

# TVET System Reform to Tap the Potential of Bhutanese Workforce for the 21<sup>st</sup> Century Economy

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“To ensure that our people do not miss out on this great opportunity, we will prioritise building up the skills of our people. In turn, our people must take advantage of every opportunity to equip themselves for success. What we lack in numbers we have to make up for in the abilities and talent of our people.”

-His Majesty's Address on National Day (2023)

Bhutan's socio-economic progress has long been rooted in skills and craftsmanship. In the early 1600s, during Zhabdrung Ngawang Namgyal's presence in Bhutan, there was more focus on the development of traditional skills, which led to on-the-job training and apprenticeships becoming integral. The institutionalisation of *zorig chusum*, encompassing 13 traditional arts and crafts, was formalised and thrived during this era. The *dzongs*, monasteries and numerous artefacts visible today are tangible expressions of the legacy of skills and workmanship passed down through generations.

The importance of contemporary Technical and Vocational Education and Training (TVET) was recognised early on with the first Five-Year Plan (FYP) in 1961. The inaugural TVET institute, Kharbandi Technical School, was established in 1964 to train Bhutanese youth at a certificate level in automobile, general mechanics, building construction, civil draughting and electrical engineering.

The formalisation of traditional skills and craftsmanship took a significant step forward with the establishment of the *zorig chusum* institutes in Trashiyangtse and Thimphu in 1997 and 1971. In subsequent years, technical training institutes (TTIs) were established in six dzongkhags (districts), providing certificate-level vocational training in construction, energy, ICT and automotive trades.

As part of a recent reform initiative, the TVET system has been placed under the Ministry of Education and Skills Development (MoESD) to integrate it with the mainstream education system. The TVET sector is now managed by the Department of Workforce Planning and Skills Development (DWPSD) in the ministry.

While there are more than 130 registered training providers in the country, 10 public institutions are placed under the direct administration of the DWPSD. These institutions offer accredited courses at National Certification (NC), National Diploma (ND) and Institute Certificate (IC) levels, in automotive, construction, traditional arts and crafts, hospitality and tourism, ICT, energy and agriculture sectors.

### **TVET Reform Plan in Action**

The TVET Reform Plan was initiated under His Majesty The King's vision to "Transform TVET into a robust, resilient and dynamic system with its institutions providing world-class facilities and programmes as per the international standards" (2019) and to provide high-quality skills training to the Bhutanese workforce.

To build a workforce that is confident, well-rounded, productive, resilient and innovative, and to provide TVET education that produces "work-ready", "world-ready", and "future ready" graduates<sup>1</sup>, the TVET reform is focusing on four areas of transformation: product transformation; place transformation; people transformation and process transformation.

The reform plan is being implemented in the 13th FYP and beyond, through four key interventions: nurture professional capability to deliver excellence in TVET training; engineer an appealing, engaging and technology-driven TVET learning environment; revamp and modernise TVET curriculum to support 21st century skills and jobs; and put in place a responsive, robust, agile, sustainable, resilient and a high performing TVET system.

To "nurture professional capability to deliver excellence in TVET training" (people transformation), the Technical Trainers Training and Resource Centre (TTTRC) was established in 2022 under the management of

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<sup>1</sup> TVET Reform Plan July 2021

DWPSD to emphasise the professional development of TVET trainers, who will play a key role in enhancing the quality of training. The TTTRC will ensure a pool of quality and adequate TVET trainers from both national and international markets.

International master trainers are being engaged in areas where Bhutan lacks capacity, such as robotics, creative arts, cloud computing, cyber security, plumbing, road construction technology, landscape design, Internet of Things, upholstery, and others. More than 40 master trainers from South Korea, Thailand, Germany, Hungary, Switzerland, Czech Republic, Japan and Sweden have been engaged since 2021 with TVET institutions in the country. Programmes such as Training of Trainers (TOT), Occupational Skills Development, and Skills Supervisor training are conducted regularly, and more than 550 TVET trainers/supervisors have been trained over the past three years. These programmes are updated on new learning and teaching methods and mechanisms. Besides international master trainers, the DWPSD will source international experts to manage the public TVET institutions.

To “engineer an appealing, engaging and technology-driven TVET learning environment” (place transformation), remodelling and augmentation works (infrastructure development to increase access) are in progress in all public institutions. The capacity of the institutions is being increased to accommodate more than 4,650 trainees. A new TTI is being constructed in Thimphu with grant support from ADB, to be inaugurated in 2024. The new TTI will accommodate about 300 trainees and will provide TVET courses at the national certificate and diploma levels for the digital, creative media and automotive sectors. The new TTI will also provide ITE-supported diploma in automobile technology.

