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Aligning Sustainable Development Goals With TVET: Evidence from Policy and Practice in Nepal

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Abstract

Nepal has committed to achieving the targets of the Sustainable Development Goals by 2030, and, in line with this, all policies and programs are developed and implemented. Technical vocational education and training (TVET) is also seen as a means to enhance employability, income generation, and entrepreneurship by developing competent human resources with the required skills and competencies. This paper examines TVET policies and practices, specifically their implementation modality, as they relate to SDG4 and SDG8, using a qualitative approach to identify further strategies for the effective implementation of TVET policies in line with the SDG targets. In the same way, the paper highlighted to what extent TVET policies and practices aligned with SDGs and what gaps remain in achieving SDGs targets, with major issues and challenges in the implementation and governance of existing TVET programs. Finally, the paper explored an appropriate way forward for achieving the SDGs, along with ways to address the challenges. It is expected that the paper will help to identify the strategies for TVET in Nepal to achieve the SDG targets by 2030.

Keywords: Sustainable Development Goals, Technical and Vocational Education and Training, employability, income generation

Context

The Government of Nepal has prioritised an inclusive, equity-based policy since the promulgation of the Constitution in 2015. Driven by this principle, the country aims to graduate from the least developed country (LDC) status by 2022 and become a middle-income country by 2030, guided by the spirit of a welfare state and the vision of Prosperous Nepal: Happy Nepali (National Planning Commission [NPC], 2017). These visions and missions align with the Sustainable

Development Goals (SDGs), which seek to reduce poverty and enable people to enjoy peace and prosperity by improving their lives sustainably. Among the SDGs, SDG 4 advocates for inclusive and quality education for all, recognizing Technical and Vocational Education and Training (TVET) as a key driver of the nation's economic development; this is reflected in the formulation of national policies and programmes. Similarly, SDG 8 aims for inclusive and sustainable economic growth, employment, and decent work, emphasising

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TVET to develop competitive, high-quality human resources for the labor market and sustainable livelihoods.

National policies and plans such as the TVET Policy 2012, the Comprehensive National Education Policy 2019, the School Education Sector Plan (2023-2028), and the TVET Sector Strategic Plan (2023-2032) are also being implemented, emphasizing the importance of skilled human resources, employability, and alignment with national development. Despite all these efforts, SDGs outcomes remained limited (Aryal, 2018). Although all SDGs support the promotion of sustainable economies and overall prosperity (Chola & Kiplagat, 2025), SDG4 and SDG8 are key goals for ensuring TVET opportunities and providing the skilled workforce needed in the labor market by enhancing employability, decent jobs, and entrepreneurship, challenges persist in governance and quality in TVET program implementation. Therefore, in this paper, I explored how these policies and programs contribute to achieving the SDGs by 2030 by reviewing the development trend of Nepal's TVET system and analysing its efforts. Additionally, the paper examined further ways to implement TVET programs in realizing the SDGs by 2030.

Methodology of the Study

This study employed a qualitative research design because the study aims to analyse the policy framework and institutional practices and their alignment with the SDGs, with a systematic desk review of the policy documents, academic literature, and institutional reports related to the TVET and SDGs in Nepal. Literature is retrieved from academic databases and systematically reviewed for national and international reports, peer-reviewed literature, and program documents for ongoing government TVET projects. Relevant documents on SDGs 4 and SDG8 related to TVET and skills development were subjected to thematic content analysis to identify persistent challenges and gaps for strengthening the TVET system in the country. To ensure reliability and credibility of the data, peer-reviewed articles, government official reports, and international publications are

selected and analysed. Thematic content analysis and open coding approaches are applied for data analysis and reflection. To strengthen the analysis, the study integrated the theoretical framework of three theories, human capital theory, social justice theory and employability theory to interpret how TVET policies and practices contribute to achieving SDGs targets.

TVET Development in Nepal

Nepal has a long history in the development of Technical Vocational Education and Training. TVET was practised from ancient times, though there was no formal system of TVET. It was practised in the form of a caste system, occupations, and transmission of knowledge from the senior to the junior. The development of TVET in Nepal can be categorized into three different phases: the Silpa Samhita phase - Vedic period to before Jayasthiti Malla (vedic period – 1332), family apprenticeship phase – Jayasthiti Malla to the first technical school of Nepal (1332 – 1931) and formal TVET development phase - first technical school to now (1931- to date).

