

Working Paper Series

Macroeconomic Policy and Financing for Development Division

Asia-Pacific's Experience with National Systems of TVET

WP/16/02
February 2016



Working Paper Series

Macroeconomic Policy and Financing for Development Division

ASIA-PACIFIC'S EXPERIENCE WITH NATIONAL SYSTEMS OF TVET

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Please cite this paper as:

Grainger, Jenny, Liz Bowen-Clewley, and Sarah Maclean (2016). Asia-Pacific's experience with national systems of TVET. MPFD Working Paper, WP/16/02. Bangkok: ESCAP. Available from www.unescap.org/our-work/macro-economic-policy-development/financing-development.

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Acronyms

ASEAN	Association of Southeast Asian Nations
BLK	Public non formal vocational training providers (Indonesia)
CLC	Community learning center
DTE	Diploma in Teacher Education
GGP	INQAAHE Guidelines of Good Practice in Quality Assurance
IAEA	International Adult Education Association
ICT	Information and communications technology
ILO	International Labour Organization
INQAAHE	International Network for Quality Assurance Agencies in Education
LLA	Lifelong Learning Account (Republic of Korea)
LM	Labour market
MOLVT	Ministry of Labor and Vocational Training (Cambodia)
MOU	Memorandum of understanding
MRA	Mutual recognition arrangement
MRS	Mutual recognition of skills
MSTC	Manpower Skills and Training Council (Singapore)
NGO	Non government organization
NQA	National qualifications authority
NQF	National qualifications framework
NSTVET	National system/systems of technical and vocational education and training
NTB	National Training Board (Cambodia)
NTTAQP	National TVET Trainers-Assessors Qualifications Programme (Philippines)
QAB	Quality assurance body
RCP	Regional Cooperation Platform for Vocational Teacher Education in Asia
RVA	Recognition, validation and accreditation of learning
SEAMCO	Southeast Asian Ministers of Education Organization
SD	Skills development
TESDA	Technical Education and Skills Development Authority (Philippines)
TVET	Technical and vocational education and training

I. Introduction

Technical and vocational education and training (TVET) is defined by UNESCO as

...those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupation in various sectors of economic life.¹

It is clear, therefore, that TVET is intended to equip people not only with vocational skills and technical skills, but with a broad range of knowledge, skills and attitudes. These are now recognized as indispensable for meaningful participation in work and throughout life. There is growing recognition that the work environment is driven by fast moving economies and technology. People therefore need the ability and the tools to update their knowledge and skills to meet employment needs across diverse contexts.

As countries have moved from command to market economies, TVET has been seen as a deliberate intervention for improving productivity, for addressing skills shortages and for alleviating poverty. Globalization, regionalization and the mobility of workers across borders have highlighted the need for improved TVET systems. These systems need to have a parity of esteem with more conventional academic training approaches. There must also be parity of esteem between TVET providers themselves. These issues have led to the development of national systems of training and qualifications.

In most countries in the Asia-Pacific region, TVET is considered essential to economic development. However, it has often been mired in traditional systems of academic and workplace training which limit its potential impact. There is a growing awareness of the need to adapt TVET systems to meet local, national and regional, if not global, demand.

This working paper presents the results of a desktop review. It provides an overview of the current state of TVET in the Asia-Pacific region. In it we describe the characteristics that make up national systems of technical and vocational education and training (NSTVET). This includes its policy and funding mechanisms, its responsiveness to the needs of stakeholders and its inclusiveness or otherwise in diverse societies.

We also highlight what appear to be the good practice indicators that sit behind well-functioning systems. However, in doing so, we provide the caution that one size does not fit all societies or economies. Every system must use a robust policy review process to meet its own specific TVET needs. This said, NSTVET must not only look inwards but also outwards. They must be easily understood by other jurisdictions and have clear processes that allow articulation of learners' achievement.

This paper includes a number of assumptions and limitations. It has been assumed that the data we obtained is up to date. However this data has not been verified by in-country personnel. This is also not a full review of every country's NSTVET in the Asia-Pacific region. The goal instead is to provide country specific examples, to give a flavor of particular types of practice within NSTVET.

¹ www.unesco.org/new/en/newdelhi/areas-of-action/education/technical-vocational-education-and-training-tvet/. Accessed 30 July 2015.

II. National Systems of Technical and Vocational Education and Training in the Asia-Pacific Region: An Overview

In this overview, we summarize the key findings of our review. These are then discussed in more detail in the following sections of this report. The main body of the review includes references.

A. Themes

A number of common themes emerge when reviewing national systems of technical and vocational education and training in the Asia-Pacific region. These include:

- the transformative potential of TVET
- NSTVET and industry
- sustainable funding
- TVET pedagogy
- inclusion and credentialing of non-formal and informal learning
- transferability of skills across jurisdictions.
- lifelong learning

TVET is being widely promoted as a transformative tool that can have a positive impact on the economy, social equity and sustainable development of a country. It is seen as a mechanism to facilitate increased productivity and wellbeing of citizens. It does this by providing individuals with the knowledge and skills necessary to ensure employment throughout life. To promote this transformative potential NSTVET are moving towards being demand rather than supply driven. Here both labour market data and input from industry have a critical role to play. Labour market data can assist with anticipating demand. Industries (including small and medium enterprises), who are active participants at all levels of the national system, including policy development, establishing national standards and working with providers, can effect positive results. Equally, providers (both public and private) must be flexible and nimble in order to respond to changes in the job market.

To support greater TVET initiatives, many countries are aiming to create a nationally administered and unified funding system through a variety of mechanisms that include public and private partnership initiatives. Sustainable funding is vital if NSTVET are to transform the economic status of their country and its citizens.

In many countries there has been poor uptake of learning provided through NSTVET. These systems are often viewed as inferior to other formal learning pathways, particularly those offered by universities. This parity of esteem issue is exacerbated by the customary practice of TVET teaching, learning and assessment that does not meet the needs of learners. The traditional model of didactic delivery and assessment is outdated.

There is growing acceptance that learning in the TVET environment is most effective when it includes a high level of practical opportunities to apply or deduce theory. It is recognized that TVET teachers and trainers must be highly skilled and well resourced. They must also offer a variety of delivery and assessment approaches both within institution and the workplace. Effective TVET teaching aims to develop a skilled workforce. If this aim is reached this in

turn will uplift the public perception of TVET so that it is no longer seen as a second rate source of education.

There is an increasing awareness that informal and non-formal learning (often driven by the informal or unregulated economy) needs to be drawn into the NSTVET at both the policy making and delivery level. Skills recognition is a mechanism to facilitate this because it gives credit for learning gained through any number of pathways. Skills recognition can open access to learning by providing a pathway into formal programmes. It also supports the mobility of the workforce across the region if mutual recognition processes are in place.

The articulation of TVET pathways is an emerging theme. Countries are attempting to offer multiple entry points into qualifications and to facilitate transition between academic, technical and work based programmes. Programmes are beginning to incorporate transferable skills, ICT and green skills. Active labour market programmes closely linked to accessible learning opportunities can result in the re skilling and up skilling of the workforce. Learners need to continue on the learning journey throughout their working life if they are to remain employable in a rapidly changing workplace.

B. Strengths

National systems of TVET are complex, multilayered systems stretching across the public and private sector. They include most areas of work and have the potential to impact on the majority of the population. Such highly multifaceted systems develop over time and no one country has the perfect system. However, definable strengths within systems in the Asia-Pacific can be identified.

1. Skills development policy

Afghanistan, the Republic of Korea, Pakistan and Bangladesh have an overarching skills development policy with clear linkages between both TVET and the labour market. While it is difficult to determine the success of such policies it is believed that having synergy between the many and varied component parts of a national system is likely to create the framework for success.

Having accurate, up to date and reliable labour market data is vital if TVET is to be relevant and effective. For example, countries such as Cambodia and Lao have undertaken robust policy reviews that provide the data and the analytics that are necessary to plan for effective, efficient NSTVET. Bhutan has a labour market information system that provides data to guide the provision of TVET.

2. Governance structures of NSTVET and accountability

Major structural change is happening within many NSTVET in the Asia-Pacific region. Governance structures are being developed that provide clear delineation of roles and responsibilities across all levels. These changes include both operational autonomy for providers and the decentralization of authority. For example, Malaysia and Singapore have separated policy, governance and oversight functions within their NSTVET. China has made significant gains in terms of decentralization of responsibility in line with a very clear national framework.

NSTVET require robust quality assurance processes to ensure that providers are offering quality technical and vocational education that meets the needs of industry and learners alike. Where quality assurance processes exist in the Asia-Pacific region, the compliance model predominates as is the case in Malaysia, the Philippines and Singapore. In contrast the evaluative model of quality assurance is used in New Zealand and some European countries and is currently being adopted by Brunei Darussalam. The compliance model is an inputs system that is intended to ensure national consistency in the provision and assessment of TVET. It focuses on establishing the standards and criteria to be applied for registration or licensing or the accreditation of standards, qualifications, training providers, assessors and/or courses.

3. Organizational structures: national qualification frameworks (NQFs)

The majority of countries in the Asia-Pacific region have national qualification frameworks. Some of these are organized under a centralized authority, as in Malaysia, Singapore and Thailand. Well functioning, inclusive NSTVET are legislated to encapsulate all levels of training provision, including public and private institutions and non-formal providers. Synergies between national qualification frameworks and the ASEAN Regional Qualifications Reference Framework are being developed.

4. Competency based qualifications

An unpublished review of TVET curriculum developments in the Asia-Pacific region found that many countries have introduced competency-based curriculums into their technical and vocational education and training. Competency based qualifications provide clarity in terms of level of qualification and expected learner skill set on completion. Many countries use their own formulas for designing competency standards. In the Philippines, for example competency standards are developed and packaged into qualifications. The strength of competency based qualifications is that they allow for comparisons to be made within country and between jurisdictions. This can facilitate the mobility of learners. Competency based qualifications also provide the benchmark against which informal learning can be measured and credentialed.

5. Recognition, validation and accreditation of learning

Making non formal learning visible can be done through a process of accreditation. In the Republic of Korea, the Academic Credit Bank accredits non formal education programmes. It determines whether the quality of the programme and course is equivalent in credit terms to those of universities or colleges. Degrees can be awarded through the academic credit bank system. Indonesia operates a credit transfer system. Most credit transfer processes accept the credentials of a learner from an accredited provider. They do not address the skills and knowledge a learner has gained in other ways, for example from non-accredited providers, non-credit bearing courses or from the workplace.

Processes that recognize skills learned in the informal sector such as community learning centers or the workplace are vital. Such processes can promote equity and increase access, particularly for vulnerable groups. Limited evidence has been found that informal learning is being credentialed. In Malaysia however, certificates are offered for manual skills learned in the workplace. This skills recognition process facilitates the credentialing of informal learning. Skills recognition processes need to be robust to ensure that any award obtained in this way is not seen as second rate.

6. Management of learning pathways

The most comprehensive NQFs show clearly articulated pathways for both vocational and academic qualifications (public and private), and their relationship to each other. The Malaysian Qualifications Framework is an eight level framework that comprises three sub frameworks: skills, TVET and a higher education sector. It provides flexible pathways for all learners to allow horizontal and vertical movement across qualifications. In Singapore the Workforce Qualification Framework does not yet incorporate qualifications offered through the private sector so is not completely inclusive but is an evolving model. Both Indonesia and the Republic of Korea have increased the permeability from TVET to higher education.

7. Regional relationships

A number of Asia-Pacific countries are developing regional relationships. The ASEAN Regional Qualifications Reference Framework (AQRF) and the developing regional quality assurance framework are tools that can be used to support such relationships. The AQRF assists with the translation of qualifications across jurisdictions by providing a common reference point. This in turn has the potential to facilitate the mobility of workers across borders.

Currently the ASEAN Secretariat and the International Labour Organisation are developing two skills mobility tools to further facilitate worker mobility. They are the mutual recognition arrangements (MRAs) and mutual recognition of skills (MRS). The MRS will focus on technical/vocational skills in particular, while the focus of MRAs is on professional qualifications such as engineering, architecture, accountancy, surveying, nursing, medicine, dentistry and tourism.

8. TVET provision

Institutional capacity building is happening in countries such as Malaysia, the Republic of Korea, Singapore and Thailand in order to achieve a more inclusive NSTVET. Demand driven programmes with up to date, relevant standardized curriculum including transferable, entrepreneurial and green skills that embed technology and include workplace experience are optimum. For example, the Republic of Korea has developed a specialized agency responsible for integrating ICT into the education and training sector at all levels.

(a) Vocationalization of secondary school education

Vocationalization of secondary school education is occurring throughout the region. Indonesia has increased TVET at the secondary school level to equip students with employment skills to ease transition into the workplace. Cambodia has also created a significant change in their secondary schools making nearly 70% of them TVET focused. This has been in response to the realization that youth were leaving secondary school with insufficient skills to transition into the workplace. In the Republic of Korea about 40% of secondary school students are currently enrolled in TVET. In India the concept of work has been embedded into primary school education and pre vocational education has been included at the lower secondary school level.

In Singapore, the image of TVET has significantly improved over the last decade. Now a third of students enroll at institutes of technology at year 11. This change has been due to a major overhaul of the TVET system in terms of infrastructure, curriculum, innovative programmes and marketing. The Institute of Technical Education, which targets the needs of

the lower 25% of the school cohort, now has a clear mission. It addresses the specific needs of particular cohorts, offers a modern campus infrastructure, has a rigorous curriculum development process, offers a process orientated pedagogic model and works in partnership with industry.

(b) TVET Teachers and trainers

Malaysia, Pakistan, Bangladesh and Sri Lanka among others have national level teacher training institutes. While this is a strength, there is a recognition that institutions often need modernizing particularly in relation to teaching and assessment pedagogy. In the Philippines there are more than 23,000 TVET trainers covering over 215 qualifications. In 2006 a National TVET Trainers-Assessor Qualifications Programme (NTTAQP) was developed to ensure competence in trade qualifications and training and assessment methodologies. The Philippines also offers modular open learning packages to upskill TVET teachers.

In 2009, universities in China, Indonesia, Lao People's Democratic Republic, Malaysia, Thailand and Viet Nam established a Regional Cooperation Platform for Vocational Teacher Education in Asia (RCP). It has the goal of improving vocational teacher education. All countries agreed there was a lack of practical vocational competences and real hands on working experiences. In 2013, the RCP developed core curricula for vocational teacher education in mechanical engineering and electrical engineering at bachelor degree level. It is hoped that by having core curricula, institutions can exchange lecturers and students and in the near future qualifications can become mutually recognized.

Indonesia has developed the concept of teaching factories to improve the link between TVET education and industry. Teachers invite industry to host their production within the TVET institute. This allows students to learn the range and level of skills required to meet industry standards. It also educates TVET teachers about these standards and about the working culture of specific industries. Another approach is to place TVET teachers as part time employees within industry. In Malaysia TVET staff have 12 week long attachments in industry. Alternatively, selected employers can be assigned as part time teachers. Both these approaches are currently operating in China.

(c) Work based learning

Work based learning includes formal as well as informal or unregulated apprenticeships, sandwich courses and unpaid work placements. The traditional way of learning in many Asia-Pacific countries is through informal apprenticeships. In Cambodia businesses with over 60 employees are obliged to take on an extra 10% of employees as apprentices or pay 1% of their wages bill in lieu. In the Philippines the formal apprenticeship system is quite small, but it is well developed, with a strong institutional underpinning. The training content is based on national competency standards developed jointly with industry. With the recent establishment of the Philippines NQF, graduates have started to receive a nationally recognized qualification. Formalized workplace assessment undertaken by workplace assessors appears to be an underutilized strategy for recognizing formal and informal workplace learning.

