

Chapter 1

Skills Development Issues, Challenges, and Strategies in Asia and the Pacific

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Introduction

The Asia-Pacific region is renowned for its size, diversity and complexity, whether it be geographical, socioeconomic, cultural, political or developmental, all of which impact on every aspect of life, including employment, labour force considerations, education and training. The region is home to some 63% of the world's population of seven billion. Countries with the largest populations (People's Republic of China, 1.34 billion; India, 1.22 billion) and the most rapidly growing megacities are to be found in the region, as are countries with relatively small populations (Bhutan, 695,000; Niue, 1,398) (UNDESA 2011).

Levels of economic development vary widely, with some of the richest countries (such as Japan) and some of the poorest countries on earth (such as Bangladesh). Asia contains the largest number of poor of any region in the world, the incidence of those living below the poverty line remaining as high as 40% in some countries in Asia (UNESCAP 2011). At the same time, many countries are experiencing a period of great economic growth and development. The growing prominence of Asian economies and corporations, together with globalisation and technological

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innovation, is leading to long-term changes in trade, business and labour markets. There is a rebalancing of power, centred on Asia and the Pacific region.

Asia's economies have achieved remarkable growth rates. If Asia continues to grow on its recent trajectory, it could, by 2050, account for more than 50% of the world Gross Domestic Product (GDP) (compared to 27% in 2010), with a sixfold increase in per capita income, to reach European levels of today. Seven economies – the People's Republic of China (PRC), India, Indonesia, Japan, the Republic of Korea, Thailand and Malaysia – are projected to account for 87% of the GDP growth in Asia and almost 55% of global GDP growth between 2010 and 2050 (ADB 2011b). A number of directions for economic development have been identified in the UNESCAP (2011) report:

- Trade within the region is growing more rapidly than the region's trade with the rest of the world, potentially leading to a deeper level of regional integration.
- Services are an important emerging sector, and various developing Asia-Pacific economies are leading the recovery in exports of commercial services, with the group recording on average a growth rate of more than 20% in 2010. There is scope to expand intraregional trade in some services.
- Some Asia-Pacific countries are already world leaders in the production and export of climate-smart goods and services.
- It is important to include small and medium-sized enterprises (SMEs) in the exports of Asia-Pacific economies, as they play a crucial role in creating employment.
- An increase in regional cooperation is also viewed as a major avenue for regional development.

However, realising the 'Asia-Pacific Century' is dependent upon countries in the region being able to sustain growth, reduce poverty and ensure inclusiveness in the distribution of gains. On the one hand, it is crucial to address inequities, while on the other, it is important to implement strategies for productivity gains so that countries are not caught in a 'middle-income trap' (World Bank 2007). The notion of a middle-income trap refers to a well-established economic principle whereby a developing nation gets 'trapped' when it reaches a certain, relatively comfortable level of income but cannot seem to take that next big jump into the true big leagues of the world economy, with per capita wealth to match. Every economy in Asia has confronted this 'trap' or is dealing with it now. Breaking out of it is extremely difficult since escaping the 'trap' requires major re-engineering which includes skills development for employability and sustainable livelihoods.

Asia also faces demographic challenges – some economies have a predominantly working age population, while there are economies that will be confronted with an aging, large elder population (UNDESA 2011). The case of the Asian giants, the PRC and India, is particularly interesting and significant. Being the world's two most populous countries, together they represent 36% of the world's population. These populations will continue to increase with India and the PRC having predicted population growth rates of 1.32 and 0.42%, respectively. GDP growth forecasts for India and the PRC in 2012 are 7.5 and 9%, respectively (International Monetary Fund 2011a, b). Large-scale migration to urban areas is a major feature in both countries, this being particularly the case in the PRC. This is fuelled by a desire for

improved employment opportunities and higher standards of living (UN Population Fund 1999).

In Asia, the informal sectors take up 65% of nonagricultural employment. Together with informal employment in agriculture, the proportion of informal employment significantly increases, in India, for example, ‘from 83% of non-agricultural employment to 93% of total employment’ (Asian Development Bank 2011, p. 1). Skills development for the informal sector presents specific challenges to governments.

A deeper level of economic integration, which is required for sustainable development, calls for regional cooperation in skills development. Although challenges for HR development vary from country to country, the overall directions for the region could be identified based on the assumption that countries need to progress towards aligning skills development strategies with socioeconomic goals. The Asian Development Bank has a competitive advantage to support countries in the region in formulating skills development strategies and in increasing regional cooperation in TVET through formulating overall priorities. In this chapter, an example of European Union (EU) regional cooperation in TVET and key challenges and current TVET trends in Asia and the Pacific are considered, and a framework to move forward to support TVET in the region is suggested.

Global Issues: Skills Development for Employability (TVET)

In this chapter, skills development for employability, which stresses practical, technical and vocational, rather than largely academic knowledge, skills and understandings shall be referred to as technical and vocational education and training (TVET).

Over time, and in different countries, various terms have and are being used to describe elements of the field that are now conceived as comprising TVET. These include apprenticeship training, vocational education, industrial arts, technical education, technological-vocational education, occupational education, vocational education and training and career and technical education. At the second International Congress on Technical and Vocational Education, held in the Republic of Korea in 1999, UNESCO and the ILO (in consultation with their respective member states and partner agencies) jointly agreed to use the term technical and vocational education and training (TVET)¹ in future in order to unite the field.

TVET is very much back on the global educational agenda after its virtual disappearance from international aid in the early 1980s, when the World Bank radically shifted its policy from TVET support towards investment in primary education. A return of TVET to the development agenda is partly a reaction to the emerging skills divide with the least developed countries falling further and

¹ The definition of TVET that has been most widely adopted is ‘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 occupants in various sectors of economic and social life’ (UNESCO 1999).

further behind, particularly in sub-Saharan Africa and South Asia. Currently, TVET is regarded as important to achieving relevant and high-quality education for all (EFA), education for sustainable development (ESD) and the Millennium Development Goals (MDGs) and is also viewed as part of the lifelong learning agenda (King 2011).

There is overwhelming evidence to demonstrate that TVET can play an essential role in promoting sustainable poverty alleviation, human development and economic growth, with clear benefits for individuals, their families, local communities and societies in general (Maclean and Wilson 2009, Chapter 1; NORRAG 2003). This is to be expected since it is estimated that some 80% of occupations centre on the application of technical and vocational skills to the world of work (UNESCO-UIS 2006). The World Bank (2010) highlights the importance of skills for individuals and economies as 'skills are at the core of improving individuals' employment outcomes and increasing countries' productivity and growth' (p. 1). UNESCO's strategy on TVET (2008) stated that more and more governments are calling for assistance in TVET development (UNESCO 2011). TVET has been identified by the international community and ADB member states in Asia and the Pacific as a priority area within ADB's range of programme activities.

