



Federal Ministry  
for Economic Cooperation  
and Development



# Conference Proceedings

International Symposium 25 - 26 November 2015 in Magdeburg, Germany

implemented by:

**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

**RECOTVET**



International Symposium

# Professionalisation of TVET-Personnel in International Cooperation





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# Preface



**By Harry Stolte**

**Head Competence Development in TVET / UNEVOC Centre Magdeburg,  
Academy for International Cooperation of GIZ, Magdeburg**

As a key success factor, qualified TVET personnel plays a central role for the creation and the future-oriented development of efficient and effective vocational education systems. The qualification of TVET personnel needs to apply at all levels as well as functional groups, ranging from decision-makers of ministries or subordinated institutions through the management staff of TVET institutions and experts who are developing occupational standards, curricula and training programmes, right to the teaching personnel of company- and school-based vocational education.

Focusing this worldwide acknowledged reality, the International Symposium on “Developments, Experiences, Potentials and Requirements in the Professionalisation of TVET-Personnel” took place from 25.-26. November 2015 in Magdeburg.

In the framework of the regional GIZ project „RECOTVET“, the Academy for International Cooperation (AIZ) of GIZ organised an international exchange of experiences between TVET scientists and practitioners with the support of its partners, the Otto-von-Guericke-University and the Fraunhofer Institute. Together, those three TVET stakeholders form the Magdeburg UNEVOC Centre “TVET for Sustainable Development”. At its core was the identification of current problems and challenges regarding the qualification of TVET personnel by classifying national and international development priorities. In addition to that, the symposium aimed to bring out solution approaches, experiences and potentials for the various endeavours of countries in course of the professionalisation of TVET personnel and to make them available for a further exchange of experiences. International perspectives had been introduced by Prof. Shyamal Majumdar, Head of UNESCO-UNEVOC International Centre Bonn and Alice Voza,

Green Jobs Specialist of the International Training Centre of ILO in Turin.

Representatives of seven GIZ partner countries, especially from Southeast Asia, explained in their presentations the qualitative and quantitative needs for measures regarding competence development of TVET personnel. At the same time it was pointed out that all partner countries give high priority to the aspect of professionalisation of TVET personnel and anchor it in their development agendas to improve the performance, demand orientation and quality of TVET. With reference to these development requirements of TVET systems, the contributions, discussions and workshops of the symposium highlighted the following topics, provided space for exchange and tried to find adequate solution approaches:

- TVET personnel at all levels of TVET systems needs to become the focus of attention regarding processes and measures of competence development. The training of professionals, the qualification of TVET managers and the leadership dialogue require specific approaches and concepts.
- Teaching personnel is to be considered as the backbone or catalyst of TVET systems. The quantitative and qualitative performance of vocational education is significantly determined by this group of people. The symposium underlined the fact that it is essential for the efforts of teacher qualification to establish sustainable development strategies for teaching personnel. Among these count the anchorage of adequate systems for the education and further training of school and in-company teachers, combined with demand-oriented programmes of competence development.

- For the education and training of vocational teaching personnel, the “UNESCO Standard Framework Curriculum”, which had been adopted in the “UNESCO/UNEVOC International Meeting on Innovation and Excellence in TVET Teacher/Trainer Education” in 2004, is still providing a sound basis for the tailor-made qualification of vocational teaching personnel.
- At the threshold of the 4th industrial revolution, working and learning are increasingly merging into each other. Corresponding effects on work and production processes as well as job requirements for employees, e.g. growing digitalisation, should be considered for the modernisation of vocational qualifications of skilled personnel. Moreover, the necessary and adequate competence development of teaching staff needs to be taken into account.
- All countries confirm that the development and improvement of occupational standards – often in connection with both national and regional qualification frameworks – rank high on their agendas. Who can be appointed for the development of occupational standards? Which methods and processes fit the demand-oriented development of occupational standards? These and other questions occupy especially decision-makers of many countries. The symposium emphasised that it is vital to link economic requirements to teamwork and the interface of TVET theory and practice. Accordingly, teachers find themselves confronted with new processes and new challenges: methodological competences - with regard to the development and implementation of standard-based curricula, that are aligned to learning outcomes as well as to their examination and certification - are often completely new areas of requirement so that the acquisition of appropriate competences remains necessary.
- The integration of environment protection into TVET requires the qualification of TVET personnel in specific teaching domains as well as in other sectors of TVET systems. In this context it is pivotal both to raise the awareness for responsibility and to be oriented towards vocational competence within TVET in specific vocational contexts and work processes.

The representatives of all participating countries agreed that TVET institutions are facing continuous changing processes due to globalisation and increasing competition. Increasing requirements concerning vocational education and training result from changes in economic sectors and work processes, from new technologies and from the impacts of climate change as well as from growing social disparities. It is expected that TVET graduates are able to use advanced technologies, to handle production systems in a competent and environmentally conscious way as well as to act innovatively. Consequently, all of these factors require appropriate competences on the part of TVET personnel for the development and imparting of appropriate qualifications. The empowerment to actively join in solution processes, contributing to the goal attainment of reform processes, appears as a further necessity.

To be equal to future requirements, the integration of technological, economic, social and ecologically relevant innovations is of particular need. A persistent further development of competence development processes is inevitable for the implementation of such approaches in the respective field of work of TVET personnel in scholastic and operational education processes.



# Conference Agenda

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# Words of Welcome

**Marco Tullner**

**State Secretary, Ministry of Science and Economy Saxony-Anhalt**



Mr. Marco Tullner, State Secretary of the Ministry of Science and Economy Saxony-Anhalt, summarised in his speech that Saxony-Anhalt professes its political responsibility in the field of international development cooperation. The contribution to future topics such as sustainable development is of high interest among many countries. It was enclosed by Mr. Tullner that in this sense, a collaboration between the federal state of Saxony-Anhalt and GIZ is connected with useful synergies for national and international TVET stakeholders.

Furthermore, he pointed out that Saxony-Anhalt considers vocational education and training as catalyst for the economic and social development, and thus it opens up extended cooperation contexts for the promotion of foreign trade. The GIZ regional and sectoral portfolio supports the efforts to establish international economic relations. In this way Saxony-Anhalt, and especially its capital Magdeburg, has evolved as a trademark in international TVET cooperation. As a result, Mr. Tullner acknowledged the constructive cooperation between the ministry and Academy of International Cooperation-GIZ in Magdeburg and gears for its successful continuation.

**Hans-Joachim Preuß**

**Managing Director, Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH**



Dr. Hans-Joachim Preuß, Managing Director of GIZ, emphasised the relevance of technical vocational education and training (TVET) in development cooperation and international cooperation as he stressed that vocational education is a cornerstone for a viable economic development, and an important driver for the development of human capacities. He added that however, it can only develop its positive effects if it matches the demands of the society and of local labor market.

The variety of GIZ's concepts in about 90 TVET projects is based on successful features of Germany's dual vocational training. Dr. Preuß mentioned that the GIZ Academy of International Cooperation in Magdeburg has operated for 25 years in the vocational training

sector. During these times the demand of partner countries have changed significantly and the requirements have become more differentiated and complex with influence to the performance of GIZ-Academy in international cooperation.

At present, the demand for tailor-made solutions to support reform processes of TVET systems determines the activities of GIZ-AIZ Magdeburg. Until now, a continuous enhancement of performances and modes of delivery have been achieved as well as networks of qualified TVET experts have been established in Germany and abroad – a fact that Dr. Hans-Joachim Preuß associated with the diversity of partners from 11 countries attending the symposium.



**Prof. Dong Qi**  
**Counsellor, Embassy of the P.R. China, Head of Education Department**



In his speech, Prof. Dong Qi, head of the Education Department of the Chinese Embassy in Germany, described current developments at all levels of the Chinese TVET sector. He highlighted the excellent performance in the collaboration with Germany, and especially in TVET cooperation with GIZ. The Chinese Central Committee recently adopted the 13th five-year plan for economic and social development aiming for an intermediate economic growth and a society with comprehensive but modest prosperity.

Prof. Dong Qi pointed out that education, and particularly vocational education, plays a fundamental role for the modernisation process in China. Furthermore, he refers to the fact that, because of the globally proceeding urbanisation, industrialisation and computerisation, new requirements are put forward to a future-compliant TVET system. China addresses this trend by creating profound change processes in TVET, shifting from pure knowledge transfer towards action-orientation, and by establishing a sustainable transfer of knowledge. At the bilateral level China aims to make a special effort for the direct cooperation between Chinese and German TVET institutions as well as the business sector and companies.



# Key Note

**Shyamal Majumdar**

**Head of Office, UNESCO-UNEVOC International Centre, Bonn, Germany**



## Challenges for International TVET Cooperation

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  - 2 Skills Challenges and UNESCO TVET Strategy
  - 3 UNESCO-UNEVOC Medium Term Strategies
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### 1 The Global Goals and TVET Agenda

Our time is an era of transitions. This is also a time of turbulence as well as time of challenges. The challenges which threaten the economy, society and the environment are numerous, complex and interconnected. In spite of significant economic and social progress till date, high youth unemployment, social disparities and environmental degradations create challenges for all countries. These challenges threaten human security, dignity and social cohesion. Peace is fragile. Large number of people in this world still suffers from poverty, hunger and inequalities. Many targets of MDG remain big unfulfilled promises and need to be redefined in new and challenging environment of economic, social and environmental perspectives. Therefore, a new vision for people, the planet, prosperity, peace and partnership is holistic, universal, rights-based and humanistic.

Global goals require global solidarity, international dialogue and an inter-sectoral, interdisciplinary approach as expressed in the commitment made at the United Nations Sustainable Development Summit

2015, 'Transforming our World: The 2030 Agenda for Sustainable Development'. The 2030 Agenda has 17 Sustainable Development Goals (SDGs), including SDG 4 which reads, 'To ensure inclusive and equitable quality education and promote lifelong learning opportunities for all'. Three targets are of special significance for TVET:

- By 2030, ensure equal access for all women and men to affordable and quality technical vocational education and training and tertiary education, including university;
- By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship;
- By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.

<sup>1</sup> Technical and vocational education and training (TVET) is understood as comprising education, training and skills development relating to a wide range of occupational fields, production, services and livelihoods. TVET, as part of lifelong learning, can take place at secondary, post-secondary and tertiary levels and includes work-based learning and continuing training and professional development which may lead to qualifications. TVET also includes a wide range of skills development opportunities attuned to national and local contexts. Learning to learn, the development of literacy and numeracy skills, transversal skills and citizenship skills are integral components of TVET (UNESCO-UNEVOC, 2015).

Meeting these targets requires the transformation and expansion of TVET through articulations within education and between education and the world of work. TVET has a central role in helping youth and adults to develop the skills they need for employment, decent work and entrepreneurship, to support the effectiveness of their organisations and the development of their communities. TVET also contributes to promoting inclusive and sustainable economic growth, social equity and environmental sustainability. TVET contributes to gender equality, global citizenship education (GCE) and education for sustainable development (ESD). It is of high relevance to transform the

TVET in a way to maximise its potential to contribute to the achievement of global goals. Accordingly, it is a global task to follow each one of the 17 sustainable development goals (SDGs) including e.g. poverty alleviation and hunger, gender equality, good health, quality education, good decent jobs, renewable energy, fostering innovation and building infrastructure or actions towards the protection of the environment and social security and peace.

Figure 1: Focus Areas of the SDGs



These 17 SDGs are broken down into 169 targets which aim to realize inclusive and equitable economic, social and environmental sustainable development.

Such holistic visions challenge TVET strategies to expand the delivery of competences and ensure skills relevance not only for the world of work, but also to ensure life-long learning, inclusion and low-carbon transitions. In this connection it is of high relevance to transform the TVET sector in a way to maximise its

potential to contribute to the achievement of SDG 4 and SDG 8 in particular and all other SDGs in general.



## 2 Skills Challenges and UNESCO TVET Strategy

Youth unemployment is a major source of concern all over the world. For instance, according to ILO (2015) 73.3 million youth (i.e. one in eight young people in-between 15-24 year old) were unemployed in 2014. As per recent estimates, at least 475 million new jobs need to be created over the next decade to absorb the 73 million currently unemployed youth, and the 40 million new entrants in the labour market annually (ibid.).

One can argue that high youth unemployment is resulted from our economic, social and related Technical and Vocational Education and Training (TVET) policies. Such policies have led to the aggravation of skills shortages, skills mismatches, unsatisfactory qualifications and inadequate skills. Skills shortages and mismatches in some countries are sometimes the result of economic restructuring when those countries shift into advanced skills and TVET systems lack the agility to depart from traditional methods to adapt training into modern technologically relevant contents including greening. A high percentage of youth unemployment results in the inability of education and training systems to adopt their provision of skills according to anticipated changes in the labour market simply because labour intelligence is weak, or does not exist. The inadequate skills which are below industry standards are a result of supply driven mentality and lack of synergies with the industries, and vice versa.

Therefore, skills development and Technical Vocational Education and Training (TVET) being high on member states' policy agenda and so central to international debates, has never been as important and timely as now. It is at the Centre stage in the current policy discourse and debate. We need to view this debate from a holistic, integrated and balanced way. Skills policy has not merely economic dimension; it has also a social, technological and environmental dimension contributing towards sustainability and lifelong learning. That is why UNESCO-UNEVOC not only advocates for skills accessibility but also highlight its transformation through sustainable and lifelong perspectives.

The educational, social, technological and economical imperatives progressively raised TVET as a priority in all the regions of the globe. In 2012, The Association for the Development of Education in Africa (ADEA) called for investment in TVET as a solution to unemployment. So did the European commission with

its communication on "Rethinking Education: Investing in skills for better socio-economic outcomes". The OECD describes skills as the new currency of the twenty-first century. Regional strategies and qualification frameworks are being built, like in the Caribbean (Carricom, 2013), Asia (ASEAN, 2009), or Southern Africa (SADC, 2011).

Recognising the importance of TVET, UNESCO has developed a TVET strategy (2010-15) to strengthen TVET in member states by focusing its actions on the Strategy's three core areas:

- i) provision of upstream policy advice and related capacity development;
- ii) conceptual clarification of skills development and improvement of monitoring; and
- iii) acting as a clearinghouse and informing the global TVET debate. The promotion of skills development is at the core of the TVET strategy.

Based on the progress and remaining challenges of ongoing TVET Strategy, UNESCO will further develop TVET strategies that will foster youth employment and entrepreneurship, promote equity and address gender equality, support sustainable development and low carbon economy and finally improve the relevance of TVET and lifelong learning. It will place a high priority on ensuring that its initiatives, in this regard, reflect an integrated focus on social equity and economic and environmental sustainability. In particular, in developing policies and programmes that are more responsive to learners' diverse needs – particularly those of the unemployed youth, excluded, and vulnerable segments. It will support the development of innovative solutions to address youth unemployment and promote cross-sectoral approaches that transverse important policy areas including education, employment, industrial and economic development, agriculture, health, and social policy amongst others.

UNESCO will continue to support policy development and capacity building, mobilising knowledge that can be applied for the benefit of the greater good, and by improving partnership and networking – one of the most essential catalysts for change.

### 3 UNESCO-UNEVOC Medium Term Strategies

Since its inception, UNESCO-UNEVOC has upheld its mandate to assist UNESCO's Member States to develop their TVET systems. It focuses particularly on contributing to the overarching UNESCO goals for TVET, namely the development of TVET worldwide, by assisting member states to develop policies and practices concerning education for the world of work and skills development for employability and citizenship, and achieve access for all to high quality and relevant learning programmes throughout life.

The UNESCO Strategy for TVET guides UNESCO's – and UNESCO-UNEVOC's – actions for the period of 2010 to 2015 in the promotion of TVET and skills development within a broader framework of lifelong learning. The goal of UNESCO's TVET programme, as laid out in the UNESCO TVET Strategy, is to promote and support initiatives that equip young people and adults with the knowledge, skills and attitudes needed for work and life, and thereby to contribute to their own as well as to their communities' well-being and development. To reinforce this, the Third International UNESCO TVET Congress (Shanghai, 2012) called upon UNESCO to collect and disseminate evidence demonstrating policy approaches for transforming and expanding TVET using the global UNEVOC network and UNESCO chairs active in the field, and expand and enhance the capacities of the UNEVOC network to play a key role in developing the capacities of decision-makers as well as practitioners and facilitate the involvement of all stakeholders in TVET. UNESCO-UNEVOC's role in realizing these calls for action is thus vital.

UNESCO-UNEVOC's work during the medium term strategies focuses on four thematic priorities, namely:

- i) addressing youth unemployment through TVET and skills development,
- ii) reinforcing sustainable development through the systemic applications of Greening TVET approaches and the integration of green skills into TVET qualifications,
- iii) gender equality through increased access to TVET of women and girls, with particular attention to those in vulnerable situations and iv) ICT in TVET. This programmatic focus is fully in line with the outcomes of the Shanghai TVET Congress.<sup>2</sup>

Greening TVET is a systematic process for catalysing and mainstreaming both sustainable development (SD) principles and SD-oriented competencies in TVET and skills development process. It is oriented to promoting an integrated, balanced and inclusive approach to address the unsustainable patterns of consumption and production. It pursues the promotion of skills and competencies that meet the requirements of the changing labour market.

On youth unemployment, UNESCO-UNEVOC has been engaged in promoting young people employability. Increased attention to this policy area will include capacity building and policy dialogue in the areas of entrepreneurship education and school to work transition, apprenticeship schemes, including a particular focus on girls and women.

Advancing green skills as part of TVET qualifications and programmes and advocating for Greening TVET<sup>3</sup> to support a systemic and whole-institution approach will constitute important dimension to support UNESCO Member States to implement the Global Action Program (GAP) on ESD through the implementation of the Greening TVET guide for TVET institutional transformation.

In coherence with UNESCO global priority on gender equality, UNEVOC will increasingly be engaged in issues relating to women's access to and participation in TVET. In addition to building a strong knowledge base on good practices and success stories to guide targeted policies and programmes, gender perspectives, with a focus on women and girls, will be further integrated transversally in other UNEVOC activities and thematic priorities.

Finally, building upon its rich experience in the field of ICT, which dates back to 1996 when UNESCO-UNEVOC first went online, UNESCO-UNEVOC will

<sup>2</sup> Resolution 31 adopted by the General Conference at its 30th session (2000, p.26) held in Shanghai, China on 16 May 2012, attended by 107 countries. This resulted in the adoption of a Shanghai Consensus available at <http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ED/pdf/consensus-en.pdf>

<sup>3</sup> Greening TVET is a systematic process for catalyzing and mainstreaming sustainable development (SD) principles and SD-oriented competencies in TVET and skills development process. It is oriented to promoting an integrated, balanced and inclusive approach to address the unsustainable patterns of consumption and production. It pursues the promotion of skills and competencies that meet the requirements of the changing labour market.

further explore the potential of technology, including mobile technology, to enhance learning, enlarge access throughout life, train and support TVET teaching staff, reduce cost of provision and empower learners.

UNESCO-UNEVOC programme and activities will be undertaken through the three areas of support contained in the Medium-Term Strategy (MTS-2015-2017), namely:

- i) Institutional and professional capacity building for policy development
- ii) Knowledge mobilisation and production
- iii) Knowledge management and sharing

Key targets and deliverables have been formulated by identifying the different set of activities to be pursued by UNEVOC in the framework of the MTS 2015-2017.

#### 4 Partnership as Key Strategic Resource

Sustainable development and the driving of economies for more jobs and inclusive growth underpin the key transformative shifts needed in education and training systems. TVET as fertile ground for deepening inter-governmental and inter-sectoral (public and private) collaboration must reinforce global partnerships by setting up cooperation frameworks that can mobilize expertise, resources and tie up common vision to create a transformative future.

The post-2015 goals must allow nations to fulfill national plans. The MDGs have taught that global targets are effectively implemented through clear ownership and once they are embedded in the national plans and targets (UN, 2013). The network as a strategy for cooperation builds on local relevance and global impact. It performs clearinghouse of new ideas, testing of innovations and a platform for benchmarking in TVET. It captures issues to inform global debate, and derives back consolidated ideas to enrich country and institutional reform initiatives. Network members ideally need to be linked to a local/national TVET agenda and reforms to be full-fledged players in a global network.

In this dynamic and challenging context, peer-to-peer experience sharing and networking between and among TVET stakeholders enhance opportunities, co-development of solutions and pooling of technical and financial resources. Peer networking and policy

learning complement efforts to perform necessary benchmarking and monitoring at the global level. Knowledge sharing and exchange between and among systems from across a broad spectrum of economic, social and technical capacities and resources (e.g. high income, middle income, low income) bear the same importance as forging donor-recipient relations.

Self-help and mutual cooperation can be staples of creating new ways of working together. In this context the UNESCO-UNEVOC Network being the largest network of TVET institutions holds high promise and huge expectations. It can play a very important role in extending partnership and networking among TVET institutions.



Apart from all the opportunities and promising practices, there will be some challenges to face, to begin with scaling up the North-South, North-South-South collaboration in TVET and the capacity development activities as well as multi-stakeholder partnerships and involving the private sector. Transformative future calls upon transformative cooperation that supports capacity building, policy learning, knowledge sharing and optimising meaningfully to reposition TVET in the Global Goals for Sustainable Development. Partnership and networking is the key strategic resource in the post 2015 era.



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# Panel

**Harry Stolte**  
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**Academy for International Cooperation of GIZ, Magdeburg**



## Steps, Cornerstones and Trends in International TVET Cooperation in Magdeburg on Track to the UNEVOC Centre Magdeburg

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### 1 General Background and Trends in International TVET Cooperation

From the start of development cooperation in the 1950s the promotion of TVET was one of the most important elements over decades in orientation of economic development. Modernisation and industrialisation were believed to require the development of a cadre of technically capable workers. It was expected, that part of the shortfall of required skills could be made good in the short term through technical cooperation staff from the global North, but this had to take alongside the development of national capacity. In-

dustrialisation was considered as unproblematic and solutions were technical.

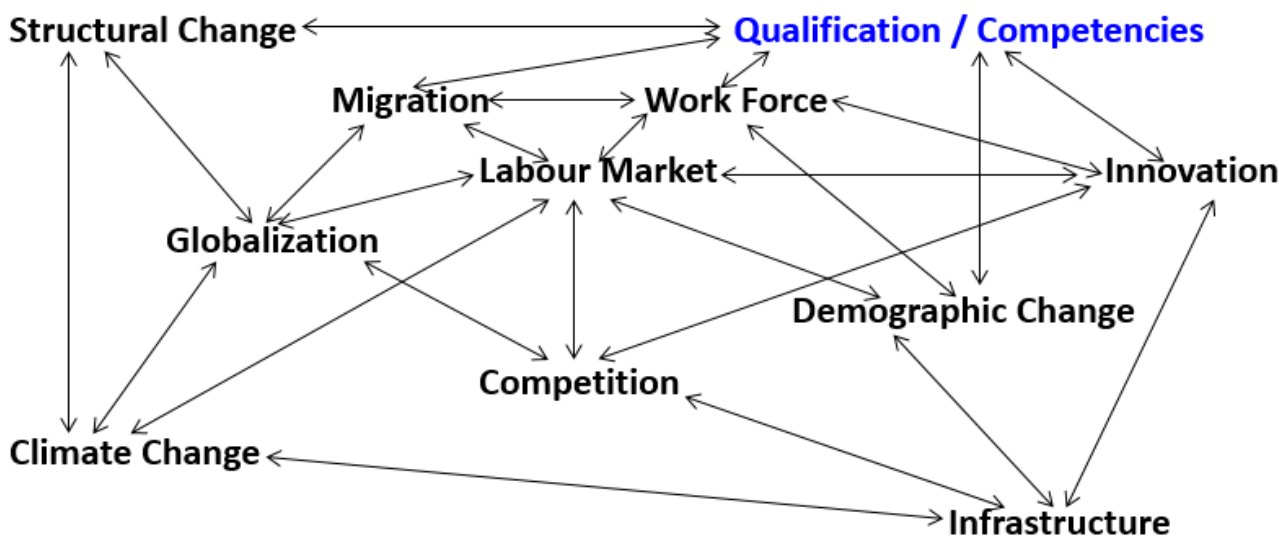
The period since 1990 has been characterised by major shifts in understandings, contexts and practices in both TVET development and the world of work. At the same time, ideas about priorities and methods of development cooperation have also changed significantly. Globalisation and associated changes exposed the need to rethinking conventional models of TVET in development cooperation. Both TVET and development cooperation have become more complex, or less simplistic. New skills, new modalities in TVET and

new partnerships are actually crucial to a new way of working. Capacity Development – where human capacity development is an integral part of – is a priority for both development agencies and their partners (Miller Idriss, 2010).

TVET is steadily emerging as a top priority in global debates and government policies for development agendas as a relevant element in addressing a range of economic, social, geopolitical, environmental, humanistic, legal and other rationales. The former dominating North-South cooperation is more and more added to or respectively combined with a North-South-South co-operation within complex network architectures. With that background this article intends to give an overview on respective developments as well as on actual trends in international TVET cooperation of GIZ's Academy for International Cooperation and the UNEVOC Centre Magdeburg.

In our world nowadays we are facing immense challenges to achieve sustainable development. The drivers of change include technological transformation, intensified global competition, trade liberalisation and new international division of labour as well as increased investment by multinational companies on jobs, financial openness, employment, politics and policies regarding the state and its markets. These complex sources of influence on qualification requirements and skills development are depicted in the illustration below.

Figure 1: Complexity and interrelationships of global trends



A number of challenges to be addressed in international TVET cooperation were therefore made subject of the international discussion. Besides those challenges, main issues on strengthening the capacities of inter-

national TVET systems will be explored in the following chapter.



## 2 Selected Challenges and Opportunities in International TVET Cooperation

According to UNESCO (2015a) one main challenge to be addressed is to improve TVET's contextual responsiveness in three different areas. Tailor made policies and measures to support economic growth can lead to a better identification and anticipation of labour market skills needs and hence to closing pertinent skills gaps.

At the same time, those measures can improve youth employability and reduce youth unemployment.

Another envisaged achievement is the provision of an appropriate mix of broader competencies alongside specialist skills. New policies and measures to promote social equity will be likewise important in order to promote the inclusiveness of TVET as well as to enable a better targeting of marginalised groups and to create a better transition from school to work. Furthermore, the development of policies and measures to enhance sustainability belongs to the main challenges for the future of international TVET cooperation. Sustainable TVET includes such as the greening of TVET and fostering of global citizenship as well as securing intergenerational rights.

Creating pathways from vocational education to higher education does not only increase the attractiveness of TVET, it also helps to expand and diversify the access to it. With it, private businesses become important TVET stakeholders because simplifying the access to TVET also supports the expansion of the private TVET sector. This leads to the need of expanding work-based learning and the cooperation with suitable businesses and therefore, it is crucial to revisit apprenticeships and develop TVET in the workplace.

Moreover, the question of how the quality and relevance of TVET can be enhanced is still in discussion. To commence the fostering of TVET's relevance, reviewing and reforming TVET qualifications as well as curricula are required so that employable graduates with matching skills can be guaranteed. Strengthening quality assurance arrangements such as the training of TVET teaching staff is finally the key to an upgrade of the quality of TVET as a whole. Professionalising TVET teachers and trainers requires the development of competence frameworks for TVET professionals and the upgrade of pre-service TVET teacher education. Likewise, the improvement of continuing professional development (in-service training) is an important matter in this sense. Another issue to be focused is the

strengthening and modernising of the institutional management in TVET.

## 3 International TVET Cooperation in Magdeburg

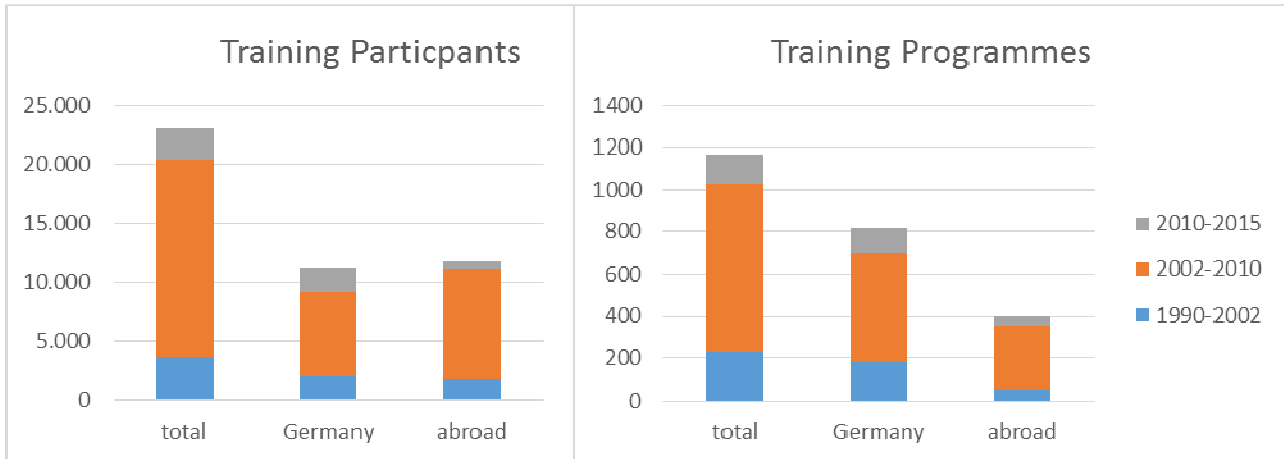
### 3.1 Some Milestones, Facts and Figures

The development of TVET expertise in Magdeburg started in 1980, when the Institute of Vocational Training (IBP) was established. During the first ten years it had been in charge of the theoretical and practical training of teaching personnel for vocational education and training („integrated TVET Teacher“).

