Background materials on TVET – Volume 3

03

Governance of technical and vocational education and training (TVET) and new work in development cooperation: strengthening TVET systems to meet new requirements

Development prospects of TVET – expert report and theses

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PREFACE

The **sector project Technical and Vocational Education and Training** supports the German Federal Ministry for Economic Cooperation and Development (BMZ) in developing strategies and approaches for technical and vocational education and training (TVET) in German and international development policy. By means of TVET, BMZ seeks to increase the supply of qualified labour in order to contribute to improving employment opportunities and economic growth. At the same time, promoting TVET as a part of lifelong learning plays a significant role in boosting individual capacity for social and political participation. Training geared to labour-market needs enhances employment prospects and enables people to earn a decent income to escape poverty.

Currently, the **issue of the future of work** is very important for the future development of German development cooperation, in particular in TVET. The focus here is, on the one hand, on how work and employment are changing in developing countries and, on the other hand, on the corresponding consequences for TVET in development cooperation.

- What kind of employment in which sectors calls for what skills?
- How must TVET systems be designed to cope with these altered and continuously changing requirements?
- How can vocational training projects be planned and carried out to prepare for work in the era of digital transformation, and to harness the opportunities afforded by the digital transformation?

To answer these questions, the sector project TVET is releasing a publication series with **background materials on TVET in development cooperation**. Published on an ad hoc basis, each of these papers examines a specific aspect of the issues described above. The aim is to compile concise, relevant information, to illustrate this with good practices, and then to make practical recommendations for both development advice and implementation.

The intention is to provide decision-makers and practitioners with inspiration for their own tasks so as to help TVET and development cooperation to respond to the challenges of 'new work' and to make use of the opportunities it affords.

Female apprentice in industrial mechanics at Umnugobi Polytechnic College, Mongolia. Many girls plan their career in vocational training.

- The background materials are available in both German and English.

ABSTRACT

The digital transformation of the world of work poses big challenges for existing training and employment systems, yet it also brings opportunities, especially for development cooperation. Whether the advancing digitalisation will ultimately offer more advantages or disadvantages depends to a large extent on whether educational policy in the developing and emerging markets makes effective use of existing scope for action. The COVID-19 pandemic has further highlighted the new qualification requirements associated with 'new work', for instance in the field of distance learning.

In light of the importance of TVET in development cooperation, this analysis takes a look at the challenges that educational policy in partner countries is facing in connection with the digital transformation of work. How can TVET be effective in shaping this transformation? The focus will be placed on aspects of TVET governance in partner countries. Cooperative TVET governance approaches can improve the governance of the entire education system, on the one hand by strengthening the capabilities of government institutions and empowering key stakeholders in a cooperative system and, on the other hand, by improving the quality and practical orientation of TVET. Social inclusion is the prerequisite in this context to avoid 'new work' causing new divides within society.

This third volume of TVET background materials has been compiled on the basis of current research approaches and an analysis of GIZ country projects. It is divided into four chapters.

Chapter 1 outlines the current challenges facing TVET governance as a result of digital transformation.

Chapter 2 defines the basic terms relating to 'new work' in this context.

Chapter 3 explores the challenges and identifies new governance approaches between decentralised and centralised steering structures.

Aspects of the above considerations are illustrated and deepened in Chapter 4 using examples in selected countries.

This study concludes with four theses combining the theoretical, conceptual considerations with the analysis of examples in selected countries.

Thesis 1: 'New work' involves adjustments to TVET governance models, and in particular new governance structures between a decentralised approach and central coordination.

Thesis 2: Strengthening the role of associations (intermediary associations) can help to better manage key challenges to governance policy.

Thesis 3: A governance strategy geared to associations should be accompanied by financing models aimed at strengthening the administrative, financial and human resources of intermediary associations and project partnerships.

Thesis 4: In the era of 'new work', social inclusion in TVET will succeed only if no new digital divides are created.

1

INTRODUCTION

The digital transformation of the world of work poses big challenges for existing training and employment systems, yet it also brings opportunities. This also applies – perhaps all the more so – in the context of development cooperation. Here, digital transformation could help implement new technological developments faster, as it reduces the inertia that can sometimes slow down adaptation processes in advanced industrialised nations. In addition, in the medium to long term, automating routine activities in the services sector or relocating these to countries of the Global South (e. g. for typical back office tasks) could lead to an increase in comparatively highly qualified jobs in these countries. Whether advancing digitalisation will ultimately offer more advantages or disadvantages depends to a large extent on whether educational policy in developing countries makes effective use of existing scope for action and whether development cooperation is able to support the transformation processes in a targeted manner.

In western OECD countries, debates about the digitalisation of education tend to centre on mainstream schools or universities (Selwyn 2016), although TVET is gradually attracting more attention (Euler / Severing 2019). Yet in the context of development cooperation, TVET plays a pivotal role: in countries that have a large informal economy[1] acquiring informal and practical skills is much more important than in countries where access to the employment and education system is highly formalised (GIZ 2019). The qualification requirements of young people and training companies are based on existing employment structures, which in developing and emerging countries are more strongly developed in the low and medium qualification segment, although digitisation and globalisation are expected to lead to increasing differentiation and skills upgrading or 'upskilling' of qualification requirements.

Training at Industrial Training Center (ITC) in Myanmar

On-the-job-training at Computer Numerical Control Centre (CNC) in Bengaluru/Karnataka, India

The COVID-19 pandemic has further highlighted the new qualification requirements associated with 'new work'. There are great differences between partner countries in terms of how well prepared they are for online learning, depending on their level of economic development. The requirements are often not in place: digital infrastructure, teacher training, recognition of digital learning and achievements, for example, tend to be areas that have yet to develop. The closure of schools and other educational institutions in many countries clearly underscored the need for digital distance learning as well as the benefits it offers. TVET will play a central role in rebuilding the economy, especially in developing and emerging markets.

In light of the importance of TVET in development cooperation, we look at the challenges that educational policy in development cooperation is facing in connection with the digital transformation of work and how educational policy can effectively help to shape the latter. The focus is placed on aspects of TVET governance with the aim of strengthening systemic governance rather than on an analysis of young people's individual learning behaviour or the willingness of companies to offer training, while these variables are nevertheless considered indirectly as target values for TVET governance.