To “revamp and modernise TVET curriculum to support 21st-century skills and jobs” (product transformation), new TVET courses are being introduced and the existing curriculum reviewed to keep it aligned with labour market dynamics. About 36 new curricula were developed and 29 existing curricula were reviewed in the past three years. New curricula were developed for TVET courses, such as construction supervisor (ND), earth moving equipment technician (NC 2), auto electrical (NC 3), refrigeration and air conditioning (NC 2), HVAC (NC 3), automobile mechanic (NC), cyber and network security (ND), automobile workshop supervisor (ND),

food processing technician (NC 2), road construction (IC), bartender (IC) and others.

The Bhutan Qualification Framework (BQF) was reviewed in 2023 and provides TVET pathways from certification level to diplomas and applied bachelor's degrees. Besides core skills, there will be an emphasis on soft skills, digital skills, and entrepreneurship skills, integrated into the TVET learning.

To “put in place a responsive, robust, agile, sustainable, resilient and a high performing TVET system” (process transformation), the MoESD plans to introduce autonomy within the public institutions for higher efficiency and agility. A proposed financing strategy for sustainable TVET has been developed to source TVET funding other than the current RGoB funding. Such strategies look at internationalisation, sales of TVET products and services, industry partnerships, and other mechanisms.

The TVET-MIS ([blmis.gov.bt/tvet](http://blmis.gov.bt/tvet)) has been developed to provide real-time data and intelligence on TVET initiatives in the country. A single-intake window to ease application to TVET programmes has been established and all TVET tracers are integrated into the MIS, which will be updated regularly to keep it user-friendly and dynamic.

### **Elevating TVET on the Global Stage**

The DWPSD has been attempting to enroll international students in the DWPSD-administered institutions since August 2023. This will generate revenue and also enhance the quality of TVET programmes to international standards, promote Bhutan as an attractive destination for international students, and introduce Bhutanese culture and tradition to them. Short-term TVET courses tailor-made for international students are being planned, while the regular courses offered within the 10 institutions will also be open to them. International student units (ISU) are being set up in all public TVET institutions.

For the 2024 intake, the MoESD is taking advantage of uniquely Bhutanese TVET courses, such as *zorig* arts and crafts course offered by the two *zorig* institutions in Thimphu and Trashiyangtse, and the Bhutanese culinary course offered by the Royal Institute of Tourism and Hospitality. These

short courses may attract those interested in taking up regular TVET courses.

International partners such as ITE Education Services (ITEES) in Singapore, Humber College in Canada, Brazilian National Service for Industrial Training (SENAI), Handwerkskammer Frankfurt Rhein-Main in Germany, Bern University of Applied Sciences in Switzerland, and Schneider Electric Foundation in France, are assisting DWPSD in raising the standard and quality of TVET.

With support from ITEES, the DWPSD is working towards introducing two ITE standard diplomas — in automobile technology and in facility technology in the TTI-T (Thimphu) and TTI-K (Khuruthang). Construction works are being carried out in the two institutes, including procurement of new tools and equipment and capacity development of instructors by ITE experts, to launch the programme by 2024.

Collaboration between the Ministry of Education and Skills Development and the Chamber of Skilled Crafts in Germany will contribute significantly to the sustainable transformation of Bhutan's craft-based construction sector and other climate-friendly TVET programmes. The project aims to establish the Bhutan German TVET Institute (BGTI) which will be initiated in 2025. A similar collaboration with the Bern University of Applied Sciences will help reform the TVET sector with new sets of knowledge and skills, particularly in wood engineering. Similarly, the Schneider Electric Foundation will provide electrical and solar energy tools and equipment to the Technical Training Institutes (TTIs) in Bhutan and build capacity for Bhutanese instructors in Schneider-administered labs in India.

Under the Bhutan Education and Skills Training (BEST) Project, the Humber College Institute of Technology & Advanced Learning (Humber College) is providing technical expertise, resources, and support, focusing on inclusivity for gender and people with disabilities, developing high-quality market-relevant TVET programmes, and facilitating the successful transition of TVET graduates into the labour market. Humber College will assist DWPSD in introducing five new diploma courses in Solar Photovoltaic (PV), Electrical Engineering Technician, Heating Ventilation and Air Conditioning (HVAC), Graphic Design, and TVET Education.

Certificate-level courses will also be introduced in landscape technician, machine learning, event management and interior decorating.