From 1990 to 2002 the German Foundation for international Development (DSE) / Industrial Occupations Promotion Centre (ZGB) implemented advanced training to multipliers at functional levels of TVET systems (teaching, management, planning). It mainly addressed executive and managerial personnel and decision-makers from the state and company level. This led to the development of international capacity building measurements, implemented by the InWent, DED and GTZ which merged to GIZ.

In 2010 GIZ incorporated InWent and until today it lies its focus on Human Capacity Development (HCD) in terms of competence development for TVET personnel on different levels. In the sense of North-South-South cooperation the organisation also fosters the dialogue and networking with public and private stakeholders in specific fields of TVET as well as for TVET policy development. Over the past few years, DSE, InWent and GIZ/AIZ have implemented HCD measures for 23.021 training participants and has run 1.170 training programmes in Germany and abroad. The detailed training numbers can be seen in the following chart.

Figure 2: Training volume delivered within 25 years



### 3.2 Focus on Professionalisation of TVET Personnel

The rationale behind promoting professionalisation of TVET teaching staff was the assumption that improving TVET instruction contributes to the enhancement of the quality and relevance of TVET. Meanwhile it is approved that “qualified and motivated teachers and instructors are key for effective learning and are at the heart of TVET quality” (UNESCO, 2015b), which means that the quality of TVET lies in the effectiveness of its teachers. In this way TVET teacher training is a catalyst for the overall success of vocational education and training systems (ILO, 2014, p.42; UNESCO, 2014).

It is a fact that there is a need to reform the institutional structure of TVET so that it becomes possible to realise a shift from a supply-driven model to one driven by market demand. Speaking of changes, in many countries the appreciation towards TVET teachers and instructors is far too low. Hence, the solution cannot only be a raise of salaries and their esteem in the society but also to launch the attitude to involve them into the successful development of reforms and innovation. Pedagogical reforms could for example permanently change teaching styles from a teacher-centred model to one that is learner-centred. Evidence shows that this new role of teachers and learners is facilitating effective learning (Majumdar, 2011).

Exact competence profiles and frameworks, appropriate for TVET professionals, need to be defined, and in line with it, pre-service education and training must

be standardised and of high quality. As an example, UNESCO (2004) proposed in its Hangzhou declaration an “international framework curriculum for a master degree for TVET teachers and lecturers”, which serves as solid base for the TVET teacher education and training system of every member state.

With regard to the following aspects, the continuing professional development of vocational teaching staff must be ensured. TVET personnel has to obtain professional skills and competences in a vocational discipline as well as related pedagogical and didactical competences. Furthermore, competency orientation should be facilitated through the integration of training contents in production and work processes.



TVET teacher education and training has to provide teachers with the capacity to collaborate within and among TVET institutions and the world of work and with the ability to network institutions with local and regional stakeholders. Because it will be increasingly requested in the future, TVET teachers and instructors need to be aware of international perspectives on vocational training and they need to be capable of working with information and communication technology (ICT) as well as digital networks.

Since 25 years GIZ/AIZ Magdeburg intends to align the developed training components for TVET professionals according to the listed requirements, although

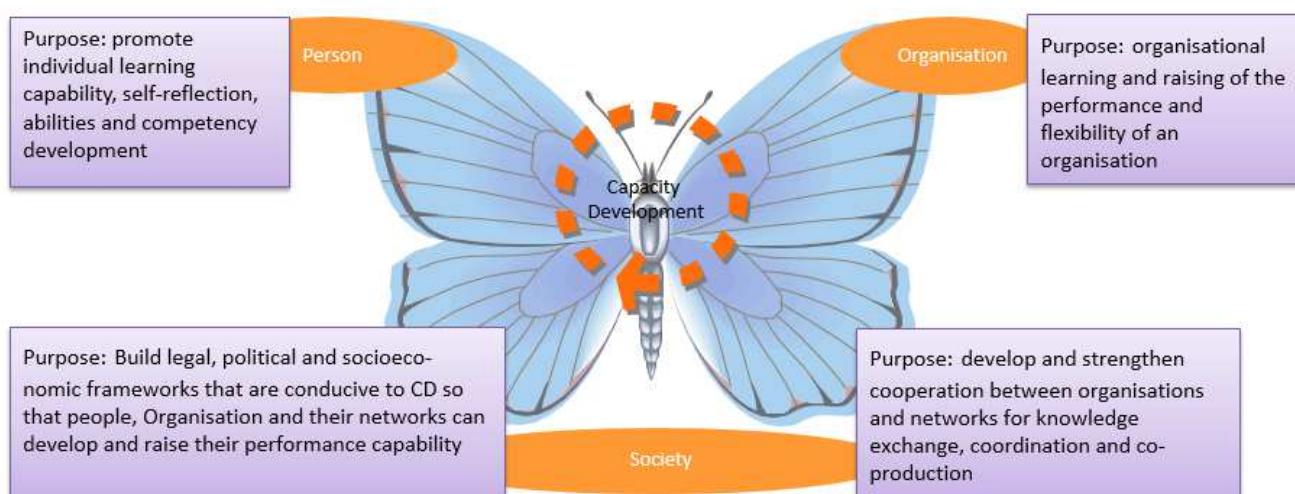
it is to mention that at the beginning, globalisation and technologisation have certainly not been such a great matter as nowadays.

## 4 Capacity Development as GIZ's Core Competence

### 4.1 The Purpose and Interventions of Capacity Development

Capacity development describes the process through which people, organisations and society as a whole

Figure 4: Encompassing capacity development on three levels



shape their own development and adapt it to changing conditions and frameworks. When supporting capacity development, the German development cooperation bases its conceptual approach on these three levels (i.e. people, organisations and society).

GIZ has created targeted interventions to support capacity development. On the level of individuals it shapes the development of personal competencies and skills through training, learning networks, study tours, etc., which is why we call it human capacity development. The organisational level comprises interventions such as the consulting of organisations,

the equipment of TVET institutions and grants for publishing new school books. For the society as a whole interventions start from the macro level and involve for example the consultation of experts, who give advice to legal reforms.



## 4.2 GIZ Capacity Development in International TVET Cooperation

Building on this, the classification of capacity development in international TVET cooperation utilises a 3-level-approach (implementation - management and planning - decision-making). On the implementation level, the focus is on providing advanced training to technical teachers, instructors and training experts to upskill them in technical fields, vocational education and towards train the trainer measurements.

Advanced training is also handled on the management and planning level, but involves directors, planning experts, HRD responsables, TVET consultants as well as standard or curricula developers. This target group shall develop capacities in planning of TVET, upgrading of staff, occupational promotion, management of TVET institutions and curriculum development.

On the decision-making level, ministries, vocational training institutions, chambers, associations and companies altogether are to foster the dialogue on systems of TVET and labour market oriented TVET.

This approach does not reflect the entirety of capacity development instruments, but gives an overview of the diverse target groups and provides information regarding a starting point for (human) capacity development measurements.

## 4.3 Competence Development in Technical Vocational Education Training (TVET)

Competence development in TVET is one part of GIZ's capacity development approach. Only to name some thematic areas, competence development approaches in TVET teacher training, professional skills and competences in vocational disciplines, skills for green jobs and the human capacity to deliver work-based and work-oriented vocational education and training courses.

## 4.4 UNEVOC Centre "TVET for Sustainable Development" - a Cooperative Approach

Not only dynamic changes in the society and economy need to be shaped sustainably. Since the key challenge lies in education and training, the sustainable competence development in international TVET cooperation is the overall aim and requires a combination of different competencies.

The UNEVOC Centre "Technical and Vocational Education and Training for Sustainable Development" represents a consortium of partners in the region of Magdeburg:

- GIZ GmbH/ Academy for International Cooperation;
- Otto-von-Guericke-University Magdeburg, Institute for Vocational Education and Training;
- Fraunhofer Institute for Factory Operation and Automatisation (IFF)

Figure 5: Combined instruments of UNEVOC Centre Magdeburg



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# Strengthen TVET Personnel in Developing Countries – Insights from Germany

*“By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states.”*

*(Sustainable Development Goals. Goal 4: Quality Education. United Nations Development Programme, 2015. )*

## Content

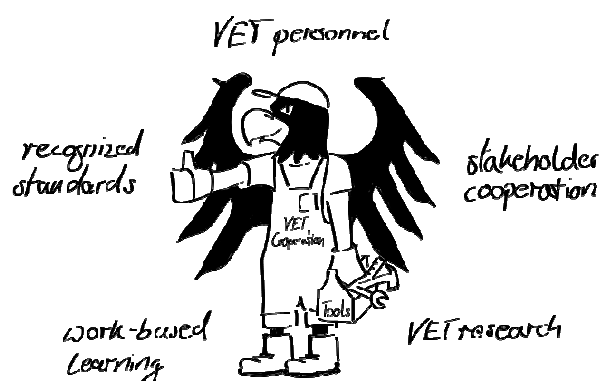
- 1 Introduction – Success Factor TVET Personnel
  - 2 Qualifying TVET Personnel in Germany
  - 3 Professionalisation of TVET Personnel – Principles for Transfer
  - 4 Practices of Development Cooperation
  - 5 Conclusion
- References

## 1 Introduction – Success Factor TVET Personnel

German vocational education and training experiences are in great demand. Delegations and requests arrive at GOVET in large numbers - many from developing countries. Most countries are interested in the German system. At home, they face staggering economic growth. In some, the middle income trap looms. A majority of countries have a young population finding it hard to enter the labour market. To address these challenges, a well-functioning Technical and Vocational Education and Training (TVET) system sets a cornerstone.

TVET systems function well only with competent and committed TVET personnel. TVET personnel means teachers, instructors, trainers, managers, directors - the people who work in and for the delivery of TVET. If they are excellent, then TVET will be excellent.

Modern equipment and teaching materials are worth nothing without TVET personnel capable of putting them to proper use. Developing countries are aware of this fact. They ask: what can we learn from Germany for developing our TVET personnel?





The German government, in turn, identifies “TVET personnel” as one of the five success factors of German vocational training (see image). The success factors are a key element of the *German Federal Government Strategy for International Vocational Education and Training cooperation* (BMBF, 2013). This strategy provides the groundwork for better coordinated international cooperation activities among German stakeholders. The success factors function as a “compass” for all those engaged in the international transfer of German experiences. Accordingly, TVET personnel is one element of German vocational training, which may be transferred in international cooperation.

But what exactly can other countries learn from Germany, and in particular its dual vocational training system, regarding their TVET personnel?<sup>1</sup> What, in particular, can they learn for the development of teaching personnel – one of the most pressing concerns? The answer does not come easy. The German models for qualifying teachers and trainers work in

Germany, but rarely fit abroad. This article will show why. And, it will suggest which approach may work instead.

## 2 Qualifying TVET Personnel in Germany

When considering German TVET personnel, qualifications immediately come to mind. In Germany’s Dual VET-System, there are two learning venues: company and vocational school. Accordingly, there are two distinct types of teaching personnel: workplace trainers and vocational school teachers. In other words: “dual” teaching personnel. Consequently, there are also two distinct qualification paths for either one (see figure 1).

Figure 1: Dual TVET personnel in Germany

### Trainers and Teachers

#### In-company trainer

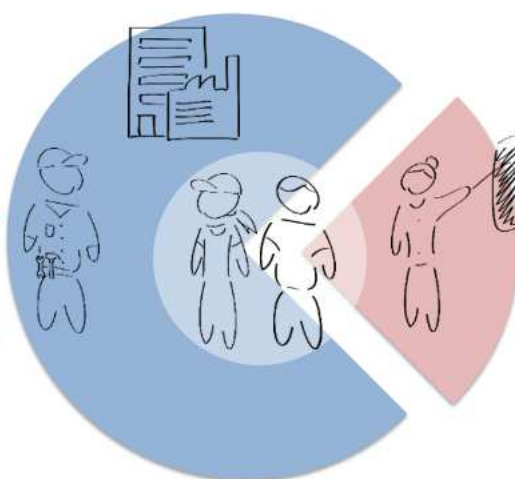
- Workplace

#### Duties and tasks

- Vocational practise

#### Qualification:

- Vocational degree
- AEVO
- Meister



#### Vocational school teacher

- Classroom

#### Duties and tasks

- Vocational theory
- General education

#### Qualification:

- University degree
- Referendariat  
(practical training in school)

<sup>1</sup> To be sure, there are other forms of vocational education in training in Germany, which also hold important lessons for international cooperation. One example are inter-company training centres, the so called “third learning venue”, which specialize in providing basic vocational practice for companies not able to provide this training themselves.

On the one hand, there is the path of the workplace trainer. Experienced workers become certified workplace trainers by passing an examination, organised by chambers. This certificate is based on a national further training standard – the *Ausbildereignungsverordnung* (AEVO). In order to pass the AEVO examination, competence in basic pedagogics and knowledge of frameworks for training (rules and regulations) need to be demonstrated. There are a number of further training programmes in Germany preparing skilled workers for this examination.

On the other hand, there is the academic path of the vocational school teacher. This initial teacher education path typically includes several years of study at a university, a public service entry examination as well as a period of practicing teaching at a vocational school<sup>2</sup>. In addition to this path, there are some alternative ways for professionals to enter the career track of a vocational school teacher, given certain conditions are met, such as long-term occupational experience and also specific academic further education qualifications. These options have developed as vocational schools find it harder to recruit teachers, especially those with some occupational work experience.

Is it possible to transfer these qualifications to other countries? This depends on what teachers need to train there. In developing countries, learning venues and hence teaching and training tasks are quite different from those in Germany.

Take, for instance, the workplace. Developing countries often feature a large informal business sector where training activity is little transparent and organised. In the formal sector of developing countries, on the other hand, one regularly finds firms which engage in low-cost production based on cheap labour. Those have little need for workers with a broad set of skills, knowledge and attitudes. Hence, they also have little interest in sustained workplace training but rather engage in informal short-term on-the-job training. Overall, in those cases the workplace as learning venue is little developed and neither is the workplace trainer.

But without business committed to training, where could skilled workers be developed instead for the nascent labour markets? Where could, for instance, small and medium enterprises, which do not have the means to train, find well-qualified workers? Where could well-qualified entrepreneurs come from, who will “kick start” a business and, on a larger scale, drive an emerging economy?

Public TVET institutes are one response to those questions. In developing countries, often the state is in charge of organising and providing vocational training in TVET institutes. TVET institutes are learning venues, but unlike the vocational school in Germany. In the absence of workplace training, TVET institutes are tasked to impart not only vocational theory but also a lot of vocational practice. Accordingly, teaching personnel at these TVET institutes need to integrate vocational theory and pedagogics with hands-on occupational work experience<sup>3</sup>. In terms of the German Dual VET-System, they need, to some extent, to fulfill the duties and tasks of both vocational school teacher and workplace trainer.

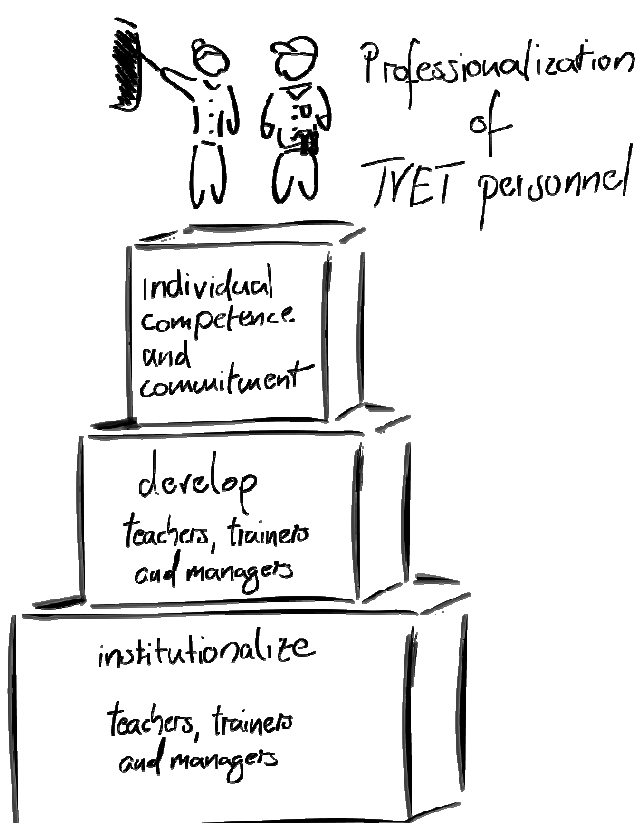
Because learning venues are different, the simple transfer of qualifications does not work. Neither a workplace trainer nor a vocational teacher qualified according to the German model would be equipped to train at a TVET institute. The qualification models for TVET personnel in the Dual system are deeply embedded in specific German conditions. The workplace trainer qualification, for instance, presumes an already existing company-based training structure, culture and commitment. These conditions allow for long-term (up to 3, 5 years) workplace training of young people and its coordination with school-based vocational education. Workplace training as part of the formal education system only works if companies want and can train in the first place. From what we know, these conditions are little existent or formalised on a broad and sustained basis in developing countries.

<sup>2</sup> In Germany, there is an obligation for teachers to be able to teach at least two subjects. Academic teacher education in this case includes typically the respective vocational theory subject (for instance, metal work) and a general education subject (for instance, math).

<sup>3</sup> See also the concept of “integrated teachers” in Lassig, Philipp and Lee, Martin (2015).

### 3 Professionalisation of TVET Personnel – Principles for Transfer

The possibilities for a transfer of German Dual system experiences to developing countries appear quite limited, especially in the case of TVET personnel. Conditions are too different. But if qualification paths cannot be transferred, what else can be? The answer is: principles. From the professionalisation of TVET personnel prevalent in the German Dual System, principles can be derived for international cooperation in TVET.



The first principle is to invest into the professionalisation of TVET personnel. Often enough, more energy and investments flow into qualification frameworks and infrastructure rather than to the very people who “run” TVET. In Germany, professionalisation of TVET personnel is an issue. There is, for instance, debate about whether the qualification for workplace trainers actually provides the competencies needed for training. A similar discussion exists for vocational school

teachers. Also it appears that career development paths provided by employers, such as companies or vocational schools, for their training and teaching personnel leave much room for improvement (Bahl, 2013; Grollmann, 2008). Imperfect as it may be, developing TVET personnel in Germany is a concern of a vast number of stakeholders engaged in the development of TVET personnel – let it be through initial and further education and training, research or policy making – and therefore relatively well-resourced.

Second, TVET personnel needs to be developed based on demand, involving both government and business. In the Dual System workplace trainers in the company or teachers at the vocational school have each their own qualification paths. The lesson: qualifications should always be oriented towards the specific duties and tasks of TVET personnel at the future workplace. Where do they teach or train? Under which conditions? What are their tasks? As a result, developing TVET personnel should always be based on local demand and on local institutional conditions. It follows that each country should develop own qualifications for TVET personnel, not simply import them. Furthermore, qualification of TVET personnel should be practice-oriented. This includes hands-on occupational practice, but also teaching practice – best acquired through working experience gathered in companies and schools. Accordingly, if possible, in-service personnel development by employers – whether as vocational schools and/or companies – should be combined with the awarding of formal qualifications. This interlocking of the education system with the world of work is the key to TVET personnel development and to TVET in general.

However, just qualifications are fine but not enough. Commitment also plays a key role. A TVET teacher may be very well qualified. But he or she will most likely not make full use of his or her competencies, if salaries are too low and training work is not valued by the employer, government and society at large. This is also why the conditions for the commitment of TVET personnel should be examined and improved. In Germany, the AEVO was officially introduced by government in the 1970s. It was and is a means for formalising and standardising workplace training on a national level. But, apart from that, the AEVO also has a symbolic function. It officially recognises the time and effort skilled workers spent in training apprentices in their company. Once introduced, the standard officially conferred value to their hitherto informal work



and strengthened their role in companies. This was further underlined with the legal obligation for companies to have at least one certified workplace-trainer in order to be allowed to train in the dual system. Government signaled: workplace trainers are important – and skilled workers who trained were glad to hear that. Another example for the “valuation” of TVET personnel are salaries of vocational teachers in Germany. They equal those of high-school teachers.

This is also a result of teacher associations’ struggle, underscoring the importance of organised TVET personnel interests. Most of all, the fact that the German government invests that much in vocational teachers is also a recognition of vocational training as important element of the formal education system in Germany. Taken together, commitment of TVET personnel should be supported through its institutionalisation. In other words, TVET personnel should be firmly established within the education and economic system, embedded in a network of checks and balances. Accordingly, TVET personnel should be addressed by national policy, by legal frameworks, by intermediary structures such as chambers and associations, through public funding and tariffs/salary policy. For this, again, both government and business have a crucial role to play, as partners.

#### 4 Practices of Development Cooperation

TVET personnel plays a vital role in the strategy and the portfolio of the German Federal Ministry of Economic Cooperation and Development (BMZ) (BMZ, 2015; 2012). In fact, in all of the TVET projects of German development cooperation with over 50 countries, developing TVET personnel is a key activity. No matter if they teachers, trainers, managers of TVET institutions or TVET policy-makers - without these multipliers TVET projects would have no sustainable impact.<sup>4</sup> The development of TVET personnel is addressed by German development cooperation on several levels, with its unique capacity development approach, and by drawing on German experiences.

One example is the Vietnamese-German Programme Reform of TVET in Viet Nam (Vietnamese-German Programme Reform of TVET in Viet Nam, 2013). The programme is commissioned by BMZ. The Vietnamese partner is the Ministry of Labour, Invalids and Social Affairs. Technical cooperation is implemented by GIZ together with the Vietnamese partners. The objective of the programme is to increase the supply of demand-oriented skilled workers. The programme works on several levels, combining the development of pilot TVET institutes with the development of the national TVET system.



On the level of pilot TVET institutes, TVET institute teachers needed more hands-on occupational experience. This was one of the initial challenges. As a response, the TVET programme strengthened practical competencies of TVET institute teaching personnel, for instance in the field of metal work. Initially, TVET teachers were instructed by trainers from Germany with a lot of hands-on occupational experience (see photo). Following this, Vietnamese TVET teachers entered advanced further training. This included also training phases in Germany, at inter-company training centres. During their training, TVET teachers learned to develop their own teaching and training materials, which they would use later for instruction. Vocational practice and theory were thus combined with pedagogics. This practical further training was

<sup>4</sup> Moreover, there are a number of projects which directly focus on TVET personnel such as the Regional cooperation programme to improve the training of TVET personnel (RECOTVET) in South-East Asia and the TVET teacher education programme in Lao PDR.

accompanied by other capacity building measures. Notably, cooperation and exchange between TVET teachers and companies in the region were strengthened and the management personnel of TVET institutes was further trained. In sum, further training of

TVET teachers was targeted at satisfying the need for more hands-on occupational experience combined with pedagogics and vocational theory. It brought teachers at TVET institutes into a better position to provide practice-oriented training.



This further training of TVET teaching personnel was, however, no isolated activity. First, TVET teachers trained in the programme eventually “multiplied” their competencies through the training of teachers in other TVET institutes. Wider networks among TVET teachers were developed and competencies were spread. Second, Vietnamese-German development cooperation used these further training experiences for TVET system development. Further training of TVET teachers at pilot TVET institutes eventually led to the joint development of a practical further training programme, which was embraced by the Vietnamese government. Finally, TVET system advisory overall contributed to the prioritisation of TVET personnel in strategy, policies and laws on vocational training in Viet Nam. In sum, the programme had and has an overall impact both on the development as well as the institutionalisation of TVET personnel in

Viet Nam. Drawing on German experience, partners developed their own models for TVET teacher training, based on demand, in cooperation with other stakeholders such as the industry and with a strong focus on practice orientation, just as German experience suggests.

## 5 Conclusion

TVET personnel is the success factor for any vocational training system, aspiring to deliver competent graduates ready for labour and life. Without qualified and committed training and management staff, TVET will not meet the demand of today’s economies for people with the right skills, attitudes, knowledge and motivation.

Germany shares vocational training experiences with developing countries. In the area of TVET personnel, conditions among countries differ vastly. Still, a number of principles found in the German vocational training system hold true still. First, there should be long-term investment in the professionalisation of TVET personnel. This is the key for improving vocational training and for meeting broader educational and economic objectives. Second, developing TVET personnel competencies should be practice-oriented. This is the only way how TVET personnel gets ready for the requirements of their future workplace. Third, development of TVET personnel should go hand in hand with setting up the institutional conditions for individual commitment. This requires a multilevel and multi-stakeholder approach - driven chiefly by a partnership of government and business. Finally, all of these aspects require stable power. There is no quick fix for strengthening competence and commitment of TVET personnel. In order to work on TVET personnel in international cooperation, a comprehensive approach is needed. This approach is taken by German development cooperation.

The basics are already existent, but there is more that needs to be done. More knowledge, for instance, is needed with regard to teaching and training in developing countries: How is training organised and who trains in local informal craft sectors?<sup>5</sup> What are the rewards systems for TVET personnel there? How

<sup>5</sup> There are a number of initiatives dealing with these questions. See, for instance, Reier, Gustav 2013 and BMZ/GIZ 2013.

could local workplace training models be integrated into the formal education system, for instance through cooperation with TVET institutes? How to strengthen business capacity and involvement in TVET? How to give TVET personnel a stronger voice – for instance through better interest representation? How to motivate employers to create further career opportunities for their teaching and training staff? What could be strategies for the professionalisation of TVET personnel? Much more is to be learned for developing TVET personnel. And not only abroad, but also in Germany.

Therefore, professionalisation of TVET personnel is by no means perfect and finished, but rather constantly under pressure by the dynamics of economic, political, technological and social change. Accordingly, international cooperation in TVET should not be a one-way street – from Germany to other countries. However, it is also an opportunity to learn from other countries to improve Germany's vocational training system. Many of the challenges Germany faces today, such as the increasing lack of young people entering TVET, coincides with those of most other countries worldwide. In the light of the global agenda of the sustainable development goals, strengthening TVET personnel today is not only a national, nor international, but a global task.

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Special thanks to Dr. Harry Stolte, Dr. Philipp Grollmann, Anke Bahl, Dr. Horst Sommer and Tobias Wolfgarten for their ideas and expertise.



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# Green Jobs for Sustainable Development

## Content

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## 1 Decent Work as a Driver of Environmentally Sustainable and Socially Inclusive Economies

Sustainable development encompasses a number of interrelated global challenges including poverty, inequality, hunger, as well as the relation between economic growth, resource consumption and environmental degradation. Although the concept has been, since its definition in 1987<sup>1</sup>, a worldwide recognised guiding principle, the confluence of several crises over the past decades – financial, food, fuel and environmental – has moved countries further away from simultaneously achieving economic development, social progress and environmental protection.

The magnitude of global environmental problems poses significant threats to economies and societies. Without appropriate responses, environmental degradation will have irreversible consequences on ecosystems on the earth and our societies will bear substantial costs, further increasing their vulnerability. Moreover, having already posed a barrier to achieving some

of the Millennium Development Goals (MDGs), natural resource depletion will hamper the ability of countries to reach many of the Sustainable Development Goals (SDGs), adopted at the UN Summit on Sustainable Development held in New York in September 2015.

The most pressing questions analysed in the global debate on sustainable development reflect the need to reconnect society with a balanced and stable growth pattern, while decreasing in-country inequality and enhancing stability, security and peace. In the light of this, quality jobs are increasingly recognised as being at the cornerstone of the required transformative change:

- The centrality of jobs in the development process was highlighted by The World Bank's 2013 World Development Report, and has recently been reiterated by the Human Development Report 2015, that defines 'sustainable work' as work that simultaneously enhances human development and environmental sustainability;

<sup>1</sup> In the report published by the World Commission on Environment and Development (WCED) in 1987, Our Common Future, also known as the Brundtland Report which marked the beginning of the era of sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

- Achieving full and productive employment and decent work for all was already one of the targets of MDG 1 (as a means to eradicate extreme hunger and poverty) and it now features prominently in the SDGs. Explicitly spelt out in the formulation of goal 8, the promotion of decent work is also implicitly referenced under many targets linked to the other sixteen goals, such as: Goal 1 on elimination of extreme poverty; Goal 2 on ending hunger; Goal 6 on inclusive and sustained growth, among others.
- Inclusive green economies, as defined in the Rio+20 Outcome Document, and reflected in the adoption of the 2030 Agenda for Sustainable Development, require increased decoupling of growth from resource consumption and environmental degradation, as well as full and productive employment, and decent jobs.
- The need to ‘take into account the imperatives of a just transition of the workforce and the creation of decent work’ is also included in the new global climate change agreement achieved at the United Nations Climate Change Conference (COP21) at the end of 2015.