This study cannot fully answer all questions raised – and therefore closes with a series of theses intended as food for thought and to inspire further analyses. The next chapter will start with a few definitions of terms to avoid misunderstandings, considering the many different forms that 'new work' is taking. The following chapter presents some conceptual thoughts on governance-related challenges posed by 'new work' in the context of development cooperation, in particular with respect to questions such as the relation between centralised and decentralised governance models, new forms of cooperation between public and private sector stakeholders and the question of social inclusion in TVET. The study then discusses a series of country examples from development cooperation practice with reference to the questions raised in the preceding conceptual part.

2

BASIC TERMS: WHAT IS 'NEW WORK'?

Public debates on the digital transformation of work as well as some academic debates frequently make reference to terms such as 'Work 4.0', 'new work' or 'gig work', to name just a few, that are used as a general reference to the challenges and opportunities arising from the digital transformation of the world of work. Taking a closer look, however, reveals that these seemingly plausible terms tend to conceal complex, multilayer processes. The digital transformation of the world of work has many dimensions, each with their own implications for governance. A granular analysis is therefore not only appropriate, but in fact necessary to be able to make specific policy recommendations.

Generally speaking, the digital transformation of the world of work encompasses the following areas (cf. BMAS 2017; Brynjolfsson/McAfee 2014; Ford 2016):

- **Advancing automation of industrial production and manufacturing processes:** Progress made in robotics as well as the increasing spread (expected to intensify over the next few years) of the Internet of Things (i.e. the autonomous communication of machines and tools via the internet) facilitate the development of complex cyber-physical steering systems that in Germany are frequently discussed as 'Industry 4.0'.

Participant of a Virtual Reality Lab in Ruanda

- **Progress in artificial intelligence (AI), in particular the development of new software algorithms capable of refining and optimising themselves ('machine learning'):** This progress enables automating processes and tasks traditionally attributed to the services sector. The big, and arguably decisive, difference between the current wave of technological change and previous waves is hence that technology is now not only making 'muscle power' redundant, but also (to a greater extent) 'brain power' (Bührer/Hagist 2017: 115).
- **Development of new possibilities for storing and analysing extremely large data volumes ('big data'):** Firstly, and most importantly, this trend has implications for the security of private data (Zuboff 2018). Indirectly, however, the availability of big data supports and enables the aforementioned automation processes in the industrial and services sectors.

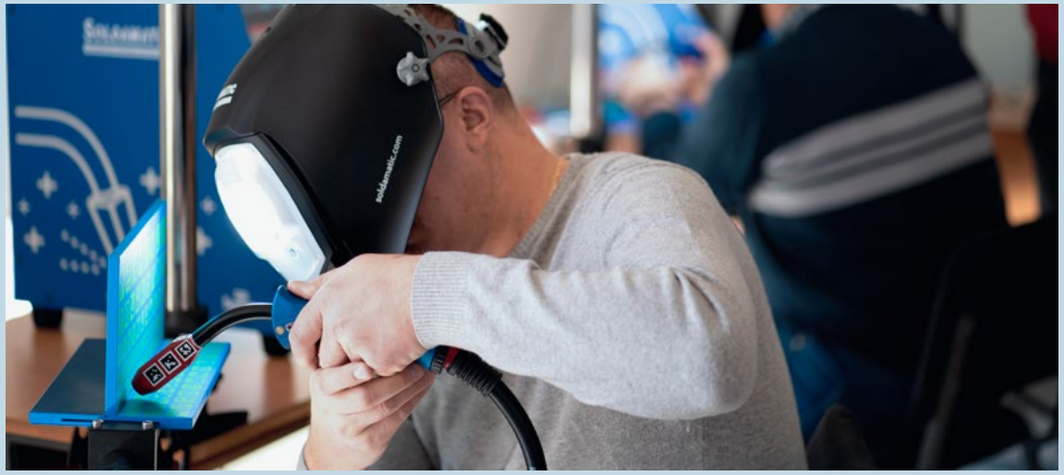
- **Development and expansion of the digital platform economy:** New technologies have enabled and driven forward the development of digital platforms – a process associated with the concentration of economic and, increasingly, political power in the hands of the global tech companies that control these platforms (Culpepper/Thelen 2020). The term 'platform economy' in turn covers a range of completely different kinds of platforms: from social communication platforms such as Twitter and Facebook, digital marketplaces such as MyHammer, service platforms such as Uber or Airbnb to crowd-working platforms such as Amazon's Mechanical Turk that offer services for finding workers, mostly for IT-related services (for this typology cf. BMAS 2017: 56).

- **Technology-enabled distribution of processes to different locations:** This aspect of digital transformation appears less spectacular than the other dimensions mentioned, but it can have significant implications on the workflows within organisations and the creation of new workflows. From an employee perspective, one positive effect is that this development allows for more flexible working models, such as working from home. However, it can also blur the boundaries between work and private life and create 'technostress'.

In the context of this study the term 'new work' can therefore be described and defined as encompassing all new forms of work that are directly or indirectly attributable to the aforementioned dimensions of technological change. There are other possible dimensions and forms of 'new work' – such as work in the field of sustainability and green economy (Montt et al. 2018) – but these are not the focus of this paper.

'New work' also has a content-related and a structural component. In terms of content, 'new work' covers new tasks and jobs in emerging sectors of the economy (such as the IT and technology sectors, but also in the digital creative industries) or changing profiles of established jobs in more traditional sectors ('digital upgrading' or 'upskilling'). The structural component of 'new work' relates to changing forms of employment as a result of the digital transformation, for instance with respect to the increasingly hazy distinction between self-employment and dependent employment. However, this distinction is less relevant in connection with development cooperation than in OECD countries in view of the size of the informal economy in many developing and emerging markets.

Welding trainers are trained in the use of the Augmented Reality welding simulator in Pristina, Kosovo



3

TVET GOVERNANCE IN THE DIGITAL ERA

3.1 'New Work' and new challenges for TVET governance

What are the new requirements arising from 'new work' for the governance of TVET policy, especially in the context of development cooperation?

