable alternative to conventional education. This was intended to offer equitable access to disadvantaged groups and was seen as a means to quickly bridge the growing knowledge gap between the country and the rest of the world. The term 'media education' is treated here in a broad sense, where radio and TV transmissions of educational programmes take precedence over other forms. Few technical

courses were offered by the government through its TVET institutions to those who have completed school year 9. Media education was implemented to provide single-episode educational programmes in certain skills. Murthy provides in his article the design of courses and curricula for teachers and students who wish to join national mainstream education through media education programmes and a National Open School. The author describes the aim of this initiative as being

*“to meet the educational requirements of the deprived, displaced and remotely located, economically weaker population of Eritrea, including women, held back by tradition and religion. (...) Secondly, it is meant to cover dropouts, women and girls conditioned by or bound to traditions, who cannot move away from home to be educated”* (†Eritrea: Murthy, 2006:193–194).

### 9.3.4. Policies in Botswana

Botswana’s Education and Training Sector Strategic Plan proposes extensive reforms to transform the country’s education system (†Government of Botswana, 2015). Improving equitable access to education is one of their strategic priorities, addressing issues of quality, relevance, access, equity and accountability across the entire education sector in order to improve outcomes for all learners. The document notes, however, that no performance indicators have been developed on equity. Hence, the country’s data on such issues are poor and the challenges faced by those most vulnerable are not entirely clear. The government recognised that:

*“The definition of who the disadvantaged groups are also need to be spelt out in the form of policy. Access for minority groups, such as those in remote areas, those with disability and associated challenges, deserve particular attention/focus by the sub-sector. Women’s participation in the Sciences is very low and in need of immediate attention”* (†ibid.:26).

The country’s National Policy on Vocational Education and Training, published nearly two decades earlier, proposed that priority should be given to disadvantaged groups in the provision of training, pointing out that:

*“Where necessary special training programmes will be established to cater for the needs of special groups. Efforts will be made both by the vocational education and training system as well as the general education system to change entrenched societal stereotypes regarding vocational education and training. Access will be opened for initial training, re-training and skills upgrading for adults”* (†Botswana, 1997:14).

According to Botswana’s Sector Strategic Plan, the TVET department *“has an equal opportunities policy that reserves a 15% quota for admission of students from disadvantaged backgrounds.”* (†Government of Botswana, 2015:26). The document notes that:

*“Currently TVET institutions, (colleges and brigades) though not fully utilised, are not able to accommodate learners with special needs. Four institutions have however been earmarked special education ‘schools’. There*

*is no indication of a robust and deliberate plan to recruit the disabled, the disadvantaged and other vulnerable groups into TVET. To overcome these shortcomings, most of the existing facilities will need to be upgraded to accommodate the learners with special education needs. Furthermore, there will need to change policies to create 'school of skills' with special dispensation for admission; to develop unique programmes and to adopt delivery methods to suit people with special needs" (†ibid.:25).*

### 9.3.5. Youth policies in Botswana, Ghana and Senegal

The Revised National Youth Policy in Botswana lists several strategic areas, including a few dedicated to gender and vulnerable youth. The policy states that one of Botswana's weaknesses is the inadequate access of young people *"to complementary factors of production such as finance, land and skills"* (†Government of Botswana, 2010:4). Regarding skills, the policy states the following:

*"Understanding of the specific needs and interests of each group is limited and needs to be improved. The rehabilitation of ex-convicts/juveniles, sex workers, and youth victims of abuse has not received adequate attention in terms of gender balance and livelihood strategies. There is, therefore, an urgent need to adequately empower these vulnerable groups for their economic survival" (ibid.:20).*

Some of the strategies presented to address this situation include designing and implementing effective special support programmes and providing appropriate infrastructure, facilities and services. Thus, the policy aims to promote youth development by the implementation of programmes and activities targeting this group in particular, which include upgrading and expanding specialised institutions serving vulnerable youth. The document asserts that its goals would be met by

*"ensuring equitable access to appropriate programmes and services regardless of their geographic location, race, gender, disability, social, religious and economic circumstances" (ibid.:10)*

The governments of Ghana and Senegal have also created policies and programmes to increase access to, and the quality of, non-formal skills training, with the aim of better preparing their populations for work in the informal sector. †Sonnenberg (2012) carried out an extensive review of the literature which revealed that these two countries have long histories of traditional apprenticeship and that these forms of skills training reach more young people than formal TVET. The author states that Ghana's and Senegal's *"strategies to confront youth unemployment do not provide enough support services to disadvantaged and marginalised youth, especially those youth with no education or low levels of education"* (†Ghana; Senegal: Sonnenberg, 2012:101). She found that many of the programmes intended to modernise traditional apprenticeship favoured those with higher levels of education and those in urban areas. The author concluded that:

*“traditional apprenticeship is a ubiquitous form of training for youth, essential for providing skills to those unable to access formal training. (...) Unfortunately, there is little data on the long-term outcomes of these initiatives, programmes and reforms. Therefore, it is difficult to evaluate the impact that these changes have in providing the pathways for young people to obtain the skills they need to prosper in the workplace” (↑ibid.).*

### 9.3.6. Refugees in Uganda

Through the internet search, we found only one programme being developed in Uganda that aimed at integrating refugees into the economy.<sup>4</sup> The Directorate of Industrial Training (DIT) produced a video, available on its YouTube channel, presenting the main characteristics of the programme.<sup>5</sup> In summary, the Ugandan government is offering six months of non-formal TVET to refugees, in classes that are formed of 70% refugees and 30% people from the nearby community. At the end of this TVET, they are assessed and certified, allowing them to progress within Uganda’s educational system if they decide to do so. This also makes sense in the context of Uganda’s progressive refugee policy, which aims to find long-term solutions for settling refugees rather than relying on repatriation.

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4 “Refugees are migrants who have crossed an international frontier because of conflict, violence, or a well-founded fear of persecution, being unwilling or unable to return to their country of origin based on threat due to their race, religion, political views, or social status.” (↑UNHCR, 1967).

5 ↑DIT Uganda, *Skills Training & Certification for Refugees in Uganda* (2018), available at <https://youtu.be/CXzqBDy9dFE>



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## Chapter 10. State Authorities for TVET Management<sup>1</sup>

For all countries in SSA, we identified key governmental stakeholders who—to a greater or lesser extent—direct TVET and monitor quality (RQ19a, b). This chapter focuses selectively on the relevant government agencies in Botswana, Ghana, Kenya and Nigeria, since these countries reflect a diverse variety of TVET system structures. These countries were chosen because they have differently structured education systems and each of them continuously publishes a remarkable number of scientific publications. Since our work involves desk-based analysis, we have looked at countries for which information is available primarily on the internet. As mentioned previously, there are some states in SSA for which we could not access the official websites at any time during our data collection (e.g., the Ethiopian website was not accessible in 2018).

### Research questions considered in this chapter

The research questions considered in this chapter are listed in the box below.

#### Research questions considered in this chapter

**RQ19.** Actor analysis: **Stakeholders in TVET policy** and education system decision-making.

**[RQ19.a]** Who are the **key players** shaping TVET politics?

**[RQ19.b]** Which **state authorities** are decisive for TVET and how is the (technical and vocational) education system managed?

We note that other parts of RQ19 are covered in Chapters 11 and 13.

### Conclusions of this chapter

In each country studied, the key stakeholders are the governmental authorities (RQ19b). For example, the Botswana Training Authority (BOTA) is developing guidelines and strategic plans for the country's TVET system. The management of the system is divided among various government agencies with specific functions. We note that trade unions,

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guilds or indeed other associations of employees or employers appear to be of little—if any—significance.

Data from our internet search indicate that, in most SSA countries, the Ministry of Education and/or the Ministry of Labour are the main governmental authorities for the decision-making and management of the TVET system at the national level. However, other ministries are responsible for the provision and delivery of TVET programmes that relate to their specific economic sectors. For example, the TVET of health assistants or nurses is the responsibility of the Ministry of Health, the TVET of tourism education is the responsibility of the Ministry of Culture and Tourism, and so forth.

This chapter reviews the institutions involved in the planning, implementation and evaluation of TVET, and those that manage the administration of the corresponding TVET-related processes. The data collected through the internet research described below are supplemented and / or confirmed by the information obtained through our literature search. The research questions in this chapter are structured by country and arranged in alphabetical order. Readers will notice that the list is incomplete. As noted in the introduction, we have only included those countries for which we were able to find a significant amount of information on key actors. This is intended to provide the broadest possible understanding of the institutions involved in the planning, implementation and evaluation of TVET and the administration of the processes involved.

We note that research publications (focusing on TVET policy in the selected countries) are available. However, there is no evidence of the actual impact of these research findings on TVET policy or on the actions of key stakeholders, at either the national or regional level.

As with the other chapters, the subsequent sections offer additional details of the points discussed in the summary above. We note that this section covers policies that were published by mid-2019.

## 10.1. Authorities and policies: Botswana

In Botswana, the state TVET authority is the Ministry of Education and Skills Development ([↑no date](#)), which is responsible for general administration and management of the TVET system. There are four departments within the Ministry that are directly accountable for the different segments of the TVET system. These are:

1. the Department of Technical and Vocational Education and Training (DTVET), which is responsible for policy development of TVET and related areas;
2. the Botswana Training Authority (BOTA), which is responsible for developing standards, quality assurance, evaluations, and the accreditation of institutions, programmes and trainers;
3. the Botswana Qualification Authority (BQA), which is responsible for developing policy and criteria for work-based teaching, for TVET qualifications, and for the establishment of a national qualifications framework; and

4. the Botswana Education Hub ([↑Botswana Education Hub](#)), which aims to contribute to quality education by strengthening the capacity of existing institutions.

The current national TVET policy (NPVET) has been developed since 1997 by the MoESD in cooperation with the Ministry of Labour and Home Affairs ([↑Ministry of Labour and Home Affairs](#)), another ministry that plays an important role in Botswana's vocational training system. The MLHA participation is executed through its Human Resource Development Council ([↑Human Resource Development Council of Botswana](#)). However, training is provided through several actors, including other ministries, parastatal organisations and private institutions.

### 10.1.1. State TVET authority

#### Ministry of Education and Skills Development > Department of Technical and Vocational Education and Training

The MoESD is responsible for the general administration and management of the TVET system and the training and quality of TVET educators. The DTVET is responsible for planning, managing and implementing government policies on TVET. In 2001, it launched the Botswana Technical Education Programme (BTEP). The Department has a division for each one of the following functions it executes: policy, programme development and delivery, human resource management, departmental management and Brigades<sup>2</sup> development.

The DTVET is also responsible for planning and implementing institution-based vocational programmes. It provides institutional TVET in 35 Brigades offering 27 programmes. The TVET institution-based programmes in Botswana are:

1. TVET (full-time college-based programmes); and
2. apprenticeship skills training (theory-based blocks for apprenticeship training) — provided through the government TVET centres and the Brigades.

In 2008, the Botswana Education Hub ([↑no date](#)) was established. This is a coordinating office working to make quality education, training and research key parts of Botswana's economic diversification and social development initiatives. It contributes to quality education through

*“strengthening the capacity of existing institutions, attracting new providers and attracting new ventures for better international engagement and improved standards”* ([↑Government of Botswana, accessed Nov. 2018](#)).

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2 Brigades were the first TVET centres in Botswana, created in 1965. According to UNEVOC (2012), Brigades *“were work crews initiated by communities in the villages, in response to the unemployment of primary school leavers who could not be admitted to secondary schools because of their poor academic performance. They provide artisan training through the combination of training with production. The goods and services produced in the production units are sold to the community. In this way, Brigades focus on community development and encourage small-scale entrepreneurs”*.



### 10.1.2. Key policies in Botswana

The key policies in Botswana are:

1. The Revised National Policy on Education (RNPE). First published by the Federal Government in 1994 in Government Paper No. 2, this policy sees TVET as crucial to the country's transition from a traditional agro-based economy to an industrialised one.
2. The National Policy on Vocational Education and Training (NPVET), published in 1997 by the MLHA ([†Government of Botswana, 1997](#)).
3. The TVET Act No. 22, published in 1998 by the DTVET. It established the BOTA as the statutory body to coordinate and implement TVET, and assigned MHLA the responsibility for policy formulation and strategic planning for TVET ([†Government of Botswana, 1998](#)).
4. The Botswana National Vocational Qualifications Framework (BNVQF), published in 2004 by BOTA. It covers TVET and has no links to general or higher education ([†Government of Botswana, 2005](#)).
5. The Botswana Qualifications Authority Act No. 24 (BQA Act) ([†Government of Botswana, 2013](#)).
6. The Education & Training Sector Strategic Plan (ETSSP 2015–2020), published in 2015 by the MoESD ([†Government of Botswana, 2015](#)).
7. The National Credit and Qualifications Framework (NCQF), published by the BQA ([†Government of Botswana, 2016](#)).

## 10.2. Authorities and policies: Ghana

The TVET system in Ghana is governed by the Ministry of Education ([†MoE](#)). Within the MoE, the state TVET authority is the Council for Technical and Vocational Education and Training ([†COTVET](#)). The Council coordinates and oversees TVET developments nationally. Other relevant departments under the MoE are the Ghana Education Service ([†Ghana Education Service](#)), which is responsible for implementing pre-tertiary education policies formulated by the MoE, and the National Board for Professional and Technician Examinations ([†NABPTEx](#)), which is responsible for evaluation, assessment and certification.

The Ministry of Employment and Labour Relations ([†MELR](#)) is the other branch of the Federal government most relevant to the TVET system. Its Directorate of Policy Planning, Budgeting, Monitoring and Evaluation leads the technical processes for the development of policies, plans, programmes and budgets of all activities of the Ministry. The National TVET Institute (NVTI) and the Integrated Community Centres for Employable Skills ([†ICCES](#)) are two bodies focused on TVET provision. The former is responsible for the coordination of training centres under the Ministry's administration, and for testing and certification, while the latter carries out competency-based TVET provision in rural communities in Ghana.

In total, 19 ministries or public bodies appear to be involved in TVET. The MoE and the MELR are also the most important public providers of TVET programmes in Ghana.

Although to a lesser extent than these two Ministries, other public bodies are also responsible for TVET provision including the Ministry of Youth and Sports (MYS), the Ministry of Local Government and Rural Development ([↑MLGRD](#)), and the Ministry of Health and Environment. Since 2018 the government has worked on a harmonization law to combine all TVET activities under the Ministry of Education.<sup>3</sup>

### 10.2.1. State TVET authority

#### MoE > Council for Technical and Vocational Education and Training

As mentioned, ([↑COTVET](#)) coordinates and oversees TVET developments in Ghana. The main responsibility of the Council is to formulate national policies on skills development (pre-tertiary, tertiary and informally), whereas the different ministries are responsible for implementing the policies within their TVET institutions. Additionally, it has the objective of advising the federal government on all matters related to the management and improvement of the TVET system. The Council is formed of five Technical Standing Committees, which function as national bodies. These are the Industrial Training Advisory Committee, the National TVET Qualifications Committee (NTVETQC), the Training Quality Assurance Committee (TQAC), and the Skills Development Fund Committee. The fifth committee, the National Apprenticeship Committee, has been created recently and is responsible for traditional apprenticeships. Further, there are Sector Skills Bodies, across 22 branches, which make recommendations to COTVET to

*“ensure that qualifications, curriculum and learning materials reflect the occupational standards”* ([↑Ghana Skills Development Initiative, Nov. 2019](#)).

In Ghana, a noteworthy feature is the presence of the National Council for Tertiary Education ([↑NCTE](#)). The NCTE is also a prominent feature of Ghana’s TVET governance. It is responsible for recommending national standards and norms to the Minister and monitoring their implementation. These standards and norms cover staff, costs, accommodation and time utilisation. Additionally, the NCTE has significant influence over the preparation of the annual national education budget. It recommends to the Minister how block allocations of public funds should be disbursed regarding running costs and capital expenditure grants for each tertiary education institution. While the NCTE deals primarily with higher education and universities, certain institutions that broadly pertain to TVET are nevertheless located within the NCTE. This primarily concerns the 40-odd Colleges of Education in Ghana, which have migrated from the GES to the NCTE. They are considered tertiary, but not universities, and focus on the pre-service education of primary teachers.

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<sup>3</sup> Proposed legislation is available from <https://www.parliament.gh/> (cf., Education Bodies Bill [↑Government of Ghana, no date](#)). As of September 2020, the law had been passed by parliament. However, the president is yet to sign the law in order for it be enacted and come into force (September 2020).

### 10.2.2. List of key policies in Ghana

Our research identified the following regulations and laws on TVET administration in Ghana.

1. The National Board for Professional and Technician Examinations Act No. 492 ([↑NBPTEx Act](#)). Published in 1994, it established the NBPTEx to administer examination schemes for professional bodies and non-university institutions at the tertiary level ([↑Government of Ghana, 1994](#)).
2. The Council for Technical and Vocational Education and Training Act No. 718 ([↑COTVET Act](#); [↑Government of Ghana, 2006](#)). Published in 2006, it mandated the Ghanaian government to establish a legal framework for TVET and a council (COTVET) which has “the objective of coordinating and overseeing all aspects of TVET in the country”.
3. The National Accreditation Board Act No. 744 ([↑NAB Act](#)). Published in 2007, it established the National Accreditation Board, and mandates it to accredit public and private tertiary-level institutions with regard to the contents and standards of their programmes.
4. The Polytechnic Act 745 ([↑Government of Ghana, 2007](#)). Published in 2007, it mandates polytechnics to provide tertiary education in the fields of manufacturing, commerce, science and technology, and to provide opportunities for skills development, applied research and the publication of research findings.
5. The Legislative Instrument LI 2195. Published by COTVET in 2012, it regulates the TVET system and ensures that it is linked to the National Technical and Vocational Education and Training Qualifications Framework (NTVETQF), which aims to improve and increase the different pathways for TVET graduates. It is administered by COTVET.
6. Education Regulation Bodies Bill, 2019, [↑Government of Ghana \(no date\)](#), no yet enacted (as of September 2020).
7. Strategic Plan for TVET 2018-2022. Not publicly accessible.

### 10.3. Authorities and policies: Kenya

In Kenya, the Ministry of Education, Science and Technology ([↑MoEST](#)) is the government body in charge of managing and developing the TVET system and its policies and programmes. It is responsible for education standards, curricula and examinations. The Ministry of Public Service, Youth and Gender Affairs, and the Ministry of Labour and Social Protection are also involved in Kenya’s TVET provision. Other line ministries also provide specialised TVET programmes. These include health, transport, agriculture, energy, and tourism (hospitality), among others.

Within Kenya’s TVET system, under the MoEST, there are several departments, authorities, boards and councils. This is something that might stand out to outsiders. The institutional framework seems very fragmented and, in some instances, functions appear to overlap across different government bodies. For example, the Ministry has a Technical

and Vocational Education and Training Authority ([TVETA](#)) and a State Department of Vocational and Technical Training ([VTT](#)). Moreover, the country has an Institute of Curriculum Development (KICD), a National Examination Council ([KNEC](#)) and a National Qualifications Authority ([KNQA](#)) and yet, there is also the TVET Curriculum Development, Assessment and Certification Council ([TVET CDACC](#)). It is difficult to grasp how the TVET education system is managed and how these bodies communicate with one another.

### 10.3.1. State TVET authority

#### MoEST > Technical and Vocational Education and Training Authority

The Technical and Vocational Education and Training Authority ([TVETA](#)) was established in 2013 under the Technical and Vocational Education and Training Act No. 29 ([TVETA Act n°29, 2013](#)), and is the body in charge of coordinating and regulating TVET in Kenya. Thus, it determines national TVET objectives, promotes access to training programmes and ensures these programmes remain relevant—all within the scope of national socio-economic plans and objectives. Among its functions are the registration, licensing and accreditation of institutions, programmes, trainers and assessors, and the implementation of the TVET National Quality Assurance System. Accreditation of institutions is done in accordance with sections 18, 32 and 57 of TVET Act No. 29, 2013. Section 23 of the same Act requires that all TVET trainers are registered and licensed by the TVETA Board<sup>4</sup>, and that training providers are obliged to recruit only accredited trainers. Finally, TVETA is the body in charge of approving Competency-Based Education and Training (CBET) Programmes. The TVETA Competency-Based Education and Training and Assessment Standards & Guidelines ([CBETA Standards and guidelines](#)), derived from Section 57(b) of TVET Act, state the duties and responsibilities that assessors and verifiers need to comply with in order to be accredited.

We highlight two more institutions in the Kenyan administration: the TVET Permanent Working Group (PWG), under the MoEST, and the National Industrial Training Authority ([NITA](#)), under the MLSP.<sup>5</sup> Established in 2014, the TVET Permanent Working Group

*“promotes TVET as a ticket to high-valued career pathways for young people through rebranding and hands-on youth engagement”* ([Permanent Working Group on TVET in Kenya, no date](#)).

Its primary focus is to provide a platform for exchange between the different stakeholder groups involved in the TVET sector in Kenya, enabling government agencies, private sector companies, academia and development partners to collaborate and further their work in promoting TVET. This strategically positions the PWG to inform and advise the government of strategies, policy issues, best practices and the implementation of TVET

<sup>4</sup> The first TVETA Board was appointed and inaugurated in 2014 through the Gazette Notice No. 3134.

<sup>5</sup> We note that the composition of the TVET Permanent Working Group can be traced back to an initiative of the AHK Kenia (German Chambers of Commerce Abroad, ‘Auslandhandelskammer’, ‘AHK’).

reforms in Kenya. Secondly, NITA is a semi-autonomous government agency that operates under the Ministry of Labour and Social Protection ([↑MLSP](#)). It has a tripartite National Industrial Training Board (NITB) that comprises employers, workers, government ministries, universities and other institutions. Known until 2011 as the Directorate of Industrial Training (DIT), its mandate is to promote the highest standards in the quality and efficiency of Industrial Training in Kenya, with its mission being

*“to provide, facilitate, promote, regulate and coordinate integrated industrial training for a globally competitive human resource”* ([↑Government of Kenya, accessed April 2019:1](#)).

### 10.3.2. List of key policies in Kenya

Our research identified the following regulations and laws on TVET administration in Kenya.

1. The Policy Framework of Education. Published by the MoE in 2012, revised in 2019.
2. The National Industrial Training Act No. 12 ([↑NITA Act](#)). Published in 2012, this act of parliament established NITA, which is designed to provide regulations for training people in industry.
3. The Kenya National Examination Council Act No. 29 ([↑KNEC Act](#)). Published in 2012, this act of parliament provides for the establishment, powers and functions of the KNEC and the conduct of examinations.
4. The Technical and Vocational Education and Training Act No. 29 ([↑TVETA Act n°29, 2013](#)). Published in 2013, this act established the TVETA as the central administrative unit of the TVET system in Kenya. The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) was also created in this act. This act classifies ‘accreditation’ as “the process by which the Board formally recognises and confirms by certification that an institution has met and continues to meet the standards of academic, training and competence excellence set by the Board in accordance with the provisions of this Act”.
5. The Kenya Institute of Curriculum Development Act No. 4 ([↑KICD Act, 2013](#)). Published in 2013, this act established the KICD and the governing Council for the Institute.
6. The Kenya National Qualifications Framework Act No. 22 ([↑KNQFA, 2014](#)). Published in 2014, this act established the Kenya National Qualifications Authority and formulated the development of the Kenya Qualifications Framework and its associated goals.
7. [↑The Guidelines for Registration of Training Providers](#), published by NITA in 2016.
8. The Competency-Based Education and Training and Assessment Standards & Guidelines ([↑CBETA Standards and Guidelines](#)).
9. The National Industrial Training Standards ([↑NITA Standards](#)). Published by NITA.

10. The [TVET Strategic Plan 2018-2022](#). This sets out the strategic priorities of the Government as outlined in the Kenya Vision 2030, the Constitution of Kenya 2010, and other relevant regional and international policy documents. According to the TVETA Chairman,

*“the development of this Strategic Plan was based on a review of the Authority’s performance and experiences since its inception, and is a culmination of an extensive consultative process among the Authority’s staff, board of directors and key stakeholders in the country”* ([Government of Kenya, 2018:vii](#)).

## 10.4. Authorities and policies: Nigeria

The Federal Ministry of Education ([MoE](#)) is the government body in Nigeria responsible for TVET coordination at the national level and is in charge of the sector’s planning, research and development. The federal level authorities are responsible for policy, curriculum, inspections, examinations, the management of schools and federal technical colleges belonging to senior secondary education level. The federal government also bears responsibility for policy design, strategy and management of all federal-owned colleges of education, polytechnics and universities ([UNESCO-UNEVOC, 2012](#)). The government bodies described below are all units of the Ministry of Education.

### 10.4.1. State TVET authority

#### Technology and Science Education Department: National Board for Technical Education

Established in 1977 by a Decree, the National Board for Technical Education ([NBTE](#)) is the main coordinating body for TVET in Nigeria ([UNESCO-UNEVOC, 2012](#)). It is responsible for the accreditation of academic programmes in all TVET institutions in Nigeria and it publishes the Directory of Accredited Programmes. These are offered in the polytechnics and technical and vocational institutions that are under the NBTE’s regulations. The Board has an Academic Planning, Research, Statistics and ICT department, which was created as a result of a Board restructuring. The NBTE accredits proposals for qualifications submitted by awarding bodies, and monitors awarding bodies offering NSQs. NBTE effectively manages the whole system on behalf of the Government.

#### National Commission for Colleges of Education

In Nigeria, the Colleges of Education are managed separately from other TVET-related activities. The National Commission for Colleges of Education ([NCCE](#)) was established by Act No. 13 of 1989 and amended by Act No. 12 of 1993. The Commission’s main goal is to promote the quality of teacher education, ensuring that it contributes to national development. The NCCE is the government body responsible for making recommendations on the parts of national policy that are related to teacher education development and it also advises on the financial needs of the Colleges. It also acts as the agency for external aids directed toward improving teacher education in Nigeria. The Commission



has standardised the teacher education curriculum determining, among other things, course entry requirements and duration. It is responsible for determining the minimum requirements for the Colleges of Education, setting out the criteria for accrediting teacher education courses and the certificates awarded by the Colleges, a process which is reviewed every five years. The NCCE collates, analyses and publishes relevant information relating to teacher education in Nigeria, determining Nigerian teachers' needs and addressing them by creating master plans for the development of the 152 Colleges of Education under its administration (21 Federal Colleges, 47 State Colleges, 61 Private Colleges, 9 Polytechnics offering NCE and 14 other NCE-awarding institutions).

It is worth noting the extensive availability of information regarding Nigerian laws and regulations; we had access to policies dating back from the 1970s. Nigeria was one of the few countries where a comprehensive list of official documents was easily found and accessed. Among these were national standards for the establishment of institutions, for the approval of programmes and for certification. The Government has produced guidelines for the establishment of private TVET institutions and for the establishment and operation of the production unit in TVET colleges.

#### 10.4.2. List of key policies in Nigeria

Our research identified the following regulations and laws on vocational training administration in Nigeria.

1. [†National Board for Technical Education Act](#). Published in 1977, this act established the National Board for Technical Education as a body to advise the Federal Government on all aspects of technical education that fall outside the scope of universities.
2. [†Federal Polytechnics Act](#). Published in 1979, this act established polytechnics in various parts of the country to provide full-time courses in technology, applied science, management and other fields. It also made provisions for the general administration of such polytechnics.
3. [†Education National Minimum Standards and Establishment of Institutions Act No. 16](#). Published in 1985, this act lists the various authorities empowered to prescribe minimum standards of education in Nigeria; and to impose penalties for any contravention of its provisions. The document contains a section on secondary and teacher education and another section on technical education. It states the purpose of TVET and teacher education, as well as the minimum standards for each of them.
4. [Federal Polytechnic Amendment Act No. 5 \(1993\)](#) by the Federal Government. The amendment provides for the post of deputy rectors for all federal polytechnics. It also sets out the tenure of office of the principal officers of the federal polytechnics.
5. [†Federal Colleges of Education Act](#). Published in 1986, this act established the Federal Colleges of Education, which are listed in the Act. Their function is, among other things, to provide full-time courses on teaching, instruction and



training in technology, applied science, commerce, arts, social sciences, humanities and management, and to carry out research on the development and adaptation of techniques. This act also makes provision for the appointment of a Provost and of the officials of each College: they carry the responsibility for the administration of education of the college students.

6. [†Educational Correspondence Colleges Accreditation Act No. 32](#). Published in 1987, this act made accreditation by the Minister of Education a precondition for the operation (or continuation in business in the case of existing institutions) of all private educational correspondence colleges wishing to conduct business in Nigeria.
7. [†Nigerian Educational Research and Development Council Act](#). Published in 1987, this act established the Nigerian Educational Research and Development Council, which was responsible for encouraging, promoting and coordinating educational research programmes in Nigeria; identifying and determining the priority of educational problems; and undertaking book, language and curriculum development, among other things.
8. [†National Commission for Colleges of Education Act](#). Published in 1989, this act established the National Commission for Colleges of Education which is responsible for advising the Federal Government on all aspects of teacher education falling outside the universities and polytechnics, among other things.
9. [†National Business and Technical Examinations Board Act](#). Published in 1993, this act established the National Business and Technical Examinations Board and gave it responsibility for the general control of the conduct of technical and business examinations hitherto conducted by the Royal Society of Arts of London City and Guilds of London and the West African Examinations Council.
10. [†National Centre for Women Development Act](#). Published in 1995, this act established the National Centre for Women Development for the general purpose of designing developmental programmes and activities for the advancement of women in Nigeria.
11. [†National Occupational Standards](#). These are standards of effective performance or competences an individual must achieve when carrying out functions in the workplace. Developed by employers and other key stakeholders and approved and published by the NBTE, NOS set out the skills, knowledge and understanding required to perform competently in the workplace. NOS also publishes measurable performance outcomes, covering the technical requirements; and the individual's ability to organise their work, make judgements, solve problems, and improve work processes and their interpersonal skills.
12. [†National Skills Qualification](#). These are work-related, competency-based qualifications. The NSQ standards are sector-specific and are set by the industry itself, reflecting the skills and knowledge that individuals need to perform a job effectively. There are NSQs available in five sectors (hospitality and tourism, power / energy / engineering, building construction, service and agro-processing), and they are regularly reviewed and updated. They are available to adults and young

people alike, as there are no minimum academic entry criteria. NSQ qualification at level 1, 2 or 3 can be taken as part of an apprenticeship. These skills are assessed at both the training centre and in the workplace. The NSQ system is maintained by

- a. the sector skills councils (whose function is to identify, define and update employment-based standards of competence);
  - b. the awarding bodies (charged with designing assessment and quality assurance systems for accreditation of the qualifications, and with approving training centres to offer NSQ);
  - c. the regulatory body (the NBTE);
  - d. assessment centres (which assess NSQ according to the awarding body criteria);
  - e. training providers (which provide training in partnership with the industry, register candidates, and assess and guide candidates towards achieving NSQs).
13. †**Nigerian Skills Qualification Framework**. Formerly known as the National Vocational Qualification Framework (NVQF), it is defined as  
*“a system for the development, classification and recognition of skills, knowledge and competencies acquired by individuals, irrespective of where and how the training or skill was acquired”*.<sup>6</sup>

The objective of the Framework is to establish pathways and progression from informal to formal professional courses, indicating the comparability of different qualifications and how one can progress from one level to another. Additionally, it aspires to ensure the quality, status, relevance and provision of TVET in Nigeria. According to the NBTE, the NSQF is used to increase the influence of employers' and workers' organisations in developing competency standards for qualifications, with the goal of making the system more responsive to the needs of the labour market.

14. †**Guidelines for Establishment and Operation of Production Unit in Technical Colleges, 2006**. Published by the NBTE in 2006, this is a revised version of the policy that was first implemented 20 years ago. It was designed to make the process simpler and less time-consuming, potentially allowing more private polytechnics and monotechnics to apply for admission. A Production Unit is an outfit for producing goods or providing services by utilising all the available resources in a college. It carries the dual objective of providing practical skills training to students and generating income to augment the school's financial resources for sustaining operations and maintenance.
15. †**Standards and criteria for approval of programmes in vocational enterprise institutions and innovation enterprise institutions programmes, 2007**. Published by the NBTE in 2007, this document established the requirements for the approval of competency-based programmes offered by the then newly created VEIs

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6 †National Board for Technical Education, **Nigerian Skills Qualification Framework**, available at <https://net.nbte.gov.ng/nsqf>

and IEIs. These are private institutions that provide an alternative route to higher education. The lists of approved programmes and institutional information can be seen on the NBTE website (see: † [VEI](#) and † [IEI](#)).

16. † [Standards for Accreditation and Re-accreditation of Diploma Programmes in Polytechnics and Similar Post-Secondary Technical institutions in Nigeria](#). The third revised edition of this document was published by the NBTE in 2013, in light of global trends and new challenges in the TVET sector. Some of the changes include the introduction of the National Innovation Diploma (NID), and requirements for Entrepreneurship Education and the Nigerian Skills Qualifications Framework (NSQF).
17. † [Guidelines and procedures for the establishment of private technical and technological institutions in Nigeria](#). Published in 2014 by the NBTE, these guidelines and procedures were established with the intention of simplifying the process of application and approval of TVET institutions.
18. † [Guidelines for Establishing New Programmes in Polytechnics and Similar Tertiary Institutions in Nigeria](#). Published in 2013 by the NBTE and currently in its third edition, this document is “an update from previous editions which reflects current trends and changes in technical and vocational education sector” (p.ii). It incorporates the new requirements for entrepreneurship training aimed at making graduates more self-reliant in the face of the challenges of rising unemployment.
19. † [Directory of accredited programmes offered in polytechnics, technical and vocational institutions in Nigeria](#). Currently in its 19th edition,  
*“the purpose of publishing this Directory is to inform academic institutions, scholarship boards, employers of labour, stakeholders in the technical education sector, parents and prospective students about the accreditation statuses of programmes that are offered by these institutions”* († [anon. Executive Secretary's Office, 2017](#)).

Hence, it contains information on certificates offered by Polytechnics, Colleges of Agriculture, Innovation Enterprise Institutions (IEI), Colleges of Health Sciences, Specialised Institutions, Technical Colleges and Vocational Enterprise Institutions (VEI).

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## Chapter 11. Non-state TVET Providers<sup>1</sup>

This chapter sets out the role of non-state TVET providers in TVET. We note that, in addition to public TVET authorities, countries in SSA generally have non-state-controlled and private TVET providers. Such providers often already have – or seek – a degree of influence on the national TVET system. In this chapter, we examine how far this influence goes and how it is being utilised (RQ19.c–f, private education providers, companies, unions). We also take the perspective of businesses to look at their role in the provision of TVET.

### Research questions considered in this chapter

The research questions considered in this chapter are listed in the box below.

#### Research questions considered in this chapter

**RQ8.** Participation and role of industry and commerce (engagement / relationship of the TVET system in business / industry / commerce).

**RQ19.** Actor analysis: **Stakeholders in TVET policy** and education system decision making.

**[RQ19.c]** Is everything in state hands, or, if not, what relevance do **private education providers** have in the system?

**[RQ19.d]** Do **businesses** play a role in TVET and do they influence TVET policy (participation, consultation, design)?

**[RQ19.e]** Do **trade unions** play a role?

**[RQ19.f]** Is there an extended, relevant system of (merchants' / artisans') **guilds**? Does it play a role regarding TVET?

We note that other parts of RQ19 are covered in Chapters 10 and 13.

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## Conclusions of this chapter

There is also evidence – in some cases quite sparse – of non-governmental TVET activities in Ethiopia, Ghana, Kenya, Nigeria, Uganda, South Africa and Tanzania. The non-governmental sector comprises private TVET providers (including large international companies), nonprofit organisations, voluntary organisations and NGOs. Across SSA, these actors have varying degrees of involvement in formulating policy, developing curricula, determining priorities for occupational standards, forecasting future labour demand, and setting indicators for curricula and for the quality of work-based education.

This prevalence of private education providers can be seen, for example, in Nigeria. There, private providers offer a real alternative to state providers in services such as education for teachers and curriculum development. In both Kenya and Botswana, state efforts are made to involve private TVET providers and industry in the design of TVET. In other countries, such as Ghana (and South Africa with its SETAs), the industrial or commercial sector is involved not only in the provision of TVET, but also in the development of government guidelines or training plans for TVET through participation in the TVET Authority (i.e. COTVET, in Ghana) and its advisory committees.