TVET refers to education and training that prepare people for gainful employment (Finch and Crunkilton 1999). TVET can take place either in formal schools (e.g. from kindergartens to grade 12 or 13) or increasingly in postsecondary community and/or technical colleges or informally by means of training at the workplace and increasingly by distance learning. In many developing countries, most TVET skills development for employability occurs through informal and nonformal means, rather than in formal TVET institutions (UNESCO-UIS 2006; 2010).

Investment in TVET is not without its critics (Maclean and Wilson 2009). Some politicians and policy makers point to the heavy expenses required to develop curricula, training staff and equip classrooms for specialised TVET subjects in secondary schools or postsecondary learning centres, which can generally cost three times more than academic courses. Also the fact is that TVET provides training, but no guarantee for jobs. According to the World Bank report (2010), 'the global imperative for more jobs, and more productive jobs, is a major challenge for development. Global unemployment, estimated by the ILO at 212 million in 2009, is at an all-time high' (p. 1). A jointly prepared ILO and OECD statistical report has noted that 'all G20 countries are facing substantial labour market challenges to promote productive employment and decent work opportunities for all' (ILO and OECD 2011, p. 1). The report has indicated that 'in the context of rapid technological change and globalization, another priority has been to improve labour market prospects for the low-skilled, especially in the more advanced economies' (p. 8). Better integration of youth, women and migrants into the labour market is also viewed as key issues. TVET has moved from beyond the narrow confines of economic planning and become part of a larger vision for promoting sustainable development in the region.

An Example of Regional Cooperation: EU

The ADB Asia 2050 report identified a number of reasons for the growing importance of regional cooperation for Asia and exemplified areas that would benefit from cooperation (e.g. transport, health, food security). The move towards economic cooperation needs to be accompanied by HRD strategies and skills development. Systematic developments in TVET cooperation in Europe could serve as an example of such cooperation, although strong supranational institutions in Europe are unique. Systematic strategies at the policy level, and the development of common tools and principles for TVET, are an indication of the recognised value of cooperation on common priorities. The need to ensure the quality and relevance of education and training has been reflected in policy development since 2002 when the ministers responsible for TVET and social partners committed themselves to cooperation in TVET, making TVET in the EU region the best in the world.

There has been a change in EU region priorities, reflects the change of HRD policy orientation and the setting of goals. The most visible part of the Copenhagen process concerns the development and implementation of European TVET tools. Such instruments as Europass (a framework for transparency of qualifications and competencies), EQF (the European Qualifications Framework) and ECVET (the European credit system for vocational education and training) have impacted transparency, comparability and the quality of TVET. In particular, the EQF serves as a common European reference system that is aimed at linking different countries' national qualifications systems and frameworks together, so it can function as a mapping device helping learners and workers to 'move between countries or change jobs or move between educational institutions at home' (EC 2008, p. 3).

The European Qualifications Framework classifies 'knowledge', 'skills' and 'competence' into eight levels. Common reference points help Europeans to collect reliable statistics to be able to forecast skills demands. The EQF provides a means of comparing qualifications in different European countries.

Almost all EU and European Economic Area (EEA) countries have indicated their intention to introduce NQFs covering all parts of their education, training and qualifications system.² One of the main reasons for the development of NQFs was the establishment of the European Qualifications Framework for Lifelong Learning. This was adopted in 2008 by the European Parliament and Council. Since the mid-2000s, NQFs in Europe have become the key instruments for reforming education, training and qualifications systems. The majority of EU, EEA and candidate countries are now working on the development and implementation of national frameworks. In Belgium, Flanders, Estonia, Lithuania, Malta and Portugal, formal

² According to the CEDEFOP (2010) report, of the 32 countries having signed up to the EQF, Lichtenstein is not developing NQF for LL. Lichtenstein is, however, developing a framework for HE in line with the Bologna process. A total of 34 NQFs are covered by the analysis. The UK has separate NQFs for England/Northern Ireland, Wales and Scotland, and Belgium is developing separate frameworks for Flanders and the French-speaking community.

adoption has been achieved. The UK, Ireland and France, which are the countries with established frameworks, have carried out, or are in the process of carrying out, reviews (CEDEFOP 2010).

The development of NQFs confirms that the EQF is regarded as an important reference system for individual countries. Most countries have (or will) use an eight-level structure and have used the EQF level descriptors as the starting point for their national work. While NQFs are important to achieve European objectives, they are also regarded as a means of achieving national objectives. NQFs are generally seen as a means of clarifying the relations between the different parts of a national system. The objective is to make national qualifications easier for national citizens and migrants to understand. Experience in Europe has shown that NQF development is a highly political process that can result in conflicting interests (CEDEFOP 2010).

To what extent European experience could be applicable to Asia-Pacific as the socioeconomic challenges are different in these regions? For Europe, a forecast on skills demand and supply up to 2020 identified three major requests:

- Developments in skills supply towards a more highly qualified workforce
- Continued sector trends towards jobs in services
- Dominance of knowledge and skills intensive jobs (CEDEFOP 2010)

For Asia and the Pacific, skills demand and supply vary greatly within subregions since they are facing different challenges (such as higher urbanisation rates in East and North East Asia; unemployment has been highest in North and Central Asia; poverty is most severe in South and South West Asia (UNESCAP 2011)).

Although the socioeconomic challenges in Europe and Asia are not the same and the demand for changing skills needs is somewhat different, overall directions towards regional cooperation could provide a long-term goal for TVET development in Asia. This involves such needs for TVET development as:

- Reinforcing links with the labour market
- Improving the effectiveness of governance and financing of TVET
- Raising the attractiveness of TVET
- Increasing access to TVET by addressing equity issues
- Lifelong learning through TVET
- Improving the quality of TVET
- Improving available statistics and performance indicators for evidence-based decision making

These matters are just as relevant to Asia as they are to Europe. Therefore, the European model provides a useful example of a regional framework for cooperation which can be a role model for Asia-Pacific, with necessary changes or adjustments being made to accommodate local contexts.

Main Issues, Concerns and Challenges Regarding TVET in Asia and the Pacific

An Overview

The critical importance of investing in TVET to promote social, economic and ecological development has been acknowledged in the region. Therefore, recent developments and concerns in TVET can be viewed through a prism of TVET's *economic, social and environmental relevance and its internal efficiency and quality*. Main achievements in TVET are observed in policy development and planning that address the issues of the relevance and efficiency of TVET. Governments in the region have recognised the need to create comprehensive skills development and training policies that include initial, and continuous, TVET to meet the needs of the labour market and to enhance economic growth. The governments of Pakistan, Timor-Leste and India have developed and adopted national skills policies along these lines. The governments of Bangladesh, Mongolia, Tajikistan and Pakistan are in the process of developing comprehensive skills strategies (ILO 2011).

Countries at different stages of economic development require different levels of skills development. UNESCO's statistics demonstrate the relative importance of *formal* TVET in the context of education system at the upper secondary and tertiary levels (Table 1.1).