In the Silpa Samhita phase, evidence of ancient architectural structures and wood carvings indicates that the ancient people of Nepal practised some forms of vocational education through occupational skills, as documented in social tradition (Shrestha, 1991). People acquired skills and knowledge (known as silpa) within caste-based rules and responsibilities (Chouhan, 2016). The career orientation from father to his sons and the mother's mentoring of her daughters in household jobs were traditions in ancient Nepal (Shrestha, 1991). The skill transformation from one generation to another was reflected in the *Lichhabi* regime across occupations such as woodwork, sculpture, craftwork, construction, and art (Shrestha & Singh, 1972), though there was no formal system of vocational education and training. However, vocational skills were fostered during that time, even in the Malla period. Arniko, the great 13th-century architect of Nepal and a profound contributor to Chinese art and architecture, can still be seen today.

During the family apprenticeship phase, the seniors taught the juniors in the family to follow

in their footsteps into a career, a long-standing tradition in Nepal. But the occupation-based society began during the period of Jayasthiti Malla (1332-1395) and defined such practices as caste-based occupations (Shrestha, 1991). People from each occupational group were produced as the certified skilled workforce, through which they were recognised. In the long run, practices in their generations were transferred into the caste system based on their profession (Sharma, 2043 BS). Malakar, Tamrakar, Ranjitkar, Kamsakar, Kundakar, Marikar, Darukar, and Lohakar etc. were named after their professions, which numbered more than six dozen at the time.

Although vocational training was not a priority, it was reflected in the divine instructions of King Prithivi Narayan Shah, who emphasized the need to develop vocational skills in the country for industrialisation, the production of essential minerals, agricultural development, and economic development. During the Rana regime, by influencing Gandhian philosophy, Prime Minister Chandra Samsher (1863-1929) established Chandra Kamdhenu Charkha Prachar Mahaguthi in 1927 and provided skill development training for orphans and marginal people (Sharma, 2043 BS).

The formal TVET development phase in Nepal can be divided into three periods: the multipurpose schooling (First technical school, 1931 - to NESP, 1971) period, the technical school's development period (NESP, 1971) to before CTEVT, 1989), and the structured TVET expansion period (CTEVT, 1989 to date). Each has its own characteristics in Nepal's TVET development. The first technical school was established in 1931 in Basantapur, Kathmandu, to realise the importance of technical vocational education and skills, which was later transferred and developed as the Institute of Engineering under Tribhuvan University in 1972. Based on the recommendation of Nepal National Educational Planning Commission (NNEPC) in 1956, the first multipurpose school was initiated in Kaski in 1956 BS and started vocational stream courses on wood work, agriculture, home science in school education which was seemed as a successful practice on vocational education and thus the multipurpose school were expanded and all together 29

secondary schools were transferred into the multipurpose school before National Education System Plan (NESP) (Sharma, 2043 BS).

In 1971, the Government of Nepal disclosed a new education plan, the National Education System Plan (NESP), which was one of the major initiatives for vocational education in the school system. To fulfil the vocational aspect of NESP, the Technical and Vocational Education Directorate, responsible for developing technical schools and technical-vocational curricula, was established in 1978. Following the directorate's recommendation, the technical schools: Karnali Technical School (1980), Jiri Technical School (1982), Lahan Technical School (1982), Uttarpani Technical School, Dhankuta (1980), and Butawal Technical Institute were established (Sharma, 1986). The main objectives of these technical schools were to make education more life-oriented and more conducive to economic productivity, and to provide apprenticeship training in specific skills to create opportunities for self-employment.

The Centre for Technical Education and Vocational Training (CTEVT) was established in 1988 for the firm and quality expansion of TVET, with policy and program development authority. After that, a structured, systematic TVET development initiative was initiated in Nepal. In 2007, TVET policy was endorsed for the first time, focusing on the expansion of TVET, access and inclusion in TVET, and the integration of skills training with market demand. In line with the policy, the technical stream secondary education program was implemented from 2012. In the same year, the revised TVET policy 2012 was enacted to address the skill development program run by other ministries. Similarly, periodic plans (14th plan, 15th plan), other sectoral policies on youth mobilization, agriculture, labor etc. have also been taken as the policies for TVET development in Nepal.