It is important to note that data on private TVET providers are inconsistent throughout our dataset. In particular, we did not come across research on the role of the industry as a promoter and beneficiary of TVET.

Responses from interviewees from the Structured Community Review (SCR) point to examples of collaboration between governmental TVET institutions and industry, which are present at least partially in some countries in SSA (Ghana, Ethiopia, South Africa, Madagascar, Zambia, Kenya, Namibia, Tanzania, Cameroon). The participants agree that a partnership between the two sides would be beneficial for all those involved in TVET.

As with the other chapters, the subsequent sections offer additional details of the points discussed in the summary above.

### 11.1. The prevalence of private education providers

The data obtained on private TVET providers are not consistent throughout our dataset. In Kenya and Nigeria, accessing the information on the number of private institutions was relatively straightforward. In some countries, such as Ethiopia, we were only able to obtain data on the number of graduates from private and public institutions combined. In other cases, we were able to compile only a fraction of the figures necessary to form a comprehensive picture. According to the African Union's Skills Portal for Youth Employment and Entrepreneurship (ASPYEE):

*"The private sector plays an important role in skills development. It comprises of large corporations, for-profit institutions, voluntary organisations and NGOs. The engagement of the private sector is especially crucial in the implementation of technical vocational education and training (TVET). Its role in TVET is not only in terms of training provision but also includes a range of other areas. These comprise policy formulation, in curricula development, the*

*setting of occupational standards priority setting, labour demand forecasting, curricular and quality indicators, and on-the-job training” (↑African Union, accessed Nov. 2018).*

### 11.1.1. Private education providers in Nigeria

A look at Nigeria is instructive with regard to private TVET providers, as information from the National Board for Technical Education (↑NBTE) is readily available, abundant and up-to-date, for both public and private providers. Table 11.1 provides a summary of the numbers of these providers, by type. In 2017, the NBTE published a ‘Directory of Accredited Programmes Offered in Polytechnics, Technical and Vocational Institutions’, listing the year of establishment and ownership of each institution, alongside the list of fully accredited TVET programmes. The current volume of this Directory, now in its 19th edition, has 241 pages (↑Government of Nigeria, 2017). The NBTE also provides a digest of the annual statistics documents of TVET institutions, the latest available version of which contains data from 2014–15 (↑ibid.). It was therefore possible to do a more in-depth analysis of the importance and prevalence of TVET providers in Nigeria than elsewhere in SSA. According to the NBTE, the TVET institutions falling outside the universities are

*“the Polytechnics and Colleges of Technology, the Monotechnics – which is further sub-grouped into Colleges of Agriculture and Related Disciplines, Colleges of Health Sciences and Specialised Institutions – Innovation Enterprise Institutions (IEIs), Vocational Enterprise Institutions (VEIs) and Technical Colleges” (↑ibid.:iv).*

**Table 11.1. Number of accredited TVET providers in Nigeria per institutional ownership (↑National Board for Technical Education)<sup>2</sup>**

Type of Institution	Federal	State	Private
Polytechnics	29	48	55
Innovation Enterprise Institutions (IEI)	6	4	143
Vocational Enterprise Institutions (VEI)	7	4	71
Technical Colleges	11	106	2
Specialised Institutions	24	3	4
Colleges of Health, Science and Technology	25	18	7
Colleges of Agriculture	19	14	–
TOTAL	121	197	282

TVET in Nigeria has been under ongoing reform for several years now. In 2007/8, Vocational Enterprise Institutions (↑VEI) and Innovation Enterprise Institutions (↑IEI) began operating. These are occupation-specific institutions which are supported by the private

sector, and provide an alternative route to higher education. According to UNEVOC, the IELs and VELs were introduced in Nigeria

*“to intensify private sector engagement and improve the relevance of the training to the job market, while providing popular means of skilling and re-skilling workforce”* (↑UNESCO-UNEVOC, 2012:12).

### 11.1.2. Private education providers in Botswana

In Botswana, there are 45 public institutions providing TVET, of which eight are TVET colleges and 37 brigade centres (TVET centres) offering a certificate up to diploma level. According to the government, considering that 10,622 students are enrolled,

*“this translates to 61% utilisation of facilities”* (↑Government of Botswana, 2015:25).

### 11.1.3. Private education providers in Ethiopia

In Ethiopia, we could not access the website of the Ethiopian Ministry of Education during the entire period of data collection. Therefore, our information on the country’s TVET system is somewhat limited. The country’s education statistics report (↑Ethiopia, 2011) informs us that, in 2003, there were 58,033 graduates from government TVET institutions and 56,747 graduates from non-government TVET providers. This enables us to conclude that non-government institutions represent a significant part of TVET provision in Ethiopia, since they account for nearly half of all the TVET graduates in the country.

### 11.1.4. Private education providers in Ghana

In Ghana, there is the Ghana National Association of Private Vocational and Technical Institutions (↑GNAVTI), indicating the possibility of a network between private TVET providers, as well as official engagement in the sector’s national standards or policy drafting.

According to our research, the Ghana Education Service (↑GES) is responsible for the monitoring and evaluation of 26 public Technical Training Institutes (TTI) and private TVET providers. A list of the 115 public and private institutions accredited by COTVET is available online (↑COTVET, 2020).

### 11.1.5. Private education providers in Kenya

In Kenya, public and private education providers coexist, but the involvement of companies in state TVET is not common. One of the TVET Permanent Working Group (PWG) objectives is to *“strategize on ways to match the needs of the private sector with the public sector”*. It also is supposed to offer *“an entry point for the private sector to communicate its needs to stakeholders”* (↑PWG, accessed Nov. 2019). We were able to obtain the total number of accredited TVET institutions in the country: based on data last updated

in April 2018, there were 987 accredited institutions. This number includes all types of public and private TVET institutions in Kenya.

In the private sector, the work developed by the Kenya Association of Manufacturers ([†KAM](#)) stands out. KAM's Manufacturing Academy offers courses in the following core categories: Strategic Management, Manufacturing Management, and Technical Operations. The Academy wants to ensure that KAM's members

*"remain at the cutting edge of the latest manufacturing research findings and service technology to enable them to remain competitive" ([†KAM](#), accessed Dec. 2018).*

KAM also provides a TVET Programme. As part of this programme, a three-month graduate internship in industry allocates each graduate to a mentor. In the two years since its launch, the programme aimed to place over 500 graduates on internships that should consequently convert into jobs. Another branch of the programme aimed to *"provide refresher training to industry employees based on identified skills gaps"* ([†KAM](#), accessed Dec. 2018). KAM states that it

*"facilitates travel logistics, mentorship training for supervisors and soft skills training. The industry provides practical skills training opportunities and assigns relevant supervisors to mentor the interns." ([†KAM](#), accessed Dec. 2018).*

#### 11.1.6. Private education providers in Tanzania

Tanzania is one of the countries where the private sector seems to have quite a significant role to play in the TVET system. According to the *Vocational Education and Training Authority* ([†VETA](#)), institutional-based training in Tanzania is provided through courses with different complexity (long and short courses). These are currently offered through the 29 VETA-owned centres and almost 538 centres under private ownership, other government agencies, faith-based organisations and civil society organisations ([†Government of Tanzania](#), accessed Dec. 2018).

#### 11.1.7. Private education providers in Uganda

Finally, in Uganda, the Directorate of Education Standards (DES), under the Ministry of Education and Sports, has two departments dedicated to TVET education: the Teacher Education Standards Department, and the Business Technical Vocational Education and Training Standards Department (BTNET). The latter has a portal which provides access to lists of TVET providers, their locations, and the programmes they offer ([†Government of Uganda](#), accessed Dec. 2018).<sup>3</sup> However, the portal lists only 14 private TVET providers a number significantly smaller than the number of public providers we ourselves could trace and that are discussed below. This casts doubt on the completeness of the portal.

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<sup>3</sup> The focus in this section is the evidence found on the prevalence of private TVET providers. Further and more broad information on DES, BTNET and other government departments can be found in Chapter 10.

The BTVET recognises skills acquired both formally and informally. It is expected

*“to promote the development of formal and non-formal institutions in the public and private sector; to incorporate and support training by non-public BTVET institutions and non-formal enterprise-based training; [and] to link formal and non-formal education and training and their respective curriculae”* (†Government of Uganda, 2008: 6).

According to the BTVET Act, private TVET providers in Uganda consist of three categories (†Government of Uganda, 2008: 8–9):

1. Non-public providers, which are non-governmental organisations, religious organisations and associations, private companies and individuals, who  
*“may provide BTVET [...] in accordance with BTVET principles, concepts and the established vocational qualifications framework”* (†ibid.)

2. Non-formal providers, which  
*“shall provide training aimed at upgrading skills and promoting indigenous technology”* (†ibid.)

and

3. Formal enterprise-based training, which  
*“shall provide industrial training”* (†ibid.).

## 11.2. Participation and role of industry, commerce and other groups with interest in TVET

In some countries, the industrial or commercial sectors are formally involved in the TVET system as training providers, advisory committees or through policy and curriculum development in collaboration with the government. Lolwana and Oketch assert that

*“whilst some countries report significant and formalised employer involvement in the TVET system, others can demonstrate little in this regard”* (†Lolwana & Oketch, 2017:18).

In Ghana, state and private TVET institutions are trying to work together. COTVET, the national TVET authority in Ghana, has an advisory committee for vocational training – the Ghana National Association of Private Vocational and Technical Institutions (GNAVTI) – in which industry representatives are involved.

Fortanier and van Wijk cite the tourism industry’s involvement in TVET as an example of the role of foreign companies in TVET (†Mozambique, Tanzania, Ethiopia: Fortanier & van Wijk, 2010). The authors analysed the impact of foreign hotels on local employment, and found that foreign hotels provided formal advanced training to its employees less often than local hotels. Additionally, their findings showed that, in general,



*“foreign hotels with a high proportion of expatriates in their management do provide significantly more advanced formal training than foreign hotels that do not have a high proportion of expat managers” (↑ibid.:202).*

### 11.2.1. Insights from the literature

In Botswana, Ghana and Kenya there was a record of intentions to involve the industry, skills councils and other stakeholders in curriculum design (Botswana: ↑Government of Botswana, 1997; Ghana: Ghana Skills Development Initiative, 2019; ↑Kenya: ↑UNESCO-UNEVOC, 2018). In Kenya, according to UNEVOC, the engagement of other players goes beyond that, for example,

*“to develop occupational standards and actively participate in curriculum assessment to ensure their compliance with the latest competency levels” (↑UNESCO-UNEVOC, 2018: 7).*

It is worth mentioning that Mayaka & King’s research findings indicate that in Kenya,

*“there appears to be an insufficient incidence of formal training incorporating on-the-job experience and this poses a challenge for both industry operators and education-providers” (↑Kenya: Mayaka & King, 2002:130).*

In Nigeria, we found evidence of the participation of industry in curriculum development (↑UNESCO-UNEVOC, 2012:7). Through desk-based research, we identified that Nigeria’s National Skills Qualifications Standards are sector-specific and set by industry. Training in the country is provided by education institutions in partnership with industry, and the skills prescribed in the national standards are assessed at both the workplace and training centres.

We found very little reference to other institutions involved in TVET apart from what has already been discussed above in the research literature. The SCR provided some further guidance on the subject.

### 11.2.2. Insights from interviews and focus groups

In the interviews and focus groups, we obtained additional insights regarding the role of the industry and other actors in Cameroon, Ethiopia, Ghana, Kenya, Madagascar, Namibia, South Africa and Zambia.

#### Cameroon

In Cameroon, businesses are involved in designing curricula and ensuring these address their needs. As the educational system moves towards competency-based training, strategies have been put in place to involve companies in student training. The aim is for trainees to acquire field competency, put the theoretical course into practice, and become adept at using relevant equipment, which is not necessarily available at all schools. The Ministry of Secondary Education is responsible for establishing partnerships with businesses for TVET internships and has established a service that negotiates

places for students within companies. However, a disconnect between training and businesses is still present despite these recent efforts.

Partnerships enabling internships to be carried out in industry were also cited by participants from Kenya, Madagascar and Tanzania. In the latter country, at the Arusha Technical College, for example, members from industry are also regularly invited to share their experience by giving lectures and demonstrating practical skills.

## **Ethiopia**

Our interviewees and focus group participants reported that business participation is weak, and partnerships are not the norm, in Ethiopia, Ghana and South Africa. As mentioned in Section 11.1.3, in Ethiopia, despite the existence of legislation determining that training be done largely within industry, the small size of the industrial sector, together with management problems, has prevented the college-based TVET system in the country from shifting to a more practical approach. Trade unions are not very strong and there might be some collaboration locally, but it is not very visible. The government was intending to help establish partnerships with businesses, but the participants have not yet seen evidence of this.

## **Ghana**

In Ghana too, the formal sector only engages in TVET at local level and the extent to which it commits to do so varies. Businesses are not eager to participate, relying on the TVET institutions to contact them, but TVET programme planners and implementers are not managing to do this sufficiently. The majority of small businesses in Ghana operate in the informal sector. SCR participant Christina Boateng, in the interview, expressed the view that these small businesses might feel that they have nothing to offer. Whether or not that is the case, programmes are not aligned with the needs of industry, leading Christina Boateng (University of Cape Coast, Ghana) to stress the need to come together and design programmes that meet demand.

## **Kenya**

In Kenya, students from the Technical University of Mombasa, which was a TVET college before becoming a university, go on to train in industry for periods of many months, and they have observed that this is a programme that works very well. The Kenya Association of Technical Training Institutions (KATTI) organises industrial training and attachments, and was cited as being an asset in supporting the technical elements of these partnerships between companies and training institutions. Yet although Kenya is implementing the dual system, business participation is not at the level that it could be.

## **Madagascar**

We were informed that in Madagascar, there is good cooperation between TVET institutions and industry. The government does not explicitly prescribe the curriculum but considers compliance with certain requirements. Each programme is designed by a team of teachers and professionals from companies or trade unions, then validated

by the National Accreditation Council. The curriculum is updated by the National Accreditation Council at the beginning of most academic years. Students also spend 8–12 weeks each year in industry, with an additional 30 weeks of classroom teaching (one semester is 15 weeks).

## **Namibia**

Similar to Cameroon, businesses in Namibia are also involved in designing curricula, ensuring that they address their needs. Namibia is moving towards compulsory industrial attachment for all TVET students and soon, no-one will be certified as artisan without industry exposure. Currently, there is participation in industry to an extent. Trade unions and other actors do get involved in the labour market analysis when identifying occupations that are in demand and need to be developed. Since the Industry Skills Committee was introduced in 2008, there have been improvements. The Committee represents various sectors of the economy and plays a critical role in identifying skills gaps in the respective industrial sectors.

## **South Africa**

In South Africa, business participation in TVET has not been given the necessary support, and current partnerships are episodic depending on TVET colleges reaching out. We are informed that businesses are usually dissatisfied with the education outcomes (leavers' skills) from arrangements made with colleges. Once again, the creation of partnerships with small businesses is encouraged by participants in the SCR as a means to increase TVET and industry collaborations.

## **Zambia**

In Zambia, a government department – the Technical Education, Vocational and Entrepreneurship Training Authority (TEVETA) – works to ensure that businesses are involved in the curriculum design, in order to guarantee that training addresses the needs of the industry. The government also established the Skills Development Fund (SDF) a few years ago. Industry contributes financially to the SDF, and is involved in deciding how it is utilised.

### **11.2.3 Specific sectors**

Participants in the SCR highlighted certain industries where partnerships seem to work better than in others. The ICT sector is cited as a field of work where partnerships between companies and TVET institutions work quite well, although, as Lova Zakariasy (Higher Institute of Technology of Antsiranana, Madagascar) points out, these pairings are only of limited value because, while students can find jobs easily, they tend to work as sales assistants rather than IT technicians. Civil and naval engineering are reported as providing good partnerships, as are energy, water and maintenance companies. Tourism is one of the sectors where these partnerships could also be successful, according to Francis Teal (Centre for the Study of African Economies, University of Oxford and IZA, UK), but, he adds, there has not been sufficient investment to generate a demand.

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## Chapter 12. National Standards and Regulations<sup>1</sup>

This chapter focuses on national standards, guidelines and regulations for TVET in SSA. We know of only a few efforts to introduce transnational regulations for TVET. The research literature does not provide much insight into these areas. Therefore, we had to gather information mainly from sources on the internet (government websites). Some states in SSA have informative, well-structured and well-maintained websites on all aspects of their TVET systems. However, there are also government agencies (e.g., in Ethiopia) where this information was hardly, if at all, available on the internet. In some cases, aspects of TVET were also identified via privately operated websites.

The countries considered in particular detail in this chapter include Botswana, Ghana, Kenya, Malawi, Mauritius, Nigeria, Tanzania, Uganda and South Africa, with occasional reference to Namibia, Rwanda and Zambia. As detailed in Chapter 3, we have selected these SSA states according to how frequently they are mentioned in the relevant publications, and on the basis of evidence of their (efforts towards) dual systems.

### Research questions considered in this chapter

The research questions considered in this chapter are listed in the box below.

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### Research questions considered in this chapter

#### RQ18. National standards and policies.

**[RQ18.a]** Which countries have **national standards** for TVET? How were they produced and to whom do they apply? E.g., students, educators, educators located at the workplace, pedagogy specialists, institutions.

**[RQ18.b]** How are national TVET standards **monitored**? To what extent do data collection and policy planning tools exist at national or regional levels?

**[RQ18.c]** Within these countries, which **state authorities** are involved in TVET?

**[RQ18.d]** To what extent / how have **national TVET systems been formalised** (i.e., embedded in the formal education or employment system)? To what extent are the described forms of training integrated into the formal system of the respective country? What measures were recommended and possibly implemented in this regard?

### Conclusions of this chapter

Botswana, Ghana, Kenya, South Africa, Nigeria, Uganda, Mauritius and Malawi all have national qualifications frameworks for education. Such qualifications set minimum requirements for the classification, registration and accreditation of national qualifications and certificates. In some countries (Kenya, Ghana, Uganda and Tanzania), these frameworks also provide pointers to pedagogical approaches to be followed. In each of these countries, competence-oriented education is recommended.<sup>2</sup>

TVET-specific qualification frameworks were found only in Botswana, Ghana and Uganda. Our research found that Botswana, Kenya, Uganda and South Africa strategically plan and develop TVET. In South Africa, for example, the training of teachers for TVET is conducted by the state.

Strategic Community Review (SCR) participant Amon Haufiku (Namibia Training Authority), mentioned that the Southern African Development Community (SADC) has developed a qualification framework to ensure free mobility and recognition of member countries'<sup>3</sup> qualification frameworks, ensuring proper alignment between the different nations.

Our internet search and policy analysis show that most of the countries in SSA have government agencies responsible for the accreditation of TVET programmes and TVET institutions. In Ghana, Kenya, South Africa, Mauritius, Nigeria and Uganda, state guidelines are issued for any TVET offered.

Information is provided on the governmental websites of Botswana, Ghana, Kenya, Nigeria, South Africa and Uganda regarding their responsibility for regulating, accrediting and monitoring TVET. These governments have developed standards for TVET, the quality requirements for which they (partially) publish and for which they (partially) monitor compliance.



Approaches to the management of TVET that are worth supporting and developing can be found across the U-publications of the above countries, which inform our discussion of the issues in this chapter. Although there is research on the general management of TVET, there is little specific research on the TVET standards (including the appropriateness, development and testing of such standards). Generally speaking, we can therefore say that the TVET standards are not informed by specific research.

Researching standards is a promising field for future research. For example, Joy Papier (University of Western Cape, South Africa) noted that South Africa is far ahead in terms of policies on teacher development because the country standardised its teacher education. According to her, more and more countries in SSA are trying to standardise the qualifications. We note that further discussion of the need for research on policy is presented in Chapter 14, based on the insights of participants in the SCR.

As in the other chapters, the following sections present individual aspects of the chapter summary above.

## 12.1. National qualifications frameworks for TVET

The table below lists national qualifications frameworks (NQFs) for TVET from the countries in SSA that have published this information. These policies were available on public websites; further policies may potentially be obtained from Ministries directly. Some of the current qualification frameworks were introduced in the early 2000s. Since then, there has been an increase in the number of countries establishing their national standards in recent years.

**Table 12.1. Qualifications frameworks and TVET-related national standards in SSA**

Country and Year of Publication	Qualification Framework / Standards	Published or established by
Botswana, 1997	NPVET—National Policy on Vocational Education and Training ( <a href="#">†Government of Botswana, 1997</a> )	MLHA—Ministry of Labour and Home Affairs
Botswana, 2005	BNVQF—Botswana National Vocational Qualifications Framework ( <a href="#">†Government of Botswana, 2005</a> )	BOTA—Botswana Training Authority
Botswana, 2016	NCQF—National Credit and Qualifications Framework ( <a href="#">†Government of Botswana, 2016</a> )	BQA—Botswana Qualification Authority

Ghana, 2012	NTVETQF—National Technical and Vocational Education and Training Qualifications Framework ( <a href="#">↑Government of Ghana, estimated 2012</a> )	COTVET—Council for Technical and Vocational Education and Training
Kenya, 2014	KNQF Act—Kenya National Qualifications Framework Act N° 22 ( <a href="#">↑Government of Kenya, 2014</a> )	National Council of Law
Kenya, 2015	National Industrial Training Standards ( <a href="#">↑Government of Kenya, 2015</a> )	NITA—National Industrial Training Authority
Kenya, 2018	CBETA Standards and Guidelines—TVETA Competency-Based Education and Training and Assessment Standards & Guidelines ( <a href="#">↑Government of Kenya, 2018</a> )	TVETA—Technical and Vocational Education and Training Authority
Malawi, 2015	National Education Standards—primary and secondary education ( <a href="#">↑Government of Malawi, 2015</a> )	MoEST—Ministry of Education, Science and Technology
Mauritius, 2001	MQA Act—Mauritius Qualifications Authority Act No. 42 ( <a href="#">↑Government of Mauritius, 2001</a> )	Federal Government
Nigeria, 1985	Education Act No. 16 (National Minimum Standards and Establishment of Institutions) ( <a href="#">↑Government of Nigeria, 1985</a> )	Federal Government
Nigeria	NID Curricula—National Vocational Certificates – curriculum and course specifications ( <a href="#">↑Government of Nigeria, accessed 2018</a> )	NBTE—National Board for Technical Education
South Africa, 2006	Further Education and Training Act No. 16 ( <a href="#">↑Government of South Africa, 2006</a> )	Federal Government
South Africa, 2008	NQF Act—National Qualifications Framework No. 67 ( <a href="#">↑Government of South Africa, 2009</a> )	Federal Government
South Africa, 2013	NQF Level 1—Regulation on the Assessment Process and Procedures for Adult Education and Training (AET) ( <a href="#">↑Government of South Africa, 2013</a> )	DHET—Department of Higher Education and Training
Uganda, 2014	UBTEB rules on the assessment of competences and conduct of business, technical and vocational examinations in Uganda ( <a href="#">↑Government of Uganda, 2014</a> )	UBTEB—Uganda Business and Technical Examinations Board

Uganda, 2012	Uganda Vocational Qualifications Framework (UVQF) summary of generic level descriptors ( <a href="#">↑Government of Uganda, 2012</a> )	DIT — Directorate of Industrial Training
Uganda	<a href="#">Qualifications Framework</a> ( <a href="#">↑Directorate of Industrial Training</a> , accessed 2018)	DIT — Directorate of Industrial Training

### 12.1.1. Scope of the standards

In the vast majority of countries, the national standards documents are relevant to TVET institutions. They set the minimum requirements for the classification, registration and accreditation of national qualifications and certificates.

The East African Common Higher Education Area was cited as an organisation that could eventually propel the harmonisation of TVET in the member countries with different NQFs. However, UNESCO's report on the status of TVET in the South African Development Community (SADC) region warns that although NQFs can make a contribution to TVET reform,

*“they cannot transform overnight problems with limited progression, lack of recognition of prior learning or integration of informal sector training into a national skills system”* ([↑UNESCO, 2013](#)).

The standards apply to private and state education providers and are monitored by government agencies (Table 12.1), which are responsible for the accreditation of institutions and TVET programmes. One of the tasks of the institutions is also to make TVET popular among students. To this end, they conduct public relations work and provide information on career paths that are possible after choosing certain courses.

### 12.1.2. Pedagogical approaches promoted in qualification frameworks

Where the pedagogical approach was discussed in the official documents of Kenya, Ghana, Uganda, Tanzania and South Africa, competency-based education was consistently the preferred choice. However, this approach, and the concept of competence behind it, are not explicitly mentioned in the research papers we reviewed. Nevertheless, the documents are clearly set within on a competency-based model which reflects an Anglo-Saxon educational tradition ([↑Deissinger, 2013](#)), and not on the paradigm of TVET that exists in Germany ([↑ibid.](#)) as recommended by the German Kultusminister Konferenz<sup>4</sup> since 2017 ([↑KMK, 2017](#)).

Generally speaking, there is little specific research on the pedagogical models or indeed the competency-based model. For country-specific details, we thus have to rely on information made available by the various authorities. For example, in Uganda, the Directorate of Industrial Training (DIT) is responsible for defining the Ugandan framework for TVET and decided to take a competency-based approach. The Uganda Business and Technical Examinations Board (UBTEB) sets the criteria for the assessment of vocational skills in guidelines, and monitors their implementation. The Vocational Qualifications Framework (UVQF) and the institutional framework for the promotion and coordination

of Business Technical Vocational Education and Training (Uganda BTNET) were established in 2008. State-certified training courses are therefore required to adopt the competence orientation. However, this does not rule out the possibility that private education providers will turn to other basic pedagogical positions in TVET. We do note that in Uganda, the most important representatives of industry were involved in the introduction of competence-oriented TVET. They have clear interest in the implementation of a competence-based curriculum by vocational training providers, and want to ensure on-the-job training (in production) in the future and make it a compulsory part of examinations (DIT, UBTEB).

Our literature survey encountered a few more references debating the development, implementation and assessment of a competency-based curriculum (e.g., [†Namibia: Shindi, 2017](#); see also, [†Rwanda: Muraraneza & Mtshali, 2018](#); [†Rwanda: van Halsema & Mulder, 2017](#); [†Mulder, et al., 2007](#)). However, one of the publications discussed the underlying theoretical concept of competency-based education.

### **12.1.3. Qualifications frameworks exclusively dedicated to TVET, and sector strategic plans**

We found specific TVET qualification frameworks in three countries: Botswana, Ghana and Uganda. The Botswana National Vocational Qualifications Framework ([†Government of Botswana, 2005](#)) is exclusively dedicated to TVET, having no links to general or higher education. In Ghana, the National Technical and Vocational Education and Training Qualifications Framework (NTVETQF) prescribes a nine-level qualifications framework for the TVET sector, describing the knowledge, skills and attitudes that should be expected from students for each one of the nine levels. These first six levels are considered to be pre-tertiary education. The Ministry of Education's Council for Technical and Vocational Education and Training (COTVET) in Ghana, is considering opening up the first two levels to the informal sector. In other words, COTVET is seeking to include apprentices in informal TVET relationships within framework. The remaining three levels require a demonstration of high levels of conceptual knowledge, as well as supervisory and management capabilities.

Our internet search also revealed strategic plans designed specifically for the TVET sectors in Botswana ([†ETSSP 2015–2020—Education & Training Sector Strategic Plan](#)), Kenya ([†TVET Strategic Plan 2018–2022](#)), Uganda ([†BTNET Strategic Plan 2011–2020](#)) and South Africa. The latter has also developed the Human Resource Development Strategy for South Africa 2010–2030 ([†Government of South Africa, 2010](#)) and an integrated strategic planning framework for teacher education and development 2011–2025 ([†Government of South Africa, 2011](#)).

Focussing on Kenya, Lawrence Mukhongo Manyonge (Technical University of Mombasa, Kenya) mentioned that a number of structures have been put in place that support TVET in that country. He cites as examples the presence of TEVETA and a permanent secretary dedicated to TVET at the Ministry of Education, the TVET Act 2013 (and the creation of TVET Authority), the proposition for the creation of a Kenya National Qualifications

Authority (KNQA), and a NQF providing 10 levels of education (up to PhD). For Miki Gilbert Ngwaneh (Vocational Centre for International Development, Cameroon), Kenya's model of polytechnics, and how they equip students with skills, is distinctive. He added that their polytechnics are based on the UK model.

## 12.2. State regulation of TVET

As we have previously noted our internet search and policy analysis have shown that most SSA countries have government bodies dedicated to accrediting TVET programmes and institutions. These accreditations are typically renewed every few years, with validity varying from a minimum of two years to a maximum of five years. The exact length depends on the country and the course that is being provided.

In addition to our analysis of the research, we can draw on statements from SCR participants who commented on state regulations. For Gabriel Konayuma (Ministry of Higher Education, Zambia), Malawi has done well by having a more organised framework for financing the TVET system. In terms of Tanzania, he highlights their decentralisation process, deeming that they have done well. Emmanuel C. Osinem (Department of Vocational Teacher Education, University of Nigeria) believes that Tanzania gives more attention to TVET, emphasising the fact that they have a Federal Minister for the sector.

Table 12.2 below lists the state TVET regulations that were found by our internet search, in addition to what was retrieved through the literature review. Following the table is a brief description of the registration, accreditation and monitoring processes in those countries. Notably, Nigeria stands out for the number of documents it has published over the years and the amount of information available. This has given us a better understanding of the regulatory process involved in Nigeria's TVET than in other countries.

**Table 12.2. State TVET regulations per country, and year of publication**

Country	Year of Publication	State TVET regulations
Ghana	2007	Polytechnic Law ( <a href="#">†Government of Ghana, 2007</a> )
Kenya	2016	Guidelines for Registration of Training Providers ( <a href="#">†Government of Kenya, 2016</a> )
	2013	Technical and Vocational Education and Training Act No. 29 of 2013 ( <a href="#">†Government of Kenya, 2013</a> )
	2015	Technical and Vocational Education and Training Act Regulations ( <a href="#">Government of Kenya, 2015</a> )
Mauritius	2009	Mauritius Qualifications Authority regulations ( <a href="#">†Government of Mauritius, 2009</a> )

Nigeria	1985	Education (National Minimum Standards and Establishment of Institutions) Act No. 16 ( <a href="#">↑Government of Nigeria, 1985</a> )
	1987	Educational Correspondence Colleges Accreditation Act No. 32 ( <a href="#">↑Government of Nigeria, 1987</a> )
	2014	Guidelines and Procedures for the Establishment of Private Technical and Technological Institutions ( <a href="#">↑Government of Nigeria, 2014</a> )
	2006	Guidelines for Establishment and Operation of Production Unit in Technical Colleges ( <a href="#">↑Government of Nigeria, 2006</a> )
	2007	Standards and Criteria for Approval of Programmes in Vocational Enterprise Institutions (VEI) ( <a href="#">↑Government: Nigeria, 2007</a> )
South Africa	2015	National Policy on Community Education and Training Colleges ( <a href="#">↑Government of South Africa, 19 2015</a> )
	2011	Integrated Strategic Planning Framework for Teacher Education and Development in South Africa, 2011–2025 ( <a href="#">↑Government of South Africa, 2011</a> )
Uganda	2013	Guidelines for establishing, licensing, registering and classification of private schools/institutions in Uganda ( <a href="#">↑Government of Uganda, 2013</a> )

### 12.2.1. Regulation in Botswana

In Botswana, the Botswana Training Authority (BOTA) works in parallel to the Botswana Qualifications Authority (BQA) in the regulation of training providers. The latter registers and accredits learning programmes and assessors, as well as awarding bodies and moderators. As specified by Botswana's TVET Act, the BOTA is mandated to

*“accredit, register and monitor both public and private training institutions to ensure adherence to the required standard and quality of training and to minimise variability between the training institutions” and has the power to “accredit, monitor and evaluate the implementation of programme courses for a comprehensive development of the individual, the economy and the society”* ([↑Government of Botswana, 1998:5](#)).

The BOTA strived to develop standards that were based on both industry's and learners' needs. Its Learning Programmes service provides several guidelines for quality assurance of school-based and work-based TVET. (For further information, see Section 12.3.2.)

### 12.2.2. Regulation in Nigeria

The UNEVOC country profile report on Nigeria's TVET system provides a good insight into how it regulates TVET providers and how it conducts education quality assessments. The report highlights that accrediting agencies usually take into consideration four basic standards when carrying out programme accreditation: the students, the physical facilities, the staff and the available funding. Some agencies add the quality of teaching and learning, which according to UNEVOC *"is actually the interaction of the four standards in the implementation of the curricula"* (↑UNESCO-UNEVOC, 2012: 11).

The functions of the National Board for Technical Education (↑NBTE) include

*"the establishment and maintenance of minimum standards in polytechnics and other technical institutions in the Federation", and the "accreditation of academic programmes in all technical and vocational education (TVE) institutions for the purpose of award of national certificates and diplomas and other similar awards"* (↑Government of Nigeria, accessed Dec. 2018).

UNESCO-UNEVOC's account of the accreditation process in Nigeria was the closest and only illustration we could retrieve on how this process might take place. It is described as follows:

*"Accreditation visit to a specific discipline is usually undertaken by a panel of experts in the professional [...] area drawn from the academia, industry, and relevant professional bodies, under NBTE's coordination. The team normally uses the NBTE minimum guide curriculum and programme specifications, as the minimum reference, and the NBTE's programmes evaluation form, as a guide."* (↑UNESCO-UNEVOC, 2012: 11)

Moreover, through the internet search, we identified that Nigeria's Federal Education Quality Assurance Service (FIS) fulfils its mandate of ensuring *"optimal attainment in all Institutions below tertiary level"* and *"uniform standard and quality control of instructional activities"* by carrying out regular inspection and continuous supervision of schools (↑Government of Nigeria, accessed 2018). Indeed, the FIS has a whole school evaluation inspectorate division (I-WSE), as well as a curriculum and pedagogy (I-C&P) division. To carry out such inspections, it has one Zonal Office in each of the six geopolitical zones of the country as well as 36 state offices. Despite having the structure and regulations in place, some difficulties in keeping inspections up-to-date should be expected, since at the time the data for this report was collected, FIS's website stated that there was

*"only one substantive Director heading South-East zones; while the state offices are headed by Coordinating Inspectors who are normally Deputy Directors. However, only 20 state offices are manned by Deputy Directors"* (↑ibid.).

Additionally, in 2007, registration of all professionally qualified teachers became mandatory, and in-service seminars and workshops started to be introduced all over the country with the aim of training teachers and qualifying unqualified teachers. UNESCO-UNEVOC states that



*“generally, the Teachers’ Registration Council of Nigeria (TRCN) undertakes the accreditation of the courses and programmes of all establishments that prepare individuals intending to become teachers in Nigeria”* (†UNESCO-UNEVOC, 2012: 10).

### 12.2.3. Regulation in Tanzania

In Tanzania, the registration of public and private institutions and the accreditation of their programmes fall under the mandates of the Vocational Education and Training Authority (VETA) and the National Council for Technical Education (NACTE) (†UNESCO-UNEVOC, 2016:13). As the country’s TVET authority, VETA is responsible for setting the sub-sector standards, developing curricula, carrying out assessment and awarding certifications. Thus,

*“it is the government body that set the standards for TVET institutions – registering and accrediting them and auditing them for compliance”* (†Government of Tanzania, accessed Dec. 2018).

The Authority website states that, by 2018, there were a total of 573 registered centres in Tanzania, 29 of which are owned by VETA.

### 12.2.4. Regulation in Uganda

In Uganda, the 2013 Guidelines for Licensing and Registering of Private Schools lists the requirements to accredit schools. The document has a section on the requirements for operating TVET providers, in which it states that

*“BTVET [business, technical, vocational education and training] schools/ institutions at the time of registration will be required to have in place all the Basic Requirements and Minimum Standards (Indicators for Educational Institutions) as contained in the Directorate of Education Standards (DES) booklet (November 2000, BRMS)”* (†Government of Uganda, 2013:11).

## 12.3. Quality assurance and accreditation of TVET

In some countries, the parliamentary acts establishing the TVET authorities also list the criteria for accrediting, monitoring and evaluating TVET institutions and / or programmes. An example of this is the Kenya National Qualifications Framework Act (KNQF Act), which also includes the delineation of a system of competencies and attainment of national qualifications by KNQA. The Kenya Qualifications Framework establishes the standards for the recognition of qualifications obtained in and outside of the country, with the aim of facilitating mobility and progression within education, training and career paths. In other countries, however, the qualifications frameworks and the regulations and assessment of TVET providers and / or programmes have been developed by different state authorities altogether. Following Table 12.3 below, on regulating and monitoring responsibilities by country and state authority, is a brief description of the monitoring of TVET standards in each of the countries mentioned in that table.