(d) Vulnerable groups

TVET provision for vulnerable groups is an increasing focus in a number of countries. Community learning centers operate in 25 countries. They aim to provide TVET to their local communities and their growth over the past decade has been significant. They offer basic

education, literacy, skills development and vocational training, income generation, entrepreneurship, community development, culture, recreation and sports, information and connectivity. In Viet Nam, for example, community learning centers offer programmes to improve the quality of human resources and to build a learning society. In Thailand 'Fix it Centers' offer education on the maintenance of occupational tools, agricultural machinery, equipment and household appliances. The majority of this learning, however, appears to go unrecognized and therefore is not credentialed, nor does it sit within the NQF.

(e) Management of TVET institutions

Institutional autonomy to promote closer working relationships with the labour market is identified as a critical change. It is needed to enhance the opportunities for learners in the TVET environment. The goal is to improve the effectiveness of programme provision and to foster accountability. This is being championed by Singapore, the Republic of Korea and Malaysia where considerable emphasis is placed on building institutional capability. Changes include reviewing the curriculum, identifying learner pathways, improving curriculum delivery and assessment practice and most importantly building strong relationships with industry and employers.

(f) Public private partnership

The growth of public private partnerships, both national and international, is currently a feature of NSTVET in some countries. In Cambodia, the private sector is invited into TVET schools to assist with training in relation to technical knowledge, engineering, electricity and architecture. In Malaysia, collaboration initiatives extend to research, internships, and work based learning programmes. In Singapore, industry is involved at a policy and curriculum level to ensure qualifications are fit for purpose. In Thailand, a Petrochemical Technical College is operating. This is a joint initiative between industry and government to meet the needs for skilled technicians. Increasing public private partnership is seen as vital if NSTVET are to be responsive and effective.

9. Sustainable funding

Diversified funding is crucial for the long term implementation of TVET policy. The Republic of Korea and Singapore have both implemented a discrete TVET training fund. They have also developed processes to ensure the effectiveness, efficiency, equity and accountability of these funds.

C. Challenges

The desktop analysis suggests that each country within the Asia-Pacific region faces specific challenges in terms of their own NSTVET. The figures below give a flavor of some of the challenges faced by individual countries (Majumdar, 2011a).

Figure 1. TVET challenges faced by Malaysia

Malaysia's TVET challenges

- ☐ Curriculum relevancy
- ☐ TVET image: perceived as inferior to academic education
- ☐ Shortage of technical training and teaching staff
- ☐ Lack of attractive remuneration packages for TVET staff
- ☐ High cost of TVET
- ☐ Flexible access through out life
- ☐ Enculturation of lifelong learning

Source: TVET Systems, Emerging Challenges and Trends in TVET: Country Perspectives by Imran Bin Idris (2011)

Figure 2. TVET challenges faced by Afghanistan

Afghanistan's TVET challenges

Lack of:

- ☐ Consistency, quality and coordination among training providers in public and private sector
- ☐ Market driven training providers
- ☐ Standardized curriculum and qualifications
- ☐ Labor market data
- ☐ Agreement across government ministries

Source: TVET Systems, Emerging Challenges and Trends in TVET: Country Perspectives by Fazel Ahmad Bahrami (2011)

Figure 3. TVET challenges faced by Bhutan

Bhutan's TVET challenges

- ☐ No accreditation system for qualifications or providers
- ☐ No curriculum development
- ☐ Low recruitment of TVET instructors and trainers
- ☐ Low status
- ☐ Poor interface between general education and TVET
- ☐ Assessment practices all institution based and not work based

Source: TVET Systems, Emerging Challenges and Trends in TVET: Country Perspectives by Sangay Dorjee (2011)

Figure 4. TVET challenges faced by Pakistan

Pakistan's TVET challenges

- ☐ National TVET policies (NQF, curriculum, recognition of prior learning, competency based training)
- ☐ Active industry involvement (skills standards, apprenticeship programs, provision of trainers)
- ☐ Assessment of demand: labor market information system and sector specific needs analysis required
- ☐ Training provider capacity
- ☐ Quality assurance (authorities role, accreditation of all providers, capacity building of examination authorities, international recognition of certification)

Source: TVET Systems, Emerging Challenges and Trends in TVET: Country Perspectives by Mohammad Riaz (2011)

Figure 5. TVET challenges faced by Singapore

Singapore's TVET challenges

- ☐ Quality of learning to ensure the development of a modern knowledge based economy
- ☐ Advanced pedagogy to promote and facilitate lifelong learning

Source: TVET Systems, Emerging Challenges and Trends in TVET: Country Perspectives by Glen O'Grady (2011)

Figure 6. TVET challenges faced by Thailand

Thailand's TVET challenges

- ☐ Workforce migration
- ☐ Requirement of multi skilled graduates
- ☐ International competency standards
- ☐ Quality of teachers
- ☐ Decentralization of administration

Source: TVET Systems, Emerging Challenges and Trends in TVET: Country Perspectives by Siripan Choomnoom (2011)

Assessment of learning is a key challenge in a region. Assessment has relied on conventional approaches such as formal examinations as the basis for determining learner success. Competency based assessment requires completely different strategies. The application of learning in practical contexts is more important than assessment of theory. Performance is the key determinant of competence. Assessment approaches need to be designed to collect

evidence of ongoing integrated performance in real situations. Performance must be robust and verified. There is little evidence in the literature of successful assessment in this mode except in the formal apprenticeship environment.

Marope, Chakroun and Holmes (2015) have identified several global challenges that are preventing NSTVET from being transformational. In general these include poor technical and institutional capacity and a low social perception of TVET. There is also a weak analytical knowledge base and foresight. Further issues are weak technical consultation, communication and collaboration among key stakeholders. There is a tendency for immediate response rather than a strategic response as well as a tendency to borrow policy from other jurisdictions. These constraints have been addressed in the options for best practice provided in section 14 below.

III. Governance of NSTVET

In the Asia-Pacific region governments play a major role in the governance of TVET systems. This includes funding provision, ownership, policy development, regulation and coordination.

In different countries TVET comes under a number of different ministries such as labour, education and industry (Wahba, 2012). Often multiple government departments also play a part. These include the departments of education, labour, agriculture, social welfare, higher education, transport and commerce.

In more established TVET systems, national qualifications authorities, national standard setting bodies and various training agencies and providers are involved in governance. So too are ‘apex bodies’ which are established to represent all stakeholders such as students, industry and all levels of education providers. Sometimes these apex bodies are autonomous; at other times they play an advisory role. The Manpower Skills and Training Council (MSTC) in Singapore, for example, is made up of senior management and staff of multinational companies and small and micro enterprises. Other members include industry experts, union representatives, government agency and ministry representatives, and independent practitioners. The MSTC addresses the manpower skills and training needs of various industry sectors.² In Malaysia there are sixteen industry lead bodies who have a role in the development of National Occupational Skills Standards (NOSS). It is these standards that underpin units of competency (ILO, 2014).

Table 1 below provides country specific details about the legislation and governance structures of NSTVET in the Asia-Pacific region. It clearly shows the multiple players involved.

² http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/UIIL_Global_Inventory_of_NQFs_Singapore.pdf. Accessed 31 July 2015.

Table 1. Legislation and governance structure for NSTVET

Country	Legislation/policies/plans	Governance
Afghanistan^a	Law of Education National Skills Development Plan	Ministry of Education functions through 34 provincial departments and has links with 5 deputy ministries including Deputy Ministry of TVET. The Ministry of Labor, Social Affairs, Martyrs and Disabled provides vocational skills training through centers and coordinates the work of NGOs. National Institute for Curriculum Development responsible for both academic and vocational education. Ministry of Higher Education
Cambodia^b	Education Strategic Plan National TVET Development Plan (1996-2020)	Secretariat of the National Supreme Council of Education National Training Board (NTB) Ministry of Labor and Vocational Training (MOLVT) Ministry of Education, Youth and Sport Director General of TVET (secretariat for NTB) Education and labor local authorities
Indonesia^c	National Education System Law 2003 Manpower Act 2003 regulates national training system The Teacher Law 2005: teacher qualifications Public non formal education is the responsibility of district governments	Ministry of Education and Culture: 9 departments report to this ministry in relation to TVET. Provincial and district education offices manage, adapt and implement ministerial policy. The Ministry of Manpower and Transmigration is responsible for the national training scheme. The national Agency for Professional Certification is in charge of issuing competence certificates National Standards of Education Board
Malaysia^d	Human Resource Development National Higher Education Strategic Plan Malaysian Qualifications Agency Act 2007	Ministry of Higher Education Ministry of Human Resources Ministry of Rural and Regional Development Ministry of Youth and Sport Department of Skills Development Malaysian Qualification Agency
Singapore^e	Continuing Education and Training Masterplan 2008, updated 2014	Singapore Workforce Development Agency Manpower Skills and Training Council National Productivity and Continuing Education Council Skills Technical Committees

Country	Legislation/policies/plans	Governance
Philippines^f	Republic Act 7796	National Coordinating Council made up of: Technical Education and Skills Development Authority (TESDA) Commission on Higher Education Department of Labor and Employment Professional Regulations Commission 4 technical working groups each with specific remits
Republic of Korea^g	Acts include: Workers Vocational Skills Development Act Promotion of Industrial Education and Industry Academy Research Institute Cooperation Act The Vocational Training Act The Employment Insurance Act The Lifelong Learning Act Policy documents include: Skills development framework Vision 2020: Vocational Education for All	TVET is governed by a number of ministries and divisions, for example: Ministry of Employment and Labor Ministry of Education Ministry of Trade, Industry and Energy National Institute of Lifelong Education
Hong Kong^h	Accreditation of Academic and Vocational Qualifications Ordinance	Vocational Training Council HK Council for Accreditation of Academic and Vocational Qualifications
Lao People's Democratic Republicⁱ	Prime Minister's Decree (No. 036, January 2010)	National Vocational Consulting and Skills Development Council Ministry of Education and Sports Ministry of Labor and Social Welfare
Myanmarⁱ	Employment and Skills Development Law 2013	Ministry of Labor, Employment, and Social Security National Skills Standards Authority
Brunei Darussalamⁱ	Brunei Vision 2035 Brunei Darussalam National Accreditation Council Order 2011, Part III, Section 21-23	Brunei Darussalam National Accreditation Council Brunei Darussalam Qualifications Framework Advisory Board

Sources: ^a www.unevoc.unesco.org/wtdb/worldtvtdatabase_afg_en.pdf. Accessed 31 July 2015.

^b www.unevoc.unesco.org/wtdb/worldtvtdatabase_khm_en.pdf. Accessed 31 July 2015.

^c www.unevoc.unesco.org/wtdb/worldtvtdatabase_idn_en.pdf. Accessed 31 July 2015.

^d http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/UII_Global_Inventory_of_NQFs_Malaysia.pdf. Accessed 31 July 2015.

^e http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/UII_Global_Inventory_of_NQFs_Singapore.pdf. Accessed 31 July 2015.

^f www.unevoc.unesco.org/wtdb/worldtvtdatabase_phl_en.pdf. Accessed 31 July 2015.

^g www.unevoc.unesco.org/wtdb/worldtvtdatabase_kor_en.pdf. Accessed 31 July 2015.

^h <http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/Presentation%20Global%20NQF%20Developments%20ASEM%20Meeting%2012%205%2013.pdf>. Accessed 31 July 2015.

ⁱ www.ilo.org/asia/whatwedo/publications/WCMS_310231/lang--en/index.htm. Accessed 31 July 2015.

The multiplicity of players in the governance of NSTVET can lead to fragmentation and inefficiencies. In Malaysia for example, having two separate agencies responsible for human resources development, quality assurance and certification creates challenges. Currently there are different criteria for assigning levels to qualifications, an inconsistent national credit system and no single database of all qualifications (ILO, 2014). Aggarwal and Gasskov (2013) found that only half the countries they studied met the international policy principles developed by the International Labour Organization (ILO, 2011). These principles relate to the governance, coordination and planning of skill development systems.

Fragmentation and inefficiencies create additional skills challenges, particularly in developing countries (ILO, 2011). These include:

- skills mismatch: training is not always fit for purpose and skills shortages exist.
- limited involvement of social partners, particularly employers and worker organizations which help to ensure training is relevant and appropriate.
- poor quality and relevance of training: un or under trained teachers/trainers, limited resources and facilities, outdated curricula and inappropriate teaching methods.
- limited access to training opportunities: formal training is often focused in main centers. In rural areas literacy, numeracy and education levels can be low.
- weak coordination of a highly complex system.

In addition, several countries do not separate policy and oversight functions, as is the case with the Cambodian National Training Board (UNESCO, 2013b). International experience suggests that policy setting authority is appropriate at ministerial level. However, monitoring and evaluation functions are best devolved to agencies that are operationally independent of ministries such as in Malaysia and Singapore. China has made significant gains in terms of decentralization of responsibility in line with a very clear national framework (Yang and Valdes-Cotera, 2011 as cited in Marope, Chakroun and Holmes, 2015). This aims to avoid the conflict of interest which arises when the same agency evaluates the success of the policies and programmes for which it is responsible (UNECISO, 2013b).

IV. NSTVET Policy

There is a range of drivers that determines the nature of NSTVET policy within specific countries. Drivers include:

- the global economy
- the domestic economy
- emerging technologies

- demographics
- the labour market and skills needs
- current TVET provision: formal, non-formal and informal.

The establishment and prioritizing of a country's actual technical and vocational needs is critical. This information can be determined through a policy review process. The depth and breadth of recent policy reviews process differs throughout the region (see table 2).

Table 2. Policy review process

Country	Policy review of TVET
Afghanistan	Reviewing and assessing relevant legal, policy and strategic documents. ^a Consulting with line ministries and national and international stakeholders in 2010.
Cambodia	A policy review of TVET in Cambodia was undertaken by UNESCO. ^b Report produced 2013 included: context, the current education and training system, the current TVET system, TVET links to the labour market, vocalization of secondary education, conclusions, recommendations and points for further discussion.
Lao People's Democratic Republic	A policy review of TVET in Lao People's Democratic Republic was undertaken by UNESCO and report produced 2013. ^c It included: context, the current education and training system, the current TVET system, TVET links to the labour market, vocalization of secondary education and conclusion. The report also contained recommendations and points for further discussion.
Pacific Islands	Questionnaire sent to 14 countries asking for information on providers, legislation, policy, governance, funding, NGOs, qualification frameworks and regional qualification frameworks. Undertaken in 2004. ^d

Notes: ^a UNESCO, National TVET strategy: Afghanistan. Available from www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Kabul/pdf/NationalTVetStrategyEnglish.pdf.

^b UNESCO, *Policy Review of TVET in Cambodia* (Bangkok, 2013).

^c UNESCO, *Policy Review of TVET in Lao PDR* (Bangkok, 2013).

^d J. Bartram, *A review of TVET policy and planning in the Pacific Islands*, Pacific Association of Technical and Vocational Training (2004).

The policy review reports relating to Cambodia and Lao People's Democratic Republic are comprehensive and provide a detailed analysis of the current TVET situation in each country. They identify policy options and strategies for improving TVET policies and systems based on findings from desk research and interviews. The analysis approaches used in the Pacific Islands study and the Afghanistan study are harder to determine.

It is beyond the scope of this review to comment on the robustness of the policy review processes that have taken place. However, it is clear that each country is able to set TVET priorities. At the SEAMEO (Southeast Asian Ministers of Education Organization) Congress held in Thailand in 2014 the following TVET policy and priority areas were identified.

Table 3. TVET policy and priority areas across the Asia-Pacific region

Country	TVET and policy areas
Viet Nam	Reviewing occupational law Unifying TVET to create a subsystem within Ministries of Labor and Education Building capacity of TVET administrators and teachers
Thailand	Enhancing image of TVET Promoting public private partnership; expanding global partnerships Strengthening capacity and capability building strategies
Singapore	Reviewing ASPIRE programme Strengthening applied pedagogy Enhancing student success Strengthening research and enterprise
Philippines	Unifying TVET registration and accreditation Enhancing teaching of soft skills Developing competency standards and training regulations
Myanmar	Reviewing policies to ensure exclusive growth
Malaysia	Proposing establishment of Malaysian Board of Technologists Developing multiple certifications Collaborating with public agencies and industry
Lao People's Democratic Republic	Expanding voucher scheme to target women and ethnic groups
Indonesia	Soft skills Teacher education and quality assurance Increasing the use of information and communication technology (ICT) Collaborating with government and industry
Cambodia	Strengthening governance, access and equity Demand driven skills based economy; improving TVET image
Brunei Darussalam	Rebranding TVET image; aligning programmes to labour market need Governance to promote autonomy and flexibility Upgrading training environments

Source: www.seameocongress.org/. Accessed 31 July 2015.