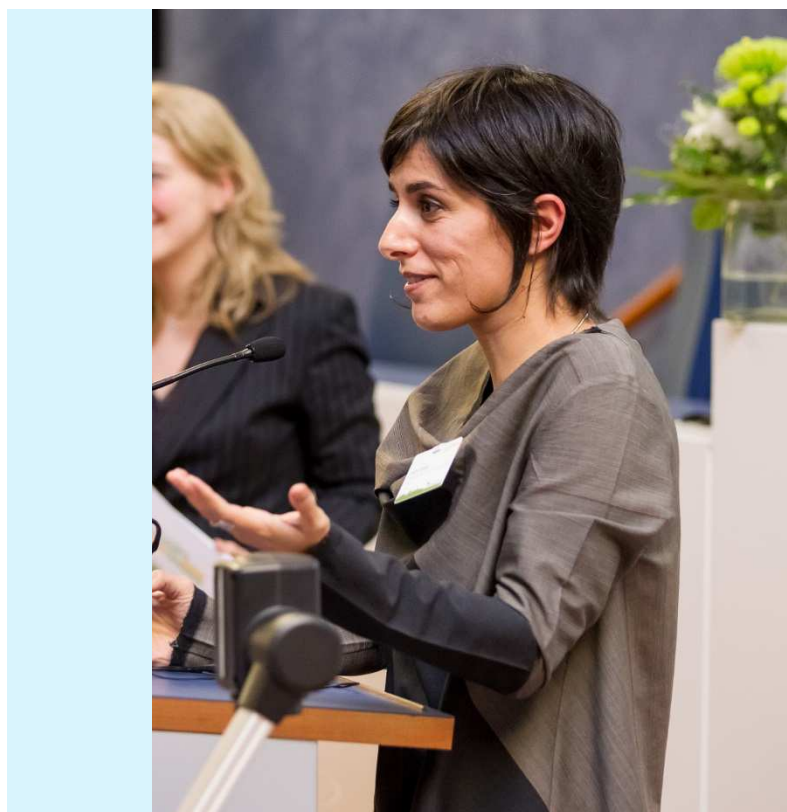
As advocated by the ILO at the COP21 in Paris, “if properly managed and adopted by consensus, transitions to low-carbon environmentally sustainable and socially inclusive economies can become a strong driver of employment creation, job upgrading, social justice and poverty eradication” (ILO, 2015).

## 2 The ILO Definition of Green and Decent Jobs

The ILO has a long-standing involvement with sustainable development and the aforementioned international agendas, linked to its founding mandate to advance social justice and its primary goal to work with member States towards achieving decent work for all. This is pursued through the promotion of rights at work, equal employment opportunities, social protection and social dialogue, at global and country-level.

The concept of green jobs summarises the particular angle the ILO takes to preserve and restore a sustainable environment through transformative growth both in traditional economic sectors (e.g.

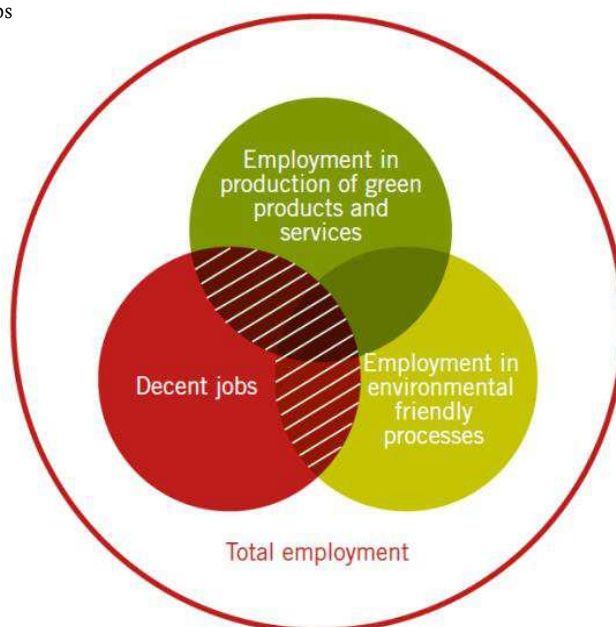
manufacturing and construction), or in new, emerging green sectors (e.g. renewable energy and energy efficiency). Meanwhile, the term also carries the qualitative notion that green jobs require to be fairly remunerated and productive, provide sufficient levels of social protection, ensure social dialogue, and guarantee workers the most basic rights at work.



### Box 1 – The ILO definition of green and decent jobs

- Jobs are green when they help reduce negative environmental impacts ultimately leading to environmentally, economically and socially sustainable enterprises and economies.
- Decent jobs are jobs that are productive and deliver a fair income, security in the workplace and social protection, better prospects for personal development and social integration, freedom for people to express their concerns, organise and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men
- Green decent jobs contribute to preserve or restore the environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency. They help to:
  - ◇ Improve energy and raw materials efficiency;
  - ◇ Limit greenhouse gas emissions;
  - ◇ Minimise waste and pollution;
  - ◇ Protect and restore ecosystems;
  - ◇ Support adaptation to the effects of climate change.

Figure 1: Definition of Green jobs



As illustrated by the diagram below, green jobs are found in the specific production of green products and services, and also in all economic sectors using environmentally friendly processes even if there is not a green product or service as an output of the activity. Green jobs are all those jobs that fall in the dashed area intersecting with decent jobs.

Sources: ILO, 2013; ILO, 2016; International Labour Office, 2013; International Labour Conference, 2013.  
For ILO guidelines towards a statistical definition of green jobs, see: [http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/guidelines-adopted-by-international-conferences-of-labour-statisticians/WCMS\\_230736/lang-en/index.htm](http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/guidelines-adopted-by-international-conferences-of-labour-statisticians/WCMS_230736/lang-en/index.htm)



At its 102nd Session in 2013, the International Labour Conference adopted a resolution and a set of conclusions concerning sustainable development, decent work and green jobs. The discussion held and the recommendations approved by the Committee resulted in the adoption of a common vision for a “just transition for all towards an environmentally sustainable economy” that helps achieve decent work, green jobs and sustainable development.

Following the recommendations of a Tripartite Meeting of Experts convened in October 2015, the governing body of the ILO released in November 2015 the guidelines for a transition to environmentally sustainable economies and societies for all, providing non-binding practical orientation to governments and social partners on how to formulate, implement and monitor the policy framework, in accordance with national circumstances and priorities.

Key policy areas to address environmental, economic and social sustainability simultaneously include: macroeconomic and growth policies; industrial and sectoral policies; enterprise policies; skills development; occupational safety and health; social protection; active labour market policies; rights; social dialogue and tripartism.

A growing number of governments are now looking into means to reshape their policy frameworks and investment decisions to maximise employment gains in the transition to a low-carbon, greener and sustainable economy. However, new green market opportunities (such as renewable energy deployment) are not always easy to access and the required policy instruments to advance green growth (such as carbon taxes or cutting fossil fuel subsidies) are not necessarily leading to systemic and durable changes.

Taking into account that many people in developing countries and emerging economies will be moving up the economic ladder towards a middle class standard of living, hence consuming a lot more resources per capita, there will be increasing pressure on the earth’s ecosystem services – many of which have already been degraded. New environmental goals and regulations will aim at a more sustainable approach to production and consumption, and this may generate both gains and losses for businesses and workers.

### 3 Understanding Employment Effects and Impacts on Labour Markets of Greener Economies

According to the world population growth trends, “to keep employment as a share of the working-age population constant, in 2020 there should be around 600 million more jobs than in 2005, the majority of them in Asia and Sub-Saharan Africa” (The World Bank, 2013). This means that about 45–50 million new jobs will be needed each year over the next ten years. Beyond the numbers, the quality of these jobs must be ensured and the diversity of the worlds of work (within and outside the official labour markets), especially in developing countries must be taken into account.

As countries move towards decarbonization of their economies, labour markets will face opportunities, risks and structural changes which the ILO has classified as follows:

<b>New job creation</b>	Additional new jobs will be created	Renewable energy sector; energy performance service companies; mobility services
<b>Elimination</b>	Certain jobs may be eliminated without direct replacement	Inefficient coal mining; packaging (materials discouraged or banned);
<b>Substitution</b>	Some employment will be substituted	Shifting from fossil fuels to RE&EE, automobiles to mass transit, waste disposal to recycling, primary metals production to secondary production
<b>Transformation</b>	Many existing jobs will be redefined	Existing jobs greened along with changed workplace practices and methods. Supply-chain effects (steel for wind turbines)

The capacity of countries to anticipate, understand and adapt to the impact greener economies will generate on labour markets, will increase their chances to capture and bring to fruition important opportunities.

As policies need to be developed in accordance with every country's situation, there is no one-size-fits-all solution. Every country needs to define its own right mix of policies for an inclusive economic, social and institutional environment. Owing to the complexity of the issues bearing on access to and use of the planet's resources, the problem lies on "how to produce more with less". This is increasingly becoming a concern not only for governments, but also for businesses, as continuing to invest in polluting or energy-inefficient types of infrastructure and inducing high-footprint consumer lifestyle preferences, is no more considered a wise option by progressive business leaders (WBCSD, 2010).

This requires consolidated methodologies to assess the impact of investing in a green economy and its related employment potential at macro and sectoral levels, as well as a consultative process in place allowing interest groups of civil society and the private sector to formulate, express and defend their needs and interests.

Evidence from countries at all levels of development proves that the shift to a greener economy can create employment across a range of sectors, and that – despite the necessary job losses that will be caused by environmental regulations – net gains of 15-60 million are possible in terms of new jobs which can be created and of existing jobs which can be improved in terms of decency and environmental impact (ILO, IOE, ITUC, UNEP, 2012).

#### **Box 2 - Employment gains in the transition to a green economy, according to ILO's research**

Business As Usual (BAU) scenario (ILO GEL model)

- Productivity level drop 2.4% by 2030; 7.2% by 2050

Shift to Green Economy (ILO GEL model)

- 0.5-2% Net job gains = 15-60 million jobs globally
- Multi-factor productivity + by 1.5% by 2020; 5% by 2050

Significant gains from major sectors: agriculture, forestry, fishing, energy, resource-intensive manufacturing, recycling, buildings and transport

*Source: ILO, IOE, ITUC, UNEP (2012)*

According to ILO and UNEP estimations, net gains in employment are likely to be higher in developing countries and emerging economies, which have the opportunity to leapfrog in a number of sectors, such as renewable energies, sustainable agriculture and green construction.

It is important to state that, employment and income gains will however largely depend on:

- Policy measures and instruments that "support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage formalisation and growth of micro-, small- and medium-sized enterprises including through access to financial services" (Leadership Council of the Sustainable Development Solutions Network, 2015, p.45), as stated in indicator 8.3 of SDG 8;

- Governments' commitment to the integration of sustainability goals in national development plans, such as for instance in South Africa where the New Growth Path, conceived in 2010 as a response to the global economic downturn the country was experiencing, identifies the green economy as one of the six priority sectors which can steer economic growth towards more labour-intensive industries. The same commitment was renewed in 2011, in the form of the Green Economy Accord, signed by various stakeholders from government, business, labour and civil society, which aims to create 300,000 jobs in activities that contribute to greening the economy by 2020. According to UNEP, "65 countries have embarked on green economy and related strategies and 48 of them are already taking steps to develop national green economy plans" (UNEP, 2015, p.1);
- Participation of the private sector, as the engine of job creation and the source of about 9 every 10 jobs worldwide (Boston Consulting Group, 2013), and engagement of other key non-state actors. While the overarching sustainable development framework is still rooted in its original definition, the debate around its means of implementation (notably, through the identification of specific goals) has become a catalysing call for new stakeholders, in addition to governments, including: business and industry, trade unions, NGOs and civil society organisations.

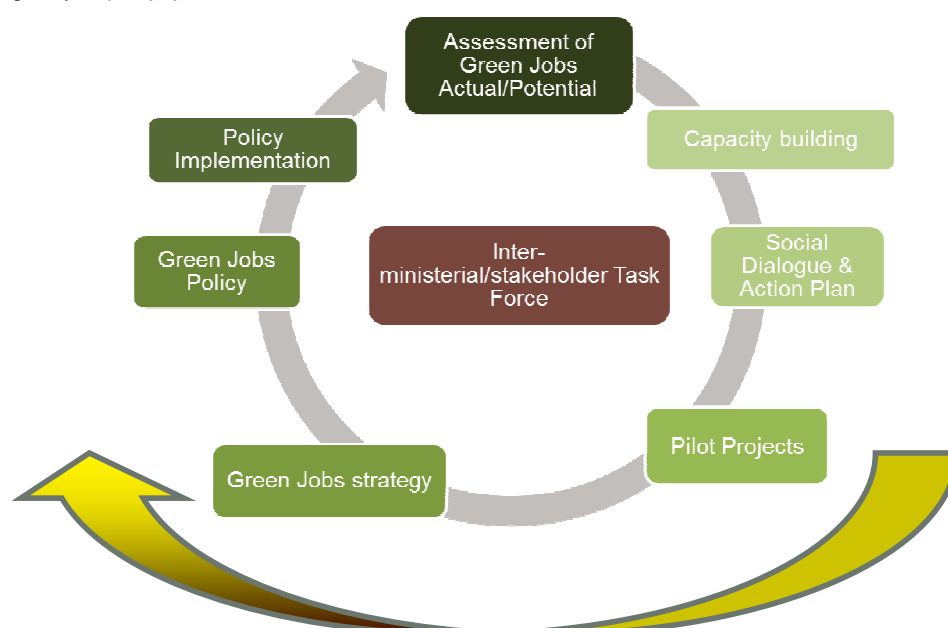
If the MDGs represented a milestone in the governmental efforts to address poverty, diseases and inequality, the SDGs must encompass the (often conflicting) views of several interest groups. This multi-stakeholders approach will be crucial to ensure economic and social gains of greener economies that are balanced and mutually reinforcing;

- Investments in skills development policies and strategies, with a particular focus on retraining and the development of portable skills to increase workers' adaptability in changing labour markets; research for skills anticipation to meet the demand for the occupations required in the green economy; and the enhancement of technical and vocational education and training (TVET) provision, increasingly recognised as an important and growing part of any skills development agenda.

When discussing policy options for the greening of economies with national decision makers, the ILO clusters the different policies into three themes:

- macroeconomic policies applied at national level,
- sectoral policies for individual responses at sectoral level, and
- social and labour policies focusing, among others, on education and skills development but also on issues of inclusion and protection.

Figure 2: The green jobs policy cycle





## 4 Skills for Green Jobs

Since the transition to a greener economy may bring about both job losses and new employment opportunities, the development of skills for green jobs is a key factor to enhance employability of workers and sustainability of enterprises. Companies and investors may hold back business diversification and growth strategies due to the lack of qualified human capital required in new emerging sectors (e.g. lack of skilled technicians in the growing wind, solar and hydro-power industries in Sub-Saharan Africa). Unemployment rates among young graduates may continue to grow in countries at all stages of development due to a mismatch between skills demand and supply (e.g. engineering and scientific skills shortage vs. obsolescence of existing skills in the construction sector).

Investing in the development of skills for green jobs should not only be a reactive measure to the greening of economies, but rather become an important driver of the low-carbon transition. According to the ILO<sup>2</sup>, the task is two-fold: anticipation of skill requirements and setting out of effective responses. This entails, among others:

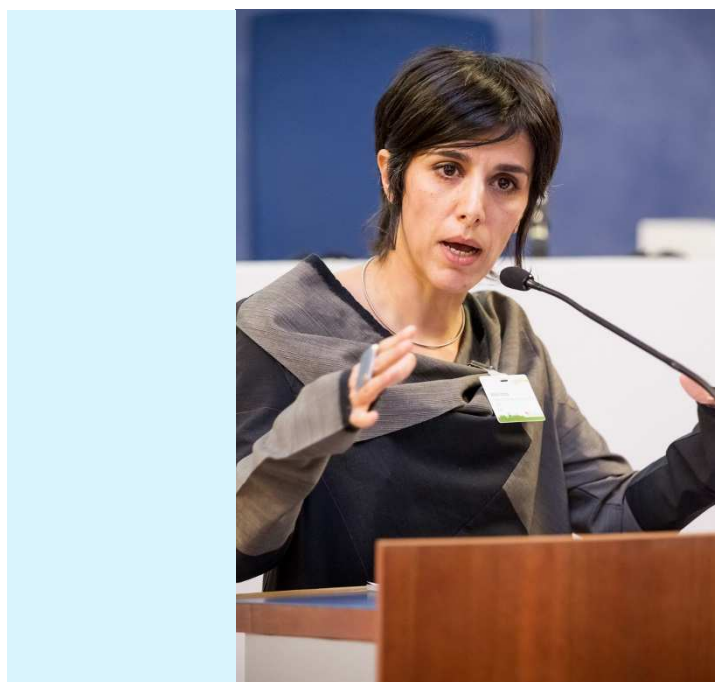
- i) developing innovative research strategies and enhancing labour market information systems, mediation services and social dialogue, to identify future skill needs in both existing and emerging economic sectors;
- ii) adapting and strengthening skills development policies and systems<sup>3</sup> to equip future labour market entrants with the required skills to enable the greening of economies and enterprises.

To build capacities among policy-makers and development stakeholders, the ITCILO offers a wide range of training courses on green jobs developed in collaboration with the ILO's Green Jobs Programme, including: a global "Academy on the Green Economy", implemented under the Partnership for Action on Green Economy (PAGE), a series of e-learning courses on green jobs for sustainable development ("*Green Jobs for Sustainable Development: concepts and practice*," offered

in English and Spanish), and a blended course on "*Promoting green jobs in the transition to low-carbon economies*", focusing on climate change and the world of work. Upon request, the ITCILO also offers training courses for dedicated audiences and on selected topics and/or economic sectors, such as: "*Skills challenges in a greening economy*", "*Greening economies, enterprises and jobs: the role of Employers' Organizations in the promotion of environmentally sustainable enterprises*", "*Green jobs in waste management*", and "*Green jobs in natural resource management*".

### For more information and contacts:

[www.itcilo.org/greenjobs](http://www.itcilo.org/greenjobs) • [www.ilo.org/greenjobs](http://www.ilo.org/greenjobs) • [greenjobs@itcilo.org](mailto:greenjobs@itcilo.org)



<sup>2</sup>Under the Skills for Green Jobs applied research project, the ILO Skills and Employability Branch has developed a series of policy recommendations for countries facing the transition to low-carbon economies. More information at: [http://www.ilo.org/skills/projects/WCMS\\_115959/lang-en/index.htm](http://www.ilo.org/skills/projects/WCMS_115959/lang-en/index.htm)

<sup>3</sup>"Skills policies and systems encompass technical and vocational training, workplace learning, informal learning, learning opportunities in the informal and rural economies and education and training for lifelong learning." (Source: <http://itcilo.org/en/areas-of-expertise/skills-development-and-vocational-training>)

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## Workshop 1

# References and Potential Capacities for the Qualification of TVET Personnel in the Area of Magdeburg





# Workshop Session

In the second phase of the “International Symposium” a discourse has been opened, which invited the participants to discuss about „Current Requirements on the Qualification of TVET Personnel“. Referring to this, in the two workshops ten speakers from GIZ cooperation countries and Germany were presenting recent regional as well as global developments regarding the qualification of TVET staff.



## Workshop 1

The focus of this workshop has been laid on the potentials and capacities for the qualification of TVET staff in the region of Magdeburg. As speakers representatives from some relevant institutions were invited, namely from the Otto-von-Guericke-University Magdeburg (Faculty for Human Sciences), the Fraunhofer Institute for Factory Operation and Automation, the GIZ-Academy for international Cooperation, the European Association for Vocational and Social Education and the Ministry of Science and Economy Saxony-Anhalt. In this framework, a lively discussion took place, considering a diversity of perspectives and potentials of TVET stakeholders in the region.

The challenging questions for example “How do we define “TVET professionals?”, “How to educate and train TVET Personnel?” or “What’s the influence of Vocational Education on Industry 4.0?” were giving

thoughts to the workshop participants. Evidently, the following discussion has involved divergent opinions.

However, the workshop concluded with the result of having bundled a number of competencies, practises and experiences regarding the professionalization of TVET personnel in the region of Magdeburg, which furthermore maintains important international networks. The contributions of institutions in the Magdeburg region are representing a crucial part of the TVET network in Germany. GIZ Magdeburg can make available the gained experiences for the implementation of various kinds of human capacity development measures.

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# **Internationalisation of TVET Research and Degrees – Review of Initiatives by the Department of Vocational Education and Human Resources Development (IBBP)**

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  - 3 Academic Study Programmes Offered by the IBBP
    - 3.1 Master Programme International Vocational Education
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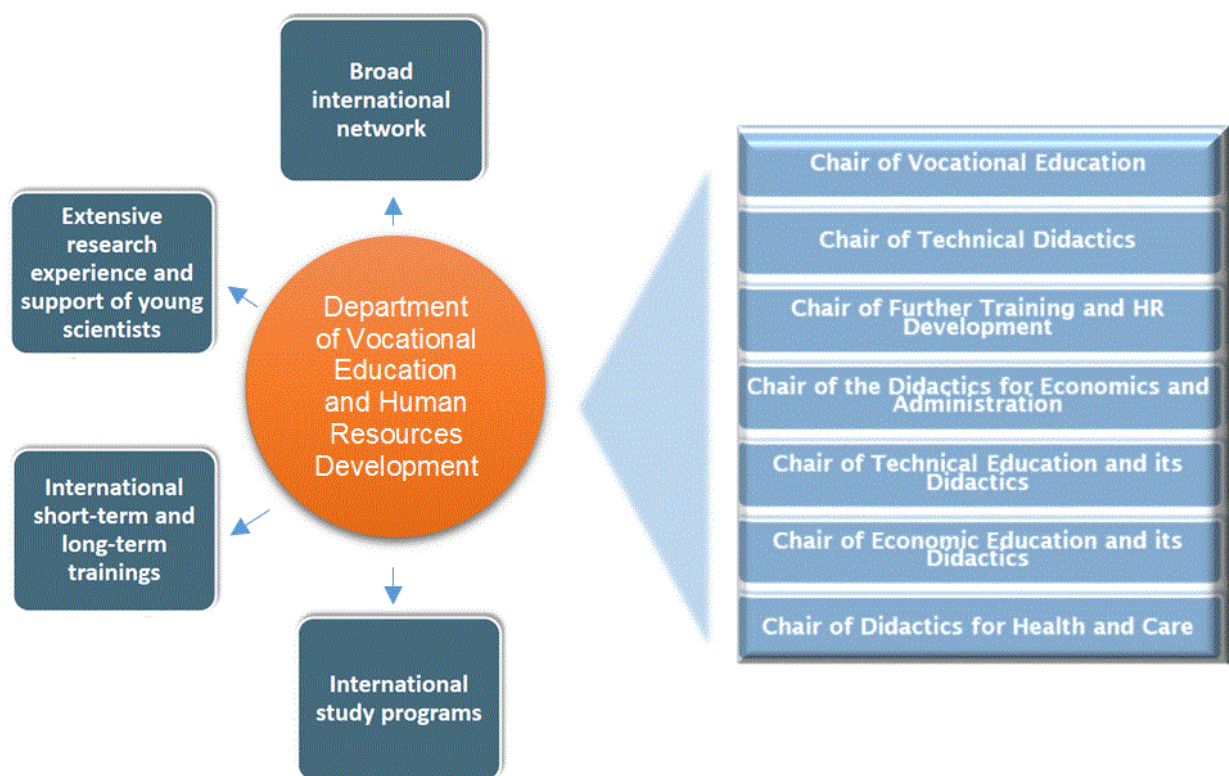
## **1 The IBBP – an Overview**

The Department of Vocational Education and Human Resources Development (IBBP) was founded in 1964 as Department for Engineer Pedagogy linking pedagogical and engineering contents. Nowadays, it is strongly placed with a variety of study programmes in TVET (see chapter 3), which foster academic excellence in Germany as well as abroad and represent a combination of a long tradition of engineering pedagogy with a strong research portfolio for the future.

As visible from the subsequent illustration, the four working focuses of IBBP are shared out between seven chairs.

The Department of Vocational Education and Human Resources Development combines four competencies to realise its two main focuses of (TVET) teacher training as well as organisational and human resources development. In particular, IBBP puts emphasis on imparting and researching theories and methods of thinking and acting according to vocational pedagogics.

Figure 1: The areas of responsibility and chairs belonging to the IBBP



With it, students will be capable of conducting scientific analyses in selected sections of vocational pedagogy and human resource development. Furthermore, students will be qualified to professionally act in TVET organisations and institutions and enabled to develop learning and education processes in a TVET context.

One main work priority relates to the internationalisation of the department, which is among others being handled in the framework of the cooperation with GIZ, UNESCO-UNEVOC International Centre Bonn and the international UNEVOC Network. While this article will provide more information on international study programmes later, the mentioned focus of TVET teacher training is further explained in the following chapter.

## 2 TVET Teacher Training – a Long Tradition at IBBP

Since its establishment, the IBBP offers TVET teacher training in various trades, although at the beginning the focus was mostly on engineering related subjects. After the Bologna declaration from 1999 the programme structure had changed into a bachelor-degree programme.

The bachelor degree is considered as first step in the VET teacher education and training and has a duration of six semesters comprising 180 Credit Points (CP). Of those, 100 CP are dedicated only to the respective occupational field such as electrical engineering. A second subject in general education, such as mathematics, accounts for 40 CP while vocational pedagogy



comprises 30 CP. The bachelor thesis amounts the rest of 10 CP. The second phase of the university education is the master-study of four semesters and 120 CP. It consists of studies in the occupational field (12 CP) plus vocational skills/applied didactics (20CP), second subject (25 CP) plus vocational skills/applied didactics (13 CP), vocational pedagogy (30 CP) and master thesis (20 CP).accounts for 40 CP while vocational pedagogy comprises 30 CP. The bachelor thesis amounts the rest of 10 CP. The second phase of the university education is the master-study of four semesters and 120 CP. It consists of studies in the occupational field (12 CP) plus vocational skills/applied didactics (20CP), second subject (25 CP) plus vocational skills/applied didactics (13 CP), vocational pedagogy (30 CP) and master thesis (20 CP).

The official degree appellation is appropriate to the respective field of study: B.Sc., B. Ed., B.A., B.Eng. (e.g. B.Sc. for Vocational Education). It can lead to an occupation or respectively a continuing master study to become a TVET teacher for vocational schools (M.Sc., M.Ed., M.A., M.Eng.). The degree is only given after a probation period (internship).

This internship or traineeship at a vocational school is compulsory and intends to convey extensive teaching practice. During their probation period, the trainees are independently delivering lessons with support from a more experienced teacher. They furthermore attend study seminars (courses in didactics, education, psychology etc.) realised by the Ministry of Education. If the teaching internship has been absolved successfully, the graduate is acknowledged as a fully-qualified vocational school teacher.

Recently, the trades offered at University of Magdeburg for TVET teacher education and training are civil engineering, electrical engineering, information technology and metals and process technology. The modules do additionally comprise didactics and curricu-

lum development as well as vocational didactics and thematic key areas e.g. heterogeneity in vocational education and training courses, teaching and learning concepts for the application of experimental and virtual learning environments in TVET, strategies in research on pilot schemes or aspects of university didactics in the education and training of TVET teachers.

### 3 Academic Study Programmes Offered by the IBBP

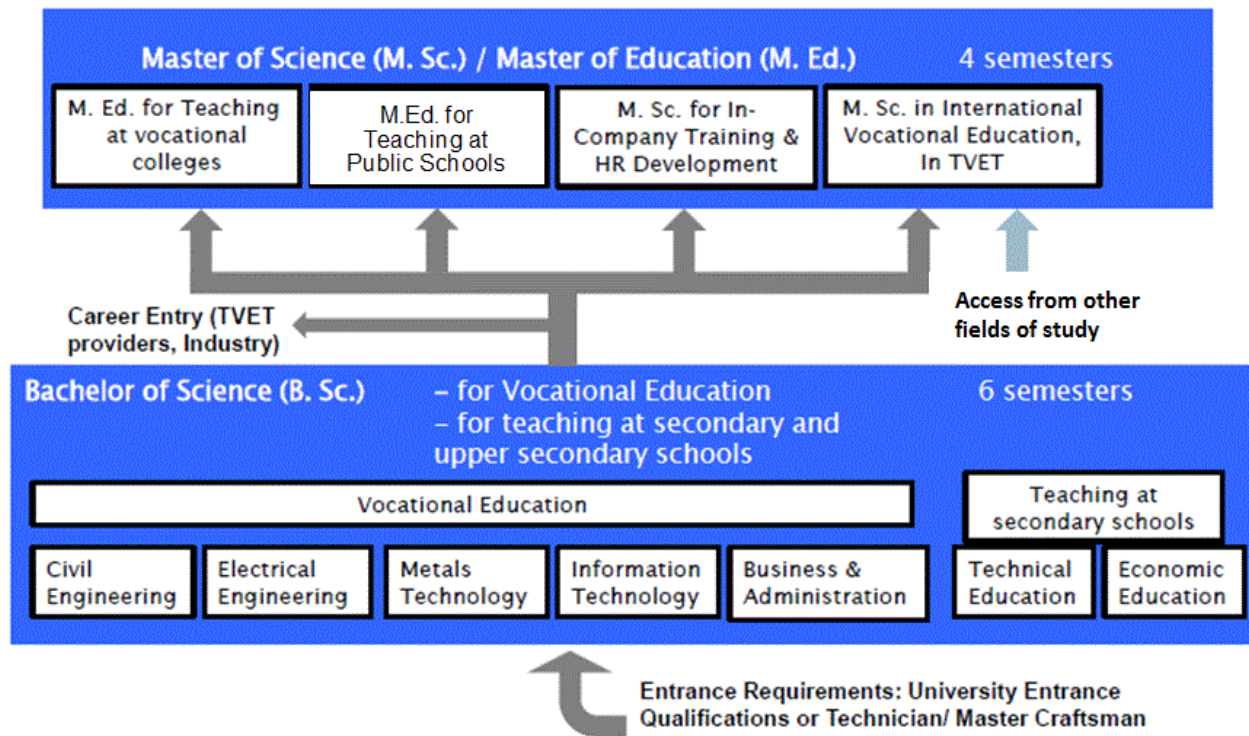
The IBBP delivers a broad range of national and international study programmes on the bachelor and master level that promote the academic excellence in Germany and abroad.