### **12.3.1. Functions and responsibilities of state authorities**

The state authority in charge of monitoring standards and qualifications is usually the TVET authority and/or the quality assurance authority if the country has one. The details are not always clear regarding how the monitoring and evaluation systems are structured, and how data are collected and analysed.<sup>5</sup> Regarding policy planning related to TVET standards, each government body is generally expected to advise the Ministry of Education on matters within their mandate. Hence, the same institutions are repeatedly drawn upon in each country. In summary, the bodies responsible for monitoring TVET standards in the following countries are:

**Table 12.3. Regulating and monitoring responsibilities by country and state authority**

Country	State authority	Functions and responsibilities
Botswana	↑BOTA	Definition and regulation of national TVET standards;  Registration of development in the field of educational provision;  Definition of TVET regulations;  Advisor for the Minister on TVET matters.
	↑BQA	Monitoring and evaluation of TVET quality assurance standards;  Advisor for the Minister on quality standards matters.
Ghana	↑TVED	Education Division (TVED) is one of the ten (10) Divisions of the Ghana Education Service (GES) Headquarters responsible for implementing pre-tertiary Technical and Vocational Education under the Ministry of Education (MoE);  Monitoring and evaluation of public Technical Training Institutes and private TVET providers;  Guidelines for examinations and certifications in TVET.
	↑COTVET	Formulates national policies for skills development;  It is expected that the tasks of the TVED will be transferred to COTVET in the future.
Kenya	↑TVETA	Registration, licensing and accreditation of institutions, programmes and trainers;  Management of the TVET National Quality Assurance System;  Determination of national TVET objectives;  Advises government in all matters regarding training.
	↑NITA	Inspection of industrial training providers.
	↑TVET CDACC	Designs and develops CBET curricula and carries out competence assessment and certification.

Nigeria	↑FIS	Monitoring and evaluation of education quality; Inspection and continuous supervision of instructional activities in schools; Collection of information on problems and difficulties encountered by teachers and institutions.
	↑EPRD, MoE	Policy planning for the education sector
South Africa	↑DHET, ↑UMALUSI (Council for Quality Assurance in General and Further Education and Training)	Accreditation of education providers Promotion of education quality improvement Assessment and certification of learners' achievement
Tanzania	↑VETA	Accreditation of education providers Definition of TVET regulations and guidelines concerning syllabi, examination and certification Inspection and supervision of TVET centres
Uganda	↑DIT	Development of occupational standards Assessment and certification of students Assessment of education programmes Accreditation of assessment centres and assessors
	↑DES	Inspection of schools and institutions Evaluation of education programmes and institutions Publication of reports on education quality and the dissemination of good practices

### 12.3.2. Monitoring of TVET standards in Botswana

In Botswana, data collection and monitoring of the TVET system is carried out by two agencies of the Ministry of Education and Skills Development: the Botswana Training Authority (↑BOTA) and the Botswana Qualifications Authority (↑BQA). The country's TVET Act assigned the BOTA the power to make regulations for any matter affecting apprenticeship training (↑Government of Botswana, 1998). This includes prescribing and regulating national training standards for the various qualification levels within the National Vocational Qualifications Framework, and requesting information from any training provider in the country where it deems this necessary in order to carry out its functions. On the other hand, the BQA coordinates quality assurance from early childhood to tertiary level by regulating compliance through monitoring and evaluation. Accordingly,

the BQA sets up the criteria for designing, developing, implementing and reviewing the national common quality assurance platform for the country's education system as a whole. Additionally, it is expected to advise the Minister on all matters pertaining to its functions. This includes the development of policy and criteria for work-based teaching and learning, the recognition of prior learning, and the credit accumulation and transfer system.

### 12.3.3. Monitoring of TVET standards in Ghana

In Ghana, TVET quality assurance is the responsibility of the Ministry of Education's Council for Technical and Vocational Education and Training ([↑COTVET](#)). The Council intends to issue annual reports on the state of skills development in the country in 2021, and has the objective of formulating national policies for skills development across the broad spectrum of pre-tertiary and tertiary education: formal, informal and non-formal. Currently, The Ghana Education Service (GES)<sup>6</sup> has a Technical and Vocational Education Division (TVED)<sup>7</sup> in charge of the monitoring and evaluation of 26 public Technical Training Institutes (TTIs) and private TVET providers. Likewise, at this moment, TVED develop and review the curriculum of TVET programmes, conducts TVET examinations, and awards certificates. We note that such responsibilities are planned to be shifted to COTVET. The Ministry of Education also includes the National Board for Professional and Technician Examinations (NABPTEx)<sup>8</sup>, responsible for evaluation, assessment and certification for non-university tertiary institutions.

### 12.3.4. Monitoring of TVET standards in Kenya

In Kenya, under the Ministry of Education, Science and Technology ([↑MoEST](#)), the Technical and Vocational Education and Training Authority (TVETA) is responsible for implementation of the TVET national quality assurance system. It covers 14 areas, including industrial attachment / internship; the condition of the learning environment; adequacy of tools and equipment for training; management of examinations; internal quality assurance mechanisms; and the professional and pedagogical qualifications of trainers. MoEST's TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) is mandated

*"to undertake design and development of curricula for the training institutions' examination, assessment and competence certification and advise the Government [on related matters]" ([↑TVET Curriculum Development, Assessment and Certification Council. Kenya, 2015:1](#)).*

Finally, the responsibilities of the National Industrial Training Authority ([↑NITA](#)) includes inspection of training providers. It sets the standards and guidelines for internal and external quality assurance in industrial training and publishes the list of approved training providers on its website. The latest list was released in May 2020 ([↑National Industrial Training Authority, 2020](#)). A code of conduct for registered training providers can also be found on the Authority's website.

Kenya developed another instrument for monitoring with the Kenya National Qualification Framework Act (KNQF Act, 2014). The Framework provides for the registration of qualifications by awarding institutions. It also develops policies to guide education and training, and policies for the development of training standards in all levels of training. In implementing this Framework, KNQA works together with regulators including the Commission for University Education (CUE), TVETA and professional bodies.

Kenya is also making use of the TVET Act 2013, which provides for the accreditation of institutions, programmes and trainers by TVETA. TVETA also develops standards and guidelines for the implementation of training in Kenya, such as CBETA, the trainers qualification framework and the minimum standards for infrastructure and equipment. It has established a National Polytechnic and a centre of excellence. In addition, TVETA has developed the Kenya National Quality Assurance Framework (KNQAF), an accreditation manual and quality management system for TVET providers.<sup>9</sup>

### 12.3.5. Monitoring of TVET standards in Nigeria

In Nigeria, ensuring optimal attainment in all institutions below tertiary level is the responsibility of the Federal Education Quality Assurance Service (FEQAS). This is achieved by carrying out regular inspections and continuous supervision of instructional activities in schools, with the aim of assuring uniform standards and quality control of TVET provision. According to Nigeria's Ministry of Education:

*"inspection and supervision are two complementary processes in quality assurance and relate to the monitoring of instructional practises and performance of an educational establishment. Inspection concerns evaluation by external agents and is carried out by Federal, as well as State Inspectors. Supervision is an internal process carried out by School functionaries such as the principal, vice principals or heads of departments or other state-designated personnel"* († Government of Nigeria, accessed May 2020).<sup>10</sup>

The FIS is hence responsible for designing, monitoring and evaluating instruments for measuring education quality. It has the mandate of obtaining information on the problems and difficulties encountered by teachers and institutions, and putting forward practical solutions to them. According to †UNESCO-UNEVOC (2012), Nigeria's TVET was faced with a lot of issues, one of them being a lack of efficient educational monitoring and evaluation procedures. The report states that FIS is also responsible for ensuring linkages with

*"the Nigerian Educational Research and Development Council, the faculties of education, institutes of education and other national and international bodies on development in curriculum content, delivery and pedagogy practices as they apply to secondary technical and vocational education"* (†ibid.:9).

9 †Technical and Vocational Education and Training Authority (TVETA), Home, available at [www.tveta.go.ke](http://www.tveta.go.ke)

10 †Government of Nigeria, Education, available at <https://nigeria.gov.ng/programs-initiatives/education/>.

Policy planning, however, falls under the Educational Planning Research and Development department of the Ministry of Education.

### 12.3.6. Monitoring of TVET standards in South Africa

In South Africa, the General and Further Education and Training Quality Assurance Council ([↑Government of South Africa, 2001](#)) accredits providers, promotes education quality improvement and ensures providers adopt quality management systems for learner achievement. The council also assures the quality of learner assessment at exit points and issues certificates of learner achievement. Thus, it is the State authority in charge of monitoring standards and qualifications in South Africa. Its responsibilities include the maintenance of a data bank, reporting to the Minister on the performance of departments of education as providers, and recommending the necessary steps to rectify any of its deficiencies. Finally, the Council is responsible for regulating the relationship between the national Department of Education, the South African Qualifications Authority, Education and Training Quality Assurance Bodies, and providers.

In South Africa, responsibility for teacher training is distributed among various ministries. The Department of Higher Education and Training ([↑DHET](#)) and the Basic Education departments in South Africa published a strategic plan to provide a framework for teacher education with the aim of improving the country's education quality. The Government worked towards empowering principals to manage their schools and be held accountable for maintaining a high standard of education, entering them into performance contracts with clear targets. The plan expected that the government would track teachers' performance

*"through the independently moderated annual national assessments in all public primary schools" ([↑Government of South Africa, 2011:6](#)).*

However, the last national assessment report we could find at the point of data collection for this report was written in 2014.

### 12.3.7. Monitoring of TVET standards in Uganda

The Ministry of Education and Sports ([↑MoES](#)) in Uganda has a Directorate of Industrial Training ([↑DIT](#)). Its responsibilities include: the development of occupational standards, the assessment of training packages, the accreditation of assessment centres and assessors, and the administration of competency-based assessments and certification of successful candidates. Also under Uganda's Ministry of Education and Sports is the Directorate of Education Standards (DES), which is responsible for setting, reviewing and monitoring quantitative and qualitative standards in the education sector. Its key functions are the planning and development of inspections of schools and institutions, evaluations of the effectiveness of education programmes and institutions, and issuing reports on the quality of education and the dissemination of best practice. Thus, it has published a series of six booklets guiding education professionals on how to improve the experiences and achievements of learners in schools, and of technical/vocational institutions, by focusing on their needs ([↑Government of Uganda, 2012](#)). DES' work



covers all the districts in Uganda and both public and private schools and institutions. The Directorate also provides professional and policy advice to the MoES, local governments, schools and other institutions such as the UNEB, the National Curriculum Development Centre and the Education Service Commission.

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## Chapter 13. Challenges to Policy Implementation<sup>1</sup>

This chapter discusses the questions regarding the implementation, impact and evaluation of TVET policy in SSA (RQ19.g, RQ20). In doing so, we can only rely on the few publications that can be found on this research topic. In the evaluated publications, it becomes clear that some of the states involved in our study set themselves very ambitious goals in TVET—including the development of work-focused and competence-oriented TVET. However, it is clear that the implementation of these claims poses a great challenge for states in SSA and their TVET authorities. This chapter identifies these challenges and the resulting mitigation strategies.

### Research questions considered in this chapter

The research questions considered in this chapter are listed in the box below.

#### Research questions considered in this chapter

**[RQ19.g]** What role does **TVET research** play in the respective national/regional education policies?

#### **RQ20. State regulation of TVET and the impact of policy on TVET programme delivery and evaluation.**

**[RQ20.a]** To what extent are institutions delivering TVET education (e.g., non-governmental organisations, state schools, colleges) **subject to state policies and regulations** (on TVET and otherwise; national infrastructure; economic and legal factors)?

**[RQ20.b]** How is **policy implementation** evaluated? Who assesses implementation? What are the quality indicators?

**[RQ20.c]** Are the policies and regulations effective? Is the impact of **policy discernable** (e.g., in the publications examined or within the internet search)?

We note that other parts of RQ19 are covered in Chapters 10 and 11. Regarding different types of TVET models, we also refer the reader to Chapter 4 and Chapter 8.

<sup>1</sup> Citation for this chapter: Haßler, Haseloff, et al. (2020). *Chapter 13. Challenges to Policy Implementation*. In: Haßler, Haseloff, et al. (2020). *Technical and Vocational Education and Training in Sub-Saharan Africa: A Systematic Review of the Research Landscape*. VET Repository, Bundesinstitut für Berufsbildung, Bonn, Germany. <https://doi.org/10.5281/zenodo.3843366>



## Conclusions of this chapter

As mentioned in Chapter 7.5. there are only a small number of publications in relation to the evaluation of the implementation and impact of TVET policies in SSA. This does not mean that the efforts made to implement TVET policy are necessarily ineffective just because few publications were found. Official documents, from countries such as Kenya and Nigeria, mention the need for TVET policy implementation evaluation. However, no details regarding the design or timeline for such evaluations are included.

From what is available, it is clear that the impact of TVET policy in the formal field is generally considered positive. Kenya and Ethiopia provide examples of this, and we evaluate compliance with TVET policies and measures. In particular, we examine the effects of changes mandated by TVET policy on the instructional-pedagogical level. In Kenya, for example, significant changes in classroom activity can be identified as an outcome of a change in pedagogical guidelines.

We also evaluate policy implementation in the informal TVET sector; attempts to formalise informal apprenticeships are noted in Botswana, Kenya, Nigeria and Uganda. There is also some limited research on the different effects of informal education, for example from Nigeria. These occasional publications show that informal vocational training models with formal aspects are more prevalent in West Africa than in South and East Africa. A Nigerian study considers the impact of informal TVET in SSA, concluding that young people value informal education because it is considered cost-effective and easily accessible, and appears to offer better employment opportunities than formal education. However, the study also describes how vulnerable groups are in danger of exploitation through informal education.

As for barriers to the implementation of reforms, the available publications emphasise insufficient (and often neglected) financing of the TVET sector compared to other areas of education. For competence- and job-oriented education, barriers also arise through poor engagement with the private sector, the job market and the industrial training institutions.

TVET agencies in all the countries considered are well aware of the opportunities as well as risks of training without state quality assurance mechanisms. Research into the impacts and the models used could pedagogically support informal approaches and might aid the development of guidelines for the protection of vulnerable groups.

While in Chapter 9 we discussed challenges for inclusion and policies relating to this, here in Chapter 13 we consider the effectiveness of inclusion-related goals. We also discuss the effectiveness of government policy on inclusion-related goals, based on the literature reviewed. One of the few studies available found that there is still a significant segmentation by ethnicity and gender within the TVET sector. Positive changes towards gender mainstreaming and equality for all people are the aim from the governmental side; however, the development and implementation of measures that would contribute to this are neither controlled nor supported.

As with the other chapters, the subsequent sections offer additional details of the points discussed in the summary above.

## 13.1. Evaluation of TVET policy implementation

References to the evaluation of TVET policy implementation are uncommon in the literature surveyed. Recent official documents, as exemplified in the following section, do mention that the implementation of a policy ought to be evaluated and adapted as necessary for the desired impact. However, there are no stipulations as to how or when this needs to happen. This is quite common across several nations; we review examples from Kenya, Nigeria and South Africa.

### 13.1.1. Evaluation of TVET policy implementation: Kenya

This is the case in Kenya, where there are various TVET reforms underway. Objective No. 5<sup>2</sup> of the TVET Strategic Plan 2018–2022 states that:

*“it is assumed at least one review of the TVET legislation and TVET Policy will take place during the lifespan of this strategic plan, TVETA<sup>3</sup> will continue to take initiatives towards harmonising the different laws and policies governing the TVET-sector. TVETA will continue to participate in all relevant platforms”* (†Government of Kenya, 2018:34).

The Kenyan TVET Strategic Plan also states that TVETA has inadequate funding and limited engagement with the private sector, the ‘world of work’, and industrial training institutions. Hence, there seems to be limited awareness and acceptance of TVETA and its mandate among most stakeholders. Yet, TVETA is expected to continue to take initiatives towards harmonising the different laws and policies governing the TVET sector, which are

*“increasingly considered to be fragmented and in some areas incomplete and/or leading to different interpretations. This has now been recognised by most stakeholders”* (†Government of Kenya, 2018:33–34).

Nevertheless, the Kenyan TVET Strategic Plan 2018–2022 emphasises that

*“in order to contribute meaningfully to these reforms, TVETA will have to increase its Research and Development capacity in order to provide relevant research, e.g. tracer studies and/or joint research with Ministry of Labour and/or industry and their organisations”* (†Government of Kenya, 2018:33–34).

It is noteworthy that this document has a situational analysis of the country’s TVET system in which it declares that the Directorate of Policy, Research and Development, whose core mandate is to conduct and contribute to TVET research, is hardly functioning. This Directorate is also expected to advise on TVET policies, publish information on TVET issues and initiate and engage in development and innovative projects. However,

*“it is understood to have only two staff members and the impact and relevance appear to be very limited despite its importance”* (†[Government of Kenya, 2018:88](#)).

### 13.1.2. Evaluation of TVET policy implementation: Nigeria

Connecting policy and impact is a far-reaching challenge, and Nigeria offers another example for this. The Inspectorate Planning and Policy Implementation Division (I-P&PI), under the Federal Education Quality Assurance Service (c.f. Section 11.1.1), has an inspectorate division dedicated to regularly inspecting and supervising policy implementation. No further information is provided, nor could we find evidence of policy implementation evaluation having occurred in the past. Wodi, who discussed the global economic crisis and entrepreneurship development in the oil and gas sector in Nigeria concludes that

*“while we acknowledge the fact that the master plan on TVET development in Nigeria from 2001 to 2010 is a work well done, it is the author’s considered opinion that the plan is a myth rather than a reality because even the Federal Government has not implemented the key recommendations of the master plan which include one model technical college in each state of the federation by Federal Government as well as by the state and local governments”* (†[Nigeria, Niger, South Africa: Wodi, 2012:10–11](#)).

Similarly, the Technical Vocational Education and Training Division of Tanzania’s Ministry of Education is in charge of monitoring and evaluating the implementation of the TVET programmes, projects and policies. We also found that the Ministry’s Education Sector Performance Coordination is responsible for monitoring, reviewing and analysing *“the proper implementation of policies, decisions and directives from the stakeholders”* (†[Government of Tanzania, accessed Dec. 2018](#)). No further details were found.

### 13.1.3. Evaluation of TVET policy implementation: South Africa

Finally, another example comes from South Africa. Subban and Vyas-Doorgapersad, who analysed the South African public administration training and development, assert that the government

*“lacks the management capacity to plan and implement reconstruction and development activities on the massive scale it had in fact promised”* (†[South Africa: Subban & Vyas-Doorgapersad, 2014:501](#)).

In summary, the data enable us to assert that policies are conceived with the aim of tackling the perceived problems with the TVET at that point in time, and they take into consideration international trends and best practices. They usually contain several references to the issues they aim to address. However, we could not obtain information on changes that have been made to a policy based on an evaluation of its implementation process. As was demonstrated in the case of Kenya, it is likely that the government bodies across SSA who are responsible for carrying out the TVET policy’s

implementation evaluation studies are under-resourced. Hence, despite the best intentions, there are considerable difficulties to be overcome before policy implementation can generate insights for policymakers and the research community.

## 13.2. Formal sector: impact of policies and regulations

As there is very little evidence on the evaluation of policy implementation in SSA, it is no surprise that evidence of the impact of policies, regulations or strategies is equally limited. This is true for both the literature review and the internet search. None of the coded material we evaluated suggested that government strategy had a predominantly negative effect.

Among the available information in coded articles, the effects of policies were generally considered positively. These policies include TVET-specific strategies, e.g., the Ethiopian 2008 TVET strategy (considered in [†Ethiopia: Hagos Baraki & van Kemenade, 2013](#)), distance-led teacher education schemes ([†Uganda, Kenya, Tanzania: Hardman, et al., 2011](#)), guidelines on ICT use ([†Kenya: Agufana, 2015](#)), and overall government strategies (drawn from various policy documents, plans and funds). Mosoti asserts that TVET programmes “*have a political appeal because they are an educational response to economic problems.*” ([†Kenya: Mosoti, 2011:182](#)).

Sambo suggests government policy should have an encouraging impact on youth entrepreneurship, while recognising that “*other scholars maintain that the efforts are less successful than expected*” ([†Kenya: Sambo, 2016:337](#)).<sup>4</sup> Hardman depicts a similar picture of qualified success with regards to a school-based distance-led teacher training programme, run by a unit within the Ministry of Education from 2001–2005 ([†Uganda, Kenya, Tanzania: Hardman, et al., 2011](#)). This programme aimed to

*“improve the quality and cost effectiveness of teaching and learning in primary schools through teachers acquiring new skills that promote active learning and training them in the use of new textbooks”* ([†Uganda, Kenya, Tanzania: Hardman, et al., 2011:672](#)).

Changes in teaching in the period between a 1999 baseline study and a 2005 evaluation suggested substantial pedagogic changes among Kenyan teachers. However, these changes were not consistent among all participant teachers in the ‘cascade’ model trial: teachers passed on their training to a lesser degree than had been expected at the programme’s conception ([†Uganda, Kenya, Tanzania: Hardman, et al., 2011](#)).

The findings of Robertson’s PhD research on leadership development for TVET college leaders in South Africa suggest that in order to achieve an effective transformation of TVET, leaders need to embrace a more collaborative and integrated leadership style ([†South Africa: Robertson, 2015](#)). The author concludes that

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4 Sambo refers to various government initiatives to address youth unemployment ([†Kenya: Sambo, 2016](#)). These include the Sessional Paper Number 4 of 2005, the Sessional Paper Number 2 of 1992 on Small Scale and Jua Kali Enterprises, the Development Plan 1997–2001, the Poverty Eradication Plan 1999–2015 and the launch of the Youth Enterprise Development Fund (YEDF).

*"in order to be capable, leaders need to adopt a more shared and distributive form of leadership which has transformational leadership at its core since followers need to be motivated to perform beyond expectations"* (↑[ibid.:208](#)).

We note that in 2015, the OECD published a review of TVET systems around the world which notes South Africa needs to strengthen professional development for vocational teachers and college leaders (↑[OECD, 2015](#)).

The Ethiopian 2008 TVET strategy, which was reportedly implemented at a time when *"[TVET] delivery was fragmented, uncoordinated, and unregulated"*, was another policy positively received in the literature (↑[Ethiopia: Hagos Baraki & van Kemenade, 2013:497](#)). It was associated with a rise in the proportion of *"formal TVET graduates"* recognised by the certification system (↑[Ethiopia: ibid., 2013](#)). Similarly, the Kenyan government's stance on ICT promotion had a positive impact on ICT use among those in TVET institutions (↑[Kenya: Agufana, 2015](#)).

### 13.3. Informal sector: role, quality and examples

Formal education is already covered at length in Section 13.2. Therefore, in this section, we discuss the information available on non-formal and informal TVET education in SSA countries. Aggarwal defines informal education as

*"an informal system of skills transfer from a master craftsperson to a young apprentice who acquires skills by way of observation, imitation and repetition while working with the master craftsperson. The transfer of knowledge and skills is based on an agreement (written or verbal) between master craftsperson and apprentice in line with local community norms and practices, and the training is not regulated by the law of a country"* (↑[Malawi, Tanzania, Zambia, Zimbabwe: Aggarwal, 2013:113](#)).

We will first provide an overview of informal TVET in SSA and its regions, and its importance to the local economy. This is followed by a description of the information on informal TVET systems compiled through our literature review, which is organised by country in alphabetical order. We note that, as in previous chapters, the information presented in the following paragraphs does not cover every country across SSA, focusing instead on those countries for which we were able to find sufficient relevant literature.

#### 13.3.1. Quality of informal TVET

Kingombe recommends that, in order to ensure good quality,

*"occupational standards should be developed for crafts in the traditional apprenticeship system. Such an approach will eliminate the problems of variable training standards. (...) Some workshops should be identified and developed into centres of excellence in all districts and used to validate training standards."* (↑[Sierra Leone: Kingombe, 2011: 77](#)).

As seen in Chapter 12 many of the countries discussed here have established qualifications frameworks in recent years. Some of the documents listed, such as the summary of generic level descriptors of the Uganda Vocational Qualifications Framework ([↑UVQF](#)), were created to allow recognition of prior learning. Thus, those who acquired their skills outside of the formal education system can be awarded equivalent qualifications if they demonstrate having the minimum required skills described. [↑Gadio \(2011\)](#) also highlighted, for example, policy by the Mali government that sought to regulate and legally recognise adult non-formal education in the country. In summary, [↑ Damasah \(2016\)](#) says that informal TVET suffers from a lack of consistency and from insufficient substance.

Ahadzie suggests that training in pedagogy should be introduced to craft workers in the informal sector in order to improve instructional abilities in informal TVET ([↑Sierra Leone: Ahadzie, 2009, cited in Kingombe, 2011](#)). The research papers we considered show that providing pedagogical knowledge to instructors would be a huge undertaking in SSA not least because such an initiative would require recognition by the government of the importance of informal providers, including it in its policies. Kingombe cited Adams:

*“The informal sector has emerged as a reality and has to be recognised for policy purposes. How it is treated by governments will likely influence its future as an instrument for employment and poverty reduction. Forcing its compliance with the regulations and taxation of an industrial economy through stronger enforcement measures will likely drive it further underground or out of existence altogether”* ([↑Sierra Leone: Adams, 2008, 2009 cited in Kingombe, 2011: 78](#)).

### 13.3.2. Informal TVET in Africa and its regions

Reporting on the current status of TVET in Africa, the African Union affirms that

*“in many parts of West Africa, and to a lesser extent in Kenya (the Jua Kali sector), traditional apprenticeship is the only avenue for many disadvantaged youths to acquire employable skills. And it works, in spite of the fact that the sector rarely benefits from any form of government support”* ([↑Ghana, Kenya, Benin, Democratic Republic of the Congo, Burkina Faso: African Union, 2007: 42](#)).

Ogwo explains that informal apprentices in developing countries are cost-effective, easily accessible, have low entry barriers and result in better outcomes in terms of employment ([↑Nigeria: Ogwo, 2013](#)). Thus, most young women and men acquire their skills through the informal system. The author does point out that informal apprenticeships have several shortcomings, and that many of them can lead to the exploitation of those who are most vulnerable. King agrees, and states that despite informal apprenticeships being more accessible to the poor than formal TVET programmes, the poorest still tend to be excluded from it ([↑General: King, 2012](#)).



There seems to be a consensus in the literature regarding the differences between the informal TVET system in Western versus in Southern and Eastern Africa. The former is considered to be much more structured than apprenticeships in Southern and Eastern African countries, where

*“an apprentice is usually referred to as a ‘helper’ or an ‘assistant’ and agreement between MC (master craftsperson) and apprentice is mostly verbal and weak”* (†Zambia, Tanzania, Malawi, Zimbabwe: Aggarwal, 2013: 113).

This is particularly true in rural areas (†Malawi: *ibid.* 2013; †Zambia, Tanzania, Zimbabwe, Malawi: Aggarwal, 2013; †Nigeria: Ogwo, 2013; †Zambia: Ryan, 2015). Safford and colleagues add that usually there are state-regulated apprenticeships in urban formal economies, but these tend to be technical trades such as engineering (†Malawi: Safford, et al., 2013). As discussed in Chapter 9, trades that are considered to be of a more technical nature are male dominated. Interestingly, Safford and colleagues’ research found that the number of learners entering apprenticeships has been rising for young people from both sexes. However, there has been a higher growth rate for young women entering apprenticeships than there has been for men (†Malawi: Safford, et al., 2013). If women have limited access to formal TVET education in SSA, then the growth observed must be occurring mainly in the informal sector. The highest growth lies where those most vulnerable are likely to be subject to exploitation, as highlighted by Ogwo (†Nigeria: Ogwo, 2013).

We now focus on the results of studies relating to informal TVET in individual countries.

### 13.3.3. Informal TVET in Botswana

In Botswana, few programmes had been developed prior to 1997 to target the needs of the country’s informal and small business sectors (†Government of Botswana, 1997). The National Qualifications Framework was created to help assess individuals who have learned through non-conventional modes, as

*“the government is fully aware of the potential for recognition of skills and knowledge possessed by people without formal education or who are unemployed”* (†UNESCO-UNEVOC, 2012:10).

However, little information is available about the providers of informal and non-formal TVET education. The Brigades (Chapter 10.1.1) provide informal training programmes or short-duration courses. These should lead to greater economic independence, but do not lead to certification. Additionally, according to UNEVOC:

*“The Botswana College of Distance Education and Open Learning (BODOCOL) was established by the Revised National Policy Education (RNPE) to deliver vocational education and training on a non-formal basis. Some accredited centres, like Madirelo Training and Testing Centre (MTTC) and the Department of Out-of-School Education (DOSET) within the MOESD, offer technical and vocational programmes to out-of-school learners”* (†UNESCO-UNEVOC, 2012:10).



### 13.3.4. Informal TVET in Ghana

Policy is inherently relevant to formalised TVET, through its association with the regulated economy and formalised contracts. In Ghana, historical attempts to reform 'traditional apprenticeships' through the National TVET Institute (1970, NVTI) and the National Coordinating Committee on Technical and Vocational Education and Training (1990, NACVET) were considered ineffective due to their failure to produce national policy ([↑Ghana, Senegal: Sonnenberg, 2012](#)). More recently, the National Apprenticeship Programme (2011, NAP) was officially launched under Ghana's Council for Technical and Vocational Education and Training (COTVET), but, in 2012, Sonnenberg considered it *"too soon to determine the impact of the reforms to traditional apprenticeship"* ([↑Ghana, Sonnenberg, 2012](#)). Corresponding attempts to enhance traditional apprenticeship schemes in Senegal sought the integration of non-formal and formal training ([↑ibid.](#)). This occurred alongside other initiatives, including

*"increasing the amount of time apprentices spend practising the trade and decreasing the theoretical curriculum, upgrading the skills of the master craftsman, establishing stand certification, and decreasing the time it takes to become certified in a skill"* ([↑ibid.:101](#)).

Sonnenberg considered the level of implementation to be generally unknown, but did refer to a survey which suggested that

*"young people lamented that non-formal skills training was long in duration, low in pay, and often lacked certification"* ([↑ibid.](#)).

This was considered evidence to support the claim that government TVET initiatives had not yet *"reached sufficient numbers of Senegalese youth to make a difference"* ([↑ibid.](#)). Unfortunately no follow-up research is presently available (in 2020) to chart developments since then.

However, in this context, we also note the [↑Ghana Skills Development Initiative](#), which has focussed on how informal apprenticeships can be formalised, contributing to improvements to quality.

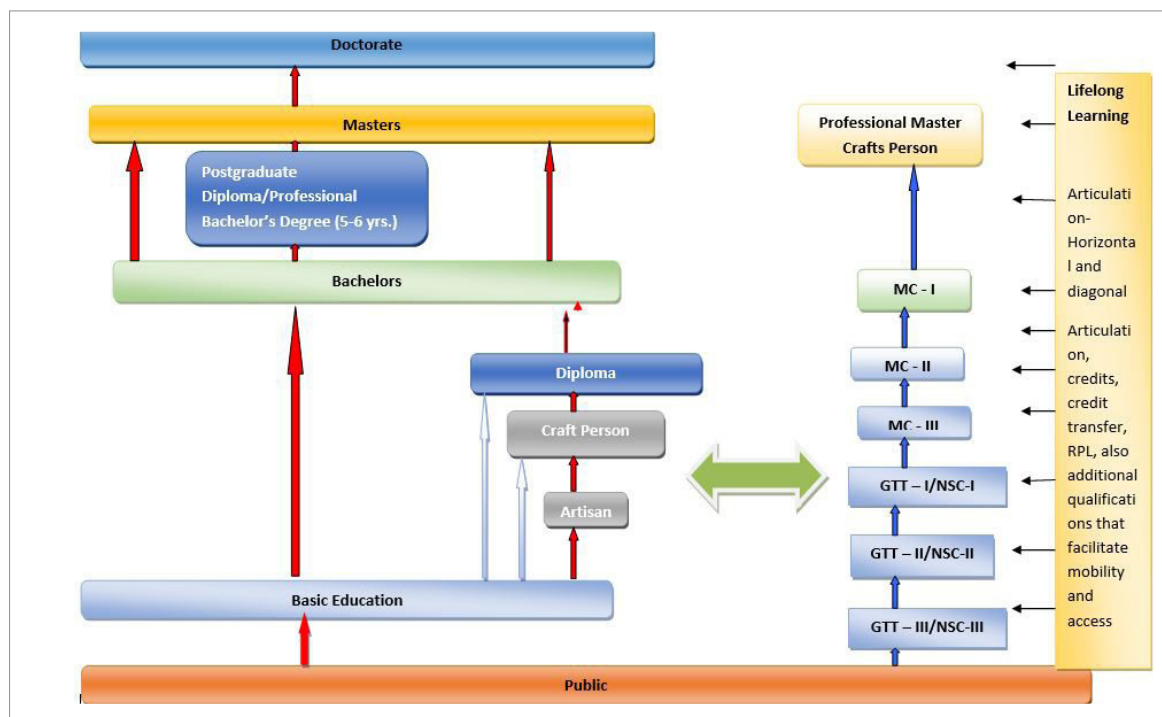
### 13.3.5. Informal TVET in Kenya

In Kenya, a number of Ministries offer non-formal TVET programmes. Further description of their involvement in the TVET system can be found in Chapter 10.3. The Kenya National Qualifications Authority (KNQA) aims to award a certificate of prior learning to those who have not undergone formal learning. Its website provides information on the process to recognise prior learning, encompassing both academic learning and experience acquired. The KNQA states that

*"the award will make one eligible for admission to a Kenya National Qualifications Framework level or granted experiential learning equivalent to a qualification in the Kenya National Qualifications Framework"* ([↑Government of Kenya, accessed Dec. 2018](#)).

The following figure shows the possible progression pathways within the general structure of Kenya's education system.

**Figure 13.1. Progression pathways, reproduced from Kenya National Qualifications Authority (KNQA) website (†Government of Kenya, no date)**



### 13.3.6. Informal TVET in Mali

Gadio provides information about informal TVET in Mali (†Mali: Gadio, 2011). In 2007, the government of Mali adopted a policy on adult non-formal education. This was intended to regulate the adult learning sector and federate the actions of policymakers, adult education providers, and learners. Gadio's review of this policy identified that the document had a limited perception of adult education, and that despite recognising it as multi-dimensional, all of the responsibilities were assigned only to the Ministry of Education (†ibid.). Additionally, the policy excluded private businesses and civil society organisations, which have been major contributors in adult education (†ibid.). Furthermore, the author states that the document should be credited for the participatory environment in which it has been developed. It filled a gap in terms of legislation on adult learning and was well received by all those involved in the development and delivery of adult education in Mali.

### 13.3.7. Informal TVET in Namibia

In Namibia, where education was one of the sectors most negatively affected by the apartheid regime of the past, Indabawa states that *"the state-sponsored programmes have made an impressive impact"* (†Namibia: Indabawa, 2000:14). In 1993, the

Government adopted a document entitled 'Towards Education For All: A developmental Brief for Education, Culture and Training' which, according to the author,

*"is widely accredited as a guide for educational practice in Namibia. It has 12 main Sections which addressed all sectors of education and allocates responsibility as well as define the framework for the participation of the non-public sectors in educational provisions. This includes the NGOs and technical and multilateral donor bodies" (↑ibid.).*

### 13.3.8. Informal TVET in Nigeria

Olulu and Udeorah define apprenticeship in Nigeria as follows:

*"Apprenticeship is a method of training youths and the middle-aged to learn a trade or craft for their future wellbeing and livelihood. Apprentice is bound by legal agreement to work for another for a specific amount of money for instruction in a trade, art or business. The apprenticeship practice is in three categories viz; the traditional model, the informal model and the modern apprenticeship model" (↑Olulu & Udeorah, 2018:337).*

Education is compulsory in Nigeria until the Junior Secondary level. Those who acquired their skills out-of-school can only progress to further education if they successfully pass the Basic Education Certificate Examination. At this stage, the country's qualifications framework provides the following pathways for students (↑UNESCO-UNEVOC, 2012):

1. senior secondary school, which allows progression to further education;
2. technical college, which allows progression to further education;
3. vocational Enterprise Institutions (VEI) and Innovation Enterprise Institutions (IEI), which are occupation-specific institutions supported by the private sector that started to operate in 2007/2008;
4. out-of-school TVET;
5. apprenticeship scheme.