The literature suggests that it is critical that TVET policy is embedded within a national workforce development framework. A recent report on the regional development of TVET in Asia and the Pacific (Maclean, Jagannathan and Sarvi, 2013) identified progress towards strategic alignment of TVET with national socioeconomic goals, including labour market policies. For example Afghanistan, the Republic of Korea, Pakistan and Bangladesh each have an overarching skills development policy. TVET activities sit within this overarching policy area. TVET policies are increasingly being linked to labour market policies as is the case for Cambodia, see Policy 14 below. Bhutan has a labour market information system that provides data to guide the provision of TVET (Dorjee, 2011).

Figure 7. TVET and labour market policies: Cambodia

The National TVET Development Plan (NTDP) 2006–2010 consisted of 15 policies with associated strategies:

Policy 1: Poverty Reduction

Policy 2: Decentralization

Policy 3: Supporting Enterprise Growth with a Skilled Workforce

Policy 4: Out of School Youth

Policy 5: Self-employment

Policy 6: Micro Credit Access

Policy 7: Small Enterprise Support

Policy 8: Community and Enterprise Based Training

Policy 9: PPP-Beneficiary Financing TVET

Policy 10: PPP-Enterprise Involvement in TVET

Policy 11: PPP-Expanding the provision of TVET

Policy 12: Assuring Quality of TVET provision

Policy 13: Quality of TVET Leadership, Management & Coordination

Policy 14: Labour Market Information

Policy 15: Skills Competency Standard.

Source: UNESCO-UNEVOC Policy review: Cambodia

This alignment of TVET policy with skills and labour policies assists with moving TVET from a supply driven to a demand driven responsive system.

V. Organizational Structure of NSTVET

Many countries in the Asia-Pacific region now follow the qualification system commonly found in Anglophone countries. In most instances this system has been superimposed onto an existing education structure in the hope of developing a coherent, comprehensive TVET approach. The aim of the approach is to include the majority of stakeholders: industry, providers at all levels both in the public and private sector and learners.

Qualification systems are made up of several components. They generally include a national qualifications authority which manages the whole system. There is a national qualifications framework which is responsible for:

- qualification design
 - ♦ outcomes based standards
 - ♦ learning pathways
- assessment of learning
 - ♦ provider based or on job learning
 - ♦ recognition, validation and accreditation of learning
- quality assurance processes.

We will discuss each of these in turn.

A. National qualification authorities

National qualifications authorities (NQA) are legislated to ensure that qualifications are credible and robust both in country and internationally. It is the national qualifications authority which manages both the national qualifications framework (NQF) and formalized quality assurance processes. Qualification authorities, through the mechanism of the NQF, are generally responsible for setting standards. They also establish learning outcomes for qualifications, manage a qualifications register, accredit training providers, develop processes that allow for recognition of prior learning and organize assessment and certification.

In some countries the equivalents of national qualification authorities also manage training institutions. This is an example of a potential conflict of interest where the regulatory and delivery components of the system are overseen by the same body.

B. National qualifications frameworks

Tuck (2007, p. V) defines a qualifications framework as ‘an instrument for the development, classification and recognition of skills, knowledge and competencies along a continuum of agreed levels’.

At their simplest level, NQFs are hierarchical classifications for formal learning programmes and their associated qualifications and certificates. Advanced NQFs enable and support the development of integrated and coherent qualifications. They aim to avoid the duplication of qualifications and over supply of providers. They also facilitate interaction with stakeholders and support quality assurance processes. Most NQFs contain qualifications that are independent of institutions. As systems of equivalency, NQFs are guardians of nationally agreed standards. They should have processes and systems in place that recognize learning and competencies from all forms of learning.

The effectiveness of NQFs as a mechanism for achieving these aims is under international debate (Allais, 2011). Evidence of their impact remains limited. This said, Coles and others (2014) believe that “NQFs provide the best response to the increasingly complex qualifications systems and the challenges of globalization we have now”.

They suggested that not only are there country specific drivers of NQFs, but they are now influenced by global factors such as:

- broader internationalization of provision (online programmes, international qualifications, international licensing)
- greater migration which brings with it the need to recognize foreign qualifications and skillsets
- leading edge skills development to boost trade and attract inward investment

National qualification frameworks vary in structure as illustrated in table 4. They can:

- be TVET specific (for example, the Republic of Korea)³
- combine secondary, TVET and academic qualifications (as in Malaysia)⁴
- separate TVET and academic programmes into two frameworks which are unified to some extent (for example, Indonesia).⁵

Some countries, such as Lao People's Democratic Republic and Viet Nam are yet to implement a unified national technical and vocational qualifications framework but work to this end is in progress.

Table 4. National qualifications frameworks, quality assurance frameworks and qualification levels per country

Country	NQF	QA processes	Qualification levels
Cambodia^a Secretariat of the National Supreme Council of Education	Cambodian Qualification Framework: 1-8 levels including both vocational and academic programmes	Reforms in place to develop a quality assurance and accreditation process	Certificate level: short courses (a few weeks to a year). Delivered in provincial or vocational training centers Diploma level (3 levels): post grade 9 training Higher diploma level: post grade 12 Technician: 2-3 year diploma Engineers: bachelor degree
Indonesia^b Indonesian Qualifications Board	Indonesian Qualifications Framework: Levels 1-9 including academic and TVET qualifications	Unspecified	Certificate on completing BLK training Diploma and degree level certification on completing higher education courses
Malaysia^c Malaysian Qualifications Agency	Malaysian Qualifications Framework: Levels 1-8 and incorporates 3 subsectors: skills, vocational and technical and academic	Comprehensive: internal and external quality assurance processes	Skills qualifications Level 1 skills certificate Level 2 skills certificate Level 3 skills certificate Level 4 advanced skills cert Level 5 advanced skills diploma TVE: Levels 1-8 Academic: Levels 6-8
Afghanistan^d	Afghan	Monitoring and	Levels 2-4 Basic to advanced vocational

³ UNESCO, "Global Inventory of NQFs: Republic of Korea". Available from http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/GlobalInventoryonNQFs_Rep_Korea_130509_final-final.pdf. Accessed 31 July 2015.

⁴ UNESCO, "Global Inventory of NQFs: Malaysia". Available from http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/UIIL_Global_Inventory_of_NQFs_Malaysia.pdf. Accessed 31 July 2015.

⁵ UNESCO, "Global Inventory of NQFs: Indonesia". Available from http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/UIIL_Global_Inventory_of_NQFs_Indonesia.pdf. Accessed 31 July 2015.

Country	NQF	QA processes	Qualification levels
Afghan National Qualifications Authority	Qualifications Framework: Levels 1-8 covering TVET	evaluation and quality control and assurance units are independent	training Level 5: Diploma Level 6: Bachelor degree Level 7: Master degree Level 8: PhD
Republic of Korea^e Ministry of Education	Korean Qualifications Framework: National technical qualifications level 1-5	Centre for Evaluation of Skills Development Policy evaluates training institutes	Degrees Multi skilled technicians Master technicians
Singapore Continuing Education and Training System^f	Workforce Skills Qualifications (WSQ) Framework: Levels 1-6 VET only, does not include academic education	Comprehensive: pre accreditation and continuous accreditation including track record, process and systems	WSQ certificate WSQ higher certificate WSQ advanced certificate WSQ diploma WSQ specialist diploma WSQ graduate certificate WSQ graduate diploma
Philippines^g National Coordinating Council for Education Technical Education and Skills Development Agency	National 8-level qualifications framework with 3 sub frameworks: - basic education - technical education and skills development - higher education	Quality assurance systems including: Qualification standards Programme accreditation Assessment criteria	5 levels of skill qualifications: National certificate 1 National certificate 2 National certificate 3 National certificate 4 National diploma 5

Sources: ^a www.unevoc.unesco.org/wtdb/worldtvtdatabase_khm_en.pdf. Accessed 31 July 2015.

^b www.unevoc.unesco.org/wtdb/worldtvtdatabase_idn_en.pdf. Accessed 31 July 2015.

^c http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/UIL_Global_Inventory_of_NQFs_Malaysia.pdf. Accessed 31 July 2015.

^d www.unevoc.unesco.org/wtdb/worldtvtdatabase_afg_en.pdf. Accessed 31 July 2015.

^e www.unevoc.unesco.org/wtdb/worldtvtdatabase_kor_en.pdf. Accessed 31 July 2015.

^f http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/UIL_Global_Inventory_of_NQFs_Singapore.pdf Accessed 31 July 2015.

^g www.unevoc.unesco.org/wtdb/worldtvtdatabase_phl_en.pdf. Accessed 31 July 2015.

The Republic of Korea has a national technical qualification framework that consists of five levels and 27 fields. The qualifications are a mixture of private and public. In addition the Korean Qualifications Framework is attempting to integrate both academic and vocational qualifications.

Singapore has a competency based qualifications system that includes broad foundational competencies and industry specific competencies. It does not include academic qualifications. It comprises six levels ranging from certificate to higher certificates to graduate diplomas. The Workforce Skills Qualification Framework covers over 26 industry clusters including aerospace, security, digital animation, tourism, business management, leadership and people management. It has a robust quality assurance process including pre-accreditation and ongoing accreditation of training providers. However WSQ does not yet include TVET offered by private sector institutions.

The Malaysian Qualifications Framework is an eight level framework that comprises three sub-frameworks: skills, TVET and a higher education sector. It provides flexible pathways for all learners to allow horizontal and vertical movement across qualifications.

The Indonesian Qualifications Framework is in development. It is moving towards providing a unified reference point for all education and training providers. It ranges from Level 1–9 and includes both academic and TVET qualifications. It includes recognition of prior learning processes and offers a credit transfer process to encourage learners to move between educational streams.

As table 4 illustrates, while NQFs in the Asia-Pacific region may experience the same drivers and have similar aims, all are different. This is because of different institutional forms of government, their relationship with civil society and the institutional forms and cultures of providers. Some have separate authorities tasked with managing NQFs and quality assurance processes while others are governed directly by ministries within a government.

The strength of any NQF is in its clearly articulated levels and progression pathways. However, challenges occur when NQFs are compared for the purpose of recognizing a qualification across a number of jurisdictions. Comparability is a challenge if NQFs have differing mandates, vocational or academic (or both), differing level descriptors, differing credit values and inconsistent nomenclature. In Singapore, for example, private and public institutions use the terms ‘certificate’ and ‘diploma’ interchangeably leading to confusion at both a national and international level.

1. How NQFs manage learning pathways

Having qualifications linked together through all levels allows learners to see a clear skills development pathway. This ‘value chain’ is missing in some qualification frameworks that do not provide for such connectivity (ILO, 2014b). Historically where TVET pathways and academic pathways did exist they were separated and it was difficult for learners, once on a pathway, to move across to the alternative learning route. In recent years qualification authorities, via NQFs, have been developing systems and processes to support both the vertical and horizontal movement across pathways. This enables people with TVET qualifications to progress to higher-level TVET qualifications and also into academic programmes. In Hong Kong for example a significant number of TVET graduates move from TVET education into academic education programmes (Hui and Cheung, 2014). This process is relatively straightforward when credentials have been gained from providers offering accredited qualifications. It is however more difficult to give credit for learning gained by other means. See table 7 for further information on TVET providers in the Asia-Pacific region and their links to higher education.

Interestingly, in its redesign of qualification formats New Zealand has included reference to both educational and employment pathways as a requirement for registration of a qualification.

Challenges arise with the increasing number of academic graduates globally who are unable to find meaningful employment and the need for technically skilled employees who can think analytically. Some countries, such as Singapore, are therefore developing policies to encourage academically qualified learners to transfer to TVET pathways.

Transparent, flexible pathways are essential if learners are to gain the knowledge and skills required to respond effectively to rapidly changing labour market needs.

(a) Qualifications

Qualifications can be developed and designed in a number of different ways. According to Marope, Chakroun and Holmes (2015) an unpublished review of TVET curriculum developments in the Asia-Pacific region found that many countries have introduced competency based curriculums into their technical and vocational education and training. Competency based curriculums describe what a person will be able to do on qualifying. This is different from prescription based qualifications which dictate the curriculum that needs to be covered.

(b) Competency based outcomes

Qualifications that are outcomes based are made up of competency standards. Each standard describes what a student needs to know, or what they must be able to achieve in order to meet the standard. Often competency standards have an assigned level and credit value.

Many countries use their own formulas for designing competency standards. In the Philippines, for example competency standards are developed and packaged into qualifications.⁶ In Cambodia Competency-Based Training Documents are being developed that include standards, curriculum, learning and assessment packages. In Indonesia national competency standards are being designed using a functional analysis approach in consultation with industry experts. These standards then underpin vocational qualifications. In Singapore competencies comprise three skill sets: employability skills (generic workplace skills), industry skills (broad industry specific skills) and occupational skills (specific role related skills). ILO (2006) has developed regional model competency standards which offer an approach to competency design. This document was updated in 2015.

(c) Assessment of learning

Assessment methodologies will generally depend on whether qualifications are based on prescription or outcomes statements. In competency based assessment there are two different types of assessment: task assessment and evidence assessment.

1. Task assessment is when an assessor provides learners with specific tasks to demonstrate their knowledge and skills in relation to the outcomes of the competency standards. Task assessments usually take place in a provider/training environment.
2. Evidence assessment is when an assessor provides learners with an evidence guide that tells them what evidence they need to present from their everyday work practice

⁶ <http://apskills.ilo.org/resources/philippines-competency-standards>. Accessed 31 July 2015.

to meet the criteria of the competency standards. Evidence assessments usually take place in the workplace.

In many instances, the assessment of TVET is mired by outdated practices where assessment focuses on knowledge acquisition and not on the application of knowledge into practice. In the Asia-Pacific region, assessment formats should shift from summative functions towards performance based and formative functions which enhance learning (Hau-Fai Law and Miura, 2015).

In a number of countries such as the Philippines, Indonesia and Cambodia TVET assessment takes place in assessment centers. These centers are often separate from training providers. While assessment centers may offer consistency in terms of assessor judgments they can create barriers to learners in terms of access and cost.

(d) Recognition, validation and accreditation of learning

Movement between learning pathways can be facilitated by recognizing, validating and accrediting existing learning. Recognition, validation and accreditation (RVA) of learning

...is an important instrument for comparing different forms of learning, in order to eliminate discrimination against those who acquire competences non formally or informally. Individuals who have had limited access to, or low achievement in, formal education and training, or who learned skills predominantly in the workplace or other settings outside the formal system, are often disadvantaged in further learning and training, and in the labour market (UNESCO, 2012a, p. 3).

Non formal and informal learning are important learning pathways that need to be made visible within the formal education system. Many countries are using national qualifications frameworks to do this. The three main mechanisms in use are:

1. accrediting providers
2. accrediting the learning outcomes of programmes based on formal competency standards
3. accrediting an individual's learning against agreed competency standards.

In the Republic of Korea, the Academic Credit Bank accredits non formal education programmes. It determines whether the quality of the programme and course is equivalent in credit terms to those of universities or colleges. Degrees can be awarded through the academic credit bank system. The potential risk with this system is that credentials awarded in this way can be considered second rate.