- ⇒ M.Ed. for teaching at vocational colleges
- ⇒ M.Ed. for teaching at general educating schools
- ⇒ M.Ed. for teaching at public TVET providers
- ⇒ M. Sc. for In-Company Training & HR Development
- ⇒ M. Sc./M.A. in International Vocational Education (double degree)
- ⇒ Postgraduate Certificate courses in Knowledge and in Project management (Chair for further training)
- ⇒ PhD Programme for Vocational Education & HR Development (independent or structured)

To begin with the Master of Education for general schools, bachelor students can choose between the pathways of technical or economic education. As the figure below shows, individuals who want to become TVET teachers can specialise on the trades of civil engineering, electrical engineering, metals technology or information technology. Before, also the subject of business administration was part of the study offer.

After completing the degree, they can either work at a TVET provider or with the industry. For those who want to teach at TVET providers, it is mandatory to absolve the Master of Education programme. It can either prepare for a teaching position at vocational colleges or at public TVET providers. Future instructors would have to attend the Master of Sciences programme for in-company training and HR development instead.

Figure 2: The “Magdeburg Model”



Another four semester study course, called M.Sc. in International Vocational Education, is a non-consecutive master programme to which postgraduates from diverse fields of study receive admission.

### 3.1 Master Programme International Vocational Education

TVET systems are getting more sophisticated and that is why nowadays and especially in the future it is of increasing importance to qualify not only TVET teachers and instructors but also other TVET professionals, who can take on functional and management tasks in the name of distinct TVET stakeholders.

The specialised programme therefore aims to qualify personnel for executive or research functions in the VET sector, especially in an international context. Graduates are also being prepared for elaborating teaching and learning material, conducting TVET research or assume work in the field of international development cooperation in TVET.

Due to the semester abroad and an optional internship, the study course furthermore enables students to apply scientific methods and understandings and provides them with competences in international collaboration together with English language skills.

In cooperation with a partner university in the UK, the study course is delivered in two countries and so it awards two degrees. The Anglia Ruskin University Chelmsford awards graduates with the degree M.A. in Teaching and Learning, while they receive a M.Sc. degree in International Vocational Education from the Otto-von-Guericke-University Magdeburg. The double-degree serves as entrance qualification for PhD studies in a related field and hence alumni from different countries can continue their academic career with PhD degrees (both in Germany and abroad).

With special regard to the two profiles of the programme, it reaches a wide range of individuals. The previously explained “International Vocational Education” profile is provided to those with fluent German skills. The more internationally oriented profile “Technical and Vocational Education and Training” is

tailored to a more international audience. Additional partner institutions are the University of Technology, Ho Chi Minh City (Vietnam), Southeast University, Nanjing (China) and Tianjin University, Tianjin (China). Through the cooperation with partner universities, the master programme contributes to development and also to the increasing academization of TVET key staff.

Here, the study focus is accordingly on scientific competences in the area of vocational and continuing

education with particular regard to the international dimension. The objectives are clear – knowledge exchange, the promotion of TVET quality, concerning such as didactics or teaching methods, and the strengthening of scientific cooperation and networks.

The first year has to be attended at the partner university while the second year is provided at the Otto-von-Guericke-University Magdeburg. The master thesis is to be started in Magdeburg in July and may be finished in the student's home country by October at the latest. It will be jointly evaluated by the partner universities.

Figure 3: 1st block: delivered in the Asian partner countries

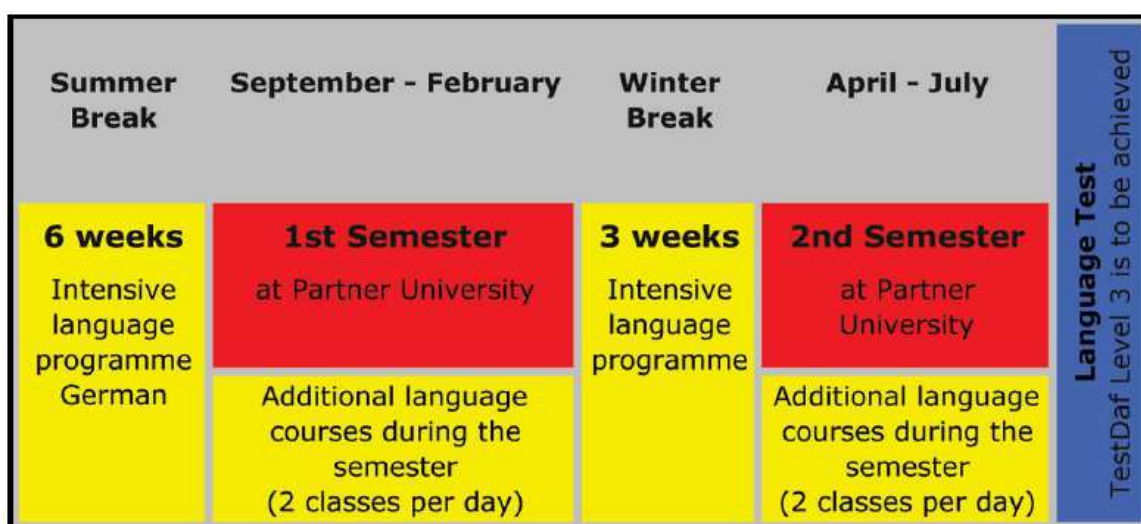
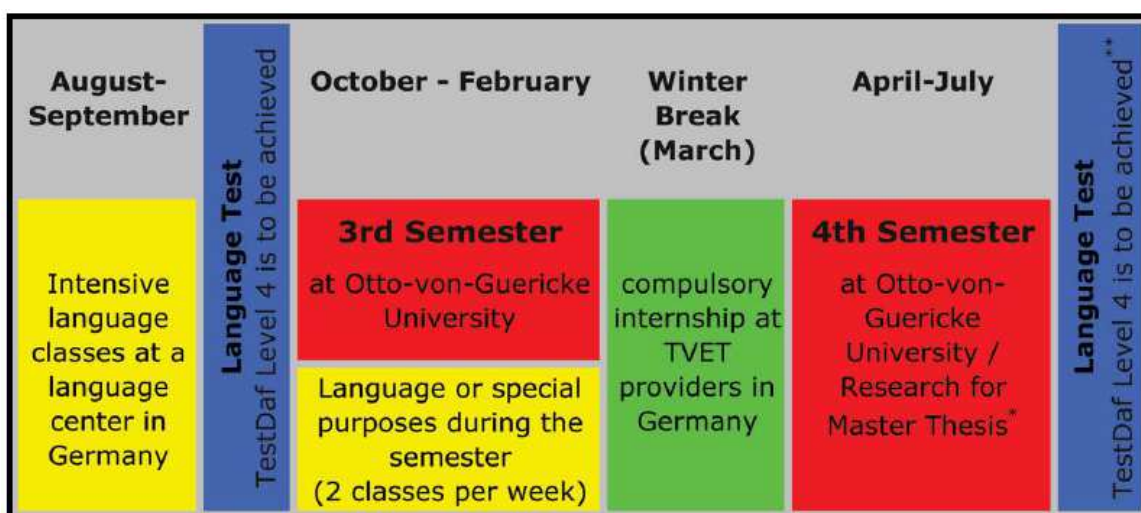


Figure 4: 2nd block: delivered in Germany





The entry requirements for the second profile are a bachelor degree or equivalent awarded by a higher education institution (acknowledged in Germany) and English language skills meeting at least TOEFL (550 paper-based test, 213 computer-based test, 79 internet-based test). In the course of their study, international students in the second profile will have to absolve a German language examination. Those students who have not passed the test DaF level 4 have to pass the examination by the end of the master programme, otherwise a degree from Magdeburg University cannot be awarded. However, they can still achieve the degree from the partner university.

Over the last 10 years, more than 130 participants from different Asian countries studied in the second profile of the International Vocational Education master degree. There is a national and international certification so that the study modules (also in separately delivered “International Leadership Training” programmes) are ECTS-certified by the University of Magdeburg and have been recognised by different Asian universities in China, Vietnam and Thailand.



### 3.2 High Qualification in Vocational Education and Human Resource Development

Besides the mentioned study courses, the IBBP also provides postgraduate certificate courses focusing on such as “Knowledge Management” or “Project Management”.

Furthermore, as reaction to the increasing demand of the development of professional staff in TVET research, the IBBP has established the 3-year PhD programme „Vocational Education and Human Resource Development“. The structured study course aims also to professionalise staff in the field of TVET and hu-

man resource management. Besides promoting young scientists, its study focus is on profound qualitative and quantitative research methods as well as international and interdisciplinary perspectives with a specialisation on scientific training in the area of vocational education and HR development leading. To achieve this high-quality target, the doctorate candidates work on an individual TVET research project and attend specific modules:

- Professional work and education processes in technical domains
- Professionalism in personal domains
- Education processes in domains of business and administration
- International comparative studies on TVET
- Human Resources development and securing the supply of skilled labour
- Further training and the development of higher education

These research fields serve as methodological and theoretical further qualification, which allows graduates to take over researcher or leading positions in TVET or human resources development related fields in an international context.

## 4 International Network and Cooperation

The department provides expertise based on an eclectic range of scientific experience and a comprising network of practice partners. The IBBP at University Magdeburg plays an influencing role as member of the UNEVOC Centre Magdeburg. In a consortium together with the GIZ/AIZ and the Fraunhofer Institute for Factory Operation and Automation the UNEVOC Centre is focusing on international TVET for sustainable development. Another example for the international recognition of the IBBP is its partnership (especially of the Chair of Vocational Education) with the international network of the Association for International and Comparative Studies in Labour and Industrial Relations (ADAPT).



Thanks to its established international partnerships, the IBBP Magdeburg could already build bridges in TVET and further develop its expertise as well as its international recognition. The department does not only organise and contribute to TVET conferences, it also assumes scientific responsibility for international projects and conducts international leadership trainings in related topics. The international projects range from “Reform TVET development strategies for the Education and Training of TVET Professionals in Mozambique” to “Quality Management and Quality Assurance in Technical and Vocational Education and Training in Iraq”.

In close cooperation with China, Vietnam and the UK, joint study programmes have been developed. Worth mentioning is the best practise example of the aforementioned joint master programme in International Vocational Education with a double-degree and compulsory attendance of one semester at a partner university in the UK. Recently, initiatives are taken to develop joint Master degree programmes (double-degree) with Austria, Switzerland and Georgia following the above mentioned pattern.

Besides other collaborations in higher education with international partners, the IBBP is also playing a crucial role in implementing international training programmes (e.g. media development, TVET for sustainable development) in close collaboration with GIZ. In the future, the international networks e.g. regarding higher education programmes are aimed to be constituted and further developed.

#### For more information and contacts:

- <http://www.ibbp.ovgu.de/inibbp/en/>
- <http://www.ovgu.de/unimagdeburg/en/Education/Before+you+start+studies/Study+Guide/Master/International+Vocational+Education.html>
- <http://www.ibbp.ovgu.de/Studium/Graduiertenprogramm.html>

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# Development of Customised Applications for Virtual Training Processes on Demand of the Modern Industry

## Potentials and Linkages to International Cooperation of UNEVOC Centre Magdeburg

### Content

- 1 Introduction and Outline
  - 2 “Industrie 4.0” and Changes for the Working Environment
  - 3 Challenges for Humans and the Organisation
  - 4 Integrated Learning and Assistance Approaches
  - 5 Virtual Interactive Learning Systems
  - 6 Summary and Outlook
- References

### 1 Introduction and Outline

On the step to the 4th industrial revolution, production systems are changing in a consequence of technological further developments. But not only technology is influenced by the integration of cyber physical systems (CPS). It goes along with new concepts for the design of work places and organisational processes. The paper at hand focus on the resulting changes for employees, the design of working environments and the need for new qualification measures.

The paper shows that learning and working will be more and more integrated. This will lead to systems

that can be applied directly on the shop floor. Moreover, this paper will outline the requirements for designing workplaces that are healthy and conducive for learning and will present an example for a virtual interactive learning environment.

Together with the Otto-von-Guericke-University Magdeburg and the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH, Fraunhofer IFF is cooperating in the UNEVOC Centre “Technical and Vocational Education and Training for Sustainable Development”. The UNEVOC Centre Magdeburg puts its main focus on “Education for sustainable development” and brings together the expertise of the three

mentioned partners to develop sustainable solutions for the education and further training of vocational education and training (VET) teachers.

## 2 “Industrie 4.0” and Changes for the Working Environment

“In essence, Industrie 4.0 will involve the technical integration of CPS into manufacturing and logistics and the use of the Internet of Things and Services in industrial processes. This will have implications for value creation, business models, downstream services and work organisation.” (Kagermann et al. 2013)

In future production systems, machines and products will be increasingly communicating with each other, exchange data and information and respond flexibly to current requirements. The human will collaborate more intensive with the machine than ever before (human-machine-interaction) and will be responsible for the controlling and monitoring of the production system.

Soder (2015) emphasises that technology is not an end in itself but only a base for Industrie 4.0. In the future, real and virtual worlds will be integrated and connected. This will allow new forms of production and cooperation.



When designing production systems, the process will decisively depend on the integration of skilled workers and the definition of their role within the working system. It is already sure that “the human” will be the

main factor for the decision on the success of the production system.

Botthof (et al. 2015) describes that the trend towards the increasing digitalisation of the working world will have a potentially strong impact on employees and their situation in the workplace in general and specifically on types of work organisation. This concerns in particular the quality of work - including factors such as job satisfaction and health - and both the general skills levels and the specific necessary qualifications and competence development processes.

When designing the work processes, it will be important to create jobs that are meaningful and conducive to learning, and that enable to work under adequate physical and psychological stress. For this purpose, it will be necessary to design the tasks in a way that mentally more (e.g. problem solving) and less (e.g. routine) demanding tasks are required in an appropriate balance. (Botthof et al. 2015)

Working systems are socio technical action systems at the micro and macro level of production and logistics, in which „the human“ interacts with means of production within a defined workflow for fulfilling a specified task.

The quality of the achievable result of an intelligent working system is determined by the continuity of information exchange while environmental conditions are changing and by the degree of adaptivity of the sensor - actuator systems involved. The intelligence of the working system is the ability to adapt itself defined and promptly to changes of the task and environmental conditions.

## 3 Challenges for Humans and the Organisation

The technology driven developments of production processes go along with changing tasks and requirements for the employees. While many publications on the subject “Industrie 4.0” or “Cyber physical systems” focus on the technological potential of automation, a study of the Fraunhofer IAO, with a participation of 661 companies, focus on the changes of human tasks, functions and positions in the design of production systems that are expected. It revealed that in the future professionals will be involved in technical systems, possibly by using mobile devices. Their specific abilities for reflection and decision making remain indispensable within these continuous improvement processes. (Ganschar et al. 2013).

A similar position is represented by Gorecky (2014) when they refer to aspects of autonomy and decision-making powers with respect to the operations of socio-technical systems. Within cyber-physical systems humans can interact both: directly in physical systems as well as via a user interface with virtual components.

The singular role of the human is justified by the authors with regard to the necessary variety in cybernetics. With the increasing variety of actions a subsystem can balance more failures within control processes. This makes the human the most flexible element of the system and in accordance to the highest variety of actions a “superordinate control instance” (ibid). Employees will be responsible for planning, controlling and problem-solving tasks.

A study published by the Institute for Innovation and Technology of the VDI / VDE Innovation and Technology GmbH outlines the current state of the discussion mentioning the opportunities and risks of this development (Botthoff et al. 2015). The editors describe a summary of the points on which consensus is predominantly observed. They expect that technological innovations that are addressed under the keywords “Industrie 4.0” will significantly affect the working systems, even beyond the industrial sector.

Future working systems need to be designed with respect to the concept of a socio technical system including the dimensions “human”, “organisation” and “technology” (ibid). The dimension “organisation” is understood as the central starting point that influences the quality of work for the professionals in terms of personality and suitability for learning. With regard to the significance of demographic change, the authors emphasise a consensus on two demands on the job design. At first there is the relief of workers from physical and psychological stress and failure. On the other hand the conducive to learning design of work processes.

#### 4 Integrated Learning and Assistance Approaches

In the factory of the future the degree of automation will increase, whereas the same production processes become more complex. The deserted factory, as it has long been proclaimed as part of the Computer Integrated Manufacturing (CIM), is not to be expected in the context of Industry 4.0, because humans have skills and abilities that are not transferable to machines,

On the role of man in the changing processes Professor Kagermann says that there will be an increasing number of areas that are so highly automated that they operate largely without human interaction. Of course, employees will continue to carry out physical activities. But they are even more supported by physical assistance systems that serve as capacity amplifiers. This gives enhanced decision-making and participation leeway. New information and communication technologies (ICT) will enormously contribute to decision support, for example by mechanical extraction of information from unstructured data, exploratory search in huge amounts of data, or fusions of sensor data. The final decision, however, continues to be made by humans (Ganschar 2013).

#### 5 Virtual Interactive Learning Systems

Learning systems are so far mainly used to accompany the production process. The reasons for this lie primarily in the lack of availability of the plant or machine. In addition, the learning processes are difficult to predict due to increasingly autonomous processes of plants and thus only partially controllable. (Blümel et al. 2010)

##### Virtual Interactive Learning System for the Process Industry

The company Fangmann Energy Services GmbH & Co. KG from Salzwedel in Saxony-Anhalt/Germany has developed a mobile flowback unit for gas wells. To ensure the safe operation of the plant, the qualification of the operator is of particular importance. According to Edeling (et al. 2013) this includes three main requirements:

- Process and plant understanding of the mobile flowback unit
- Transfer of knowledge in the operation of the mobile flowback unit
- Collection of experiences on the operation of the mobile flowback unit



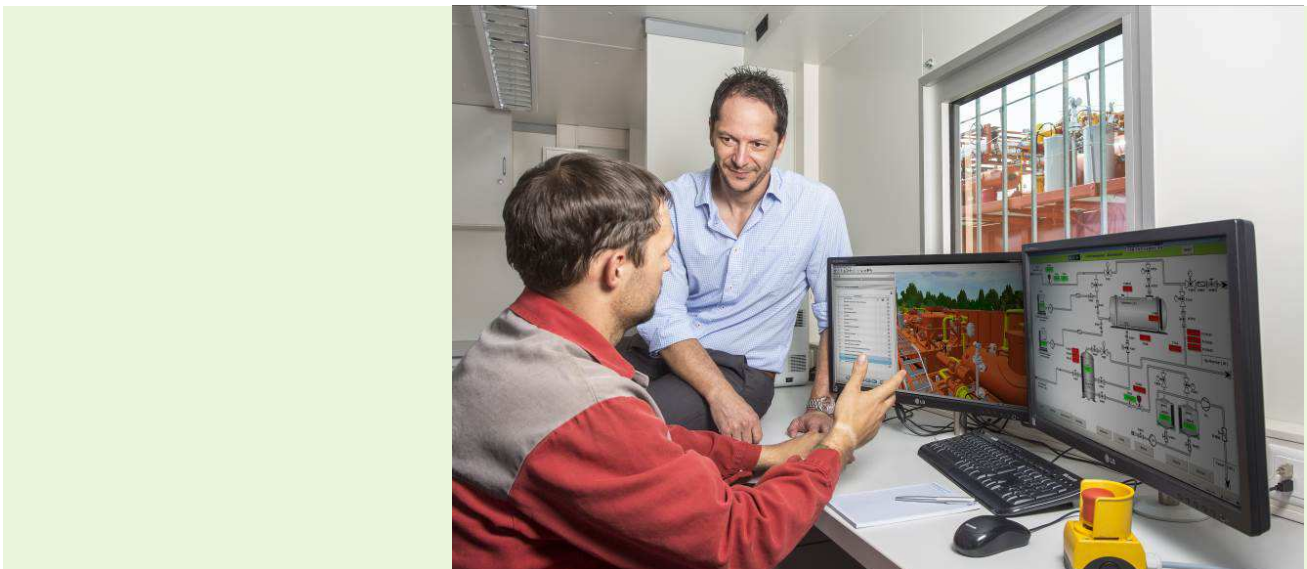
The communication of this learning content can only take place very limited in practice. Already in the development phase of the mobile flowback unit, the future operators should be qualified and contribute their experiences to the development process. For this purpose, a learning system has been developed which provides on the basis of the current design data, the instructions for the installation, commissioning, operation and maintenance of the plant and, moreover, provides it on demand. The use of the learning system should be carried out on site during the work process. For this purpose, the application was made available in the control room and was coupled to the process control system (see fig. 1).

The development time of the plant could be reduced by about 25% supported by the Virtual Reality design and reviewed by the responsible authorities, and the possibility of training future staff in an early phase. So the staff was already qualified during commissioning, which leads to a shortened commissioning time by 20%.

## 6 Summary and Outlook

The paper at hand presents changes that are expected in production systems in the context of developments in the “Industrie 4.0” initiative and focus on the role of the human within the development, especially from the point of learning and the design of conducive and healthy work systems.

Future work will deal with the integration of learning and working in the workplace. The integration of experiential knowledge will be of particular importance for this development. The demographic development requires solutions that keep the expert knowledge in the company, even though the experts retire (Haase et al. 2015). The identification, collection, documentation and transfer of this knowledge by using technology based systems will therefore be in the main focus of research.



Learning application of the mobile flowback unit in the control room  
(Source: Fraunhofer IFF / Dirk Mahler)

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Human Capacity Development for Vocational Education and Training



# Human Capacity Development Formats in Customer-oriented Competence Development for TVET Personnel

## Content

- 1 The Capacity Development Approach of GIZ and its Application
  - 2 HCD in Technical Vocational Education and Training
  - 3 Examples of HCD Formats in Competence Development of TVET Personnel
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    - 3.3 International Leadership Training “Master Trainer in TVET” in Southeast Asia
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## 1 The Capacity Development Approach of GIZ and its Application

Fostering capacity development – this is one of GIZ’s core competences in the field of international cooperation. In this context capacity development is described as the process through which people, organisations and society as a whole shape their own development and adapt it to changing conditions and frameworks. When supporting capacity development, German development cooperation, and with it GIZ, bases its conceptual approach on certain levels (i.e. people, organisations and society).

The purposes of the so called three-level-approach are perceived as follows:

- **Person:** promoting individual learning capability, self-reflection, personal abilities and competency development on individual level,
- **Organisation:** fostering organisational learning and raising of the performance and flexibility of an organisation
- **System:** building legal, political and socio-economic frameworks that are conducive to capacity development so that people, organisations and

their networks can develop and raise their performance capability as well as developing and strengthening cooperation between organisations and networks for knowledge exchange, coordination and co-production on society level.

Within this 3-level approach GIZ considers experts, financing, formats for Human Capacity Development (HCD) as well as equipment and materials as the means, to support capacity development activities and interventions. Since Human Capacity Development is the core competence of the GIZ Academy for International Cooperation (AIZ), the focus of this article shall be on it exclusively.

When talking about HCD, the aims are clearly defined as:

- fostering the development of individual skills and competencies in various fields, e.g. personal and social, specialised knowledge, management and leadership, methodological knowledge and competencies,
- shaping joint learning processes, in particular emphasising knowledge sharing,
- building up and tending expert networks, and
- enhancing the disseminator role of partners, in particular by activities on training of trainers, strengthening training establishments, ability to build capacity.

The groups targeted by GIZ's HCD activities and programmes are specialists and managerial staff from all hierarchy levels. Qualified by tailor-made training programmes with the aim to act as multipliers and disseminators and due to their working positions they become "change agents" who contribute to changes at the organisational level (Grollmann; Rauner, 2007).

AIZ offers a number of HCD formats that can be applied and blended according to what result or impact of competence development our partners and clients wish to achieve. Besides the classic training solutions based on on-site modules joint training, coaching and advice, reflection and supervised independent learning are provided. Learning as well as networking using new media are fostered by tutored e-learning and mobile learning solutions. Conferences and study trips and study programmes, seminars, workshops as well as practice learning complete the arrangements of HCD in order to support knowledge sharing and expert networking.

## 2 HCD in Technical Vocational Education and Training

Among the different scopes of German development cooperation and GIZ's HCD activities, the measures and programmes on Technical Vocational Education and Training (TVET) play a vital role in the sustainable strengthening and development of the partner countries. Also in this specific sector, HCD and competence development is applied as part of the overall capacity development approach by GIZ. Within the respective HCD activities, the different formats are always addressing different levels of change in order to ensure a comprehensive result and effect of the measures (see table 1). Herewith, the combination of different learning venues (Germany – abroad, companies – schools, online training – classroom training) combined with an action-oriented learning approach ensure a significant gain of competence among the involved participants. Additionally, modern media/ ICT is integrated in the qualification programmes (e.g. e-learning, learning and communication platforms). The involvement of private sector partners as well as the focus on topics of practical relevance guarantee that the qualification programmes focus on the training needs of the world of work.

When acting in the field of TVET, AIZ applies a three-level-approach (summarised by the subsequent table), which is aligned to the aforementioned three-level-approach and includes all the relevant players of a national TVET system. Here, the decision making level (Macro), management and planning level (Meso) as well as implementation level (Micro) are involved.



Table 1: The three level approach in TVET

Level	Target group	HCD instruments
Decision making or Macro	<ul style="list-style-type: none"> <li>ministries,</li> <li>vocational training institutions,</li> <li>chambers, associations,</li> <li>companies</li> </ul>	dialogue on <ul style="list-style-type: none"> <li>systems of TVET</li> <li>labor market oriented TVET</li> </ul>
Management & planning or Meso	<ul style="list-style-type: none"> <li>directors,</li> <li>planning experts,</li> <li>HRD responsible persons</li> <li>TVET consultants (promoters),</li> <li>standard &amp; curricula developers</li> </ul>	advanced training in <ul style="list-style-type: none"> <li>planning of TVET, staff development, development of standards,</li> <li>curricula, teaching &amp; learning material</li> <li>management of TVET institutions,</li> <li>assessment, testing, certification, accreditation</li> </ul>
Implementation or Micro	<ul style="list-style-type: none"> <li>technical teachers,</li> <li>instructors,</li> <li>training experts</li> </ul>	advanced training in <ul style="list-style-type: none"> <li>technical fields,</li> <li>vocational pedagogy, didactics,</li> <li>train the trainer</li> </ul>

With its involvement of all hierarchies this approach ensures the consequent coordination in terms of demand, applied HCD instruments and supporting measures as well as a high degree of transparency of the single activities, processes and programmes, which all intend to strengthen the capacities of TVET systems.

One aspect of strengthening the capacity of TVET systems, namely the improvement of TVET teacher qualification and training, is of central importance. This is due to the fact that recent TVET reforms are internationally oriented to shift the institutional structure of TVET from a supply-driven model to market demand-driven one. TVET teachers and trainers are crucial success factors in such reforms and innovation processes, who therefore without fail need to be involved in these processes of change (ILO, 2014, p.42; UNESCO, 2014).

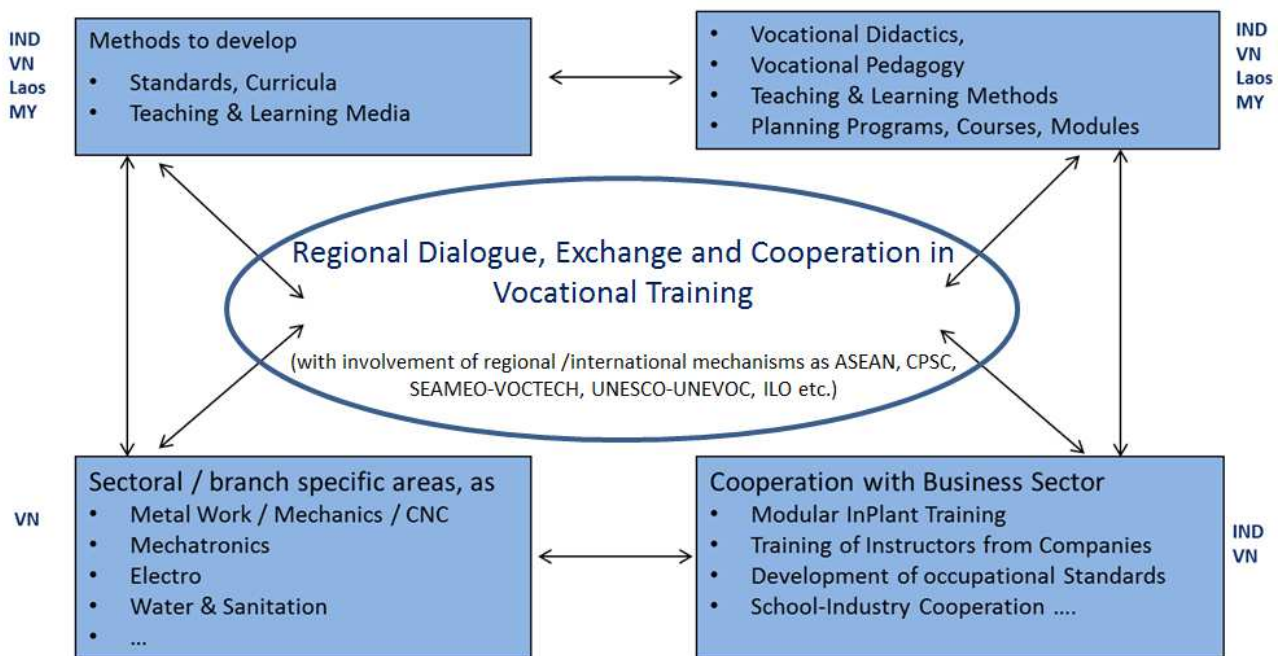
The dimensions for improving performance, quality and competencies of TVET teachers and trainers range from the development of skills and competences to pedagogical reforms to change from a teacher-centered model to one that is learner-centered and to the definition of competence profiles and frameworks appropriate for TVET professionals. In particular, the following thematic areas for teachers and instructors are primarily to be addressed by HCD:

- Vocational discipline (e.g. work and business processes, technology oriented focus)
- Vocational teaching and learning (e.g. vocational pedagogies & didactics)
- Development and evaluation of vocational curricula, media & learning environments (e.g. occupational analysis, methods of curricula and media development)
- Planning and development of training programs & courses (e.g. by focusing on work processes)
- Occupational standards, assessment, testing and certification (Vocational Qualifications Frameworks)
- Train-the-trainer networks (national, regional, international dimensions)

### 3 Examples of HCD Formats in Competence Development of TVET Personnel

The following figure visualises a HCD approach in TVET with thematic and regional interrelationships applied in ASEAN within the frame of modules for non-academic as well as academic TVET teacher training.