One fundamental challenge is the speed of technological change, which contrasts with governance institutions that are often slow to respond. While information and communication technology (ICT) already experienced spurts of development back in the 1980s and 1990s, the change processes of the last decade point towards an exponential growth and development dynamic (Brynjolfsson/McAfee 2014) that is caused to some extent by the above-mentioned different dimensions of technological change reinforcing each other.

Added to this is the global nature of the digital revolution, which comes to bear especially on the developing and emerging markets. Whereas the technological developments of previous decades tended to concern the more advanced, western economies, the most recent wave of digital transformation is spreading at a much faster rate to less developed economies, not least due to the desire of global technology companies such as Google, Facebook and Amazon to tap lucrative growth markets. In addition, the hardware and software of the latest iteration of digital transformation (smartphones, laptops and tablets as hardware, online platforms and open-source software) are more easily accessible to consumers and also to the 'producers' of the new digital economy than the machines and inputs of previous waves of technological change. Consequently, the digital transformation of the last decade offers major growth opportunities especially for developing and emerging countries, e.g. by leapfrogging intermediary technological development stages or building up local start-up companies that face lower access barriers to capital and digital infrastructure compared to previous technological development phases.

The challenge for TVET governance now lies on the one hand in defining training occupations and needs such that they meet the rapidly changing requirements of companies and of the young people wanting to acquire the skills.

IT competences in Tunesia

On the other hand, TVET policy should not take a merely **reactive** approach, but rather estimate future training needs with foresight (**prospectively**) and be able to ensure, by means of a suitable training policy, that companies can seize potential growth opportunities. This way, governance approaches of a more prospective nature can improve the governance of the entire education system.

Workplace in an office in La Paz, Bolivia

In this connection there is a conflict between the **short-term** need to adapt qualification structures to changing requirements and the **long-term** objective of ensuring a sustainable supply of skilled labour. At first glance, a governance model that can easily adapt to fast-changing needs would appear to come closest to the requirements of 'new work'. Such a short-term, reactive governance model would likely be dominated by market mechanisms in the financing and actual provision of TVET. A market-dominated model of TVET governance[2] however entails the risk that long-term qualification needs that go beyond the short-term needs are neglected, as there is no rational incentive for the various market participants to invest in those.

In contrast, it is more likely that long-term qualification needs and interests of the different stakeholders (trade unions, employer associations, business associations and government actors) will be taken into account in the collective training model (Busemeyer/Trampusch 2012). Collective training models, such as the dual training system in Germany, are characterised by a high willingness on the part of the employers to invest in training combined with a pronounced commitment of public sector i. e. government actors to TVET. This is true not only in terms of TVET financing, but also in terms of the will to promote it as a genuine alternative to university degrees. In collective training models, the **intermediary associations** (trade unions, employer and business associations, etc.) are also deeply involved in the collective governance of the system.

Almost in an inverse relationship to market dominated TVET systems, the strength of collective education and training systems lies in the consideration of the various stakeholders' different interests, supporting the system's sustainability and stability in the long term. The price of stability, however, is that adjustment processes tend to be slower than in market-driven systems. In addition, collective training systems depend on established association structure in the various sectors in which training is to be offered and organised, to ensure that the respective stakeholders' interests are effectively represented. However, this is not always the case in dynamic, high-growth sectors of the new digital economy. On top of that, project-related and frequently personalised 'new work' employment structures make it more difficult to organise interests in associations (or trade unions), as the individuals are less likely to be willing to play an active role in a member organisation than in traditional industry sectors.

Besides the corporatistic principle of including the interests of different stakeholders, the 'occupational principle' also plays an important role in collective training systems. According to the 'occupational principle', trainees do not only, or not primarily, acquire skills needed in the short term in their training, but also skills that go beyond these under a training concept aiming at comprehensive vocational skills. In the long term, such 'polyvalent' skills (Streeck 1996: 141) can enable systems that comprise a good base of skilled labour with broad-based training to respond faster and more flexibly to changing framework conditions. The challenge from a governance perspective, however, is to convince employers that it is worthwhile in the long term to invest in a broad range of skills (Busemeyer/Trampusch 2012).

The digital transformation challenges the 'occupational principle' in a variety of ways. As mentioned above, the typical employment forms and models that we are seeing in 'new work' do not fit the collective training model's structures for the organised representation of interests in associations (and accordingly with hierarchies in some cases). More importantly, however, social constructs of occupational identities tend to be of less relevance in 'new work' for social integration than in the industrial economy. Occupational identities in 'new work' are fluid and tend to be activated on an ad hoc basis without reference to specific qualifications or certificates. As a result, qualification structures also do not follow the occupational principle to the same extent, but rather can be 'assembled' in a more modular and fragmented way.

Collective training systems building on the occupational principle hence face the challenge of redesigning governance structures such that they can meet the needs of young people and companies for flexibly compiled qualification packages without completely renouncing the 'occupational principle'. The latter is important for realising long-term and sustainable qualification strategies that go beyond satisfying short-term qualification needs. The institutional context is decisive here: For market dominated TVET systems, the challenge lies in avoiding excessive fragmentation of qualification structures. Whereas a highly modularised system is able to adapt comparatively quickly to changing needs as mentioned above, if it is uncoordinated there is a risk of too much fragmentation. In contrast, for collectively or corporatistically organised systems, the key factor is the extent to which the stakeholders in the system are capable and or rather willing to incorporate new technological advances and changing vocational requirements in designing training occupations.

Apprentice at Government Technical Institute (GTI) in Burma, Myanmar

3.2 New forms of governance between decentralisation and hierarchical steering

Alongside the question discussed in the previous chapter relating to the 'horizontal' coordination between government and non-government stakeholders, which we will get back to later, the 'vertical' coordination between different levels of government also plays an important role for TVET governance. One key determinant of the success of Germany's dual training model is the unique combination of central governance on the one hand and decentralised implementation at local and company level on the other hand. Training regulations and equivalent instruments define common standards for the entire education and employment system, while leaving sufficient scope for company-specific considerations in practice. The political discourse about how to design training systems therefore revolves around the question of where exactly to draw the line between central governance and corporate flexibility (Busemeyer 2009).