### 13.3.9. Informal TVET in Uganda

According to UNEVOC, the specific training needs of the informal sector in Uganda's TVET system have been largely neglected. The organisation states that

*"there is no systematic approach to skills development for people already in or seeking to enter the informal sector. Many of the training offers are supply-driven, not based on market assessments and only duplicate formal sector training at very low levels. Some very effective programmes cannot be replicated due to the lack of information exchange and resources" (↑UNESCO-UNEVOC, 2014: 9).*

The Ugandan government does acknowledge the importance of the informal sector to the local economy. The country has democratised education in the TVET subsector, and its National Qualifications Framework (NQF) aims to provide opportunities to all

learners to further their education up to tertiary and university level. However, the research of Bananuka and Katahoire and of Blaak and colleagues indicates the persistence of significant challenges to the country's non-formal education system. These include a lack of specialised education for trainers; lack of a policy framework to regulate and inform the sector; lack of facilities for practical exercise; no optimal fit between content and market requirements; and limited funding as a result of the low priority of non-formal education within the political spectrum in Uganda ([↑Uganda: Bananuka & Katahoire, 2008](#); [↑Uganda: Blaak, et al., 2013](#)). Bananuka and Katahoire's findings suggest that, despite the government's commitment to international protocols and its proclamations on Education For All, non-formal TVET in Uganda

*"is run on a rather ad hoc basis without clearly defined structures save for the recent initiatives in Community Polytechnics. Much as various policy documents and statements advocate for the integration of Non-Formal Education into the PPE [post-primary education] level and the education system as a whole, the policy statements lack proper follow-up and coherence"* ([↑Uganda: Bananuka & Katahoire, 2008: ix](#)).

### 13.3.10. Influence of legislation on informal TVET

Policies are inherently relevant to formalised TVET, given its connection to the regulated economy and its formalised contracts. For example, as noted in Section 13.3.4, some earlier attempts to reform 'traditional apprenticeship training' by the National Vocational Training Institute (1970, NVTI) and the National Co-ordinating Committee for Technical and Vocational Education and Training (1990, NACVET) are considered to have failed because they could not be implemented politically ([↑Ghana, Senegal: Sonnenberg, 2012](#)). The National Apprenticeship Programme (2011, NAP) was officially launched by COTVET. As noted above, at the time of publication of his study, Sonnenberg believed it was still too soon *"to be able to determine the effects of the reforms on traditional training"* ([↑ibid.:101](#)). Attempts to improve the traditional TVET system and to integrate informal and formal training are reported about Senegal as well ([↑ibid.](#)).

## 13.4. The impact of policy regarding inclusion in TVET

The literature also considers the effectiveness of government policy with regards to inclusion-based goals (see also RQ12, 9). Gender disparity was targeted in two instances and research papers. Firstly, Uganda's Joint Admissions Board (JAB) recognised an affirmative action policy within the health education sector. It is recognised that this has a positive effect on gender equality among those starting TVET. However, according to Galukande and colleagues, TVET is still seen as a socially less desirable route, and less prestigious compared to an academic education ([↑Uganda: Galukande, et al., 2018](#)). Furthermore, McGrath and Akoojee noted a positive impact of the National Vocational Certificate (NCV) on both student numbers and overall demographics of the student body ([↑South Africa: McGrath & Akoojee, 2009](#)). However, the authors stressed that aggregate student gender and ethnic profiles mask variations across programmes and

institutions. As such, *“there remains considerable racial and gender segmentation within the sector”* (ibid.:152).

Finally, limitations in policy impact on disability are discussed by Malle (Kenya, Tanzania: Malle, 2016). In his study, focus group interviewees representing disabled persons’ organisations and relevant government bodies largely agreed that disability was not addressed sufficiently in TVET policies and legal frameworks (and noted that relevant policy was not supported by an implementation mechanism). It was generally noted that the level of success was qualified, with, for example, policies failing to address all levels of gender and racial disparity (in spite of benefiting aggregate profiles; South Africa: McGrath & Akoojee, 2009).

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This bibliography can be accessed from the [↑entry for this document in our evidence library](#).

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## Chapter 14. Insights Regarding Institutional Frameworks and Research Capacity<sup>1</sup>

In Chapter 5, we considered stakeholders in the research landscape, including experts and institutions (RQ13). However, it was not possible to identify leading experts based on the U-publications alone. The reason for this is that most authors and institutions — and indeed funders — only appear once or twice, making it difficult to detect patterns. Given the limited information about institutions more generally, it was unsurprising that information on institutionalised research capacities and frameworks was similarly limited. It is therefore hard to be conclusive about the institutional frameworks in which researchers operate, and how they influence the development of the education system or increased research capacity. Of course, it is possible to extrapolate about what TVET-specific institutional frameworks exist; for example, on the basis of related fields like general education research – of which TVET research could be considered to be a sub-field. If we take general education research as our scope, this would suggest that the framework conditions with respect to the sub-field of TVET research are likely to be characterised by high student numbers, and by staff focused on teaching high numbers, quite likely by means of rote learning.

However, while we might extrapolate such conclusions, they cannot be fully trusted as they are based on simple, albeit logical, generalisations. More direct exploration of the topic is needed if we are to have a greater sense of confidence in our conclusions about TVET-specific institutional frameworks and research capacities. To that end, this chapter discusses the insights obtained from participant responses in our focus group sessions and interviews that might add more certainty to conclusions on the current topic. The first section (14.1) presents insights regarding ‘institutional frameworks and research capacity’, with the subsequent section (14.2) focusing on participants’ ‘TVET research interests’ and their highlighted ‘current and emerging research topics’ within the TVET sphere. The greatest research interest addresses poverty reduction and improving living conditions through vocational training. The research questions considered in this section are RQ3.a, RQ22.a and RQ22.b. Each collection of insights is organised to address the research questions that could not be comprehensively answered by the

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literature review alone. Those questions are presented at the beginning of each section for reference.

## Research questions considered in this chapter

The research questions considered in this chapter are listed in the box below.

### Research questions considered in this chapter

**[RQ3.a]** What are the topics, perspectives and current debates concerning TVET that can be identified? Are there special topics that stand out? (For example: 'informal apprenticeship'?)

**[RQ13.c]** What institutionalised research capacities exist in TVET research in sub-Saharan Africa?

**[RQ13.d]** In which institutional frameworks do individuals and institutions operate and how can they influence the development of the (TVET) education system?

**[RQ15.a]** Which institutional framework conditions in TVET research (institutional connection, degree of organisation, specialist specialisation, personnel and financial resources, research / university / policy framework, etc.) influence the research performance?

**[RQ15.b]** Given institutional framework conditions (institutional connection, degree of organisation, specialist specialisation, personnel and financial resources, research/university policy framework, etc.) and their influence on research capacity and performance: How can those framework conditions be influenced to increase research capacity and performance?

**[RQ22.a]** For which areas within the TVET system (in the countries/regions) is there an urgent need for research support?

**[RQ22.b]** Need for research: For which research questions is there still the greatest need for research (including RQs on the improvement of TVET)?

## Conclusions of this chapter

There are many answers to the research questions regarding how institutional framework conditions can be influenced to increase research capacity and performance (Section 14.1.) (RQ13.c, d, e and RQ15). The responses suggest that the chief changes in framework conditions that are needed to increase research capacity are increased financial and material resources, clear leadership, foundational research and support, and greater skills training and professional development (Section 14.1.1.). Currently, there are insufficient funds for conducting research, for providing competitive salaries to highly skilled researchers, as well as for sharing research through avenues such as conferences (Section 14.1.1., 14.1.2.). Having more conferences, or other events and tools that facilitate networking and the sharing of ideas was also, in itself, a suggested way in which institutional frameworks could be improved to increase research capacity

and performance (Section 14.1.2.). Greater opportunities for networking also help serve the function of filling current skills gaps. Through networking, researchers may be able to request the expertise of regional and international researchers who may have the skills that might be lacking in their institution or research group (Section 14.1.2.).

Concerning the second topic addressed in this chapter – the research interests and motivations of participants and the current and emerging TVET research topics in the region, the responses were also diverse. The information provided by the U-publications enables us to identify some areas that need research support (to answer RQ22), and the areas of interest that participants described wanting support for (Section 14.2.). The greatest research interest addresses poverty reduction and improving living conditions through vocational training (Section 14.2.1.). Participants expressed interest in research exploring the integration of theoretical and practical elements of TVET, the dual training system, increased focus on the professionalisation of the workforce and professional development with respect to TVET, further collaboration between countries for the advancement of TVET and TVET beginning in primary and secondary schools (Section 14.2.1.). Greater access and equality within the TVET sphere, as well as the exploration of the relevance of TVET to everyday life were also expressed as research interests (Section 14.2.2.). They further noted that in order to stimulate greater interest in TVET, there is a need for greater funding, capacity building and networking (Section 14.2.2.). This was suggested alongside changing the perception of TVET as leading only to low-class occupations and as not being a university-level pursuit.

The research topics that they indicated as current and emerging (RQ3) related to, and went beyond, the research interests described above. Namely, they highlighted research into greater access and equality in TVET as an emerging topic, as well as links between theoretical and practical elements in TVET. Research topics confirmed by the Structured Community Review (SCR) in particular, are:

- **Perception of TVET.** The Participants stressed the need to change the narrative around TVET, presenting it in a different, more positive light (Section 14.2.2.).
- **Curriculum design.** There is a perceived need for more research to develop curriculum design. A simple transfer of TVET curriculum concepts working in other places is not seen as suitable for SSA (Section 14.2.2.).
- **TVET teacher education.** Teacher education and continuous professional development for lecturers are seen as important ongoing research topics. Moreover, the researchers want particularly to understand what encourages or leads teachers to choose working in TVET (Section 14.2.2.).
- **Employment and industry.** Increasing unemployment generally on the one hand and unemployability of TVET graduates on the other is a matter of great importance in most countries in SSA. In this regard, researchers see a need for research about the weak cooperation between industry and TVET institutions and the lack of workplace learning and internships (Section 14.2.2.).
- **Equality in and access to TVET.** Inequality, and disadvantages for women and vulnerable groups in TVET as a fact, has been acknowledged in the research.

Researchers call attention to the necessity of following up research and on implementing findings into practice (Section 14.2.2.).

- **Green TVET.** Vocational training as part of the education system has to deal with questions of sustainability and ethics. Researchers see their efforts in connection with the UNESCO/UNEVOC activities regarding the Sustainable Development Goals. The aspiration of many of them is to turn TVET into a development accelerator in this regard (Section 14.2.2.).
- **Policy.** Participants of the SCR recommend evidence-based TVET policy guidance, and research on policy implementation. Furthermore, they noted that monitoring and evaluation of TVET programmes with the aim of securing its adequate implementation, are urgently needed (Section 14.2.2.).
- **ICT.** Integrating ICT with TVET, specifically the implementation of e-learning in TVET and learner management systems, were cited as areas of particular research interest (Section 14.2.2.).

## 14.1. Insights into institutional frameworks and research capacity

In this first section, we explore the insights gained from participants on institutional frameworks and research capacity. Participants reflected on and responded to questions concerning the challenges affecting institutional performance in research, teaching and networking, amongst other areas. However, the responses did not stop at describing these challenges, but went further to suggest solutions to them.

### 14.1.1. Institutional frameworks and research capacity

This section considers RQ13.c, RQ13.d and RQ15a,b. When describing the institutional framework conditions of research development in SSA (RQ15) and institutional research capacities (RQ13), most of the comments made by our community of participants related to the challenges associated with insufficient institutional framework conditions and research capacities. Those challenges most frequently centred around the shortage of funding that could support the local knowledge production appropriately, in all of the participants' countries of origin. Participants reported that governments usually allocate some budget for research but that this budget is insufficient; research in TVET is generally seen as a neglected area. As a result, sub-Saharan African researchers rely heavily on international funding and cooperation to be able to carry out research projects or to broaden the scope or depth of their studies. However, the overall lack of funding affects the availability of appropriate equipment, researchers' salaries, conference attendance (knowledge and experience sharing), as well as the number and scope of studies that can be carried out.

Beyond funding limitations, a lack of clear leadership was another challenging condition raised with regard to institutional frameworks. Gabriel Konayuma of the Ministry of Higher Education in Zambia, for example, noted that what is holding TVET research back in Zambia is the lack of an agency or institution that clearly and authoritatively drives

the TVET research agenda. He emphasises, however, that this has its roots in the country's wider cultural context:

*“People do not see the benefits of research. They do not really understand what the importance would be”* (Gabriel Konayuma, Ministry of Higher Education, Zambia).

A third point, with respect to institutional frameworks, was made by Doris Mtemang'ombe (Malawi Polytechnic, Malawi) when she highlighted the limited support available in identifying key research areas to develop in Malawi, and the lack of essential foundational research upon which more targeted studies can be built. She called for *“something [research] that will help us and from which we can build on”*. The need for updated labour market analysis, which could be used to better contextually review the curriculum at their institution, was cited as an example. Mtemang'ombe continued:

*“What is happening in industry? What are the skills? What do we have? How are we going to build business-TVET partnerships without knowing this?”* (Doris Mtemang'ombe, Malawi Polytechnic, Malawi).

System-wide institutional framework conditions aside, interviewees also raised a number of points concerning institutionalised research capacities on the personal level. Importantly, the issue of funding — already noted in the discussion of institutional framework conditions — naturally affects researchers at the personal level. Researchers have limited access to funding, which curtailed the breadth and depth of research that they were able to pursue. Apart from funding though, participants also noted the lack of training and professional development opportunities available to them. This point was also raised in the literature that we found. <sup>†</sup>Davis, et al. (2008), for example, speaking on agricultural education and training, found that current educational approaches in Mozambique do not adequately develop individual or organisational capabilities to innovate.

This has the effect of limiting the skillset researchers leave formal education with, and the skill sets that they are able to pass on to junior researchers. As another example, participants reported that in Madagascar, young TVET teachers are encouraged to further their education by obtaining a PhD, but do not have the opportunity to learn quantitative skills to work with large datasets. This means that the research produced tends to be descriptive — in the sense that it primarily recounts or summarises, e.g., features of the education system. Without access to data for deeper analysis or funding to undertake original research it is difficult to get the results published. Related to this is the need for support in writing research proposals for international funding applications. Therefore, while there is enormous pressure on researchers and young lecturers to obtain a further qualification (Masters/PhDs), across SSA there remains an issue of limited breadth in the degree courses available, especially in the area of quantitative research. Details of the qualifications of the participants in the SCR can be seen in Appendix 2, Section 3.2.1.

Despite limitations in the types of research published (descriptive versus more in-depth), and difficulties in obtaining further qualifications that provide students with a wide range of quantitative research skills, research still takes place and is published. Notably though, that research is executed mainly by universities across SSA, rather than by TVET colleges. This is most likely due to the fact that universities have comparatively better access to research skills and expertise, as well as to consulting opportunities. However, across the sector, even at better-resourced universities, institutional research capacity is reported as being small. In South Africa, for example, participants reported that one third of the country's 23 universities have a history of TVET research, and yet this is attributed to a small number of people specialised in the field. In other words, TVET research is carried out by interested individuals dedicated to TVET, with the relevant skill expertise, rather than by departments. Overall, the number of TVET experts in South Africa is limited: fewer than 20 individuals in South Africa, according to [Papier \(2017\)](#).

In summary, when considering the institutional framework conditions in TVET research that influence research performance, and thus answering RQ15, the participants in the interviews and the SCR noted that limited funding, a lack of clear leadership and insufficient foundational research and support were the key challenges. With respect to RQ13.c on institutional research capacity, funding was also understandably raised as a key issue, alongside limitations in the range of degree courses available to researchers. That may, in part, be the result of universities and TVET colleges having few experts who specialise in the field and who might be able to pass the necessary skills on. The institutional frameworks within which individuals and institutions operate do have room for improvement (RQ13.d), and that addressing the aforementioned challenges might potentially have a significant effect on the development of the TVET education system. Participants' suggestions on addressing these challenges is the focus of the following sub-section.

#### **14.1.2. Improving research capacity and performance**

Insights regarding research capacity were already discussed to some extent in the previous sub-section. Specifically, those insights were presented in terms of the associated challenges. This sub-section delves further into the community's insights on research capacity and performance, by exploring their views not only on what the existing challenges are, but on what could be done to address those challenges (RQ15.b).

The previous sub-section highlighted the fact that the availability of research funding was, in the view of participants, one of the main issues in SSA. It therefore should come as no surprise that the remedy presented for research development included the provision of the necessary financial and material resources. One might also recall that the SCR highlighted the limited breadth of research skills training to which postgraduate students, and consequently academics (or vice versa), had access, across SSA universities. Professional development in specific research tools and methodologies was consequently suggested as a way of filling those skills gaps. Junior lecturers need capacity building not only in research but in their speciality (i.e., in their technical subject) and in



pedagogical knowledge, too. Speaking on both the need for financial support and skills development, one of the SCR participants, Ewnetu Hailu Tamene (Jimma University), noted that in Ethiopia, junior researchers need support for carrying out data collection (accommodation, travel, research assistants, etc.), data management and analysis. Further, he also highlighted the lack of technical skills capacity to implement the findings of research that has already been done, limiting the impact of research on the continent.

Another issue in SSA regarding TVET research is that there are few incentives for highly skilled workers, including researchers, who may leave SSAfrica for better salaries and jobs elsewhere. The limited ability to offer competitive salaries means that SSA also does not attract the skilled people needed from outside the region. It may therefore be the case that without adequate salaries, creating more highly skilled jobs will not solve the technical capacity problem. Increasing the technical capacity in the region can only be properly done through consideration of the broader economic context. Beyond the suggested need for greater financial support — if research capacity and performance challenges are to be addressed — there was an emphasis on having greater networking tools to connect researchers from different countries and institutions. A collaborative approach was seen as contributing to improved research outcomes; if the technical capacity cannot be sourced within Africa, cross-regional networks provide an avenue for accessing researchers with the requisite skills. The participants noted that researchers are keen to share experiences and best practices. The development of a platform where the relevant stakeholders could be contacted, interact, and get together was therefore suggested (see also Chapter 15).

## 14.2. Research interests and topics of the SCR participants

Having now discussed the institutional frameworks and research capacity regarding TVET in SSA, both in terms of the challenges facing institutions and their research, and the related solutions, this section deals with the research interests and motivations of participants, as well as current topics in their fields.

### 14.2.1. Insights regarding research interests

This sub-section details the research interests of the participants. Research interests were discussed in further detail during the focus group sessions of the SCR. The research interests expressed were fairly diverse. Participants were specifically asked, *“What are your research interests?”*, *“What types of projects motivate you?”*, and *“What research components would such a project have?”*

#### Research interests

Participants outlined a number of research interests concerning TVET in SSA. Chief amongst these was the pursuit of research into poverty reduction and the betterment of workers through TVET. Philipa Idogho, for example explained that,

*“What excites me most as a TVET researcher is to see people who are useful to themselves through skills acquisition, and I am more interested in taking part in research that will create employment, especially to the teeming youth. I like to be helpful to society. This is what motivates me”* (Philipa Idogho, University of Abuja, Abuja, Nigeria).

A couple of participants both mentioned two other research interests. The first of these was an exploration of the professionalisation of the workforce and professional development. The second was the synthesis of TVET theory and practice – an interest that partially relates to a comment by Peter Changilwa about his interest in how TVET impacts people’s everyday lives. He explained,

*“Researching about those who make the very basic yet necessary ‘tools’ of life as opposed to philosophical theories is perhaps one of my motivations. TVET research is by default action research, and providing practical solutions to issues affecting the underprivileged who find their hope in TVET is a worthwhile engagement to me”* (Peter Changilwa, United States International University, Kenya).

Finally, mention was also made of interests in instructional leadership, and which factors attract students and their families to TVET. Succinctly, Amina Idris commented, in focus group 2, that,

*“Areas of research that could solve societal challenges can be of interest, [the] results of which will bring about massive amounts of skills training for young people; curb the growing security threat; industrialisation of communities will go a long way to addressing youth restiveness; address the challenges of out of school children; improve female participation; standardise the informal sector”* (Amina Idris, National Board for Technical Education, Nigeria).

## Research motivation

The types of projects that motivated the participants were also discussed. Specifically, we asked about what might persuade participants to join a TVET project, and what new project or initiative might attract TVET researchers from across SSA, themselves included. There was, unsurprisingly, some overlap between their motivations and research interests, and what they regarded as compelling projects. Vusi Maseko noted, for example, that,

*“I would design a lecturer capacity-building project to ensure that lecturers are up-to-date with theory and [also] practical”* (Vusi Maseko, South West Gauteng TVET College, South Africa).

This relates to the interests in professional development and the synthesis of theoretical and practical elements of TVET, described above. The professionalisation of TVET, involving reviewing curricula and raising awareness amongst teachers, was also suggested. Finally, participants also suggested projects relating to the design of a dual

TVET system, collaboration between schools and companies, and comparisons of TVET systems between countries.

We also asked participants about the components that would be involved in the motivational research projects described above. This additional probing prompted further responses on what a motivational TVET project might entail. Notably, participants highlighted their desire for the training of community health workers or service providers on the use of information and communication technologies, as well as for research project components on how to introduce TVET in primary and secondary schools to help raise standards in African countries relative to the rest of the world, including the professionalisation of TVET:

*“Professionalisation of training [...] includes many other aspects, such as reviewing curricula, training teachers to be aware of the new system and looking for collaboration between schools and companies”* (Deodonne Kunfuniwe, Inspectorate of Pedagogy for Industrial Education (IPIE), Ministry of Secondary Education, Cameroon).

The participants discussed not only what research projects motivate them, but also what might motivate other researchers to conduct TVET research themselves. Amongst the suggestions were: having greater financial rewards for conducting such research, creating more networking opportunities, and raising awareness of the need for research. The following discussion on the issue took place during the June 2019 focus group 2 sessions:

**Vusi Maseko.** *There is an urgent need to create awareness that TVET research, especially by people in TVET, is necessary. They must be involved in research opportunities. Also, conferences targeting TVETs can get such colleagues to reach out and participate. Even what is currently going on is a positive move in the right direction.*

**Facilitator.** *Please expand. There are three points (or, what did we get wrong?):*

1. *Awareness raising — there is an urgent need to create awareness that TVET research, especially by people in TVET, is necessary.*
2. *Conferences — as a way of engaging colleagues.*
3. *The current activities are a step in the right direction — how could it be made even better?*

**Vusi Maseko (answering the first point).** *Many colleagues are not aware that they can contribute constructively to TVET research. They have the correct credentials and experience necessary but this wealth of knowledge is never tapped in their everyday work. We can change this sad state of affairs.*

**Facilitator.** *How do we change it?*

**Vusi Maseko (answering the second point).** *Some may be assisted to reach out and contribute by organising conferences that are TVET specific where they can showcase what they are doing ... let the world see their solutions to problems. There is so much going on in TVET that the outside world does not see.*

Participants also gave their opinions on what discourages or demotivates participation in TVET. In particular, they said that the perception of TVET as leading to lower-class occupations, alongside it not being associated with university-level qualifications, is discouraging. Inadequate research tools and facilities to conduct TVET research was suggested as a demotivating factor, as exemplified by the following focus group 2 discussion. Here, Amina Idris answers the facilitator's question (*"What do we need to do to empower people active in TVET already to become more experienced researchers?"*):

**Amina Idris.** *To empower people that are active on TVET is very subjective. It depends on the motivational pattern of the TVET researcher. However, the major factor that discourages a TVET researcher is inadequate research tools or facilities. Once this is solved, there's hope that the concerned research fellow will be ok.*

**Facilitator.** *When you say 'research tools'—what do you mean?*

**Amina Idris.** *Tools such as equipment, records, reference materials, even finances to obtain items needed to ensure the genuineness of the research outcomes.*

#### 14.2.2. Insights regarding current and emerging research topics

The SCR participants also remarked on a number of research topics relating to TVET in SSA that they regarded as current and emergent. One might recall that this topic has already been addressed in Chapter 6, where the focus was on what the literature review revealed the current and emergent topics to be. Here, we present the expert participants' perspectives (RQ3.a).

Research themes mentioned both as current and emerging themes were as follows:

- Perception of TVET
- Curriculum, NQF and skills development
- Teacher education
- Employment and industry
- Women in TVET
- Green TVET
- TVET funding
- Equality and access
- Policy
- ICT

#### Perception of TVET

The need to change the image of TVET is a topic that was frequently discussed in the literature (Section 7.3.3.) and it was also indicated by participants as a current and an emerging research topic. Participants stressed the need to change the narrative around TVET, presenting it in a different, more positive light. A better understanding of the perceptions of this level and field of education, and how these perceptions can be changed to increase the reputation of TVET, is therefore required. As it is, TVET is not seen

as an attractive qualification or career option. It therefore seems to be a reasonable assumption that an improved perception of TVET is an important condition for expanding TVET in some countries. Expanding TVET is important, for instance in Madagascar, where there is a need for a greater number of technicians and the strengthening of the technical capacity of graduates.

### **Curriculum, NQF and skills development**

Topics concerning curriculum design and development, as well as the National Qualifications Framework, and, more specifically, skills development and transfer, were also mentioned by participants quite frequently. Changes in the curriculum were intended to include practical lessons to a greater extent, since TVET is generally perceived as being too theoretical, leading graduates to have trouble finding employment once they are out in the field. That this is a current research topic ties in seamlessly with the finding in the previous section that more solidly integrating practical and theoretical elements of TVET is both a research interest and motivation. The content provided in the curriculum is also reported as not relating properly to the needs of the companies.

Currently, the focus of this interest in the curriculum as an emerging research topic is specifically on curriculum design and implementation. The questions in this regard include what should be taught, in what measure, in what way, and using what kind of pedagogy. The perceived need for more research to support curriculum design relates to the more prominent advocating, recently, of an evidence-based approach. This is particularly necessary as there is an acknowledgement that the “*importation*” of what is working in other places is not seen as suitable for SSA; there needs to be an adjustment to SSA country realities for new curriculum design to be effective; the need to adapt the curriculum to the needs of industry is particularly highlighted in the work of Euler and Marin ([↑Euler, 2013](#); [↑Mahrin, 2013](#)).

The NQF is regarded as necessary in order to provide TVET graduates with opportunities for progression up to the highest level of education. Without an official qualifications framework, there is less chance of structured progression in TVET. The need for skills transfer and capacity building were usually mentioned in relation to hopes for countries’ economic development. For example, Kipkirui Langat (Director General TVET Authority) reports that in Kenya, the aim for the next couple of decades is to have more and better infrastructure. However, companies state that they do not have the skills to support this development. Hence, the government is currently looking at supporting projects that include skills transfer.

#### **14.2.3. TVET teacher education**

Teacher education was also highlighted as a current research topic. The aspects of teacher education that are currently being studied in SSA include: what encourages or leads teachers to choose to work in TVET; teacher progression; and continuous professional development for lecturers. How to enhance TVET teaching and improve educators’ competencies, including online teacher development, are also focal points of current research. Joy Papier (University of Western Cape, South Africa) states that

the last 10 years have “*opened a bag of worms*” (regarding TVET) because one cannot improve teaching and learning if teachers’ education is not improved ([Papier, 2017](#)). Hence, questions such as, ‘How do teachers achieve subject expertise, gain experience in the workplace and become a teacher trainer?’ are key areas of emerging investigation. She adds that some universities in South Africa have only just started offering an initial qualification for TVET college lecturers, and attention is being given to determining the kind of professional development programmes needed by TVET teachers. The University of Western Cape, for example, is offering an in-service qualification which is a post-graduate certificate. In another example, in Cameroon, colleges are at times unable to find people with the right skills to teach, and so improving the adequacy of teachers’ qualifications and the quality of practical skills teaching is becoming a priority in the country. There is also a concern about how to regularly update trainers’ competence, particularly considering the increasing need to re-tool TVET trainers for 21st-century workforce requirements. In this context, the attitudes of trainers and self-learners is emerging as a topic of investigation. The professional development of informal apprenticeship instructors also plays a role in countries where the informal TVET sector is strong.

#### 14.2.4. Employment and industry

Increasing employability and economic development is a matter of great importance in most countries in SSA, and it therefore makes sense that this is an emergent and current research topic within the TVET sphere. Relatedly, employment, entrepreneurship, and the relevance of TVET content and methods to fulfill the needs of local people and industry, are other areas to which research efforts have been applied. There was a consensual yearning among the participants for a shift away from a supply-driven TVET to a demand-driven TVET.

Weak linkages between industry and TVET institutions have been commanding attention recently across SSA, and solutions that include the great number of small- and medium-sized enterprises are being investigated. Certain industrial sectors present better links with education providers than others. At her institute in Madagascar, according to Lova Zakariasy (Higher Institute of Technology of Antsiranana), civil engineering, naval engineering, energy and water system maintenance, finance, banking and insurance all have a good match with the labour market. However, for ICT this is not the case: while graduates find jobs easily, it tends to be in unrelated professions (such as sales). Similarly, there is a poor match between industry and TVET institutions in the fields of business management and tourism. Zakariasy informed us that the tourism industry in Madagascar needs more workers from secondary schools (e.g., as room servicers, cooks, servers), while the TVET programmes in this area focus on management (e.g., housekeeping, stewards, *maîtres d’hôtel*).

There was a consensus among participants regarding the emerging topics relating to employability. Cited by most was the necessity of carrying out market research, as well as creating regional and subregional occupational maps, with the aim of promoting demand-driven TVET. This is connected to a wish to improve the links between education providers, the TVET curriculum, and companies, to better address unemployment



issues and the lack of practical experience during TVET programmes. In this sense, developing entrepreneurship was also mentioned as a field of study that has been coming to the fore in recent years. However, Francis Teal (Centre for the Study of African Economies, University of Oxford and IZA, UK) is sceptical of this as he stresses that

*“one of the problems in SSA is that you actually have too many entrepreneurs because the jobs aren’t there. Why teach entrepreneurship? This is not going to provide people with a reasonable income in a saturated market”.*

#### 14.2.5. Equal access to TVET

Inequality in TVET has, up to now, been under-researched. Nevertheless, it is important to consider existing research and turn actionable findings into practice.

The need to promote the involvement of girls in TVET is now acknowledged in most countries, as girls and women are under-represented in that sphere. Doris Mtemang’ombe (Malawi Polytechnic) points out, however, that the work being done on this should not only be centred on girl students. She stresses the need to involve parents in the discussion as they have a strong influence on what their dependants are going to do in their career progression:

*“We need to know what challenges children face to choose their career. This also interferes with the number of girls in TVET. We will need strategies to support them in their career choices.”*

Notably, girls are not the only group mentioned by participants that is under-represented and vulnerable in the TVET sphere, and on which an increasing amount of research is being conducted. Benadeth Ezekoye (Okpara University of Agriculture, Nigeria) informed us that TVET programmes for immigrants is a new area of research in Nigeria, where a country-wide study is being carried out.

#### 14.2.6. Green TVET

As highlighted in the introduction to this section, green TVET is also an emerging topic. As environmental issues are brought into the mainstream, education for sustainable development, along with the term, ‘greening’ TVET, is becoming a more noticeable research interest. This topic was raised particularly in connection with UNESCO/UNEVOC activities that consider it a high-priority area ([UNESCO-UNEVOC, 2006](#)). TVET as part of the education system has to deal with questions of sustainability and ethics. TVET research should therefore be encouraged in this regard. The aspiration of many researchers is to turn green TVET into a development accelerator. The literature review found one conference paper from 2012 that presented a project of sustainable green energy production from agricultural and poultry operations in remote villages in South Africa ([South Africa: Nigeria, Niger: South Africa: Ushimaru, 2012](#)). Another publication, by [Marope, et al. \(2015\)](#) also discussed the topic in the context of *“Policies and policy measures to enhance the sustainability of development”* (p. 85).



### 14.2.7. Policy

Emmanuel Osinem (University of Nigeria) advocates the analysis and revision of education policies, creating clear and strong guidelines for promoting such practices in SSA. Undoubtedly, research on policies is a requirement in many countries. Based on the literature review and internet search developed in Phase 1 of this study, we concluded that evidence of the impact of policies, regulations or strategies was sparse (Chapter 6). Participants reported the lack of evidence-based policy guidance and research on policy implementation. Furthermore, they noted that monitoring and evaluating with the aim of securing adequate implementation, are urgently needed. As put by Peliwe Lolwana (University of Witwatersrand, South Africa):

*"We do not know much about policies on TVET. The employment situation is working? We do not know much about our institutions. How are they working? How can we make them better? What interventions are needed? General capacity strengthening is needed. We need research on African systems and how they are being carried out."*

Relatedly, Kipkirui Langat (Director General, TVET Authority, Kenya) expressed the desire to develop a research policy on TVET. The Authority's priority is running a TVET system that is evidence-based so that the investment it makes has a lasting impact:

*"Once the research policy is in place, we can decide what will be prioritised and what resources we have. We can only do research according to the resources we have."*

He explains that awareness of other government initiatives is required when planning for training and skills development, so that they can harmonise, for example, the foreign investment being made with TVET provision needs. On the other hand, Neil Butcher (Neil Butcher & Associates, South Africa), upon analysing where the trends are and how TVET systems can be more responsive, stresses that research needs to evolve. Africa has many young people, and social research should focus on what opportunities are available as a means of developing young entrepreneurs and helping them succeed.

### 14.2.8. ICT

As technological development accelerates, many of the participants recognise that ICT is an emerging subject that increasingly requires further research to focus on it. Integrating ICT with TVET, specifically the implementation of e-learning in TVET and TVET data and learner management systems, were cited as areas of particular interest. Lova Zakariasy (Higher Institute of Technology of Antsiranana, Madagascar) also pointed out that even when TVET providers have sophisticated equipment, it is not used efficiently or optimally by students. The same occurs with digital education and ICT devices in schools. She is therefore interested in obtaining knowledge on how to make the best use of equipment as didactical tools.

### 14.3. Chapter bibliography

This bibliography can be accessed from the [↑entry for this document in our evidence library](#).

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Euler, D. (2013). *Das duale System in Deutschland – Vorbild für einen Transfer ins Ausland?* Bertelsmann Stiftung. [https://www.bertelsmann-stiftung.de/fileadmin/files/BSt/Publikationen/GrauePublikationen/GP\\_Das\\_duale\\_System\\_in\\_Deutschland.pdf](https://www.bertelsmann-stiftung.de/fileadmin/files/BSt/Publikationen/GrauePublikationen/GP_Das_duale_System_in_Deutschland.pdf) (↑record)

Mahrin, B. (2013). Mobile Lernumgebungen und Handlungsansätze für die internationale Berufsbildungszusammenarbeit. *bwp.* (↑record)

Marope, P. T. M., Chakroun, B., & Holmes, K. P. (2015). *Unleashing the potential: transforming technical and vocational education and training.* (↑record)

Papier, J. (2017). *A comparative study of TVET in 5 African Countries with a specific focus on TVET Teacher Education.* (↑record)

UNESCO-UNEVOC. (2006). *TVET for Sustainable Development: Opportunities and Challenges.* (↑record)

Ushimaru, K. (2012). Sustainable green energy production from agricultural and poultry operations-A renewable energy project for community empowerment and vocational training in remote villages in South Africa. *INEE Global Humanitarian Technology Conference.* <https://doi.org/10/gf62nf> (↑record)

## Chapter 15. Research Networks and Capacity Building<sup>1</sup>

This chapter explores findings regarding TVET-related research networks in SSA. It includes a synthesis of the literature from the systematic literature review and internet searches, as well as what participants in our interviews and focus groups reported. The chapter covers information about research networks; further, it explores opportunities to form such networks. Firstly, we discuss the literature found through our systematic literature review. This builds on the presentation of our results about key actors and stakeholders in TVET who were discussed in Chapter 5. This is followed by an exploration of the research networks and opportunities for networking, that our community of participants mentioned as existing within SSA. Networking collaborations between SSA and relevant European countries are also considered. The final section of this chapter is a continuation of the Chapter 14 discussion of the challenges associated with capacity building; while Chapter 14 covered capacity building in the context of institutional frameworks, this chapter focuses on capacity building in relation to networks.

### **Research questions considered in this chapter**

The research questions considered in this chapter are listed in the box below.