The Department of Workforce Planning and Skills Development will produce work-ready and world-ready professionals with skills and competencies for the global labour market. In 2022, Bhutan became a member of WorldSkills Asia and is working towards becoming a member of WorldSkills International. Through these two platforms, we can showcase and gauge the skills and competencies of Bhutanese at a global level. Efforts are being made to ensure that Bhutanese youth can compete in the upcoming WorldSkills Asia which will be held in Taipei in 2025.

### **Aligning TVET to the 21<sup>st</sup> Century Economy**

The TVET institutions are evolving to reflect the shifting landscape of our economy, industries, and technological advancements. In response to the changing economic dynamics, elements such as English skills (reading, writing and communication) and mathematical proficiency were integrated into all vocational training. In the 10th plan period, ICT skills became a crucial component of all training, while the 11th plan period saw the incorporation of entrepreneurship skills, all aimed at bolstering the employability of TVET graduates.

Attempts are underway to incorporate important soft skills such as critical thinking, creativity, collaboration, communication, digital literacy, and adaptability, into TVET teaching and learning process. Institute-certified programmes are being upgraded to national certification and national diploma-level programmes, with the scope to introduce applied degrees in the TVET field in the future.

The historical focus of TVET institutions in Bhutan centred on catering to the needs of the country's nascent industries. However, in a globalised economy marked by increased workforce mobility, TVET is significantly influenced by local demands and also by global trends. The rapid transformative technological changes in global industries, encompassing robotics, artificial intelligence, quantum computing, biotechnology, machine learning, Internet of Things (IoT), and other digital advancements, necessitate the TVET sector to align with both national and international labour market requirements.

The ongoing TVET reform places more emphasis on aligning courses with 21st-century and Industry 4.0 requirements. This involves integrating technology into teaching and learning, benchmarking TVET to global standards, and undergoing a comprehensive transformation in product, place, people, and processes. To this end, some of the high-level diploma courses that will be introduced in the DWPSD-administered institutes in the 13th plan period are solar energy technology, TVET education, facility management, electrical engineering, construction management supervisor, food and agro-processing, cyber and network security, software development and programming, website and application development, blockchain developer, security system integration, machine learning and data science (data analysis), and apparel design. An applied degree in hospitality and tourism will also be introduced by the end of the 13<sup>th</sup> Plan period.

To ensure the continued relevance of TVET programmes, the DWPSD is committed to ongoing skills assessment, focusing on evaluating content relevance within various courses. This includes regular updates to training curricula, delivery processes and materials. The establishment of sector skills councils aims to enhance local industry participation in the design and delivery of TVET programmes.

The new ADB-funded project, “Pathways for Emerging Skills and Jobs” (August 2023), emerges as a crucial financial catalyst for various TVET reform initiatives in Bhutan. Aimed at bolstering skills development, the project focuses on enhancing digital and physical access to training, improving the quality of skills training, fostering industry partnerships and private sector engagement, and strengthening the overall image and institutional capacity of the TVET sector. Key components of the project include the construction of infrastructure at key institutions, such as TTI-Chumey, TTI-Samthang, TTI-Rangjung, and RDTC, to increase access.

In 2023, the DWPSD-administered institutes enrolled 3344 trainees (source: TVET-MIS), underscoring the pivotal role of skills development in accelerating economic growth and increasing workforce productivity. This emphasis aligns with the goals of the 13th Five-Year Plan (FYP) and beyond. His Majesty’s highlighting of “skills development” during the 116th National Day Address further underscores the critical nature of this endeavour, particularly in the context of the Gelephu Mindfulness City.

Public TVET institutions are positioned to make significant contributions to both the quantity and quality of the workforce. To fulfill these expectations, the DWPSD is tasked with strategic objectives, including increasing the enrollment capacity of TVET courses to accommodate 40 percent of National Gyalsung Graduates, introducing high-level vocational courses at National Certification and National Diploma levels, integrating ICT and digital learning methodologies, and updating and reviewing existing curriculum and teaching methodologies to align with industry and labour market needs.

The implementation of the TVET Reform Plan reflects Bhutan's commitment to transforming its technical and vocational education system into a robust and globally competitive entity. As the TVET sector progresses into the future, the adaptability, innovation, and responsiveness to global demands position Bhutan as a player in the ever-evolving landscape of technical and vocational education. The efforts outlined in the reform plan lay the foundation for a TVET system that not only meets the needs of the domestic workforce but also contributes to Bhutan's recognition as a hub for high-quality technical education internationally. The journey towards producing work-ready and world-ready professionals with global-level skills and competencies is underway, and the prospects for the future of TVET in Bhutan appear promising and transformative.

## **References**

Department of Education and Skills Development, TVET Reform Plan July, 2021