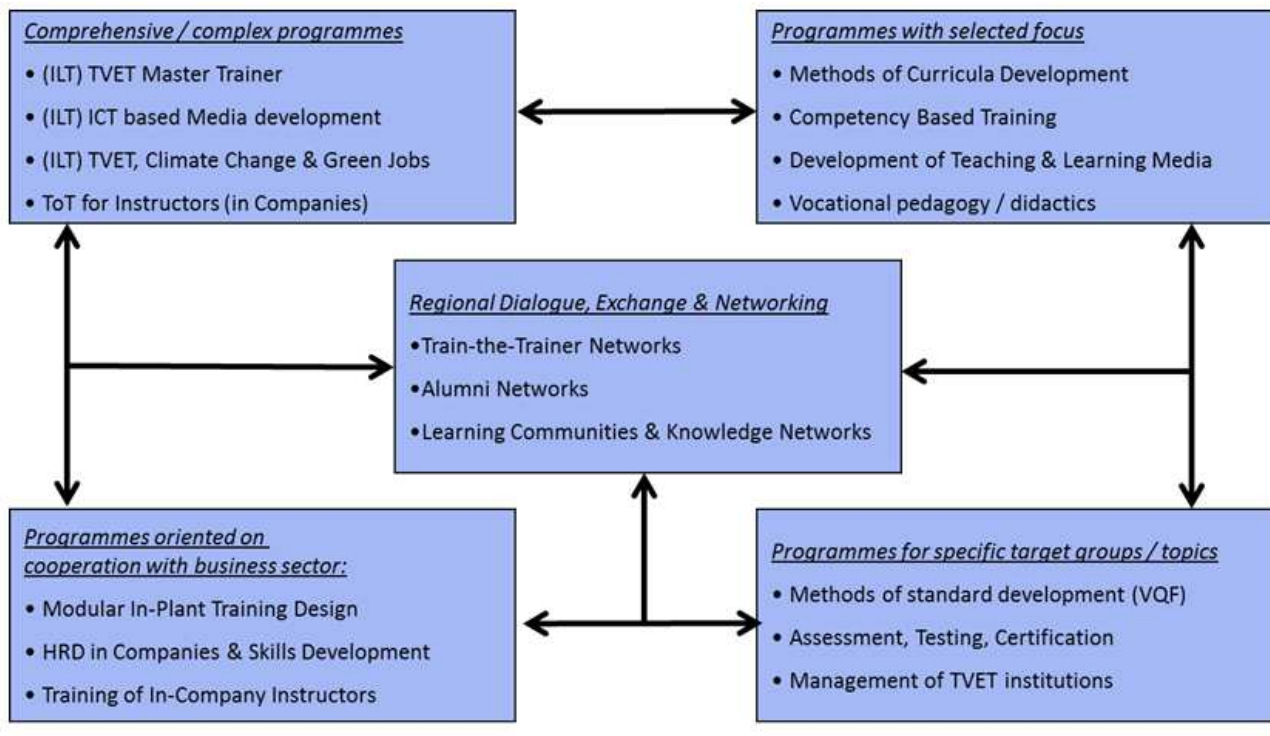
Figure 1: Example of a HCD approach in ASEAN countries



As displayed in the following illustration, there are general examples for themes and types of GIZ HCD programmes for practice-oriented non-academic and academic training of TVET teachers and instructors and generally TVET personnel in ASEAN countries.

This overview already contains features of the specific tailor-made GIZ HCD programme for the further qualification of TVET teachers and instructors or TVET personnel in the ASEAN region. In the following chapter its features are further explained.

Figure 2: Overview of Human Capacity programmes in the ASEAN region



### 3.1 Regional Cooperation Programme to Improve the Training of TVET Personnel in ASEAN Countries (RECOTVET)

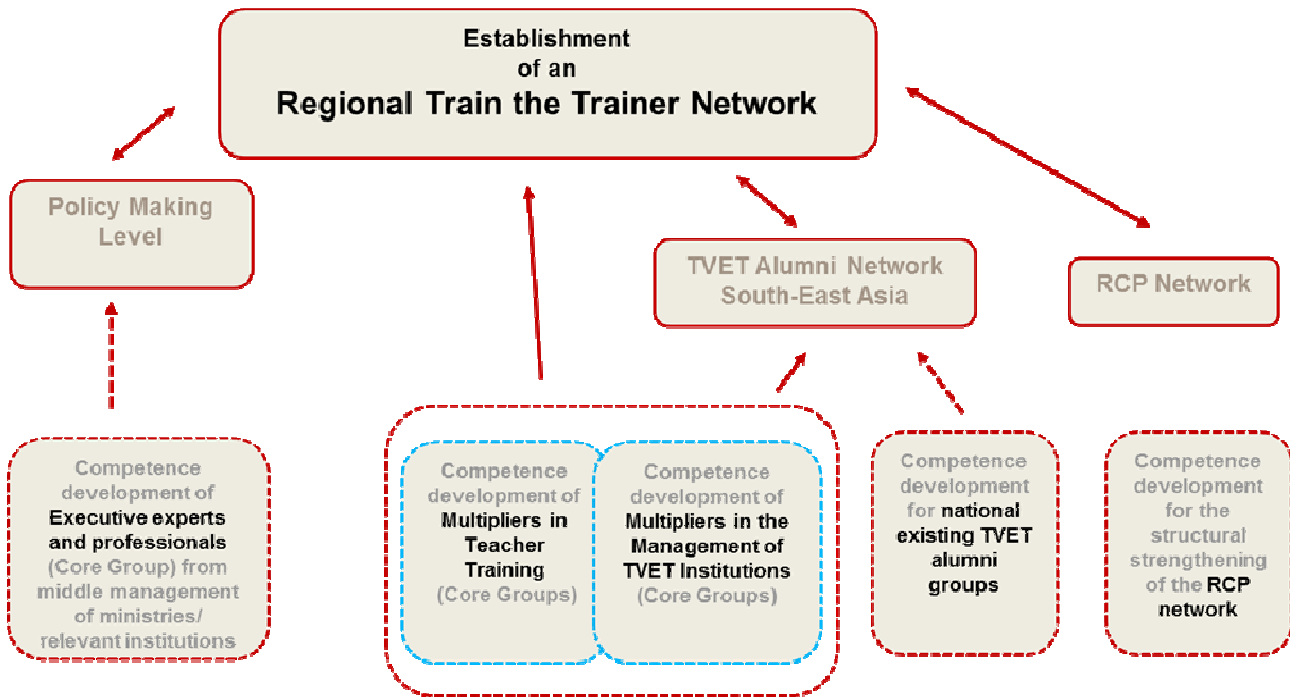
The overall programme objective is to support TVET personnel and to create institutional and thematic preconditions for quality improvement and regional harmonisation of the education and training of TVET personnel in South East Asia (with focus on Laos, Vietnam, Myanmar, Indonesia).

Regional cooperation must be intensified to equally enhance the effectiveness of all ASEAN countries' vocational education systems. The efforts at the political level also need to be coordinated. Particularly RECOTVET is involved in three different action areas that are closely interlinked and therefore create the following synergies:

- (1) Regional Policy Dialogue,
- (2) HCD for Multipliers and Key personnel in TVET as well as
- (3) Regional Cooperation Platform (RCP).

In action area 2, Human Capacity Development for professional staff is a key focus. Specialists and managers of ministries, vocational training institutions, organisations and businesses as well as experts on research levels receive training on regionally relevant topics of TVET. They are taught to design, implement and evaluate training programmes tailored to the needs of the economy. National TVET alumni of the region play a crucial role by creating a regional pool of multipliers in TVET to broaden the new programme's medium-term impact as well as support the work of GIZ's regional and bilateral TVET projects. The involvement of national teacher training institutes aims at the initiation of a regional train-the-trainer network (figure 3) among the addressed countries to ensure exchange and knowledge sharing.

Figure 3: HCD approaches in RECOTVET



### 3.2 International Leadership Training “TVET, Climate Change and Green Jobs”

Technical Vocational Education and Training plays an essential role in preventing climate change since the skilled workers and experts are those who do or do not deal efficiently and sustainably with energy and resources in their jobs and at their workplaces. The efficient use of energy and resources in the job is not only the task of specialists, but also of every employee. In consequence related issues have to be implemented in the training regulations, in the profile and equipment of vocational training centres within initial and further training of teachers and instructors, and within training courses. This cannot be done by merely transferring best practices from one country to another, but with consideration of relevant developments and trends (technical, economic and social), needs and interests of stakeholders as well as characteristics of the respective country or region.

By means of capacity building in the fields of curricula development, facility and institution management of training as well as promoting green jobs, GIZ aims at contributing to fostering green growth in Laos, Vietnam and Indonesia. It is vital to equip TVET institutions of these countries with well-trained staff, who is

able to apply the knowledge and skills gained in Germany, and who can qualify other people, set up train-the-trainer programmes and build professional networks to further promote this job greening process. The International Leadership Training (ILT) programme “TVET, Climate Change and Green Jobs” is engaged with the relevant issues of how the greening of jobs process is done in detail, how the integration of green features is managed and how it is applied in practice.

The broadly diversified target group of the training programme comprise TVET experts with technical qualifications and work experience in the fields of waste water management and supply, renewable energies and energy efficiency in construction. They have responsibilities at different TVET levels, particularly as TVET planning experts, curriculum developers, managing staff in colleges and other vocational training centres, vocational teachers and instructors, university lecturers in teacher training, experts and managers in ministries, authorities, energy suppliers, energy agencies and research institutes, or as human resource personnel in companies. They have a university degree or a similar qualification and have already gathered several years of experience in their field of work.



The objectives of the International Leadership Training are at the end to enable the participants to prepare forecasts and derivations in relation to new qualification requirements particularly for the Green Economy sector and to conceive, plan and implement relevant qualification profiles, curricula and models for implementing them in TVET. In their future jobs, working as experts and multipliers, the participants will contribute to initiating and organising change processes in their institutions and environments.

### 3.3 International Leadership Training “Master Trainer in TVET” in Southeast Asia

The ILT “Master Trainer in TVET” offers the opportunity to highly qualified and motivated TVET professionals from Southeast Asia to upgrade their competencies for their future teaching, management and administrative responsibilities in the national TVET sectors. The ILT Master Trainer programme in TVET is expected to increase the competencies of teaching staff in TVET schools and training centres and contribute to the development of TVET by strengthening the competencies of qualified multipliers. Participants will be enabled to actively contribute to design and to initiate change processes within teaching processes in their schools and institutions.

As a result of the ILT, participants are qualified to contribute to the initiation and realisation of individual, organisational and systemic change processes with special focus on teaching and learning processes within TVET institutions. The participants are capable to act as multipliers, and thus they are able to use, apply and disseminate their competencies gained during the training, to further qualify change agents in their work environment, set up train-the-trainer programmes and build professional networks.

In this sense, the ILT is an integral add-on of GIZ’s bilateral TVET projects in the region and contributes to their sustainable outcome and impact. Various aspects of modern approaches in curricula development, teaching and learning methods and training material development have to be considered in designing the profile and equipment of vocational training centres, in the initial and further training of teachers and instructors, and in developing training courses. As a matter of fact, competencies cannot be taught but can be acquired by each individual by combining knowledge, skills, experiences and values. However, a sustainable outcome and finally the success of compe-

tency driven further trainings are closely linked to the learning environment provided to the participants, which creates a positive precondition for individual learning processes and offers.

The main outcome of the ILT “Master Trainer in TVET” is the enhancement of the competencies of teaching staff in TVET schools. To this end, participants are able to prepare forecasts and derivations in relation to new qualification requirements, and they conceive, plan and implement relevant qualification profiles, curricula and models for implementing them in TVET. Being back on their jobs, the participants mainly take over the roles as TVET experts and multipliers, contributing to initiation and organisation processes as well as sustaining change processes in their institutions and respective professional environments.

## 4 Achievements of HCD in GIZ TVET Programmes

The quantitative results of HCD in TVET during the past 25 years are noticeable with a total number of 1.170 conducted programmes, which illustrates the contribution of GIZ AIZ to the reform and development efforts in various countries in Asia (e.g. China, Vietnam, Laos, Myanmar and Indonesia) and in Southeast Europe (e.g. Bulgaria, Romania, Moldova and Ukraine).

With regard to qualitative achievements the implemented HCD programmes and activities among others could contribute to

- the upgrading of individual competencies and qualification of TVET staff, in particular by master degrees achieved in the context of study courses jointly organised by GIZ AIZ and partner universities such as the Otto-von-Guericke University Magdeburg,
- the quality improvement at different organisational/ institutional levels due to the qualification of the respective TVET staff,
- the strengthening impact of programmes towards TVET reforms in partner countries by tailor-made consulting and qualification solutions, and
- the orientation towards practice-oriented training development referring to a number of products such as curricula, teaching and learning media, training concepts or standards.

## 5 Lessons Learnt and Recommendations

Looking at the situation of the majority of TVET systems, we generally recognise two major sources for the recruitment of TVET teachers and trainers. On the one hand there are graduates from school or university systems with insufficient practical skills and limited competencies regarding real processes in the world of work. On the other hand, the skilled technicians on the labour market have only limited pedagogical and didactical competencies.

This issue influences the quality of TVET and thus the quality of the national workforce. Closing these qualification gaps will be the future challenges of HCD in TVET. Therefore, forthcoming programmes and activities have to be considered

- the training needs assessment, i.e. functions and tasks of individuals to be fulfilled in specific organisational settings, must be clear and known,
- the training programme development, i.e. content and organisational implementation frameworks, must be selected appropriately,
- the selection of participants, i.e. the individuals' match to the objectives of competence development to be achieved, must be considered strictly,
- the knowledge sharing and networking, i.e. experiences, best practices and developed products, must be exchanged in national, regional and international dimensions consequently,
- the programmes' follow-up activities, i.e. and HCD activities, should not be considered isolated but must be combined for example with coaching, transfer and dissemination in terms of multiplier concepts in order to increase the sustainability effects.

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# Demand-oriented Services within International Cooperation for the Qualification of TVET Personnel for Sustainable Development

## Content

- 1 The European Association for Vocational and Social Education – Service Provider for the Economy
- 2 The European Dimension of Work-based Training and Qualification of TVET Personnel
- 3 EBG – Partner for Developing Skilled Labour Programmes and the Development of TVET Personnel in Asia
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## 1 The European Association for Vocational and Social Education – Service Provider for the Economy

The European Association for Vocational and Social Education (EBG) offers and trains a variety of occupations for different fields of activities. In EBG's vocational school and fulltime vocational school centers, trainings for state-accredited vocations in education and care (nursery, child and youth care workers) as well as non-physician health and care professions are provided. In cooperation with Steinbeis University Berlin, EBG's Steinbeis-Transfer-Institute for applied sciences of European health and education science offers academic qualifications for employees working within the field of pedagogy. The aim of the preparatory college (*Europäisches Studienkolleg der Wirtschaft – ESKW*), which was state approved by the Ministry of Science and Economy of Saxony Anhalt in 2012, is to

prepare and enable foreign students for studies at a German university or German university of applied sciences. EBG also acts as responsible body for day-care and afterschool care centers.

EBG's regional centers of competence in Magdeburg, Halle, Berlin and Torgau offer comprehensive TVET programmes as well as individual TVET programmes for national and international companies.

The EBG acts according to international guidelines, action-oriented learning and industry-orientation. Internationality, in this case, summarises both memberships in various international projects, such as the European Association for Institutes of Vocational Training (EVBB), and the training of international participants in our local and European training centers as well as our partner institutions in Asia.

To give an example for the international activities of EBG: Since 2004, EBG has established several representative offices in China and in 2014, a further department in Vietnam had been launched. Action-oriented learning and teaching describes the didactic approach of occupations e.g. in the metal and electrical industry. This approach is not only based on but also requires the combination of practical work-related activities and cognitive reflection. Due to the industry-orientation of the provided programmes, employability skills of graduates are facilitated. The training content is geared to the national training framework as well as to the curriculum framework of the German provinces. It had been developed in close collaboration with the economy to align trainings and qualifications with company's needs.

Therefore, the European Association for Vocational and Social Education is a partner in demand for companies in Germany, within Europe and around the world. The good reputation is based on specific characteristics of the cooperative training between EBG's vocational training facilities, on-the-job training in companies and a private vocational school. Regarding this cooperative training, EBG focuses on companies in the area of metal- and electronic industries as well as chemical industry.



Besides private but state-recognised vocational schools also small and medium sized companies (SMEs), which cannot afford training facilities for the basic practical training within daily work, make use of the comprehensive services of the European Association. For the latter, mainly state-owned vocational schools do not match the in-company requirements regarding subjects such as technical mathematics,

reading of engineering drawings, standardisation or basic English skills (Industrieanzeiger, 2009). This model, which was developed by the EBG together with companies within the Magdeburg region, is in high demand, also beyond Germany's borders in Europe, for example in Slovakia, where it is proposed to introduce the dual training system or elements of it.

## 2 The European Dimension of Work-based Training and Qualification of TVET Personnel

Due to its complexity, its long-term historical development and therefore its anchorage within German companies, the dual system cannot be transferred or adopted by a one-to-one approach. Taking this into account, the EBG as co-founder of European Association for Institutes of Vocational Training has been contributing to the further development of work-based trainings since more than twenty years.

The work-based model of EBG is to combine practical basic training in vocational schools as well as in training facilities, which is also interesting for the first year of training in full-time vocational education and training systems. This approach was implemented by EBG in different countries, e.g. the Slovakian Republic. In these and other countries the work based model was tested in the fields of metal- and electro industry as well as water and waste water industry.

The mentioned approach includes a systemic structure, the responsibility of the companies, vocational schools and educational institutions within this system. Furthermore, it deals with financial aspects as well as the qualification of TVET staff in the areas of company-based training, training in vocational schools and private institutions (EVBB, n.d.).

Slovakia is a country in demand for the production of automobiles. It identified significant criteria that is used by international automobile manufacturers to choose their locations and that is preceded by a complex situation analysis. This analysis takes into consideration the existing infrastructure and the country specific subsidy programmes as well as the existing workforce and the trainable workforce potential (Beckmann, 2009).

As example of work-based training solutions, the following illustration shows the training and cooperative structure between EBG's cooperative training centers and companies for the occupation of metal-cutting mechanic.



Figure 1: Time sequences of the training – metal-cutting mechanic

The EBG supports and advises already in the stage of recruiting, before the start of the training											
1st Training year											
September	October	November	December	January	February	March	April	May	June	July	August
Manual Cutting with handoperated tools		Machine Cutting (conventional turning/ milling) Separate, Transform, Fitting (1 week end of January)					Fundamentals in CNC Technics, Basic I	Machine Cutting (Focus Point: Configuring machines and tools)	Fundamentals in CNC Technics, Basic II	project works/ holidays	
2nd Training year											
September	October	November	December	January	February	March	April	May	June	July	August
in-company training					Training course Control technology (pneumatics and hydraulic system)	Examination preparation and final examination Part I (in a timely manner, 4 weeks)		Advanced Training Course I (turning and milling)	in-company training		
3rd Training year											
September	October	November	December	January	February	March	April	May	June	July	August
Advanced Training Course II Machine programming, 5 sided machining, CAD Fundamentals, VOP Fundamentals (ShopMill/ Shop Turn) Turning, milling and drilling technics		in-company training									
4th Training year											
September	October	November	December	January							
in-company training		Examination preparation and final examination Part II									

The blue markings in the illustration indicate EBG's field of action in terms of corporative training while the yellow areas show the duration of the in-company on-the-job training. Grey areas portray the examination preparation and final examination phase.

After all, when integrating skilled labour within this type of training, a true challenge is encountered. Nowadays, in the target group of TVET teachers there is a great demand of young professionals at master level and especially the labour market is lacking university graduates in relevant disciplines. There is a gap between the large demand of industrial metal and electrical occupations and the appropriate qualification of TVET personnel for the practical training.

Especially, in-company trainers and trainers of cooperative centers have to train the students at modern and very expensive industrial machines and equipment. This aspect is subject of current debates within Europe and also internationally. Therefore, a one-to-one transfer of the entire German model seems not very suitable.

### 3 EBG – Partner for Developing Skilled Labour Programmes and the Development of TVET Personnel in Asia

The scheme of fulltime vocational school training is dominant in Asia. Theoretical and practical lessons are taught in vocational schools. Mostly, the teachers only have little technical-technological and pedagogical competence to provide the practical training. They typically lack industrial experience in their field of training (Beckmann and Sommer, 2012, p. 47).

Philipp Phan Lassig considers the difference or variation of trained knowledge and skills within the university education of TVET teachers versus the demands of reality as the crucial point (Lassig, 2015, p. 46).

It is EBG's priority aim to bridge this gap. That is why EBG has cooperated with suitable partner institutions and vocational schools in China for meanwhile eleven

years and in Vietnam for eight years. EBG mainly aims at improving the practical experience of teaching personnel of vocational schools. This is the starting point for EBG's trainings, which, in case of Vietnam, are built on an actual state analysis.

### 3.1 Cooperation in Vietnam

A research conducted by GTZ, now GIZ, in 2008/2009 reaffirms the lack of TVET teaching staff suitable for the practical training within vocational schools as well as the lack of pedagogical competence of the teaching personnel (Beckmann and Sommer, 2012, p. 47).

Within the frame of the GIZ project “Förderung der Berufsbildung Vietnam” (Programme Reform of TVET in Vietnam) GIZ and EBG, as private educational body, developed public-private-partnerships (PPP) projects with the purpose of qualifying CNC skilled workers for the local and the international market. Aim of these further training measures were to provide Vietnamese companies from the metal processing industry with qualified metal-cutting machine and CNC technicians (GDVT, 2012, p. 43).

Trainers from vocational schools were trained systematically to enable them to act competently and professionally as well as demand-oriented and methodically in their vocation. The trainers were selected on the basis of already existing technical knowledge and skills and were prepared to realise vocational trainings as well as demand-oriented further trainings. In the long run, the aim of the project was to prepare the trainers qualified by EBG for their role as multipliers. To support the overall objective of the general improvement of vocational training in the frame of this PPP, teaching and learning material for trainers and participants had been developed (Beckmann and Sommer, 2010, pp. 128-130). The General Department of Vocational Training (GDVT) considered the designed training as applicable and requested further cooperation measures from EBG.

As part of the regional TVET Conference in Hanoi in 2012, jointly carried out by the Ministry of Labour Invalids and Social Affairs (MoLISA), the Federal Ministry for Economic Cooperation and Development (BMZ) and the GIZ, an agreement was reached on education and training programmes for TVET teaching staff, built upon the approach of integrated teachers (Sommer, Lipsmeier and Beckmann, 2012, pp. 82-96).

The concept of an “integrated teacher” is not a totally new one, but still applicable and useful for various countries. The aim of the designed model was (and is) to train TVET teachers for both theory and practice. The requirements for international participants of the programme compose of a general education qualification recognised in their home country and as much hands-on work experience as possible in their respective occupational specialisation (Lässig, 2015, p. 47).



The training programme focused on German as second/ foreign language and a practical, which - to some extent - was completed in companies under actual production conditions. Besides, the participants acquired the competences for imparting vocational theory and practice, achieved by means of intensive pedagogical training in both theory and practice. This approach is still highly useful for the cooperation with Asian countries regarding initial and further education of TVET teaching personnel. The integration of vocational theory and practice is an important impetus to the development of an occupational standard for TVET teaching staff in the partner countries. The EBG has continually enhanced this concept and developed demand-oriented vocational theory and practice contents for further trainings of TVET teaching personnel. Participants of these further trainings should serve as multipliers in their institutions. In addition to the training modules, EBG offers concepts for equipping workshops or labor units in cooperation with different GIZ projects in Vietnam, including consulting on equipment in colleges in Bac Ninh, Ninh Thuan, Long An, An Giang and in LILAMA 2.

### 3.2 Projects in China

Completed and future projects in China do also base on the mentioned multiplier effect. In the last decade, EBG conducted several further trainings of Chinese TVET teaching personnel in China and in EBG centers in Germany in the fields of CNC, mechatronics and welding. The preparation, implementation and examination include more or less the following sequences:

#### 1) Preparation of the course:

- I. Selection of suitable partner institutions in China (duration of approximately 4 to 6 weeks) with a sufficient stock of CNC turning/ milling machines, tools and testing equipment as well as qualified teachers.
- II. Further training of Chinese teaching personnel in EBG centers in Germany (introduction to German IHK training plan, training of teaching methods, field trips)
- III. Optional implementation of further training in Chinese partner institution (180 teaching units for one course in CNC milling or CNC turning and 360 teaching units for both courses)

#### 2) Implementation of the course:

- I. Providing EBG/ IHK training plan for partner institution and coordination with the relevant AHK office
- II. Assessment of willingness and readiness to provide the training according to IHK standards by EBG experts before the course starts
- III. Conduct course by the Chinese teaching staff and further qualified by EBG
- IV. Coaching by experts from Germany

#### 3) Examination

- I. Development of a final examination by EBG according to DIHK standards for the partner institution
- II. Assignment and sending of German experts to the partner institution before the end of the course to prepare the final examination
- III. Final Examination according to DIHK standard
- IV. Certification of successful participants by an EBG certificate (or if requested AHK certificate)

EBG maintains solid partnerships as SEMES – Shenyang, the Shenyang Department of Education and Lixin College in Chongqing and the respective local Department of Education. Participants of EBG courses did achieve top ranks (first and third place) within China-wide competitions in CNC machine cutting. Moreover, the demand for further training offers and training programmes in Germany in the field of early childhood education from our partner institutions increased.

Within the town twinning of Magdeburg and Harbin, further trainings on vocational topics, for example the dual training system, are offered. With its offers and further training programmes EBG contributes continuously to the competence within development cooperation, which originated in Magdeburg (Beckmann, 2015, Interview).

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# Partners of tomorrow

## The Saxony-Anhalt Trainee Programme for Foreign Young Talents

### Content

- 1 The Initial Situation in Saxony-Anhalt
- 2 The Programme's Approach and Concept
- 3 Programme's Benefits
- 4 A Programme's Success Story

### 1 The Initial Situation in Saxony-Anhalt

Saxony-Anhalt is characterised by a landscape a scenery of small companies. In comparison to other German states, the export rate of about 30% is relatively low. Primarily regional, German and European markets are addressed by the companies. Extra-European markets are still under-represented.

Even in case of existing interests, small companies face difficulties to position themselves in foreign markets. Distinctive fears appear towards the entry into a foreign market because often the companies feel that their employees are not sufficiently qualified and/ or prepared for international cooperation. Missing language capabilities, missing cross-cultural knowledge and a lack of foreign experiences are the main reasons named by the industry.

Companies that want to grow internationally do not only face the previous mentioned problems. Due to

the demographic development in Germany and the latest tendency of young school leavers to enter university, the companies barely find skilled workers in the local labour market. Although foreign employees could be a remarkable option to cover the demand of skilled workers at least partly, many - in particular small companies - are reserved when it comes to the employment of foreign employees. The reasons for that might be the same as for the difficulties of entering a foreign market.

The large number of foreign students in Germany could be a valuable source of future workforce for our country that can overcome the companies' constraints. Foreigners who stay in Germany for a couple of years due to their studies are often fluent in German as well as they have gained a lot of experience with the German culture.

About 300,000 foreign students currently study in Germany, most of them from Turkey, China and Rus-

sia. The most preferred states are North Rhine-Westphalia, Bavaria and Baden-Württemberg due to their economic power and their international business relations.

But also Saxony-Anhalt has remarkably developed as an interesting destination for foreign students. Since the reunification in 1990 until 2014, student numbers have increased from 581 to 6,481.

Factors for this development are not only the active collaboration of the universities with international partners but also the well-prepared institutional and infrastructural conditions of the universities as well as the development of widely diversified caring offers for foreign students. Eventhough Saxony-Anhalt is an attractive place for foreign students, it still offers significant and not yet exhausted potentials for future growth and development. In particular, the interface between study and occupation contains significant improvement potentials from the students point of view: Vocational orientation or missing traineeship opportunities during the studies are named as examples in this context.