### Research questions considered in this chapter

#### RQ14. Analysis of TVET networks.

**[RQ14.a]** What **research networks** on TVET in SSA already exist, and what is the extent of African research institutions' and professionals' contribution / involvement?

**[RQ14.b]** What **international networks** exist between German and African countries, African and other European countries, or networks involving outstanding international research institutions?

**[RQ14.c]** Which potentials for **network formation** can be identified?

**[RQ13.e]** Given institutional framework conditions (institutional connection, degree of organisation, specialist specialisation, personnel and financial resources, research/university policy framework, etc.) and their influence on research capacity and performance: How can those framework conditions be influenced to increase research capacity and performance?

**[RQ13.f]** What potential exists for the **development of institutional TVET research capacities** or what possibilities exist for the expansion of already existing cooperations?

### Conclusion regarding networks

Overall, identifying TVET research networks formed among African institutions (Sections 15.1., 5.3.) or their partnerships with international organisations (Section 15.1.2.) was not a straightforward process. Very little information was discovered through the literature review and the internet search. The literature review and online search did, however, highlight other networking opportunities that were available to TVET researchers and practitioners across SSA, such as networking at conferences and within general TVET organisations (Sections 15.1., 5.6.), including organisations that are not necessarily research-focused. However, the fact that only limited information on TVET networks was available online did not necessarily mean that only a few networks were active, since there are other means of storing and accessing such information. We, therefore, suspected that it might instead have been the case that such information was held either in offline collections or in the minds of experts in the field across SSA. Consequently, we expected that the second phase of our research, which involved focus groups and interviews, would offer better insights regarding networks, as it involved extended personal engagement with African TVET stakeholders (Section 15.1.7.).

Overall, it appears that the main active TVET networks are UNEVOC, VET-Net ([↑Haseloff, 2017](#)) and RAIFFET ([↑Ginestié, 2015](#); Section 15.1.2.). Within these, UNEVOC is a broader multi-purpose network within which some research takes place; VET-Net is focused on TVET research and TVET teacher development; and RAIFFET is focused on TVET teacher development, with a strong focus on academic conferences (and we would, therefore, consider it a research network).

Most other TVET networks and partnerships focus on TVET more generally, rather than on TVET research specifically. Among such networks, besides UNEVOC, are Edukans–Learn4Work, VET Toolbox (a relatively new multilateral project that supports national TVET projects),<sup>2</sup> and the TVET-Authority Kenya network, which was initiated by the TVET-Authority Kenya and connects several African states. The focus groups and interviews drew attention to such non-research networks, as well as to wider networking opportunities that can include aspects of TVET in SSA. This includes events, such as conferences, through which networking occurs.

## 15.1. TVET-research networks, TVET networks and TVET cooperations

The section covers TVET-research networks, TVET networks and TVET cooperations, such as TVET-research specific networks (e.g. the Réseau Africain des Institutions de Formation de Formateurs de l'Enseignement Technique and VET-Net), followed by TVET-specific networks and TVET-specific cooperations. We also discuss TVET conferences, research funding and wider networks in SSA.

### 15.1.1. Working definitions: cooperation and network

As there are different interpretations of the term 'networks', it is worth defining this term. Specifically, we distinguish between bilateral or multilateral cooperation on the one hand and networks on the other.

#### Figure 15.1. Working definition of a bilateral/multilateral cooperation and of a network

##### Working definitions: Cooperation and network

A **bilateral or multilateral cooperation** is a programme or intervention that has a given timeframe and budget. In particular, such a cooperation is fixed with regard to the members for the duration of the cooperation. Often, such cooperations are initiated through specific funding programmes.

A **network** is an association of several researchers, organisations or states that share common interests through this network. A network has the characteristic that new organisations can join it, and that organisations can leave it. Furthermore, a network is usually financially supported by the network members. Networks can be coordinated in a centralised or decentralised fashion.

We do not specify the use of the word 'partnership', as it often occurs in names of both networks and cooperations.

<sup>2</sup> †VET Toolbox, Home, available at <https://www.vettoolbox.eu>

### 15.1.2. Overview of TVET research networks

In this subsection, we discuss the only two TVET research-specific networks we discovered: RAIFFET and VET-Net. While it would be desirable to also have a network like the European Research Network on Vocational Education and Training (VETnet) that is focused entirely on, and based within, SSA, a similar network does not exist for African institutions.<sup>3</sup> However, these two discovered networks still offer useful starting points.

#### Réseau Africain des Institutions de Formation de Formateurs de l'Enseignement Technique (RAIFFET)

RAIFFET ([↑RAIFFET](#)) is a network, established in 2002, that supports TVET teacher education in Africa ([↑Ginestié, et al., 2012](#); [↑Ginestié, 2015](#)). It focuses on the connection between technology education and vocational training, promoting an integrated and comprehensive approach. It covers mainly francophone countries and has run five conferences since 2005 ([↑RAIFFETmonde on Twitter](#); [↑RAIFFET on Facebook](#); website: [↑RAIFFET](#)). Although this is not explicitly stated, since conferences are one of its main activities, it is likely that this network focuses on research. Conferences (which welcome between 50-100 participants, across 10-20 countries, with most participants also delivering a paper) have been held as follows:

- 2005 in Libreville (Gabon) on the theme, 'Technology Education, Vocational Training and Sustainable Development' ([↑Colloque de Libreville au Gabon Éducation technologique, formation professionnelle et développement durable, 2005](#));
- 2008 in Hammamet (Tunisia) on the theme, 'Technology Education, Vocational Training and the fight against poverty' ([↑Actes du colloque international RAIFFET de Hammamet en Tunisie, 2008](#));
- 2011 in Saly Portudal (Senegal) on the theme, 'Technology Education, Vocational Training and equal opportunities' ([↑Actes du colloque international RAIFFET de Saly Portudal – Mbour au Sénégal, 2011](#));
- 2014 in Marrakech (Morocco) on the theme, 'Technology Education, Vocational Training and teacher training';
- 2019 in Douala (Cameroon) on the theme, 'Training of Trainers for Technical Education and Technology in Africa: Achievements, Constraints And Perspectives'.

The next conference, the 6th RAIFFET conference, had been planned for 2020 in Koudougou (Burkina Faso). It considers 'new relationships with knowledge' at the primary education level, at the level of TVET and at the level of education professionals:

*"This sixth symposium will be an opportunity to compare points of view on the question of new relationships with knowledge, be it by looking at this issue with regard to basic education in the framework of Education For All (EFA), in relation to Technological and Vocational Education and Training (TVET) or with regard to the training of teaching professionals" (↑Sixième*

<sup>3</sup> We note that despite similar acronyms, VET-Net is different from VETnet (the European Research Network on Vocational Education and Training).

[Colloque du RAIFFET à KOUDOUGOU au BURKINA FASO – Sciencesconf.org](#)).

The conference aims to encourage exchange and networking, as an opportunity to develop cooperation, promote innovative practices and contribute to professionalisation. It is an opportunity to disseminate the results of research carried out in the field of TVET, and to build joint research programmes.

*“This symposium should encourage exchanges between partners and most importantly between participants. It is not the only institutional meeting, but it is an opportunity to develop scientific cooperation, promote innovative practices, and contribute to the professionalisation of participants. This training in and through educational research is part of the professionalisation of all the partners of the network. It provides an opportunity to disseminate the results of research carried out in the field of scientific and technological education, as well as in vocational training, to exchange on innovations which drive the development of societies, to encourage the construction of future joint programmes, and to support scientific publication in order to enhance the value of research carried out beyond our local networks”* ([†Sixième Colloque du RAIFFET à KOUDOUGOU au BURKINA FASO](#)).<sup>4</sup>

In addition, the conference aims to support doctoral and post-doctoral students in the process of scientific communications and publications.

## VET-Net

The only other network dedicated explicitly to TVET research (including research on TVET educators) is the research and training network for TVET teachers in SSA (VET-Net, [†Haseloff, 2017](#)). VET-Net originated through a programme of the German Academic Exchange Service (DAAD, 2012 - 2015), and brings together German, South African, Ethiopian and Mozambican researchers from universities in those countries. The network was initially founded by Germany and Mozambique in 2012 and extended to South Africa and Ethiopia. The network partners are mainly located at universities (TU Dresden in Germany, University of Siegen in Germany, Universita Pedagogica Mozambique, University of Jimma in Ethiopia, University of the Witwatersrand in South Africa - TVET departments). After the end of the DAAD project, the network continues to exist informally. The researchers work together on scientific issues as needed. Its expandability has been clearly demonstrated, and it continues to grow, involving other interested researchers from Burkina Faso, Nigeria, Kenya and Namibia, as well as from the broader regions of Europe, Asia and North America ([†ibid.](#)). Researchers at the TU Dresden and the University of Siegen manage the network from the German side. VET-Net is active and seeking funding (as of February 2020).



### 15.1.3. Related networks: VETnet and ERNWACA

We briefly highlight two networks that are not TVET research networks as such, but may be extended to fit. The European Research Network on Vocational Education and Training (VETnet) focuses on Europe. However, it may offer a useful paradigm for such network operations in SSA or within sub-regions. If such a network existed, cooperation between an equivalent African network and VETnet could take place.

A similar case could be made for the Educational Research Network for West and Central Africa ([↑ERNWACA](#)), which involves a number of countries (Benin, Cameroon, Congo, Gambia, Ghana, Guinée, Ivory Coast, Mali, Nigeria, Senegal, Sierra Leone and Togo). The network focuses on education, and while there may not be a specific focus on TVET research at the moment, it may be possible to create such a focus in the future.

SASSCAL<sup>5</sup> and WASCAL<sup>6</sup> are two other networks that do not belong to the TVET area but are exemplary for successful networking between Germany and Africa in science. Both networks deal with issues of sustainability in relation to the environment and climate, so they focus on the Sustainable Development Goals (UNO).<sup>7</sup>

### 15.1.4. TVET-specific networks

There are a number of networks that are TVET-specific. In these networks, there is usually a partial focus on research — to a greater or lesser extent. However, this focus is not exclusive. Nevertheless, it may well be possible to increase the focus on research within these existing networks (Section 15.1.3.). Among such networks, the UNEVOC network appears to be the largest and most active. It is therefore discussed separately in Section 15.4.

The network by the Technical and Vocational Education and Training Authority (TVETA, Kenya) is noteworthy as the only network that is run by a government agency, primarily to network with TVET-related government agencies across the continent.

The Edukans – Learn4Work programme has its headquarters in the Netherlands and focuses on Ethiopia, Ghana, Kenya, Rwanda and Uganda.

*“[The programme] uses the combined knowledge, expertise, networks and funding opportunities of partners in both Africa and in the Netherlands to improve vocational education in Ethiopia, Ghana, Kenya, Rwanda and Uganda. The programme brings parties from various sectors together: schools and the public sector, but also NGOs and the private sector” (↑Edukans).*

5 ↑SASSCAL – Southern African Science Service Centre for Climate Change and Adaptive Land Management, Home, available at <http://www.sasscal.org/>

6 ↑Bundesministerium für Bildung und Forschung, West African Science Service Centre on Climate Change and Adapted Land Use, available at <https://www.fona.de/de/wascal-ii-west-african-science-service-centre-on-climate-change>

7 ↑United Nations, Sustainable Development, available at <https://sustainabledevelopment.un.org/?menu=1300>

Finally, there is VETToolbox, which is a relatively new multilateral project that supports national TVET projects.<sup>8</sup>

### 15.1.5. TVET-specific cooperations

This subsection considers TVET-specific multilateral cooperations, i.e., programmes or interventions that have a given timeframe and budget (possibly through a specific source of funding) and which are usually fixed regarding membership. Notably, Maintz and Krönner emphasise that

*“Only in few cases do development agencies earmark particular budgets for TVET and Skills Development. Instead, they often cover broader fields such as education, enterprise development, gender, informal sector, HIV/AIDS (e.g. concerning persons teaching in TVET). TVET and skills development initiatives can be conceived in these contexts” (†Maintz & Krönner, 2008:4).*

This discussion on TVET-specific networks is therefore fairly brief, as there are few TVET-specific cooperations in existence across SSA.

We must also note that this discussion focuses heavily on the responses from the SCR participants, rather than solely on the literature review. The participants were able to offer insights into TVET-specific cooperations that expanded on the information we were able to find in the literature review.<sup>9</sup> Amongst those named were training institution associations such as the Kenya Association of Technical Training Institutions (KATTI)<sup>10</sup>; programme implementers such as the German GIZ; and the Ghana Skills Development Initiative (GSDI)<sup>11</sup>, implemented by GIZ, in cooperation with COTVET: a bilateral cooperation between Ghana and Germany.<sup>12</sup>

Another example of cooperation is a review of TVET policy that is taking place in Namibia by a consultancy firm in conjunction with the Leibniz University (Hanover, Germany)<sup>13</sup>. In addition, the Namibian government has a partnership with the government of South Korea supporting innovation under the policy. This partnership was established through UNESCO’s network and contacts. Furthermore, South Korea has been assisting Namibia in becoming a member of †WorldSkills International (WSI) and establishing WorldSkills Namibia which held its first National Skills Competition (NSC) in 2016. Namibia has been a registered member of WSI since 2010 (Amon Haufiku, Namibian Training Authority).

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8 †VET Toolbox, Home, available at <https://www.vettoolbox.eu>

9 Notably, we asked the SCR participants for information about what TVET research networks there are across SSA, rather than specifically about TVET cooperations. However, their responses frequently focused on cooperations rather than on research networks.

10 † KATTI, Home, available at <https://katti.co.ke/>

11 †GSDI – Ghana Skills Development Initiative, Home, available at <http://www.ghanaskills.org/>

12 †Govet / BMBF cooperation with Ghana, join declaration of intent

13 †Leibniz University Hannover, Home, available at <https://www.uni-hannover.de/en/>

In another example of recent cooperation, the South African merSETA<sup>14</sup> and the I:BB (Institute for TVET, 'Institut für Berufsbildungsforschung', University of Bremen in Germany) collaborated in the COMET project (↑Hauschildt, 2016). The project participants developed a model for competence assessment. This project analysed the costs, benefits and quality of in-company training provided in a total of 142 South African companies.<sup>15</sup> We also identified other cooperative links between South African and British universities (the University of Western Cape, Nelson Mandela University, Wits University and the University of Nottingham were mentioned in the SCR).

The interview participants also mentioned two projects funded by the German Ministry of Education (BMBF): the Internationalisation of VET (WB-IBB, 2017 and 2018)<sup>16</sup>, and the Meta project on Research into the Internationalisation of Vocational Education and Training (MP-INVET, 2019–2022). Both of these initiatives are monitoring and evaluating research and development projects of German research institutions in Africa (and internationally) – but without African project partners.

The SCR mentioned two other projects conducted by the Institut für Berufs- und Betriebspädagogik (IBBP) of the University of Magdeburg and by the department Technical Education department (TB) of the University of Rostock, together with the Universidade Pedagógica in Maputo, Mozambique. These projects (2011–2013 and 2010–2013) aimed at advising Mozambique's Escola Superior Técnica da Universidade Pedagógica (ESTEC, the Technical Higher Education School of the University of Pedagogy) on the establishment of initial and further education centres for TVET.

There are other large funding organisations such as the German Academic Exchange Service (DAAD)<sup>17</sup>, which maintains networks such as the DAAD Alumni Association (and related support projects). However, there is little information about their work. Within Africa, only their Ethiopian branch has a website that publishes details on projects, partners, news, annual meetings and other events (↑AEEGS — Association of Ethiopians Educated in Germany).

### 15.1.6. TVET conferences

Conferences were also discussed by the SCR, and at the moment, these appear to be the main way in which researcher-to-researcher networking occurs; within the TVET domain, they are key to sharing experience and making contacts. Specific conferences mentioned by the participants were the International Vocational Education and Training Association (IVETA) conference, the Rift Valley conference, and the International Conference for the Training of French-speaking Engineers and Technicians (Conférence

14 The manufacturing, engineering and related services Sector Education and Training Authority.

15 This comes under our definition of cooperation or partnership, but not network, as it is *a programme or intervention that has a given timeframe and budget*.

16 ↑Wissenschaftliche Begleitung der Programmlinie: Internationalisierung der Berufsbildung (WB-IBB), available at <https://wb-ibb.info/>

17 ↑German Academic Exchange Service – DAAD, available at <https://www.daad.de/en/>

Internationale des Formations d'Ingénieurs et de Techniciens d'Expression Française, CITEF)<sup>18</sup>. The Agence Universitaire de la Francophonie (AUF) was also mentioned, which hosts the CITEF conference. AUF's network includes francophone countries, including and beyond France, and has a big research programme on TVET.

**Figure 15.2. A selection of TVET conferences**

TVET conferences
<ul style="list-style-type: none"> <li>• Conférence Internationale des Formations d'Ingénieurs et de Techniciens d'Expression Française (CITEF)</li> <li>• Department of Vocational Teacher Education conference (University of Nigeria)</li> <li>• International Vocational Education and Training Association (IVETA) conference</li> <li>• The Rift Valley conference</li> <li>• RAIFFET</li> <li>• Southern African Society For Cooperative Education (SASCE) conference<sup>19</sup>.</li> </ul>

The International Vocational Education and Training Association (IVETA) conference provides international networking for researchers:

*"It is a network for researchers. It happens every year. Scholars present the findings of their research and how to improve TVET in their countries. Unfortunately, there are not enough resources at the moment to send people to this conference. At their institution, they are trying to create a TVET research centre. They have a proposal to obtain financial support and are looking for someone to fund it. This is a goal they want to achieve" (Doris Mtemang'ombe, Malawi Polytechnic, Malawi).*

We also note that it appears that CITEF and RAIFFET are aware of each other ([†Renouveau de la Chaire UNESCO « Education scientifique et technologique et formation des enseignants » de 2017 à 2021](#)). As noted above, RAIFFET also undertakes conferences, though the predominantly anglophone participants in the discussions were unaware of RAIFFET.

Despite the relatively frequent references to conferences by the SCR participants, funding to participate in these events is limited, and personally financing travel expenses is not viable due to the low salaries of many researchers. They are therefore often not able to attend conferences in other countries across the continent.

<sup>18</sup> Conférence Internationale des Formations d'Ingénieurs et de Techniciens d'Expression Française (CITEF), réseau institutionnel « Sciences de l'Ingénieur » de l'Agence Universitaire de la Francophonie (AUF), see ([†Séminaire sur l'employabilité des diplômés organisé par la CITEF en mai 2018](#)).

<sup>19</sup> This is also known as WIL (Work Integrated Learning)–Africa.

### 15.1.7. Other relevant international organisations

The following is a list of other research networks, conferences and organisations that facilitate networking, mentioned by our participants.

**Figure 15.3. International non-TVET-specific organisations that facilitate networking**

International non-TVET-specific organisations that facilitate networking
<ul style="list-style-type: none"> <li>• Commonwealth Association of Polytechnics in Africa (CAPA)</li> <li>• German Academic Exchange Service (DAAD)</li> <li>• Gesellschaft für Internationale Zusammenarbeit (GIZ), Germany</li> <li>• Porticus Foundation (Netherlands)</li> <li>• Southern African Development Community (SADC) of the African Union</li> </ul>

### 15.1.8. Research funding

As proposals written for funding applications generally require the involvement of more than one institution in order to fulfil the terms of reference requirements, many institutions that provide funding for research were also cited as promoting network formation. The African Development Bank (AFDB), the British Council, the UK Department for International Development (DFID) and the German Academic Exchange Service (DAAD) were the named institutions that invite proposals relating to TVET. For example, according to Emmanuel Osinem (University of Nigeria, Nigeria), some institutions in Nigeria partnered with Makerere University in Uganda and the University of Zimbabwe to prepare and submit a project to DFID called *Strengthening TVET Educator Programme in Africa (STEP-A Project)*.

Another international organisation that was mentioned as facilitating networking and idea sharing, was UNESCO and its International Centre for Technical and Vocational Education Training (UNEVOC) network. Many respondents noted being members of the UNEVOC network (cf., Section 15.4.).

### 15.1.9. Wider networks in SSA

We were also able to locate evidence for the following additional networks currently active in SSA. However, the focus on TVET, and particularly TVET research within these networks, varies. Likewise, some of these are specific cooperations, while others are more open networks. Nevertheless, this may offer good starting points for intensifying work on TVET.

1. **Africa–EU Partnership.** According to its website, *“the Africa-EU Partnership, with its continental approach, is an instrument of political dialogue and cooperation, overarching and complementing existing*

*development relationship frameworks between EU and African countries.”*  
(†Africa-EU Partnership)

2. **New Partnership for Africa's Development (NEPAD)** / African Union Development Agency (AUDA). NEPAD also partners with international financial institutions, UN agencies and Africa's development partners. According to the African Union,

*“During the June/July 2018 AU Summit held in Nouakchott, Mauritania, the Assembly approved the establishment of the African Union Development Agency (AUDA) as the technical body of the AU. [...] Transition from NEPAD to AUDA will be undertaken as part of the establishment of the latter.”*  
(†African Union)

3. **African Union** (†AU). The AU has formal agreements with several organisations. These partnerships are, by region: the Africa–Arab Partnership; Africa–European Union Partnership; Africa–South America Summit (ASA); Africa–India Partnership; Africa–Turkey Partnership; China–Africa Cooperation Forum (FOCAC); Africa–United States Partnership; Tokyo International Conference on African Development (TICAD); Africa–Korea Partnership; and Africa–Australia Partnership.
4. **European Centre for Development Policy Management** (†ECDPM), which has partnerships with KAM, the African Union Development Agency (AUDA), African Development Bank (AfDB), GIZ and OECD.
5. **Further Education and Training Institute** (South Africa) (†FETI). FETI has the following research and development partners: DG Murray Trust; City & Guilds (UK); INSETA; Access Trust; JET Educational Services; Ford Foundation; Financial Planning Institute; Western Cape Department of Economic Development and Tourism; Human Sciences Research Council; General Motors SA; Student Enrolment Management Unit (University of the Western Cape)UWC; National Business Initiative; British Council; South African Development Community (SADC) – UNESCO; Highline Community College USA; Kresge Foundation; Western Cape Education Department; Department of Higher Education and Training; Cape Peninsula University of Technology; South African Qualifications Authority; Danish International Development Agency (DANIDA); and MOT South Africa.

## Other research networks

The African Journal of Education, Science and Technology<sup>20</sup> organises conferences:

*“In Kenya, there are means of sharing knowledge. At the African Journal of Ed, Science and Tech, they have collaboration, forums, with Nigeria, Uganda”*  
(John W. Simiyu, University of Eldoret, Kenya).

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20 †African Journal of Education, Science and Technology, available at <http://www.ajest.info/index.php/ajest>

## 15.2. Network formation and the development of research capacities

We now turn to the potentials for network formation (RQ14.c), and the role networks can place in increasing research capacity and performance (RQ13.e) and in the expansion of already existing cooperations (RQ13.f). Having discussed what research networks exist across SSA, as well as platforms through which networking occurs (such as conferences), this section explores what the interview and focus group participants said about increasing research capacity in SSA, especially through network formation.

Participants generally agreed that it would be useful to have more developed networks across SSA. Kunwufine Deodonne and Miki Gilbert Ngwaneh (Vocational Centre for International Development), both from Cameroon, noted that more could be achieved in terms of research capacity if there was better access to research networks. These sentiments were echoed by Peter Changilwa Kigwilu from Kenya, Christopher Serwaniko from Uganda and James Keivy from South Africa.

Among the reasons given for why networks are useful are that they can increase research capacity, and that networking enables the exchange and generation of ideas, for instance, how to support TVET teacher development for new competencies. Ewnetu Hailu Tamene (Ethiopia) suggested that it would be a good idea to develop a platform for capacity building through networking; one that increases exposure to other cultures, different ideas, methods and ways of doing things. The participants also emphasised the capacity of networks for fostering personal growth through peer-learning and mentorship, the sharing of ideas, improved visibility of one's institution, and collaborating in order to share skills. Notably, some participants emphasised that while networking through any communicative platform, virtual or otherwise, is desirable, meeting in person is important and should not be neglected. Vusi Maseko, for example, explained that:

*“Virtual conferences are cost-effective but they deny you the human effect”*  
(Vusi Maseko, South West Gauteng TVET College, South Africa).

Further information about participants' thoughts on virtual networks is presented in the following section.

As well as articulating a positive desire to form and participate in networks, the participants also offered ideas about why there are not more networks in existence, and stronger ones. Miki Gilbert Ngwaneh, Cameroon, pointed out that finding the means to form networks was difficult. The subject of a lack of resources to fund networks was one that Gabriel Konayuma (Zambia) also raised. Further, it was a concern that TVET is not given sufficient attention as a field of research; therefore, there is limited support for existing scholars and a lack of development of a diverse pool of researchers from which a network might be built. Miki Gilbert Ngwaneh also spoke about the limited information on potential individual and institutional network members and partnerships; such factors inhibit the forging of networks across the continent.



One solution suggested for addressing the challenges facing network development was to create a UNEVOC database that detailed different institutions' research foci.<sup>21</sup> That database could then be consulted by researchers so that they could connect with institutions that shared their interests. Christina Boateng explained emphasised the importance of having:

*"opportunities for people to come together and plan projects together. This would help."* (Christina Boateng, University of Cape Coast, Ghana).

### 15.3. Supporting the virtual research community

As well as articulating a desire to form and participate in networks, the participants also offered ideas about why more — and stronger — networks do not exist. This section explores their views on virtual networks more broadly, as well as their experiences of participating in our Structured Community Review (SCR): in itself an informal virtual research and working community. The initial key purpose of this SCR virtual network was to review Chapters 1–13 of this report. However, participants requested that the community should be kept and be further developed as a virtual network relating to TVET research in SSA beyond the scope of this report. Throughout the remainder of this chapter, the virtual network that was born out of the SCR will be called the virtual research community<sup>22</sup>.

It is worth noting that the interaction of this virtual research community is intrinsically motivated; it is not based on the availability of research funding, but simply on an interest in TVET research<sup>23</sup>. Instead of intensifying commitment to research in a small selection of countries, this virtual research community (which is made up of participants from various African countries or regions) might in the future be supported through connection to a coordination office (at a university). Furthermore, communication in the virtual research community is mainly done online via a WhatsApp group. While individual messages and longer contributions are also exchanged by email, WhatsApp proved more successful as a medium of communication.

The virtual research community itself considered it important that it should include 'minorities' and disadvantaged people. By this, we mean not only groups that are minorities in a particular society, but especially minorities in TVET research such as women, young researchers and people with disabilities. Furthermore, the spectrum of *linguae francae* used in SSA should be covered (English, French, Portuguese, Arabic).

#### 15.3.1. Virtual research community experiences

As noted in the previous section on network formation and capacity building, some participants in the virtual research community emphasised the need for personal participation in conferences. This is because the personal exchange and establishment of contacts is considered important and sustainable for future collaboration. However, this is often not possible due to a lack of financial support (e.g., trips to conferences cannot be financed). The participants in the virtual research community agreed that a hybrid model could be an acceptable solution to this problem.

The aim of such a hybrid model would be to undertake capacity building through exchange and joint research. The model that was proposed could work as shown in Figure 15.4.

**Figure 15.4. A model for virtual conferences**

A model for virtual conferences
<ul style="list-style-type: none"> <li>• One or more researchers at location A (a TVET facility in SSA) prepare a scientific contribution with a short presentation. The presentation will be shared one week before the meeting with researchers at locations B, C, D (also TVET institutions in SSA).</li> <li>• At the time of the presentation, the researchers meet at an office of their own facility (location A). Researchers at location B meet in an office at location B, etc.</li> <li>• Researchers from location A provide the presentation (e.g., via audio, possibly recorded in advance).</li> <li>• This is followed by a question/answer session and discussion via audio and WhatsApp.</li> </ul>

Aspects of this model might vary depending on the internet connectivity available at the locations. For example, the presentation could be videoconferenced (which may not always be possible), or could be delivered in advance by audio or video recording. Ideally, such meetings would take place regularly (e.g., every month). Speaking on this topic in June 2019, Vusi Maseko considered the issue in the following extract from focus group 2 on WhatsApp:

**Facilitator..** *I was just wondering what size of event [e.g., a seminar] you had in mind? Just wondering in terms of length. Were you thinking one hour? One day? One week?*

**Vusi Maseko.** *I would say over a number of days, like from Thursday to Sunday; to accommodate those that may not be able to participate during working hours.*

It is noteworthy that Vusi proposes that the conference should extend into the weekend to enable better participation. In other sectors — that are perhaps better resourced — conducting activities on the weekend is out of the question. However, here a researcher voices the opinion that it is not just possible, but necessary.

The virtual research community considered that if meetings only take place sporadically, there will be no building of momentum and no sustained networking. Regular meetings may make the exchange more informal after a few months, and this might bring up new ideas from researchers who are otherwise excluded from the research dialogue. An example of such new ideas can be found in a recent conference presentation that resulted from the collaboration of members of the virtual research community.

### 15.3.2. AfriTVET International Conference (June 2019)

The virtual research community made a scientific conference contribution that was presented at the AfriTVET International Conference by Peter Kigwilu at the Rift Valley Technical Training Institute (RVTTI, Kenya, June 2019). This conference focused on implementing the sustainable development goals for green economies and societies. It was sponsored by the Africa Journal of TVET. Alongside European researchers, SSA members of the virtual research community presented, as shown in Figure 15.5, a paper entitled, Technical and Vocational Education and Training in Sub-Saharan Africa: A Comprehensive Review of the Current State of the Research <sup>24</sup>.

**Figure 15.5. Presentation slide used during the AfriTVET International Conference**



### 15.3.3. Enabling participation in conferences

As just described, virtual networks do not just function to enable networking online, but can be used to facilitate collaboration and idea sharing in different arenas. This section explores factors that arose in the virtual research network discussions concerning what factors might enable greater participation in conferences. Bearing in mind that conferences were emphasised by participants as being particularly important for TVET researchers in SSA (Section 15.2.), the ability of a virtual research community to further enable such participation is encouraging.

<sup>24</sup> The conference presentation was a direct outcome of the present review, i.e. supported by the German Ministry for Education and Research (Bundesministerium für Bildung und Forschung, BMBF).

Conferences, however, are at times too resource-intensive to allow for broad participation. Resources consumed include both financial resources and time needed. We also recall that in general, there is an aspiration for TVET to focus more on information and communication technologies. In the focus group discussions, we explored the use of technology by the researchers themselves to overcome some of the resource constraints. The following extract from the virtual research community WhatsApp discussion in June 2019 demonstrates how conference costs remain a barrier for some.

**Facilitator.** *Conference costs can be a problem — travel costs are a problem too. Or are those costs paid for by institutions?*

**Vusi Maseko.** *This depends per conferences but for most the presenter foots the bill for travel and accommodation. That can be a stumbling block.*

**Joseph Okwaro.** *The charges shown there are for presenters.*

**Vusi Maseko.** *So from South Africa I would have to pay about R2,100.*

**Facilitator.** *So the institution doesn't cover it?*

**Joseph Okwaro.** *Conference costs are in most cases met by the institutions. That happens to us when we attend the same outside Kenya. It can be costly for an individual.*

**Facilitator.** *Ok. Is that the same for others? Does your institution pay? Is there a quota, like you get a conference every year, or every few years?*

**Vusi Maseko.** *Not always. Sometimes you even have to take leave to attend and you pay from your own pocket.*

Despite the financial obstacles often blocking attendance, conferences do offer the opportunity for researchers to publish scientific articles. However, although the researchers in our virtual research community were able to take advantage of conferences to that end because they have the requisite skills to produce publishable research publications, that is not always the case. It was hinted at that for some, the lack of experience in research methods can be an obstacle to conference participation and to the submission of conference contributions. Joseph Okwaro noted, for example, that,

*"We need to encourage TVET institutions to hold conferences so that their members will be involved in research work. They get used to the [research] techniques"* (Joseph Okwaro, Eldoret National Polytechnic, Kenya).

However, contributing to conferences through presentations of research is not the only purpose of participation. Participation in conferences also permits networking among individuals, a purpose that is harder to serve with virtual models.

In summary, enabling greater conference participation might involve a combination of greater access to funds to attend conferences, the formation of more or larger virtual research networks, increased research methods skills development amongst researchers, and initiatives geared towards maximising networking once people are able to

make it to a conference. During the WhatsApp discussions, the following model (Figure 15.6) was discussed; it could be utilised by conference organisers and participants to encourage more formal networking (both at and beyond conferences).

**Figure 15.6. A proposed model for formal networking using conferences**

Using conferences to sustain capacity building
<ol style="list-style-type: none"> <li>1. Create a list of relevant TVET conferences.</li> <li>2. Find researchers in SSA via the (gradually expanding) research community, and thus present research results of the virtual research community at conferences.</li> <li>3. Provide funds to cover (local) travel and conference fees.</li> <li>4. At the conference: <ul style="list-style-type: none"> <li>• give a talk on the research results of the virtual research community;</li> <li>• conduct workshops on research and research methods.</li> </ul> </li> </ol>

It was suggested that travel costs could be kept low if researchers primarily attend national conferences. Even though the promotion of conference visits is hardly innovative in itself, the focus here is on building a targeted commitment that systematically strengthens research and knowledge, related to TVET associated with SSA, that can.<sup>25</sup>

## 15.4. A closer examination of UNEVOC

In addition to this information about the breadth of the existing networking opportunities across SSA (Section 15.3.), the interviews and focus groups also provided insight into which of these networks were most significant. Perhaps the most easily identifiable one was the UNEVOC Network and its regional coordinating centres. UNEVOC activities aim primarily to promote international collaboration and partnerships (Sections 5.4., 5.5.). We therefore conclude this chapter with a description of the UNEVOC Network and its geographical reach.

The UNEVOC Network is composed of TVET experts from ministries, national bodies, research organisations and training providers from around the world. It is subdivided into five regions, of which Africa is one. The continent is then further subdivided into the following regions:

### 1. Central and Eastern Africa.

- a. Coordinating centres: Kenya's Department of Technology Education, University of Eldoret (UoEld).
- b. Member countries: Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia,

<sup>25</sup> †Building State Capability, The Doing Development Differently Manifesto, available at <https://building-statecapability.com/the-ddd-manifesto/>.

Gabon, Kenya, Rwanda, Sao Tome and Principe, Somalia, South Sudan, Tanzania and Uganda.

## 2. Southern Africa.

- a. Coordinating centres: Botswana's Human Resource Development Council (HRDC), Mozambique's National Directorate for Professional Technical Education (DINET).
- b. Member countries: Angola, Botswana, Comoros, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Zambia and Zimbabwe.

## 3. West Africa.

- a. Coordinating centre: Nigeria's National Board for Technical Education (NBTE).
- b. Member countries: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo.

## 4. North Africa—Arab States.

- a. Coordinating centres: Egypt's Ministry of Education (MoE), Morocco's College of Technical Education, Mohammed V Souissi University (UM5S).
- b. Member countries: Algeria, Egypt, Libya, Mauritania, Morocco, Sudan, Tunisia.

### 15.4.1. UNEVOC Nigeria

As noted above, there are four UNEVOC coordinating centres across Africa, under which is a cluster of other relevant TVET centres in the sub-region. Three of those sub-regional coordinating centres are particularly relevant to the research conducted for this report which focuses on SSA: those based in Nigeria, Botswana and Kenya (see Section 5.3.). We therefore present more detail on the cluster of centres under the remit of those three relevant coordinating centres. As Ghana's Council for Technical and Vocational Education and Training (Section 10.2.) has also established relevant TVET networks, it will also be detailed in this section.