The Republic of Korea also has a Lifelong Learning Account (LLA) system that works as a depository for an individual's learning record. It recognizes a person's learning gained from both the TVET and academic sector. The National Institute of Lifelong Learning can then approve this learning. Non approved courses can be included in an LLA but the Ministry of Education, Science and Technology cannot guarantee their quality. Therefore true accreditation is questionable. The LLA does provide a directory of registered learning courses that an individual can choose from. These learning courses have been through an 'assessment accreditation' process. Whilst this system is a repository for individual learning it remains unclear how informal learning is credentialed and made equivalent to formal learning.

Indonesia operates a credit transfer system. Most credit transfer processes accept the credentials of a learner that an accredited provider has already awarded. They do not address the skills and knowledge a learner has gained in other ways from non accredited providers, non credit bearing courses or the workplace.

Cambodia is considering ways to assess and recognize the skills of returning migrant workers so that they can contribute more fully to national development (ILO, 2014).

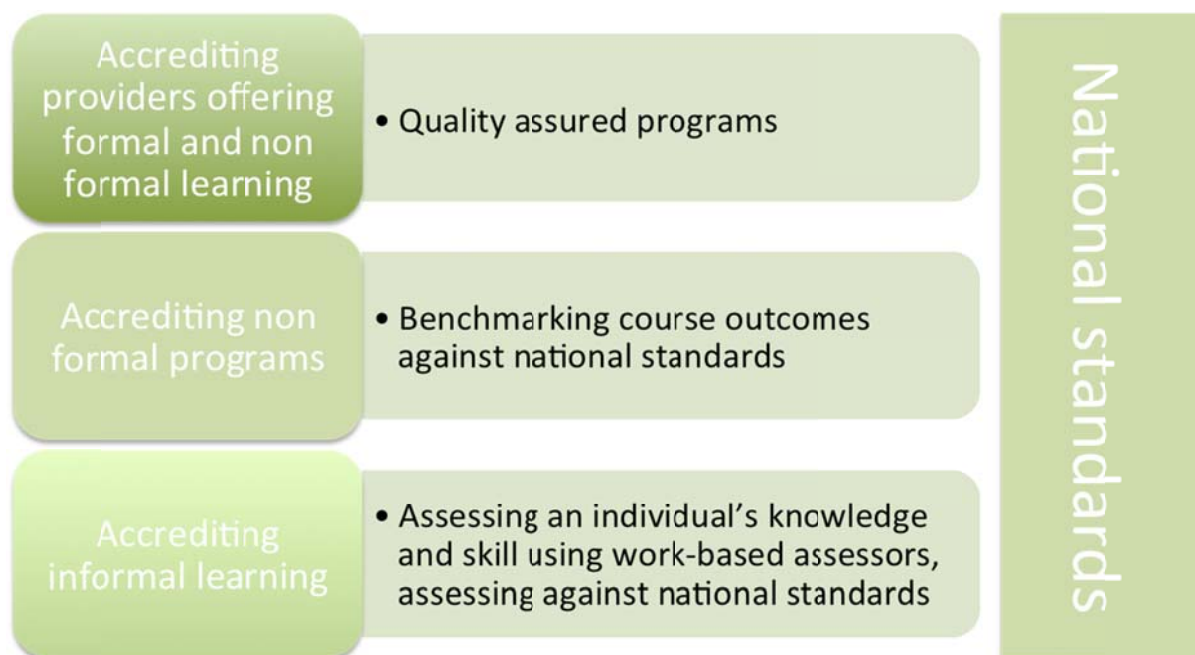
Accreditation becomes a barrier to accessing the benefits of the NQF in many countries where non formal education is delivered by community learning centers, voluntary agencies and NGOs. Their limited resources are focused on programme development and delivery rather than on the compliance requirements of the NQF. Without provider accreditation, learners are disadvantaged in term of having their skills recognized. However, NQFs can support the recognition of learning from such providers. If providers' programmes are aligned with explicit outcome based standards/competencies then learning can be accredited (Björnåvold, 2000). The more closely aligned these standards are to workplace and industry, the more likely it is that skills gained from non formal learning will be recognized.

Skills recognition or recognition of current competence is an RVA process that allows for an individual's learning to be recognized. It usually happens in the workplace and is determined by skilled workplace assessors. The skills recognition process is not concerned with how the learner developed their skillset (through non credit bearing courses/workshops or experiential learning). Instead, it determines the currency of the skillset against particular standards and awards credits accordingly.

Such a skills recognition process may be an end in itself (by awarding qualifications) or it may open up educational pathways for people where none previously existed. Equally it may recognize a sub set of skills leading towards qualification attainment. It is also a process that can be used to determine compliance with professional standards. In countries where professional standards already exist, these can be used to underpin RVA processes. In Malaysia, for example, the NQF comprises three sub frameworks: a five level skills sector, a VET sector and a six level framework for higher education qualifications. The skills sub framework issues skills certificates for manual skills offered in the workplace. The criteria and standards applicable are in line with the national occupational skills standards.

In summary, processes exist to recognize formal, non formal and informal learning. All accreditation should be underpinned by national standards. Once these are established programmes and individuals can be assessed against them. The various approaches are shown below.

Figure 8. Accrediting learning



C. Quality assurance processes

Quality assurance processes are integral to qualification systems. They aim to meet the needs of all the stakeholders involved in the TVET system including:

- students who want to know that their qualifications are of good quality, comparable with others from other providers and credible in the marketplace.
- funders (including national governments) who want to ensure they are getting value for the money invested in terms of skilled and employable graduates.
- employers who want assurance that a qualification means a graduate has the required knowledge, skills and attributes to be useful in the workplace.
- education providers who want to be able to benchmark their programmes against other comparable providers and receive funding for their provision.
- government policy makers who invest in a TVET system to ensure their workforce is skilled and can meet the labour requirements of industry and of the international labour market.

The scope and robust nature of quality assurance processes differs from country to country (see table 4). Common features include:

- stringent registration processes for all educational providers
- accreditation of education providers and maintenance of accreditation
- validation of qualifications/competency standards or prescriptions
- approval of programmes/qualifications
- quality assessment that is valid, fair, consistent and sufficient
- measuring consistency of outcomes across providers
- awarding qualifications.

1. The compliance model

The compliance model of quality assurance predominates in the Asia-Pacific region (Bowen-Clewley, Cooper and Grannall, 2010). It is used by countries such as Malaysia, the Philippines and Singapore. The model is an inputs system that is intended to ensure national consistency in the provision and assessment of TVET. It focuses on establishing the standards and criteria to be applied for registration or licensing or the accreditation of standards, qualifications, training providers, assessors and/or courses.

Other characteristics of this model include:

- developing processes for ensuring consistency of assessment both within and between providers, assessors and/or courses
- developing an internal audit requirement within providers
- placing a strong emphasis on independent external audit to identify areas of compliance and non-compliance
- implementing processes to ensure remediation of non-compliance.

The model is high cost as it requires strong centralized systems and regular reviews and audit, with follow up of non-compliance performance. There are usually strict rules which make it suitable in countries where there is little tradition of quality assurance within the education sector and/or the general business community. The approach is most suited to countries where any or all of the following conditions apply:

- low or uneven levels of quality provision of TVET
- lack of consistency between courses and problems with parity of esteem of those courses
- large numbers of training providers which may operate within agencies with different organizational structures and requirements.

2. The evaluative model

Other countries (for example, New Zealand) have moved to an evaluative quality assurance model. This approach is most suited to countries where any or all of the following conditions apply:

- a TVET sector that is linked to a national qualifications or skills framework
- experience with compliance based quality assurance systems
- strong commitment to quality assurance and continuous improvement within the sector
- public understanding of the need for quality assurance in TVET systems.

Organizations using the evaluative model also generally have effective quality assurance bodies (QABs) operating already. They may also be ISO 9001 – 2008 accredited or have links with other international QABs and agencies such as the International Network for Quality Assurance Agencies in Higher Education (INQAAHE). There is often some familiarity with and adherence to international indicators of good practice such as the INQAAHE Guidelines of Good Practice in Quality Assurance (commonly referred to as GGP). Brunei Darussalam are moving to this evaluative approach of quality assurance focusing, in part, on institutional self-assessment and continuous improvement (ILO, 2014).

In summary, quality assurance processes are varied. Most aim to or already offer processes for evaluating:

- organizational policies and processes
- processes for managing quality of programme design and delivery in relation to the identified outcomes
- processes for determining and comparing consistency of assessment judgements
- articulation and credit transfer arrangements.

D. Regional qualifications reference frameworks

The Association of Southeast Asian Nations (ASEAN) has recently developed a qualifications reference framework known as the ASEAN Qualification Reference Framework (AQRF). This has the aim of:

providing a reference point and translation grid for all qualifications throughout Southeast Asia ... that will benefit employers, education providers and job seekers to recognize qualifications issued within the region (Paryono, 2013).

The AQRF is a tool that can be used to support the migration of workers between countries. This is seen as particularly important with the establishment of the ASEAN economic community in 2015. It is hoped that the AQRF should make it possible to recognize modules or smaller skillsets that learner have, not just full qualifications. This objective recognition of competence could further facilitate worker mobility.

Currently the ASEAN Secretariat and the International Labour Organisation are developing two skills mobility tools to assist with this. They are the mutual recognition arrangements (MRAs) and mutual recognition of skills (MRS). The MRS will focus on technical/vocational skills in particular, while the focus of MRAs is on professional qualifications such as engineering, architecture, accountancy, surveying, nursing, medicine, dentistry and tourism.⁷

Validating non formal and informal learning can be undertaken if learning can be compared to standards. These are either occupational standards or competency based standards. The ILO has produced a number of competency standards for a variety of sectors: welding services; construction and domestic services. The ILO also produces standards for core competencies required in the workplace. These internationally developed standards are designed to be used as a basis for developing national standards or reviewing national standards. The aim is to reduce duplication of effort, rather than to be prescriptive.

E. Regional TVET quality assurance framework

The East Asia Summit is addressing the issue of a regional TVET quality assurance framework (Paryono, 2013). The aim of the framework is to provide:

⁷ <http://apskills.ilo.org/events/ilo-national-workshop-implementation-of-mutual-recognition-of-skills-in-preparation-for-aec>. Accessed 31 July 2015.

a set of principles, standards and quality indicators to assist EAS countries to develop, improve, reform, guide and assess the quality of their TVET systems, and provide a basis for alignment between national TVET systems (ASEAN).⁸

Regional quality assurance frameworks in other parts of the world act as a:

- tool to promote and monitor the improvement of member countries' systems of TVET
- reference tool that outlines benchmarks to help assess clearly and consistently whether the measures necessary for improving the quality of TVET systems have been implemented and reviewed
- self-assessment tool that can include internal and external assessment which can be made public (Bateman and others, 2012).

Table 5 summarizes the functions and rationale of national and regional qualification frameworks (Coles and others, 2014 adapted from Björnåvold and Coles, 2008).

Table 5. Functions and rationale of national and regional qualification frameworks

Area of comparison	Level of qualification framework	
	National	Regional
Main function	To act as a benchmark for the level of learning recognized in the national qualifications system.	To act as a translation device to enable comparison of levels of qualifications across member countries.
Developed by...	national governments, in many cases through national agencies set up for this purpose.	countries in the region acting jointly, mostly facilitated by a regional body or association.
Sensitive to...	local, national and regional priorities (eg level of literacy and labour market needs).	collective priorities across member countries (eg enabling mobility of learners and workers across boundaries).
Currency/value depends on...	the extent of the regulatory compliance required; the level of buy in from key players (such as industry, learning institutions and professional associations); the perceived or real value to the broad population.	the level of trust between member countries; the transparency of national quality assurance systems; mutually agreed regional priorities.
Quality is guaranteed by...	adherence to nationally agreed quality assurance systems, exemplified in the practices and national bodies and learning institutions.	the common application of the referencing criteria and guidelines, as well as the robustness and transparency of the national referencing process, and the national quality assurance systems.
Levels are defined by reference to...	national benchmarks which may be embedded in different learning contexts, eg school education, work or higher education.	general progression in learning across all contexts that is applicable to all countries.

⁸ www.asean.org/news/asean-secretariat-news/item/asean-develops-framework-to-facilitate-movement-of-skilled-labor-and-professionals. Accessed 31 July 2015.

VI. TVET Providers

In all Asia-Pacific countries there is a range of providers within TVET systems. They offer formal, non-formal and informal learning opportunities through a number of different types of programmes (see table 6 below). There are no agreed definitions of these terms however, the following appear to be the most commonly recognized.

- Formal learning takes place in education and training institutes and leads to certification at various levels. Formal learning is structured and curriculum based with clear teacher/learner requirements.
- Non formal learning is learning outside of formal learning. It can be structured but tends to be more flexible. Non formal providers complement or supplement formal education providers and tend to operate in community based settings, the workplace or through civil society organizations.
- Informal learning is often described as unintentional learning. It takes place at work, in the family or during leisure activities.

Developed TVET systems within the region have an array of public and private providers offering formal TVET programmes. These range from TVET senior secondary schools and training institutes to polytechnics and universities. TVET provision covers a large segment of the population ranging from young people through to adults.

Non formal providers in developed TVET systems often offer a range of credit bearing courses (Republic of Korea, Singapore). Community learning centers cater for those learners who fall through the gaps. In Singapore, community outreach programmes target low paid workers, youth, ethnic minorities, disabled and people over 40 to ensure ongoing employability. It is less common for community learning centers to offer credit bearing courses. Their focus is predominantly pre-employment or trans-employment skills.

In developing TVET systems those who fall through the gaps are much larger in percentage terms of the overall population. This is because the provision of private and public formal TVET providers is significantly less. To fill this gap, the number of non formal TVET providers (often NGOs) is significantly increased. In developing systems the focus of community learning centers is predominantly workplace numeracy and literacy and job seeking skills. Again these are often non credit bearing. The establishment of structures that enable this learning to be counted towards recognized credentials is seen as a fundamental principle in providing equity of access.

Institutional capacity building is happening in countries such as Malaysia, the Republic of Korea, Singapore and Thailand in order to have a more inclusive NSTVET. The most effective programmes are demand driven with up to date, relevant standardized curriculum including transferable, entrepreneurial and green skills that embed technology and include workplace experience. The Republic of Korea has developed a specialized agency responsible for integrating ICT into the education and training sector at all levels.⁹

⁹ http://english.keris.or.kr/es_ak/es_ak_100.jsp. Accessed 31 July 2015.

Table 6. TVET training providers by country

Country	TVET systems	Providers
Indonesia^a	Formal	Senior technical and vocational secondary schools Higher education institutes offering TVET: Single faculty academies Advanced schools Polytechnics Institutes Universities
	Non formal	Public non formal vocational training providers (BLKs). They offer 4 types of training: Institutional training (increase skills of job seekers) Non institutional training: mobile training units Apprenticeship programmes Demand based training
Cambodia^b	Formal	Higher secondary school TVET programme: 3 different levels, one year each Polytechnics Vocational training schools
	Non formal	Provincial training centers and vocational training centers offer 1-4 month programmes Private providers and NGOs
Afghanistan^c	Formal	TVET high schools TVET institutions (private) TVET institutions (public)
	Non formal	Training centers Private sector NGOs
Viet Nam^d	Formal	Technical and vocational institutes
	Non formal	Community learning centers
Thailand^e	Formal	TVET schools Vocational institutes
	Non formal	Community learning centers
Republic of Korea^f	Formal	Vocational high schools Vocational polytechnics Korea University of Technology and Education Training centers within companies
	Non formal	Vocational training institutes

Country	TVET systems	Providers
		Community learning centers
Philippines ^g	Formal	TESDA administered schools State universities/colleges TESDA regional and provincial training centers Agricultural training institutes Private institutes
	Non formal	Community learning centers
Malaysia ^h	Formal	TVET schools: lower and upper secondary schools Technical universities Polytechnics Vocational colleges
	Non formal	Community colleges

Sources: ^a www.unevoc.unesco.org/wtdb/worldtvtdatabase_idn_en.pdf. Accessed 31 July 2015.

^b www.unevoc.unesco.org/wtdb/worldtvtdatabase_khm_en.pdf. Accessed 31 July 2015.