During this phase, TVET institutions: CTEVT, an apex and autonomous body, Training Institution for Technical Instructor (TITI) to provide training for teachers and instructors, and National Skill Testing Board (NSTB) for national-level skill testing and certification, are

established. Similarly, polytechnic institutes, partnership schools, Technical Education in Community Schools have been established by CTEVT (Council of Technical Education and Vocational Training [CTEVT], 2025). Similarly, the secondary schools that have been developed as technical stream secondary schools under the Centre for Education and Human Resource Development (CEHRD) program (CEHRD, 2025).

Universities also conduct technical higher education in medicine, agriculture, engineering, forestry, and Animal science through their constituent and affiliated campuses. In medical education, there are five academic institutes, including deemed universities, and 147 other campuses have been established for technical subjects in higher education (UGC, 2018). In total, nine universities are directly involved in technical higher education. Kathmandu University has established itself as a specialised institution for TVET by offering a Master's degree in TVET, and the National Academy of Tourism and Hotel Management (NATHM) under the Ministry of Tourism has also started offering both short-term vocational training courses and academic courses. For vocational training and skill development, there are 639 private training institutes under CTEVT, and the Vocational Skill Development Training Centre under the Ministry of Labor and Employment is operational. Moreover, there are 119 regular skill testing centres in existence (CTEVT, 2025). Similarly, apart from the Ministry of Education, Science and Technology, 14 other ministries and their departments are directly involved in skill development training (Aryal, 2020).

Initiatives and Reforms in Nepal's TVET Sector

Nepal has been making remarkable progress in reforming the TVET sector through policy priorities, program interventions, and structural reforms. All these initiatives are aligned with the national priority, the planning process (through periodic and annual plans), and national and international commitments, such as the SDGs. The approaches taken to

strengthen countries' TVET systems are categorised as follows.

Legislative and policy strategies

The constitution of the nation is the main legislative foundation to strengthen TVET system of the country. It has envisioned a prosperous nation through socialism-oriented economic and social development, with inclusiveness, social justice, good governance, partnership, coordination, and sustainable development (NLC, 2015). Education, including TVET, is recognised as the driving force for the employability and income generation, which is assumed to support economic development. The revised TVET policy 2012, the comprehensive national education policy 2019, both have highlighted the expansion of TVET opportunities to prepare capable, efficient, competitive and efficient human resources for the economic development of the country (MOE, 2012, MOEST, 2019), which are also the legislative backbone to reengineer the TVET system of the country. The education policy (2019) emphasizes the importance of a quality and sustainable TVET system in the country through inclusion, a national vocational qualification framework, and the identification, protection, promotion, and development of traditional skills (MOEST, 2019). Based on the policy, a national qualification framework has been developed and approved by the government, and the level descriptors are also defined for each qualification.

The 16th periodic plan of Nepal has also recognised the importance of TVET, as it produces competent, innovative, and entrepreneurial human resources to fulfil the nation's requirements (NPC, 2024). The plan also emphasized access, quality, and sustainability in TVET and its development; for this, the engagement of the private and business sectors is equally important (NPC, 2024). The SDGs provision in this regard, by 2030, all women and men will have access to quality technical and vocational education, and all adults will have access to relevant vocational knowledge and skills, has also provided policy guidance for the development of the TVET sector in Nepal (UN, 2015). In addition to this,

the sectoral national policies such as the National Agriculture policy (2004), the Labor and employment policy (2005), etc. are equally important to implement the TVET programs and activities. The education sector plans of the country, School Education Sector Plan (SESP, 2023-2032), School Sector Development Plan (2016-2022), School Sector Reform Plan (2009-2016) include other policy initiatives to strengthen TVET in school education to facilitate the school-to-work transition by emphasising the access, quality and sustainability of the TVET programs.

Governance and management

For the governance and management of the TVET system in the country, the Council of Technical Education and Vocational Training (CTEVT), an apex and primary body, operates under the provisions of the CTEVT Act. The CTEVT assembly and CTEVT council, both chaired by the education minister, are mainly responsible for policy formulation, coordination with TVET stakeholders, and resource management (NLC, 1989). Apart from this, the Policy Coordination Committee, representation from the concerned ministries and the private sectors is also functioning for the coordinating roles among the TVET implementors.