The Nigerian National Board for Technical Education (NBTE) (see Section 10.4.) was recognised as the UNEVOC Coordinating Centre for the West African Sub-Cluster in 2012, a cluster composed of 23 centres. In 2010, it established a Centre of Excellence for TVET

*"to facilitate the capacity development of TVET personnel, promote innovation and enhance partnership" (†NBTE).*

The Board's website stated that the network of national and international partners established by the Centre of Excellence for TVET includes the following institutions (†Government of Nigeria):

1. UNESCO-UNEVOC International Centre, Bonn, Germany
2. UNESCO (Regional) Bureau, Dakar, Senegal
3. Commonwealth of Learning, Vancouver, Canada

4. OIC-VET, SESRIC, Ankara, Turkey
5. Commonwealth Association of Polytechnics in Africa (CAPA), Nairobi, Kenya
6. Nigerian ICT Forum of Partnership Institutions, Abuja, Nigeria
7. Nigeria Network Operators Group (ng NOG), Abuja, Nigeria
8. ECOWAS Commission, Abuja, Nigeria
9. UNESCO Nigeria Country Office, Abuja, Nigeria
10. UNESCO-NATCOM, Abuja, Nigeria

#### **15.4.2. UNEVOC Botswana**

Botswana's Human Resource Development Council (HRDC) (Section 10.1.), also a UNEVOC Coordinating Centre, has made partnerships with several organisations and education providers (Section 5.5., Section 11.1.). Dr Owen Nkosinathi Sotshangane from Walter Sisulu University, states that

*"there is no doubt that sustaining success in innovation and entrepreneurship and establishing industry and academia partnerships are essential and can significantly assist in reducing unemployment, poverty and inequality in most countries. However, it can only be individuals who understand academia and business that can be the driving force behind successful partnerships."*

(†HRDC Research and Innovation 2016/17 grants award, Government of Botswana)

To illustrate the wide-ranging connections of these networks at the national level, we list the members in Botswana here. The following institutions are listed on the HRDC website as having links with the Council.



**Figure 15.7. Botswana Human Resource Development Council (HRDC): Links to other organisations**

**Botswana Human Resource Development Council (HRDC): Links to other organisations**

AFDA, Arthur Portland, BA ISAGO, BOTHO University, Boitekanelo College, Botswana Accountancy College, Botswana College of Open and Distance Learning (BOCODOL), Botswana Educational Research Association (BERA), Botswana Examinations Council (BEC), Botswana Innovation Hub, Botswana Institute for Development and Policy Analysis (BIDPA), Botswana Institute for Technology Research and Innovation (BITRI), Botswana Investment Trade Centre (BITC), Botswana Qualifications Authority (BQA), Botswana Tourism Organisation (BTO), Botswana University of Agriculture and Natural Resources (BUAN), Botswana University of Science & Technology, Business Botswana, DDT College of Medicine, Flying Mission, Gaborone Universal College of Law, Government Data Portal, Human Resource Development Council of Mauritius, Human Resource Development Council of South Africa (HRDCSA), Imperial College of Business, Institute of Development Management, International Labour Organisation (ILO), Labour Market Observatory (LMO), Limkokwing University of Creative Technology, Management College of Southern Africa, Ministry of Basic Education, Ministry of Economic Development and Finance, Ministry of Employment Labour and Skills Development, National Strategy Office (Office of the President), Organisation for Economic Cooperation, Southern African Development Community (SADC), Statistics Botswana, UNESCO, University of Botswana

### 15.4.3. UNEVOC Kenya

We highlight a number of TVET efforts in Kenya (also see Sections 10.3., 5.5., 11.1.5.); the activities of the UNEVOC Centre in Kenya — some coordinated by the Kenya National Commission for UNESCO — include:

1. University of Eldoret
2. Technical University of Mombasa
3. Technical and Vocational Education Authority
4. Rift Valley Technical Training Institute.

#### 15.4.4. Ghana: COTVET

In addition to the UNESCO-UNEVOC Centres and their regional coordinating bodies, of particular interest for our research were the cooperations established by Ghana's Council for Technical and Vocational Education and Training ([↑COTVET](#)) (see Sections 10.2., 5.5.). The COTVET aims to *"promote cooperation with international agencies and development partners"* ([↑Government of Ghana, 2006: 3](#)). The Council's website indicates partnerships with the following international organisations:

1. African Development Bank ([↑AfDB](#))
2. World Bank Group ([↑WB](#))
3. KfW Development Bank ([↑KfW](#))
4. Deutsche Gesellschaft für Internationale Zusammenarbeit ([↑GIZ](#))
5. Danida and Denmark's development cooperation ([↑Danida](#))
6. Japan International Cooperation Agency ([↑JICA](#))

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*WorldSkills / Home.* (n.d.). Retrieved February 2, 2020, from [https://worldskills.org/?id=277&itemid=431&option=com\\_content&task=view%27a%3D0](https://worldskills.org/?id=277&itemid=431&option=com_content&task=view%27a%3D0) (↑record)

## Chapter 16. Perspectives on Future TVET Research<sup>1</sup>

The aim of this study was to report on the state of research on TVET in SSA through a systematic literature review enhanced with a structured community review, interviews and focus groups. Across 15 chapters and several appendices, this report defined terms and provided contextual information (Chapters 1–3), and an overview of the research landscape (Chapters 4–15). The report also summarised the various findings (see executive summary preceding Chapter 1). Now, in this final chapter, we provide an outlook on future TVET research programming based on the findings of this report.

### 16.1. Cross-cutting approaches for designing joint TVET research in SSA

In this section, we put forward suggestions for approaches to TVET research in SSA. This report has demonstrated that — while research on TVET in SSA is available and covers multiple facets — there is a clear need for much further research on TVET in SSA (Chapters 6, 14). If researchers in SSA are to undertake research, then research funding and capacity building have to be priorities.

#### 16.1.1. TVET research needs to be broad and systematic

Complex problems may not have simple solutions; where differentiated and complex approaches are needed, these need to be evidence-informed. TVET research needs to be interdisciplinary. We cannot rely on some kind of notion of ‘narrow TVET research’: TVET research has to be undertaken in the context of other research branches, such as social scientific research, education research and other specialist subject disciplines. This applies to TVET research in general, as well as to TVET research in SSA.

The complex challenges for TVET in SSA have consequences for the design of TVET research. We, therefore, suggest focusing on the following interlocking areas of TVET research.

- **Research on ‘TVET research’.** What is the scope of TVET research? How is TVET research conducted in SSA? Which methodologies and paradigms form the basis

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<sup>1</sup> Citation for this chapter: Haßler, Haseloff, et al. (2020). *Chapter 16. Perspectives on Future TVET Research*. In: Haßler, Haseloff, et al. (2020). *Technical and Vocational Education and Training in Sub-Saharan Africa: A Systematic Review of the Research Landscape*. VET Repository, Bundesinstitut für Berufsbildung, Bonn, Germany. <https://doi.org/10.5281/zenodo.3843372>



for TVET research? How does it relate to other disciplines, and how could it usefully relate to those other disciplines? What capacity needs to be built to facilitate successful research? (Chapters 7, 13).

- **Research on the TVET system.** What are the goals of TVET in SSA? How is TVET integrated into the education system and at which levels (macro-, meso-, micro-level<sup>2</sup>) is it influenced, and by which institutions? At each of these levels, how can TVET be influenced in relation to educational policy, planning, practice, professional development and the promotion of education, etc.? (Chapters 8, 10, 11, 12).
- **TVET research at the level of education delivery.** Competence measurements and advanced approaches for TVET educators are needed. This needs to include pedagogy in TVET teacher education as well as curriculum development towards flexible use and application of teaching and learning concepts. (Chapters 4, 8).

### 16.1.2. Accurate measures

Accurate measures of the effectiveness of interventions need to be developed (Chapter 13). Such measures need to include a variety of different aspects of the TVET system (such as institutions and policy) in order to capture correlations accurately, and in order to stand a chance of approaching the identification of causal relations ([†Rauner, et al., 2007](#)). Importantly, the relationship between policymaking and policy implementation needs to be strengthened (Chapters 7, 13). Pertinent goals are recognised as important and enshrined in policy; yet, in practice, they are not realised by the relevant authorities and institutions (Chapter 13).

### 16.1.3. TVET research needs to be long-term

Undertaking long-term research means having access to long-term research funding (Chapters 6, 14). Longer-term research should span at least 2–3 years. Longer programmes — often shunned because of costs — can be divided into different research and implementation phases (such as conception, planning, implementation, testing / evaluation, re-planning, implementation). Longer-term funding empowers researchers and implementers to undertake full cycles of implementation, evaluation and re-implementation (Chapter 6). This allows for successful approaches to be expanded further.

### 16.1.4. Research in partnership, multilateralism and diversity

Multilaterality and diversity — including interdisciplinary approaches — are worth promoting. This plurality includes diversity of topics and the partners involved, with organisations from the research sector as well as from industry, businesses or other entrepreneurial institutions. Such broad designs offer the opportunity to innovate (Chapter 15). Purely bilateral cooperation may well be limited in its effectiveness and flexibility. Naturally, for research to be effective and equitable, partners from the African continent need to be involved in research projects and partake in research grants for research in SSA.

It is essential to develop not only the African regions within Africa but the African regions within a global context. The interviews we conducted have shown that all partners have to see clear advantages in cooperation (means, publications, regional innovations) in order to undertake committed work in networks or cooperations (Chapter 15). TVET researchers often work without specialised support, and are isolated in their institutions or countries (ibid.). Although TVET networks are identifiable (UNEVOC, TVETA Kenya), and sometimes TVET research takes place within networks, there are few research networks dedicated specifically to TVET research, e.g., RAIFFET, TVET-Net (Chapters 5, 15). There is an urgent need to develop networks and methods that can support TVET researchers effectively.

### 16.1.5. Applied and practical research

Contemporary issues such as gender or sustainability, which are discussed in the international research community, are — despite some interesting trends — still not sufficiently reflected in the discussion about TVET and TVET research in SSA (Chapters 9, 14). Involvement in international TVET networks can offer support for engagement with contemporary and future discourses (Chapters 5, 15). However, such involvement always needs to be designed according to the needs of all partners (including, of course, those on the continent). Examples from the past two decades of international research funding show that international cooperation can be problematic and ineffective (Chapters 6, 14). Even with other contemporary approaches to building international cooperation in TVET (e.g., ‘doing development differently’ or ‘adaptive management’)<sup>3</sup> it is not certain what the effective approaches are precisely. This justifies the need for action and research to interlock as tightly as possible: practical research and evidence-based implementation are two sides of the same coin (Chapter 14).

Calls for action, such as TVET implementation in certain areas, should always be calls for researching that action, too. Appropriate methods and research designs play a major role here: research on isolated scientific problems cannot lead to solutions to complex problems (Chapters 8, 14). This means that research on TVET must be set up in such a way that it can address practical and practice-oriented problems. Research needs to be action-oriented: research that focuses on improving practice, on real-world problems that are of societal relevance (ibid.). In a best-case scenario, researchers who are also practitioners can reflect on and further develop their own (teaching or administrative) practice during the research process (ibid.).

### 16.1.6. Approaches to funding TVET and TVET research

In this context, a joint approach by research and business sponsors makes sense. A practice-oriented project by TVET providers is prepared, planned, carried out and evaluated together with researchers (Chapter 5). It might, therefore, be worth considering whether a ‘mixed’ economic / implementation / research funding is expedient. A

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3 <sup>†</sup>Building State Capability, *The Doing Development Differently Manifesto*, available at <https://building-statecapability.com/the-ddd-manifesto/>

network of companies, TVET schools / colleges and universities could work together in such a project. Likewise, it is advisable to underpin existing projects in the field of TVET with additional TVET research. It would also make sense to work with other ministries. Depending on the project, expertise and support could be brought in by the Ministry of Labour, Development and Agriculture, etc. (Chapter 10).

## 16.2. Topics and themes

As noted, above, while diverse research on TVET in SSA is available, there is a clear need for further research on TVET in SSA. We now turn to a number of clear starting points for such future research in terms of topics and themes that we present in this first section (Chapters 6, 7). Clear objectives for what constitutes meaningful TVET have to be developed (Chapter 4). There is an urgent need for research on the establishment and introduction of TVET standards linked to well-founded teaching approaches according to the current international state of research (Chapter 12). Similarly, the continuing education of TVET teachers must be further researched, and further developed in evidence-based ways (Chapters 4, 7).

### 16.2.1. Societal perspectives

If we are to undertake further TVET research, then it is important that it does not only target the economically viable side of TVET. In the light of broader social development in SSA, providing education for *responsible citizens* — who play a part in shaping a cohesive society and sustainable world — needs to be a topic of research and development (Chapters 4, 7). Student-centred teaching approaches are needed to develop the skills required to become such responsible citizens, who are self-reliant and (self-)reflective. Such aspects need to be part of the competence-orientation of TVET (Chapter 8). If the issue of personal development and individual education — especially relating to critical reasoning — is neglected, as is often the case in informal education, graduates of these forms of TVET are vulnerable to abuse and exploitation in the workplace (ibid.).

Integration, equal opportunities and gender aspects need to be addressed — both in research and implementation. Specific suggestions as to how change in this direction can be implemented effectively are — as our analysis shows — still rare (Chapters 8, 9). Research can make valuable contributions in foregrounding this.

In many countries in SSA, despite a high level of youth unemployment, there is a shortage of skilled workers (Chapters 4, 9). Demand- and competence-oriented TVET will benefit both industry and young people. If this alignment can be created, then it will be possible to get better support for TVET programmes from industry and business. Industry and business benefit from recognised and systematically implemented TVET standards and correspondingly skilled workers (Chapter 12).

### 16.2.2. Perspectives of industry and business

In all further TVET research and implementation, it is of the utmost importance to consider the perspectives of all stakeholders, including industry and businesses (Chapters 4, 5, 6, 14). It is advisable to identify TVET needs on a regular basis — both in terms of quality and quantity — through the consistent participation of regional companies and institutions (Chapters 6, 11). This not only leads to increased industry participation in TVET, thereby increasing the chances of conceptual and financial support; it also makes TVET more attractive to potential students, because their chances of being employed in the regional labour market increase. Moreover, more skilled employment ultimately increases workers' incomes and living standards. Measures that strengthen both industry and workers are likely to result in strengthening the economy overall.

In order to keep the barrier of entry low and increase the attractiveness of TVET programmes, innovative solutions are needed (Chapter 7). For example, it will also be necessary to consider to what extent existing qualifications and abilities can be used and recognised in the future (Chapter 6). Many people in the regions surveyed have obtained skills and experience without any formal training in a wide range of fields, including artisanal work, craft or agriculture (Chapters 8, 13). Such TVET — in the informal sector and without a (state recognised) certificate — nonetheless has value; existing skills need to be made identifiable in order to gain formal recognition and contribute to society to full effect.

### 16.2.3. Information and Communication Technology in TVET

There is a clear need for research to guide the introduction of skills development in Information and Communication Technology (ICT) through TVET; this effort is in line with the stated objectives of SSA TVET policies (i.e., in Nigeria, Uganda, Kenya, Ghana, Tanzania, Cameroon, Malawi, Rwanda and others; Chapters 6 and 8). TVET research must consider the relevance of ICT-based teaching and learning in TVET against the background of current developments and changes of work processes in the economy. So far, existing research in TVET indicates a lack of evidence of the impact of ICT on the efficiency of TVET programmes ([†South Africa, Namibia, Zambia, Botswana: Hoosen, et al., 2017](#)). Research findings on the meaningful use of even simple ICTs, such as the use of video material ([†Ghana: David & Asamoah, 2011: 12](#)), are rare.

As mentioned in Chapters 6 and 8, first, it is important to prepare TVET students for a working world in which ICT plays a decisive role. Second, there is a demand for integrating modern technologies into the TVET process, and, indeed, it is essential to do so. This applies to both the training of teachers and students. TVET research must provide suitable educational concepts through which ICT-use can improve teaching and learning.

Our analysis identifies strong infrastructural constraints that affect the ICT sector in SSA. Therefore, on a larger scale, SSA should initially focus on the use of basic technologies to support teaching and learning (laptops, tablets, digital resources). TVET research must integrate this into existing teaching and learning concepts and develop workable models for different approaches in the broad spectrum of blended learning.

#### 16.2.4. Align TVET research with the SDGs

All countries worldwide in the UN have adopted the Sustainable Development Goals (↑[United Nations](#))<sup>4</sup> on globally oriented targets for ecological, social and economic sustainability as well as for poverty reduction by 2030. The SDGs represent an important guideline worldwide and also in SSA, on which TVET policy is based. The results in this report show that, so far, current TVET research in SSA has not been sufficiently developed to make a significant contribution to achieving the SDG (Chapter 5, ↑[Ogwo, et al., 2018](#)). The question must be asked whether and how research on TVET in SSA can be used to help achieve the SDGs.

The aim should, therefore, be to establish cooperations with SSA that fund joint TVET research which makes a fundamental contribution to achieving the SDGs (ibid.). This is a challenge that can be met most fully by a multilateral and international group of researchers who actively work together in a network (Chapter 15). Capacities for TVET research in SSA and multilateral research cooperation needs to be strengthened.

In conclusion, we note that some countries and research locations are grappling with these complex problems and are working towards addressing the pertinent issues. For example, in Kenya, Ethiopia, Ghana and Tanzania, efficient institutions have been created to run the TVET system; in Burkina Faso, the education of TVET teachers is being professionalised (University of Koudougou; Chapters 10, 11). In other settings, however, it appears less likely that progressive reforms are going to improve existing TVET systems and offer better life chances for young people (ibid., ↑[Arias, et al., 2019](#)).

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4 The 17 SDGs are anchored in the UN 2030 Agenda. This was adopted by all UN member states in 2015. The SDGs consider all three dimensions of sustainability – social, environmental, economic – equally. The declared goal is the transformation to a world in which everyone acts in an ecologically compatible, socially just and economically efficient manner (see, e.g., the 2030 Agenda for Sustainable Development, ↑[BMZ](#), as available at [https://www.bmz.de/de/ministerium/ziele/2030\\_agenda/index.html](https://www.bmz.de/de/ministerium/ziele/2030_agenda/index.html)).

### 16.3. Chapter bibliography

This bibliography can be accessed from the [↑entry for this document in our evidence library](#).

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*Building State Capability - The DDD Manifesto*. (n.d.). Retrieved May 28, 2020, from <https://buildingstatecapability.com/the-ddd-manifesto/> (↑record)

Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung. (n.d.). *Die Agenda 2030 für nachhaltige Entwicklung*. Retrieved August 4, 2020, from [http://www.bmz.de/de/themen/2030\\_agenda/index.html](http://www.bmz.de/de/themen/2030_agenda/index.html) (↑record)

David, S., & Asamoah, C. (2011). Video as a tool for agricultural extension in Africa: a case study from Ghana. *International Journal of Education and Development Using ICT*. (↑record)

Hoosen, S., & Butcher, N. (2017). Chapter 12: Considerations in Costing ODL and ICTs in TVET. In C. Lachem (Ed.), *Using ICTs and Blended Learning in Transforming TVET*. (↑record)

Ogwo, B. A. (2018). Re-visioning Technical Vocational Education and Training (TVET) for the Youth in Sub-Saharan Africa (SSA) and the Sustainable Development Goals (SDGs): Prospects and Promises Within the Framework of the Ubuntu Paradigm. In E. J. Takyi-Amoako & N. T. Assié-Lumumba (Eds.), *Re-Visioning Education in Africa: Ubuntu-Inspired Education for Humanity* (pp. 155–173). [https://doi.org/10.1007/978-3-319-70043-4\\_9](https://doi.org/10.1007/978-3-319-70043-4_9) (↑record)

Rauner, F., Grollmann, P., & Martens, T. (2007). *Messen beruflicher Kompetenz*. (↑record)

United Nations. (n.d.). *Sustainable Development Goals*. Retrieved May 28, 2020, from <https://sustainabledevelopment.un.org/?menu=1300> (↑record)

## Appendix 1: Annotated bibliography

This annotated bibliography contains brief descriptions of the most cited items in this report as well as summaries of the 14 U.u publications used in Chapter 7.

### 1.1. Most-cited items

This section contains brief descriptions of the most cited items in this report in order to number of citations.

#### 1.1.1. 'Give Courage to the Ladies'

**Kimberly Safford, Deborah Cooper, Freda Wolfenden & Joyce Chitsulo (2013).**  
***'Give courage to the ladies': expansive apprenticeship for women in rural Malawi.***  
**Journal of Vocational Education & Training, 65:2, 193–207.**

<b>Citation</b>	<a href="#">↑Malawi: Safford, et al., 2013</a>
<b>Comment</b>	This paper examines the apprenticeship opportunities in a large-scale Access to Teaching Scholarship in Malawi. The programme's study materials and support structures are designed to move participants from restrictive to expansive contexts for learning, and to develop hybrid roles as students, community workers and apprentice teachers. The authors examine data from the first cohort of participants and consider the extent to which the Scholarship offers an innovative model of expansive apprenticeship to address barriers to female continuing education and chronic teacher shortages in sub-Saharan Africa.



### 1.1.2. Achieving Teaching Quality in Sub-Saharan Africa: Empirical Results from Cascade Training

**Lange, Sarah (2016). *Achieving teaching quality in sub-Saharan Africa: Empirical results from cascade training*. Bamberg: Springer, p. 242.**

<b>Citation</b>	<a href="#">↑Cameroon: Lange, 2016</a>
<b>Comment</b>	This study is concerned with the question as to whether cascade training in professional development of teachers can contribute to the improvement of teaching quality. The author explores the effectiveness of training multipliers in schools in Cameroon. The report focuses on whether the participation of teachers in professional development leads to differences in the teaching practice and in the attitude of teachers. This research question is analysed with a research methodology, which encompasses a questionnaire survey provided to teachers, students and principals, as well as a teacher video survey and a student achievement test. The empirical results show the effects of cascade training on the learner-oriented teaching practice, if the trained teachers are supported in their roles as change agents. Among the conditions for the conceptual quality and the implementation of cascade training, the continuity of school-based professional development is particularly emphasised in light of the results.

### 1.1.3. UNESCO-UNEVOC World TVET Database Country Report Nigeria

**UNESCO-UNEVOC World TVET Nigeria, p. 13, Database country report**

<b>Citation</b>	<a href="#">↑UNESCO-UNEVOC, 2012</a>
<b>Comment</b>	A brief report on the general characteristics of the TVET system in Nigeria, including the country's TVET mission, strategy, legislation, current reforms, and major projects and challenges. It also contains information on Nigeria's formal, non-formal and informal systems, the governance and financing of TVET, and the country's qualifications frameworks.

### 1.1.4. Lessons for Developing Countries from Experience with Technical and Vocational Education and Training

**Kingombe, Christian (2011). *Lessons for Developing Countries from Experience with Technical and Vocational Education and Training*. International Growth Centre (IGC) working paper, reference number: F-39011-SLE-1.**

<b>Citation</b>	<a href="#">↑Sierra Leone: Kingombe, 2011</a>
<b>Comment</b>	<p>Based on research on the lessons learned from recent TVET reforms in other developing countries, this paper aims to inform the future comprehensive design and implementation of strategies for TVET in Sierra Leone. It makes suggestions for how to address future challenges and opportunities to ensure that the good performance of TVET reforms contribute to the promotion of sustainable growth through private sector development.</p> <p>The paper is structured as follows.</p> <ul style="list-style-type: none"> <li>• Section 2 provides a stock taking of the available quantitative evidence on the impact of TVET.</li> <li>• Section 3 presents and discusses different institutional and strategic TVET frameworks.</li> <li>• Section 4 discusses the importance of a demand-oriented TVET system.</li> <li>• Section 5 discusses the various existing and potential sources for the financing of the TVET system.</li> <li>• Section 6 presents various examples of successful external cooperation on TVET projects in Africa and Asia.</li> <li>• Finally, section 7 presents policy options.</li> </ul>

### 1.1.5. Assessment of Perceived Attributes and Instructional Use of Information Communication Technology

**Agufana, PB (2015). *Assessment of Perceived Attributes and Instructional Use of Information Communication Technology by Lecturers in Technical Training Institutions in Kenya*. Thesis submitted in partial fulfilment of the requirements for the award of the degree of Doctor of Philosophy in Curriculum Instruction and Educational Media of Moi University, Eldoret, p. 159.**

<b>Citation</b>	<a href="#">↑Kenya: Agufana, 2015</a>
<b>Comment</b>	The specific objectives of this study were to establish the relationship between perceived attributes (ease of use, usefulness, cultural relevance, and government policy) and instructional use of ICT. The study adopted the quantitative research design.

### 1.1.6. Republic of Botswana (2015) ETSSP 2015–2020 — Education & Training Sector Strategic Plan

**Republic of Botswana (2015) *ETSSP 2015–2020 — Education & Training Sector Strategic Plan*, p. 174.**

<b>Citation</b>	<a href="#">↑Botswana: Government of Botswana, 2015</a>
<b>Comment</b>	The Botswana Government, through the Ministry of Education and Skills Development (MoESD), has set out its five-year Education and Training Strategic Sector Plan (ETSSP: 2015–2020) setting out its priorities for the sector. It is designed to give guidance to decision makers and planners at all levels and aims to improve education sector performance over the next five years. The plan refers to many of the challenges facing the education sector and the various strategies, programmes and activities designed to meet these challenges.

### 1.1.7. Factors Affecting Youth Entrepreneurship Development within Kibera, Kenya: the Perspective of Entrepreneurship Education

**Sambo, Wise (2016). *Factors affecting youth entrepreneurship development within Kibera, Kenya: the perspective of entrepreneurship education. Problems and Perspectives in Management*, 14(2–2), pp. 331–338.**

<b>Citation</b>	<a href="#">↑ Kenya: Sambo, 2016</a>
<b>Comment</b>	This study seeks to investigate and report on the factors affecting youth entrepreneurship development with specific reference to entrepreneurship education in Kibera, a district of Kenya. Two objectives are identified, namely (i) to determine the government's provision and access to entrepreneurship education and training among the Kenyan youth, and (ii) to determine whether there is a relationship between the level of education, training and development of youth entrepreneurship. Findings revealed a strong positive correlation between the provision of entrepreneurship education and development of youth entrepreneurship, and that the level of education has a very weak positive correlation to youth entrepreneurship development. Recommendations are made on how youth entrepreneurship can be improved in Kibera and the rest of Kenya.

### 1.1.8. Traditional Apprenticeship in Ghana and Senegal

**Sonnenberg, K. (2012). *Traditional Apprenticeship in Ghana and Senegal: Skills Development for Youth for the Informal Sector. Journal of International Cooperation in Education*, Vol. 15, No. 2 (2012), pp. 93–105. CICE Hiroshima University.**

<b>Citation</b>	<a href="#">↑ Ghana, Senegal: Sonnenberg, 2012</a>
<b>Comment</b>	Ghana and Senegal have long histories of traditional apprenticeship. These forms of skills training reach more youth than formal technical and vocational training. This paper examines the approaches these two countries' governments have taken to increase access to and quality of non-formal skills training opportunities. Despite a lack of data on the long-term outcomes of these initiatives, programmes and reforms, several important implications arise from these countries' experiences. These implications are discussed, as well as areas for future research.

### 1.1.9. Hospitality and Tourism Education in Uganda

**Eddy Kurobuza Tukamushaba & Honggen Xiao (2012). Hospitality and Tourism Education in Uganda: An Integrative Analysis of Students' Motivations and Industry Perceptions. *Journal of Teaching in Travel & Tourism*, 12:4, pp. 332–357.**

**Citation**      ↑Uganda: Tukamushaba, & Xiao, 2012

**Comment**      This article presents an integrative analysis of students' motivations in choosing hospitality and tourism programmes as well as industry perceptions of graduates' qualifications for employment in Uganda. Implications of the study are discussed in light of curriculum and programme refinement to better prepare future graduates for the industry.

### 1.1.10. Mapping Non-formal Education at Post-primary Educational Level in Uganda

**Bananuka, T., & Katahoire, A. (2008). *Mapping Non-formal Education at Post-primary Educational Level in Uganda* [Working document]. <http://cees.mak.ac.ug/sites/default/files/publications/Session.pdf>**

**Citation**      ↑Uganda: Bananuka & Katahoire, 2008

**Comment**      This paper explores various cases of non-formal education at post-primary education level in Uganda with special focus on the analysis of the context of non-formal education (NFE) provision and the curriculum. Other issues explored include educator training, materials development, teaching and learning methods, policy development and implementation, the relationship with formal education, linkages with work and employment, and issues of sustainability and continuity.

### 1.1.11. Government of Nigeria (1985) Education Act No. 16 (National Minimum Standards and Establishment of Institutions)

**Government of Nigeria (1985). Education Act No. 16 (National Minimum Standards and Establishment of Institutions)**

**Citation**      ↑Nigeria, Government, 1985

**Comment**      An Act to deal with, amongst other things, the specification of various authorities empowered to prescribe minimum standards of education in Nigeria; and to impose penalties for any contravention of its provisions. The document contains a section on secondary and teacher education, and a section on technical education. It states the purpose of TVET and teacher education, as well as the minimum standards for each of them.

### 1.1.12. Inclusiveness in the Vocational Education Policy and Legal Frameworks of Kenya and Tanzania

<b>Malle, A. Y. (2016). Inclusiveness in the Vocational Education Policy and Legal Frameworks of Kenya and Tanzania. Journal of Education and Learning, p. 103.</b>	
<b>Citation</b>	<a href="#">↑Kenya, Tanzania: Malle, 2016</a>
<b>Comment</b>	This study examines the status of inclusiveness in the education and training policies of Ethiopia in comparison to those of selected East African countries. Most of the study participants agreed that the issue of disability was not adequately addressed in the education and training policies or the legal and implementation instruments of the study countries. The participants also proposed valuable recommendations.

### 1.1.13. Video as a Tool for Agricultural Extension in Africa: A Case Study from Ghana

<b>David, S., &amp; Asamoah, C. (2011). Video as a tool for agricultural extension in Africa: a case study from Ghana. International Journal of Education and Development Using ICT, 1516.</b>	
<b>Citation</b>	<a href="#">↑Ghana: David, &amp; Asamoah, 2011</a>
<b>Comment</b>	The paper explores the effectiveness of video viewing clubs (VVCs) as a training method. Results suggest that the VVC is effective as a relatively low cost, interactive training method for providing low-literacy populations with skills, information and knowledge on complex technical topics. The paper concludes by discussing the challenges of scaling up VVCs and identifying issues for further research.

### 1.1.14. Undergraduate Students' Learning Outcomes

<b>Alade, I. A. (2015). Effects of Three Categories of Manpower on Undergraduate Students' Learning Outcomes in Technical Education and Their Implications for the Curriculum Implementation. JISTE Vol. 19, No. 2, 2015, p. 1144.</b>	
<b>Citation</b>	<a href="#">↑Nigeria: Alade, 2015</a>
<b>Comment</b>	This study examines the effects of three categories of manpower on undergraduate students' learning outcomes in technical education, and their implications for the curriculum implementation. It was concluded that the three categories of manpower are effective at enhancing students' learning outcomes in technical education in various dimensions. To this end, it was recommended that literate artisans should be integrated into the teaching of vocational skills in tertiary education institutions.

### 1.1.15. Technical and Vocational Education and Training in Ethiopia

<b>Krishnan, P., &amp; Shaorshadze, I. (2013). Technical and Vocational Education and Training in Ethiopia (p. 1379) [Working Paper]. Retrieved from <a href="http://prime-ethiopia.org/wp-content/uploads/2015/03/TVET1.pdf">http://prime-ethiopia.org/wp-content/uploads/2015/03/TVET1.pdf</a></b>	
<b>Citation</b>	↑Ethiopia: Krishnan & Shaorshadze, 2013
<b>Comment</b>	<p>This report presents a background study of the state of technical and vocational education and training in Ethiopia, arguing that it is important to improve its efficiency.</p> <p>Two ways to doing so are proposed:</p> <ul style="list-style-type: none"> <li>• Improve the efficiency and equity of the centrally-driven allocation mechanism, drawing on the recent advances in matching algorithms and their application to school choice.</li> <li>• Impact evaluation of the final labour market outcomes of graduates has to be an integral part of the TVET system.</li> </ul>

### 1.1.16. Training Community Healthcare Workers

<b>Mastellos, N., Tran, T., Dharmayat, K., Cecil, E., Lee, H.-Y., PengWong, C. C., . . . O'Donoghue, J. M. (2018). Training community healthcare workers on the use of information and communication technologies: a randomised controlled trial of traditional versus blended learning in Malawi, Africa. BMC MEDICAL EDUCATION, 958. <a href="https://doi.org/2129771:ZRWB TANL">https://doi.org/2129771:ZRWB TANL</a></b>	
<b>Citation</b>	↑Malawi: Mastellos, et al., 2018
<b>Comment</b>	<p>This study argues that there is no difference between blended and traditional face-to-face learning in relation to the acquisition of ICT knowledge among community healthcare workers in developing countries. Given the human resource constraints in remote resource-poor areas, the blended learning approach may present an advantageous alternative to traditional learning.</p>



### 1.1.17. Vulnerability, Partnerships and the Pursuit of Survival: Urban Livelihoods and Apprenticeship Contracts in a West African City

**Hanson, K. (2005). Vulnerability, Partnerships and the Pursuit of Survival: Urban Livelihoods and Apprenticeship Contracts in a West African City. GeoJournal, 1643. <https://doi.org/2129771:QJBKZ3W3>**

<b>Citation</b>	↑Ghana: Hanson, 2005
<b>Comment</b>	This paper analyses local-level apprenticeship contracts and networks to highlight informal urban livelihoods within the context of socio-economic vulnerability and wider contemporary changes taking place in Koforidua, Ghana. It contends that apprenticeship contracts and the network spaces they create have created a new social cohesion and community that transcend the traditionally known spaces of social support, i.e., ethnic ties, family ties or even institutional support.

### 1.1.18. “If I can be a helper, one day I be a boss”

**Ryan, S. (2015). “If I can be a helper, one day I be a boss” – A case study of informal apprenticeship in Lusaka**

<b>Citation</b>	↑Zambia: Ryan, 2015
<b>Comment</b>	In light of the revision of the Apprenticeship Act in Zambia, this report argues for the expansion of the definition of ‘apprenticeship’, with an emphasis on apprenticeship within the informal economy. The authors state that the Basic Trades Certificate, which recognises informally acquired skills, including skills gained through informal or traditional apprenticeships, promoted skills acquisition more effectively, and provides a means to access formal vocational training courses and certification. The authors defend the view that TVET policy needs to become more responsive to the informal economy, and that the quality of training needs to be improved. Decent work outcomes also need to be strengthened through supporting trade associations, providing greater access to finance for master craftworkers and graduating apprentices, improving health and safety outcomes, and creating greater links between the formal and informal training and employment sectors.

### 1.1.19. Baseline Study for Distance Technical and Professional Education in Mozambique

**Romiszowski, A. (2015). Baseline Study for Distance Technical and Professional Education in Mozambique (p. 613). Retrieved from <http://oasis.col.org/handle/11599/1775>**

<b>Citation</b>	† <a href="#">Mozambique: Romiszowski, 2015</a>
<b>Comment</b>	This baseline study was undertaken to describe and analyse the current situation in Mozambique with respect to TVET, in order to evaluate the needs and the viability of employing open and distance Learning (ODL), and in particular, eLearning, in a flexible and blended approach.

### 1.1.20. Assessment of Perceived Ease of Use and Instructional Use of ICT by Lecturers in Technical Training Institutions in Kenya

**Agufana, P., Too, J., & Mukwa, C. (2018). Assessment of Perceived Ease of Use and Instructional Use of ICT by Lecturers in Technical Training Institutions in Kenya. African Journal of Education, Science and Technology, p. 124.**

<b>Citation</b>	† <a href="#">Kenya, Rwanda: Agufana, et al., 2018</a>
<b>Comment</b>	The findings indicated that use of ICT by lecturers is perceived to greatly improve instruction. The study recommends that lecturers be encouraged to use ICT for instructional purposes for that reason.

## 1.2. Overview of the 14 U.u publications

The following tables indicate the goals, methodology and results of the 14 U.u publications. As the layout of the information presented differs from Appendix 1.2., we have repeated publications where there is overlap.