In relation to 'new work', the thesis that decentralised forms of governance could have an advantage over centralistic approaches would appear plausible. From this perspective, the training system must be capable of responding quickly to changing needs as a result of the dynamic development of individual economic sectors and, or rather regions – a centralistic approach could be too slow and unwieldy. In addition, a centralistic approach may not take sufficient account of local and sector-specific particularities. A decentralised governance approach, in which for example local or sectoral training associations are responsible for developing new training occupations and programmes, therefore appears more appropriate for the purpose of governance.

Participants of IOT Training at Digital Transformation Center in Kigali, Rwanda

One disadvantage of the decentralised governance model, however, is that – similar to the above market-dominated model – an excessively decentralised approach could lead to the system's fragmentation and disintegration. Decentralised governance approaches should therefore also be combined with central coordination mechanisms. Intermediary associations (employer and industry associations) could assume a key coordination function here as well. In systems with a low prevalence of association structures, government agencies (certification institutions) could fill the gap – but care should be taken to avoid excessive fragmentation of qualification structures here, too.

If training structures are coordinated centrally and effectively, this can also provide a kind of leverage. Once new training content and models have been successfully tested in the dynamically developing economic sectors, central coordination would make it possible to 'export' these training models to less dynamic economic sectors and regions where they could contribute to the sustainable development of qualification structures. Development cooperation actors could actively support these kinds of coordination processes, in some cases even beyond national borders, provided that context-specific particulars are taken into account.

3.3 New models of cooperation between public and private sector stakeholders

In connection with the above-mentioned distinction between market and corporatistically organised TVET systems, there are a range of challenges emerging with respect to 'new work' in terms of how cooperation relationships between public and private sector stakeholders will develop.

The first challenge pertains to the fact that association structures are underdeveloped in new, dynamically developing economic sectors. This is particularly relevant in development cooperation, as intermediary associations in many developing and emerging markets have in any case fewer organisational, financial and human resources than they do in advanced economies. The prevalence of new business models in the platform economy additionally hampers the emergence of stable association structures, as they favour project-related and personalised forms of working.

The second challenge is that in some cases training content falls within the protected proprietary domains of technology companies, in particular in ICT. For this reason, technology companies themselves have a commercial interest in offering training and education. There is a certain conflict between these commercial interests and public stakeholders' legitimate interests of offering broad and barrier-free access to education and training to the extent possible. The individual course participants themselves, however, do not necessarily have an interest in barrier-free access if they have sufficient resources to acquire any relevant additional qualifications on the free market. In the context of development cooperation, it must also be considered that national governments with comparatively weak administrative capacities are less able to counteract the marketing efforts of global technology companies than the governments of advanced economies.

In view of these challenges, cooperation relationships between public and private sector stakeholders need to be rethought and redefined in the era of 'new work'. It is key that such cooperation actually reconciles public and private interests and is not, for example, a concealed go-to-market strategy used by global technology companies. Development cooperation actors can make a vital contribution in this respect by offering crucial support for such cooperation processes.

Training at Vocational Training College in Vietnam

3.4 Social inclusion in TVET

TVET plays a central role for the social inclusion of young people in training and employment (Busemeyer 2015; Solga 2014). TVET's prominent role with regard to social inclusion is likely even to gain importance as a result of digital transformation. Various studies have shown that in particular occupations based on medium or even low qualification levels are affected by automation processes (Michaels et al. 2014; Graetz/Michaels 2018; Nedelkoska/Quintini 2018). High-quality vocational training can therefore effectively safeguard against automation, as more challenging skilled labour jobs are less exposed to a risk of automation than routine tasks that lend themselves to automation.

In the context of development cooperation, it must also be considered that it is technologically easier to relocate many of the more service-oriented occupations in the office and administrative sector from advanced economies to developing and emerging markets (Brown et al. 2011). Here, too, vocational training can play an important role in developing the relevant skills and capabilities. For more demanding jobs in the office and administrative sector, hybrid training models combining high school-based (or even university-based) theoretical training with work-experience phases in companies appear particularly promising.

The examples of social inclusion described so far tend to refer to jobs that require medium- or high-level qualifications. At the same time, attention should be paid to ensure that 'new work' does not create new social divides reinforced or caused by selective access to digital technology. For example, in developing countries (less so in emerging markets) basic tools of the digital society (such as smartphones, laptops or tablets, but also widespread internet) cannot be presumed to be as widespread as in emerging markets and industrialised countries. A new report on the use of teaching materials (Cambridge Assessment International Education 2018: 14) shows that developed countries such as the United States lead in the use of digital tools such as smartphones in lessons (answer given by 74 per cent of the student respondents), whereas the level is much lower in economically less developed countries such as India (16 per cent use smartphones in the classroom). Emerging markets, especially China, however, can match developed countries in terms of the use of digital tools in the classroom. Hence it is possible that education-policy strategies involving a greater use of digital media in lessons might reinforce existing digital divides rather than eliminate these unless it is ensured that children and young people have access to such learning materials outside school as well and that schools in different socio-economic settings offer similar equipment.

4

EXAMPLES FROM SELECTED COUNTRIES

Four examples from selected countries are presented and discussed below that address and expand our knowledge of individual aspects of the above considerations from different perspectives.[3] By their nature, these country examples can only briefly highlight the chosen aspects. The final part of this paper concludes with a series of theses combining theoretical and conceptual deliberations on TVET governance with the country examples.

4.1 The Indo-German Programme for Vocational Education and Training (IG-VET)

GIZ has been funding the Indo-German Programme for Vocational Education and Training (IG-VET) since 2016. The programme's primary objective is not to support isolated individual projects, but rather 'to focus on the long-term cooperation between government and private sector stakeholders' (GIZ (India) 2019: 7). Similarly, as discussed and recommended above, the focus of the programme is on strengthening the capacities of the stakeholders involved as part of a multi-level approach (GIZ (India) 2014). Support for strengthening TVET can be provided by specifically using digital tools, such as virtual reality environments in training or using blockchain technology to document skills in lifelong learning processes (GIZ (India) 2019b: 9, 18).