The share of TVET students at the upper secondary and tertiary levels over the past 10 years has changed and is related to specific pathways of economic development in each country (such as the rapid expansion of knowledge-led sectors, e.g. the PRC; industrialisation, e.g. Viet Nam; the lack of employment opportunities after secondary TVET, e.g. Lao PDR). Due to the increasing emphasis many countries put on TVET, they also set very high targets for enrolment in secondary vocational programmes (UNESCO 2012). For Indonesia and the PRC, these targets were 70 and 60%, respectively (Copenhagen Development Consult A/S 2005, p. 7), India (12.6% in 1999) targeted 25% (World Bank 2006b), and Bangladesh (0.7% in 1999) set a target of 20% of all secondary students to be enrolled in the vocational/technical secondary

Table 1.1 Countries with highest and lowest TVET enrolments at secondary and tertiary levels

| Upper secondary | | | | Tertiary (5B) | | | |
|-------------------|------|------------------|-----|-------------------|------|------------------|------|
| Highest countries | | Lowest countries | | Highest countries | | Lowest countries | |
| Uzbekistan | 81.0 | Lao PDR | 1.1 | Lao PDR | 60.9 | Mongolia | 2.4 |
| PRC | 42.6 | Nepal | 1.7 | PRC | 44.6 | Pakistan | 5.1 |
| Thailand | 39.9 | India | 1.8 | Malaysia | 43.3 | Philippines | 9.6 |
| Indonesia | 37.2 | Afghanistan | 2.7 | Singapore | 42.3 | Kyrgyz Republic | 14.7 |
| Kazakhstan | 26.0 | Bangladesh | 8.1 | Viet Nam | 33.5 | Thailand | 15.5 |

Source: UNESCO-UIS Database (2010) and UNESCO (2012)

Note: Lao PDR = Lao People's Democratic Republic; PRC = People's Republic of China.

stream (World Bank 2007a). Pakistan has planned to add technical vocational streams in secondary education with a 50% target (World Bank 2006a). Implementation challenges associated with these reforms need to be carefully planned to be successful. In 2009, the PRC, with its highly planned economy, achieved 47.1% of TVET enrolment.

Although a formal, school-based training is getting more attention from governments, it enrolls fewer trainees than either nonformal training or enterprise-based training (ADB 2009a). Considering the importance of informal employment in Asia,³ it is possible to suggest that nonformal training is playing, and will continue to play, an important role in skills development in the region.

The recent UNESCO Bangkok report on the regional development of TVET in Asia and the Pacific (UNESCO 2012) identified a *progress towards strategic alignment of TVET with national socioeconomic goals* in terms of expansion of government TVET strategies and a movement from a supply-driven to a demand-driven TVET system, as the major directions of TVET development in the region.

The World Bank (Powell and Lindsay 2010) confirms these findings. The World Bank analysed the success stories of Singapore, Hong Kong, China, Republic of Korea and Viet Nam and noted that certain economic conditions such as:

- Macroeconomic stability
- Sustained growth in productivity
- Significant investment in technology
- Continued investments in human resources development

should be present for a country's economic development. However, while these qualities may be necessary for rapid growth, they in no way ensure rapid growth, or even ensure any growth at all, of a national economy. Many other nations also share these macroeconomic characteristics, but they have not yet experienced similar growth trajectories.

The importance of specific government guidance, planning, policies and interventions is essential. Markets alone 'cannot in a timely manner coordinate education and training for people so that skilled workers are available in the labour market when employers need them. Markets fare even worse when planning for long-term future needs is necessary, not just in terms of what skills are going to be in demand in the labour market, but what sectors will be the growth sectors in the medium and long term and what skills will be needed by them then' (Powell and Lindsay 2010, p. 16).

Hence, there is a need to support governments in skills development planning and policy formulation, aligned with socioeconomic development, which is essential for the ADB action agenda.

³ Among five countries that concentrate three-quarters of the total informal employment estimated for the group of 46 medium- and low-income countries globally (ILO 2011), three are from Asia – India, Viet Nam and Pakistan.

Box 1 Success Stories from East Asia

Success stories from the East Asia (Powell and Lindsay 2010) provide examples of achievements by the countries:

Singapore

Though Singapore is a unique country, other nations can use Singapore as an example to assist them in designing their skills development and catch up strategies, because that is exactly what Singapore did. Singapore looked very closely at where they wanted to go, which sectors they wanted to focus on and what assets they had as a nation. They then used off-the-shelf education, skills development and industrial promotion policies, which they adapted to their national context, to very rapidly develop and catch up with more developed countries

Hong Kong, China

The way in which courses are funded also has an impact on student supply. For instance, where there is high economic demand for a particular programme of study and one that requires high capital investment, tuition fees will be paid by the state. However, in subject areas where demand is high and there is no capital investment, such as accounting or business studies, the state will not pay tuition fees. This strategy ensures that state investment occurs in strategic skills areas that the private sector would not support.

Republic of Korea

The experiences gained provide notable policy implications for other countries which aim to transform their economies and industrial structure. These are the following: (1) There must be close congruence between skills development systems, government's role and the stages in economic development. (2) While it is difficult and inefficient for government to directly control the whole process of skills development, government does have a role to promote the behaviour of stakeholders to the advantage of social and national goals. (3) Participation of social partnership between stakeholders is becoming more important; skills development systems exclusively regulated by the state fail to meet actual needs of firms. (4) Higher education for the masses was achieved without significant secondary level VET. This illustrates that late specialisation is possible and that a combination of general education and in-plant training may be efficient models in a high growth economy. (5) Maintaining a balance between quantitative expansion of the skills base and issues of equity and growth is possible.

Key Issues in Asia and the Pacific Region

Given the very broad coverage of skills development for employability with regard to the issues, concerns and challenges confronting policy makers, practitioners and researchers,⁴ a survey was conducted by The Hong Kong Institute of Education (August 2011),⁵ of internationally renowned TVET experts, to ascertain their views on what they regarded as being the key issues concerning TVET in the Asia-Pacific region. These main issues were discussed at the ADB International Forum in Manila, 12 and 13 December 2011. These challenges are referred to in the section below and are examined in a comprehensive way in the various chapters that appear in this book.

Public–Private Partnerships (PPP) and the Financing of Skills Development for Employability Including Responses to Demand-Side Forces and Industry Partnerships

Although the role of governments is extremely important in setting up policies for skills development, it is essential to include public–private partnerships in TVET development and delivery. Analysis by ADB (2010) identified a wide range of public–private partnerships in use in education and training. The growth of PPPs in Asia and the Pacific can be observed in the region, as the private providers help governments to improve the quality of skills development, increase access for the disadvantaged and enhance relevance and the linkages of TVET to labour market needs. As analysed by ADB (2010), many governments are exploring options and developing mechanisms to involve the private sector in both the supply and demand sides of TVET provision. From the supply side, the public sector funds the operation of private TVET institutions (vouchers, subsidies, grants, stipends), while from the demand side, the mechanisms to promote parental choice, competition and accountability are in place. These measures ensure increasing enrolments, improving educational outcomes and enhancing equality in access. To boost the PPPs, the governments need to strengthen the capacities of their public agencies to regulate, monitor and contract private TVET providers; develop the capacities of private providers to deliver quality TVET by facilitating access to capital; improve

⁴The most comprehensive overview to date of the content of TVET is provided in Maclean and Wilson (2009) and Rauner and Maclean (2008).