### 1.2.1. Influences on students' learning outcomes in Nigeria

<b>Alade, I. A. (2015). Effects of Three Categories of Manpower on Undergraduate Students' Learning Outcomes in Technical Education and Their Implications for the Curriculum Implementation. <i>JISTE</i>, 19(2)</b>	
<b>Citation</b>	<a href="#">↑U.u/Nigeria: Alade, 2015</a>
<b>Goals</b>	<p>The aim of this study was to explore the effects of three categories of manpower: vocational educator, higher technician and literate artisan.</p> <p>The study explored the effects of these three categories on undergraduate students' learning outcomes in technical education.</p> <p>Additionally, it examined the implications of the results for implementing the curriculum.</p>
<b>Methods</b>	<p>The study had a sample size of sixty students.</p> <p>Students were randomly assigned to treatment groups where they were trained for one week.</p> <p>The study employed a quasi-experimental design using a 4x3x2 factorial matrix.</p> <p>Students took part in pre- and post-tests using a questionnaire developed by the researchers.</p>
<b>Results</b>	<p>The study found that students' learning outcomes in technical education were enhanced by the intervention in question.</p> <p>Students taught by a vocational educator, literate artisan or a higher technician group all showed improvements over a control group.</p>

### 1.2.2. Learning the master's trade in Ghana

<b>Frazer, G., &amp; Frazer, G. (2006). Learning the master's trade: Apprenticeship and human capital in Ghana. <i>Journal of Development Economics</i>. <a href="https://doi.org/10/dmcqmr">https://doi.org/10/dmcqmr</a></b>	
<b>Citation</b>	<a href="#">↑U.u/Ghana: Frazer &amp; Frazer, 2006</a>
<b>Goals</b>	<p>This study explored the financial impact of apprenticeships in Ghana.</p> <p>A model of apprenticeship as training in specific human capital was outlined with the goal of exploring this model through the study.</p> <p>The model aimed to predict worker productivity and remuneration.</p>
<b>Methods</b>	<p>Secondary data were used in this publication.</p> <p>Data were obtained from a national household survey (the Ghana Living Standards Survey).</p> <p>The sample size was 14,991 (all individuals over the age of 15). Out of this sample, 4,151 individuals were in the labour force.</p> <p>A panel dataset of manufacturing firms was also used. The panel dataset had a sample size of 2,122.</p>
<b>Results</b>	<p>Results suggested that a return on apprenticeship was enjoyed only among the self-employed.</p> <p>Furthermore, they suggested that capital was the only constraint preventing apprentices from becoming self-employed entrepreneurs.</p>

### 1.2.3. Entrepreneurship education in Senegal

<b>Garcia-Rodriguez, F. J., Gil-Soto, E., Ruiz-Rosa, I., &amp; Sene, P. M. (2017). <i>Entrepreneurship Education in Sub-Saharan Africa: Results of a Case Study in Senegal</i>.</b>	
<b>Citation</b>	<a href="#">↑U.u/Senegal: Garcia-Rodriguez, et al., 2017</a>
<b>Goals</b>	<p>Students' entrepreneurial potential was assessed.</p> <p>The study researched a threeyear entrepreneurship promotion programme.</p> <p>The goal was to explore the impact of the entrepreneurship programme.</p>
<b>Methods</b>	<p>A structured questionnaire was used to collect data.</p> <p>The questionnaire measured Entrepreneurial Intention, Perceived Desirability, Perceived Feasibility and Attitudes toward Enterprise.</p> <p>The sample size was 128 students. The study employed a pre-/post-test.</p>
<b>Results</b>	<p>Improvements were found in student entrepreneurial potential, perceived desirability and perceived feasibility at the programme's end.</p> <p>However, there was no improvement with regard to any of the attitudes associated with entrepreneurship.</p>

#### 1.2.4. Computer literacy among practical arts teachers in Swaziland

<p><b>Hlophe, Z. F., &amp; Mindebele, C. (2001). Computer literacy among practical arts teachers in swaziland vocational schools. <i>Journal of Vocational Education and Training</i>. <a href="https://doi.org/10/cxxtx9">https://doi.org/10/cxxtx9</a></b></p>	
<b>Citation</b>	↑ <a href="#">U.u/eSwatini: Hlophe &amp; Mindebele, 2001</a>
<b>Goals</b>	<p>This article reported the findings of a study conducted in Swaziland.</p> <p>The study hoped to determine the computer literacy skills of teachers of agriculture, commerce, home economics and technical studies.</p> <p>The study also explored the computer interests of the teachers.</p> <p>In addition, it examined what computer software programmes and what kind of information teachers were interested in.</p>
<b>Methods</b>	<p>Teachers from sixteen pilot vocational schools were considered.</p> <p>A census survey of all high school teachers of agriculture, commerce, home economics and technical subjects was conducted.</p> <p>In total, 74 teachers were surveyed.</p>
<b>Results</b>	<p>The study found that the teachers did not have the necessary basic computer knowledge and skills.</p> <p>However, it found that teachers did have a strong interest in taking computer technology courses.</p>

### 1.2.5. Evaluation of a VEOP in South Africa

<b>Jacobs, L., &amp; Wet, C. D. (2013). Evaluation of the vocational education orientation programme (VEOP) at a university in South Africa. <i>The International Review of Research in Open and Distributed Learning</i>, 8. <a href="https://doi.org/10/gf623n">https://doi.org/10/gf623n</a></b>	
<b>Citation</b>	<a href="#">↑U.u/South Africa: Jacobs and Wet, 2013</a>
<b>Goals</b>	<p>This study sought to evaluate the Vocational Education Orientation Programme (VEOP) at a South African university.</p> <p>The study assessed the individual modules and the quality of the VEOP.</p> <p>The goal of the evaluation was to improve the programme.</p> <p>A further goal was to inform the development of a full qualification.</p>
<b>Methods</b>	<p>Data were collected using two questionnaires.</p> <p>A total of 1536 evaluation forms were distributed to lecturer-students at the end of each programme module in 2011.</p> <p>A total of 418 questionnaires were returned, out of which only 412 were usable for analysis.</p> <p>In 2012, the same cohort was asked to complete the second questionnaire. 60 lecturer-students were randomly selected from three campuses, also randomly selected. A total of 48 lecturer-students responded with feedback on the quality of the overall programme.</p>
<b>Results</b>	<p>Both strengths and weaknesses of the VEOP were found.</p> <p>Results suggest that assessment was the best part of the modules, whilst study materials needed the most improvement.</p> <p>The need for improved student support and for careful selection and training of tutors was emphasised by the study.</p>

### 1.2.6. The Impact of Training on Lowland Rice Productivity in Uganda

<b>Kijima, Y., Ito, Y., &amp; Otsuka, K. (2012). Assessing the Impact of Training on Lowland Rice Productivity in an African Setting: Evidence from Uganda. <i>World Development</i>. <a href="https://doi.org/10/gf62mn">https://doi.org/10/gf62mn</a></b>	
<b>Citation</b>	↑ <a href="#">U.u/Uganda: Kijima, et al., 2012</a>
<b>Goals</b>	<p>This study assessed the impacts of a training programme in eastern Uganda.</p> <p>It was initiated by the Japan International Cooperation Agency (JICA).</p>
<b>Methods</b>	<p>A total of 300 households were randomly selected (75 randomly selected from each of four sites).</p> <p>The selections came from two pilot project sites and from two sites where training had previously started.</p> <p>Ex-post non-experimental data were used.</p> <p>Questionnaires pertaining to agricultural production were distributed.</p> <p>Overall, 123 households had not yet harvested rice by the time of data collection, leaving 177 households as the final sample size.</p>
<b>Results</b>	<p>Participation in the training programme resulted in increased adoption of enhanced cultivation practices.</p> <p>Participants in the training programme also had increased profits from rice production.</p>



### 1.2.7. A school mental health literacy training approach in Tanzania

<p>Kutcher, S., Wei, Y., Gilberds, H., Ubuguyu, O., Njau, T., Brown, A., Sabuni, N., Magimba, A., &amp; Perkins, K. (2016). A school mental health literacy curriculum resource training approach: Effects on Tanzanian teachers' mental health knowledge, stigma and help-seeking efficacy. <i>International Journal of Mental Health Systems</i>. <a href="https://doi.org/10/gf62ks">https://doi.org/10/gf62ks</a></p>	
<b>Citation</b>	↑U.u/Malawi, Tanzania: Kutcher, et al., 2016
<b>Goals</b>	<p>Mental health literacy (MHL) is foundational for mental health promotion, prevention, stigma reduction, and care.</p> <p>However, school-supported information pertaining to MHL in SSA is extremely limited.</p> <p>The study investigated whether the successful application of a school MHL curriculum resource may be an effective way to increase teacher MHL and therefore help to improve mental health outcomes for students.</p>
<b>Methods</b>	<p>Intervention: Secondary school teachers in Tanzania were trained on the African Guide (AG). a school MHL curriculum resource culturally adapted from a Canadian MHL resource (The Guide), for use in Africa.</p> <p>Pre-post training assessment of participant knowledge and attitudes was conducted.</p> <p>Help-seeking efficacy for teachers themselves and their interventions for students, friends, family members and peers were determined.</p> <p>Paired t test (n = 37) was used to analyse the data.</p>
<b>Results</b>	<p>The study demonstrated significant improvements in teachers' overall knowledge (mental health knowledge and curriculum specific knowledge).</p> <p>Teachers' stigma against mental illness decreased significantly following the training (p &lt; 0.001; d = 0.61).</p> <p>Teachers also reported high rates (greater than ¾ of the sample) of positive help-seeking efficacy for themselves, as well as for their students, friends, family members and peers.</p> <p>The study replicates the results of a previous intervention in Malawi, and the authors suggest that consideration could be given to scaling up this intervention in both Malawi and Tanzania.</p>

### 1.2.8. Professional development of teachers in Cameroon

<p><b>Lange, S. (2014). Learner orientation through professional development of teachers? Empirical results from cascade training in Anglophone Cameroon. <i>Compare: A Journal of Comparative and International Education</i>, 44(4), 587–612. <a href="https://doi.org/10.1080/03057925.2013.841027">https://doi.org/10.1080/03057925.2013.841027</a><sup>1</sup></b></p>	
<b>Citation</b>	†U.u/Cameroon: Lange, 2014
<b>Goals</b>	<p>The publication examines the effects of a professional development programme on the attitudes towards the teaching and learning of teachers in the anglophone part of Cameroon.</p> <p>The development programme combines a multiplier system (cascade training) with school-based in-service training.</p>
<b>Methods</b>	<p>The research compares the effects that the training had on the attitudes of three groups of teachers in a control group design:</p> <p>(1) teachers participating in the in-service training, subdivided into</p> <p>(1a) teachers trained as multipliers and</p> <p>(1b) teachers trained by the multipliers, and</p> <p>(2) teachers who did not participate in the training.</p> <p>The study featured a quantitative control group design (n = 292) and is intended to contribute to the discussion on the sustainable effects of in-service teacher training in low-income countries.</p> <p>The data collection was conducted in 13 secondary schools in Cameroon.</p>
<b>Results</b>	<p>The results suggest that the programme had effects on the teachers' attitudes and classroom practices.</p>

1 Related book: Such studies include †Lange & Benavot (Cameroon: 2016:160), which used a quasi-experimental control group design. With regards to teacher practice, self-reported measures showed that teachers working in programme schools possessed *"a significantly higher degree of learner orientation"* (†ibid.:159). In terms of student outcomes, however, there was *"no significant difference between the results of students who were taught by multipliers compared to students taught by trained teachers in programme schools"* (although students "taught by teachers in programme schools in the natural sciences have significantly higher achievement in natural sciences" than those in control schools (†ibid.).

### 1.2.9. Blended learning in Tanzania

<p><b>Machumu, H., Zhu, C., &amp; Sesabo, J. (2016). Blended Learning in the Vocational Education and Training System in Tanzania: Understanding Vocational Educators' Perceptions. <i>International Journal of Multicultural and Multireligious Understanding</i>. <a href="https://doi.org/10/gf623b">https://doi.org/10/gf623b</a></b></p>	
<b>Citation</b>	†U.u/Tanzania: Machumu, et al., 2016
<b>Goals</b>	The paper examines TVET educators' desire for the design, adoption and deployment of blended learning in TVET programmes delivery in Tanzania.
<b>Methods</b>	<p>A single case study design with an in-depth interview and focus group discussion was conducted with 15 TVET educators in three TVET colleges, located in the Morogoro and Dar es Salaam regions.</p> <p>Snowball and purposive sampling were used to obtain sample respondents.</p> <p>For the data analysis, content analysis was employed to condense data obtained from interviews and focus group discussion.</p>
<b>Results</b>	<p>The paper found that online provision of "<i>continuous professional development, institutional arrangements, and support</i>" should be provided online.</p> <p>This could encourage the design and use of blended learning in TVET.</p> <p>The paper recommends that locally designed blended learning should be relevant to the environment of both students and teachers.</p> <p>The paper recommends that the relation between blended learning, imparting knowledge and practical skills should be a focus of future research.</p>

### 1.2.10. Inclusiveness in policy and legal frameworks of Ethiopia, Kenya and Tanzania

Malle, A. Y. (2016). Inclusiveness in the Vocational Education Policy and Legal Frameworks of Kenya and Tanzania. <i>Journal of Education and Learning</i> .	
<b>Citation</b>	<a href="#">↑U.u/Kenya, Tanzania: Malle, 2016</a>
<b>Goals</b>	<p>This publication compares the education and training policies of Ethiopia with those of Kenya and Tanzania.</p> <p>It examines the status of inclusiveness in the education and training policies of Ethiopia in comparison to such policies in Kenya and Tanzania, and considers the special educational and training needs of students with disabilities.</p>
<b>Methods</b>	<p>Focus group discussions and interviews conducted in Kenya and Tanzania, relevant policy document analysis and earlier findings were used as primary sources for the research.</p> <p>A total of 18 representatives of Disabled People's Organisations from Kenya and Tanzania participated in two sessions of focus group discussions, and 15 high-profile figures and experts from concerned government bodies of these study countries were interviewed.</p>
<b>Results</b>	<p>Data from document analyses and focus group interviews revealed negative results:</p> <p><i>"The participants agreed that the participation of students with disabilities in formal vocational education was insignificant."</i> (<a href="#">↑U.u/Malle 2016:109</a>)</p> <p>Most of the study participants agreed that the issue of disability was not adequately addressed in the education and training policies or the legal and implementation instruments of the study countries.</p> <p>The publication also makes a number of recommendations.</p>

### 1.2.11. Training community healthcare workers in Malawi

**Mastellos, N., Tran, T., Dharmayat, K., Cecil, E., Lee, H.-Y., PengWong, C. C., Mkan-dawire, W., Ngalande, E., Tsung-ShuWu, J., Hardy, V., Chirambo, B. G., & O'Do-noghue, J. M. (2018). Training community healthcare workers on the use of information and communication technologies: A randomised controlled trial of traditional versus blended learning in Malawi, Africa. *BMC Medical Education*. <https://doi.org/10/gdc33z>**

**Citation** [↑ U.u/Malawi: Mastellos, et al., 2018](#)

**Goals**

The publication argues that despite the increasing uptake of information and communication technologies (ICT) within healthcare services across developing countries, community healthcare workers' (CHWs) knowledge is too limited to fully utilise computerised clinical systems and mobile apps.

A course on ICT and eHealth was developed with the aim of offering basic knowledge and computer skills to enable CHWs to use digital solutions in healthcare delivery.

CHWs were allocated to either a blended or traditional learning course.

CHWs' knowledge of and attitudes towards the use of ICT, and their satisfaction with either a traditional or blended learning approach, were assessed.

**Methods**

Knowledge and attitudes were assessed before and after participants' respective courses. Two questionnaires were developed and tested for face validity and reliability in a pilot course with 20 CHWs. The questionnaires were designed to measure CHWs' knowledge of and attitudes towards the use of ICT before and after each course, as well as their satisfaction with each learning approach.

Following validation, a randomised controlled trial was conducted to assess the effectiveness of the two learning approaches. A total of 40 CHWs were recruited, stratified by position, gender and computer experience, and allocated to the traditional or blended learning group using block randomisation.

In the analysis, per-item, pre-post and between-group, mean differences for each approach were calculated using paired and unpaired t-tests, respectively.

Per-item, between-group satisfaction scores were compared using unpaired t-tests.

<b>Results</b>	<p>Findings were largely positive. Participants' scores improved regardless of the type of course taken. Both blended and traditional learning were found to have unique strengths and weaknesses when compared with each other.</p> <p>There were no significant differences between groups in attitudinal gains.</p> <p>Satisfaction with the course was generally high in both groups. However, participants in the blended learning group found it more difficult to follow the content of the course.</p>
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### 1.2.12. Nursing education in Tanzania

<p><b>Muganyizi, P. S., Ishengoma, J., Kanama, J., Kikumbih, N., Mwanga, F., Killian, R., &amp; McGinn, E. (2014). An analysis of pre-service family planning teaching in clinical and nursing education in Tanzania. <i>BMC Medical Education</i>. <a href="https://doi.org/10/f6bm6p">https://doi.org/10/f6bm6p</a></b></p>	
<b>Citation</b>	†U.u/Tanzania: Muganyizi, et al., 2014
<b>Goals</b>	<p>Improving family planning (FP) services was a key aim of this study.</p> <p>Improving the quality of FP services, including enhancing pre-service FP teaching, has the potential to improve contraceptive prevalence.</p> <p>This study sought to identify gaps in pre-service FP teaching and suggest opportunities for strengthening the training.</p>
<b>Methods</b>	<p>Data were collected from all medical schools and from a representative sample of pre-service nursing, Assistant Medical Officer (AMO), Clinical Officer (CO) and assistant CO schools. A total of 35 pre-service schools were evaluated for FP teaching including 30 technical education and five degree offering schools.</p> <p>Semi-structured questionnaires were used in interviews, alongside observations.</p> <p>Documents were assessed for their suitability as competency-based FP teaching tools against predefined criteria.</p> <p>Quantitative data were analysed using EPI Info 6, and qualitative data were manually analysed using content analysis.</p>
<b>Results</b>	<p>Most of the curricula that were evaluated did not meet the criteria for appropriate FP teaching.</p> <p>FP teaching was found to be “<i>theoretical, poorly guided, and skewed toward short acting methods.</i>”</p> <p>Only 22.9% of all the schools had systems in place to produce graduates who could skillfully provide FP methods.</p> <p>Only 23.3% (n = 7) of schools had skills laboratories, and 76% (n = 22) were either physically connected or linked to FP clinics.</p> <p>None of the degree-providing schools practiced FP at its own teaching hospital.</p> <p>Of the assessed 11 pre-service curricula, only one met the criteria for suitability of FP teaching.</p> <p>Teachers were concerned with poor practical exposure and lack of teaching material.</p>



### 1.2.13. Farmer-to-farmer extension in Tanzania

<b>Nakano, Y., Tsusaka, T. W., Aida, T., &amp; Pede, V. O. (2018). Is farmer-to-farmer extension effective? The impact of training on technology adoption and rice farming productivity in Tanzania. <i>World Development</i>. <a href="https://doi.org/10/gf62mx">https://doi.org/10/gf62mx</a></b>	
<b>Citation</b>	<a href="#">↑U.u/Tanzania: Nakano, et al., 2018</a>
<b>Goals</b>	<p>Agricultural training is a potentially effective method to disseminate relevant new technologies to increase productivity and alleviate rural poverty in SSA.</p> <p>Since it is prohibitively expensive to provide direct training to all the farmers in SSA, it is critically important to examine the extent to which technologies taught to a small number of farmers disseminate to non-trained farmers.</p> <p>This paper investigates the technology dissemination pathways among smallholder rice producers within a rural irrigation scheme in Tanzania.</p>
<b>Methods</b>	<p>The study compared the performance of three categories of farmers: key farmers (who receive intensive pre-season training at a local training centre); intermediate farmers (who are trained by the key farmers); and other ordinary farmers.</p> <p>By collecting and analysing a unique five-year household-level panel data set, the study estimated difference-in-differences models to assess how the gaps in performance evolve as the technologies spillover from the trained farmers to the ordinary farmers.</p> <p>To disentangle the technology spillover process, the study also examined the extent to which social and geographical networking between the key and intermediate farmers influences the adoption of technologies by the ordinary farmers, by incorporating social relationship variables into spatial econometric models.</p>
<b>Results</b>	<p>The study found that the ordinary farmers, who were a relative, or residential neighbour, of a key or intermediate farmer, were more likely to adopt new technologies than those who were not.</p> <p>As a result, while the key farmers' technology adoption rates rose immediately after the training, those of the non-trained ordinary farmers caught up belatedly.</p> <p>As the technologies disseminated, the paddy yield of the key farmers increased from 3.1 to 5.3 tonnes per hectare, while the yield of the ordinary farmers increased from 2.6 to 3.7 tonnes per hectare.</p> <p>The results suggest the effectiveness and practical potential of farmer-to-farmer extension programmes for smallholders in SSA as an alternative to the conventional farmer training approach.</p>

### 1.2.14. Pre-service training and coaching in Ghana

<b>Wolf, S. (2018). Impacts of Pre-Service Training and Coaching on Kindergarten Quality and Student Learning Outcomes in Ghana. <i>Studies in Educational Evaluation</i>. <a href="https://doi.org/10/gf62pq">https://doi.org/10/gf62pq</a></b>	
<b>Citation</b>	↑ <a href="#">U.u/Ghana: Wolf, 2018</a>
<b>Goals</b>	<p>This study evaluates a programme designed to support Ghanaian kindergarten (KG) student-teachers during pre-service training through mentorship and in-classroom training.</p> <p>Several potential barriers to teaching quality and learning outcomes are examined.</p>
<b>Methods</b>	<p>The study uses a randomised-control trial.</p> <p>The Fast-track Transformational Teacher Training programme was evaluated in the Western region during the 2015–2016 and 2016–2017 academic years.</p> <p>The randomised-control trial was registered in the American Economic Associations' registry for randomised controlled trials.</p> <p>Participants included the full cohort of KG student-teachers completing coursework from Holy Child College of Education in 2015.</p> <p>A baseline survey was conducted in June 2015 as student-teachers were finishing their coursework prior to their placement year, after which 137 student-teachers were randomised to be placed in either a treatment school (23 schools) or a control school practicing "<i>business as usual</i>" (23 schools).</p> <p>Using random assignment, 69 teachers were assigned to the treatment group and 68 teachers to the control group.</p> <p>The baseline survey (baseline) occurred prior to randomisation, and collected basic demographic information, language proficiency and basic pre-literacy skill knowledge before the student-teaching year of training.</p>

<b>Results</b>	<p>Findings show that the programme improved knowledge and implementation of the national curriculum for individuals both when they were student-teachers and, the following year, when they became newly qualified teachers (NQTs).</p> <p>There were mixed impacts on professional wellbeing, increasing personal accomplishment and motivation but decreasing job satisfaction for NQTs.</p> <p>There were mixed impacts on teaching quality, with increases in child-led learning but decreases in some other aspects of quality.</p> <p>There were no impacts on NQTs' student learning outcomes.</p> <p>The findings highlight system level challenges with both the posting of NQTs and the absence of support in their first teaching year.</p>
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This bibliography can be accessed from the [entry for this document in our evidence library](#).

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## Appendix 2. Research Design for the Interviews and Structured Community Review

This appendix presents the methodology of the interviews we conducted, and of the Structured Community Review (SCR). It begins with an extension of the methodologies of the interviews and SCR that were presented in Chapter 2. Descriptive statistics of the interviews and SCR participants are then presented. The outcomes of the interviews and the SCR were mainly discussed in Chapters 14 and 15, but also interspersed in the findings of the other chapters.

### 2.1. Methodological approach

As explained earlier in the report, it is not possible to address all of our research questions and provide strong recommendations for action on TVET (or TVET research) by means of a literature review alone. In order to adequately develop an overall picture, further methods must be used. Among those methods are interviews, which were therefore carried out alongside the SCR. The term ‘community’ is used here to refer to both TVET researchers and TVET teachers. The first stage of our community data collection process was the interviews, which followed an initial email survey. The second stage was the SCR, which was followed by another email survey. This second stage also included focus group sessions using WhatsApp.

Figure 2.1 below provides a summary of the stages of the community consultations. Methodological details on each stage are provided in the following sections. Notably, in an earlier chapter (Chapter 2, Figure 2.1), we described the stages of the research design, with the literature review stages included. Figure 2.1 abbreviates the stages focusing on the literature review, and instead focuses on data collection from the TVET research community participants.

We note that the German report ([↑Haßler, et al., 2019](#)) was not designed to incorporate the interviews and focus groups. Instead, the interviews and focus groups informed an unpublished internal report (in German). The present, expanded English report ([↑Haßler, et al., 2020](#)) includes the insights from the focus groups and interviews, incorporated throughout the report and within a number of new chapters.

**Figure 2.1. Community consultations and how they were used in this report. The Phases are cross-referenced with the chapter describing the research design (Chapter 2).**

Community consultations
<p><b>Phase 1:</b> Community consultations in conjunction with literature research (Chapter 2, Section 2.3.).</p> <ul style="list-style-type: none"> <li>• <b>Activity 1b. First online survey</b> (at the start of literature review; see: Literature scoping, Section 2.3.2). <ul style="list-style-type: none"> <li>• The outcomes were incorporated in Chapters 1–13 (<a href="#">↑German version</a> / <a href="#">↑English version</a>).</li> </ul> </li> <li>• Phase 1 also contains these non-community activities: <b>Activity 1a.</b> Literature discovery and analysis (Section 2.3.1.) and <b>Activity 1c.</b> Literature analysis and synthesis (Section 2.3.3.).</li> </ul> <p><b>Phase 2:</b> Interviews, surveys, review, focus groups (2.4.)</p> <ul style="list-style-type: none"> <li>• <b>Activity 2a. Interviews</b> (Section 2.4.1.): <ul style="list-style-type: none"> <li>• Essential elements incorporated into Chapters 1–13 (<a href="#">↑German version</a>);</li> <li>• Full insights incorporated into Chapters 1–13 (<a href="#">↑English version</a>);</li> <li>• Contributed to new chapters (Chapters 14, 15; <a href="#">↑English version</a>).</li> </ul> </li> <li>• <b>Activity 2b. Online survey 2</b> (Section 2.4.2.). Survey prior to the SCR: <ul style="list-style-type: none"> <li>• Essential elements incorporated into Chapters 1–13 (<a href="#">↑German version</a>);</li> <li>• Full insights incorporated into Chapters 1–13 (<a href="#">↑English version</a>);</li> <li>• Formed new chapters (Chapters 14, 15; <a href="#">↑English version</a>);</li> <li>• Demographic of participants described in this Appendix.</li> </ul> </li> <li>• <b>Activity 2c. Structured Community Review</b> (Section 2.4.3.). The SCR conducted a review of Chapters 1–13 in a draft <a href="#">↑English version</a>. The outcomes are available as follows: <ul style="list-style-type: none"> <li>• Full insights incorporated into Chapters 1–13 (<a href="#">↑German version</a> / <a href="#">↑English version</a>);</li> <li>• Formed new chapters (Chapters 14, 15; <a href="#">↑English version</a>);</li> <li>• Formed new Appendix 3., which describes the changes that were made to the report as a result of the SCR's comments (<a href="#">↑English version</a>).</li> </ul> </li> <li>• <b>Activity 2d. Focus groups</b> (Section 2.4.4.): <ul style="list-style-type: none"> <li>• Essential elements incorporated into Chapters 1–13 (<a href="#">↑German version</a>);</li> <li>• Full insights incorporated into Chapters 1–13 (<a href="#">↑English version</a>);</li> <li>• Contributed to new chapters (Chapters 14, 15; <a href="#">↑English version</a>).</li> </ul> </li> </ul>

### 2.1.1. The interviews

The purpose of the interviews was to look at the topics identified earlier in the report in greater depth, as well as to answer research questions that could not otherwise be answered. They also served to add first-hand perspectives from members of relevant organisations and to uncover new material that had not yet been published. Amongst the types of organisations that interview participants came from were authorities, NGOs and research institutions. Particular emphasis was placed on carrying out interviews with people in national government ministries (responsible for TVET) as well as with people from funded projects (e.g., organised by Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ). It was also important to speak to researchers based in SSA so that informed action-oriented recommendations could be made to help direct the strategic cooperation of the German Federal Ministry of Education and Research (BMBF) with organisations in SSA. Those recommendations are specifically important in driving empirical research and the establishment, or further development, of SSA institutional research capacities.

The interview questions were based on our research questions, and were further refined through the results of our literature review. As we wanted to have roughly comparable results between participants, the interviews had to be structured, as well as having very specific questions that needed to be answered. However, we also deemed it necessary to allow participants free and open-ended reflection so that the answers we received would not be entirely constrained, thus preventing us from seeing a full picture. A semi-structured interview process was therefore deemed most appropriate. Interviews took place by telephone or 'voice over IP' (Skype, WhatsApp). Upon completion of the interviews, the interview notes were sent to the respondents to ensure validity and to invite any further reflections. Following our checks on the validity of the responses received, a thematic analysis of the interview notes was conducted. This qualitative thematic analysis was carried out in Dedoose, a cross-platform app that enables collaborative exploration of the data, regardless of the location of the researchers.

### 2.1.2. The Structured Community Review

Beyond interviews, we also carried out a Structured Community Review (SCR). The researchers and trainers involved in the SCR worked simultaneously to achieve the following two main goals:

- reviewing an early draft English version of the [↑German version](#) of this report;
- Conducting a design-experimental assessment of the extent to which the community is ready (or to what extent certain community members are willing) to work towards a clearly defined common goal that is useful to the community. Our common goal was the creation of a joint report (an English 'community' version of the earlier [↑German version](#)).

An invitation to join the SCR was created via existing community channels (via well-known researchers and the UNEVOC Forum). Community members who expressed interest in the SCR were then registered via an online form and given access to the document

to be discussed. The SCR required active communication with the community such as in a discussion forum, by email or with comments on documents (Google Docs and email / WhatsApp). The review consisted of successive stages in which parts of the document were checked by the participants, after which there were scheduled targeted discussions. At the end of each stage, the ideas and suggestions were summarised. This summary can be read in Appendix 4.

As the SCR is not only a review but also a design-based experiment to assess of the process of a community review, we ensured that all participants in the SCR were clear, and agreed, that the process itself is also the subject of research. The process assessment analysed the behaviour of participants in the review process to reveal possible barriers to and benefits of conducting a SCR. The SCR was also used to pursue other goals, such as the formation of sub-groups for potential future collaboration.

Our review process was iterative and, therefore, did not end with a narrative analysis. Instead, the key messages were checked again in a survey at the end of the SCR process, and participants were assigned to focus groups. The SCR was therefore itself reviewed through the survey, and again through focus groups, ensuring that the feedback we received was comprehensive, valid and reliable.

The SCR has the great advantage of broad participation by the research community, drawing on pan-African (SSA) TVET expertise without favouring certain countries. Previous research has shown that a network approach is an effective way of strengthening research capacity. The Community is conceptualised as such a network. The SCR is therefore useful in determining whether such a network approach is welcomed by the Community, and the extent to which they are actually willing to get involved.

### **2.1.3. Ethics**

The inclusion of all interview extracts in this report was checked with the respective participants for accuracy and permission.

### **2.1.4. Reporting**

A data reference with all quotes and the respective attributions to focus group sessions and interviews is available, see further materials in Appendix 5. We note that some additional sources, particularly regarding COTVET in Ghana, were provided by GOVET.

## **2.2. The participants**

This section gives additional information on the participants in the interviews and the SCR, specifically, statistics on the participants in each stage of the report research process. We asked 93 people for interviews in stage one. Ultimately, 27 people responded to the interview request and completed the interview (29%). Of those 27 people, 12 (44%) read our summary notes of their interviews, thus validating our recorded responses from them, and also making further suggestions where necessary. Most

interview participants were male and were from SSA, but the few participants from outside the region were not excluded.

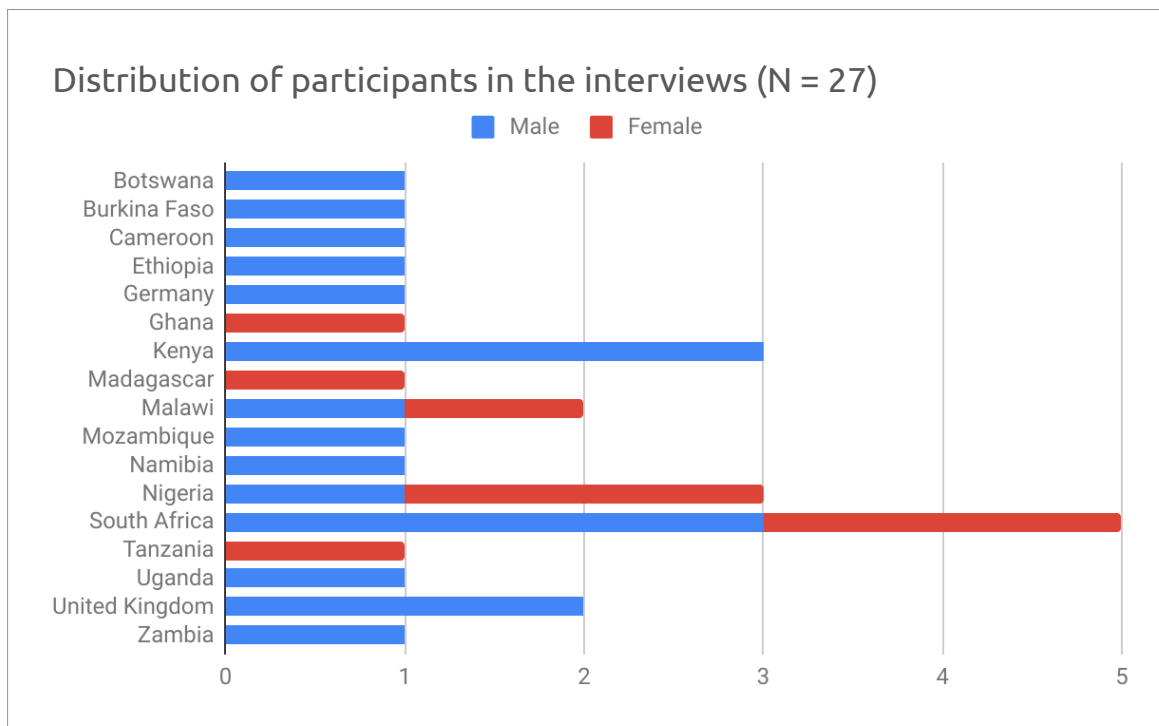
Following the interviews, we conducted the SCR in stage two. Fifty-one researchers registered for the SCR and were added to an email group. In addition, 4 were added via WhatsApp. Participation by email was sporadic and limited to 16 researchers (31%). Of the 55 researchers, 32 were interested in a discussion via a WhatsApp group (63%). Of the 32 researchers in the WhatsApp group, 27 (84%) participated actively. Again, more SCR participants came from SSA, and were male. As there is overlap between the email and WhatsApp discussion, the broader discussion thus involved around 30 people in total. Graphical representations of the descriptive statistics on the interview and SCR participants, as well as the institutions they came from, are provided in the figures below. This Appendix concludes with a section detailing the qualifications of the participants in our study.