Department of Cottage and Small Industries (DCSI) under the Ministry of Industry and Commerce, Nepal Academy of Tourism and Hotel Management (NATHM) under the Ministry of Tourism and Civil Aviation, and National Academy of Vocational Training (NAVt) under the Ministry of Labor and Employment are other institutions for the implementation of TVET activities beyond the Ministry of Education. Similarly, the Federation of Nepal Chamber of Commerce and Industry (FNCCI), the Federation of Nepal Cottage and Small Industries (FNCSI) and other independent training providers are also involved in skill-based training in the country. Likewise, Swiss Development Cooperation (SDC) supported projects: Enhanced Skills for Sustainable and Rewarding Employment (ENSSURE), National Vocational Qualification Framework (NVQF), and Quality Technical and Vocational Education and

Training (TVET) for Youth (QualiTY) are also in the TVET sector, aiming to develop competent human resources for better employment with the required skills. Other I/NGOs are also providing vocational training to supplement the skilled workforce in the labor market. A total of 15 ministries are involved in implementing the TVET program in Nepal.

Recognising the importance of TVET from the school level, during the period of SSRP, a technical stream in community schools from grade nine was initiated as outlined by the TVET policy (2012) for the equitable access to TVET opportunities. The purpose of introducing such schools was to prepare the students to respect the work culture from the school level. To date, 537 community schools offer TVET streams from grade nine, and about 60,000 students are studying (CEHRD, 2025). For the management of these schools, the school management committee and the local governments are made responsible.

Training Institute for Technical Instruction (TITI) for training to the trainers working at technical institutes and polytechnics, National Skill Testing Board (NSTB) for the testing of the skills of all levels, based on the National Occupational Skills Standard, from the elementary level to level four, are also in place for the governance of TVET. In addition, technical higher education institutions within universities are providing technical education on cost-sharing and cost-recovery approaches (Aryal, 2018). The Social Development Ministries are made responsible for governing the TVET functions at the provincial level.

Programmatic approaches

Various TVET programs are being implemented to strengthen the country's TVET system, which is also influenced by technological development and globalisation. In Nepal, two main types of TVET programs are currently run: short-term vocational skill development training and long-term academic courses. Short-term training is mainly offered by training institutes, NGOs, and some technical institutes. But long-term academic courses are offered by Polytechnique, technical schools, and higher education institutions. In

short-term training (generally a week to three months), the training offers skills that support self-employment and income generation, based on national occupational skill standards. The long-term courses (diploma and pre-diploma programs, technical stream secondary courses, B.Tech, M. TVET, etc.) aim to develop competent human resources and provide academic certification, with avenues for higher study as well. Equity and inclusion, quality and relevance, and the lifelong learning approaches are basic principles for the development of these programs.

To ensure access for all in TVET, the scholarship is also provided to economically poor, marginalized, and disadvantaged groups, thereby increasing enrollment in TVET programs. These programs are mainly offered by CTEVT and constituent polytechnics. Furthermore, recognition of prior learning is provided for those from informal and lifelong learning, implemented by the Skills Testing Board (CTEVT, 2025). Other ministries, beyond MOEST, are also implementing TVET programs from their field-level organizations. For example, the National Academy of Vocational Training (NAVt), under the Ministry of Labour, Employment and Social Security (MoLESS), offers short-term training (CTEVT, 2025). Similarly, the Ministry of Industry, Commerce and Supplies offers skill development training through short-term courses at private institutions, and some businesses are also providing such training in coordination with government institutions. Altogether, about 150,000 youth are receiving opportunities through these program interventions (MOE, 2017). The Nepal government has recently endorsed the TVET sector strategic plan (TSSP, 2023-2032). Based on the TSSP, CTEVT and the provincial social development ministries have practised to develop their annual program and budget.

TVET and 2030 agenda

The end of the Cold War in 1991 marked a shift towards liberal ideologies globally, emphasizing capitalism and human rights. In Nepal, international organizations promoted economic liberalisation and human rights, aligning with the global agenda to reduce

intersectional inequality. By the 2000s, Nepal had incorporated the Millennium Development Goals (MDGs) into national plans, impacting the TVET sector, but the 10th periodic plan gave them lower priority. The focus on MDGs also led to increased investment in primary education, but challenges arose in meeting ambitious targets for secondary education enrollment.