⁵Those surveyed were: Kenneth King, University of Edinburgh; Steven Lamb, University of Melbourne; Shyamal Majundar, UNESCO-UNEVOC International Centre; Young, UNESCO Bangkok; Chris Chinien, Workforce Development Consulting, Canada; Director and staff, Colombo Plan Staff Training College; Margarita Pavlova, Griffith University; Karina Veal, International Consultant on TVET.

educational and management practices, and create structures/institutions that assist in establishing and the implementation of PPPs.

Based on its experience in the region, ADB (2010) identified the following lessons learned from empirical evidence in Asia and the Pacific:

- Improve the perception of the role that private sector plays for the public benefit.
- Allow not-for-profit and for-profit education and training providers to operate.
- Promote and facilitate foreign direct investment in education.
- Develop clear and objective establishment criteria and streamline processes for registering private education providers.
- Provide subsidies to the private education and training sector.

Strengthening of PPPs would be also helpful for developing skills for the innovation and technology sectors. Skills development for employability is an important area for PPPs as it is essential to adopt a multidimensional approach to TVET to increase quality, effectiveness and access.

National Vocational Qualifications Frameworks and Sector Skills Councils

Governments in over 100 countries are designing, implementing or considering national qualification frameworks (NQFs) or are involved with regional qualifications frameworks (Allais 2010). The development of NQFs is underpinned by the idea that all qualifications can (and should) be expressed in terms of outcomes, without a prescribed learning pathway. International interest in NQFs has arisen because of issues concerning the relevance, flexibility and portability of skills and training and the effects on employment opportunities. Countries have adopted different approaches to NQFs, but the underlying motives driving the process are usually similar. These include the need to strengthen links between education, training and the labour market; the need to ease the process of labour mobility across employment sectors, regions and countries, including lifelong education and training; recognising prior learning experience and credits; setting standards based on learning outcomes; facilitating quality assurance; and improving the perceived status of TVET (Allais 2010).

In the mid 1990s, Australia, UK, New Zealand and South Africa initiated work on NQFs. In the late 1990s and early 2000s, some Caribbean and Latin American countries developed NQFs, usually using the UK model. In the late 1990s, considerable work in the EU was achieved, led by the Bologna Process of harmonising higher education systems (Austrian Federal Ministry of Science and Research 2009). This process removes specialist educational institutions from the centre of the system and places the learner, and the opportunity to gain qualifications, at the centre. One key difference between NQFs and traditional systems in terms of implementation is that they are designed independently of delivery and are based

on a set of levels, standards and outcomes. An outcome-based framework is really an assessment system and does not relate to provision. Most people within the system need guidance and the provision of education, and hence, this requires institutional arrangements with associated curriculum, teaching and learning.

NQFs do not arise from specific needs, but as a result of a decision to develop a framework that encompasses as large a proportion of the population as possible and covers many sectors. *These are top-down frameworks that must be driven by governments and government agencies.* Hence, there is need to support governments in this reform.

Many ASEAN countries are experiencing the challenges of rapid development, structural reform and high levels of labour mobility. These can only be met through flexible education and training systems with efficient skills recognition processes. Most ASEAN countries lack comprehensive NQFs, although Singapore, Indonesia, Thailand and Malaysia have developed full or partial frameworks which are broadly similar to each other and Australia's NQF. The absence of comparable NQFs prevents efficient qualification recognition across borders, which in turn limits trade and investment in services, including education services and the movement of migrant workers. This negative impact is greatest in the least developed economies which particularly need to build human capital through the provision of quality education and subsequent skills and widely accepted qualifications. Beyond the ASEAN countries in Asia and the Pacific, Hong Kong, China, Australia and New Zealand have implemented NQFs. The Republic of Korea is in the process of implementing NQFs, and five other nations have NQFs under development or consideration (APEC Human Resources Development Working Group 2009).

Regional Model Competency Standards have been developed and implemented in Bangladesh, Indonesia, Lao PDR and Thailand to foster mutual recognition of skills and qualifications. A number of countries have used Regional Model Competency Standards in key sectors (manufacturing, tourism, construction, agriculture) (ILO 2006).

The *Mapping of Qualifications Frameworks across APEC Economies* report concluded that the NQFs in APEC economies were diverse in their structure, coverage, operational purposes and governance. They all aimed to provide greater transparency for qualifications, support for skills standards systems, and a means of managing quality assurance and to facilitate the international recognition of qualifications. Some economies used the NQFs as a basis for credit systems for transfer across education and training levels and institutions. Five APEC countries have NQFs covering senior secondary, vocational education and higher education qualifications, but there were differences in the framework across the sectors. In Singapore, the framework applied only to vocational education and in Thailand to higher education. In 2007, India made the decision to limit the framework to the TVET sector, rather than develop a more inclusive NQF (World Bank and ILO 2011).

The education and labour departments of governments usually take responsibility for qualifications. In several countries, NQFs have emerged from the TVET sector associated with the developments of industry skills standards and

competency standards-based qualifications. The introduction of competency-based training has been associated with a relative shift in control of the content of training from providers to industry (World Bank and ILO 2011).

Sector Skills Councils (SSCs) are another important means to develop dynamic and demand-based TVET planning. These help establish a common understanding of skills required for specific occupations, in particular the need to match the requirements of the labour market through the links between TVET providers and industry. These are usually state controlled but involve employer-led organisations that monitor training and qualifications in specific economic sectors. The overarching objectives of SSCs are⁶

- To reduce skills gaps and shortages and to provide advice on skills needed to the TVET system
- To be involved in the development of standards
- To improve productivity
- To boost the skills of their sector workforces
- To improve learning supply

In the UK, there are 22 SSCs⁷, covering approximately 85% of the British workforce. Internationally, there is the International Network of Skill Sector Organisations which comprises the members Australia, Canada, India, Netherlands, New Zealand, Pakistan, South Africa and the UK⁸. These countries take a leadership role in promoting the SSC concept and the development of occupational standards.

Many countries in the Asia-Pacific region, and worldwide, have expressed an interest in developing NQFs and establishing Sector Skills Councils (SSCs) and believe that there will be many benefits. Issues of interest include the relevance of European models to Asia, the role and limitations of NQFs and country and regional experiences. An issue of considerable interest is how countries have overcome the traditional resistance to NQFs, such as resistance from trades unions, a lack of teachers/trainers with national qualifications and employers' acceptance of such standards. Another matter of importance concerns the role of SSCs and whether this is a proven model for the implementation of NQFs. The experiences of moving from national to regional NQFs are also important (Young 2009).