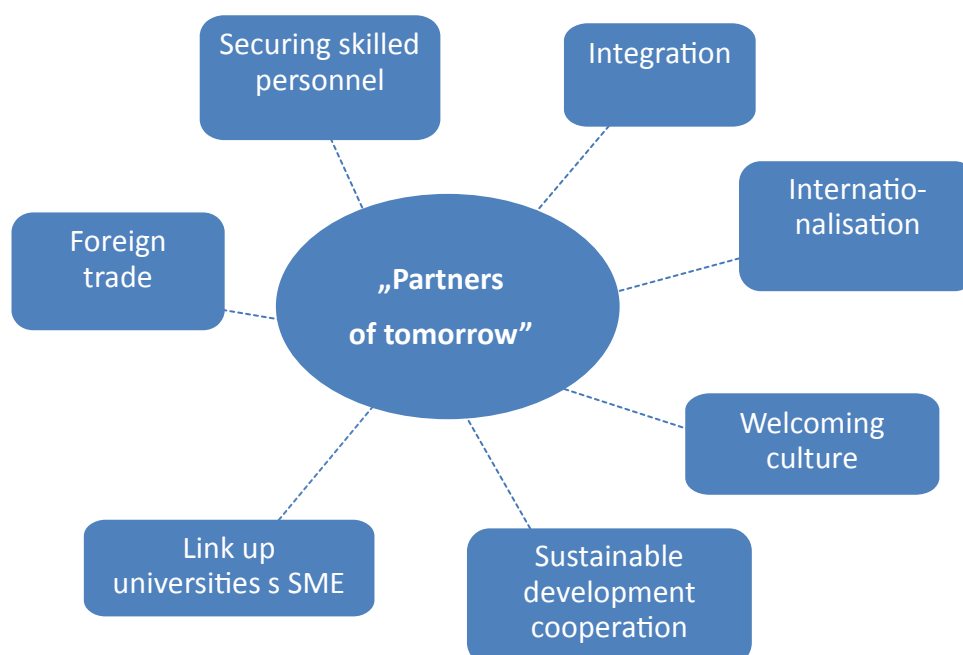
As for the in-service training of TVET teachers, while considerable in-service training and continuous development of teachers and managers occurs, it appears to be implemented in an uncoordinated manner

(ADB, 2010). Currently, the VEDI conducts in-service training for TVET teachers (pedagogy and technical fields). 150 teachers are trained annually, but nevertheless more than 1,500 teachers from the MOES have yet to undergo pre-service training. Under STVET Project \*2, TVET teachers need to be retrained in both technical and pedagogical aspects to serve the newly approved competency based training (CBT) curricula of four occupational areas, construction, cabinet maker, basic business and mechanic, consisting of 17 Jobs.

## 2 The Programme's Approach and Concept

The programme "Partners of tomorrow" promotes the strengthening and consolidation of international cooperation - primarily of small and medium enterprises (SMEs) - in the context of the internationalisation and Europe strategy of Saxony-Anhalt. The project had been initiated by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and is supported by the Ministry of Science and Economy of Saxony-Anhalt as well as by the Carl Duisberg Gesellschaft (e. V.). It is implemented in close cooperation with the Chambers of Industry and Commerce in Saxony-Anhalt. The key challenges the programme faces are summarised in the figure below.

Figure 1: Key challenges of the programme





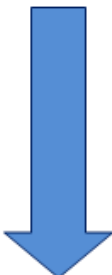
Emphasising the development of partnerships between foreign young talents and SMEs in Saxony-Anhalt, the programme focuses on three main objectives:

- 1) The facilitation of Saxony-Anhalt's internationalisation
  - New target markets could be developed for the participating companies.
  - Due to the participants' knowledge and experiences, cooperation could be initiated and/ or supported.
  - First contacts between the participating companies and foreign young talents could be enabled; possibly existing obstacles could be overcome.
- 2) The acquisition of suitable foreign experts for the economy of Saxony-Anhalt
  - The project is an ideal 'door opener' for foreign

students that enables or eases entry opportunities into the regional economy.

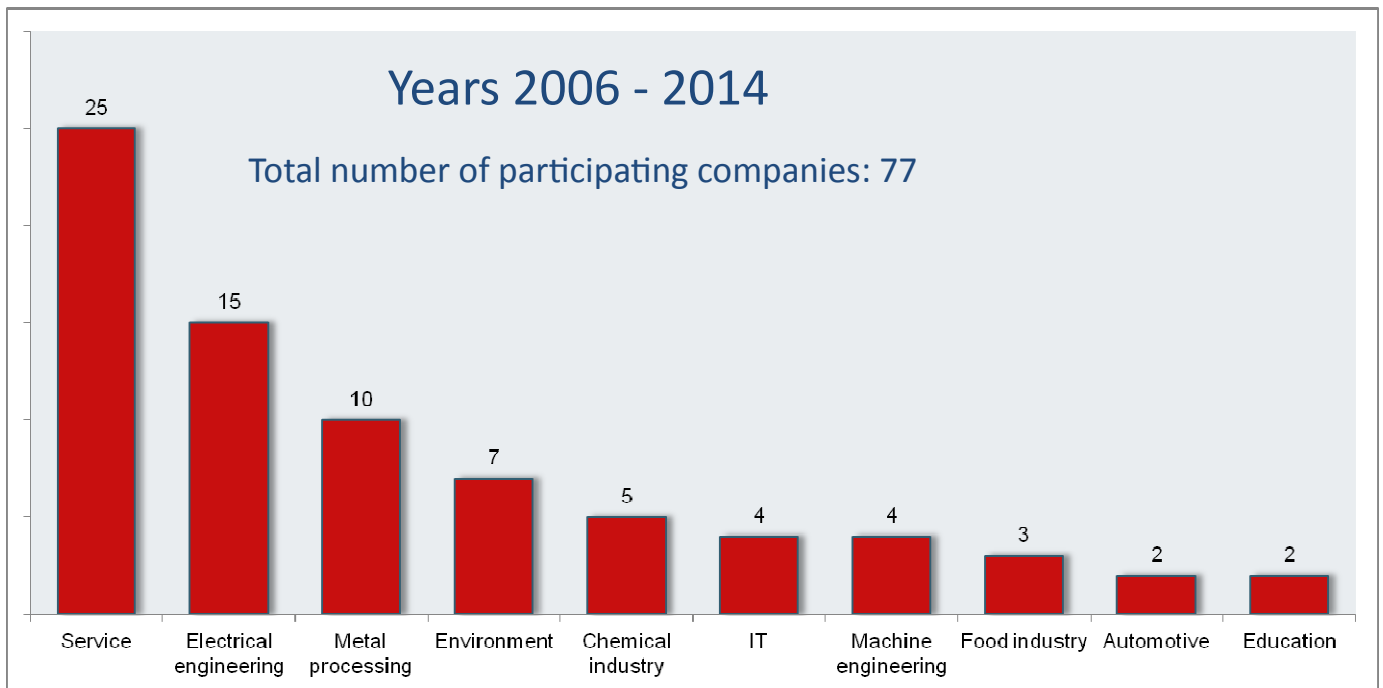
- In many cases the partnerships between companies and trainees outlast the traineeship period.
  - The programme makes an important contribution to the integration of foreign students into the state's economy.
- 3) The sustainable contribution to the development cooperation
    - The arranged traineeships contribute to initiate international economic cooperation and to enable first vocational experiences
    - Reliable working relationships are developed.

At the programme's implementation, the following elements are applied:

<b>1. Identification of needs</b> 	Detailed positioning efforts of SMEs from Saxony-Anhalt into foreign markets create the starting point. Therefore, specific scopes are identified and combined to a working package, which sets the frame for the traineeship and the required qualifications. Based on this profile, foreign young talents studying in Saxony-Anhalt and matching with the requirements are searched and brought in contact with the companies.
<b>2. Matching</b> 	Where the needs of a SME and the qualification profiles of a student correspond, a cooperation in the form of a traineeship with the SME is agreed. Ideally the target country of the SME's particular foreign activities is identical with the trainee's country of origin.
<b>3. Implementation of the traineeship</b> 	To enable vocational entry experiences for the student, the objectives of the traineeship are to apply the gained qualifications and to achieve common agreed objectives regarding the SME's foreign activities. Company tutors guide and support the foreign students during the traineeship period. They introduce them to the company culture, provide information needed for the elaboration of the company's demand and transfer their working experiences. The foreign students work actively and purposefully while they adopt new methods and acquire practical experiences. Together they reflect on the achieved progresses and decide the next steps.
<b>4. Follow-up and assessment</b>	At the end, all involved parties assess the traineeship in terms of the benefit for the planned foreign activities and for the trainee. Best practices are shared within the business network of Saxony-Anhalt and, if needed, adjustments for future programmes are analysed.

The following chart shows the origin of the participating companies according to their industry sectors.

Figure 2: Industrial sectors from participating companies



### 3 Programme's Benefits

Due to the described approach, the programme serves as a valuable tool to cope with the previously mentioned weaknesses in Saxony-Anhalt.

The participating companies derive direct benefits on several levels from the project. To give an example, the companies can be supported through the programme regarding a planned international business project by analysing the conditions, chances and opportunities of the particular target market competently and according to the companies' specific product portfolios. Other examples comprise the identification of target-aimed corporate contacts, the preparation of exhibition participations or the creation of a foreign-language internet presence as well as the elaboration of company-specific information materials. The companies can establish personal and trustful relations to future business partners abroad, which are of strategic meaning. Due to the additional working capacities, projects can be processed that would never be possible under normal conditions.

Furthermore, the companies get in touch with foreign young talents. They do not only apply their competences but also acquire cross-cultural experiences. This leads to an increased confidence in terms of international business activities. Besides, the companies can retain the foreign students as future employees on an early stage.

Foreign students offer a set of special advantages: They master the local language of specific target markets. Trustful cooperation could be planned and purposefully realised through existing contacts and networks in corresponding target markets. Country-specific experiences or knowledge are already available or can be accessed easily.

At the same time, the foreign students gain practical experience in the world of work and learn about the German corporate culture. They familiarise themselves with the innovative and technological potential of the host company. Consequently, they become ambassadors of these companies and their products abroad.



As trainees they get important impulses for their studies and/ or final thesis. They also improve their occupational entry perspectives and career chances after the completion of their studies in Germany. The young talents test their professional, language and cross-cultural competences with their tutors within a common learning process.

The increased awareness for the characteristics and differences of other cultures provides a benefit for all involved parties and helps to reduce prejudices towards foreign people and cultures.

#### 4 A Programme's Success Story

The solar industry, for which Saxony-Anhalt has become famous as one of the most important locations in Germany and worldwide, has grown into a significant economic factor in the region. A well-developed network connecting resident companies, such as in Solar Valley and in Central Germany, is one of the greatest advantages that Saxony-Anhalt has to offer.

In the following, one of the success stories of the trainee programme for foreign young talents is being presented. For several years MaxxContact has been successfully producing complete cabling solutions for photovoltaic systems, wind turbine generators as well as for machines and appliances. A new corporate sector is realised in the sale of components for photovoltaic plants.

##### **The company portfolio includes:**

- Cutting and finishing of cable and wiring (kitting, kit sets)
- Production of connection systems for photovoltaic modules and plants
- Finishing of connection systems for wind turbine generator towers
- Cable harness production
- Installation of components and switch boxes
- Sales of cable and wiring as well as system products
- Distribution of components for photovoltaic plants (wiring, connectors, inverters, modules, racks and accessories)

MaxxContact showed interest in the partner-of-tomorrow programme, as the company intends to

grow globally. For the objective of supporting the company at its positioning in on the Latin-American market and in particular on the Chilean market, MaxxContact and Mr. Omar Camacho Gómez were connected.

In 2010 the native Columbian graduated with a diploma degree as engineer for machine engineering and since 2013 he attends the master programme Sustainable energy systems at Otto-von-Guericke-University Magdeburg. He took notice of the programme for foreign young talents by an information post in the foreign students' social media network and applied for a traineeship. Due to his national and professional background he was invited as potential candidate and finally selected by MaxxContact.

Because of his language capacities Mr. Camacho Gomez was involved whenever it came to business activities in the Spanish-speaking world. He was charged with the preparation of business proposals according to the clients' inquiry and the contact initiation with customers. He conducted customer talks independently and translated the company's information materials into Spanish. With his company tutors he carried out market research on products and companies in the Latin American market, which are - just like MaxxContact- actively participating in the development of sustainable energy solutions.

At the end of the traineeship, Mr. Camacho Gomez could not only acquire practical experiences based on his technical knowledge from university, he could also improve his business competences in terms of company organisation and customer relationship management as well as he could develop his personal skills in terms of working attitude and self-management.

Within the traineeship period, MaxxContact achieved an increased general business potential, an enlarged potential range of customers as well as an enlarged



## Workshop 2

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# International Perspectives on TVET Personnel Development





# Workshop Session

In the second phase of the “International Symposium” a discourse has been opened, which invited the participants to discuss about „Current Requirements on the Qualification of TVET Personnel“. Referring to this, in the two workshops ten speakers from GIZ cooperation countries and Germany were presenting recent regional as well as global developments regarding the qualification of TVET staff.



## Workshop 2

In the second workshop, various international perspectives on recent demands of HCD for TVET personnel were presented, which were related to processes in modernising and reforming TVET systems. The five speakers described the current developments and challenges regarding TVET and TVET teacher training in Georgia (Ministry of Education and Science), Myanmar (GIZ), Mongolia (Ministry of Labour), Lao P.D.R (Vocational Educational Development Institute) and South-Korea (Human Resources Development Service).

The representative's contributions have raised important questions such as “What are the major challenges for TVET systems?” or “Are SMEs involved in the vocational education and training?”.

Also the debate to the justified question “What can be done to increase the reputation of TVET teaching personnel?” turned out quite interestingly.

From the workshop it was concluded that whenever a country is on the rise, it faces similar challenges regarding its TVET system. This includes first of all a lack of teachers and their low TVET-related pedagogical skills, technical qualification and esteem in the society can be a serious issue. Furthermore, within TVET systems the personnel which is familiar with methods for the development of curricula up to occupational standards is scarcely or not available at all.

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# VET Teachers Professional Development in Georgia

## Content

- 1 Background
- 2 Objectives of the Professional Development Programme for VET Teachers
- 3 Programme Relevance and Problem Analysis
- 4 Corresponding Activities on Research and Development of VET Teacher Professional Development - Action Plan

## 1 Background

The Ministry of Education and Science of Georgia is currently implementing the VET Development Strategy for 2012-2020 and Implementation Action Plan 2015-2018 with the help of connected institutions. The new vocational education and training strategy will take forward previous strategic efforts for greater employment and training opportunities.

Under the Ministry of Education and Science, the National Center for Teacher's Professional Development (TPDC) works on improving the teaching quality at schools, setting high standards of teaching and learning, as well as raising the teachers' status.

The center carries out its activities in two main priority areas:

- Professional development of VET teachers;
- Attracts qualified staff;
- Creates a positive environment for the new candidates to support them during the preparation process and help them grow professionals.

Since 2011, some pilot trainings have been organised and, with the beginning of 2015, a VET Teacher Professional Development Programme has been set up according to the national Vocational Education Development Strategy and Implementation Action Plan.

Basic challenges of vocational education in the Vocational Education Reform Strategy include: preconditions for the Vocational Education Teachers' Training, the entry of a VET Teachers' Trainee Programme, professional development - theoretical, as well as practical - and later, the increase of quality of the vocational education system.

Until the end of 2014, neither a structured vocational education teacher training nor a professional development system with lifelong-learning approach existed. Vocational education teachers were not trained at the system level. This impeded the recruitment of new and qualified candidates as well as their continuous development. Capacity building for vocational education teachers in specific fields was rarely implemented. The systematic implementation of teachers' professional development was desirable regarding the orientation of vocational educational activities to deepen professional pedagogical skills and the oppor-



tunity of conducting them into industry-led skills (on-the-job trainings and involvement of employers).

The objectives of the VET Teacher Professional Development State Programme are now to raise the competencies of VET teachers in accordance with modern standards and the support of their continuing professional development to keep both their subject and teaching expertise at the forefront of current developments.

## 2 Objectives of the Professional Development Programme for VET Teachers

One of the top priorities of the Vocational Education Development Strategy in Georgia is VET teachers' professional development and the turning of their profession into a more appealing and prestigious one. Due to changes in the VET system, teachers face certain challenges. Thus, in order to successfully meet those challenges, the professional development of vocational teachers is vital

### To provide an overview of the programme purposes:

- VET teacher skills development in vocational pedagogy
- Setting up a successfully functioning in-service and professional development system
- Boosting the teacher's vocational skills according to employer needs and requirements
- Developing vocational didactics knowledge for VET teachers and skills in compliance with vocational and modular teaching standards
- VET teacher skills enhancement in inclusive education
- VET teacher skills development in information and communication technologies

The programme's target group are public vocational school teachers of Georgia. The number of the activities carried out under the programme is increasing annually and the programme scope is significantly expanding.

Teacher trainings for the improvement of general professional skills will continue and, above that, industrial trainings and their scopes will triple. The mentor programme will be launched in public professional institutions, while a project for teacher com-

pulsory courses will be developed together with a teacher manual in pedagogy. The collaboration with international organisations within teacher professional development is planned. Additionally, VET teacher surveys will be carried out and meetings with them aiming at information sharing, problem identification and prevention will be implemented in a systematic way.

In order to plan the VET teachers' professional development it is important to investigate their academic needs and mood-perceptions. All the activities within the professional development should meet the teaching personnel's requirements and should fall within the field of their interest, so that the measures become effective for teachers and can also be reflected in the quality of teaching and student learning outcomes.

In 2014, the process of the modular programme development was launched in vocational education and also professional standards were resumed. The concept of the qualification and training of vocational teachers was developed and VET teacher's standards as well as their code of ethics were revised. According to the concept of the new programme, VET teachers were required to complete compulsory teaching trainings and acquire the knowledge of necessary teaching methods.



## 3 Programme Relevance and Problem Analysis

The actuality of the vocational teacher development programme contributes to the VET teachers' professional development. Similarly, the concept ensures the

attraction of new VET staff to the profession, it maintains qualified personnel in the profession and guarantees their development.

Nowadays, the key problem within this field is the non-existence of a professional development system for vocational teachers, which is accordingly reflected in the quality of VET. The professional development of teachers should be a priority at all levels, both for inductees as well as for teachers and all parties interested in the profession.

Therefore, it is necessary to plan and design effective and efficient activities for continuous professional development in order to improve teaching skills as well as professional competences. All the surveys carried out among vocational education teachers demonstrate that the main academic need of VET personnel is emphasised as vocational training in the industry and in close collaboration with employers. Taking into consideration the existing conditions and the requirements, the programme directly responds to the needs of vocational teachers and is focused on the development of their capabilities.

Since a unified system for the training and development of vocational teachers did not exist in the past, the activities planned for the development of VET personnel were of non-systematic and unorganised nature. Moreover, the results of the implementation of professional development activities were not summarised and the analysis of their practical use were not recorded. In-service trainings were not compulsory, however, teachers have never refused to attend

trainings or participate in any activities.

The number of teachers involved in vocational trainings or employment is quite unstable. Every year, the existing number of teachers is recorded and it is quite changeable. Apart from the fact that the introduction of the modular training will contribute to a stable number of VET teachers, it will also allow to determine the teachers' professional knowledge and skills with respect to particular modules. Implemented activities based on the identified needs will be effective and will have an appropriate impact.

The final design and completion of the vocational teacher training and development concept will enable us to pilot the concept in practice and then implement it according to the national action plan.

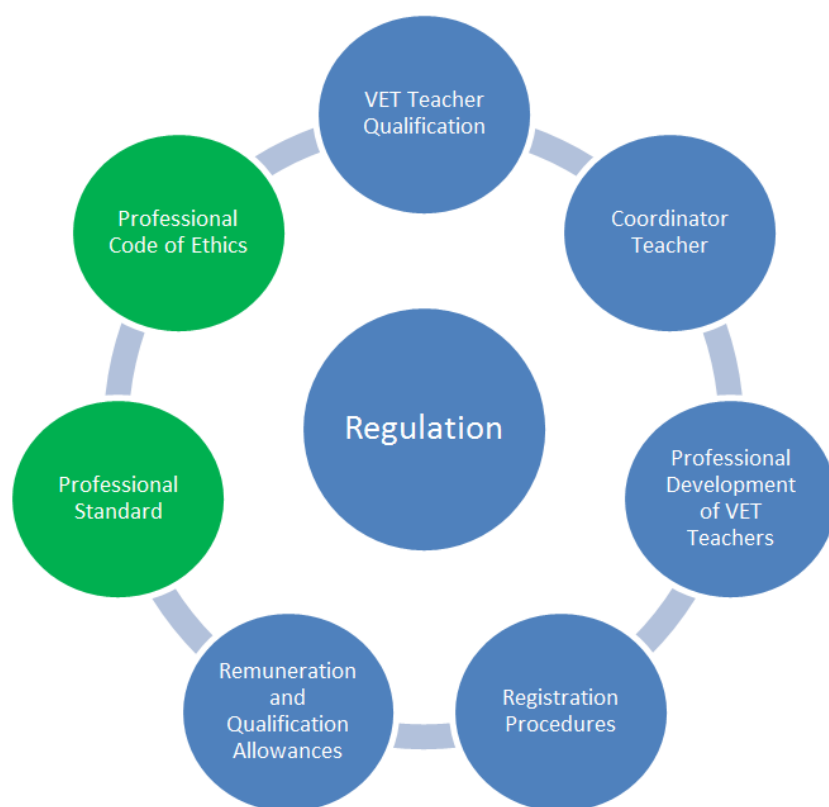
#### 4 Corresponding Activities on Research and Development of VET Teacher Professional Development - Action Plan

The Teacher Professional Development Centre of Georgia set up a Thematical Working Group (TWG) named "VET Teacher Professional Development" under the National VET Council, a political decision making instrument with the participation of five ministries and a large range of stakeholders e.g. trade unions and international donor organisations such as GIZ. In other fields of VET development more TWGs were established but at the moment the mentioned TWG is the most active and effective one.

#### Box 1: Objectives of the work of the Thematical Working Group

- Research and Development for a successfully functioning in-service and professional development system
  - ⇒ Definition and adoption of legal base on VET Teacher Professional Development
  - ⇒ Definition and adoption of supplementary orders on pedagogical qualification, registration systems and procedures of VET teachers, continuous professional development and organisational environment
- Teacher skills development in vocational pedagogy
  - ⇒ First piloting of parts
  - ⇒ Teacher Needs Analysis (TNA)/ survey on pedagogical qualification needs (pilot)
- Boosting vocational teaching skills according to employer needs and requirements
  - ⇒ Training of specialists in specific professional fields on systematical TNA in cooperation with Millennium Challenge Account (MCA)

Figure 1: Regulatory aspects regarding the Georgian VET system



Marked in green, the Professional Standard and Professional Code of Ethics have already been approved by the Ministry of Education and Science. The other documents are still in the regulation process.

The implementation steps of the VET Teachers Development Programme have been presented here. Of great importance is furthermore the development of a framework law and related orders to regulate the whole system for vocational teachers.

At the moment, the Teacher Professional Development Centre is in final review of the regulatory documents illustrated in the figure above.

In early 2016, an in-service basic pedagogical course will start as a pilot concept including several modules for vocational teachers. A basic guideline and a curriculum have already been developed. Soon, each teacher will get the chance to attend annual professional development courses and reach agreements with the school management board linked to personal career development opportunities (the result of career guidance for VET teachers).

The legal base for such an integrated teacher professional development programme has already been developed.

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# Professionalisation of TVET Teachers in Myanmar

## Content

- 1 Brief Overview of TVET in Myanmar
  - 2 Deficits of TVET Teacher Education
  - 3 Practices of TVET Teacher Training
  - 4 Activities of International Organisations
  - 5 Draft Concept Proposal
  - 6 Professionalisation of TVET teaching profession within ASEAN and Myanmar National Qualification Framework
- References

## 1 Brief Overview of TVET in Myanmar

As UNESCO (2015) declares, “qualified and motivated teachers and instructors are key for effective learning and are at the heart of TVET quality”. In Myanmar, however, there is still no formal training system for TVET teachers, nor a well-functioning TVET teacher education institution, despite the plans to work towards the establishment of such institutions and systematic training development. In this context, it becomes important to have a good, but feasible concept for TVET teacher education in Myanmar. This short paper will provide a brief overview of TVET in Myanmar, challenges, and a draft proposed concept.

This section describes the current status quo of the technical, vocational education and training (TVET) sector in Myanmar. The sector is still fragmented with eighteen line ministries involved. However, only thirteen ministries provide some types of TVET. In addition, there are approximately 350 different private TVET providers. The TVET database is in the development stage, but it is not sophisticated yet.

Currently, there is little cooperation between the TVET institutions and the industry, and the TVET curricula are developed without the involvement of the industry. Therefore, a skill mismatch exists between the demands of the labor market and the skills of the TVET graduates. There is, as a result, a high youth and graduate unemployment rate in Myanmar. The TVET infrastructure such as training facilities, equipment and teaching materials is underfinanced.

Furthermore, and like in many different countries, TVET holds a lower esteem in the society, and TVET teaching profession is not socially well recognised (Grollmann, 2009, p.1185). The TVET assessment is heavily based on declarative knowledge. To give an example, the training assessment does not include the components that evaluate the development of skills such as planning, problem solving, research, and leadership, although those skills are in fact necessary in their real work life.



## 2 Deficits of TVET Teacher Education

The present landscape of the TVET teacher education in Myanmar faces several challenges. A TVET teacher education system does not exist yet. There is an insufficient number of TVET teachers. As a result, the employed TVET teachers work overtime and they are overburdened with other responsibilities – for example, driving cars for school guests or supervising boarding houses. Most TVET Teachers are appointed from the government-owned factories, or recruited from the private sector. Only a few of them apply for teaching positions (Schmidt, 2015, p.45).

The lack of teaching media in the classroom leads to a teacher-centered approach. The black board is still the dominant media for the lesson delivery in some classrooms (Bleeken, 2013). Besides, the traditional, hierarchical structures can hinder the application of modern teaching methods. The power hierarchy between principal and teacher, and between teacher and the students is distinctive so that seemingly egalitarian, modern styles of teaching and learning can be seen as inappropriate and impracticable.

## 3 Practices of TVET Teacher Training

Until 1996, the Technical Teachers Training Institute (TTTI) provided one-year teacher training programmes in TVET. Approximately 10% of teachers at the schools under the Ministry of Science and Technology (MoST) hold certificates from TTTI. From 1996 to 2006, the Special Training Project (STP) offered short-term training courses for TVET teachers. Around 25% of TVET teachers in the schools under the MoST hold a certificate from those training courses.

The current practices of TVET teacher training are as follows. Three-month technical training programmes are available at the Technical Promotion Training center (TPTC) in Baelin, Myanmar. The MoST has assigned TPTC to become a TVET teacher training institute. However, currently only the teachers from the vocational schools under the MoST receive that training.

In addition, the Ministry of Industry (MoI) supports extra technical trainings for TVET teachers from six Industrial Training Centers (ITCs) under the ministry. The international donors such as ADB, GIZ, HTMI, and KOICA have delivered different kinds of trainings.

As stated before, technicians or employees from the industry are employed as TVET teachers. Although they have some technical knowledge, skills and understanding, they definitely lack the generic teaching skills.

## 4 Activities of International Organizations

Below's bulletpoints list the activities of international organisations in the area of TVET teacher training in Myanmar.

- GIZ, in cooperation with the MoI,
  - ◇ provided six-to-eight week teaching methodology training in Germany for TVET teaching staff from ITC Sinda as well as a four-week, consecutive programme for thirty selected teachers from five other ITCs.
  - ◇ implemented an eight-months International Leadership Training programme for TVET professionals for in Germany and other European countries.
  - ◇ has developed a multiplier training concept for TVET teachers and instructors under the MoST and planned to implement this training in early 2016.
  - ◇ provides an ongoing support for practical and pedagogical TVET teachers training at ITC Sinda.
- KOICA has signed a memorandum of understanding with the MoST to provide support in establishing a TVET Teacher Education Institution.
- SDC offers a short-term, training of trainers programme for skills development. The training course is available for the trainers from “Mobile Training Programs” and the Center for Vocational Training.
- UNESCO, in cooperation with the Ministry of Education, has offered a training of trainers programme at the Centre of Excellence for Business Skill Development in the Yangon Institute of Economics.

## 5 Draft Concept Proposal

Given that Myanmar has experienced a positive, political change, and the economic landscape has changed, the country needs more skilled workers and specialists. Based on the present situation, the following, draft short-term and long-term concepts are proposed.

In the short-term concept, the recruitment of experienced, committed practitioners from relevant fields are required. Another entrance requirement is working English proficiency, so that the trainees understand the training materials. To be able to recruit promising, future trainers and qualified tutors, an attractive salary of their profession should not be neglected.

Trainees must attend a compulsory training programme, which is modular and takes a minimum, six-

month duration. As figure 1 portrays, the training content comprises the vocational pedagogy and applied didactics. In module 6, trainees are required to practice teaching with the mentorship of a tutor at a TVET school. In case of the need for some recruited trainees, an add-up technical training should be provided.