Globally, challenges such as high youth unemployment, socio-cultural disparities, environmental degradation, economic fluctuations, and rapid technological changes threaten human security and social cohesion (Majumdar & Rein, 2018) and thus the global agenda Sustainable Development Goals (SDGs). Among SDGs, mainly the SDG4: Education 2030, focusing on inclusive and equitable education, and SDG8, promoting sustainable economic growth and decent work are directly linked with SDGs. The SDGs explored the global agenda, with specific targets for TVET by 2030, including target 4.3: access to quality education; target 4.4: skills, employment, decent work, and entrepreneurship; target 4.5: eliminate gender disparities; target 8.5: productive employment and decent work; and target 8.6: reduce unemployment. To achieve the target, it is necessary to expand and transform TVET opportunities and to articulate qualifications within the education system and the world of work (Majumdar & Rein, 2018).

The National Planning Commission of Nepal has set specific targets to achieve the SDG goals, including reaching 75 per cent of youth and adults with relevant skills and reducing underemployment to less than 10 per cent (NPC, 2017). For SDG4: Education 2030, the Ministry of Education, Science and Technology has developed the Nepal National Framework to achieve the SDG4 targets, in line with the government's mission to become a middle-income country by 2030.

Approaches for strengthening TVET

Various approaches are being applied to strengthen TVET system in Nepal. The first is the market-oriented academic-vocational blended approach, which includes long-term courses for diploma and pre-diploma programs,

as well as short-term training courses for vocational skill development aligned with national occupational skill standards to address market requirements. All these programs are run by 67 constituent institutes, including polytechnics, 439 affiliated training institutions, and 1850 affiliated short-term training-providing institutions (CTEVT, 2025). The second approach is the school-integrated technical education approach, in which TVET programs are run by community schools through the technical education community school (TECS) program and by separate technical stream schools, as parallel programs of CTEVT. There are 639 technical schools with TECS programs, and 537 technical stream schools are now in operation. The purpose of such programs is to prepare students for the world of work and to explore opportunities for advanced education in their field of study.

The next approach is a sector-specific social inclusion approach, which includes training programs run by other ministries, particularly for income generation and self-employment. The Ministry of Labour, Employment and Social Security, the Ministry of Women, Children and Senior Citizens, and the Ministry of Industry run various short-term skill-training programs across different occupations to address the needs of the skilled workforce. Apart from these, the academic approach to TVET programs is also found in academic courses on TVET for bachelors and masters in different subjects, run by universities and campuses, which also operate to supply competent human resources and develop the foundation of skills and knowledge for higher education. Ultimately, all programs under these approaches will support achieving the SDG targets by 2030.

SESP, TVET, and Skills Testing

The sectoral periodic plan for education, the School Education Sector Plan (SESP: 2023-2030), has also recommended that TVET programs be delivered through technical stream schools to provide training and academic courses in technical skills and knowledge (MoEST, 2022). Mainly, such programs are offered only in five different areas: agriculture, animal science, electrical engineering, civil

engineering and computer engineering. The SESP further envisions strengthening the technical and vocational stream of secondary education (grades 9-12) to improve the quality of TVET services for secondary school students.

To date, 714 of 753 local levels have at least one TVET institution, making TVET opportunities easily accessible. Only 338 local levels manage long-term training programs (CTEVT, 2025; CEHRD, 2025). Under CEHRD, 537 community schools are running 9-12 technical streams courses. Currently, the National Skill Testing Board (NSTB) has developed 314 National Occupational Skill Standards to test informally or formally acquired occupational skills (CTEVT, 2025). However, the current statistics show that the number of graduates from CTEVT's diploma-level programs is about 40000, and the corresponding numbers for TSLC programs and technical stream schools are about 60000 (CTEVT, 2025; CEHRD, 2025). Similarly, as of the date, the number of candidates who have completed the skill test is 512000 (CTEVT, 2025).

For a sustainable TVET system in the country, the Nepal Government has reformed its policies, updated its plans and programs, and developed a new strategic plan aligned with SDG targets, but there are still challenges to achieving the targets by 2030. Particularly, the involvement of the business and private sectors, reducing unemployment, clarifying roles across levels of government, and managing resources for TSSP are major issues. Therefore, equitable opportunity in TVET for all, governance reform, adoption of new conceptual approaches such as greening TVET and utilisation of technology in TVET, as well as a new funding model for sustainable financing in TVET, might be the major interventions that can facilitate the achievement of SDG targets.

Discussion

TVET has now emerged as a strategic instrument for addressing socio-economic and developmental challenges embedded in the SDGs worldwide. TVET is mainly articulated through SDG4, quality education and SDG8

decent work and employability, guided by the theories: human capital theory i.e. education and training increase productivity and economic growth, social justice theory i.e. equitable distribution of opportunities, resources, and outcomes and employability theory i.e. education enables learners with skills relevant to the labor market.