Green Growth and Skills Development for Employability

At the international level, a clear link between TVET, environmental conservation and sustainable development has been expressed in 2004 in the Bonn Declaration (UNESCO-UNEVOC 2004) that was reached after deliberations by 122 experts

⁶ Department of Business Innovation and skills, UK [no longer in existence](#):

⁷ Alliance Sector Skills Councils, UK. http://www.sscalliance.org/HomePublic/AbouttheAlliance/About_the_Alliance.aspx

⁸ International Network of Sector Skills Organization. <http://inssso.org>

from UN member states who met in Bonn, Germany. Pressure to train for green economic restructuring directly relates to issues of climate change and move to a low-carbon emission.

Pathways to a low-carbon economy are often seen as technical issues, requiring engineering knowledge and skills (McKinsey and Company 2009). Clean technology has become the fastest growing sector in venture capital and private equity investment. In Hong Kong, China, the top 10 banks have committed 10–15% of project finance to renewable and clean technology (The Climate Group 2008).

However, the development of appropriate skills in the general workforce is also necessary for meeting this challenge. As industries re-engineer their resource and energy inputs, supply chain management, logistics, design and construction of the built environment, production processes, services and water and waste management, current practices have to evolve in order to significantly reduce carbon emissions.

The Asia Business Council report (Asia Business Council 2009) predicts that the number of green jobs created by 2030 could reach 100 million worldwide, which is estimated at 2% of the future workforce. Some of these green jobs will be new jobs, while others will be substitutes for existing jobs. Potentially, Asia could have 50 million green jobs, and many jobs in existing industries would require green skills as manufacturing industries may change their production processes or develop green products. Potentially expanded production capacity along with supply chains, and new servicing needs, would indicate that green skills will become an essential part of the future.

TVET has a great responsibility to train workers in these new skills. This involves the training systems in different countries understanding, and anticipating, the needs of future employers, having the flexibility to adjust and so provide appropriate TVET in a timely manner and to adjust to changes in jobs that currently may not appear to require green skills but will in the future. It is clear that countries in the Asia-Pacific region will need to develop policies, training programmes and green skills qualifications frameworks and maintain close links with TVET providers. A UNESCO report (UNESCO 2012) highlights that multiple initiatives across the region (in Bangladesh, the PRC, India, Indonesia and the Philippines) are in place to train for green jobs.

Although green growth is a relative newcomer as a driving force for employment and training, it has become clear over the last few years that many jobs are changing as green skills are introduced. Production and service industries are reacting to the need to reduce energy consumption and waste, as the costs of fuel and raw materials increase. It is important to consider best practices for investing in skills training to meet the demands of a greening economy and how TVET institutes can understand and react to industries' requirements: for example, how to teach sustainable work practices, environmental management systems and sustainable resource reduction strategies and solutions to the difficulties faced by TVET providers in changing curricula due to the capital investment necessary in equipment and teachers. It is also relevant to consider the emergence of entirely new 'green jobs' such as those related to the development, manufacture and operation of renewable energy generating equipment, green accounting, carbon trading and carbon auditing.

Vocationalisation of Education and the Reorientation of Skills Development for Employability Through Lifelong Learning

Lifelong learning has emerged as one of the keys to improving the quality of life in the twenty-first century.⁹ An initial education is no longer sufficient to enable people to benefit from new opportunities that advances in science and technology bring and other changes in the world of work. There is no doubt that continuing to learn is the key to securing employment and income stability. Higher levels of formal education and training lead to higher incomes and greater employability. Rates of return (RoR) studies have included both educational attainment and skills measures while taking account of other variables such as gender, occupation, work experience and geographic location (OECD 2005, 2007). These studies show that the main reason that well-educated and trained individuals earn higher incomes is that they have higher knowledge and skills levels, or put simply, higher qualifications are a proxy for more skills.

Lifelong learning goes beyond formal education and training to include ‘skills development’. This is an umbrella term to describe the ways in which individuals continue to learn and acquire skills and competencies which influence employment and earnings potential (Adams 2011). Schools, higher education and TVET institutions engage in skills development for work, but just as, or even more, important, are apprenticeships, enterprise-based training, professional development, informal learning in the workplace, and government and nongovernment training programmes. Vocationalisation of secondary education provides a foundation for lifelong learning in skills development for employability. As argued by many, it is desirable and appropriate that secondary schools are more accountable for developing the economic and labour force needs of society through placing a greater emphasis on skills development for employability (Maclean and Wilson 2009; Rauner and Maclean 2008; Fien et al. 2008). The social function of vocationalisation resulted in the opportunity for young people to stay in school longer than might have been possible if only an academic curriculum were offered.

Previously, the notion of ‘vocationalisation’ was only related to inclusion of vocational content into general education programmes or to prevocational or pre-technical education programmes. Current trends are to ‘new vocationalisation’ that also includes vocational or technical education programmes that prepare participants for direct entry into specific occupations (Maclean and Pavlova 2011). The demand to enhance productivity and employability brings this vocational element at the secondary school level under the umbrella of ‘vocationalisation’, together with general and ‘prevocational’ options. The main reason for this is that in some contexts, TVET development at the level of secondary education can bring a maximum effect in increasing the employability of graduates. At the same time, more general education is included in the TVET stream, and the distinction between academic and vocational

⁹ This section on lifelong learning draws on the Background Concept Paper by Power and Maclean (2011).

is blurred across all three categories. Functional aspects of this training, relevant to labour market needs (e.g. technological knowledge, flexibility, better productivity), become increasingly more important than educational achievements. Therefore, a call by ADB in 2008 (Asian Development Bank 2008) for a shift from traditional TVET approaches to context-related world-of-work competences could be interpreted as a broadening of the notion of vocationalisation by including secondary TVET. The change is away from an education-driven to a functional model of skills development, at the secondary level.

At the tertiary level, there has been a transformation of higher education in the past two decades as a result of the massification of higher education. The numbers of students in tertiary education worldwide doubled between 1991 and 2004 and continues to grow, particularly in high-population countries such as India and the PRC. The number of tertiary students has further increased between 2005 and 2009 by 21% in the PRC and 25% in India (UNESCO Institute of Statistics 2010). For other countries in East Asia and the Pacific, the increase has been 9%, while for North America and Western Europe, there has been little overall change over this period. As student numbers have risen dramatically, an increasing emphasis is being placed on skills development for employability which has resulted in the vocationalisation of higher education (Maclean and Wilson 2009).

