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Financial Flow in TVET in Nepal: Transiting from the Old to the New Constitution

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Abstract

Drawing on the data over ten years (2007/08 to 2016/17), this paper analyzes public sector fund flow and budgetary allocations and expenditure in TVET in Nepal which shows that the Nepali TVET has remained an area of low investment despite policy priority to it. The paper discusses how Nepal's recently adopted federalization has affected the budgeting process in the transition phase from the Old to the New Constitution. However, in the name of transition and lack of legal mechanism, the budgetary practices in TVET have not yet followed the spirit of the New Constitution. And thus, there has been little meaningful change in TVET budgetary practices. This situation could be understood as institutional weaknesses or a lack of strong will towards strengthening necessary institutions for the development of the sector. Foremost, there is a lack of clear understanding of seeing the TVET itself and its role in social, economic, and political processes. Conflict on the governance of TVET is obvious as Nepal is not yet experienced in coordinating the three political levels. Furthermore, the involvement of other stakeholders, including the private and industry sectors, is at a minimum in design and implementation of activities in the sector. These problems could be addressed by working for, through a collaborative chain of actions, a robust institutional mechanism that would facilitate the development of the TVET sector.

Key words: TVET, financial flow, federalization, social institution, Nepal

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1 Introduction

Technical and Vocational Education and Training (TVET) could be described as a process of acquiring some knowledge, some techniques, some skills that help the learner in her/his life to perform some activity, some work that help the person towards earning a living and lead a quality life with a social identity. This could also help a person to move towards further education. Such learning could take place in any mode – formal, informal, and non-formal (see Carron & Carr-Hill, 1991; DGIZ, 2016; Eshach, 2007) and includes both hard skills that are more tangible (e.g. plumbing, computer programing, painting) and soft skills that are less tangible (e.g. communicating, team working, problem solving, advocating). While people might informally get many of these skills during their upbringing, while working, or while interacting with other people which might help them get a good job and earn for living, the process of acquiring or educating the people with the skills and knowledge that are necessary for the world of work is basically an activity that is carried out with formal systems and institutions. Furthermore, linking actors from the education and employment systems is a constitutive characteristic of TVET (Rageth & Renold, 2019), thus institutions from both the social systems may be included. Though in countries like Nepal where traditional and informal process of skills learning is still active and thus is in need of substantial support for strengthening and recognition as per the needs and demand of the time, it is nevertheless a more formalized system that needs to be developed, expanded, and consolidated as per the need of the time.

Expanding and consolidating TVET, however, has remained a costly project as it needs high cost investment compared to general education and this has been problematic for many countries, particularly the developing ones (Maclean & Pavlova, 2013). This is mostly the case in countries which provide full-time TVET delivery where industry does not participate in sharing costs. The high cost is mainly because the sector needs an efficient system with competent human resource, technology, infrastructure, equipment, quality assurance, to be relevant to the needs of other sectors that utilize the TVET products, and regular monitoring, evaluation and assessment. Despite the big challenge in mobilizing resources, most countries around the world have given high emphasis on developing the sector. They are also supported by development partners, financially, technically, and systemically under some bilateral and multilateral arrangements. Despite such support, the TVET system in these countries often remain weak, running on outdated curriculum and technology, having poor linkage with the industry and business sector, and with low productivity (Bolli et al., 2018; Caves et al., 2019; Grainger, Bowen-Clewley, & Maclean, 2016; Rageth

& Renold, 2019). Nepal is an example of this sort of situation which has been investing, supported by huge foreign resources, in the sector for more than seven decades but the outcomes have been highly unsatisfactory. This situation can largely be linked with Nepal's political scenario.

Recent history of Nepal experienced high political turbulence. A popular political movement in 1990 changed the thirty years long direct and autocratic rule of the King and his court into a multi-party democracy, making the society more open and prompting wide popular participation in political, social, and economic processes. However, a fraction of politicians, not satisfied with the system began armed protests. As a counter-action, government forces responded with armed machineries. As a result of such conflicts, lots of lives were killed, disappeared, and wounded, and public properties were destroyed. This bloody conflict went on for ten long years until 2006 when a mass movement changed the course of the country by ending the Kingship and making the country a republic. However, political chaos and disruption of social and economic processes continued and it was only in 2015 the country got the new federal constitution with the provision of three levels of governments. In 2017, the country could hold three general elections as per the provision in the new constitution – for local governments, province governments, and for the federal government. One provision in the 2015 constitution is the powerful role of the local governments in the governance of school education, including the TVET system (Nepal Law Commission, 2015). It could be expected that this provision will bring far-reaching influence on TVET as its governance and financing would now be closer to the level where the activity takes place. The question now is whether all these provisions would contribute to building a quality, relevant, and equitable TVET system in the country. Two reports on the redesign of the TVET system in Nepal in the context of the new constitution highlight the challenges and opportunities that arise (Renold & Caves, 2017; Renold, Bolli & Caves, 2018). In particular, the second report pointed out that financing flows need to be analyzed more closely to assure financing security from the old to the new regime and to identify options for attracting new sources to finance the TVET system appropriately and efficiently.

In this context, this paper intends to analyze the trends of public investment in TVET in terms of budgetary allocations. Drawing on the data over the past ten years (2007/08 – 2016/17)⁵ of budget allocation to the sector, the paper assesses the financial priority the government has given to the sector and drawing from this assessment presents a perspective on financing the sector.

⁵ In terms of Nepali fiscal year, this refers to 2064/65 – 2073/74

It is obvious that developing a sector needs proper financial investment and it is important to see that such investment is made effectively. For this it is important to understand the present trends, patterns, and underlying factors and therefore, this paper is an effort towards that direction. The paper adopts a constitutional frame in order to see how the transition to a federalized system of governance that established 753 municipal governments (generally referring as *Palika*), seven provincial governments, and one federal government (Nepal Law Commission, 2015) has envisioned the role of these governments in TVET financing and how these are being realized.

Obviously, establishing institutions, in itself, cannot be the reason towards positive change. The more important point is how social institutions are institutionalized as stable bodies and function in the given political, social, cultural, and economic contexts. Looking from this perspective, institutions are societal products and at the same time provide resources and meanings to society. Institutions are thus “multi-faceted, durable social structures, made up of symbolic elements, social activities, and material resources” (Scott, 2014, p.57). In a more practical sense, institutions are organizations or systems of organizations (Miller, 2019). They are also to be seen as dynamic beings that produce and reproduce themselves and are with subjectivities. Whether we see progress or stagnation in Nepali TVET, the perspective of social institution could provide an explanation (Renold et al., 2019). Effectiveness of the institutions depends upon how the society develops the environment that works towards stabilization and add value to these institutions and how these institutions are able to provide “stability and meaning to social life” (Scott, 2014, p. 58). Further, it is also important to realize how the rules of the game are developed and how actors play the games. Rules are not only formal but also informal (Bruton, Ahlstrom, & Li, 2010; Miller, 2019). While formal rules are explicit and are supposed to direct the institutional or organizational practices, there also are informal rules in an implicit manner and at times might be more active and influential rather than formal rules.

The paper begins with a brief introduction to the Nepal context, focusing on its TVET system. Then, after explaining the methodological aspect, the paper moves to present an analysis of the budgetary allocation to TVET in Nepal and the flow of fund. Finally, the paper presents an outlook on the observed trends and patterns drawing on what the data show, international scenario, and how Nepal could move on financing the sector if it is to achieve the goals of national development as well as individual enhancement by strengthening the linkage between education, employment, and income. The paper would also point out some of the key problem areas like lack of key information for better assessing the TVET financing scenario and future research needs.