Figure 1: Module structure and module content (M1-M3)

Module	Module Title and Content
M1	<b>Theories and Structures of TVET</b>
	<ul style="list-style-type: none"><li>• Institutional and technical pre-requisites of TVET</li><li>• Legal Framework of TVET in Myanmar</li><li>• Stakeholders of TVET</li><li>• Fostering partnerships in TVET</li></ul>
M2	<b>Assessment of Learning Outcomes</b>
	<ul style="list-style-type: none"><li>• Learning objectives definition</li><li>• Types of learning objectives (cognitive, psychomotoric, affective)</li><li>• Hierarchy of learning objectives</li><li>• Action-oriented learning and action-oriented assessment</li><li>• Forms of assessment (open, half-open, close questions, multiple choice)</li><li>• Principles of assessment (objectivity, reliability, validity)</li><li>• Assessment results and fostering students' development</li><li>Standards and Standard Development</li></ul>
M3	<b>Learning and Teaching Methodologies</b>
	<ul style="list-style-type: none"><li>• Micro methods (deduction/induction, analysis synthesis)</li><li>• Macro methods (role plays, projects, experiments, case studies, question guided text analysis)</li><li>• Principles of action-orientation</li><li>• Phases of lesson planning and lesson evaluation (preparation of lesson drafts, evaluation methods, reflecting teaching performances)</li></ul>

Figure 1: Module structure and module content (M4-M6)

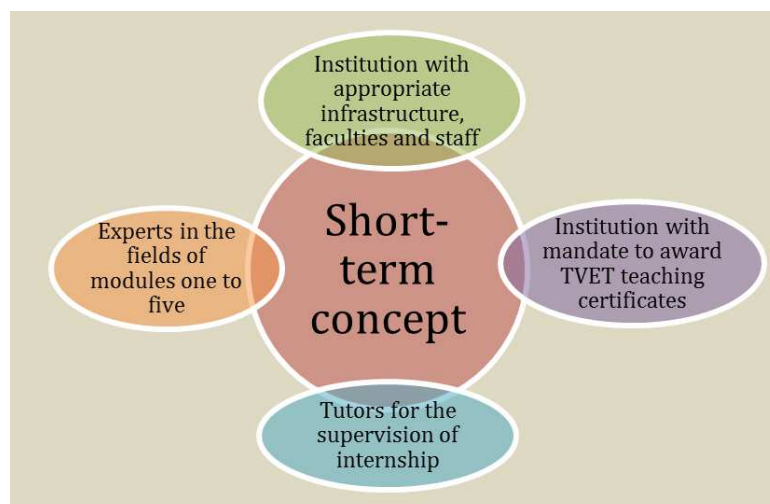
M4	<b>Applied Didactics (e.g. electrical engineering, mechanical engineering)</b>
	<ul style="list-style-type: none"> <li>Teaching and learning methodology tailor made for vocational disciplines (Transfer of issues covered in Module 1 to specific subjects)</li> </ul>
M5	<b>Curriculum &amp; Teaching Media Development</b>
	<ul style="list-style-type: none"> <li>International forms of curriculum concepts (traditional subject-oriented curricula vs. workplace-oriented curricula)</li> <li>Identification and wording of learning objectives (identification tools, analysis instruments)</li> <li>Modular concepts as innovative approach to curricular structures</li> <li>Types of media (haptive digital)</li> <li>Advantages and disadvantages of different media</li> <li>Principles of media design</li> </ul>
M6	<b>Professional Studies (internship)</b>
	<ul style="list-style-type: none"> <li>Participants develop and conduct classes under close supervision of a tutor</li> </ul>

Source: Bünning, 2015, p.31

In addition, for the successful implementation of this concept, an institution with the appropriate infrastructure, faculties and staff is essential. This institution must have a mandate to award the TVET teaching

certificates. Qualified tutors to supervise the internship, and experts in the fields of modules one to five also need to be recruited (see figure 2).

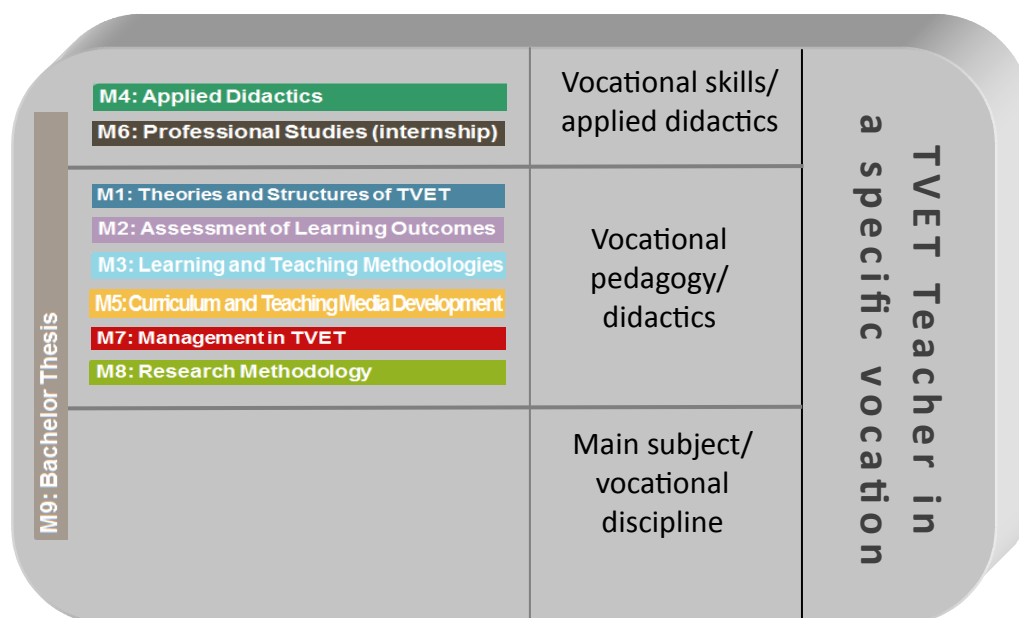
Figure 2: Implementation requirements of short-term concept



Next, to build a community of qualified TVET teaching personnel, a long-term plan is also necessary. The subsequent proposed long-term concept includes the concurrent model and the consecutive model. Both models propose to offer a three-year bachelor programme with 180 credit points (CPs): a block of respective vocational disciplines with 120 CPs as well as a block of TVET pedagogies and didactics with another 60 CPs. However, it needs to be noted that

based on the needs of different vocational disciplines and those of individual student teachers, interlinks between the course contents should be offered. It is highly feasible that modules 1-6 from the short-term concept can be transformed to the long-term approach, including three extra modules in management in TVET, research methodology, and the bachelor thesis (see figure 3).

Figure 3: Concurrent bachelor degree programme



In figure 4 below, a brief description of those extra modules is introduced. The objective of taking those extra modules is three-fold: through the management module, the teaching staff becomes aware of the overall picture of TVET management; furthermore, the

research methodology aims to train them to be able to see teaching as action research, while the bachelor thesis aims to deepen their knowledge and understanding of the profession in their focal teaching disciplines.



Figure 4: Module structure and module content of additional modules (M7-M9)

Module	Module Title and Content
M7	<b>Management in TVET</b>
	<ul style="list-style-type: none"> <li>• Institutional development</li> <li>• Staff development</li> <li>• Cooperation development with industry and other partners</li> <li>• School management</li> </ul>
M8	<b>Research Methodology</b>
	<ul style="list-style-type: none"> <li>• Qualitative and quantitative research approaches</li> <li>• Data analysis</li> <li>• Research fields in TVET</li> <li>• International research findings</li> </ul>
M9	<b>Bachelor Thesis</b>
	<ul style="list-style-type: none"> <li>• Independent research work</li> </ul>

Source: Bünning, 2015, p.33

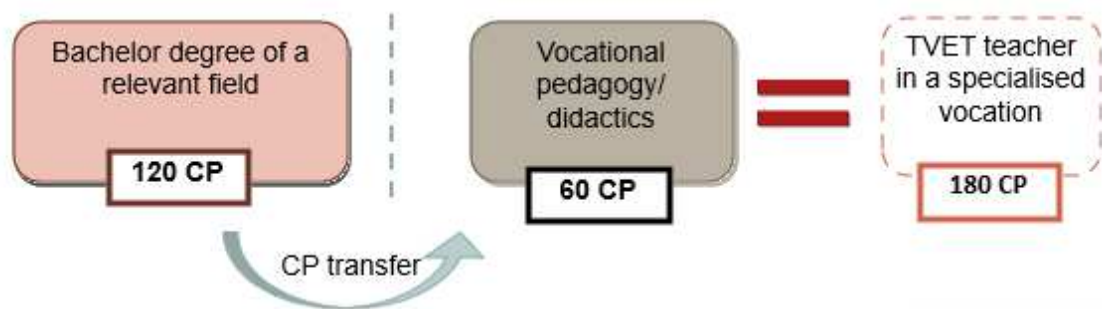
The first concept offers a concurrent bachelor degree, with modules 1- 9 taught in “parallel” to a selected vocational discipline (e.g. civil engineering) as main subject and forming one entire bachelor programme. The entrance qualification requires the successful completion of the matriculation evaluation, which is a legal prerequisite. This degree programme holds the following advantages and disadvantages. The benefits of this concept programme are that the student teachers identify themselves with the teacher role quite early, and there is a very close linkage between the vocational discipline and didactics and pedagogy. As the drawbacks, the programme cannot provide a quick response to occurring emergency needs of TVET teaching staff. In addition, high institutional requirements exist, given that the courses of both vocational disciplines and pedagogical didactics need to be offered at the same time.

Subsequently, the second concept delivers a consecutive (top-up) bachelor degree programme. As entrance criteria, the initial completion of a bachelor degree in a vocational discipline and successful demonstration of basic technical skills are required. As figure 4 high-

lights, the 120 CPs from their previous vocational degrees can be transferred into the programme. After taking 60-CP courses in vocational pedagogy and didactics, the trainees are eligible to work as a TVET teacher in the relevant vocational field. However, if needed the implementation of an additional technical skills training during the study period will be vital for the education and training of qualified TVET teachers and instructors.

Similar to other concepts, this proposed concept also constitutes some advantages and disadvantages. The positive aspects are that it can quickly respond to the demanding needs of TVET teachers in many vocational schools in Myanmar. Furthermore, the delivering institutions only need to focus on pedagogics and didactics. However, the downsides are that from the very beginning the identity development of a teacher is not fostered. So as the degree holder of a respective vocational field, the graduates could easily be head-hunted from the industry, resulting in the comparatively higher turnover rate.

Figure 5: Consecutive (top-up) bachelor degree programme



Source: Bünning, 2015, p.36

## 6 Professionalisation of TVET Teaching Profession within ASEAN and Myanmar National Qualification Framework

TVET teachers hold a fairly low esteem in Myanmar society and earn a very low salary, while the workload is unpredictable and comparatively high. The ASEAN Qualifications Reference Framework entails the potential to make TVET teaching profession more at-

tractive through putting TVET teaching qualifications in identical levels of degrees from higher education. This implies that the esteem in the society is influenced, and it also has implications on the salary in the long run.

Therefore, TVET teacher's degree structures need to be in line with newly developed Myanmar National Qualification Framework (figure 6), which fits to the current ASEAN qualification standards.

Figure 6: Proposed Myanmar National Qualifications Framework

Level	Sectors			Lifelong Learning
	Basic Education	TVET	Higher Education	
8			Doctoral Degree	Recognition of prior learning (Assessment and validation)
7			Masters Degree	
6		Degree	Post Graduate Diploma Bachelors Degree	
5		Advanced Diploma	Associate Degree	
		Diploma	Diploma	
4		*V&T C/SC4		
3		*V&T C/SC3		
2	High School	*V&T C/SC2		
1	Middle/ Primary School	*V&T C/SC1		

Source: Bünning, 2015, p.35

In conclusion, to be able to implement the proposed concepts some potential challenges and necessary steps should be taken into consideration. The Myanmar government needs to show the political and funding commitment to TVET planning and implementation mandates. Furthermore, in order to realise the teacher training programme, there is one critical requirement: an institution that has been selected as learning venue and provides the opportunity to teach both theory and practice. The training institution also has to be equipped with modern and appropriate technical resources as well as with the sufficient number of highly-qualified human resources (Bünning, 2015, p.33). A successful delivery of the bachelor-degree course is only possible if having bundled the technical competencies for teaching vocational disciplines, as well as the pedagogical competencies for teaching (vocational and applied) didactics.

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# Human Capacity Development of the TVET Sector in Mongolia

## Content

- 1 Introduction to the Mongolian TVET Sector
  - 2 Human Capacity Development (HCD) Activities
  - 3 Best Practices and Results from Implementing HCD Activities
- References

## 1 Introduction to the Mongolian TVET Sector

The present article is giving an overview of the Mongolian TVET sector, the activities undertaken by the Ministry of Labour (MoL) and its international partners to develop human capacities in line with future development plans.

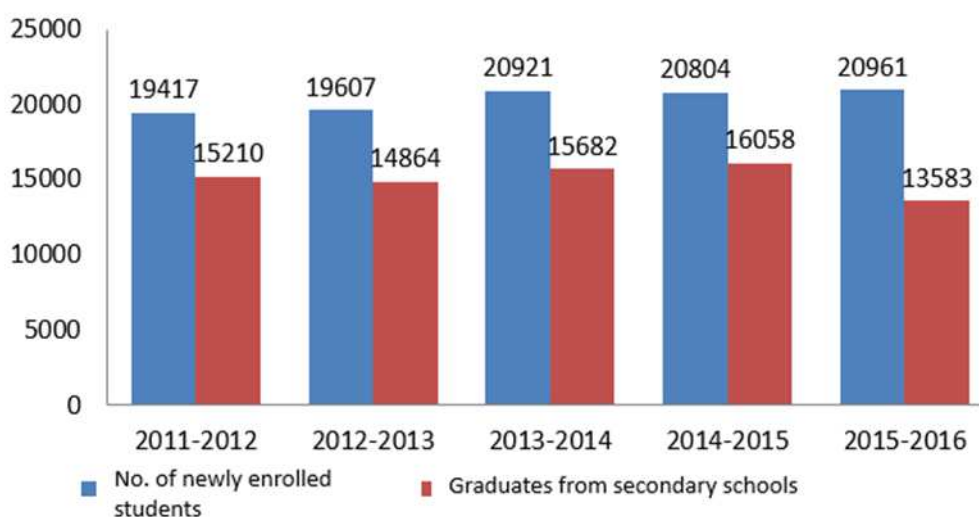
The Democratic Republic of Mongolia is located in east-central Asia between Russia and China and maintains a parliamentary government. With an area of 1.56 km<sup>2</sup>, its economically leading sectors are agriculture, mining and mineral resources. The annual gross domestic product growth amounts 7.8% (The World Bank, 2014).

In the mineral resource sector there is a high and further increasing demand for skilled workers, mainly in occupations such as construction, electrical engineering and mechanics maintenance. According to the Mongolian government, 40,000 additional skilled workers at technician level will be required by 2018.

Mongolia has a very young population; the majority of the population (68.9%) is in labour force and aged from 15 to 64 years. Only 41.8% of the enrolled students in higher education do find a job after their graduation, which is the reason for the remarkable drop of higher education enrolment rates during the last two years. After all, 63.4 % (school year 2014-2015) of TVET students are in employment since their graduation. The stable enrolment rates in vocational education and training can be seen from the following figure.



Figure 1: Student enrolment in vocational education and training institutions



The Mongolian market is driven by demand and puts emphasis on emerging and growing economic sectors and competency-based training. The National Council of TVET (NCVET) is subordinated to the Mongolian government and has the highest authority for (technical) vocational education and training (see fig. 2). It includes representatives of both employers and trade unions. The employer's involvement in the delivery of vocational training courses is commencing but not far developed yet. The development of a National Vocational Qualifications Framework is already advanced (OECD, 2012). Corresponding plans to link the qualifications framework to quality assurance mechanisms are under development.

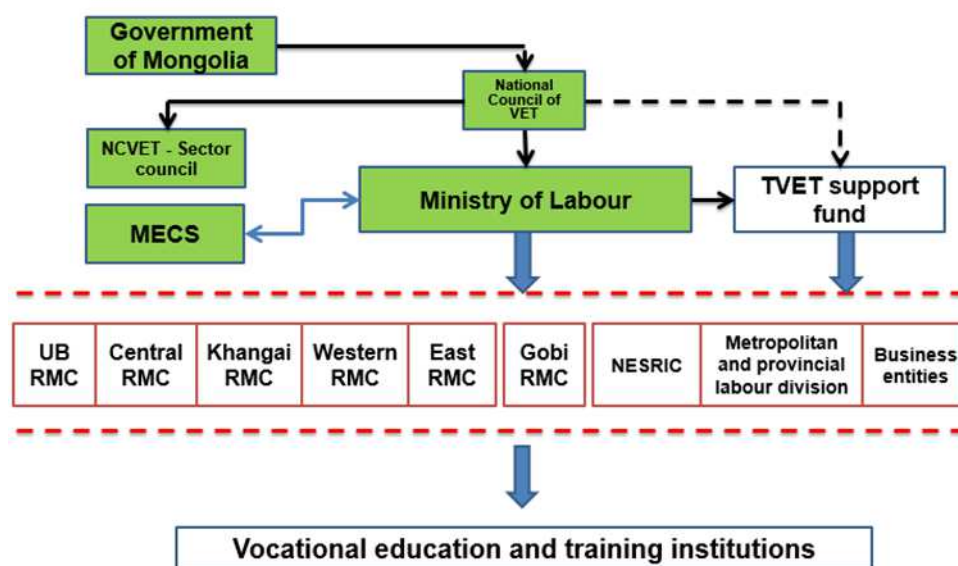
TVET in Mongolia is carried out more or less equally by public and private training providers, in Vocational

Education and Training Centers, Politechnical Colleges or TVET institutions under the state-owned or private higher education bodies. Since the Ministry of Labour is now responsible for short-term study programmes (rather than the Ministry of Education), industrial branches are more involved and training courses in collaboration with big companies are recently acknowledged by the state.

The developed policy recommendations of NCVET have to be approved by the Minister of Education. Together with the Ministry of Labour, the Ministry of Education, Culture and Science (MECS) is the main organ of government for the coordination of the activities of NCVET.



Figure 2: Vocational education and training system of Mongolia



Creating basic requirements for a competency-based training and assessment is the key target of the new TVET law. With it, also public private partnerships should be established.

From a total number of 81 currently existing vocational education and training institutions, 49 are state-owned while the rest is in private hand.

## 2 Human Capacity Development (HCD) Activities

As a good practice example, the Mongolian Ministry of Labour and the „Cooperative Vocational Training in the Mineral Resource Sector Project (CVT)“ of GIZ have been jointly organising and implementing HCD activities since 2014.

In the past few years, Mongolia has experienced a tremendous demand for skilled workers, especially in the sectors of electrical engineering, construction and mechanics <sup>1</sup>. What the project also intends to tackle is

the lack of comprehensive further training programmes for senior job-seekers without any formal vocational training in order to create spaces for improving their livelihoods.

The vocational training and counselling project is a regional approach (see fig. 3) to capacity development of institutional and human resources as well as to improve the population's employability under the conditions of promoting a sustainable and inclusive economic growth based on mineral resources. All coordinated HCD activities are financed by the Governments of Germany, Switzerland and Australia. The leading executive agency for those activities of Mongolia is the Ministry of Labour.

In total, over 500 people have been trained within the frame of HCD trainings in Germany and Mongolia until today. The participants include representatives of MoL, TVET school teachers and managers, career guidance counsellors, in-company instructors and other representatives of companies, professional

<sup>1</sup> According to data from the Mongolian government, 40,000 additional skilled technical workers will be required by 2018.

Figure 3: CVT project regions



associations, chambers and trade unions. Completed HCD trainings comprise practical and methodological trainings for TVET teachers and in-company instructors that are provided by professional associations as well as study tours on specific topics to learn international best practices (e.g. TVET management, labour market policy or career guidance).

In addition, capacity development is offered by national and international consultants as well as by international long-term technical advisors who are placed at 12 Mongolian partnering TVET schools. One example of their work is the delivery of day-to-day advice on implementing newly developed TVET curricula that meet the international standards using teaching materials, tools and equipment.

### 3 Best Practices and Results from Implementing HCD Activities

The HCD training participants' feedback shows that these trainings are "significantly beneficial". In detail, the results of survey participants, who were randomly selected, revealed that the teaching skills at TVET schools, in-company instructors and career guidance counselors have improved. Besides, the training quality in TVET has also improved and consequently, trainees are being prepared to meet employers' needs. Finally, the conviction of a labour market-oriented

TVET system that contributes to economic development could be strengthened.

To ensure the sustainability of human capacity development, MoL, GIZ and Oyu Tolgoi have cooperatively established "Competency Centers" at Polytechnic Colleges in the Darkhan-Uul, Dornod and Umnugobi provinces for the selected disciplines. These "Competency Centers" are to train students, teachers, specialists at the Regional Methodological Centers and company staff according to international standards. Therefore, it is the aim of those centers to cooperate with international TVET institutions and to provide support for the implementation process of a new diploma programme for career guidance counselors at selected Mongolian education providers.

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# Requirements and Strategies for Quantitative and Qualitative Improvement of TVET Personnel in Lao P.D.R.

## Content

- 1 Current Goals and Practices
  - 2 Development of TVET Personnel
  - 3 Challenges and Strategies for the Development of TVET Teachers
- References

## 1 Current Goals and Practices

Currently, TVET teachers in public TVET schools have, in principle, the status of permanent employees and the decision of recruiting them is made by the central government. Meanwhile, the VEDI and the National University of Lao PDR (NUOL) have been playing a critical role in pre-service TVET teacher training. Until 2008, the Faculty of Engineering of the NUOL was training the theory TVET teachers at Bachelor level (25 per year), whereas VEDI was training the practical TVET teachers and trainers at Higher Diploma and Bachelor (continuous) level (50-60 per year). This capacity was assessed as not in accordance with the ambitious target of TVET expansion set by the government<sup>1</sup>. Thus, the MOES decided since 2008 to expand the TVET teachers training capacity to some selected TVET institutions. In total, 600 new teachers will be trained each year during the upcoming five years and the Ministry of Education and Sports

(MoES) was ready to allocate appropriate resources based on a yearly plan and curricula submitted by schools that are approved by them.

As for the in-service training of TVET teachers, while considerable in-service training and continuous development of teachers and managers occurs, it appears to be implemented in an uncoordinated manner (ADB, 2010). Currently, the VEDI conducts in-service training for TVET teachers (pedagogy and technical fields). 150 teachers are trained annually, but nevertheless more than 1,500 teachers from the MoES have yet to undergo pre-service training. Under STVET Project<sup>2</sup>, TVET teachers need to be retrained in both technical and pedagogical aspects to serve the newly approved competency based training (CBT) curricula of four occupational areas, construction, cabinet maker, basic business and mechanic, consisting of 17 Jobs.

<sup>1</sup> GIZ (2011) prognosticated in 2011 that up to 5,000 teachers and trainers had to be trained and employed from 2010 to 2020, more than tenfold higher than the current capacities.

<sup>2</sup> STVET project is ADB Grant which will last for 5 years focusing on 4 occupation areas, 8 public institutions and 3 private were involved. Competency Based Approach to training will be deployed.

Under Vocational Education Laos (VELA), there are three main components that support the new TVET Reform Policy. These three components are as follows:

- Improvement of regulatory framework including TVET Development Plan 2016-2020, TVET Qualification Framework (VNQF) and regulations under TVET Law.
- Improvement of Dual Co-operative Training Scheme, known as DCT, similar to the dual training in Germany
- Improvement of access of disadvantaged groups with basic skills (more than 10,000 people) and semi-skilled to level up so that 2,000 people will join the initiatives.

At the same time, the “Strengthening of TVET Project” (STVET) (2011-2015) also contributed to a very large amount in human resource development especially teachers, managers, final year students and disadvantaged groups through contract training, training vouchers and so on.

Besides the traditional TVET institutions, there are now Integrated Vocational Education and Training (IVET) Schools, which deliver formal TVET and non-formal basic vocational training to different target groups including disadvantaged youths and adults. This refers to a new concept of TVET schools in rural areas developed with the support of GIZ. So far, there are nine IVET schools under the MoES that have been supported by the German government through financial and technical cooperation programmes.

## 2 Development of TVET Personnel

As previously mentioned, the development of TVET personnel has been conducted through pre-service and in-service training approaches. Attempts to standardise the TVET personnel ranging from teaching staff to management have been initiated in the past ten years, however, putting them into real practices is not yet considered as a formation of a comprehensive system. The curricula for training of trainer at 4 levels as well as for the training of TVET institutions' managers is under development. The Vocational Education Development Institute (VEDI) is the main organization for TVET personnel development but it is difficult to coordinate the development of teachers and trainers of 11 ministries. It is expected that VEDI will play a key role in supporting TVET development in Laos including personnel development, curricula and media development, research and analysis and to report

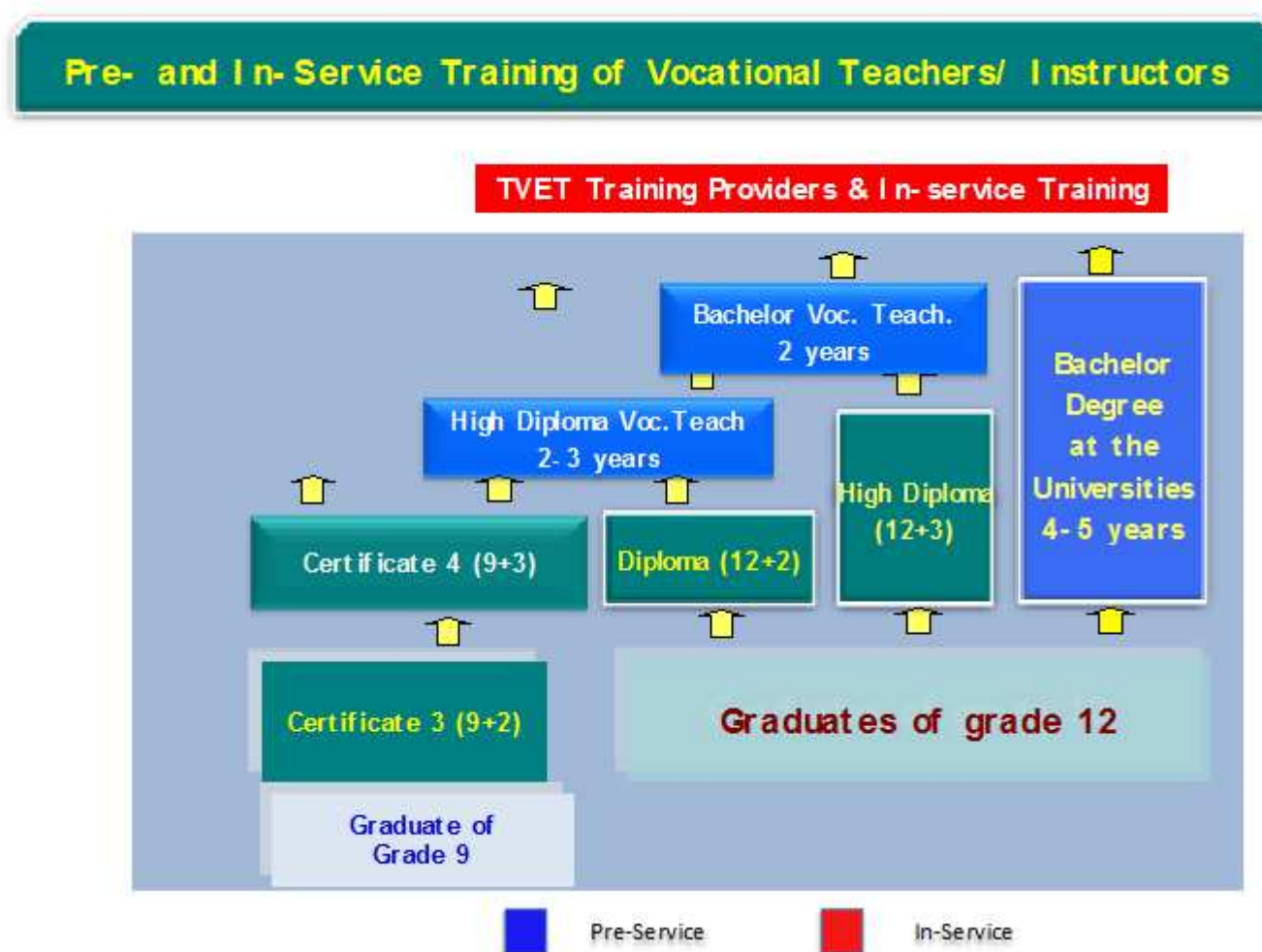
all the TVET related activities to the Ministry of Education and Sport as well as the government of Laos. In cooperation with Germany standards for TVET teacher trainings have been developed with one set of generic definition based on competencies through the TVET Teacher Training Project (TTEP).

All donors supported a significant number of teachers and managers training activities, as they are perceived as a key success factor for management and implementation process. The Technical Vocational Education Department (TVED) plan for 2014-2015 set a target of 500 teachers to be trained in short-term courses and 150 to follow international training. Due to the expected increasing number of TVET students, around 300 new teachers are needed from 2016 to 2020. At the same time, practicing teachers who are holding higher diploma and diploma levels need to be upgraded and qualified. However, capacities of VEDI, in terms of infrastructure and personnel, are limited so that support and contribution to VEDI are urgently needed otherwise the government's aspirations cannot be satisfied.

Nevertheless, TVET personnel is not only referring to those who graduated from the system mentioned above. There are more than half of total recruited personnel come from various institutions in the country and overseas, thus in-service training is another approach to train our personnel. From 2009 to 2015 the total number of trained TVET personnel has noticeably risen from 1,266 to 2,290 people. In comparison, the capacity to train new teachers by VEDI and the number of assigned TVET institutions is still below the quantitative and qualitative target. From the academic years 2003 until 2015, 514 TVET teachers were trained in the fields of business, construction, mechanic, electric/electronics and agriculture, most of them in the latter mentioned (HD Program, VEDI). During 2009/2010 a number of 108 TVET teachers graduated from other TVET institutions in the trades of construction, business, hostelry, agriculture, automotive, IT and electric engineering (TVED).