^c www.unevoc.unesco.org/wtdb/worldtvtdatabase_afg_en.pdf. Accessed 31 July 2015.

^d www.tvet-vietnam.org/. Accessed 31 July 2015.

^e www.unescobkk.org/education/resources/resources/education-system-profiles/thailand/higher-tvet. Accessed 31 July 2015.

^f www.unevoc.unesco.org/wtdb/worldtvtdatabase_kor_en.pdf. Accessed 31 July 2015.

^g www.unevoc.unesco.org/wtdb/worldtvtdatabase_phl_en.pdf. Accessed 31 July 2015.

^h http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/UII_Global_Inventory_of_NQFs_Malaysia.pdf. Accessed 31 July 2015.

VII. TVET Programmes

TVET programmes range in length from half-day workshops on topics such as literacy or hygiene to four-year master's degrees in applied technology. Most formal TVET courses start at the senior secondary school level and run from one to three years. These are followed by one to three year programmes offered by higher educational institutions such as technical college or polytechnics. Universities offer specialized technical qualifications such as engineering.

Non formal TVET courses typically run from one to twelve months. Table 7 summarizes the types of programmes offered by TVET providers and their links to higher education. See section 5 for a discussion on accrediting non formal credit bearing and non credit bearing courses. Section 5 also covers the recognition, validation and accreditation of informal learning.

Table 7. Types of programmes offered by TVET providers and their links to higher education

Country	TVET system	Providers	Programmes	Links to higher education
Indonesia^a	Formal	Senior technical and vocational secondary schools Higher education institutes offering TVET: Single faculty academies Advanced schools Polytechnics Institutes Universities	Technology and engineering, health, art, crafts and tourism, ICT, agribusiness and agrotechnology, business management	If student passes national exam can access higher education. BLKs are credentialed and allow for certification. Theoretically they could link to higher education via a credit transfer system Theoretically informal learning could link to higher education through government assessments
	Non formal	BLKs offer 4 types of training: Institutional training (increase skills of job seekers) Non institutional training: mobile training units Apprenticeship programmes Demand based training	Early childhood; youth education; women's empowerment; literacy	
Cambodia^b	Formal	Higher secondary school TVET programme: 3 different levels, one year each Polytechnics Vocational training schools	Vehicle repairing, general mechanics, computer technology, agricultural mechanics, electricity, electronics, cooling mechanics and civil engineering	Skills bridging programmes allow access to 2-year diploma programmes Equivalency tests allow re-entry into formal education from non formal education
	Non formal	Provincial training centers and vocational training centers offer 1-4 month programmes Private providers and NGOs	Basic agriculture, construction, motor repair skills, craft and basic food processing	No current mechanism for skills recognition or cross crediting.
Malaysia^c	Formal	TVET schools: lower and upper secondary schools Technical universities	Vocational subjects in secondary school include: engineering services, construction, home economics,	Accrediting before experiential learning Note: The 22 vocational subjects

Country	TVET system	Providers	Programmes	Links to higher education
		Polytechnics Vocational colleges	agriculture, computing Extensive qualifications in all technical and vocational areas post school	taught at secondary school link to national skills certificates
	Non formal	Community colleges	Unspecified	
Republic of Korea^d	Formal	Vocational high schools Vocational polytechnics Korea University of Technology and Education Training centers within companies	Engineering Technology Agriculture Commerce Maritime Note: Specialized vocational high schools link directly to needs of industry	Providers are accredited by the Academic Credit Bank system Learners have access to Lifelong Learning Account system
	Non formal	Vocational training institutes Community learning centers	Teaching, agriculture, nursing, maritime, health, arts, physical education, physiotherapy, fisheries, aviation	
Singapore^e	Formal	Institute of technical Education caters for lowest 25% of school leavers: 3 colleges in total Polytechnics Universities	ITE offers 99 courses in 11 sectors ^f Polytechnics offer approximately 50 courses across many industry sectors	Formal articulation process both vertical and horizontal allows individuals to continually re skill and upgrade
	Non formal	Unspecified (see Vulnerable groups table)	Unspecified (see Vulnerable groups table)	
Afghanistan^g	Formal	TVET high schools TVET institutions (private) TVET institutions (public)	Agriculture, livestock, veterinary, business, construction, engineering, arts	Transfer to university possible via cross crediting No current system to validate outcomes of non-formal and informal learning. A recognition system is in development.
	Non formal	Training centers Private sector NGOs	Carpentry, plumbing, motor mechanics, television repair, electrical, computer studies Private providers offer computer literacy, English, management, accounting	
Philippines^h	Formal	TESDA administered schools	Full range of TVET programmes	Post TVET bridging programmes

Country	TVET system	Providers	Programmes	Links to higher education
		State universities/colleges TESDA regional and provincial training centers Agricultural training institutes Private institutes		Alternative learning system based on portfolio, interview and/or written exam
	Non formal	Community learning centers		Flexible entry into national skills certificate programmes

Sources:^a www.unevoc.unesco.org/wtdb/worldtvtdatabase_idn_en.pdf. Accessed 31 July 2015.

^b www.unevoc.unesco.org/wtdb/worldtvtdatabase_khm_en.pdf. Accessed 31 July 2015.

^c

http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/UII_Global_Inventory_of_NQFs_Malaysia.pdf. Accessed 31 July 2015.

^d www.unevoc.unesco.org/wtdb/worldtvtdatabase_kor_en.pdf. Accessed 31 July 2015.

^e

http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/UII_Global_Inventory_of_NQFs_Singapore.pdf. Accessed 31 July 2015.

^f www.tda.edu.au/resources/Singapore_TVET_system_16_Dec_2012.pdf. Accessed 31 July 2015.

^g www.unevoc.unesco.org/wtdb/worldtvtdatabase_afg_en.pdf. Accessed 31 July 2015.

^h www.unevoc.unesco.org/wtdb/worldtvtdatabase_phl_en.pdf. Accessed 31 July 2015.

A. Programme issues in TVET

In the Asia-Pacific region there are a number of TVET programme issues:

- TVET resources
- lack of curriculum relevancy
- standardization across providers
- learning through workplace practice
- literacy and numeracy skills
- transferable skills
- entrepreneurial skills
- green skills.

We will look at each of these in turn.

1. Resources

The resources required to deliver relevant TVET curriculum are considerable. They include a small teacher-to-learner ratio, practical equipment for skill development, information and communications technology (ICT) resources and appropriate facilities which replicate current industry practice. Many Asia-Pacific countries see resourcing TVET as an ongoing challenge.

2. Relevancy

Graduates from secondary school and post-secondary school TVET programmes are often reported as unable to meet the needs of employers. This is because their skillset is either too restricted or based on outdated practice. If curricula lack relevance, graduates are unable to ‘hit the ground running’ and so fail to meet the needs of the workplace. Malaysia has identified curriculum relevancy as an ongoing concern.

3. Standardization

Standardization of curriculum outcomes across providers is another weakness in current national TVET systems. Several countries are working to improve this. Malaysia has established the Malaysian Board of Technologists in an attempt to standardize the quality of training curricula across public and private providers. It is also working closely with industry to increase curriculum relevancy.

4. Learning through workplace practice

‘Learning through practice in work stands as the most common, pervasive and salient provision of learning for occupations across human history’ (Billett, 2013). Occupational development is a key, if not the key, component of TVET. Evidence suggests that engaging learners in authentic occupational activities, within the work environment, generates both situation specific learning and more generalized vocational skills such as teamwork and problem solving. Throughout the Asia-Pacific region there is an increasing demand to increase work based experiences in formal TVET.

Learning through practice can occur in a number of ways through:

- the formal apprenticeship model
- the informal apprenticeship model
- work placements
- situational specific tasks in a simulated work environment.

Wolf (2011) believes that apprenticeships are a ‘highly effective route into stable employment for young people in many countries’. Apprenticeships forge cooperation between TVET providers and industry as they are based on a combination of both study and work experience. Learners gain company specific skills, industry specific skills and generic workplace skills. Apprenticeships are often the traditional way of introducing young people into the workforce.

A number of apprenticeship models exist within the Asia-Pacific region. In Cambodia, for example, businesses with over 60 employees are obliged to take on an extra 10% of employees as apprentices or pay 1% of their wages bill in lieu. It is estimated that between 6-13% of businesses comply with the apprenticeship law. Questions remain regarding quality, retention of apprentices, ongoing employability of trainees, and wages received during and after the apprenticeship. In Cambodia, 92% of apprentices are women, suggesting that the majority of apprenticeships take place in the garment sector (UNESCO, 2013b).

Another example is in the Philippines the formal apprenticeship system is quite small, but well developed, with a strong institutional underpinning. Enterprises wishing to take on apprentices, and institutions that provide the off the job training component, need to be

accredited. The training content is based on national competency standards developed jointly with industry.

Informal apprenticeships have existed for centuries. They entail learning the whole job, on the job. Whilst thought of as often unplanned, in fact they are often highly structured and organized (Sweet, 2013). Learning gained through informal apprenticeships can be recognized, validated and accredited through a skills recognition process reliant on highly competence workplace assessors who assess to nationally agreed standards.

Work placements or internships do provide insight into workplace practices and offer an opportunity to translate theory into practice. Simulated environments where the workshop is brought into the classroom are an alternative method but are generally recognized as having limitations in developing competence where ongoing repeatability of performance is a key determinant (Berryman, 1993).

5. Literacy and numeracy

Functional literacy and numeracy are significant issues for developing countries in the Asia-Pacific region. See section 12 for more information.

6. Transferable skills

Technical skills training is vital to TVET, however it is no longer seen as sufficient. The teaching of transferable skills is now considered paramount. Definitions of ‘transferable skills’ differ. Broadly speaking these are skills that allow individuals to adapt to change in order to be able to lead productive and meaningful lives. These include critical and innovative thinking, interpersonal skills, intrapersonal skills, global citizenship and media and information literacy (UNESCO, 2014). Hui and Cheung (2014) define such skills as ‘cultural literacy’.

Throughout the Asia-Pacific region the inclusion of transferable skills in TVET is occurring ‘at a varied pace and in varied ways’ (UNESCO, 2014). Some countries are integrating the concept of transferable skills at the policy level, whilst others are piloting it at an educational/delivery level. Table 8 provides examples of different models being used by providers.

Table 8. Models for teaching transferrable skills

Country	Teaching of transferable skills
Viet Nam	Infusion model: Infusing skills into existing learning experiences
Malaysia	Diffusion model: Teaching modules of transferable skills as separate disciplines, for example, ‘Industrial Training on Soft Skills’
Japan	Extracurricular: One day programme combining teaching and practice

7. Entrepreneurial skills

Alongside the need of all learners to develop transferrable skills is the need to also have a toolkit of entrepreneurial skills. Entrepreneurship skills include turning ideas into action and being creative and innovative. Currently most TVET programmes are designed to prepare

learners for paid employment and many focus on employment in large enterprises. Less attention is given to skills that would allow learners to become self-employed or work in small to medium sized enterprises (Badawi, 2013). Entrepreneurial skills create the possibility of both self-employment and the startup of small businesses in the local context. We believe this is a central requirement for alleviating poverty and offering opportunities to vulnerable groups.

8. Green skills

Climate change, environmental degradation and the scarcity of resources are not only changing the nature of work but also demanding a response from the TVET sector. This would ensure that people have the knowledge and skills required to move towards a green economy and a green society. Greening TVET is a major driver towards sustainable development and corporate social responsibility (UNESCO-UNEVOC, 2013a).

9. ICT skills

The penetration of ICT in all dimensions of economic, social and cultural activities has far-reaching implications in terms of the skills required to become an active member of society. The ability of students to use ICT has become a new requirement for effective education systems (Atchoarena, 2011).

Teachers and trainers need to have the knowledge and the resources to successfully integrate information and communication technology into the classroom or alternative learning environment for TVET learners.

An example of a commitment to providing easy and cheap access to ICT has been the development for educational purposes of cheap tablets in India. The computer, called Aakash, or 'sky' in Hindi, has a color screen and provides word processing, web browsing and video conferencing. There is work continuing on providing a solar powered version.

In February 2015, UNESCO-UNEVOC co-hosted a conference in recognition of mobile learning week. A number of presentations were given focusing on improving skills development of women and girls through the use of ICT. These will be available to view later in the year. ICT can enhance the reach and impact of TVET. However on a cautionary note ICT can lead to a digital divide which exacerbates existing inequalities (UNESCO-UNEVOC, 2013b).

10. Summary of TVET programme issues

In summary, there has been significant concern expressed regarding TVET providers and programmes. These include the following:

- minimal engagement with the world of work and industry stakeholders to identify required areas of skills and related curriculum components
- the focus on and testing of theory acquisition rather than the integration of theory and practice in curriculum design
- low quality of training often based on obsolete teaching material and equipment
- technical training seen as a vehicle to move into higher education rather than the workforce

- value determined by time spent learning and examinations rather than assessment of competence
- minimal focus on employment skills and the transfer capacity of learners
- poor access to ICT, new technology and innovative delivery approaches.

VIII. Vocationalization of Schools

There is a global trend of decreased demarcation between TVET and general education. A number of countries have been ‘vocationalizing’ their secondary schools in an attempt to ensure learners leave with the required skills to find and retain work. Globally, the vocationalization of secondary education began in the 1970s. Its original aim was to promote the inclusion of less privileged groups in education and training, narrowing educational gaps and avoiding social fragmentation (Lauglo, 2005).

Now the focus of vocationalization is to give all learners the basic skillset required to secure and retain employment. According to Maclean and Pavlova (2013) vocationalization of secondary school education can happen in a number of ways:

- academic curriculum which offers practical subjects as a minor proportion of the timetable (for example Malaysia secondary academic schools)
- exposure of all students to vocational education within the curriculum
- provision of both general and vocational education pathways in the same school.

Indonesia has increased TVET at the secondary school level to equip students with employment skills to ease transition into the workplace (Paryono, 2011). Cambodia has also created a significant change in their secondary schools making nearly 70% of them TVET focused. This has been in response to the realization that youth were leaving secondary school with insufficient skills to transition into the workplace.

However the stigma associated with TVET in schools persists in some countries. It is still seen as a second class education. This can be primarily attributed to the perception that graduates are not considered work ready. The factors that cause this are multifaceted and include:

- lack of facilities to practice
- lack of linkages between school and industry
- a poor education system
- lack of qualified teachers.

Many countries are trying to alter this image. Indonesia has increased the provision of TVET. China has increased the amount of general education within TVET programmes. Indonesia and South Korea have increased the permeability from TVET to higher education (Ratnata, 2013).

In Singapore, the image of TVET has significantly improved over the last decade. Now, a third of students enroll at institutes of technology at year 11. This change has been due to a

major overhaul of the TVET system in terms of infrastructure, curriculum, innovative programmes and marketing (Seng, 2011). The Institute of Technical Education which targets the needs of the lower 25% of the school cohort now has a clear mission. It addresses the specific needs of particular cohorts and offers a modern campus infrastructure. The Institute has a rigorous curriculum development process, offers a process orientated pedagogic model and works in partnership with industry. In India the concept of work has been embedded into primary school education and prevocational education has been included at the lower secondary school level (Marope, Chakroun and Holmes, 2015).

IX. TVET Staffing

As table 9 illustrates, the education of TVET teachers differs throughout the region.