2 Nepal: The Country and Its TVET System

Nepal is a country of socio-cultural diversity. But the country has not yet been able to convert this diversity into a development resource. At the international level, its development status is illustrated by its 149th position out of 189 countries in the Human Development Index (HDI), 2017 (UNDP, 2018). One of the major factors for such position is the low literacy level of the country. As per the national population census of 2011, only about two-third of the total population of age five and above are literate in Nepal (Central Bureau of Statistics [CBS], 2012). Although the school going number of children is in the increasing trend, minimizing school dropout and grade repetition are still big challenges. About 22 per cent people (more than six million) are below the poverty level and the GDP per capita at current price stands at NPR 103,335 (US\$1,004) for the fiscal year 2017/18 (Ministry of Finance [MOF], 2018).

Realizing the importance of education in national development, the country has been giving high emphasis on it and on the TVET sector, as one of the important domains of education. This sector evolved in Nepal mainly to serve two purposes: i) to provide individuals with the needed skills and knowledge for their livelihood; and ii) to meet skilled human resource need of the country for national development.

TVET is a historical tradition in Nepal. Coming to more recent history, some vocational training institutes known as Basic Schools (*Adhar Pathashala*), were established during the second half of the 1940s (Sharma, 1986) but the planned initiations for the development of sectors were begun only during 1950s. These initiatives were further institutionalized and streamlined when the Council for Technical Education and Vocational Training (CTEVT) was established in 1989. The CTEVT is mandated for coordinating, developing, and strengthening TVET in Nepal. Since then, the TVET sector received continuous attention for its growth and development mainly through establishing TVET institutions, formalizing TVET curricula, assessment and certification of skills training.

2.1 TVET Programs and Services

At present, four types of TVET programs are available in Nepal. These are: i) long-term skill development programs (e.g., Technical SLC, Diploma), ii) short term skills training (National Skills Testing Board Level: elementary, 1, 2, 3 and 4), iii) livelihood training (very short duration ranging from 3 days to few weeks), and iv) technical education (normally offered by universities and at

tertiary level). The CTEVT and its affiliated institutions offer long-term skills development programs and short-term skills training. Currently, there are 30 technical schools constituted under the CTEVT, 73 annex schools and 459 CTEVT affiliated training providers (CTEVT, 2018). However, the total training capacity of all these institutions is just about 100,000 per year. Besides the CTEVT and affiliated institutes, some other government ministries and offices also provide vocational training without sufficient coordination among them and thus there is lack of consolidated information on the TVET services in Nepal (for a detailed overview see Baral, Kemper & Maldonado-Mariscal, 2019).

As the discussion above shows, the progress of the TVET sector is still very slow and also weak. Taking into consideration the fact that about 500,000 people enter the labor market every year (MOF, 2018), the supplies of TVET services is far low. In addition, the education employment linkage is very weak in the context of Nepal (Caves et al., 2019). It is often commented that there is minimal involvement of business, industry and employers in the development and delivery of TVET and skills development in Nepal. The persisting gap of required involvement of business, industry and employers in the curriculum design, implementation and assessment of skills and competencies is leading to a mismatch between the world of work and the world of learning resulting into unemployment and underemployment of trained youth (Baral, Kemper & Maldonado-Mariscal, 2019; Caves et al., 2019).

The recent labor force survey highlights that out of the total labor force of 20.7 million, around 908,000 people are unemployed, which accounts for 11.4 per cent unemployment rate (CBS, 2019). Lack of appropriate skills is one among many other reasons for such pervasiveness of unemployment. This situation adversely affects the productivity of the economy and therefore, signifies the urgency of skills training needs in the country. Due to inadequacy of job opportunities inside the country, tendencies of youth going for foreign employment is in the increasing trend. Currently, around 4.3 million youth are abroad for foreign employment, out of which, only a little above one per cent are skilled workers whereas about 24 per cent are semi-skilled and 75 per cent are unskilled (MOF, 2018). Furthermore, Bolli, Parajuli and Renold (2019) show that the strength of the relationship between completed primary and secondary education and formal sector employment has decreased over time.

In this context, a systemic approach focusing on the development and expansion of the TVET programs in the potential sector and occupation is a viable measure for increasing employment opportunities in Nepal. It seems that this sector is in limelight in Nepal in recent years. The need

for expansion and development of technical and vocational education and training has now become a new political agenda in Nepal. This is featured highly on the election manifesto of Nepal Communist Party (Nepal Communist Party, 2017) (currently a ruling party) and Nepali Congress Party (Nepali Congress, 2017) (currently the main opposition party).

Nepal's constitution 2015 has identified education, employment, and labor, among several others, as fundamental rights. With these positive aspects, it can be expected that the TVET sector will gain a new height in the days to come, at least up to secondary education. But several things are yet to be cleared and these include the governance system. It is not yet clear how TVET governance will be designed and implemented in the years to come. The constitution and legal provisions say that the basic and secondary level education that include TVET is the responsibility of the local governments. Lack of necessary legal and institutional provisions towards preparing and strengthening the local governments for effective functioning of the sector has been putting doubts on how federalization will work in Nepal, at least in the context of TVET. It is also true that the constitution has placed education under the concurrent power of the three levels of governments. This means all levels of governments are responsible for the development of the sector. Hence, this paper aimed to see how the federal government has been allocating funds for financing the sector.

3 Methodology

This paper draws the budgetary allocation data on TVET mainly from the two reports (Parajuli & Shakya, 2012; and Kushiyait & Lamsal, 2019). Parajuli and Shakya's report was prepared for the Nepal Ministry of Education and Kushiyait and Lamsal's report was prepared for Kathmandu University School of Education. Though both reports were different in their objectives and scope, they however dealt basically with public sector budgetary allocations in TVET – the first report for the period 2007/08 to 2011/12 (corresponding to Nepali fiscal year 2064/65 to 2068/69 BS) and the second report for 2012/13 to 2016/17 (corresponding to Nepali fiscal year 2069/70 to 2073/74 BS). Both reports worked based on the data they obtained mainly from the Red Books⁶ of the

⁶ Red Book is an official publication that gives the budget details including the allocation for the public sector by budget heading and the source of the fund (internal and foreign with further breakdown into grant and loan in case of foreign source budget) for the coming fiscal year, actual expenditure under that heading in the previous fiscal year, and the revised allocation for the current fiscal year. At the federal level, the federal ministry of finance publishes this book each year after the approval of the budget by federal parliament and at the provincial level by the provincial ministry of the economic affairs and planning in the respective province after the approval of the province parliament.

corresponding fiscal years. Likewise, both reports took the support of the Development Programs, annual publications of National Planning Commission, of the corresponding years to identify the TVET related programs of different ministries.

One common problem both reports noted was identifying the TVET programs. The problem lies in the fact that there is no common consensus on what TVET includes. As the TVET programs are carried out by a number of government and semi-autonomous government offices, non-government organizations, and the private sector, they do so with their own understandings and definitions of TVET. Both reports took technical and vocational education and training as degree oriented academic programs, or training programs with or without certification, offered as formal or non-formal activity, by public or private institutions. Both reports stayed within the scope of those programs that deliver technical and vocational skills and knowledge to students or participants necessary for entering the world of work with certain specific vocation, occupation, or profession and both did not include higher education. However, if some organizations focusing on TVET have allocated and spent some budget on higher education, it would be rather difficult to separate such budget and expenditure. As such, such budget is included under the TVET budget but it could be said that the proportion of such budget is very small.

The budgetary practice of Nepal also creates confusion in identifying TVET programs. Neither the Red Books nor any other government publications categorize the programs as formal or non-formal TVET programs explicitly. This makes that anyone who tries to calculate the public sector budgetary allocation and expenditure in TVET has to go through all budget heads under all government ministries and other offices and decide whether a particular budget head is a TVET program or not just by looking at the name of the budget head and nature of the activities. Obviously, this leaves space for subjective judgement. Apart from the Red Books, both reports consulted some other government publications, mainly from the National Planning Commission, different other ministries and offices, and the Council of Technical Education and Vocational Training to identify the TVET programs.