At macro level, the programme aims to strengthen the administrative capacities of the new Ministry of Skill Development and Entrepreneurship (MSDE), established in 2014. Previously, the administrative responsibilities for training programmes had been shared between some 20 ministries, with the Ministry of Education playing a major role, which it still does. While the MSDE cooperates with other ministries in training policy (such as the Ministry of Micro, Small and Medium Enterprises and the Ministry of Housing and Urban Poverty Alleviation), some pooling of resources and capacities has taken place that should improve and simplify the system's governance structures in the long term. In the short term, however, there is a risk of conflicting responsibilities, as some of the old bureaucratic structures still subsist alongside the newly established structures. Another accomplishment is the involvement of industry associations since 2018 in the newly created National Apprenticeship Promotion Scheme (NAPS), which is aimed more at creating short-term training opportunities, however.

On-the-job-training at manufacturing company Exa Thermometrics in Karnataka, India

At meso level, IG-VET aims to strengthen the role of private stakeholders, especially sector and business associations. With the establishment of the MSDE, further TVET governance reforms have been initiated in India in the last few years. The creation in 2011 of Sector Skills Councils (SSCs) is particularly notable and they now cover 40 business sectors (NCAER 2018: 16). The SSCs are autonomous, non-governmental non-profit institutions that bring together business representatives to promote the joint development of training and examination standards as well as training partnerships. The involvement of the private sector is to be welcomed in principle.

However, due to the voluntary approach taken, the composition of the SSCs can depend to a large extent on the commitment of certain companies or even individuals and there is hence no guarantee that the SSCs can actually articulate the needs of the respective sectors. As an alternative, private interests can be organised based on the model of chambers of industry and commerce, in which economic interests in a certain region are pooled and articulated via association structures rather than individual companies.

The National Skill Development Corporation (NSDC) is a public-private partnership (51 per cent held privately) that functions as an umbrella organisation for the SSCs and as such coordinates the national training standard-setting process (with input from the SSCs). One challenge in this context is that companies themselves do not always know themselves exactly what their training needs are. In addition, NSDC is responsible for managing the National Skill Development Fund[4] that distributes subsidies to training companies and education institutions.

Finally, at micro level IG-VET develops specific models for the implementation of cooperative TVET with a focus on three clusters: the automotive industry in Aurangabad, electronics in Bengaluru and energy efficiency in the construction sector in Bhiwadi.[5] These sectors – particularly the first two – are strongly connected with 'new work', i.e. upskilling existing job profiles and qualification requirements. At micro level, work also focuses on capacity development. In all three clusters, for instance, industry and sector associations were won as cooperation partners (Business Management Organisations, BMOs). Specific measures in the project's implementation included establishing and setting up Skill Development Units (SDUs) in the BMOs responsible, including for training trainers, developing curricula and teaching materials and coordinating with the institutions providing the theoretical part of the training. For the theoretical part of the training, the project cooperates frequently, but not always, with the widespread Industrial Training Institutes (ITIs) (GIZ (India) 2019a: 13–15). In addition, there are measures to specifically support micro, small and medium-sized enterprises (MSMEs) in training matters, such as the establishment of basic education centres by industry associations (similar to inter-company training in the German system).

IG-VET is a successful example of an approach aimed at strengthening administrative, financial and human resources and capacities of public and private sector stakeholders involved in TVET. In the short term, such a strategy may not be as successful as individual incentive programmes designed to maximise the number of participants in education measures.[6] There is also the challenge of convincing local cooperation partners that the comprehensive institutionalisation of the cooperative TVET model is not aimed at maximising short-term training opportunities, but also at creating sustainable cooperation relationships. In the long term, a capacity-oriented approach therefore lays important foundations for setting the cooperative TVET model on a permanent footing. Intermediary associations – the BMOs – are involved and strengthened in a targeted manner so that they develop an interest of their own in motivating their member companies for TVET. However, the voluntary nature of the SSC model reveals certain weaknesses in this respect, as the approach is a less comprehensive than the chamber model that effectively pools the interests of companies in a certain sector or region.

Drone workshop for young students in Baghdad

A positive aspect, however, is that the capacity-oriented approach is supported by the Indian Government's own measures. Special mention should be made here of the NAPS referred to above, which was launched in 2016. It refunds employers for 25 per cent of grants paid to trainees and compensates for the cost of absence to enable trainees to take up external offers for basic education (NCAER 2018: 18). The objective pursued by NAPS – 50 million trainees per year by 2020 – is ambitious, but not necessarily unrealistic and appears designed to maximise short-term training and apprenticeship programmes. Nevertheless, it shows that the Indian Government is highly motivated to strengthen cooperative TVET. The challenges, however, are enormous as only 2 per cent of the working population have formal TVET qualifications (a further 9 per cent have informal TVET qualifications) (cf. NCAER 2018: xvii).

4.2 ICT – Perspectives for the Modern Youth in Iraq

Economic, social and political conditions in Iraq are still extremely precarious. The country is suffering from many years of armed conflict with the terrorist organisation Islamic State (IS) and the fall in oil prices, which is having a serious impact on the country's budget. As the private sector is underdeveloped in Iraq and the public sector therefore plays a vital role in securing employment, the two aforementioned crises are major factors causing high unemployment. This affects the young generation in particular: ILO estimates youth unemployment in 2015 at 33 per cent of young people aged 15–24 (GIZ (Iraq) 2019: 7). Young women, but also university graduates are affected most. While Iraq has a high number of university graduates, their qualifications do not fully meet the actual labour market needs. As a result, even well-educated young people face unemployment and have since late 2019 been demonstrating nationwide because of the difficult economic situation (GIZ (Iraq) 2020: 9).

In 2014 the Iraqi Government in 2014 developed and adopted the Private Sector Development Strategy (PSDS) 2014–2030 to strengthen the private sector together with the United Nations Development Programme (UNDP). While the precarious fiscal situation slowed the implementation of this strategy in the following years, it sets important strategic parameters for other, related programmes and measures. A positive outcome was that the PSD strategy was able to build on a number of local, existing initiatives.