The commitments on SDGs of the government of Nepal are centralized more on education and skill development to address the challenges such as poverty, unemployment and labor migration and aimed for the LDC graduation (NPC, 2020) by 2026 by taking TVET as a critical policy departure. The Education Policy (2019) and SESP (2022) recognised TVET as a pathway to address these challenges. According to the human capital theory, investment in TVET enhances individuals' skills and productivity, thereby supporting increasing returns for both individuals and nations (Becker, 1993). Based on this core thrust, TVET in Nepal is funded to improve the nation's economic efficiency, equip youth with occupational skills, and enhance productivity and employability, as mentioned in SDG 8. It is also assumed that strengthening the quality and relevance of TVET promotes productive employment for youth and ultimately supports the nation's sustainable economic growth (Wickramasinghe & Wickramasinghe, 2025).

SDG 4.3 emphasizes the inclusive and equitable distribution of the TVET opportunity that can be supportive for social justice, and remove the structural barriers that make certain groups based on race, caste, ethnicity, geography, gender and socioeconomic status, as said by social justice theory (Wheelahan, 2015). TVET policy has provisioned targeted scholarships, flexible entry from both informal and nonformal learning to the formal education system with provisions in NQF, a focused skill development programme for the disadvantaged population (MOE, 2012).

Again, SDG4.4 focuses on relevant skills for employment and SDG 8 for decent and productive employment is aligned with the employability theory, as TVET develops individuals with the skills and competencies to fulfil the requirements of the labor market

(McQuaid & Lindsay, 2005). Industry-linked training, apprenticeships, and competency-based curricula are now being promoted to strengthen the nation's TVET system and enhance employability, in line with employability theory. Many efforts and initiatives have been undertaken to align policies and programs with the SDGs and to strengthen Nepal's TVET sector. Still, there are some issues in access and equity, quality and relevancy, mobility and permeability, curriculum and accreditation, funding, etc. Furthermore, we have been facing multiple challenges (Aryal, 2018) on the way to enhancing TVET as a major vehicle for the nation's economic transformation, as follows.

Equity and Justice: An Overarching Agenda in Nepali TVET

Despite the government's reform initiatives to build a strong TVET system in the country, the coverage of TVET facilities remains insufficient. Still, some local governments lack a TVET institution to provide skills training. About 700,000 youth annually go abroad to seek better jobs and improve their employability, but most of them are unskilled (MOF, 2024), consequently, they must engage in 3D (Difficulty, Danger, and Dirty) jobs. In school education, 4.9.7% of children aged 5-9 years never attended school (CEHRD, 2025). In addition, 11% of youths are neither in school nor working; most of them are from the marginalised groups and economically poor families (CBS, 2016). Although the TVET facilities are made available to ensure access for all, they are serving only in the areas that are accessible: district headquarters and urban areas only, which cannot serve the youth of remote areas and economically poor areas. The labor market's requirement for competent human resources cannot be met by the supply mechanism. To ensure the participation of marginalised people and the economically poor, the government has provided significant scholarship opportunities, but they are insufficient to address youth from economically poor families, though some provisions are made for this (ADB, 2015).

Thus, ensuring access to TVET for all youth with relevant skills, equipping them to compete

in the labor market, and engaging them in gainful employment are major challenges in Nepal. This is a common challenge in developing countries: providing need-based skill-development opportunities for youth who lack access to schools and training centres (Kiplagat & Maiba, 2025). Thus, in developing countries like Nepal, the expansion of TVET institutions to address these challenges is another challenge due to the economic and political factors that may obstruct the achievement of the SDG target by 2030.

Curriculum and Accreditation: Anticipated Intervention for Quality

To address contemporary labour-market needs, CTEVT has developed and updated a wide range of curricula across both skill development and academic fields in TVET. To date, 50 curriculum areas have been prepared and updated for diploma courses, 34 for pre-diploma courses, and 179 for short-term vocational training courses (CTEVT, 2025). In addition to these, the National Academy of Tourism and Hotel Management (NATHM) have prepared curricula for Bachelor's and Master's levels in hospitality and hotel management, in accordance with the university's curriculum development process. Similarly, universities themselves have prepared and launched TVET courses in different disciplines, as Kathmandu University has offered the B. Tech and M. TVET courses.