One other related problem both the reports noted was the possibility of over and under reporting of TVET budget. This would happen in cases when TVET programs are combined with different other programs but the budget heading will not indicate that those programs also include the TVET component. Further, even if a particular program is identified as a TVET program but as only the total budget figure is available without breakdown, disaggregating the allocation as actual TVET budget and non-TVET component is not possible. Both reports could include only the TVET

budget that are classified as developmental budget under different ministries and both developmental and regular budget under the ministry of education. TVET activities under regular budget of other ministries are not captured.

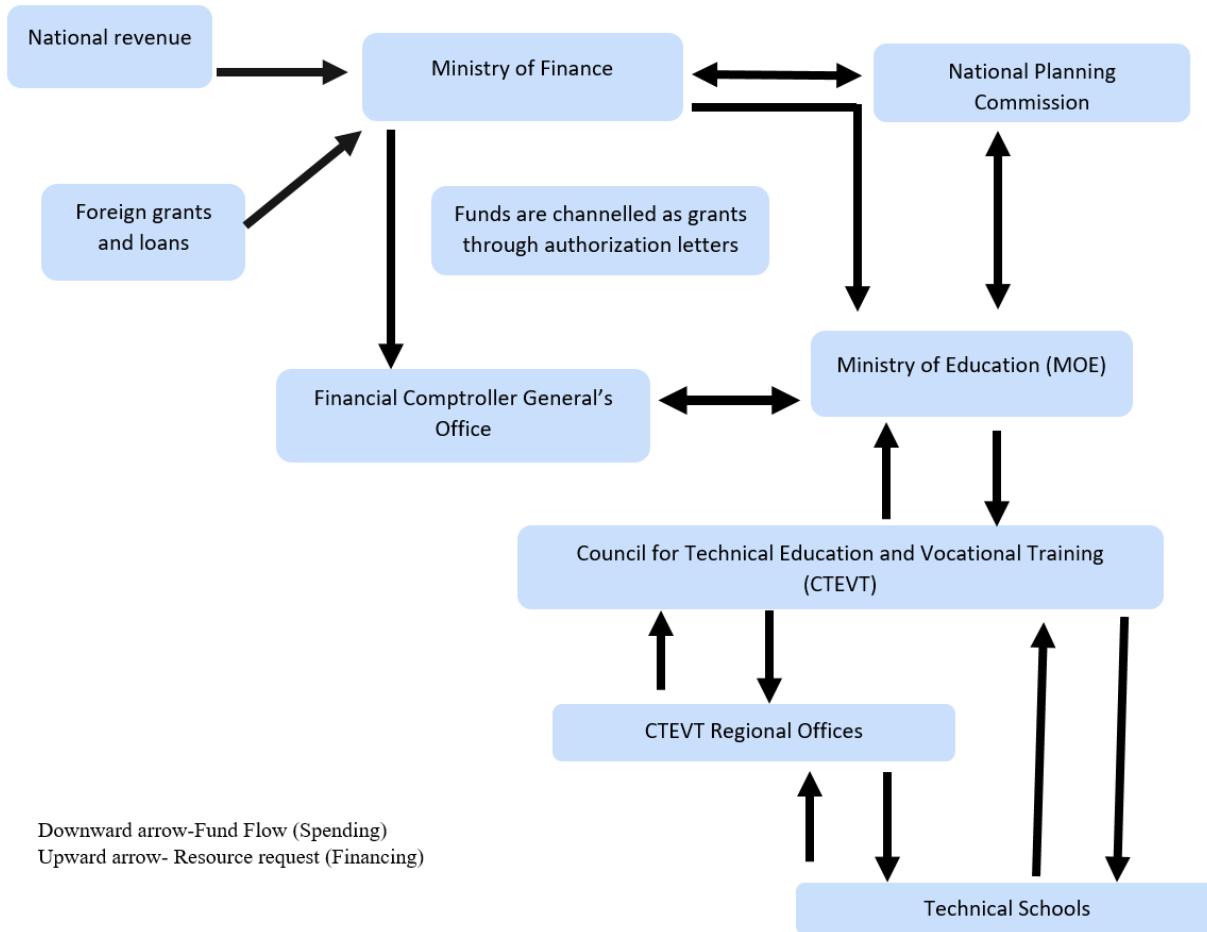
Beginning from the year 2015 the government has begun technical and vocational education stream in secondary level (grades 9-12) in general public schools. As per the data of 2019 there are 434 such general secondary schools with vocational and technical education stream (MOEST, 2019). Kushiya and Lamsal report (2019) noted that information on investment made to this stream of education is also not available. One more point that needs to be noted here is that as the two reports from which this paper derives from were prepared by different teams, judgmental bias in identifying the TVET programs and budgetary allocations cannot be ruled out.

As this paper draws from the two reports mentioned at the beginning of this section and as these reports are based on the Red Books, the paper does not include the discussion of the expenditure made by the private sector, the non-government organizations, and households. It is however a reality that these sectors have been making a huge investment in Nepali TVET but the problem is there is no information on such investments; there just is no any system of documenting and accounting the investments made by these sectors. Non-government organizations receive their fund mainly from foreign sources, either through foreign funded projects running in Nepal or directly from foreign sources. Whatever their sources might be, there is no information on the volume of their investment and naturally this does not come into the national account system. Foreign donors are also the key investors in Nepali TVET and their investment goes either through the government system or through non-government system. Though some of their investments through government channel is accounted in the Red Books, a large portion of their investment remains unaccounted in the national account system.

4 Fund Flow to TVET: Before and After the Federalization

This section deals with public source funding to public TVET institutions. As no information is available on private sector funding, NGO funding, and household funding to TVET schools no discussion could be made on these areas. Further, privately-run TVET schools do not receive public funding in Nepal. There are a few non-profit trust-managed TVET schools which receive a small amount of public grants through the CTEVT.

Fig 1: Fund flow before the new constitution



This figure presents the fund flow only in MOE/CTEVT system; system in other ministries/offices used to be largely same but some variations might have there. Donor partner financial not controlled by the Government of Nepal are not included in the figure.

As the country has adopted a federalized system of governance, efforts are made to see the funding mechanism before and after the beginning of the federal system. As noted above, TVET programs in Nepal are run under the purview of the CTEVT and different other government ministries and offices (Renold & Caves, 2017). As such, all these ministries and offices allocate funds for their programs. Before the beginning of the practice of federal budgeting, funds to public TVET schools and training centers were used to channel through and in coordination with the concerned ministries and departments, i.e. funds from ministry to departments and sub-national offices under