One example of such a measure is the 'ICT – Perspectives for the Modern Youth in Iraq' module, which is embedded in the special initiative ↱ 'Tackling the root causes of displacement, reintegrating refugees' of the German Federal Ministry for Economic Cooperation and Development (BMZ) as a module to promote TVET in ICT. The module's objective is to improve employment prospects for young people

in the ICT sector in Iraq. Considering the precarious situation in Iraq, it is not immediately obvious why the ICT sector in particular should harbour high growth potential. As already discussed above (↱ chapter 2) in connection with the term 'new work', there is a marked difference in employment relationships between the dynamically growing ICT sector and traditional economic sectors. The more decentralised, project-related, individualised and flexible access to employment in the ICT sector can provide an opportunity for a country like Iraq, as start-up companies will need to invest less in production facilities and can build knowledge and expertise faster. One important foundation is that access to mobile internet in Iraq is functioning well in large parts of the country (GIZ (Iraq) 2019: 8).

The above-mentioned module and the underlying strategies are thus aimed at establishing a comprehensive tech ecosystem in which networking between different actors (young people, employers/clients, financiers, mentors, etc.) is key. Similar to the cluster approach in India, the measure focuses on certain regions, namely urban and semi-urban regions in Baghdad, Basra, Sulaymaniyah, Erbil, Mosul and in the further course of the project potentially also Anbar, as the conditions for creating a tech ecosystem are more likely to be in place there than in more rural areas.

Unlike IG-VET in India, the measure in Iraq concentrates more on the micro and meso level and endeavours to develop tech ecosystems bottom-up due to the uncertain economic and political conditions. One important milestone in this respect is the formation of the Iraqi Innovation Alliance (IIA) in 2019, bringing together the **Innovation Hubs** described below and their support organisations, which illustrates the potential of expanding local experiences to include the entire nation (GIZ (Iraq) 2020: 19).

At micro level, the measure provides various forms of support for individuals. On the one hand, it supports and implements specific training measures in the ICT sector, such as courses for IT skills including programming, web and app design and data processing, but also qualification modules relating to setting up a business. Promoting women's participation is a particular focus of its work. A target participation rate of 30 per cent women in the qualification courses has been set; in practice, however, there are still huge regional differences in participation rates of women (GIZ (Iraq) 2020: 26). The project also provides special support for other disadvantaged groups, mainly internally displaced persons, but also persons with disabilities. Through its design, the measure makes a significant contribution enabling effective use to be made of TVET's social inclusion potential (see above,

Using Virtual Reality during a hackathon in Baghdad

↱ chapter 3.4). Secondly, the project supports networking activities between young people interested in ICT or with ICT qualifications on the one hand and mentors, financiers and clients, on the other, with the aim of tailoring better what the young start-ups have to offer to the actual market demand (GIZ (Iraq) 2019: 11). These specific instruments show how education and economic support measures are closely interlinked in this project. This way, promoting TVET can also strengthen networks between education and training and between training providers and private sector actors.

At a meso level, the measure supports the establishment of Innovation Hubs in the above-mentioned cities and towns. It involves private stakeholders – from non-governmental organisations to start-up companies – in implementation, depending on the local situation in the respective towns and cities. The hubs themselves are also private non-governmental organisations. In addition, the German company Siemens was recently won as supporting cooperation partner; further cooperation opportunities with the software company SAP are being reviewed (GIZ (Iraq) 2020: 8). The services offered by the hubs have been very well received and are accepted by the target group (GIZ (Iraq) 2020: 16).

In a first step, the Innovation Hubs provide the physical infrastructure for the implementation of the qualification measures. In addition, **coworking spaces** and **makerspaces** are set up to give young people access to production inputs and processes such as 3D printers or CNC milling units and an exchange and networking between actors in the start-up scene is encouraged. Here, too, a conscious decision was made to facilitate a smooth transition from education and training on the one hand to business development and business start-ups on the other. The project is also developing cooperation arrangements with universities such as Mosul University. The hubs are attractive partners for universities, as they convey skills and knowledge that universities do not teach, or teach less effectively, such as management or soft skills, work ethic and teamwork. Conversely, a cooperation arrangement with universities also makes the hubs' offers more attractive for the large number of university graduates and drop-outs to whom the hubs can offer an additional, practical qualification.

The measure 'ICT – Perspectives for the Modern Youth in Iraq' promotes TVET under difficult conditions. The decentralised, flexible and pragmatic approach in cooperation with private actors as well as the seamless transition between education and training on the one hand and starting a business on the other are a convincing example of the special features of 'new work'. In an economically, politically and socially precarious environment such as in Iraq, such an approach can be used effectively to tap into the potential for growth and employment, provided individual measures are systematically embedded in more comprehensive development strategies. In the medium term, it would be advisable to network the measure's local initiatives to a greater extent such that robust training structures can also be established at a systemic level.

4.3 Programme for basic and vocational education and training in Mozambique

Since 2008, GIZ has been making its contribution to a major strategy to promote basic and vocational education and training in Mozambique – the Pro-Education Programme. This strategy is also closely linked to the government's Education Strategic Plan (PEE in Portuguese). The Pro-Education Programme is intended to improve the quality of primary education and vocational training for children and young people, with a focus on girls. Both with respect to primary schools and TVET, qualifying and training teachers is of central importance. Next are investments in school infrastructure, particularly structural renovations and new buildings. The TVET project module is presented and discussed in more detail below.

Similar to the examples discussed above, this project is also primarily aimed at institutional and human resources capacity development. The project in Mozambique also applies a multi-level approach, but the macro and meso

Training of teachers in the province Inhambane, Mozambique

levels that focus on cooperation with political stakeholders and intermediary associations are less pronounced than in the other country examples. The decision to make the institutional level of TVET centres the priority area was specifically strengthened in a recent reorientation. As part of the Integrated Professional Education Reform Programme (PIREP), GIZ activities primarily concentrate on the sectors of machine maintenance, electronics, metal working, ICT and renewable energies (GIZ (Mozambique) 2014).

Within the scope of the technical cooperation project, training measures are held at a total of 14 TVET centres for teachers and trainers to strengthen the practical relevance of TVET, especially by introducing competence-based curricula. These measures are supported by consistent quality management in implementation. In the course of the project, individual **public-private partnerships** (PPPs) have been established, for example with the mining company Rio Tinto or the German web hosting provider STRATO that supported the modernisation of an ICT learning lab at the Maputo Industrial Institute (IIM), both of which have, however, meanwhile ended. There are only few formalised partnerships with companies. In the longer term, there are plans to increase private sector involvement through school advisory boards.