The boundaries between academic knowledge/work and vocational knowledge/work have become blurred. As more people are engaging in higher education, there is a need to accommodate a more diverse range of interests and abilities. Many students want courses that are of a vocational nature to prepare them directly for the world of work. The massification and vocationalisation¹⁰ of higher education have profound implications for what knowledge is regarded as being of most worth in tertiary institutions. At the political level, the detachment of university degrees and their academic curricula from the labour markets could be regarded as a negative aspect of university development (Pavlova 2005). Academically, education detached from reality was regarded as providing insufficient skills for appropriate employability of university graduates. The challenge is to link higher education with the constantly changing needs of society, and this is seen as an increasingly important issue by universities and politicians (European Commission 1995). Creating a fruitful and dynamic partnership between higher education and society has become one of the basic objectives of universities.

In terms of development skills for employability through the lifelong learning framework, continuous TVET includes employer-led training, adult training programmes and informal training. Formal learning is getting more and more inclusive of informal and nonformal learning to vocationalise education by devising most effective ways in which education institutions can best prepare learners for the

¹⁰ By vocationalisation, we mean a way of empowering individuals through development of their capabilities and providing them with an opportunity to orient and adapt for the work environment. The main goal of vocationalisation is to improve the vocational relevance of education. Usually, vocationalisation means the introduction of practical and/or vocational subjects, industry visits, vocational guidance and more applied way of teaching general education subjects.

world of work and for a smooth transition from education institutions into the world of work. As a result, programmes aimed at skills development for employability increasingly stress learning which is lifelong and life-wide. The move to vocationalise secondary and postsecondary education can be achieved through adopting a lifelong learning model which represents a major paradigm shift in how best to achieve skills development for employability and sustainable livelihoods. Multiple pathways between vocational and academic education, as observed in the region, provide additional opportunities for learners in skills development.

Skills Development for Employability and Inclusion: Expanding Opportunities for Youth and Other Marginalised Groups and for Poverty Alleviation and Equity

One function of TVET is social. For individuals with low skills levels, having the opportunity to acquire skills for employability at strategic points throughout their lives is a crucial factor in improving their prospects for gaining employment and a secure income and thus in combating poverty and improving the quality of life for themselves and their families. Many education and development policies are based on the assumption that literacy and primary education play a key role in poverty reduction, while higher education is crucial for economic development in the global knowledge society. While both of these are true, evidence is also mounting that all levels of education and types of training (formal and nonformal) can contribute to both these things: that is, learning throughout life is the key to sustainable development and poverty alleviation. For example, work in India indicates that higher education not only contributes to economic development (in India), but it also makes a significant contribution to a reduction in absolute, as well as, relative poverty and particularly to increasing life expectancy and reducing infant mortality (Tilak 2007). When higher education institutions use their expertise to work with schools serving poor communities and act as their advocates, progress can be made in combating poverty, raising the basic skills levels of both children and adults, improving crop yields and improving health and nutrition (Arini et al. 2007).

The effectiveness of training programmes for the unemployed is different across countries. For instance, in developed countries, generated employment for trainees is only 38% of cases and raised the incomes of the unemployed in only 23% of the programmes. Within these totals, however, better results were reported for women in general and for training programmes that started before mass layoffs (ADB 2009a). For transition economies, results for programmes were better in securing employment for graduates. This may reflect the economic situation affected by structural change when jobs are available at the end of the training.

Enhancing the level of skills among vulnerable groups such as the unemployed (and in particular, youth), rural and informal economy workers who are difficult to

reach (a large proportion of whom are women and people with disabilities and low-income families) is regarded by many governments as the means to break the cycle of low skills, low productivity and poverty. Considerable effort is being deployed by the countries to increase the participation of disadvantaged target groups in the region.

Soft Skills, Including Values and Ethics, as Part of Skills Development for Employability

Although there is an increasing emphasis on skills for employability (implicitly understood as workplace skills) because of what is often the highly specialised nature of TVET, there is a danger that ‘life skills’ will not be developed. The workplace is not just about production or service: ethics and values also have an important role to play so that workers are aware of, and can distinguish between, ethical and unethical behaviour in the workplace. It is important for young people to develop a personal code of work ethics and to be able to solve ethical dilemmas in the workplace. An understanding of labour rights and an understanding of the ethics of corruption and bribery are important workplace ‘soft’ skills. There is also a need to consider TVET’s role in developing noncognitive skills that are also important for employment and self-improvement, such as the noncognitive skills of self-worth, confidence and motivation.

Soft skills are defined differently across countries. In Australia, for example, the Australian Chamber of Commerce and Industry and Business Council of Australia define these skills as *employability skills*, ‘skills required not only to gain employment, but also to progress within an enterprise so as to achieve one’s potential and contribute successfully to enterprise strategic directions’ (2002, p. 3). This framework identifies eight main employability skills.¹¹ These ‘employability’ skills have a broader application as they are relevant to a variety of tasks in personal, social and work contexts. These skills can also help individuals to cope with change (Callan 2003). Employers are looking for employees who are adaptable and who have skills beyond technical (Maxwell 2010); 33.1% of employers consider employability skills to be the most important factor when employing graduates (Australian Industry Group and Deloitte 2009). Their multidimensional nature comprising of ‘know-how, analytical, cultural and communication skills, and common sense’ can help to provide an active and reflective approach to life for the employees (Allen Consulting Group 2004).

¹¹ Communication, teamwork, problem-solving, initiative and enterprise, planning and organising, self-management, learning and technology.

Employers want employees who are creative problem-solvers and innovators who are constantly updating their knowledge and expertise. The development of appropriate values and ethics through TVET has not been well documented in the region, and so specific projects and research are required to fill this information gap.

Quest for Improved Frameworks for Skills Development

Different agencies and organisations have variously developed their approaches and conceptual frameworks for skills development. For example, a conceptual framework for *Skills Toward Employment and Productivity* (STEP) has been established by the World Bank (2011). It includes a series of steps to get children off to a good start, ‘ensuring that all students learn, building job-relevant skills that employers demand, encouraging entrepreneurship and innovation and matching the supply of skills with demand’. It is based on the concept of lifelong learning.

The Asian Development Bank (2008, p. 26) in its report *Education and Skills: Strategies for Accelerated Development in Asia and the Pacific* depicted the economic and social rationale for TVET. The report highlights the importance of skills development to increase productivity, alleviate poverty, increase human capital in ways which complement ‘physical investment’, initiate technological and structural change and attract foreign direct investment. ADB has recognised the importance of the Human Resource Development (HRD) strategic framework and action plan for the region (Asian Development Bank 2009b). Following the work of the Working Group on Human Resource Development (WGHRD) established in 1995 at the Fifth Ministerial Conference of the ADB member states, the 2007 midterm review of the government member states (GMS) strategic framework noted that, ‘although the WGHRD has addressed key HRD concerns in GMS, programme development and implementation has been essentially project-based and lacks a clearly defined strategic framework’ (ADB 2009b, p. 1) to address key HRD concerns and issues in education and skills development, labour and migration, health and social development. Among the main objectives of the Working Group on HRD are to:

- Promote investment in people
- Identify and prioritise key human resource issues and problems
- Exchange information on human resources development matters
- Address subregional human resource development requirements (Greater Mekong Subregion Inception Meeting of the Working Group on Human Resources Development 1996).