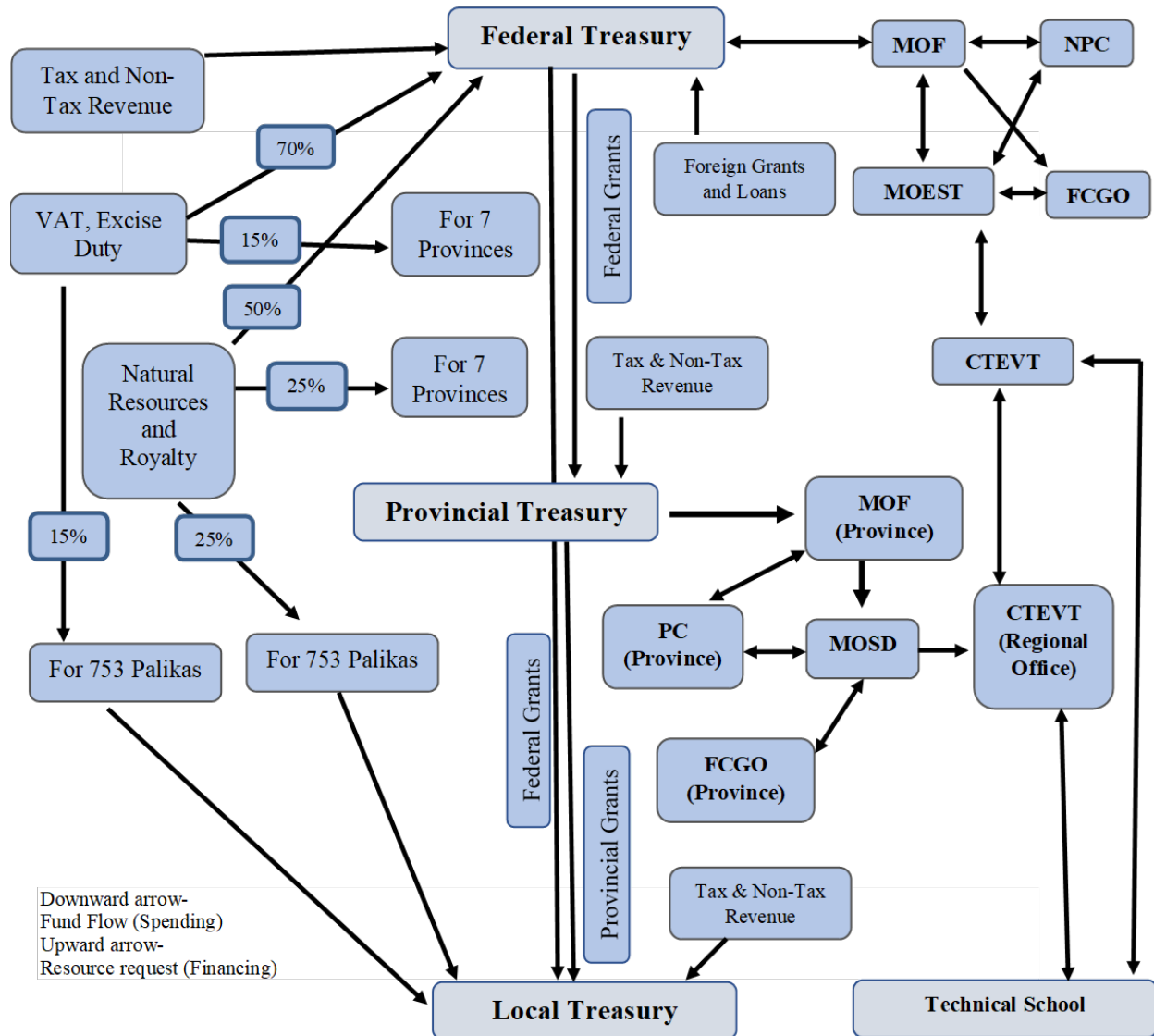
the same ministry. Likewise, funds to the CTEVT were used to channel through the Ministry of Education, Science and Technology and through the CTEVT to its constituent schools (Fig 1).

The CTEVT would receive grants from the Ministry of Education (through authorization letter) along with the approved programs and budgets. The programs and budgets were approved by the National Planning Commission and Ministry of Finance in consultation with the Ministry of Education (now, Ministry of Education, Science and Technology). The Ministry of Finance would provide spending authority to the Ministry of Education along with the spending authorization letter and approved programs and budgets. The Ministry of Education, in turn, would then send the spending authority to offices under it, including the CTEVT. Once the CTEVT would receive authorization letter along with the approved programs and budgets from the ministry, it would discharge its spending authority to its constituent schools along with the approved budgets and programs. The release of fund to the schools would be done by the corresponding District Treasury Control Office on the basis of the approved program and budget and release order from the higher authorities.

Such process of fund flow was same in case of other ministries and offices which had their sub-national offices conducting TVET based activities. In all cases, Ministry of Finance would send spending authorities to other ministries and the ministries would then discharge their spending authorities to the sub-national offices together with the approved programs and budgets. The fund would be transferred to the implementing offices thorough the District Treasury Control Offices on the basis of the release order to them from the higher authorities.

After the federal setup, which came into full effect only after the three general elections in 2017 and when the federal, provincial, and local governments were formed, expectation was that financing TVET would follow the spirit of the new constitution. But as the organizations under the federal setups are yet to be institutionalized in a firm manner, the country is still in a transition phase regarding TVET governance and funding. It is not the scope of this paper to discuss the argued shortcomings of current federalization of Nepal that it is not going to contribute to achieve vertical and horizontal equalization in the country, thereby defeating the very fundamental rationale for federalization (Wagley, 2018).

Figure 2: Fund flow after the new constitution (transition phase)



Downward arrow-
Fund Flow (Spending)
Upward arrow-
Resource request (Financing)

FCGO: Finance Comptroller General Office CTEVT: Council of Technical and Vocational Training PC: Planning Commission
MOSD: Ministry of Social Development (Province)
This figure presents the fund flow only in the MOEST/CTEVT system. System in other ministries/offices are largely same but some variations might be there
% figures in the left side of the figure show proportion of resource sharing (VAT, excise duty, and Natural resources and royalty) among three levels of governments (Source: NNRFC, 2019)

In the federal setup, all three levels of governments (local, province, and federal) have their own treasury which consists of money from tax and non-tax revenue sources and from grants from higher level governments (Fig 2). The funds from such treasury are to be utilized to the corresponding functions of the governments as decided by the constitution and laws. Because of the nature and scope of the functions, some of the functions are categorized as concurrent while others are as exclusive to specific level of government. The concurrent functions (between and among federal, province and local governments) should receive funding as per the shared modality between them. But the functions which are assigned to a particular level of government under the exclusive list should be funded by the concerned government.

One noted change the 2015 constitution presented to the local and provincial governments is the authority of revenue generation. The local governments had this authority earlier also but under the federal setup, the scope of this authority has been expanded considerably along with constitutional assurance. With this, the local and provincial governments will have the freedom to invest as per their priority and assigned functions.

As per the constitution and the Local Government Operation Act 2074 (2017), TVET has been categorized as the exclusive function of the local government (Nepal Law Commission, 2017a). However, there is some confusion because the existing CTEVT is yet to be restructured in line with the state restructuring and this has created anomalies in funding procedures to schools. In the past two years, after the federal budgeting, the fund to the general schools goes to the local governments following the principles of inter-governmental fiscal transfer. This is because the general schools are regarded as the function of the local governments. But the same principle has not been applied in the case of technical schools and thus the fund to the TVET schools are not channeled through the local governments. The reason is a missing coordinated regulation of the TVET sector on all three tiers. Until now, the sector has been kept under the federal government, which is not in-line with the constitutional and legal provisions. The federal fund to the CTEVT constituent schools is channeled through the province governments on an ad hoc manner.

In the case of other government ministries and offices (other than education and CTEVT), their channeling of fund for implementing TVET activities might have taken place either by keeping the budget under the federal ministry or in sub-national offices under that ministry. In any case, the fund is transferred to the sub-national or program implementing offices by issuing authorization letter from the Ministry of Finance to the concerned ministry and then to the concerned department/offices and eventually to the subnational offices under the corresponding ministry. Here again, as discussed above, the fund goes to the District Treasury Controller Office which after

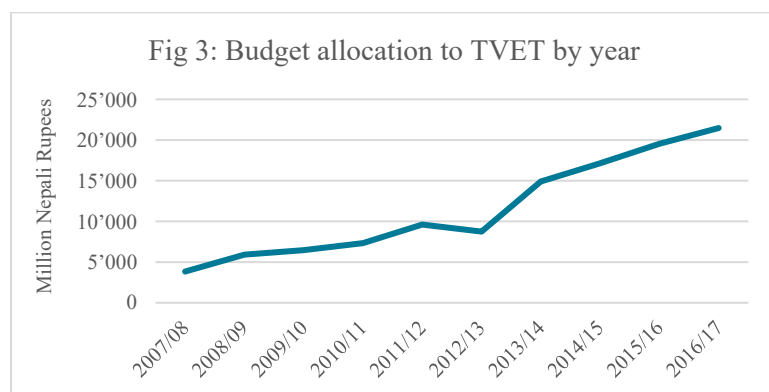
receiving the authorization letter transfers the fund to the concerned sub-national offices. However, there might also be the cases where the local governments are program implementing agencies. If so, they follow the procedure of fiscal transfer from one government to the other governments.