Figure 1: Pre- and in-service TVET teacher development



On the other hand, the in-service training programme for TVET teachers is to be accomplished both in country and abroad. The training has been focused on some aspects like management, pedagogy and skill upgrading training. Regarding the in-country training, VEDI is one of the key training organisations that undertakes the in-service training on management in TVET and pedagogy upgrading. From 2000 to 2014 there were more than 2,300 teachers trained by VEDI on pedagogical know-how. In collaboration with donor agencies, TVED has sent 432 teachers to neighbouring countries, mainly Thailand, to upgrade their skills in a period of four years. Multiplier Trainer Training in the field of management, pedagogy and professional skill upgrading has been initiated with the support of the TEMASEK Foundation of Singapore

and STVET project. The intention was to train the core trainers who then have the mandate to train further three trainers at the sending institutions. The initiative has been put into practice for a period of more than three years. More than 120 teachers and 30 managers have been trained as core trainers from this project, however, the application of their know-how in the sending institutions is still an issue. Furthermore, there is no report available concerning the post-training impacts.

### 3 Challenges and Strategies for the Development of TVET Teachers

There are five main challenges for the training and education of TVET teachers:

- 1) Low qualification and high demand of new TVET teachers
- 2) Limited co-operation between TVET teacher providers
- 3) Low salary of TVET teachers
- 4) Limited movement of TVET teachers
- 5) Not unified teacher training system
- 6) Lack of budget from the government and limited support from donor agencies

According to TVET law, personnel on this sector includes management personnel, academic personnel and teaching staff. TVET teachers are classified into two types: theory and practice instructors. The latter comprises workshop instructors and in-company trainer. Theory teachers are mainly those who completed a university education in the country or

overseas without any teaching experience. Compared to that, practical instructors are those who have learned from TVET institutions. Among these, some were selected to join the higher diploma programme at VEDI. Those who do not obtain pedagogical experience will be trained while they are in workplaces. The following strategies will be deployed for future development of TVET teachers and instructors in Laos.

#### 3.1 The Pre-service Training

The higher diploma programmes (as shown in table 1) are offered for two target groups, group one includes those who completed the certificate 4 or the 9+3 programme, which lasts for 3 years. Group two includes those who completed diploma in TVET or 12+2, which lasts for 2 years. Training courses at the Higher Diploma Level are to be conducted by VEDI.

Table 1: The structure of higher diploma programme

Description	Training Programmes							
Semester	1	2	OJT	3	4	OJT	5	6
Activity	Skills	Skills	OJT	Skills + Pedagogy	Skills + Pedagogy	OJT	Professional + Pedagogy + School Management	Teaching Practicum + project
Period (weeks)	20	20	12	20	20	12	20	20
Credit	20	20	4	20	20	4	20	15

The bachelor degree level started in 2010 with the aim to upgrade teachers who are holding High Diploma Certificates as well as to improve the quality of delivering at the training delivery institutions. The regular bachelor programme (as shown in table 2) lasts for four years and the continuous programme for two years. It has been offered by three institutions

with 237 graduates since 2007. Currently, 115 students are enrolled in the TVET teacher training at bachelor level, provided by VEDI and the Teacher training department of FOE (VEDI and TVED).



Table 2: Structure of bachelor's programme at VEDI

Activities	Training Phase			Training & transfer phase	
Semester	1	2	school vacation	3	4
Period	20 weeks	20 weeks	14 weeks	20 weeks	20 weeks
Topics	Field related	Field related Pedagogy Modern media	OJT or Internship	Field related Pedagogy Management	Teaching practices Project
Credit	20	20	4	20	15

For the master's programme it is planned to collaborate with external universities following such concept as RECOTVET/Regional Cooperation Platform (RCP) involving five countries China, Vietnam, Laos, Thai-

land, Malaysia and Indonesia. It is recommended that the trained master trainers, who already collected more than 60 credits, should be the first and foremost target group.

### 3.2 The In-service Training

The in-service training will come in line with the TVET reform, that is moving towards Competency Based Training (CBT), modernised teaching and learning approach and the improvement of workplace learning. The following strategies are being deployed.

#### 1) Implement Teaching Competency Standard

In 2011, a teaching competency standard has been drafted by VEDI and approved by TVED. The standard consists of 4 levels, with a total of 43 teaching competency units. Table 3 below presents the structure for future TVET trainers.

Table 3: The structure of proposed TVET teacher

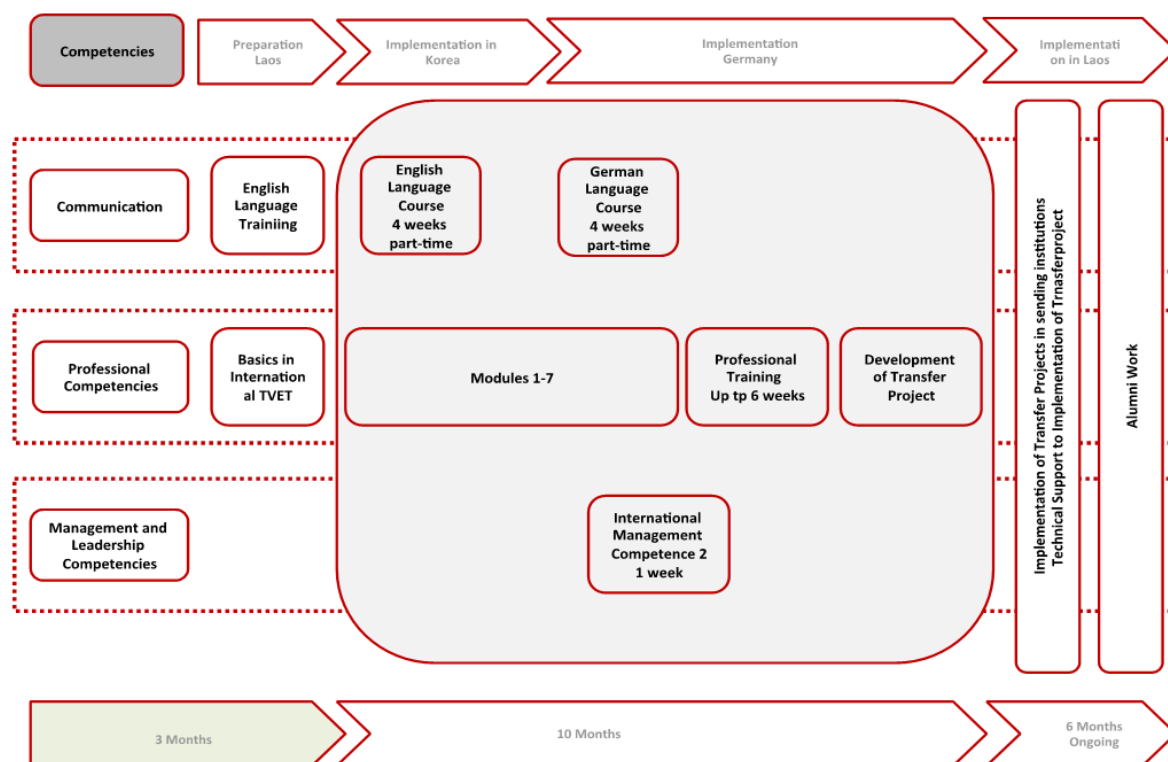
Vocational Teacher Education Certificate	VTE-C1	VTE-C2	VTE-C3	VTE-C4
No of teaching competency units	10	11	11	11
	+			
TVET Qualification (preferred)	Diploma	Advanced Diploma	Master Craftsman (BA TVET)	Vocational Graduate Diploma (Specialist 1)
	=			
Vocational Teacher Qualification Level	VT QF 1	VT QF 2	VT QF 3	VT QF 4
Official name	Junior Teacher	Experience Teacher	Expert Teacher	Senior Expert Teacher

## 2) Training of Master Trainers (pedagogy and methodologies)

In parallel to this development, TVET teachers who are working for non-project schools will be trained on the multiplier-training scheme (MTS).

The trained master trainers have to train other trainers in the country. The following concept is applied for the master trainer training.

Figure 4: The master training concept



The main target of this programme is to foster competencies in didactics as well as in applying pedagogic and teaching methods and to impart basic knowledge of general teaching skills. An integrated transfer project is crucial as it is an individual project designed for the home institutions of the participants. Each partici-

pant is going to implement the transfer project in his or her home institution with up to 20 colleagues, 14 days training, 10 Institutions with budget support of 9.5 Mio KIP per project from which 200 teachers will be trained.

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**Human Resources Development Service (HRD) Korea**



# Greatest Challenges for VET in Korea

## Content

- 1 Background of VET Development Cooperation in Korea
  - 2 Development of Korea and Related Challenges
  - 3 Development of National Competency Standards
  - 4 Work-based Learning Dual System
  - 5 Outlook
- References

## 1 Background of VET Development Cooperation in Korea

There was nothing to be remained in Korea after the period of Japanese occupation for a period of 35 years. The Korean War converted the country to the poorest in the world. For seven years the country remained in chaotic situation due to the three years of war. After that, the military general Park Jung Hee assumed the reins of government in 1961 and was supposed to design the first 5-Year Economic Development Plan. However, no budget was available.

The president of the USA, John F. Kenedy, refused official development assistance for Korea since he did not acknowledge the general park. In that time, Germany supported Korea and the two countries completed a memorandum of understanding on the establishment of vocational schools. The partnership agreement regarding technical cooperation between Korea and Germany in 1961 was signed in 1963. Then, president Park officially visited Germany being his first visit in Europe and the president of Germany, Karl Heinrich Lübke, gave him advice, especially addressing the nurturing skilled workforce and the constructing of motorways.

Thanks to the support of Germany, the Korea-Germany vocational institute opened in 1967. As a result, the first motorway was built in 1968 and opened in 1970. It is a good opportunity now to express gratitude to Germany because it held out hands. In this context, Korea is actively willing to support the developing countries for a sustainable development in the world. Korea became one of the member country of Development Assistance Committee as a donor country in 2010 and would like to share the hope to the country needed aid.

In the 1960s, with Germany's support the framework for a TVET system was initiated and the economic development policy was actively implemented in the 1970s. The law of compulsory vocational education was enacted in 1976 and the government started to cultivate skilled workers transferring the policy direction from labor-intensive to technology-intensive industry in 1990s. At that time, the Human Resources Development Service (HRD) of Korea was established.



## 2 Development of Korea and Related Challenges

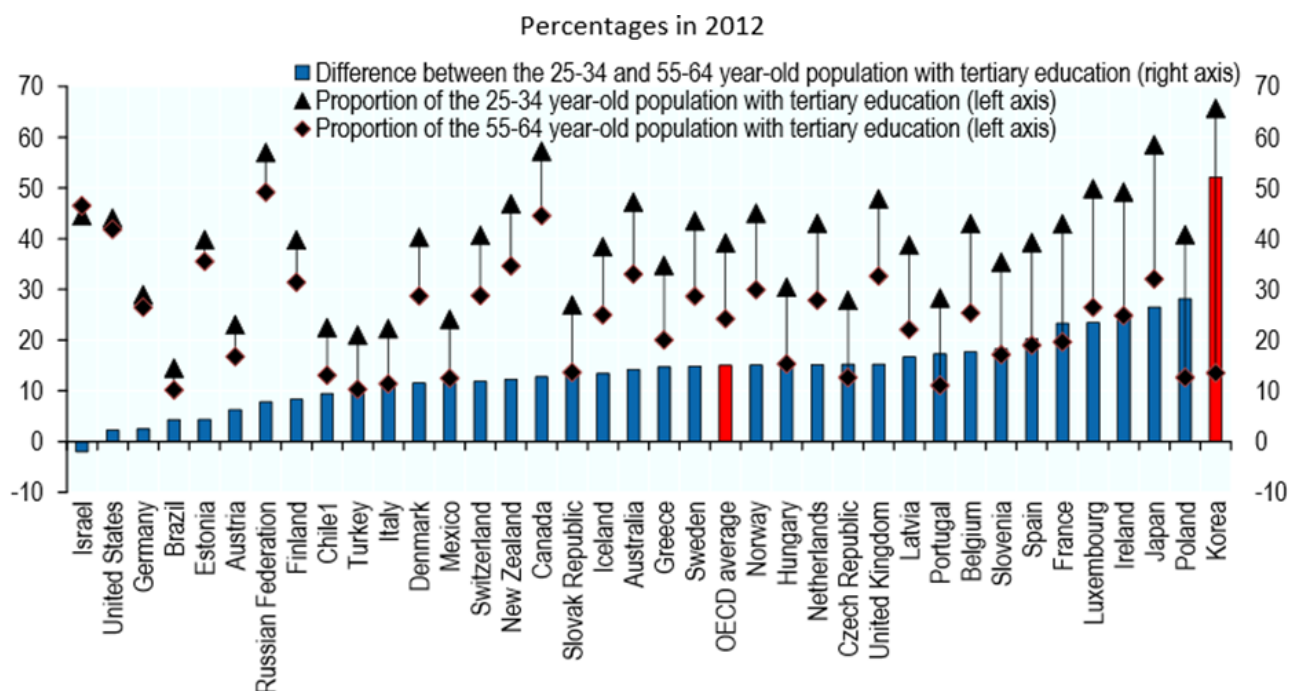
The country developed a high-technology industry and a high-level service sector during this period, and the employment insurance was launched in 1995 as social security. Then, Korea was hit by the financial crisis in early 1997, but even here the employment insurance played a pivotal role as social security. Due to the great efforts of both Korean government and the people, economic growth became possible. In fact, the poorest country in the world became the 10th important economic power country within 60 years.

Korea does not have natural resources and the size of the country is ranks 109 in the world. Its population is limited with less than half of Japanese population. However, Korea considered its people also as human resource, which created some challenges. Parents who

experienced poverty, invested in education for their children by working hard. The parents believed that their children could live affluently and happily if they graduate from universities. Therefore, at some point there were too many highly educated young people. In 2005, the university entrance rate amounted 82 % as the double of Germany's. Thanks to effort of reducing the rate by the government it could be decreased to 70% in 2013

The imbalance had serious causes in the labor market: A high unemployment rate prevailed and the industries lacked workforce in the industry. After all, the education gap between the young and old generation became the highest in the world as you can see in the chart below.

Figure 1: Generation gap in tertiary educational attainment



Source: OECD 2014: Education at a glance: OECD Indicators. Paris: OECD Publishing.

Although Korean youth are highly competent, there is still a lack of workforce in the industrial sector.

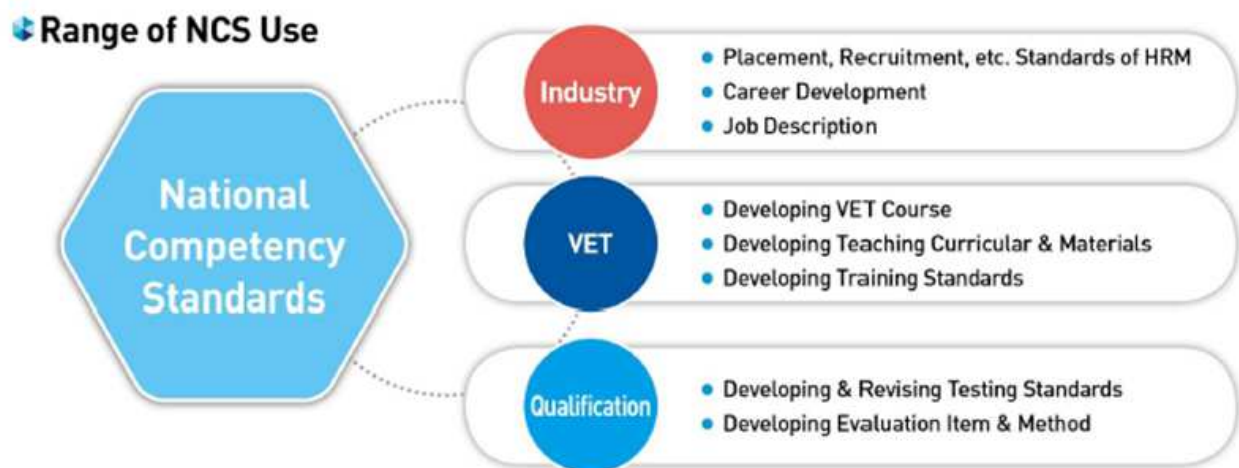
Another difficulty approached by dint of the parental generation, who worked hard to educate their children. The population in Korea is fast aging and in this situation, the demands of schools, companies and workers are high and distinct. Schools required many programmes tailored to the industry needs and companies were required to make efforts to increase the effectiveness of vocational training. Workers were also required to learn the content and knowledge which was needed in the workplace.

The government was to make efforts to establish a competency oriented society that reduces the gap between education and labour market, which means a transfer from an academically oriented society to a competency oriented one. In order to accomplish this vision, two great challenges arose.

### 3 Development of National Competency Standards

HRD developed national competency standards (NCS) to link the education system to the qualification system as well as to the work-learning system to create a competency oriented society (see figure 2). Through NCS, education gets connected within the framework of schools, vocational training institutions and industries. With these competency standards the knowledge, skills and attitude needed to perform duties in the workplace got systemised for each industrial sector and level (corresponding to Article 2 of the Framework Act on Qualification). Additionally, the involvement of the government to make workers successfully complete their job duties got standardised.

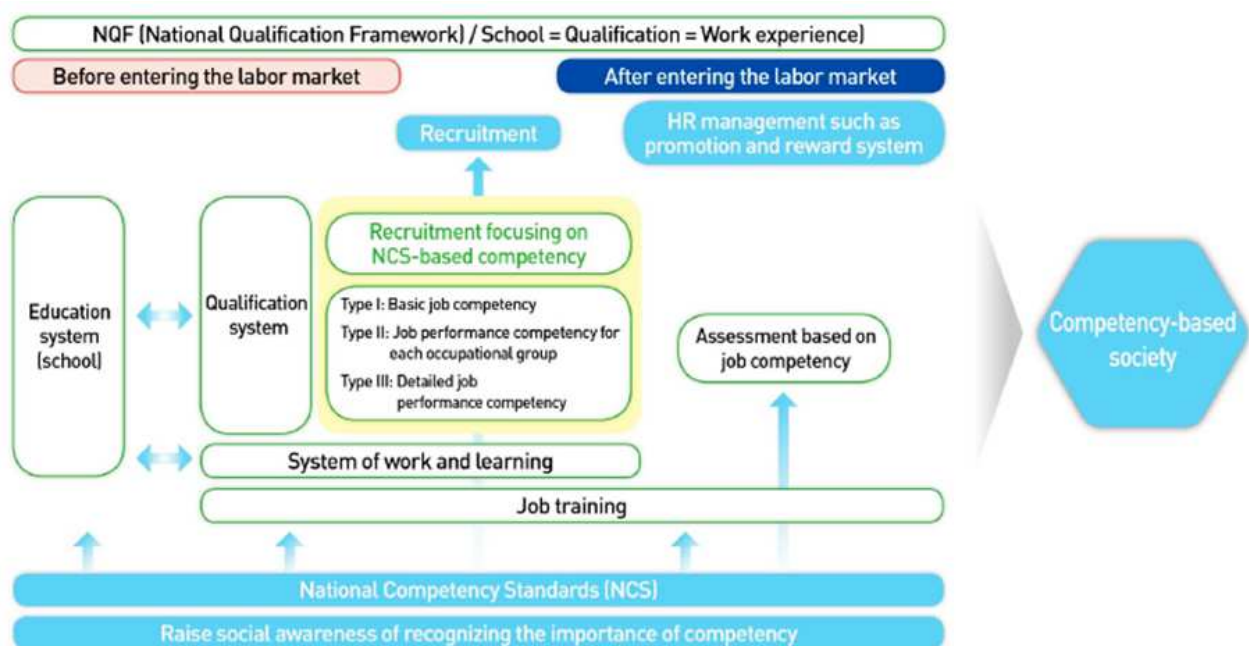
Figure 2: Overview National Competency Standards



Based on NCS, it is available to develop human resources appropriate for the industry through implementing vocational training, qualification and career development. With this process, NCS plays a pivotal

role for the crucial infrastructure of TVET, so that Korea is broadly developing into a competence based society as shown in the illustration below.

Figure 3: Realisation map of competency based society based on NCS



Recently, Korean companies used NCS for evaluating candidates and hiring employees. Accordingly, it started to become one of the measures to develop and operate vocational training programmes. In addition, a new qualification system needed for the industry was operated. HRD Korea has developed NCS according to industrial sectors which are mainly hosted by the Ministry of Employment and Labor and the Ministry of Education. NCS consists of 24 categories, 80 divisions, 236 sections and 880 subsections referred to the Korean employment classification of occupations. It will be continuously developed into more categories. Job duty refers to subsections in which standards can be developed and it comprises of each competence unit. The level of NCS is categorised in eight

stages and knowledge, skills and competence are suggested so that it can be used in a standardised way. Three groups have been mainly involved in the development of NCS. HRD Korea designed the website and operates it in order to efficiently provide information to VET trainers, trainees and companies, which mainly use NCS.

#### 4 Work-based Learning Dual System

The second challenge refers to the implementation of a work-learning based dual system. Apprenticeship training is a global trend addressed in the world. Especially, apprenticeship training based on the model of the dual system was a key issue in 'Rethinking

Education' at the European Summit in 2012. Korea introduced a work-learning dual system last year, as a new paradigm of VET. Above that, a new apprenticeship training customised in Korea was launched, which is based on NCS and can be seen in the illustration below.

Figure 4: Overview of work-based learning dual system



In-company trainers train workers in a company instead of a school or vocational training institute, so the vocational education and training is divided in in-company phase with work and training on-site and a training phase in joint training centers. Through joint training, Off-JT is implemented in SC, Schools and joint training centers, and OJT is in the workplace. Through this dual system, workers can acquire certificates of qualification and receive the benefit of an acknowledgement of their academic background. The certification is given by both the government and the industry after the completion of the training.

HRD Korea selects participating companies, develops the programmes and certifies the programmes. Companies hire trainees to work and learn at the same time. After an internal and external assessment, the certification of qualification can be issued to the "learning workers". The participating companies will have to proof certain qualification such as advanced technology or not having experienced any industry accident. These companies provide more than 300

hours training for a minimum of six months up to four years. The programmes are developed by NCS experts, VET experts and professors of polytechnical schools, so to say of a vocational college. The programmes are certified and implemented by committees. There are criteria to be applied in six trades. The evaluation is conducted in the workplace after completing the programme. There are two assessments, an internal assessment in the company and an external assessment conducted by HRD Korea and external experts.

The work and learning based dual system provides various financial benefits for the companies. They receive the entirely developed programme, on-site professors, training material development and training fees etc. It is aimed to train 70,000 trainees in 10,000 companies by 2017.



## 5 Outlook

Through the Sector Council as representative of the industries, the system can be promoted even more. In addition, various efforts for quality assurance of the training are made. The education of on-site professors, monitoring and consulting has been intensified.

In October 2015 the OECD published a Korean report on “Policy Priorities for a Dynamic, Inclusive and Creative Economy”. In this report, the problems and conflicts between educational training and the labour market are pointed out. Furthermore, four advices were suggested as follows.

- The tertiary education and VET system shall be improved still by promoting work-based learning and involving employers in the curriculum design as well as experts in course instruction.
- With the help of a cooperation with relevant stakeholders and recruiting practitioners lifelong learning for adults and upgrading their skills towards the need of the labour market should be promoted.
- The Skills Assessment and Anticipation tools should be continued to develop in order to inform education and employment policy on skills needs.
- By an improved utilisation of skills and productivity on a local level, higher quality jobs should be supported while taking into account mechanisms for strengthening engagement with employers, especially SMEs

The greatest challenges of Korean government is processed at HRD Korea. It was established in 1982 and has 1,100 employees in 24 local offices around the country in order to support SMEs and workers.

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# Closing Remarks

**Rainer Nitsche**  
Vice-Major of Magdeburg



In the closing ceremony, held by the Vice-Mayor of Magdeburg Mr. Rainer Nitsche, the work of GIZ for the city of Magdeburg has been acknowledged as bringing forth remarkable effects not only for local TVET providers but also for scientific institutes and the economy. In the education sector, GIZ promotes the internationalisation process of numerous TVET institutions, as well as its regional expertise is a benefit for local SMEs. Mr. Rainer Nitsche particularly emphasised the collaboration between GIZ, Otto-von-Guericke-University and Fraunhofer Institute in the Magdeburg “UNEVOC Centre for sustainable development”. The thematic focus of the UNEVOC Centre is on highly relevant fields of action in TVET such as green jobs. Thus, it is directly linked to the efforts of Magdeburg regarding a comprehensive and sustainable urban development.





# Impressions of the Conference





















# UNEVOC-Centre Magdeburg

In the globalised world of today the need to shape processes sustainably is becoming ever clearer and so is the fact that the key to this challenge lies in education and training. Contemporary development processes are very complex and thus necessitate a combination of different competencies. For this reason, the three Magdeburg institutions Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH,

Otto-von-Guericke-University and the Fraunhofer Institute for Factory Operation and Automation IFF have reached an agreement of cooperation with the aim to contribute to the implementation of the targets and strategies of UNESCO and the UNESCO-UNEVOC International Center.



UNEVOC Centre  
TVET for Sustainable  
Development  
Magdeburg, Germany



The UNEVOC Centre Magdeburg puts its main focus on "Education for sustainable development" and concentrates on the following topics:

- Development of concepts for education and further training of TVET teachers
- Development of curricula and learning and teaching materials for TVET
- Human resources development
- TVET and sustainable development
- Development of innovative learning environments for professional education and further training

The main instruments for working in the above-mentioned areas will be:

- Research and Development
- Education and Further training
- Capacity building
- Networking, exchange of experiences and transfer

For further information and contacts please have a look at <http://www.unevoc-magdeburg.de/>.



# Profile of GIZ

## GIZ. Solutions that work.

We provide services worldwide in the field of international cooperation for sustainable development. The German Agency for Technical Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH) has over 50 years of experience in a wide variety of areas, including economic development and employment, energy and the environment, and peace and security. The diverse expertise of our federal enterprise is in demand around the globe, with the German Government, European Union institutions, the United Nations and governments of other countries all benefiting from our services. The German Federal Ministry for Economic Cooperation and Development (BMZ) is our main commissioning party, but we also work closely with the private sector, fostering successful interaction between development policy and foreign trade.

All these commissioning parties trust GIZ to generate ideas for political, social and economic change on their behalf, to develop these into concrete plans and to implement the envisaged change processes. Since we are a public-benefit federal enterprise, German and European values are central to our work. This makes us a reliable service provider that people can trust. Together with our partners, we work to deliver flexible and effective solutions that offer people better prospects and sustainably improve their living conditions.

The registered offices of GIZ are in Bonn and Eschborn. In 2014 our business volume exceeded two billion euros. Around 70 per cent of our local workforce of 16,410 people are national personnel working in over 130 countries. In our capacity as a recognised sending organisation, we currently have 785 development workers in action in partner countries. In addition, CIM, a joint operation of GIZ and the Federal Employment Agency, placed around 1,000 integrated and returning experts with local employers abroad in 2014 while providing them with financial support and advisory services.<sup>1</sup>

<sup>1</sup> Figures as at 31 December 2014



GIZ's registered offices are in Bonn and Eschborn. The company is also represented at 19 other locations in Germany



# AIZ—the Academy of GIZ

## Academy for International Cooperation (AIZ)

AIZ is GIZ's own modern academy operation, providing high-quality human resource development and training courses for internal customers and external clients. These comprise a range of courses and customised personnel development and training measures for internal customers and external clients in Germany, in our partner countries and on virtual platforms.

## Portfolio

### Key Qualifications of Professionals

Talking, acting, advising, managing and networking in the international arena are all 'international performance skills'. Behind these there is a broad spectrum of topics that make up our trainings. Further training programmes are developed in conjunction with our clients. To help achieve their strategic objectives to the fullest, we combine elements from our regular courses with individually developed components customized to the specific needs. The current programme offer can be accessed at:

- AIZ Programme Catalogue
- Didactics Concept

## Human Capacity Development

We advise, design and implement complex Human Capacity Development programmes that

- empower individuals to drive their own actions
- strengthen capacities of technical experts to implement lasting solutions
- enable managers to design change
- strengthen trainers and advisors in their role as multipliers
- build and consolidating leadership responsibility
- unit people to sustain learning and change

We offer existing modules for situation profiles frequently encountered (catalogue services), but also concepts that are specially tailored to the given situation and context (programming services).

## Core Services

- Leadership development
- Catalogue services and tailor-made measures for building key skills required for international cooperation: in Germany, around the world, virtually
- Advisory service on HCD
- Implementation of HCD services
- Human Resources development of National Staff of GIZ
- Improving learning and cooperation process by innovative didactic methods (culture cases, competence benchmarking, etc.)
- Learning with New & Social Media
- Design and organization of international learning platforms
- Networking with experts and alumni





# Participants

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Mr. Batbaatar, Munkhbayar	Head of Mongolian Builder's Association, Mongolia
Ms. Baykan, Hümeýra	Head of International Affairs, European Association for Vocational and Social Education, Germany
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## **Imprint**

### **Published by the**

Deutsche Gesellschaft für  
Internationale Zusammenarbeit (GIZ) GmbH

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On behalf of  
Federal Ministry for Economic Cooperation and Development (BMZ)

**Design, Layout and Printed by**  
GIZ GmbH

### **Photo credits**

Title: Andreas Lander; pages 27, 28 GOVET; page 63 EBG; pages 108 (1x), 109 (2x) GIZ; page 111 UNEVOC Magdeburg; remaining photos Andreas Lander

As at  
February 2016

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