The WGHRD for the Greater Mekong Region, which includes Cambodia, the People’s Republic of China (PRC), the Lao PDR, Myanmar, Thailand and Viet Nam, was established in 1995 ‘to address issues in education and skills development, labour and migration, health, and social development’ (Asian Development Bank 2009b). The WGHRD has agreed to develop a strategic framework and action

plan to increase the effectiveness of subregional cooperation in HRD and to strengthen synergies with other subregional initiatives.

At the Joint Summit Declaration of the Third GMS Summit (2008), the heads of governments ‘endorsed and underscored the importance of making early and substantial progress on the implementation of the HRD Strategic Framework and Action Plan’ (Asian Development Bank 2009b, p. 1). Since its inception meeting in December 1996, the Working Group on HRD has met regularly and has identified numerous HRD issues of common and regional interest and has ‘led in many cases to subregional HRD initiatives involving some or all of GMS countries’ (Asian Development Bank 2009b, p. 2). The key common human resources development challenges identified by the group include ‘to reform, strengthen, and harmonize GMS vocational and technical training standards, and to harmonize labour migration policies to meet labour demand across the region and provide skilled and unskilled workers with cross-border employment opportunities’. The Human Resources Development action plans and strategies include ‘to promote regional cooperation in education and skills development’, including ‘harmonization of competency standards, skills standards testing, accreditation systems including in the higher education sector, and training standards for technical and vocational teachers in occupations required by migrating workers’; ‘to finance GMS HRD priority’; and ‘to monitor the process of implementing the action plan’ (Asian Development Bank 2009b).

Key issues, challenges and prospects concerning skills development for employability and sustainable livelihoods in Asia and the Pacific region include regional and global networking in order to:

- Share innovative and best practices in skills development for employability
- Improving productivity and teaching and learning for skills development for employability
- Training and educating the trainers and teachers working in the area of skills development for employability, including career long professional development

Other issues include:

- The importance of skills in improving education systems throughout the world
- Aligning economic and industrial policies with education and skills for employment and competitiveness, with the lessons learned from successful countries in Asia
- Applicability of the apprentice model and its application in Asia and in societies where high-tech and value-added industries are developing
- How to improve the status of TVET

Strategic networking for action could include the national, subregional and regional levels and could focus on the economic, social and environmental functions of TVET. It also needs to accommodate effective public–private partnerships and strategic skills development reforms. Martinez-Fernandez and Powell (2009) identified three approaches applied by international cooperation

agencies in skills development in South Asia: poverty reduction, economic and social development and governance.

Future actions on the regional and subregional levels should take into account existing cooperation in Asia and the Pacific. The results of this cooperation should be analysed, and the lessons learnt should inform the development of the framework.

ASEAN, CAREC (Central Asia Regional Economic Cooperation) and the Greater Mekong Subregion Program have been identified as the most successful of the non-EU regional institutions worldwide (ADB 2011b). These structures could be used to set up and strengthen the skills development for employability component of cooperation.

Moving Ahead and Work in Progress

This chapter has discussed current issues, challenges and prospects regarding policy making, practice and development concerning skills development for employability internationally but with particular reference to Asia and the Pacific. The analysis presented in this chapter demonstrates the importance of regional economic cooperation for future development. Examples of successful countries' developments in the region highlight the importance of government leadership in aligning skills development strategies with a country's socioeconomic goals. It is suggested that these two trends could provide the main directions for TVET strategy in the region, with regard to (i) support of governments in developing coherent TVET strategies aligned with socioeconomic goals and (ii) development of a regional strategy and tools to support regional and subregional TVET cooperation in Asia and the Pacific. Three broad goals are suggested for national TVET development. The first two are directly related to the economic, social and environmental roles of TVET, while the third is aimed at the improvement of governance for the effective formulation and realisation of required measures.

Key issues and challenges identified in the region and discussed in this chapter could guide the formulation of specific projects to support TVET development in Asia and the Pacific. External and internal efficiencies of TVET are the major criteria for effectiveness and the evaluation of TVET interventions. Although TVET cannot solve all labour market/economic problems faced in the region, well-structured and well-targeted skills development is worthwhile as it benefits individuals, employers, industry and the economy. Research suggests that human capital is the key driver of economic development. Countries investing most in developing their human capital are the ones enjoying the most rapid and sustained economic growth and the highest quality of life (Deutsche Bank 2008; Banks 2008).

The next steps in TVET development should be framed by the recognition of the specific needs of different groups (e.g. school leavers who have not completed secondary school; students from different backgrounds and with different experiences; workers with different skills levels; working people and casual

employers; disadvantaged people who are not engaged in the labour market, including gender based causes; people with disabilities; youth; people in rural areas; migrants from rural areas to cities and between countries). The needs of different economies and the specific training needs of different groups of employers (of various sizes and industries) should also be recognised.

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References

- Adams, A. (2011). *The Role of Skills Development in Overcoming Social Disadvantage* (Background paper prepared for the Education for All Global Monitoring Report 2012). UNESCO.
- Asian Development Bank. (2005). *Technical assistance implementation of Pacific education strategy: Skills development* (Technical Assistance Report Project Number: 38634) (Financed by the Japan Special Fund).
- Asian Development Bank. (2007). *Report and recommendation of the President to the Board of Directors on a proposed loan to Indonesia for the senior secondary education project*. Manila. (Draft)
- Asian Development Bank. (2008). *Education and skills: Strategies for accelerated development in Asia and the Pacific*. Manila: ADB.
- Asian Development Bank. (2009a). *Good practices in technical and vocational education and training*. Manila: ADB.
- Asian Development Bank. (2009b). *Greater Mekong Subregion economic cooperation programme, strategic framework and action plan for human resource development in the Greater Mekong Subregion* (2009–2012).
- Asian Development Bank. (2010). *Public–private partnerships in ADB education lending, 2000–2009*. Manila: ADB.
- Asian Development Bank. (2011a). *A handbook on using the mixed survey for measuring informal employment and the informal sector*. Manila: ADB.
- Asian Development Bank. (2011b). *Asia 2050: Realizing the Asian century*. Manila: Asian Development Bank.
- Asian Development Bank and United Nations (2012). *Green Growth, Resources and Resilience: Environmental Sustainability in Asia and the Pacific*.
- Allais, S. (2010). *The implementation and impact of national qualifications frameworks: Report of a study in 16 countries*. Geneva: Skills and Employability Department, ILO.
- Allen Consulting Group. (2004). *Development of a strategy to support the universal recognition and recording of employability skills: A skills portfolio approach*. Canberra: Department of Education, Science and Training.
- Alliance Sector Skills Councils, UK. (2012). http://www.sscalliance.org/Home-Public/AbouttheAlliance/About_the_Alliance.aspx