Despite what has been going on in practice, if Nepal has to follow the new constitutional provisions, the TVET sector should have experienced major shift in its funding mechanism. As per the constitutional provisions, federal and provincial governments cannot directly allocate funds to schools, including the CTEVT constituent schools. This means schools can get funds only from the local government. This is so because the constitution has noted that the school education up to the secondary level is the responsibility of the local government. This would require that all schools be accountable towards local government. However, this has not been realized in the case of TVET schools so far.

Under the constitutional provisions, federal and provincial investments in TVET should be channeled through the local governments by following the inter-governmental fiscal transfer procedure. The Article 250 of the Constitution of Nepal has made the provision of National Natural Resources and Fiscal Commission for regularizing the resource sharing among different levels of governments (Nepal Law Commission, 2015). Likewise, the Intergovernmental Fiscal Arrangement Act 2074 has provided the basis for inter-governmental fiscal transfer (Nepal Law Commission, 2017b). All these arrangements are to ensure revenue rights and sharing of revenue, regularizing public budget and expenditure procedures, and to ensure fiscal discipline among different levels of governments. Such constitutional and legal provisions ensure fiscal federalization with tools like tax devolution and fiscal transfer and with principles like fiscal equalization and expenditure needs and revenue capacity. But the current implementation practices in the first years of transition show that the federal government is not yet complying with the constitutional and legal provisions regarding the resource sharing in TVET due to missing restructuring of the TVET sector's institutional framework and legal regulation. The transfer of the fund, as was practiced in the last two years (2017-18 and 2018-19), to province governments and then directly to the CTEVT schools, did not follow the principle of fiscal transfer and was clearly against the constitutional provision. Paudel and Sapkota (2018) have also drawn similar observations on fiscal federalization in Nepal.

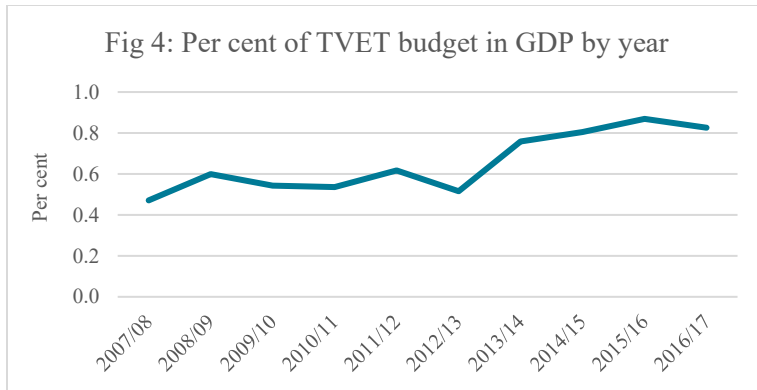
5 Trends of Budgetary Allocations to TVET

Budget allocation to TVET (formal programs and non-formal courses) shows a constantly increasing trend during the ten years of 2007/08 and 2016/17 (Table 1, Fig 3). Looking at the past ten years' data, we can see that there has been substantial increase in budgetary allocations to TVET; more than five times increase from 2007/08 to 2016/17. More importantly, the rise has been comparatively steep in recent years.



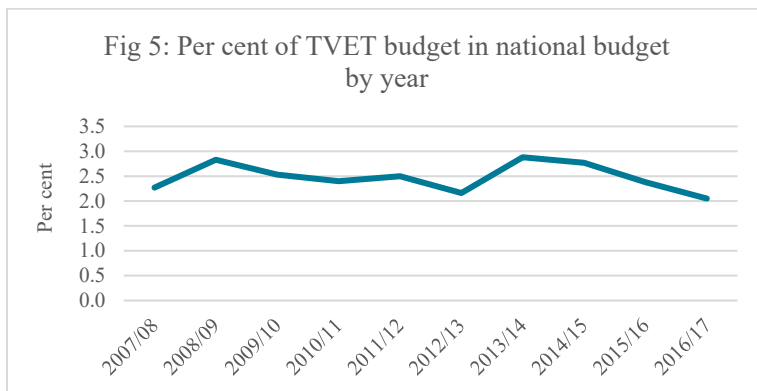
Data source: Red Books and Planning Books of respective years; obtained from Parajuli & Shakya, 2012; and Kushiyait & Lamsal, 2019

This is, of course, a satisfactory trend but the question is, whether the level of investment in TVET the country has been making is adequate for the strong and sustainable development of the sector. Moreover, we do not know how much of this expenditure has gone into non-formal courses and how much into formal TVET programs. Both are, of course, difficult questions at least in the case of Nepal because no such information is available. It is, however, clear that there is a distinct lack of investment in the sector as it suffers from all sorts of problems including access, equity, quality, and relevance. Moreover, the sector is weak as it lacks a robust system, strong linkage between education and employment actors, institutional mechanism to cooperate across governmental levels, and the competent human resources who could steer the system.



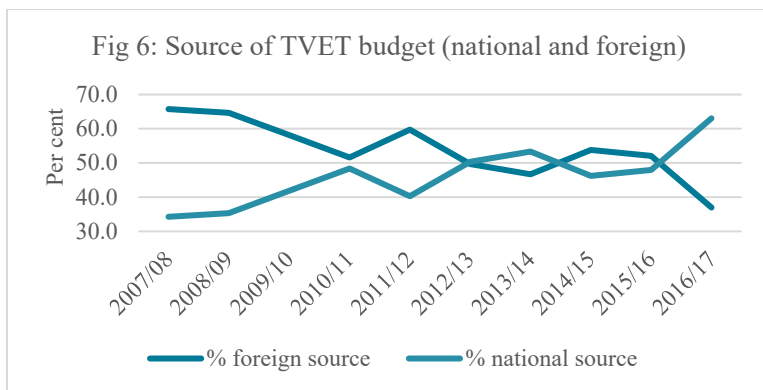
Data source: Red Books and Planning Books of respective years; obtained from Parajuli & Shakya, 2012; and Kushiyait & Lamsal, 2019

If we look at the public investment to the sector in terms of gross domestic product (GDP) and national budget, the low investment to the sector becomes further clear (Table 1, Figs 4, 5). While TVET budgets in terms of GDP show an increasing trend in the last ten years, we can see stagnant or even declining trend in terms of national budgets. In 2007/08, TVET could receive 0.471 per cent of GDP, this same per cent rose to 0.803 in 2017/18.



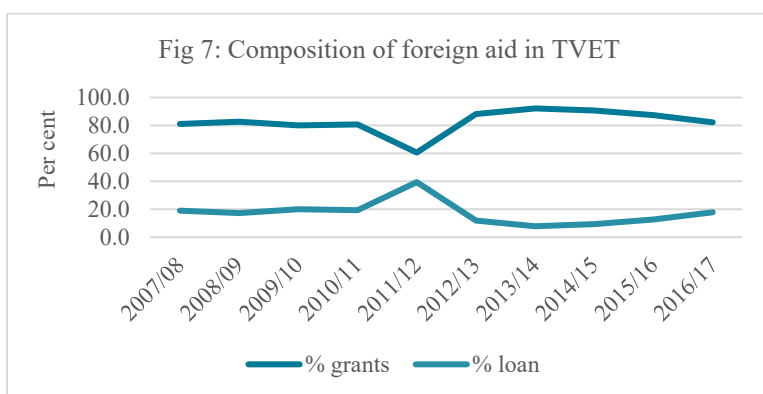
Data source: Red Books and Planning Books of respective years; obtained from Parajuli & Shakya, 2012; and Kushiyait & Lamsal, 2019

However, TVET budgets in terms of national budgets remained stagnant at around two per cent with some fluctuating trends. In 2007/08, TVET budget was just above two per cent of national budget and was still about two per cent in 2017/18, which is even lower than 2007/08. This means while national budget went on swelling, TVET budget remained ignored and stagnant. Considering the priorities given to this sector in government policy documents, such low allocation to the sector raises questions on the real intention of the government towards the sector. This explains why Nepal has the lowest percentage of secondary student enrolment in TVET among all South Asian countries (Dewan & Sarkar, 2017).