Table 9. Country specific TVET teacher education systems

Country	Current practice in TVET teacher education
Brunei Darussalam	Brunei has one teacher education institution: SHBIE, Universiti Brunei Darussalam. It has recently become a graduate school to raise the qualification of all teachers including TVET teachers. Current TVET teachers' programmes include: MTeach (TVET) GradDipEd (TVET) Continuing Education Centre, Universiti Brunei Darussalam Diploma in Technical Education
Cambodia	2 different types of teacher education, one academic and one TVET (National Technical Training Institute). Each is under a different ministry. TVET teacher training is a one year programme for teaching either junior or senior level students. Those teaching at a junior level must hold an associate degree or higher; those teaching at a senior level must hold a bachelor degree or higher.
Indonesia	Universities offer education for TVET teacher for secondary vocational and technical schools A vocational education development center offer in service training for TVET teachers
Lao People's Democratic Republic	The national university of Lao has been offering pre service education to TVET trainee teachers. Overall TVET teachers are seen as having a low level qualification.
Malaysia	Wanting all TVET teachers to hold a first degree. They are working on a new national TVET teacher qualification. There is a need to standardize TVET teacher training across a broad number of providers.
Myanmar	2 TVET teacher training centers produce competent technical teachers. Those teachers wanting to teach at the technical universities need to hold a first degree. TVET teachers working in the technical colleges, schools and institutions are trained via practical skills based courses.
Nepal	In 1991 the Training Institute for Technical Instruction was established. However, there is no mandatory requirement for pre service training or in service training for TVET instructors, the condition for recruitment of professional teachers in vocational schools is usually diploma level, bachelor degree or master degree in some special field. There is a need for competency standards for TVET teachers. There are over 10,000 TVET teachers/trainers throughout the public and private

Country	Current practice in TVET teacher education
	sector.
Indonesia	Teacher training institutes within universities. By 2015 all teachers must complete a certification process that requires them to have a higher education degree. Teachers certified in line with standards developed by the National Standards Board. A vocational education development center offers in service training for TVET
Singapore	Singapore Institute of Technical Education provides its own TVET teacher education. This is competency based, practice oriented teaching complemented by on the job mentoring and supervision by experienced teachers.
Viet Nam	Quality of TVET teachers is low. Salary average. No professional development plan; teaching equipment and aids insufficient. No specific TVET teacher training programmes. However there is a focus on TVET teachers reaching the required occupational standards of industry, where they exist. The aim is to achieve this by teachers returning to industry every 2-5 years to update their practical skills and learn about new technologies.
Cambodia	National Technical Training Institute trains selected university graduates to become TVET teachers and upgrades trainers.
Afghanistan	A bachelor degree is required to become a TVET teacher. However, more than 50% of TVET teachers do not currently have a degree.
Republic of Korea	TVET teachers are trained at Koreateach and are classified as professional teachers, general teachers and onsite training teachers.

Sources: SEAMECO VOTTECH, “The excellence of teacher education and research innovation”, report from the Expert Meeting on TVET Teacher Education in Southeast Asia, Bangkok, Thailand 25-28 December 2012; and UNESCO World TVET database reports: country specific. Available from www.unevoc.unesco.org/go.php?q=New%20country%20reports%20in%20World%20TVET%20Database.

A number of TVET teacher training models exist. Many are country specific but broad categorizations can be defined (Lipsmeier, 2013). These include the following models:

- concurrent
- consecutive
- transfer
- vocational
- internship.

While teacher training may differ, what remains the same is the expectation that TVET teachers/trainers will be technical experts as well as teaching experts. This duality of roles sets a challenge for existing education systems in which TVET teachers are predominantly differentiated by function alone.

TVET teachers need to move between the world of manual or technological skills that underpins many traditional jobs and occupations and the world of critical thinking and analysis, innovation and abstract reasoning that accompanies modern industry. They must also be skilled teachers using different pedagogies as situations arise. To meet these requirements, the training of any TVET teachers needs to be actively linked to industry, academic research and best practice teaching methods (Gamble, 2013). However while some countries in the Asia-Pacific region have well-articulated processes to train TVET teachers,

others have very limited resources. Malaysia, Pakistan, Bangladesh and Sri Lanka among others have national level teacher training institutes. While this is a strength, there is a recognition that institutions often need modernizing particularly in relation to teaching and assessment pedagogy. Generally TVET teachers in secondary schools in developing TVET systems are poorly supported as are workplace trainers and assessors.

A. Specific roles within TVET teaching

TVET teachers work in diverse environments delivering diverse curricula. In recognition of this diversity, many discrete TVET teacher roles have been defined (Lipsmeier, 2013). These include:

- theory teachers working in the classroom
- practical trainers working in the labs or workplace
- teachers of theory and practice integrating all aspects of the curriculum
- general knowledge course teachers offering more holistic education as part of the TVET course
- advanced skills theory teachers (for example, technical assistants, chemical lab assistants, material testers etc).

In addition to these are workplace assessors who can determine competency in the workplace. This is particularly important for recognizing informal workplace learning. There are clearly different types of TVET teachers and assessors. However, there are seldom articulated training pathways or development of vocational competencies for each role. Countries need to determine the levels of training required by TVET staff. There is an argument that suggests that an informal workplace coach, while still needing basic adult teaching skills, does not need the same level of training as a professional TVET teacher for whom this role is their primary career.

In the Philippines there are more than 23,000 TVET trainers covering over 215 qualifications. In 2006 a National TVET Trainers-Assessors Qualifications Programme (NTTAQP) was developed to ensure competence in trade qualifications and training and assessment methodologies. The programme has four levels:

- Level 1: trainer/assessor
- Level 2: training design/development
- Level 3: training supervisor/mentor
- Level 4: master trainer.

In Indonesia assessor standards have been endorsed and a growing number of qualified assessors are practicing.

In 2009, universities in China, Indonesia, Lao People's Democratic Republic, Malaysia, Thailand and Viet Nam established a Regional Cooperation Platform for Vocational Teacher Education in Asia (RCP). It has the goal of improving vocational teacher education. All the countries agreed there was a lack of practical vocational competences and real hands on working experiences.

A number of strategies were developed to address this. Strategies included:

- extra occupational study schemes for practitioners, technicians and engineers
- dual study programmes for vocational teacher education
- incorporation of companies in study schemes
- in service training of vocational teachers targeted to their specific needs.

In 2013, the RCP developed core curricula for vocational teacher education in mechanical engineering and electrical engineering at bachelor degree level. It is hoped that by having core curricula institutions can exchange lecturers and students and in the near future qualifications can become mutually recognized (Hung, 2013).

B. TVET pedagogy

It is important to note that any pedagogy taught as part of TVET teacher training needs to reflect the fact that many TVET students have their own subculture and ways of learning. This is different from the didactic method most TVET student teachers are exposed to and perpetuate.

A recent report by Law and Miura (2015) focused on the predominant pedagogy of teachers in seven Asia-Pacific countries. While there were differences in individual countries all governments had recognized the need to change the main teaching and learning style from a teacher centered transmission approach to a learning centered participatory approach. Learning centered activities include “project based activities, problem-and theme-based integrated learning, experiential learning and activities that involve action research, debate, teamwork, group discussion and presentations” (Hau-Fai Law and Muira, 2015).

Countries also recognized the need to change their assessment formats. These need to move away from predominantly theoretical based summative testing towards performance based and formation functions.

Professional TVET teacher training also needs to incorporate research into its own learning culture. Research is now seen globally as a core component of higher education in general. TVET must not be exempt from this. It is also imperative in a world of ever changing technology that TVET teachers are actively involved in professional development. This will happen as a matter of course if each teacher has close links with industry, as it is industry which embeds the latest technology into the business practices.

C. TVET teachers and industry

Majumdar (2011b) sees the backbone of TVET teacher education as its link to industry. TVET teachers must engage with industry, be regularly upskilled by industry and have close working relationships with them that influence curriculum and teaching practice. Only then is a skilled qualified TVET teacher workforce an achievable goal. It is well recognized that TVET institutions in less industrialized countries generally receive little support from industry (UNESCO, 2012b). However more developed countries such as Indonesia, Malaysia, Singapore and the Republic of Korea have closer working relationships with industry and see these as vital if a skilled, responsive workforce is to be readily available.

Indonesia has developed the concept of teaching factories to improve the link between TVET education and industry. Teachers invite industry to host their production within the TVET institute. This allows students to learn the range and level of skills required to meet industry standards. It also educates TVET teachers about these standards and about the working culture of specific industries. Another approach is to place TVET teachers as part time employees within industry. Alternatively, selected employers can be assigned as part time teachers. Both these approaches are currently operating in China.

X. TVET and Vulnerable Groups

The majority of non formal TVET programmes target vulnerable groups. These include the unemployed, underemployed, the illiterate, youth (particularly those who did not have access to or did not complete secondary education) and women. In developing countries, programmes are predominantly pre-employment in nature and focus on literacy and numeracy skills (see table 10 below). This is followed in some instances by work focused skill development programmes. Sometimes these are short term, outcome driven programmes which guarantee employment. In line with the premise of lifelong learning, all programmes should include transferable skills. For vulnerable groups this should include entrepreneurship in particular.

Table 10. NSTVET providers and programmes for vulnerable groups

Country	TVET providers for vulnerable groups	Programmes
Indonesia	BLK providers focus on poor individuals who dropped out of primary or secondary school Providers are located in large urban areas, smaller urban centers and rural areas	Early childhood education, youth education, women's empowerment education, literacy education, vocational training and internship, equivalency programmes and other kinds of education aimed at developing learners' ability.
	Provincial training centers and Vocational training centers target rural areas. Aim to reduce social dislocation and poverty.	Basic agriculture, construction, motor repair skills, craft and basic food processing Hairdressing/beauty Computing Tourism
Cambodia	Community learning centers	Equivalency programmes Literacy programmes Life skills courses: Hair cutting, sewing, sculpturing, rice planting
Republic of Korea	Polytechnic students include school dropouts, unemployed people and disadvantaged groups Neilbaum Voucher system offsets cost of TVET training	Employment oriented curriculum Customized training tailored to company need Hands on skills Employment success packages support unemployed people to actively seek work
Thailand	Community learning centers ^a 'Wisdom teacher operated' Local administration or government	Provision of functional literacy Second change education for those who did not complete formal education

Country	TVET providers for vulnerable groups	Programmes
	administration or business administration	Practical skills training
Viet Nam	Community learning centers ^b at provincial level Community learning centers at commune or ward level	Illiteracy eradication Tailor made to needs of learners: literacy, technology, foreign language mastery Training and upgrading Life skill improvement towards personal fulfilment and community development
Singapore	Singapore offers a number of programmes for a range of vulnerable people: Disengaged youth Unemployed workers Older workers Low wage and low skilled workers	NEXSTEP programme for disengaged youth Skills redevelopment Place and Train ADVANTAGE! Job creation
Afghanistan	Literacy department within government overseas NGO initiatives	Occupational literacy and skills acquisition
Lao People's Democratic Republic	Non formal education institutes	Literacy Basic vocational training

Notes: ^a www.unescobkk.org/fileadmin/user_upload/appeal/Literacy_and_Conrtinuing_Education/Meetings_Conferences/RegionalResearchWorkshop/Presentations/Thailand.pdf. Accessed 31 July 2015.

^b www.unescobkk.org/fileadmin/user_upload/appeal/Literacy_and_Conrtinuing_Education/Meetings_Conferences/RegionalResearchWorkshop/Presentations/Viet_Nam.pdf.

It is interesting to note that in developed TVET systems programmes are targeted more specifically to subgroups within the vulnerable umbrella, to ensure ongoing employability. These include low paid workers, youth, ethnic minorities, disabled and those over 40. Providers of programmes for vulnerable groups include both the state and the private sector, such as industry and NGOs.

Access is a major issue for vulnerable groups within all countries across the Asia-Pacific region (Caillods, 2010). Traditional access to TVET usually occurs at upper secondary level (aged 15-18). For this to occur students generally have to have attended primary and lower secondary school. But for many reasons a significant number of children in the region fail to benefit from TVET simply because they are not engaged in the formal education system for long enough. Obstacles faced by women and youth include gender disparity, socio economic and ethnic disparities and rural – urban disparities. Other considerations are related to supply and demand factors (ILO, 2014b).

Community learning centers operate in 25 countries. They aim to provide TVET to their local communities. Their growth over the past decade has been significant (see table 11 below). They offer basic education, literacy, skills development and vocational training, income generation, entrepreneurship, community development, culture, recreation and sports, information and connectivity (Miyazawa, 2015).

Table 11. Number of community learning centers and learners by country

Country	Number of community learning centers
Thailand	8764 centers with over 2 million learners
Viet Nam	10,994 centers with over 13 million learners
Indonesia	4513 centers
Philippines	843 centers
Republic of Korea	4,992 centers with over 27 million learners

In Viet Nam, for example, community learning centers (CLCs) offer programmes to vulnerable groups. These include youth and adults seeking employment as civil servants, in small enterprises and as rural labour. Programmes are also run for the elderly to enhance community engagement. Their overall aim is to improve the quality of human resources and to build a learning society.

In Thailand ‘Fix it Centers’ offer education on the maintenance of occupational tools, agricultural machinery, equipment and household appliances (Choomnoom, 2011). The majority of this learning, however, appears to go unrecognized and therefore is not credentialed.

Community Learning Centers face a number of issues. NQFs fail to recognize the learning they offer. There is limited, if any, skills recognition processes in place. Management staff are often untrained, there is limited infrastructure and inadequate funding. Relationships with government can be complex if multiple departments are responsible for provision of service (UNESCO, 2013). There is a call for the lifelong learning taking place at CLCs to be recognized within national qualification frameworks.

A. Key issues

In the Asia-Pacific Secondary Education Review Series, Caillods (2010) describes these key issues relating to access for vulnerable groups:

- gender disparities
- socio economic and ethnic disparities
- rural – urban disparities
- supply related factors
- demand related factors.

We will look at each of these in turn.

1. Gender disparities

Girls are under represented in secondary education in many Asia-Pacific countries. This includes Cambodia, Lao People’s Democratic Republic, and Afghanistan in particular. Often gender discrimination is entrenched in the socio cultural context of the country. Social norms such as early marriage, early pregnancy and a poor maternal health record deter girls from starting or completing higher secondary school education. Economically and culturally girls are expected to stay at home to care for children and grow food. Conditions such as lack of water and separate toilet facilities, lack of female teachers and long travel times may make

parents reluctant to send their daughters to school. These constraints can also exist for adult women seeking training opportunities. Such constraints are exacerbated in rural areas and for some ethnic groups in cities.

2. Socioeconomic and ethnic disparities

Children from the poorest households are not well represented in either TVET or academic secondary education in most countries. Attributing factors include the direct and indirect costs of education. Direct costs include fees, transport, uniform and textbooks; indirect costs include the loss of income from children being at school (in the fields, in the informal sector or in industry). Minority groups are also generally not well represented in secondary education.

3. Rural-urban disparities

Poverty is a major problem in many rural areas in the region. Three out of four poor people in developing countries live in rural areas and most of them depend directly or indirectly on agriculture (World Bank, 2008). Education is seen as a valuable asset for rural people. It enables them to pursue new sustainable approaches to agriculture, obtain skilled jobs, start new businesses and support positive change in local communities.

It is very clear that increasing people's skills in rural areas in most cases provides them with opportunities to improve their lives, and more importantly to adjust to the changes occurring around them and even themselves act as a catalyst to changes (Cavanagh, Shaw and Wang, 2013).

Particular skills include literacy and numeracy, agriculture and agricultural processes, health and safety, transferrable skills and entrepreneurship. Productive decent work for all is an important approach to mitigating poverty and social exclusion.¹⁰

However, the opportunity costs for rural learners seeking education and training are often higher than for urban learners. Costs of travel, food and lodgings may be prohibitive. Figures from Indonesia, for example, suggest that young people from rural areas tend to enter secondary school later and leave earlier.

4. Supply related factors

Supply related factors that influence the take up of TVET include the location of training providers and the cost of education, as already discussed. Additional factors include the quality of the education and the assessment and examination procedures. Quality is adversely affected by large class sizes, poor resources, outdated curriculum and undertrained or absent teachers. If the education is not perceived to be worthwhile then people will not engage. Historically TVET has been thought to be a relatively unattractive educational option compared with academic, higher education (Winch, 2013). This is an image that needs to change. Equally, the failure to pass exams or meet assessment criteria leads to people drop out.