The national reform process is being implemented institutionally with the support of TVET providers in five provinces. The main thrust of the process is to improve TVET quality by expanding its practical relevance, in particular by involving the private sector in TVET to a greater extent. As part of the modification of the PEE and in its updated version for the years 2020 – 2030, the ICT sector is to receive particular attention, especially with regard to the use of ICT in lessons in schools and vocational colleges (GIZ (Mozambique) 2019: 15–16), but also in practice oriented training of school teachers and vocational trainers.

A new TVET framework act was adopted in 2016 and entered into force in 2018. The act aims to orient TVET more closely on the professional practice and labour market needs. One key element is the gradual conversion to skills-based curricula in TVET, which constitutes a lengthy process, as approval procedures involve the National Professional Education Authority (ANEP) (see below) and equipping the TVET centres and training the trainers takes some time. The act also provides for the levy of a TVET fee and the creation of a national TVET fund for 2020.

In the context of the aforementioned challenges arising from 'new work' for TVET governance, the recent reform is pointing in the right direction. In addition to strengthening practical relevance, the reform's objective of expanding the TVET centres' autonomy such that they are able to adapt better to local needs in a more decentralised governance model is notable in this respect. However, the implementation of the reform is hampered by a variety of factors. First, there is the worsening economic environment, which will probably deteriorate further as a result of the COVID-19 crisis. While it is true that Mozambique has shown dynamic growth since 2005, this has abated significantly in recent years and Mozambique is still one of the poorest countries in the world (KfW (Mozambique) 2018: 6). Then there are further problems, in particular high absenteeism among school teachers.

Lines of conflict are emerging also at the level of TVET governance. The 2016 reform act placed TVET governance in the hands of the newly established ANEP, which is responsible for regulating this sector. Two other authorities, belonging to two different ministries, are responsible for implementation – the National Directorate for Professional Technical Education (DINET) within the Ministry of Science, Technology, Higher Education and Professional Training (MCTESTP) and the National Institute of Professional Education and Labour Studies Alberto Cassimo (IFPELAC), which was

recently shifted from the Ministry of Labour to the State Secretariat for Youth and Employment. Coordination difficulties and conflicting competencies between these authorities are to be expected. In addition, as a new authority ANEP is not necessarily equipped with the resources required to adequately discharge the tasks at hand. The new strategic plan for vocational training (2018 – 2022), developed together with other donors, is to improve TVET access and quality as well as to improve governance and coordination between the different stakeholders.

In summary, despite these difficulties, the example of Mozambique shows how a long-term strategy can be successful in difficult economic conditions in realigning TVET towards skills-based learning and greater labour market relevance. However, the example also shows that such a strategy requires staying power. In addition, it is evident that if there are no association structures, or if such structures are poorly developed, the meso level of intermediary associations cannot assume as many tasks in TVET governance as in countries with strong associations. A decentralised approach that concentrates on implementing concrete reforms in geographically limited pilot projects and seeks to win individual partners on the ground (companies) clearly makes sense here, especially if reform processes at the macro level of governance are supported in parallel. If dialogue with the private sector is continuously pursued and expanded, this can create trust that may boost the involvement of private companies in the long term.

4.4 Promotion of Economy and Employment Programme in Rwanda

In recent years, Rwanda has registered highly dynamic economic growth. The ICT sector in particular is a key driving force. Between 2011 and 2016, this sector grew by 15.8 per cent annually (GIZ (Rwanda) 2018: 1). Within the scope of the Smart Rwanda Master Plan[7] the government aims to position Rwanda as central ICT hub in Africa in the long term. GIZ supports this process with the Promotion of Economy and Employment Programme (Eco-Emploi), which includes support for TVET. Eco-Emploi is aimed at promoting growth and employment opportunities in various sectors such as wood, tourism, ICT, e-commerce and logistics.[8] This project also starts by improving capacities with a focus on cooperation between chambers, employer associations and private companies.

Promoting the ICT sector is a particular focus of the programme's work. With the ICT chamber, Rwanda has created a key interface, bringing together the sector and employer associations as well as companies and individuals to support ICT sector development.[9] A central development cooperation task in this context is knowledge sharing, especially on how to design the content of job profiles and training regulations as well as on training trainers. In line with this aim, the ICT chamber has established partnerships with German institutions and associations. It has entered into one partnership with Sequa, a public-benefit consulting firm supported by the umbrella organisations of German business that offers consulting services on how to develop association and chamber structures. There is a second partnership in place with the sector network of German SMEs in the ICT sector, BITMi (Federal Association of the IT middle-class) (GIZ (Rwanda) 2018: 1), focusing above all on promoting digitalisation in the tourism industry.

Apprenticeship in the framework of the programme "Eco Emploi" in Rwanda

Participants of IOT training in Rwanda

The ICT chamber is also involved in a project to establish a dual cooperative training model in the ICT sector. It shows that TVET meanwhile plays a central role in this sector's development after the Rwandan Government had initially focused more on university education in implementing its ICT strategy. As private companies do not always have much training capacity or sufficient knowledge resources and company structures can be piecemeal, alongside promoting the dual-cooperative TVET model a more school-centric approach to TVET promotion appears advisable in Rwanda to promote knowledge transfer to the companies through vocational colleges, as is the case in the wood sector, for example. The dedicated training and education of teachers and trainers obviously plays a vital role in such a strategy.

A further initiative of the ICT chamber that is being carried out with GIZ support is the establishment of the **WeCode** software academy. **WeCode** offers a six-month training programme for women in two branches (software and app testing or software development and programming).[10] The specific promotion of digital skills for women is aligned with BMZ's #eSkills4Girls strategy, initiated as part of Germany's G20 presidency in 2017 (BMZ 2019). This strategy is aimed at overcoming the digital gender gap in terms of internet access, digital skills development and assumption of leadership positions and is particularly strong in developing countries. The more demanding training course with a programming focus is designed more for university graduates, whereas the course with a software testing focus also provides more basic qualifications. Once participants have completed their training, WeCode provides support in the process of finding a job and brings them in contact with potential employers.