Data source: Red Books and Planning Books of respective years; obtained from Parajuli & Shakya, 2012; and Kushiyait & Lamsal, 2019

Public fund has been one of the main sources of financing TVET in Nepal. Public sources include funds from national as well as foreign sources that are included in the public account system. Recent years financing in TVET seems to be dominated by national sources (Table 2, Fig 6). Looking at the past ten years' data, share of public sources in TVET shows an increasing trend, though fluctuation is also clear. Even if we exclude the share of public financing in 2016/17 (63%) as an exceptional year, it is clear that the public sector financing has remained within the range of 40-50% in the past few years. This can probably be seen that the Nepali TVET sector is not overtly relying on foreign sources.

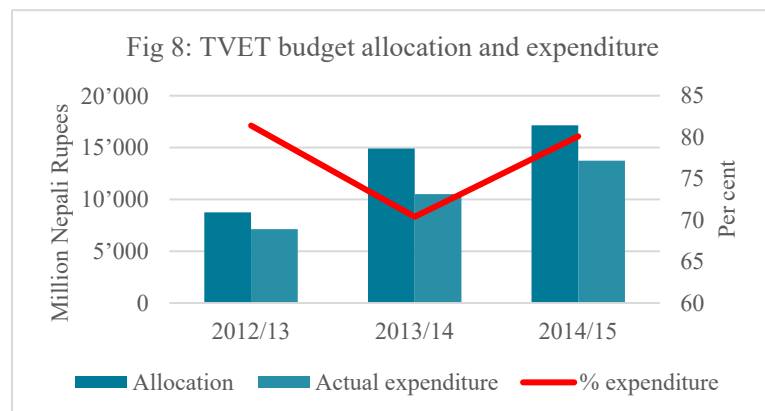


Data source: Red Books and Planning Books of respective years; obtained from Parajuli & Shakya, 2012; and Kushiyait & Lamsal, 2019

This can further be understood that Nepal has still possibility to invite further support from foreign sources for strengthening and expanding TVET in the country.

Nepal's foreign aid support to TVET is composed basically of grants (Table 2, Fig 7). With over 80 per cent support in grants and just 20 per cent in loan, Nepal actually is in ease in managing

foreign sources in TVET. With only one exception in the last ten years, when the proportion of grants came down to 60 per cent, the trend of high proportion of grants seems to be consistent.



Data source: Red Books and Planning Books of respective years; obtained from Parajuli & Shakya, 2012; and Kushiyait & Lamsal, 2019

While talking about financing in TVET, it needs to see the capacity of the sector to spend the allocated money. Because, if the system does not have the capacity to spend the money, it makes little sense to claim that the required budget is not available. Available data for three years (2012/13-2014-15) show that the Nepali public TVET sector could spend the allocated budget within the range of 70-80 per cent (Table 3, Fig 8). This shows the need for improvement in the spending capacity of the TVET sector. That is, the need to strengthen the institutional capacity of not only the TVET sector but also the whole system is clear. In other countries, such problems are regulated by a TVET Act. Such act would help to determine the tasks of the various political levels and involved stakeholders and who contributes to the costs. As these issues have not yet been resolved in Nepal at the time of this publication, no further conclusions can be drawn.

Table 1: TVET Budget as Compared to Gross Domestic Product and National and Education Budget by Year (in million NRs)

	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Gross Domestic Product (GDP)	815,700	988,300	1,193,700	1,369,400	1,558,000	1,695,000	1,965,000	2,130,100	2,247,000	2,599,000
National budget	168,996	209,416	256,480	306,496	384,900	404,820	517,240	618,100	819,468	1,048,920
Education budget	28,390	39,086	46,617	57,828	63,919	63,431	80,958	86,030	98,643	116,361
TVET budget	3,841	5,920	6,477	7,345	9,618	8,753	14,909	17,149	19,537	21,478
% of TVET budget in GDP	0.471	0.599	0.543	0.536	0.617	0.516	0.759	0.805	0.869	0.826
% of TVET budget in national budget	2.27	2.83	2.53	2.40	2.50	2.16	2.88	2.77	2.38	2.05

Sources: Red Books and Economic Surveys by Ministry of Finance and Planning Books (Book of Annual Programs) by National Planning Commission of the respective year. Obtained from Parajuli & Shakya, 2012; and Kushiyait & Lamsal, 2019.

Table 2: Source of TVET Budget (national and foreign) and Composition of Foreign Aid in TVET by Year

	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
% foreign aid in TVET budget	65.74	64.66	58.15	51.61	59.72	49.66	46.69	53.78	52.04	36.96
% national source in TVET budget	34.26	35.34	41.85	48.39	40.28	50.34	53.31	46.22	47.96	63.04
Composition of foreign aid in TVET budget										
% grants	81.05	82.69	80.01	80.68	60.57	88.12	92.17	90.70	87.31	82.16
% loan	18.95	17.31	19.99	19.32	39.43	11.88	7.83	9.30	12.69	17.84

Sources: Red Books and Economic Surveys by Ministry of Finance of the respective year. Obtained from Parajuli & Shakya, 2012; and Kushiyait & Lamsal, 2019.

Table 3: TVET Budget Allocation and Expenditure (in million NRs)

	2012/13	2013/14	2014/15	2015/16	2016/17
Allocation	8,753	14,909	17,149	19,537	21,478
Actual Expenditure	7,121	10,502	13,734	19,362*	21,477**
% expenditure	81.4	70.4	80.1		

*Estimated expenditure **Revised allocation

Sources: Red Books and Economic Surveys by Ministry of Finance of the respective year. Obtained from Parajuli & Shakya, 2012; and Kushiyait & Lamsal, 2019.

6 The Scenario

The starting position on financial development shows that it will hardly be possible to achieve the country's economic policy goals without a substantial increase in financial resources for the TVET sector. As increasing public sector resources is a difficult task given the stage of development of this economy, there is only one way to overcome this problem and that is giving a major role to the private sector. Rageth (2018) was able to show with her empirical analysis that countries with a strong public-private partnership achieve better outcome effects on the labor market. If the private sector can be led to a substantial commitment, then the expansion of the TVET sector will be possible even if the state has limited resources. Egg and Renold (2016, p. 48) have calculated the ratio of public and private costs for the TVET sector in Switzerland. According to this study, around 40 per cent of the costs for the formal TVET sector are covered by the state and 60 per cent by the private sector. Further, as we will see later, under certain conditions companies can achieve a greater productive return. Compared to general education, in TVET the private actors are of the greatest importance for efficiency and effectiveness (Caves et al., 2019). That is why it is important for the state to set the right incentives so that companies are willing to invest in training.

Along with attracting the private sector for investment, the state must also allocate various functions and tasks of a TVET system (see Renold & Caves, 2017) to the three political levels, so that the constitutional provisions are respected. Since TVET must manage a complex structure of institutions from the education and employment system, it is recommended to draw up a separate TVET law that could facilitate all these processes. The functions of the private industry must also be regulated by this law to stimulate private sectors engagements.