Despite these efforts, the gap has existed in curriculum design and accreditation. Market-oriented curriculum development across different occupations is found lacking (Aryal, 2018), resulting in the underemployment of the trained human resources, and, thus, the majority of the youth are employed abroad as non-skilled workers. Similarly, the gap has existed in engaging the business and industry sector in the curriculum development process, particularly in the skill development curriculum process. Consequently, the production based on the prepared curricula could not address the human resource requirements of the business and commerce sector. Again, there are two types of curriculum practised by the two organisations under the MOEST, as CTEVT developed TSLC and diploma curriculum in their own way.

Similarly, the Curriculum Development Centre (CDC) for the technical stream school under CEHRD has prepared the curricula for grades 9-12. The assessment framework, the credit hours of the courses, and even the learning outcomes differ across these curricula. As a result, there is a mismatch in the assessment, recognition, and equivalence processes for the qualification and accreditation, which demands a common framework for curriculum development.

Human Resources: Attention Needs to Bridge Skills in Demand and Skills in Supply

Of the 700,000 youths entering the labor market every year, most are abroad in search of better jobs and further study, bringing the total to 5.96 million youths in foreign employment (MOF, 2024). In-country unemployment is 12.6% among the youth population, whereas the youth aged 15-24 underemployment rate is 22.7% (National Statistics Office [NSO], 2024). According to the Nepal Living Survey 2022/23, 13.7% of the employed population is engaged in agriculture as self-employed, whereas only 86.3% are employed in wage-earning non-agricultural activities (NSO, 2024). Among employed human resources, most are unskilled and semi-skilled. To fulfil labor market demand, on the one hand, skilled human resources are sourced from abroad; on the other hand, the country has high unemployment and underemployment. This scenario explores the huge gap between the production and supply of human resources in the competitive labor market. Such gaps certainly pose challenges to achieving the SDGs targets in both the social and economic sectors. Thus, integrating youth into social and economic life, analysing both the supply and demand for skills, and promoting relevant programs are quite necessary (Aryal, 2018).

Infrastructure and Equipment: Common Felt Gap

It is recognized that the existing physical facilities of TVET institutions are insufficient to meet the requirements for TVET-related SDG targets, and thus the expansion of TVET facilities with sufficient infrastructure and necessary equipment is required. Ensuring

quality and relevancy of TVET services is necessary with a quality curriculum, quality human resources, and well-equipped physical infrastructure. Currently, there are 67 constituent institutes, including polytechnics, 639 technical schools with TECS programs, and 439 affiliated training institutions and 1850 affiliated short-term training providing institutions are under CTEVT (CTEVT, 2025), and other school-based technical streams in 537 community schools (CEHRD, 2025). The facilities provided to the institutions should obviously meet the functional requirements of the planned educational programmes both qualitatively and quantitatively (Pitanilubut, 1979). But, the facilities available in most of the technical and vocational education providing institutions are very weak. The community schools, both offering the TECS programme and the technical stream, do not yet have sufficient physical infrastructure and equipment to ensure the programme runs smoothly (DOE, 2017). These evidences indicate that there is a gap between the available facilities and the requirements for a quality, relevant TVET system in the countries, which may impact the SDGs targets.

Financing: Needs Careful Attention for Achieving TVET Goals

The financing in TVET covers two issues: at the micro-level, it concerns the sources and mechanisms of funding; at the macro-level, it deals with the overall funding levels, and their distribution between the public and private sources (Dohmen, 2009). Given the level of demand for skills development, TVET funding seems a challenge for governments and other stakeholders, including donors. According to a study by Parajuli and Shakya (2012), the Red Book (the government budget allocation book of Nepal) showed that the government budget for TVET was Rs. 9.6 billion in 2011/12, scattered across 34 different budget headings. This was just 0.617 per cent of GDP and 2.5 per cent of the national budget (Parajuli and Shakya, 20112). The report further explores that the TVET budget share has a slightly increasing trend in later years; but it is more donor dependent, as nearly 60 per cent of the total TVET budget is from the development partners' support, out of which the share of

loans is about 40%, almost loan is in the project basis.