One particular challenge for TVET development in Rwanda's ICT sector (but also in other countries) is to ensure that the qualifications obtained by training participants match labour market needs as much as possible. Even though Rwanda's ICT sector has experienced dynamic growth in recent years, companies themselves are not always able to articulate their training and qualification requirements. The above-mentioned capacity-building measures can partially help in this respect. Other approaches that are promising are not necessarily aimed directly at the development of the ICT sector, but rather concentrate on sectors that have jobs to offer (e.g. the tourism industry) where they focus on 'digitalising' and enriching training and job profiles in these sectors in accordance with the 'new work' principle.

Rwanda is a convincing example of how successful a targeted business development strategy in the ICT sector can be. Cooperation between public and private sector stakeholders – individual companies as well as associations – again is a crucial success factor in this example. The ICT chamber plays a pivotal role in the association landscape and can be strengthened further in its role through targeted support from development cooperation. Particular mention should also be made of the fact that TVET plays a central role in the ICT sector's development. The example of WeCode also shows how measures and projects aimed at overcoming social inequalities can contribute to economic development at the same time. Rwanda's key challenge now lies in ensuring that the structures and institutions created are sustainable, i.e. changing incentive structures and ensuring that local stakeholders remain motivated so that the institutions are sustainable even without direct support from BMZ and other donors.

5

THESES ON REFORMING TVET GOVERNANCE IN THE DIGITAL ERA

This study concludes with four theses summarising the findings of the examples in selected countries and combining them with the above conceptual and theoretical considerations on reforming TVET governance in the era of 'new work'. The common thread linking these theses is the affirmation of the government's central role in TVET governance, not so much as the sole actor but rather as an actor that actively promotes, expands and orchestrates cooperation and networking between public and private sector actors (companies and associations).

THESIS 1:
'New work' involves adjusting TVET governance models: In a decentralised approach, governance structures must leave more room for sectoral or locally adapted solutions without, however, losing sight of the aspect of central coordination.

Many of the examples in the selected countries mentioned follow a multi-level approach in implementing reform strategies. The implementation of pilot projects in individual regions, clusters and i. e. or business sectors plays an important role in this respect. However, the examples also show that economic, political and social conditions can vary greatly from region to region within a country and that programmes and projects must therefore be specifically tailored to the various contexts. The extent of regional heterogeneity (or regional discrepancies) is likely to be more pronounced in most developing and emerging markets than in economically advanced industrialised nations where adjustment mechanisms of a social state ensure that living standards are harmonised to a certain extent. The example of Iraq shows how development cooperation projects deal constructively with regional heterogeneity and make use of local resources in setting up innovation hubs in different cities and towns. In Mozambique, the reforms of recent years were aimed at enhancing the autonomy of TVET centres as a basis for decentralised governance approaches.

THESIS 2:
Strengthening the role of associations (intermediary associations) can help to better manage key challenges to governance.

In promoting decentralised governance models (see thesis 1), mechanisms for central coordination need to be established to ensure that the decentralised approach does not add to regional heterogeneity. Besides purely government authorities, intermediary associations such as the ICT chamber in Rwanda or the SSCs in India are central actors capable of organising and guaranteeing such coordination. Compared with a government-centric approach, coordination through association structures (in particular employer and industry associations) has the advantage of private sector knowledge being readily fed into the governance process. In addition, it can make employers more willing to offer in-company training if governance responsibility in this sector is in the hands of their 'own' interest groups.

THESE 3:
A governance strategy geared to associations should be accompanied by financing models aimed at strengthening the administrative, financial and human resources of intermediary associations and project partnerships.

Development cooperation can make a targeted contribution to strengthening association structures if the development cooperation financing models are oriented towards building intermediary associations' capacities and resources. This principle has largely been implemented in the country examples discussed above. For example, the corresponding programmes promote national or sectoral institutions and actors (such as the SSCs in India or the ICT chamber in Rwanda) or regional and local innovation hubs (Iraq), TVET centres (Mozambique) and individual schools (India, Rwanda). These approaches all have in common that efforts are made to set positive incentives for establishing cooperation arrangements and partnerships, primarily between the public and the private sector, instead of pursuing individual incentive programmes for certain training participants or companies.

THESE 4:
In the era of 'new work', social inclusion in TVET will succeed only if no new digital divides are created. Targeted strategies aimed at improving access to education for disadvantaged groups can even make a substantial contribution to a country's economic development.

This thesis is based on the consideration that social inclusion and economic development are not necessarily in conflict with each other, but that, on the contrary, instruments and projects seeking to improve the inclusion of disadvantaged groups also generate positive economic effects. The example of WeCode in Rwanda shows that the targeted promotion of digital skills for women not only reduces the digital gender gap but can also help to open up new employment potential. The project example from Iraq reveals similar dynamics. In relation to other education sectors, including above all universities, TVET shows that it is particularly successful in combining the objective of social inclusion with economic development.

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ENDNOTES

[1] A study by the International Labour Organization (ILO) estimates that 85.8 per cent of all employment in Africa is informal (for comparison: 25.1 per cent in Europe and Central Asia) https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_627189/lang--en/index.htm (retrieved on 21 April 2021).

[2] Besides the market model and the collective training model mentioned below, research on TVET governance models refers to further models, such as the state-centred or what is called the 'segmentalistic' model (Busemeyer/Trampusch 2012). In the following analysis, I will focus on the market model and the collective/corporatistic model.

[3] The country examples are based on an evaluation of internal GIZ documents, public sources and a range of background interviews with experts for the respective countries, conducted in March/April 2020.

[4] https://www.msde.gov.in/nationalskilldevelopmentfund.html (retrieved on 21 April 2021)

[5] Looking ahead, three further clusters will be added in the next project phase: Hyderabad (medicines), Mumbai (retail) and Pune (green energy).

[6] For instance, only 127 young people took part in the cooperatively organised training programmes in the pilot regions (GIZ (India) 2019: 6) although more than 1,000 TVET students benefited indirectly from the wider counselling services and curricular improvement.

[7] https://www.minict.gov.rw/news-detail/ict-sector-has-continued-to-fuel-the-rwandan-gdp-growth (retrieved on 21 April 2021)

[8] https://www.giz.de/en/worldwide/20792.html (retrieved on 21 April 2021)

[9] https://rdb.rw/departments/information-communication-technology/ (retrieved on 21 April 2021)

[10] https://wecode.moringaschool.com/ (retrieved on 21 April 2021)

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