**Figure 2.2. Participants in the different phases of the project**

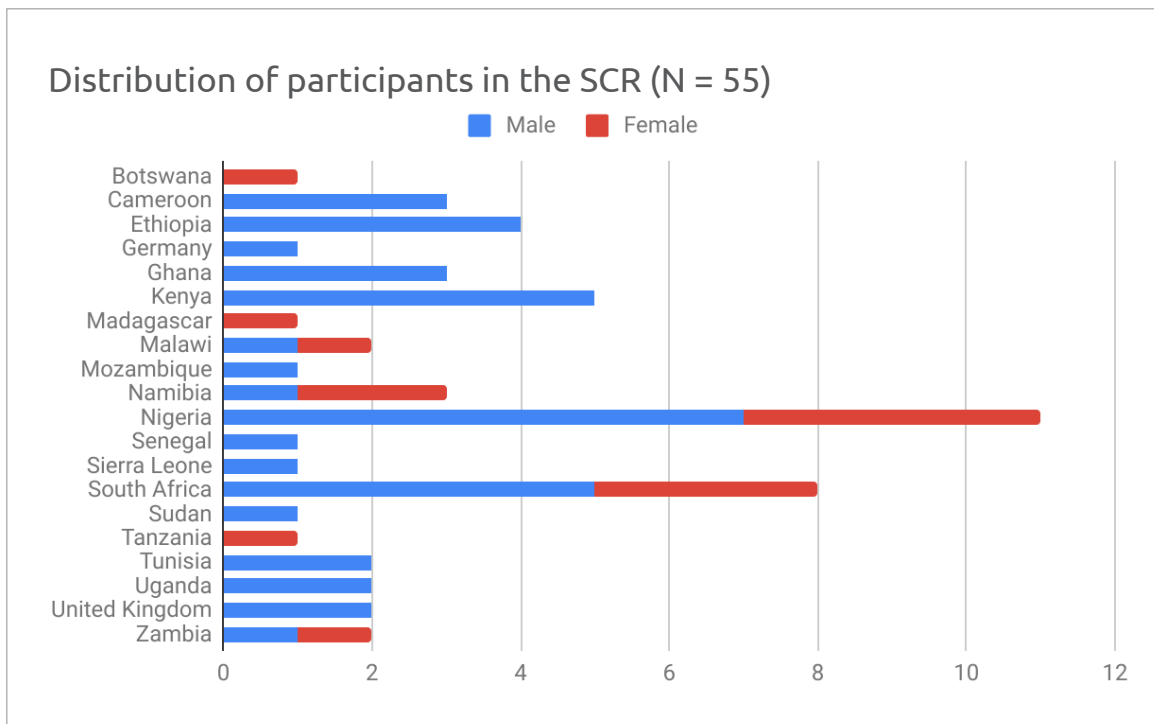
Interaction	Number	Percentage
Total number of people approached over lifetime of project	158	
Email survey (1st survey)	42	
Email surveys received	16	38%
Interview requested	93	
Interview completed	27	29%
Interview transcripts returned	12	44%
Second survey completed and joined mailing list for the SCR	51	
Participated in mailing list for the SCR (% compared to joined)	16	31%
Joined WhatsApp group for the SCR (% compared to mailing list)	32	63%
Joined SCR WhatsApp group only	4	
Participated in WhatsApp Group for the SCR (% compared to joined)	27	84%
Contributions to SCR (i.e., reviewing the report; % compared to mailist list)	13	25%
Named on presentation	8	
Participants from SSA	112	79%

Participants who engaged in some manner (surveys, interviews or SCR)	86	54%
Participants from SSA who engaged in some form	73	46%
Participants with female first name	34	22%

**Figure 2.3. Distribution of participants in the interviews. N = 27 participants in total, 70% with male first names and 30% with female first names.**



**Figure 2.4. Distribution of participants in the SCR. N = 55 participants in total, 75% with male first names and 25% with female first names.**





**Figure 2.5. Institutions of the participants in the SCR**

<b>Colleges / TVET providers</b>
Arusha Technical College (Tanzania)
Buffalo City TVET College (South Africa)
Department of Fine and Applied Arts, College of Education (Nigeria)
Ekurhuleni East TVET College (South Africa)
Eldoret National Polytechnic (Kenya)
Ken Saro-Wiwa Polytechnic (Nigeria)
Malawi Polytechnic (Malawi)
National Vocational Training Institute (Ghana)
Port Elizabeth TVET College (South Africa)
South West Gauteng TVET College (South Africa)
Yaba College of Technology (Nigeria)
<b>Universities</b>
Durban University of Technology (South Africa)
Higher Institute of Technology Antsirananana (Madagascar)
Jimma University (Ethiopia)
Michael Okpara University of Agriculture (Nigeria)
Nelson Mandela University (South Africa)
Oslo Metropolitan University (Norway)
Pedagogical University of Mozambique
Technische Universität Dresden (Germany)
United States International University – Africa (Kenya)
University of Abuja (Nigeria)
University of Eldoret (Kenya)
University of Malawi
University of Nigeria
University of Nottingham (United Kingdom)

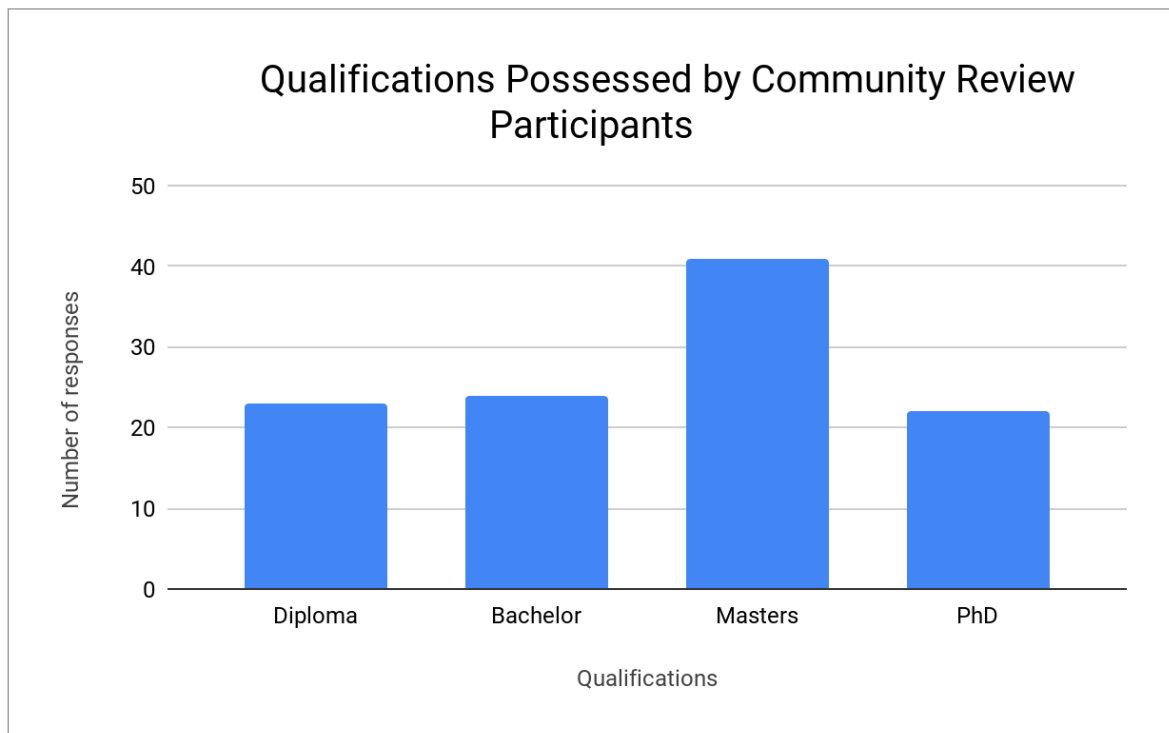
<b>Ministries and other governmental organisations</b>
Ghana Education Service (Ghana)
Inspectorate of Pedagogy for Industrial Education, Ministry of Secondary Education (Cameroon)
Namibia Training Authority (Namibia)
National Board for Technical Education (Nigeria)
National Commission for Colleges of Education (Nigeria)
National Vocational Training Institute (Ghana)
Ministry of Higher Education (Zambia)
Ministry of Professional Education and Employment (Tunisia)
Technical Education and Vocational Training Authority (Pakistan)
TVET Authority (Kenya)

### 2.2.1. Qualifications

All SCR respondents had at least a higher education degree. The vast majority had obtained a Masters or PhD qualification as well. There were 49 valid answers to this question. A total of 4 had a Bachelor degree as their highest qualification; 23 had gone on to further education obtaining additionally a Masters degree. The remaining 22 had also obtained a PhD.

Since there can be differences in the national qualifications frameworks between countries, our questionnaire provided tick-boxes with Diploma, Bachelor, Masters and PhD as options, and respondents were asked to tick all the degrees they possessed. Figure 2.6. shows the breakdown in qualifications of the participants who responded to the questionnaire.

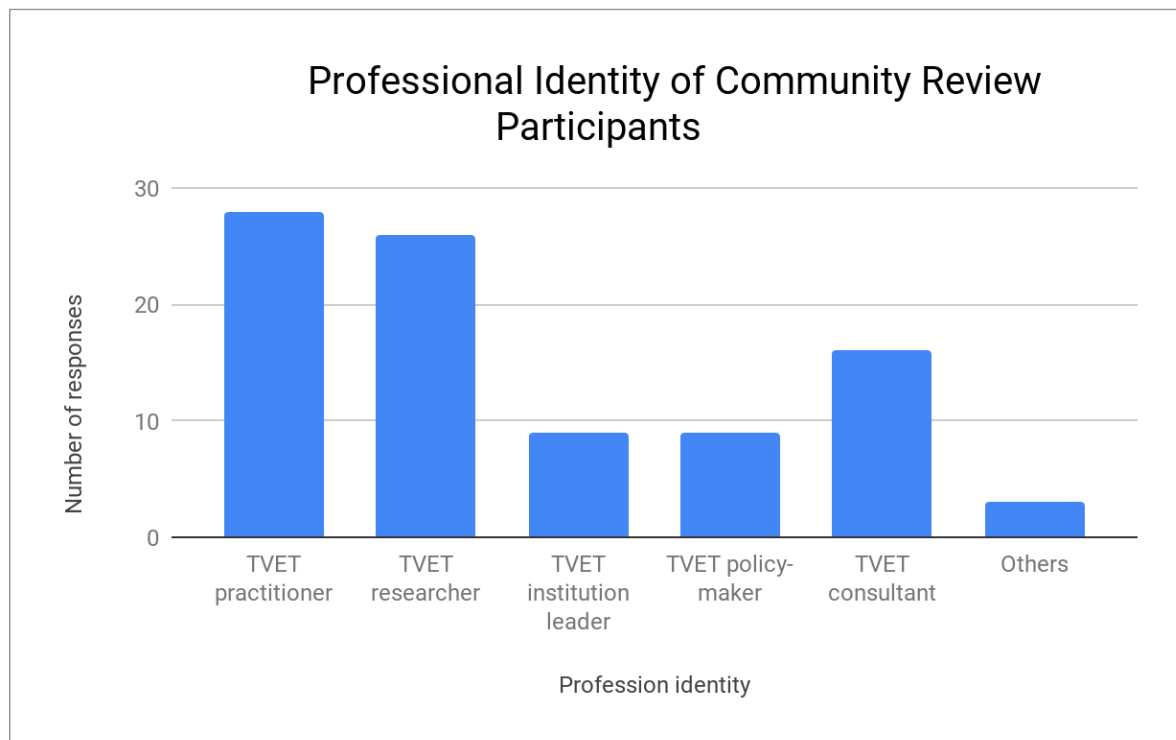
**Figure 2.6. Qualifications held by the SCR participants**



### 2.2.2. Professional activities

The questionnaire also allowed for multiple choices to be selected regarding the participants' self-reported professional identity. The options in the questionnaire included: TVET practitioner, TVET researcher, TVET institution leader, TVET policy-maker, TVET consultant and Other. Many selected more than one option, with TVET Researcher and TVET Practitioner being by far the most frequent activities.

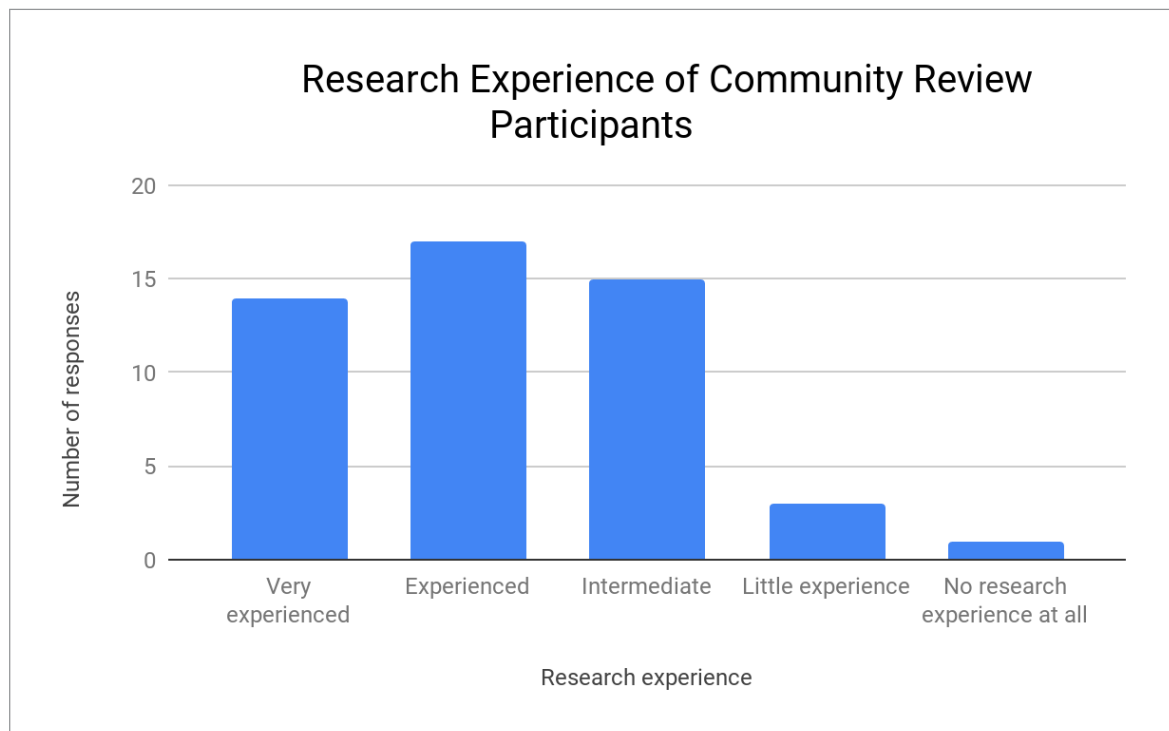
**Figure 2.7. Stated professional identity of the participants**



### 2.2.3. Research experience

As most participants had at least a Masters degree and 45% of respondents had obtained a doctorate, when asked about their research experience, the vast majority indicated having intermediate or greater research experience. Only one participant stated that they had no research experience at all, and three judged that they had little experience.

**Figure 2.8. Participants' self-assessment of their research experience**



### 2.2.4. Digital skills

We seized this opportunity to also collect data on participant's digital skills, particularly those related to collaborative and web-based ways of working. Specifically, we explored their acquaintance with and knowledge of the tools we intended to use for the community review, such as Google Docs and Zotero reference manager. Their familiarity with the former was fairly high. All participants had at least heard of Google Docs; 10 consider themselves somewhat familiar, using this tool occasionally; 16 used it sometimes; and an additional 10 participants reported being very familiar with it, using it a lot. However, 28% (14) of those in this sample had not used Google Docs before. This could have inhibited a more extensive contribution to the literature review report from these 14 individuals. The familiarity and use of Google Docs on a smartphone or tablet was slightly lower: 10 and 11 participants reported, respectively, never or rarely using Google Docs on these devices, representing 42% of the answers received. Yet the numbers of respondents making frequent and intermittent use of Google Docs on these mobile devices were higher: very often (8); often (6); sometimes (15).

Familiarity with the Zotero reference manager was significantly lower. Zotero is the application we used to make the publications retrieved through the extensive literature review carried out in the first phase of this research freely available to all participants. Twenty-two have not heard of Zotero before and another 21 participants had heard of it, but not used it. This represents 88% of the TVET stakeholders who took part in this phase of the research. Among the remaining 22% (6 stakeholders) who provided information about their familiarity with Zotero, 4 stated they use it a lot, use it sometimes, while one other participant uses it only occasionally. We asked those who had a Zotero account to kindly provide us with their Zotero ID, so that we could give them fuller access to the library. However only two participants complied: one based in the UK, the other in Ghana.

It is possible that the use of a different popular reference management tool such as Mendeley or EndNote might have had an effect. However, we cannot ascertain this without data on a usage of a broad range of reference management tools, and Zotero is one of the most well-known and widely used of these tools. It is also the tool that the key authors of this report used most extensively previously. The fact that about 40% of the participants had heard of Zotero, but had not used it until our data collection point, might indicate a lack of use of reference management software in general in their work, rather than unfamiliarity with, specifically, Zotero.

We also explored whether participants had personal websites or an online presence otherwise. The results suggest that the online presence of the participants was generally low, at least with respect to personal websites and popular social media websites based in the Global north. Only 24 had LinkedIn accounts, and 20 had a Twitter account. We note that we asked questions about the latter because it has rapidly increased its relevance in the academic field in recent years ([Budge, et al., 2016](#)). Taking into account the low adoption of accounts on the social media platforms of interest to this research, the low number of participants that have a personal website (3) should come as no surprise.

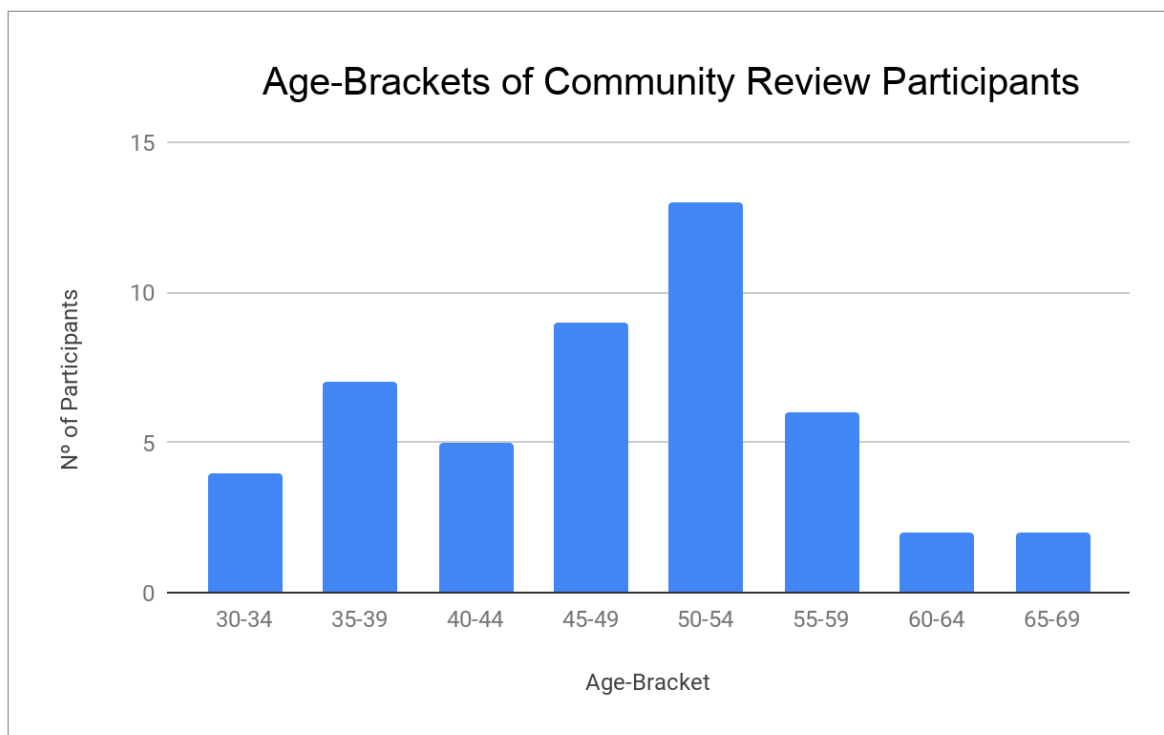
### **2.2.5. Language of preference**

Regarding the preferred language of communication, English was by far the most popular, with 37 responses. English in addition to another language was chosen by an additional 9 participants, with French being the second most popular language (4 responses). The remaining language combinations of preference were: English, French and Arabic; English, German and Dutch; English and Portuguese; English and Amharic; and English and kiSwahili. Arabic was preferred by one of the participants. The remaining 5 participants did not provide us with information concerning their preferred language of communication.

### 2.2.6. Age brackets

As shown in Figure 2.9 below, the ages of the participants ranged from under 20 years old to over 70. The youngest participants were between 30–34 years old, and the oldest was under 70 years old. The majority of participants were between the ages of 45–54 years old; this age bracket represented 46% of respondents.

**Figure 2.9. Age brackets of participants**





## 2.3. Appendix bibliography

This bibliography can be accessed from the [↑entry for this document in our evidence library](#).

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## Appendix 3. Results of the Structured Community Review

The Structured Community Review (SCR) was conducted on an earlier version of the present report, i.e., on versions of Chapters 1–13, c.f. Appendix 2. The advantage of undertaking a structured community review is, in short, that it offers an opportunity for ‘critique from the field’. In other words, it provides the opportunity for a product—developed on the basis of academic literature, which we know to be limited—to be reviewed by practising TVET researchers as well as TVET practitioners. The results of this process have been incorporated into the present Chapters 1–13. However, in order to demonstrate the value of the SCR process—as well as to be transparent about our own reflective process—this Appendix describes the issues that were raised regarding the earlier versions of these chapters. Overall, the benefit of the SCR has been to make the report more insightful, accurate and valid.

The participants in the SCR pointed to a number of areas in which the report would need to be either strengthened or corrected. These changes ranged from minor grammatical and language corrections to a more substantial critique of the report. The major changes suggested included the addition of literature and organisational networks that we had missed during the initial literature review stage. Other suggested changes reflected the expertise of the SCR participants in governmental affairs and qualifications frameworks, as well as regarding the demographic and historical contexts of SSA. Such expertise led to an appreciation of how a lack of awareness on the part of the original authors—perhaps even bias—skewed the original text.

These aspects of the SCR participants’ contributions are described below. Their contributions and suggested changes are summarised thematically. A suggested change may be referred to more than once if it falls under more than one of the following headings.

### 3.1. Added literature and research network references

Though we carried out an extensive online search of the TVET literature and landscape of SSA, our search was unable to capture every relevant piece of information. This is a methodological limitation of not just our report, but of much research in general: it is often not completely exhaustive. However, as we aimed to be as comprehensive as possible in our search for relevant information, it was crucial to have a larger number of researchers with appropriate TVET expertise review the report. That review—i.e., the SCR—brought to light additional publications that were subsequently added to

strengthen the report. These publications consisted of relevant literature that did not appear through our searches. However, another important area was references to research networks or other relevant TVET organisations that offered valuable additions to the report. A few examples of literature that was found via the SCR are provided in the next paragraph, with notes on the research networks highlighted by the SCR presented in the paragraph thereafter.

Amongst the literature that the SCR suggested that we add to our report was a study by [†Simiyu and Sambu \(2012\)](#) that focused on an innovative strategy to increase enrolment in TVET institutions in Kenya using e-learning. It was also highlighted that the same authors published other research on the role of the public in the development of TVET in primary schools in Kenya ([†ibid. 2014](#)). Notably, all of these examples of added references were added by the authors of the respective papers. John Simiyu drew attention to the first two papers mentioned in this paragraph, alongside references to the work of Joy Kasandi Kelemba ([†Kelemba, 2010](#); [†Mwinzi & Kelemba, 2010](#)), and Kitaiinge and colleagues ([†Tiony, et al., 2016](#); [†Kimaiyo, et al., 2016](#); [†Maina & Kitaiinge, 2018](#)). Lesley Powell highlighted her relevant work on South African VET.

In addition to highlighting additional research publications, the SCR participants also made key contributions to our knowledge of existing TVET research networks and institutions in SSA. Our original searches did not find specific research networks between African and European countries or institutions. However, participants in the SCR noted that there are examples of such cooperation, including links between British and South African universities. Volker Wedekind reported that Nottingham University, for example, has strong links with the University of the Western Cape, Nelson Mandela University and Wits University. He also noted links between German and African institutions, such as between the University of Bremen, Germany and the Manufacturing, Engineering and Related Services Education and Training Authority (merSETA) in South Africa, and between Magdeburg University in Germany with conference organisers in Maputo Mozambique. Wedekind also highlighted additional research centres or networks doing work in TVET in South Africa. These included the Human Sciences Research Council, the REAL Centre at the University of Witwatersrand, the Nelson Mandela University and Rhodes University. These changes were incorporated into Chapter 15.

Additionally, John Simiyu noted that there were research institutions that we had failed to include in the earlier version of our report. These institutions included the University of Eldoret, Technical University of Mombasa, Technical and Vocational Education Authority and the Rift Valley Technical Training Institute: all active UNEVOC Centres in Kenya. He also noted that some TVET activities are coordinated by the Kenya National Commission for UNESCO. These contributions were likewise incorporated in Chapter 15.

While much of the SCR participants' commentary on TVET institutions and networks in SSA related to those we did not reference, the SCR also provided another insight into such institutions in SSA. In the version of the report that was reviewed by the SCR, we had stated that:

*“In SSA, teacher colleges are typically not co-located with other tertiary institutions but may be in the same directorate as primary and secondary schools.”*

This was flagged by the SCR as too broad a generalisation, as that situation is not true for all SSA countries. Though a single comment, it is an important one that led us to examine even more critically our discussion of institutions throughout the report, especially when broad generalisations were being made.

## 3.2. Government institutions

The most significant set of institutions that were commented on in the SCR were government institutions. SCR commentary focused on detailing more accurately what government ministries are responsible for; raising various relevant policy documents that we had missed in our literature review; and updating outdated printed information through newer figures that have not yet been published. Kipkirui Langat, for example, added to our report by clarifying that as well as the Ministry of Labour and Social Protection being involved in Kenya’s TVET provision, the Ministries of Health, Transport, Agriculture, Energy and Tourism (hospitality) also played a role in providing specialised TVET programmes. He also provided additional information on the Kenya National Qualifications Framework (KNQF) Act of 2014. Likewise on governmental TVET policy, Amina Idris mentioned the Federal Polytechnic Amendment Decree 5 of 1993 by the Federal Government of Nigeria, which updated the Federal Polytechnics Act of 1979. Idris also provided additional information on standards for accreditation and re-accreditation of Diploma Programmes in Polytechnics and similar post-secondary technical institutions in Nigeria.

## 3.3. Deeper consideration of demographic groups

A number of the comments made during the SCR also encouraged deeper consideration of different demographic groups – including their contexts and the challenges faced by them – and how this is represented in the previous versions of Chapters 1–13. Those comments could be grouped based on their reference to age (namely, youth) and gender.

### 3.3.1. Youth

The topic of youth was raised early on in the SCR, when Robert Jjuuko and Amina Idris questioned the assertion that

*“Africa faces enormous challenges, one of which is a young population. The average age is now 18 years. By 2050, the population is expected to double to two billion people.”*

Jjuuko challenged this assertion and Idris followed by responding that a youthful population should not be viewed as a challenge; instead that the challenge might relate to low productivity, or to a system that is unable to cater adequately to the needs of young

people. As a consequence of their commentary, we re-evaluated and rephrased discussion about young people in the report to focus on the challenges associated with population growth, as opposed to presenting population growth itself as a problem.

Idris raised a further issue regarding youth, noting that appropriate skills for getting good jobs or becoming entrepreneurs are lacking amongst young people. She made this comment in response to the report stating that sustainable economic growth and jobs are essential prerequisites for Africa's youth to fuel the economy and to develop the continent. The report was therefore changed to reflect her point, emphasising instead that economic growth and jobs are not the only essential prerequisites for young people to drive the economy: the acquisition of the skill sets needed to fill and create jobs is of equal importance.

### 3.3.2. Gender

Gender was another demographically-focused topic that the community addressed. The discussion centred mainly around our discussion of the 'role of women / gender issues within TVET' vs. the 'gender issues in TVET being representative of wider gender issues in society,' i.e. beyond the scope of TVET. Amina Idris, for example, critiqued the report's contrasting of women's under-representation in TVET with their under-representation in other specific education sectors. A similar question was raised on comparing TVET gender statistics with certain university statistics. On the one hand, the comparison does serve to highlight that gender-based challenges, and potential solutions, are not restricted to the TVET sphere alone. However, while a comprehensive gender analysis is clearly needed, the availability of data is poor. Further research on gender in TVET has been proposed in Chapter 16.

### 3.3.3. Historical considerations of colonialism

Another topic that arose during the SCR pertained to the consideration of historical colonialism in how the literature sourced for the report was written and researched. Amina Idris suggested that it is worth considering more deeply the period within which the literature was written. She noted that:

*"Several TVET approaches are age-long in SSA but not appropriately taken into account in post-colonial education thereby rendering a large part of the informal workforce of little substance. For instance, there is no way you can mention apprenticeship in SSA without referring to the establishment practices in various places up till today; the neglect of which is one of the challenges the educational system has in SSA."*

We had already made attempts to take the colonial history of much of SSA into account when writing the report. However, Idris' comments helpfully prompted additional discussion and served as a reminder to consider broader historical perspectives.

Our literature review had specifically been limited to the past 20 years. This effectively means that the publications were written in post-colonial times. On the one hand, this

makes those publications more likely to report on post-colonial education. On the other hand, the effects of colonialism did not end with countries' independence. We therefore do acknowledge that the recency of the literature we sourced does not negate the potential impact of colonial histories on the literature that we cite. However, the time periods under examination in the literature we considered mean that post-colonial ideas and approaches were at least uppermost in the literature we considered.

### 3.4. Further items

Clearly further items can be added, particularly beyond the period covered by the report. There are a number of further items that were recommended in discussions ([↑Chelagat, et al., 2018](#); [↑Kintu, 2019](#); [↑Kitainge, 2009](#); [↑Wanyeki, et al., 2018](#); [↑Wang, 2009](#)) as well as additional items being published beyond our search period ([↑Abdelkarim, 2019](#); [↑Bonzet & Frick, 2019](#); [↑Joseph & Leyaro, 2019](#); [↑Zinn, et al., 2019](#)).



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This bibliography is also available online in the following formats:

- The full bibliography (below) is available here: <https://www.zotero.org/groups/2317526>. All metadata can be publicly viewed. Researchers and practitioners can apply for group membership to access additional information.
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## Appendix 5. List of Additional Materials

The English version of this report took just over two years to prepare (mid-2018 to mid-2020). Our intention is to make the existing (and future) materials to be as accessible as possible. This appendix provides an overview of the available materials for this report.

### 5.1. Versions of this report

The German version of (late) 2019 is available here:

Haßler, B., et al., (2019). *Berufsbildung in Sub-Sahara Afrika: Stand der Forschung*. VET Repository, Bundesinstitut für Berufsbildung, Bonn, Germany. DOI: [10.5281/zenodo.3334690](https://doi.org/10.5281/zenodo.3334690). Available from <https://docs.opendeved.net/lib/GEELRK57>.

The English version (July 2020) is available here:

Haßler, B., Haseloff, G., et al. (2020). *Technical and Vocational Education and Training in Sub-Saharan Africa: A Systematic Review of the Research Landscape (1st ed.)*. VET Repository, Bundesinstitut für Berufsbildung, Bonn, Germany. DOI: [10.5281/zenodo.3572897](https://doi.org/10.5281/zenodo.3572897). Available from <https://docs.opendeved.net/lib/ZEDIHF57>.

We have also allocated a DOI for a potentially forthcoming 2nd edition:

Forthcoming: *Technical and Vocational Education and Training in Sub-Saharan Africa: A Systematic Review of the Research Landscape (2nd ed.)*. DOI: [10.5281/zenodo.3970782](https://doi.org/10.5281/zenodo.3970782). Available from <https://docs.opendeved.net/lib/EHKG4JUL>.

### 5.2. Chapters in this report

The chapters in this report have their own DOIs assigned, to make it easier to quote and reuse them.

Chapter number	Chapter name	DOI	Citation and references
	Executive Summary	<a href="https://doi.org/10.5281/zenodo.3843340">10.5281/zenodo.3843340</a>	<a href="#">↑link</a>
1	Introduction	<a href="https://doi.org/10.5281/zenodo.3843342">10.5281/zenodo.3843342</a>	<a href="#">↑link</a>
2	Research Design	<a href="https://doi.org/10.5281/zenodo.3843344">10.5281/zenodo.3843344</a>	<a href="#">↑link</a>
3	Overview of the dDiscovered Publications	<a href="https://doi.org/10.5281/zenodo.3843346">10.5281/zenodo.3843346</a>	<a href="#">↑link</a>
4	The Conception and pPractice of TVET in SSA	<a href="https://doi.org/10.5281/zenodo.3843348">10.5281/zenodo.3843348</a>	<a href="#">↑link</a>
5	TVET Actors	<a href="https://doi.org/10.5281/zenodo.3843350">10.5281/zenodo.3843350</a>	<a href="#">↑link</a>
6	Themes, Perspectives and Current Debates in TVET rResearch	<a href="https://doi.org/10.5281/zenodo.3843352">10.5281/zenodo.3843352</a>	<a href="#">↑link</a>
7	Systematic rReview of TVET rResearch	<a href="https://doi.org/10.5281/zenodo.3843354">10.5281/zenodo.3843354</a>	<a href="#">↑link</a>
8	Models for dDesigning, dDeveloping and dDelivering TVET	<a href="https://doi.org/10.5281/zenodo.3843356">10.5281/zenodo.3843356</a>	<a href="#">↑link</a>
9	ilInclusion-related Challenges and Policies	<a href="https://doi.org/10.5281/zenodo.3843358">10.5281/zenodo.3843358</a>	<a href="#">↑link</a>
10	State aAuthorities for TVET mManagement	<a href="https://doi.org/10.5281/zenodo.3843360">10.5281/zenodo.3843360</a>	<a href="#">↑link</a>
11	Non-state TVET pProviders	<a href="https://doi.org/10.5281/zenodo.3843362">10.5281/zenodo.3843362</a>	<a href="#">↑link</a>
12	National sStandards and rRegulations	<a href="https://doi.org/10.5281/zenodo.3843364">10.5281/zenodo.3843364</a>	<a href="#">↑link</a>
13	Challenges to pPolicy ilImplementation	<a href="https://doi.org/10.5281/zenodo.3843366">10.5281/zenodo.3843366</a>	<a href="#">↑link</a>
14	Insights Regarding Institutional Frameworks and Research Capacity	<a href="https://doi.org/10.5281/zenodo.3843368">10.5281/zenodo.3843368</a>	<a href="#">↑link</a>
15	Research nNetworks and cCapacity bBuilding	<a href="https://doi.org/10.5281/zenodo.3843370">10.5281/zenodo.3843370</a>	<a href="#">↑link</a>
16	Perspectives on Future TVET Research	<a href="https://doi.org/10.5281/zenodo.3843372">10.5281/zenodo.3843372</a>	<a href="#">↑link</a>

## 5.3. Additional resources

### 5.3.1. Data Log

Haßler, B., et al. (2020). *Data Log—Technical and Vocational Education and Training in Sub-Saharan Africa: A Systematic Review of the Research Landscape*. VET Repository, Bundesinstitut für Berufsbildung, Bonn, Germany. DOI: [10.5281/zenodo.3976866](https://doi.org/10.5281/zenodo.3976866). Available from <https://docs.opendeved.net/lib/DYNH5EWU>. ([↑record](#))

### 5.3.2. Keywording sheet

Björn Haßler. (2019). *Keyword inventory for: Berufsbildung in Sub-Sahara Afrika - Eine systematische Aufarbeitung des Forschungsstandes* (10.5281/zenodo.3595604). Zenodo. DOI: [10.5281/zenodo.3595604](https://doi.org/10.5281/zenodo.3595604). Available from <https://docs.opendeved.net/lib/BIKE35W3>. ([↑record](#))

### 5.3.3. Presentation 1 (2019)

Kigwilu Changilwa, P., Haßler, B., Marsden, M., Watson, J., Schaffer, J., Kagambega, A., Iseje, F., Maseko, V., Orji, C. T., Deodonne, K., Amina, I., Ewnetu, T., & Ezekoye, B. (2019, June). *Technical and vocational education and training in sub-Saharan Africa: A comprehensive review of the current state of the research*. AfriTVET International Conference, RVTI, Kenya, June 2019. DOI: [10.5281/zenodo.3976864](https://doi.org/10.5281/zenodo.3976864). Available from <https://docs.opendeved.net/lib/JCQQCLAY>. (↑record)

### 5.3.4. Presentation 2 (2019)

Haßler, B., Marsden, M., Iseje, F., Deodonne, K., Changilwa, P., & Maseko, V. (2019, September 3). *Technical and vocational education and training in sub-Saharan Africa: A comprehensive review of the current state of the research*. VETNET @ ECER. DOI: [10.5281/zenodo.3385078](https://doi.org/10.5281/zenodo.3385078). Available from <https://docs.opendeved.net/lib/3V5L7IWH>. (↑record)

## 5.4. Zotero libraries

As noted in Chapter 3, all bibliographic data used in this report is available in our evidence library<sup>1</sup> as well as in a dedicated Zotero library<sup>2</sup>. In the digital version of this report, all references are clickable and lead to the corresponding entry in the Open Development & Education evidence library; in other words, for all publications discussed in this report, basic bibliographic information is available for review. No username or password is required to look up the publications and their details. Some extended functionalities are available after login; users are invited to register here<sup>3</sup> to join the shared library.

## 5.5. Appendix bibliography

This bibliography can be accessed from the [↑entry for this document in our evidence library](#). As this chapter is bibliographic in nature, the bibliography is not repeated here.

1 ↑Open Development & Education, Evidence Library, available at <https://docs.opendeved.net/lib/>

2 ↑Open Development & Education, Zotero Library, available at [https://www.zotero.org/groups/2317526/oden\\_tvetr-ssa/library](https://www.zotero.org/groups/2317526/oden_tvetr-ssa/library)

3 ↑Open Development & Education, TVET Zotero Library Registration, available at [https://www.zotero.org/groups/2317526/oden\\_tvetr-ssa?](https://www.zotero.org/groups/2317526/oden_tvetr-ssa?)

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