The system of TVET in any country functions in the available social contexts. Actually, Nepal has been experiencing problems and challenges in the development of strong social institutions (see Pandey et al., 2019 in relation to water supply related institutions in Nepal and their weak performance). Political upheavals the country has been experiencing since long and the resulting power conflicts are mainly responsible for the poor performance of social institutions in Nepal. This sort of situation has adversely affected the Nepali TVET sector and explains the poor performance of the sector. That is why it has not been able to attract Nepali youth and their parents towards it and thus has failed to create a meaningful impact in Nepali society.

As we have shown in the analysis, different understandings on TVET are in practice in Nepal. The data suggest that both formal programs and non-formal courses are subsumed under the same title. This is not in line with the international standards. Without distinguishing between formal programs and non-formal courses, Nepal will have difficulties in having the performance of the TVET system reflected in international statistics. Moreover, the financing mechanisms between formal and non-formal education could be different. While in formal education the state has an obligation to provide funding (in Nepal: Right to Education), this is not the case with non-formal education. Non-formal courses may have different purposes (retooling of adults, labor market integration, upgrading of skill set) and can be financed by different sources.

Once the scope (i.e., formal and non-formal TVET), objectives and roles have been clarified, the corresponding regulations can be made for all three political levels. It is important that the national level develops the main features in a federal TVET law together with the other two political levels as mentioned in article 232 of the 2015 constitution. This requires a high-level TVET conference or a council in which all political levels are adequately represented. The better the three levels coordinate at the beginning of this process, the sooner it will be possible to implement this law because consensus is reached at the beginning. Furthermore, as we have already outlined, the competent authorities should clarify which roles and responsibilities the private sector could assume. Caves et al. (2019) have shown that cooperation between business and government in Nepal is still very modest compared to top performers around the world (Bolli et al., 2018). It must be understood in Nepal that this is a necessary prerequisite for developing an effective TVET system.

The role of the private sector within a formal TVET system can be diverse. On the one hand, the private sector should play a decisive role in the development of the National Occupational Skill Standard (NOSS) and the related curriculum, because they know better than school representatives what competencies and skills the workforce needs. In addition, numerous studies show that

workplace learning (see e.g. Bolli & Renold, 2017; Trilling & Fadel, 2009) has multiple benefits for skills acquisition. Finally, the training companies will contribute to the costs of the training because they can also generate a return through the productive contribution of the apprentices (Wolter & Ryan, 2011; Wolter & Schweri, 2002). Preliminary studies on the pilot trials of the 24-month dual VET apprenticeship in Nepal indicate that it could be possible to achieve a small net benefit for companies in Nepal (Bolli et al., 2020). If the expansion of the dual VET approach in Nepal becomes possible, companies could make a decisive contribution to the expansion of the TVET system not only in terms of financial engagement but also in terms of effective skills development provider. In order to ensure rights and obligations, minimum standards must be laid down in a TVET law. It goes without saying that this will hardly be possible in a general education law.

To sum up, the most compelling scenario to boost the TVET sector in Nepal is embracing the private sector as an important partner for institutionalizing the TVET sector. The advantages of that way forward are manifold. Most importantly, the private sector may act as an important financial resource as it will pay for a part of the TVET program activities. If private sector involvement is also guaranteed in the development of National Occupational Skill Standard and curricula, the government will have certain security that the TVET graduates will meet the need of the industry. Furthermore, studies show that workplace training has several advantages to prepare people for the 21st century skills as apprentices are embedded in teams of adults (role models), can learn on the best available technologies, and gain self-confidence.

7 The Outlook: The Ways Ahead

We would like to draw here a few key points as ways ahead for instituting and strengthening a robust TVET system in Nepal. The foremost need is to be clear on how to see the TVET. To move on it in a more focused manner, clarity on understanding it and differentiating it with skills development programs is a must. As discussed in the section of methodology, identifying TVET programs was a challenge while calculating the budgetary allocations to TVET activities. Given this challenge, there remain some limitations in this paper like inability to differentiate between TVET and skills development programs. A related and urgent requirement is the development of a strong TVET information system that could collect, process, store, analyze, and retrieve when needed necessary information required for better decision making at all levels. Likewise, there is a critical shortage of research-based information. To address this gap, developing a trend of research in TVET sector is the need of today in countries like Nepal.

TVET in any country functions in the available social, cultural, political, and economic environment. As different actors and structures interplay with their own priorities, societal relationships often become complex and multiple. Conflicts for societal power and resource sharing might be the norms. Naturally then, resource sharing in a society might be skewed; some sectors might be privileged at the cost of some other sectors. In the present context, TVET in Nepal has remained a deprived sector it needs intervention to bring positive changes. One way to have realized the change is to make the related stakeholders understand the potential of this sector in national social and economic transformation. This could be realized by working for developing a strong legal and institutional framework staying within the directives of the Constitution, and backed by political commitments at all levels, stakeholders, and actions. Creating a situation that entrusts active roles for different other actors, including industry and private sector, is one of the prerequisites for an effective and more relevant TVET. As discussed above, involvement of private sectors could be important for generating resources and for linking TVET with the employment sector or for a strong education employment linkage. One final point is that Nepali TVET needs to be developed on the basis of Nepali values and address the needs of Nepali youth and Nepali community.

8 References

- Baral, D. P., Kemper, J. & Maldonado-Mariscal, K. (2019). Country case study: Technical vocational education and training (TVET) programmes in Nepal. *LELAM-Working Paper, 7*. Retrieved from https://ethz.ch/content/dam/ethz/special-interest/dual/r4d-tvet4income-dam/documents/WP_7_CountryCaseStudy_Nepal.pdf
- Bolli, T., Katherine, M. C., Renold, U., & Buergi, J. (2018). Beyond employer engagement: Measuring education-employment linkage in vocational education and training programmes. *Journal of Vocational Education & Training, 70*(4), 524-563. Retrieved from <https://doi.org/10.1080/13636820.2018.1451911>
- Bolli, T., Kemper, J., Parajuli, M.N., Renold, U., & Thapa, B. K. (2020). Projection of net benefits for companies in the dual VET-apprenticeship programme in Nepal. *LELAM Working Paper, 12*. Retrieved from https://ethz.ch/content/dam/ethz/special-interest/dual/r4d-tvet4income-dam/documents/WP_12_ENSSURE_Report3_Cost_Benefit_Analysis_LELAM.pdf
- Bolli, T., Parajuli, M.N. & Renold, U. (2019). Has the relationship between formal education and the formal employment sector in Nepal changed between 1995 and 2014? *KOF Working Papers, 455*. doi: <https://doi.org/10.3929/ethz-b-000337924>
- Bolli T. & Renold, U. (2017). Comparative advantages of school and workplace environment in skill acquisition: Empirical evidence from a survey among professional tertiary education and training students in Switzerland. *Evidence-based HRM: A Global Forum for Empirical Scholarship, 5*(1), 6-29. Retrieved from <https://EconPapers.repec.org/RePEc:eme:ebhpps:ebhrm-05-2015-0020>
- Bruton, G.D., Ahlstrom, D., & Li, H-L. (2010). Institutional theory and entrepreneurship: Where are we now and where do we need to move in the future? *Entrepreneurship Theory and Practice, 34*(3), 421-440. doi: 10.1111/j.1540-6520.2010.00390.x
- Carron, G., & Carr-Hill, R. A. (1991). *Non-formal education: Information and planning issues*. Paris: International Institute for Educational Planning.
- Caves, K. M., Ghisletta, A., Kemper, J. & Renold, U. (2019). Meeting in the middle: TVET programs' education-employment linkage in developing contexts. *KOF Working Papers, 460*. Retrieved from <https://doi.org/10.3929/ethz-b-000356567>.