¹⁰ www.ilo.org/global/about-the-ilo/decent-work-agenda/lang--en/index.htm. Accessed 31 July 2015.

5. Demand related factors

Parents, women and youth base decisions to attend TVET or send their children to school on the perceived post education benefits that attendance will bring. These benefits are usually measured in the likelihood of finding a job that is better remunerated than their skillset currently allows.

In 2013 it was estimated that 73 million young people were unemployed globally (ILO, 2014b). In addition to this ‘informal employment is pervasive and transitions to decent work are slow and difficult’ (ILO, 2014b, p. 1). Globally, over education and over skilling coexist with under education and under skilling. In developing regions, where 90% of the global youth population lives, stable, quality employment is especially lacking. Creating decent work is the other side of the coin to NSTVET. If decent work opportunities are not available, vulnerable groups will persist in being marginalized as competition for a diminishing resource (decent jobs) intensifies.

XI. Impact of NSTVET on the Labour Market

Recent research shows that the level of skills in a workforce predicts economic growth rates far better than average schooling levels (World Bank, 2011). It may therefore be logical to assume that TVET has a positive impact on economic growth rate, as it is the major vehicle used by most countries to address skill need. However the statistics on those undertaking formal TVET across the Asia-Pacific region are inconsistent and can be unreliable. Determining the impact of TVET on the labour market is fraught with difficulty, primarily because of insufficient robust statistical data. This situation is exacerbated when considering non formal and informal TVET.

Ideally, the TVET outcomes on the labour market should be measured by several factors. These are the share of TVET graduates who obtain a job after completion of training, the timespan between graduation and placement, the ratio between the average wage of TVET graduates and the average wage of those who did not follow the TVET path (Dohmen, 2009). In reality there appears to be a mismatch between the level and type of skills imparted by TVET systems and the requirements of the labour market (Hope, 2012).

The reliability of labour market information and the monitoring of employment impacts are extremely important in developing needs-related TVET and labour market policy measures (German Federal Ministry for Economic Cooperation and Development, 2005). However this data is not always readily available or disseminated appropriately. The collection, interpretation and dissemination of labour market data needs to be robust, as do the institutions that provide it. Employment services need to be closely aligned to labour market data. Guidance should be given to learners on local, regional and national labour market trends if they are to make an informed decision about which skillset they should focus on developing and the training opportunities they should pursue.

XII. Public and Private Partnerships in NSTVET

To ensure NSTVET are demand driven there is agreement that, up to date and relevant industry stakeholders need to be involved at every level of governance and organizational

structure. A wide range of public private partnerships are in use in TVET in the Asia-Pacific region (Asian Development Bank, 2009). Many governments are exploring options and developing mechanisms to involve the private sector in both the supply and demand side of TVET provision. Governments need to ensure their public agencies can regulate, monitor and contract private TVET providers, develop the capacities of private providers to deliver quality products and create processes that assist with the establishment and implementation of public private partnerships. Public private partnerships need to include small, medium and large enterprises for the full potential of skills development to be recognized.

There are examples of these partnerships in several countries. In Cambodia the private sector is actively invited into TVET schools to assist with training in relation to technical knowledge, engineering, electricity and architecture. In Malaysia collaboration initiatives extend to research, internships, and work based learning programmes (see table 12). In Singapore industry is involved at a policy and curriculum level to ensure qualifications are fit for purpose. In the Republic of Korea industry is involved at many levels of the NSTVET. In Thailand a Petrochemical Technical College is operating. This is a joint initiative between industry and government to meet the need for skilled technicians. Engagement with the private sector leads to improved understanding of skill demands. It also allows for a continual upgrading of learning content particularly in relation to innovations in technology.¹¹

Table 12. Malaysian collaboration initiatives by institution type

Ministry	Institutions	Collaboration initiatives
Ministry of Higher Education	Technical universities	Industry PhD Research, innovations and commercialization
	Polytechnics	Industrial training Internship programmes Industrial attachments for lecturers Guest lectureships
Ministry of Education	Community colleges	Work based learning
	Vocational colleges	Traineeship programmes
	Vocational schools	Basics of financial management
	Mainstream schools	Traineeship programmes

A regional workshop in the Philippines in 2009 looking at private and public partnerships made a number of recommendations. These included:

- unifying curricula and standardizing programmes between TVET providers to ensure they meet the need of industry
- organizing exchange programmes
- accrediting private providers
- closely supervising trainees in the workplace

¹¹ www.khmertimeskh.com/news/799/public-private-partnership-----contributes-to-labor-development/. Accessed 31 July 2015.

- having MOU between the workplace and the TVET provider (Abalena, 2009).

A study undertaken by Abdullah (2011) in Indonesia describes the complex nature of the relationship between training providers and industry partners. For these relationships to be successful there needs to be:

- open, continuous communication between partners
- flexible course delivery including scheduling, course structure and location
- delivery of quality training services and produces
- timely response to concerns and inquiries
- qualified and experienced trainers/instructors
- mutual trust
- acknowledgement of the strengths, limitations and needs of the TVET and business world.

It seems clear that the growth of public private partnerships, both national and international, will be a feature of NSTVET in the future.

XIII. Financing of NSTVET

A demand driven TVET system is one that is responsive to the technical education and training needs of the population and of industry. For this to occur clear, diversified sources of funding are required (Atchoarena, 2014). Government funding in itself is often not adequate to accomplish the needed change. Public and private partnerships also have a place, as indicated above. For such a complex area the desktop review did not identify the amount of commentary expected.

At a macro level, funding is required for the development and operationalization of a nationally based, comprehensive TVET system. This should include national qualifications authority, national qualifications frameworks, standard setting bodies and awarding bodies.

Johanson (2009) describes a typography of training funds:

- pre-employment training funds aimed at building national training capacity and increasing training provision. These are usually financed through payroll levy revenue generating schemes.
- enterprise training funds aimed at increasing the productivity and competitiveness of industry by raising the skills of workers. These are usually financed through payroll levy incentive schemes.
- equity training funds aimed at raising the incomes of disadvantaged groups. These are usually financed through public subsidy, levy or donors. For example, the Cambodian Training Fund supports community based training initiatives in rural areas.¹²

At a micro level, funding is required by institutions and a range of other training providers, including workplaces. To be effective, TVET needs a relatively low trainee to trainer ratio, facilities of reputable standards, regular investment in new equipment and the maintenance

¹² UNESCO-UNEVOC Policy review of TVET in Cambodia. Accessed 31 July 2015

and repair of existing equipment (Dubois and Balgobin, 2010). TVET also requires funds dedicated to trainer and assessor education and upskilling. Funding can come from several sources and these are outlined below.

Public financing comes from:

- direct payments/subsidies
- tax deductions/tax rebates
- vouchers (for example, Malaysia and Singapore) or entitlements (Australia)
- provision of training loans: fixed instalments loans or income contingent loans
- social security schemes, for example the Malaysia Employees Provident Fund

Trainee financed training comes from:

- wage reductions
- tuition and apprenticeship fees
- individual learning accounts (for example in Austria)

Employer financed training comes from:

- single employer funding
- training levy/payroll tax system

Alternative sources of funding are:

- donor funding
- deferred and income related payments
- formalized company contributions
- corporate social responsibility payments

National training funds are the vehicle used in many countries to unify various funding sources, augment the volume of training resources and allocate funds. Training funds provide an institutional framework for the collection and allocation of funds. They usually operate outside of the normal government budgetary channels. Table 13 provides details of some of the current funding models in use in the Asia-Pacific region.

Table 13. Current funding models for some countries in the Asia-Pacific region

Country	Financing
Indonesia	Shared responsibility of the government, local government and community 20% of national budget allocated for education (excluding teachers' salaries) Allocation of funds to educational institutes is in the form of a grant
Cambodia	The National Training Board allocates a National Training Fund (Training Grant Fund and Self Employment Generation Fund). Funding sources include government, international organizations, donors and other stakeholders.
Afghanistan	Afghanistan Reconstruction Trust Fund is supported by donors. A functioning system for public TVET funding is in its infancy.
Republic of Korea	Public funding : ministries and municipal governments Private: employment insurance paid by business owners and employees. User pays

Country	Financing
	private colleges also operate.
Singapore	Skills Development Fund: managed by Singapore Workplace Development Agency. Sources of funding: contributions by all employers in Singapore.
Malaysia	Human Resource Development Fund relies on the Human Resource Development levy which is imposed on specific groups of employers. Also the Skills Development Fund administers loans to skills trainees, especially school leavers
Hong Kong	Vocational Training Council administers training funds: student grants, loans, scholarships Self-financing post-secondary education fund (government backed) State funded and privately funded universities

Financing arrangements are critical for the success of TVET initiatives but are determined by their placement within a government's public policy agenda and by the rules and regulations influencing how financial resources are collected, allocated, and managed. Moreover it depends primarily on the economic situation and available resources of the country.

XIV. Options for Improvement

This section of the report offers good practice indicators which provide options for the implementation of NSTVET. The report draws on examples of the strengths of various systems and countries outlined in Section 2. It also reflects the wide body of literature on these topics.

It is important to note that all policies, procedures and practices must be tailored to the specific circumstances of the country and to the beneficiaries of technical and vocational training.

A. National skills development policy

Good Practice Indicator 1

National Systems of TVET are embedded into a country's national skills development policy and clearly linked to achieving labour market needs as well as social development considerations.

Commentary

National systems of technical and vocational education and training should not operate in isolation from other national policy directives as they have interrelationships with both skills development and labour market policies.

Countries formulate skills development policies to engage all stakeholders in: setting a common vision of the skills system that a country aims to build; facilitating an alignment with national development framework and coherence with other policies; proposing coordinated and planned actions and reforms for improving outcome and impact of training; clarifying institutional arrangements for the skills system; anchoring existing good practices; and pledging political and collective will and commitment while clarifying roles and responsibilities of stakeholders (ILO, 2011).

ILO has identified fifteen policy areas for skill development. As the figure below illustrates many of these areas have direct links with NSTVET and the labour market (LM).

Figure 9. Skills development policy and its links to TVET and labour market policies



B. Developing policy for NSTVET

Good Practice Indicator 2	In establishing NSTVET policy, detailed analysis of key policy drivers has been undertaken and regularly reviewed to ensure currency and relevance of the system.
Good Practice Indicator 3	The reviews provide robust information through a consultation process that has included key stakeholders such as policy makers, real employers (of small, medium and large enterprises), industry peak bodies, learners, educational providers, unions, relevant NGOs and funding agencies.
Good Practice Indicator 4	The impact of TVET outcomes on the labour market is measured to ensure there is a good match between the level and type of skills imparted by the NSTVET and the requirements of the labour market.

Commentary

The establishment and prioritizing of a country's actual technical and vocational needs is critical. Not only will this provide the basis for determining realistic and achievable goals, it will also allow a coherent and possibly unique model to be developed in response to these needs. This will limit the risk of borrowing systems and processes from jurisdictions where significantly different needs and contexts exist. Retrofitting other countries' TVET systems into the domestic setting can result in poor outcomes.

Policy recommendations will result from a policy review process as identified in the table below. These can then be used in the development of a strategic plan. In highly complex systems such as NSTVET, strategic plans must include clear goals. There must also be detailed strategies to achieve the goals, delineated responsibilities and clear accountability, operational plans and evaluation measures. Often implementation needs to be staged according to agreed priorities.

Figure 10. Policy drivers: global and domestic economies; demographics; labour market; emerging technologies and TVET provision

Policy drivers	
Global economy	Domestic economy
<p>The impact of the global economy</p> <p>This should analyse at a macroeconomic level:</p> <ul style="list-style-type: none"><input type="checkbox"/> Likely demand for skills driven by global economic trends<input type="checkbox"/> Impact of demand for goods and services on employment growth and demand for labour<input type="checkbox"/> Potential internal impacts on skill supplies	<p>The nature of the domestic economy</p> <p>This requires an in depth analysis of the domestic economy including:</p> <ul style="list-style-type: none"><input type="checkbox"/> Current demographics<input type="checkbox"/> Debt: GDP ratios and their impact on funding for government TVET programs<input type="checkbox"/> Current workforce development policy/ies and the strategic objectives they meet<input type="checkbox"/> Nature of skills required within the economy<input type="checkbox"/> Current available skills stocks in the economy by occupational category<input type="checkbox"/> Changing nature of the demand for skills arising from the evolution of the economy<input type="checkbox"/> Forecast demand for skills, and projections by occupation category

Policy drivers

Demographics

Demographics

This should forecast:

- ☐ Population growth by region
- ☐ Population diversity
- ☐ Employment patterns by regions
- ☐ Impact of continued expansion of the labour force and of the population on economic growth and the provision of a steady supply of human capital
- ☐ Regional development requirements in providing a distribution of skills and qualifications throughout the country
- ☐ Implications that an ageing population will have on the economy
- ☐ Impact of increased labour mobility, both in terms of inflows and outflows from the country

Labour Market

The nature of the labour market

This requires an in depth analysis of the current and predicted situation:

- ☐ Statistic data on employment, underemployment, unemployment
- ☐ Access to employment
- ☐ Advisory services
- ☐ Evaluation of the match between level and type of skills imparted by NSTVET and the requirements of the labour market
- ☐ Supply issues (training and retraining for lifelong learning)
- ☐ Demand issues (employment programs, wage subsidies, support for business start ups)

Policy drivers

Emerging technologies

Emerging technologies

This should include:

- ☐ The impact that the rapid spread of emerging skills and technologies has on developing an adaptive, flexible workforce to meet the changing needs of industry
- ☐ An analysis of new and innovative responses that will be required from education and training providers, employers and individuals
- ☐ An analysis of the current readiness of education and training providers, employers (who will need to facilitate training for their staff) as well as individuals to embrace new technology
- ☐ Review of the extent to which the country's workforce development policy promotes science/technology driven sectors, relative to business services (financial, corporate etc) and the level of skills requirements that will emerge from this policy in occupational contexts and levels

Current TVET provision: formal, non formal & informal

The nature and coverage of current TVET provision including:

- ☐ Purposes and drivers of TVET provision
- ☐ Current national and regional spread of provision and funding mechanisms and responsible government ministries
- ☐ Current methods and basis for recognition of learning and expertise
- ☐ Current legislation, regulations, policy and institutional structures and quality assurance mechanisms
- ☐ Training pathways and articulation of qualifications/credentialling between and across training sectors and providers
- ☐ Involvement of industry and enterprises in development and review of systems, curriculum and competency design, assessment design and quality assurance

Policy drivers

TVET curriculum, delivery & assessment

The nature and coverage of current TVET provision including:

- ☐ Current targeting and funding of curriculum, delivery and assessment mechanisms and destination data for:
 - ☐ workplace based training through formal (apprenticeships) and non formal (on the job learning) processes
 - ☐ public and private institution based training
 - ☐ community learning centres
 - ☐ organisation and enterprise competency based frameworks
 - ☐ training schemes that are targeted to specific groups
 - ☐ vocational training in secondary schools

TVET access & and inclusiveness

The nature and coverage of current access to TVET provision including:

- ☐ Inclusiveness and accessibility of TVET systems including analysis of what current exists to address:
 - ☐ diversity within the population
 - ☐ needs of and provision for vulnerable groups including:
 - ☐ youth
 - ☐ women
 - ☐ ethnic minorities
 - ☐ returning migrant workers
 - ☐ people with poor educational attainment
 - ☐ the unemployed
 - ☐ the underemployed
 - ☐ workers with skills but no qualifications

The policy review should be able to provide the following conclusions and recommendations covering:

- existing situation in the TVET sector and reforms required
- a strategy to reform the system
- methods for implementation of the reform strategy including:
 - ♦ revisions to, or establishment of a national workforce development policy including those in both the formal and informal sectors
 - ♦ policy reforms and underpinning legislation and regulations required
 - ♦ financing
 - ♦ desirable locus of government control for workforce development and related TVET provision
- definition of roles that different stakeholders can and should play in the proposed system and mechanisms for engaging and communication with them

The policy review conclusions and recommendations should also cover:

- national structure for TVET system:
 - ♦ model for a national qualifications framework
 - ♦ model for competency standards and credit mechanisms, delivery and assessment
 - ♦ quality assurance requirements including registration, accreditation and review of institutions and providers, and arrangements to ensure national consistency of assessment
 - ♦ the role of short courses in the system
 - ♦ articulation arrangements to create credible learning and skill development pathways within all sectors of the economy including formal and informal employment
 - ♦ transition arrangements from current to proposed system
 - ♦ risk analysis and mitigation plan
- evaluation of the reform impact
- ongoing continuous monitoring of the performance in the sector.