The TVET sector strategic plan (TSSP) 2023-2032 is a long-term strategic plan for the development of Nepal's TVET sector, which requires a substantial amount of resources, equivalent to NPR 426 billion (approximately USD 3.47 billion) has been estimated for the implementation of TSSP (2023-2032) and distributed into four components: a) equity and access, b) quality and relevance, c) governance and management, and d) coherence and transferability (MOEST, 2022). To implement TSSP, government funding has been identified as a primary source of TVET financing, with contributions from students' fees, the business and commercial sectors, and training institutes also being supplemented. Apart from this, financial assistance received from development partners and INGOs has also provided an external source of funding for TVET development in Nepal. However, the internal source, i.e., government budget allocation to the TVET sector, has been gradually declining, from 78.21% of the total TVET budget in 2015/16 to 42.42% in 2021/22 (MoF, 2022). While analysing the existing allocation, it can be concluded that there may be significant funding challenges in TVET to achieve SDG targets, as available financial resources cannot address the new vision for the TVET sector. Thus, at least two sets of policy issues need to be addressed in this regard (Aryal, 2018): first, exploring and identifying ways to ensure adequate funding across all TVET institutions, and second, examining the roles of government and other TVET stakeholders and beneficiaries in addressing these challenges.

Governance of TVET: Clarity in Inter-Governmental Roles and Responsibilities

TVET programs are implemented in Nepal by a variety of institutions, including government and private institutions, as well as universities, in different modalities. However, program and resource duplication have been found during program implementation (Aryal, 2020; ADB, 2015). The governance system, including TVET governance, has also been reoriented in line with the federal setup. In the functional analysis of the level of government based on the

constitution, the implementation of the TVET program falls primarily under the jurisdiction of local and provincial governments, whereas policy and national standards are under the jurisdiction of the federal government (OPMCM, 2016). Despite their current strengths, subnational governments still lack implementation and financing capacity to meet national requirements. Moreover, the implementation arrangement with clear terms of reference has not yet been established. For example, based on the CTEVT act, the CTEVT has engaged in long-term and short-term training, but for the same purpose, particularly for the training of NAVT under MOLES, is also established under 'Operational Formation Order'. Such parallel institutions under parallel legal foundations may create duplications and contradictions for implementation of the programs. The same condition is also found for the technical stream in the community school and the TECS school managed by CEHRD and CTEVT, respectively. The functional analysis of the authorities at the levels of government shows that TVET functions principally under the authority of the local government; however, it is not ensured that local governments can exercise all their authorities because they lack the appropriate structure and adequate human and financial resources. Thus, the implementation arrangement, with an appropriate structure, roles and responsibilities, and adequate resources, for the governance of TVET functions is to be clearly defined (Aryal, 2018).

Implication and Conclusion

Nepal has committed towards achieving the SDG goals by 2030. TVET has been identified as one of the key instruments for achieving the SDG targets. There are about 15 ministries of the government, and other private and business sectors are rigorously engaging to strengthen the system through the implementation of different academic and skill development programs. But the duplications in programs and resources have posed a significant challenge to efficient and effective system development. Consequently, it may influence the achievement of the SDGs' targets by 2030. A consolidated legal foundation with clearly defined roles and responsibilities for the levels

of government and their institutions is essential to addressing the challenge. Sufficient funding arrangements, well-defined and market-driven curricula, harmonisation among levels of government and the private sector, and adequate resource management are the basic requirements for moving towards the SDGs.

In addition, a human resource projection and development plan, a robust and comprehensive TVET management information system, mobility and permeability through the national qualification system, and the development of the work culture and youth attraction are further essentials for achieving the SDGs' commitments. Permeability is one of the best strategies for attracting youth to the TVET world (Wahab et al., 2025) as the well-defined level of qualification with descriptors and recognition of the prior learning helps to specialise their knowledge and skills to pursue higher education. Although the study was based only on the secondary source of data, the findings of the study have policy implications, as MOEST, CTEVT and other concerned authorities will take further action for efficient and effective policy development, aligning SDGs and then program development for its implementation. Similarly, it has opened the research implications as based on the findings of this study, further research in this area to find out the appropriate measures to achieve SDGs targets by 2030.

While Nepal has made commendable progress on some SDG targets, the expansion and institutionalization of TVET facilities are potential drivers of inclusive and sustainable development. Achieving the SDGs by 2030 will require not only the expansion of TVET facilities but also emphasis on structural transformation, governance reform, curricular interventions, and effective resource management. A consistent national qualification framework, strong private-sector partnerships, and well-defined intergovernmental roles and responsibilities are equally essential. Ultimately, TVET must be governed and positioned as a key development strategy to empower youth, enhance employability, and foster a resilient, inclusive, and prosperous Nepal.

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