- Central Bureau of Statistics. (2012). *National population and housing census, 2011 (national report, vol 1)*. Kathmandu: Author. Retrieved from <https://cbs.gov.np/wp-content/uploads/2019/07/pulationandhousing-census-2011.pdf>
- Central Bureau of Statistics. (2019). *Report on the Nepal labor force survey 2017/18*. Kathmandu: Author. Retrieved from https://cbs.gov.np/wp-content/uploads/2019/05/Nepal-Labour-Force-Survey-2017_18-Report.pdf
- Council for Technical Education and Vocational Training (CTEVT). (2018). *Prabidhik tatha byabasaik sikchya yebam talim: ek jhalak* [Technical and vocational education and training: A glimpse]. Kathmandu: Author.
- Dewan, S. & Sarkar, U. (2017). *From education to employability: Preparing South Asian youth for the world of work*. Washington, D.C./New Delhi: Just Jobs Network. Retrieved from <https://www.unicef.org/rosa/media/1326/file>
- DGIZ Deutsche Gesellschaft für Internationale Zusammenarbeit (2016). *Definitions of formal, informal and non-formal learning*. Retrieved from <https://www.giz.de/expertise/html/11954.html>
- Egg, M.E. & Renold, U. (2016). The Swiss education system, with a special focus on vocational education and training. In U. Renold & F. Probst (Eds). *The Swiss vocational education and training initiative India: Background, Concept and Results of the Pilot Project 2008-2013* (pp. 27-52). Bern: Hep Verlag.
- Eshach, H. (2007). Bridging in-school and out-of-school learning: Formal, non-formal, and informal education. *Journal of science education and technology*, 16(2), 171-190.
- Grainger, J., Bowen-Clewley, L., & Maclean, S. (2016). *Asia-Pacific's experience with national systems of TVET*. MPFD Working Paper, WP/16/02. Bangkok: ESCAP. Retrieved from https://www.unescap.org/sites/default/files/wp-16-02_final_0.pdf
- Kushiyait, B.K. & Lamsal, M. (2019). *A study on financial flow in technical and vocational education and training in Nepal*. A study report submitted to Kathmandu University School of Education, Kathmandu, Nepal.
- Maclean, R. & Pavlova, M. (2013). Vocationalization of secondary and higher education: Pathways to the world of work. In *Revisiting global trends in TVET: Reflections on theory and practice* (pp. 40-50). Bonn: UNESCO-UNEVOC.

- Miller, S. (2019). Social institutions, In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Summer 2019 Edition). Retrieved from <https://plato.stanford.edu/archives/sum2019/entries/social-institutions/>
- Ministry of Education, Science, and Technology [MOEST]. (2019). *Technical and vocational education and skills development: Fact sheet*. Kathmandu: Author.
- Ministry of Finance (MoF). (2018). *Economic survey 2017/18*. Kathmandu: Author. Retrieved from https://mof.gov.np/uploads/document/file/for%20web_Economic%20Survey%202075%20Full%20Final%20for%20WEB%20_20180914091500.pdf
- National Natural Resources and Fiscal Commission [NNRFC]. (2019). National Natural Resources and Fiscal Commission: Information booklet. Kathmandu. Author. Retrieved from [https://www.nnrfc.gov.np/uploads/resources/2019-08-25/Fiscal Commission Final Setting Book.pdf](https://www.nnrfc.gov.np/uploads/resources/2019-08-25/Fiscal_Commission_Final_Setting_Book.pdf)
- Nepal Communist Party. (2017). *Joint manifesto of CPN UML and CPN Maoist: Election for house of representation and province assembly, 2074*. Retrieved from <http://cmprachanda.com/2017/11/8487>
- Nepal Law Commission. (2015). *The constitution of Nepal*. Kathmandu: Author.
- Nepal Law Commission. (2017a). *Local government operation act, 2074*. Retrieved from <http://www.lawcommission.gov.np/np/archives/44921>
- Nepal Law Commission. (2017b). *Intergovernmental fiscal arrangement act 2074*. Retrieved from <http://www.lawcommission.gov.np/np/archives/15164>
- Nepali Congress Party. (2017). *Manifesto of Nepali Congress: Election for house of representation and province assembly, 2074*. Retrieved from [https://www.nepalicongress.org/files/download/NC%20Manifesto%20Complete%20\(small%20bytes\).pdf](https://www.nepalicongress.org/files/download/NC%20Manifesto%20Complete%20(small%20bytes).pdf)
- Pandey, C.L, Maskey, G., Devkota, K, & Ojha, H. (2019). Investigating the institutional landscape for urban water security in Nepal. *Sustainability*, 12(3), 173-181. doi 10.1089/sus.2019.0007
- Parajuli, M.N. & Shakya, R.M. (2012). *Resource needs assessment for technical and vocational education and training (TVET) sub-sector in Nepal*. A study report submitted to Ministry of Education, Kathmandu, Nepal.

- Paudel, B. & Sapkota, K.P. (2018). *Local levels in federalism: Constitutional provisions and the state of implementation*. Kathmandu: Swatantra Nagarik Sanjal Nepal. Retrieved from <https://asiafoundation.org/wp-content/uploads/2018/08/Local-Levels-in-Federalism-Constitutional-Provisions-and-the-State-of-Implementation-English-Version.pdf>
- Rageth, L. (2018). A configurational analysis of vocational education and training programmes: types of education-employment linkage and their explanatory power. *KOF Working Paper*, 442. Retrieved from <https://doi.org/10.3929/ethz-b-000270719>.
- Rageth, L. & Renold, U. (2019). The linkage between the education and employment systems: ideal types of vocational education and training programs, *Journal of Education Policy*, doi: 10.1080/02680939.2019.1605541
- Renold, U., Bolli, T., & Caves, K. (2018). Constitutional reform and its impact on TVET governance in Nepal. *Second report in support of developing understanding and finding the way forward for federalising the TVET sector in Nepal. KOF Studies*, 114. Retrieved from <https://doi.org/10.3929/ethz-b-000275454>
- Renold, U. & Caves, K. M. (2017). Constitutional Reform and its Impact on TVET Governance in Nepal. A report in support of developing understanding and finding the way forward for federalizing the TVET sector in Nepal. *KOF Studies*, 89. Retrieved from <https://doi.org/10.3929/ethz-a-010857985>
- Renold, U., Rageth, L., R., Caves, K. M., & Buergi, J. (2019). Theoretical and methodological framework for measuring the robustness of social institutions in education and training. *LELAM Working Paper*, 2. Retrieved from <https://doi.org/10.3929/ethz-b-000356629>.
- Scott, W. R. (2014). *Institutions and organizations: Ideas, interests, and identities* (4th Ed). Thousand Oaks, CA: Sage.
- Sharma, G. N. (1986). *Nepalma shikchhyako itihaas* (Prachinkaaldekhi sambat 2007 samma) [Development of education in Nepal (From ancient times to till 1951)]. Kathmandu: Mrs. Hem Kumari Sharma.
- Trilling, B. & Fadel, C. (2009). *21st century Skills: Learning for life in our times* (1st Ed.). San Francisco: Jossey-Bass.
- UNDP. (2018). *Human development indices and indicators: 2018 statistical update*. Retrieved from hdr.undp.org/sites/all/themes/hdr_theme/country-notes/NPL.pdf

- Wagley, A. (2018). Fiscal imbalances in Nepal's federalism: An empirical analysis. *NRB Economic Review*, 30(1), 49-68. Retrieved from <https://nrb.org.np/ecorev/articles/4.%20%20Fiscal%20Imbalances%20-%20Achyut%20Wagle.pdf>
- Wolter, S.C. & Ryan, P. (2011). Apprenticeship. In Hanushek, E.A., Machin, S. & Wössmann, L. (Eds.). *Handbook of Economics of Education*, vol. 3. (pp. 521-576). Amsterdam: Elsevier. Retrieved from <https://doi.org/10.1016/B978-0-444-53429-3.00011-9>
- Wolter, S.C. & Schweri, J. (2002). The cost and benefit of apprenticeship training: The Swiss Case. *Applied Economics Quarterly*, 4, 347-367.