C. Governance and accountability

Good Practice Indicator 5

Governance of NSTVET is based on the principles of participation, transparency and accountability. A robust, inclusive quality assurance process is in place.

Commentary

Governance considers the extent to which a TVET system, across all levels and in all its various sub parts, is characterized by participation, transparency and accountability. Accountability is primarily ensured through robust quality assurance processes across the whole TVET landscape.

Figure 11. Quality assurance best practice indicators

Quality Assurance

Best practice quality assurance occurs when:

- ☐ All institutions (both public and private) providing programs of learning or qualifications in the TVET sector are covered by national quality requirements.
- ☐ There is interagency congruence with quality assurance requirements
- ☐ Internal and external monitoring and auditing takes place
- ☐ Nationally prescribed moderation system review assessment decisions across institutions to ensure consistency
- ☐ Accreditation of providers or courses occurs
- ☐ Stakeholders receive training in quality assurance processes and are accredited in this area
- ☐ Standardization of criteria for competence is clear

Sound governance also adheres to the following underlying principles:

- shared responsibility
- equal opportunities
- social partnerships
- private public partnerships
- lifelong learning

D. Organizational structure

Good Practice Indicator 6	The NQF goes beyond a hierarchical classification system and is a mechanism that ensures a needs-based, coherent and cohesive qualifications system is in place that recognizes lifelong learning and is based on stakeholder consultation.
Good Practice Indicator 7	TVET operations are centralized under one authority to provide a coordinated, efficient and effective national system.

Commentary

National qualification authorities generally oversee the implementation of TVET policy using the national qualifications framework as a primary mechanism. Some NSTVET operations are centralized. Others are moving towards increasing autonomy for providers who exercise their own governance and management **within** the requirements of the NQF.

It is usually a national qualifications authority that manages both the national qualifications framework and formalized quality assurance processes. Through the mechanisms of an NQF, they are responsible for setting standards, establishing learning outcomes for qualifications, accrediting training providers; developing processes that allow for recognition of prior learning; assessment and certification. Governance and the mechanisms used to govern need careful consideration within the NQA if it is to be effective, equitable and responsive.

There has been considerable debate about the use of the NQF approach. But despite this, there is general agreement that this approach forms a sound response for the organization and structure of NSTVET in the light of increasingly complex qualification systems and the challenges of articulation between international systems. Advanced NQFs enable and support the development of integrated and coherent qualifications. They aim to avoid the duplication of qualifications and over supply of providers. They also facilitate interaction with stakeholders and support quality assurance processes.

Figure 12. Good practice national qualifications frameworks

National Qualification Frameworks NQF are mechanisms that should: <ul style="list-style-type: none"><input type="checkbox"/> Facilitate stakeholder interactions<input type="checkbox"/> Create a coherent, articulated qualifications system<input type="checkbox"/> Ensure fit for purpose qualifications<input type="checkbox"/> Recognise formal, non formal and informal learning<input type="checkbox"/> Support wider quality assurance processes
--

E. Qualifications

Good Practice Indicator 8	Qualifications are designed to identify the underpinning skills, knowledge and attributes graduates need to perform a range of roles across a broad context. Qualifications needs to be accessible in different settings including the workplace and education institutions.
Good Practice Indicator 9	TVET qualifications are focused on clear outcomes that make explicit what graduates can do, be and know on completion of the qualification.

Commentary

Qualifications can be developed and designed in a number of different ways but current good practice suggests they should be based around a set of defined competency based outcomes.

Qualifications can either be prescription based (they dictate the curriculum that needs to be covered) or competency based (they describe what a person can do). However, most NQFs register competency based qualifications.

Qualifications must

- have a clear purpose and be aligned with industry/sector needs
- be focused on outcomes
- be internally coherent and clearly document the competencies that those completing the qualification must achieve
- recognize broad transferable and generic skills as well as specialised industry and professional skills
- have clear indications of entry and exit points for intended graduates
- provide an indication of their relationship with other qualifications.

There is general agreement that qualifications must:

- be meaningful to learners and others who perform the particular role or job
- combine the functional and the generic requirements of the role or job. This then allows for whole performance/holistic assessment, as opposed to assessment of narrow tasks

- be adapted to particular and changing workplace circumstances ('fitness for purpose'), rather than being used as an all-purpose template
- be focused on technical requirements that are valid (fit for purpose) and usable (manageable).

F. Assessment of learning

Good Practice Indicator 10

Assessment is focused on outcomes, is evidence based and reflects an understanding of learning as multidimensional, integrated and revealed in performance over time.

Commentary

Learning is a complex process. It entails not only what students know but what they can do with what they know. Learning also involves values, attitudes and habits of mind that affect both workplace and academic performance.

In TVET, assessment determines whether learning can be applied in real life contexts. It should reflect these understandings by employing a diverse array of methods, including those that call for actual performance, using them over time so as to reveal change, growth, and increasing degrees of integration. Such an approach aims for a more complete and accurate picture of learning and its application in performance.

In many instances, assessment of TVET is mired by outdated practices where assessment focuses on knowledge acquisition and not on the application of knowledge into practice. This usually depends on whether qualifications are based on prescription or competency based outcomes statements. In the Asia-Pacific region there is general agreement that assessment formats should shift from summative functions towards performance based and formative functions which enhance learning.

Competency based assessment should incorporate:

- integrated assessment and task based assessments where possible to avoid repetition and to demonstrate all the components of competence rather than just knowledge and skills
- where practicable, assessment tasks in the workplace based on evidence derived from real-life activities (naturally occurring evidence)
- job tasks that are mapped to determine which elements of competencies are completed on the job, and which are common to a number of competency standards
- use of technological solutions that make recording of evidence easy and part of the job. These might include:
 - ♦ completion of evidence records such as workplace diaries, check lists and log books
 - ♦ work samples collected through photographs, videos, PDAs and other electronic devices.

Assessor judgements must be guided by the following principles:

- validity which is supported through direct workplace evidence, i.e. we are measuring what we say we want to measure, as this is the actual work
- sufficiency which is supported by evidence from a variety of sources (minimum of 3), which is of the standard required and demonstrates repeatability
- authenticity which is supported by validation that the work is that of the candidate for assessment and a true representation of their performance

G. Recognition, validation and accreditation of learning¹³

Good Practice Indicator 11

Assessment methodologies encompass the opportunity for assessing and credentialing those who have acquired competences non formally or informally.

Commentary

RVA is a mechanism that can be used to provide recognition to learners who have gained knowledge and skills through non formal and informal mechanisms. The learning becomes visible, is made tangible within the formal recognition processes.

Many countries are using national qualifications frameworks to do this. The three main mechanisms in use are:

- accrediting providers
- accrediting the learning outcomes of programmes based on formal competency standards
- accrediting an individual's learning against agreed standards.

There is no doubt that RVA is a vital instrument for enhancing equity for learning achieved outside formal learning environments.

H. Management of learning pathways

Good Practice Indicator 12

Systems and processes exist within NQFs to support both the vertical and horizontal movement across learning pathways.

Commentary

The strength of any NQF is in its clearly articulated levels and progression pathways between the various ranges of qualifications. This process is relatively straightforward when credentials have been gained from formally recognized credit bearing providers offering accredited qualifications. It is however more difficult to credentialise learning gained by other means.

I. Regional relationships

¹³ This is known by a range of terms in different countries including recognition of prior learning (RPL), recognition of current competence (RCC) and accreditation of prior learning (APL).

**Good Practice
Indicator 13**

NSTVET are aligned with regional qualification frameworks to ensure portability and mutual recognition of skills across the region.

Commentary

Regional qualifications frameworks and quality assurance frameworks provide mechanisms for providing mutual recognition arrangements, processes for determining equivalency for credentials of formal learning and for the validation of non-formal and informal learning across borders. This provides considerable benefit to learners, employers and providers. It ensures the credibility of programmes of learning and the ability for learners to have recognition that enables them to use their knowledge and skills in a range of contexts and countries.

J. TVET provision**Good Practice
Indicator 14**

TVET providers are accredited as having the capacity to develop, resource, deliver, assess and quality assure programs of learning that meet specified competency based outcome requirements.

**Good Practice
Indicator 15**

TVET programs reflect the workplace and its requirements, are learner centred and based on the principles of good practice in TVET learning, emphasizing a participatory approach.

**Good Practice
Indicator 16**

TVET providers ensure engagement with industry for their teachers and learners to maintain currency and relevance of their programs.

**Good Practice
Indicator 17**

TVET trainers and assessors are trained and competent in both their technical specialization and competency based training and assessment.

**Good Practice
Indicator 18**

TVET providers at all levels, engage with other providers, including workplaces and non formal providers to foster articulation between the variety of programs that are offered.

**Good Practice
Indicator 19**

Policy makers, providers, employers and other stakeholders work together to ensure quality provision of targeted and staircased TVET programs for vulnerable groups.

**Good Practice
Indicator 20**

Programs for vulnerable groups should include workplace literacy and numeracy, transferable skills and entrepreneurial skills in particular.

Commentary

This section includes discussion of the following groups: TVET providers, programmes, teachers/trainers and assessors, and vulnerable groups.

(a) TVET providers

There is clear evidence from the literature on effective practice that TVET providers at all levels should:

- have clearly specified quality management systems and processes designed to encourage continuous improvement and ensure they have the capacity and resources to deliver education and training to a specified standard
- have sound governance and management systems (including student records, documentation of assessments, backup systems, staff performance reviews etc)
- ensure the scope and methodologies of current and intended course delivery and assessment are defined, meet industry requirements and are appropriate and learner centered
- regularly benchmark their performance against specified standards and/or other providers
- have policies to guarantee the rights of students or clients (e.g. policies for fee refund or appeal on assessment)
- meet all requirements specified by the relevant quality assurance body for their sector/country.

(b) TVET programmes

There are agreed general principles of what constitutes effective TVET training. These include:

- training curricula structure and delivery methods reflect the workplace and its requirements and are designed in collaboration with industry
- training has clearly specified outcomes
- training involves learners in planning and implementing learning activities
- learners have sound workplace experiences within their training
- learners have opportunities for individual growth and development
- learners are offered literacy, numeracy, transferable, entrepreneurial, greening skills and ICT in context
- high quality assessment is an integral part of the training
- trainers have certain affective characteristics – respect for students, belief in their abilities to learn, sensitivity to their special needs, warmth, understanding, and patience – as well as the ability to teach well in conventional terms
- training recognizes the particular needs of adult learners and is tailored to meet these needs and support self-directed learning wherever possible
- evaluation is used to assure training quality
- the learning situation is cost effective for both providers and learners.

Moreover it is critical that TVET providers encourage engagement with NSTVET by:

- ensuring a parity of esteem between vocational and non vocational education through the provision of quality outcomes for learners
- aligning TVET training programmes to local industry need: close collaboration between employers and government

- offering flexible courses including ‘just in time training’
- updating curricula
- offering blended learning approaches
- engaging with workplace learning/apprenticeship programmes
- providing local training facilities that meet local training needs and encouraging employers to use these for training or even actual production
- reducing direct cost of TVET to the learner as far as possible
- supplying appropriate teaching staff
- providing adequate learning resources
- encouraging career options including entrepreneurship and self employment.

(c) TVET teachers/trainers and assessors

There should be agreed standards of practice for TVET teachers as part of a holistic TVET quality assurance framework. Tutors and assessors should

- be trained and competent in competency based training and assessment
- have recent relevant industry experience and relevant qualifications
- familiar with the course requirements, including the standards to be judged through assessment
- ensure that their students receive fair, valid and consistent assessments
- be provided with regular opportunities to upskill and maintain their technical knowledge and skills.

(d) Vulnerable groups

TVET programmes for vulnerable population groups must be focused on identified labour market needs and opportunities. They must be well targeted, accessible and staircased to build achievement and confidence. A partnership approach should be taken which includes employers, unions, workers and government. It is critical that such programmes provide the following:

- literacy, language and numeracy skills
- an increased focus on training young people for higher skills and qualifications; offering career pathways
- the identification of and response to the differing needs of groups within ‘vulnerable groups’ as a one size TVET solution does not fit all
- public funding to upgrade skills training, resources including ICT and facilities for vulnerable groups and their teachers/trainers.

K. Sustainable funding

**Good Practice
Indicator 21**

Sustainable and accountable financing systems exist that support the capacity for long term policy TVET implementation as well as the level required to improve TVET outcomes.

Commentary

There are a number of financing sources and each has benefits and disadvantages which are themselves strongly influenced by the circumstances and policy agenda of the country concerned. They include:

- public financing
- trainee financed training
- employer financed training
- alternative sources for funding.

Most countries use a mixture of these to fund NSTVET. The use of a national fund of some kind, where the funding from a range of sources is unified and administered, is very common. There are also equity based training funds designed to target vulnerable and disadvantaged groups.

Payroll taxes or employer levies are the most common means of providing the bulk of these funds. However these may not be appropriate in low income countries where the work base is limited or highly informal and levy income generating capacity is weak.

Regardless of the model adopted, there are some general principles that should be adhered to in developing a sustainable funding model (Johanson, 2009). These include:

- public/private partnership funding initiatives
- employers having a leading role in governance of both levy and equity funding systems
- employers having a strong voice in the allocation of training funds
- an independent administrative capacity
- funding system that encourages provider competition and development of training markets increases overall quality
- targeted support for small enterprises
- evaluation on the performance of training funds.

XV. Conclusion

Countries in the Asia-Pacific region have adopted strategies to adapt current models of TVET to meet rapidly changing societal and economic needs. Analysis of, and responsiveness to, the fluidity of demand is critical. It is also important to recognize that TVET serves a wide range of learners including youth, low income workers, women, disabled, the unemployed and migrants. Each of these groups has widely differing characteristics, contexts and constraints. But they all need to be included in any TVET strategy.

The need for inclusivity has led to the growing acceptance that there must be multiple routes to skills acquisition and workplace competence. All of these must be recognized by the TVET system. There is general agreement that TVET systems should include:

- workplace based training through non formal (apprenticeships) and informal (on the job learning) processes

- public and private institution based training
- organization and enterprise competency based frameworks
- training schemes that are targeted to specific groups
- vocational training in secondary schools.

The importance of programmes that combine generic (sometimes called ‘employment skills’ or ‘transferable skills’), entrepreneurial skills and technical components is being increasingly recognized. This aims to enhance worker adaptability in a rapidly diversifying workplace and to support worker mobility in fast developing economies.

There is a need to establish comparable standards of learner outcomes, from whichever route the learning has been achieved. This has led to the establishment of national and regional qualifications frameworks and national and regional competency/skills standards. There is now a heavy emphasis on meaningful engagement with industry in developing both frameworks and standards. This has become a key feature in ensuring the relevance, quality, reputation and sustainability of TVET systems.

Technical and vocational education's purpose has always been to equip learners for success in the workplace, in communities, and their personal lives. While this purpose may have remained constant for centuries, the world around TVET is undergoing a period of unprecedented change and challenge. The challenges for NSTVET include securing funding and achieving affordability. Systems must accommodate learners who may already have access to all the “knowledge” they require but are not credentialed and serve the non-traditional learner. Other issues are to do with managing learners who are moving between multiple learning environments, managing learners from different jurisdictions, meeting government objectives and doing all this within the constraints of current delivery models. These will be the significant challenges for TVET in the future.

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