- APEC Human Resources Development Working Group. (2009). *Mapping qualifications frameworks across APEC economies*. http://hrd.apecwiki.org/index.php/International_Education:_Research_Findings#Map
- Arini, McNaughton, S., Langley, J., & Sauni, P. (2007). What education reform means: Lessons from teachers, research and policy working together for students success. *Educational Research for Policy and Practice*, 6(1), 31–54.
- Asia Business Council. (2009). *Addressing Asia's new green jobs challenge*. <http://www.asiabusinesscouncil.org/docs/GreenJobs.pdf>
- Austrian Federal Ministry of Science and Research. (2009). *The European Higher Education Area, towards the European Higher Education Area: Bologna process*. http://www.ond.vlaanderen.be/hogeronderwijs/bologna/documents/Bologna_leaflet_web.pdf
- Australian Industry Group and Deloitte. (2009). *National CEO survey — Skilling business in tough times*. Sydney: Australian Industry Group.
- Australian Chamber of Commerce and Industry & the Business Council of Australia (2002). *Employability Skills for the Future*, DEST, p3.
- Banks, G. (2008, August). *Australia's productivity challenge and human capital*. Presentation by the Chair of the Productivity Commission. Brisbane: Eidos Institute.
- Callan, V. J. (2003). *Generic skills: Understanding vocational education and training teacher and student attitudes*. Adelaide: NCVER.
- CEDEFOP. (2009). *Continuity, consolidation and change: Towards a European era of vocational education and training*. CEDEFOP Reference series, 73. Luxembourg: Office for Official Publications of the European Communities (Adapted from Dunkel and Le Mouillour, 2008).
- CEDEFOP. (2010). *Skills supply and demand in Europe: Medium-term forecast up to 2020*. Luxembourg: Publications Office of the European Union.
- Chinien, C., McOmish, E., Perera, M., & Chinien, A. (2009). A Profile of TVET in the Asia and Pacific Region: A survey of progress, innovations and promising practices. In R. Maclean & D. Wilson (Ed.), *International handbook of education for the changing world of work* (Part III, Section 4, pp. 749–764). Dordrecht: Springer.
- Confederation of Indian Industry, Technopak. (2009). *Case for setting up sector skill Councils in India, CII national conference on education – 2009*, Linking education to employability, New Delhi, India.
- Copenhagen Development Consult A/S. (2005). *Technical and vocational education and training (TVET) in [the People's Republic of] China: An overview*. Washington, DC: World Bank.
- CPSC. (2011). *TVET perspectives in Asia-Pacific Region: Changing landscape for sustainable future*. Manila: CPSC.
- Department of Business Innovation and skills, UK. (no longer in existence). http://webarchive.nationalarchives.gov.uk/+http://www.dius.gov.uk/skills/sector_skills_councils
- Deutsche Bank. (2008). *The broad basis of societal progress*. Frankfurt: Deutch Bank Research.
- European Commission. (1995). *White Paper: Teaching and learning*. Towards a learning society (pp. 21). Brussels: ed. E.C., Directorate General Education, Training and Young.
- European Commission. (2000). *A memorandum on lifelong learning*. Luxembourg: European Commission.
- European Commission. (2008). *The European qualifications framework for lifelong learning*. Luxembourg: European Commission.
- Fien, J., Maclean, R., & Park, M.-G. (2008). *Work, learning and sustainable development: Opportunities and challenges*. Dordrecht: Springer.
- Finch, C. R., & Crunkilton, J. R. (1999). *Curriculum development in vocational and technical education*. Needham Heights: Allyn and Bacon.
- Greater Mekong Subregion Inception Meeting of the Working Group on Human Resources Development. (1996). *Summary of proceedings*. Manila, Philippines.
- Hoelscher. (2005, September 8–10). *Vocational programmes in German Higher Education and their role for the Economy. Some thoughts in European Comparative Perspective*. Paper presented at the international seminar vocational content in mass higher education? Responses to the challenges of the labour market and the work-place, Bonn.

- ILO. (2006). *Guidelines for development of regional model competency standards (RMCS)*. Bangkok: ILO.
- ILO. (2011, April). *Building a sustainable future with decent work in Asia and the Pacific*. Report of the Director General. 15th Asia and the Pacific regional meeting, Kyoto, Japan.
- ILO & OECD. (2011, September 26–27). *Short-term employment and labour market outlook and key challenges in G20 countries: A statistical update for the G20 Meeting of Labour and Employment Ministers*, Paris.
- Intergovernmental Panel on Climate Change. (2007). *Climate Change 2007*, the IPCC fourth assessment report. http://www.ipcc.ch/publications_and_data/publications_and_data.shtml
- International Monetary Fund. (2011a). *India and the IMF*. www.imf.org/external/country/IND/index.htm
- International Monetary Fund. (2011b). *People's Republic of China and the IMF*. www.imf.org/external/country/CHN/index.htm
- International Network of Sector Skills Organization. <http://insso.org>
- InWent (Magdeburg, Mannheim) in partnership with UNESCO-UNEVOC International Centre (Bonn)., & The Southeast Asian Ministers of Education Organization Regional Centre for Vocational and Technical Education and Training (SEAMEO VOTEC). (2004). *International conference corporate HRD and skills development for employment: Scope and strategies final report*.
- Jagannathan, S. (2011, September 13–15). *Education and Skills in Asia – Responding to greening economies*. Paper presented at Oxford Education and Development Conference.
- Johanson, R. K. (1996). *Diversifying sources of financing vocational training: A Set of training modules*. Geneva: Training Policy and Programme Development Branch, ILO.
- King, K. (2011, September). Towards a new global world of skills development? TVET's turn to make its mark. *NORRAG News*, 46.
- Lauglo, J. (2005). Vocationalisation of secondary education revisited. In J. Lauglo & R. Maclean (Eds.), *Vocationalisation of secondary education revisited*. Dordrecht: Kluwer.
- Lauglo, J., & Maclean, R. (Eds.). (2005). *Vocationalisation of secondary education revisited*. Dordrecht: Kluwer.
- Maclean, R., & Pavlova, M. (2011). *Vocationalisation of secondary and higher education: Pathways to the world of work*. Discussion paper for UNESCO Paris.
- Maclean, R., & Wilson, D. (Eds.). (2009). *International handbook of education for the changing world of work: Bridging academic and vocational learning*. Dordrecht: Springer.
- Martinez-Fernandez, C., & Powell, M. (2009). *Employment and skills strategies in Southeast Asia setting the scene*. Paris: OECD.
- Maxwell, S. (2010). *Using rubrics to support graded assessment in a competency-based environment*. Adelaide: NCVER.
- McKinsey and Company. (2009). Retrieved November 21, 2011, from http://www.mckinsey.com/client-service/ccsi/pathways_low_carbon_economy.asp
- NORRAG. (2003). *Debates in skills development: Skills for life and work*. Geneva: Working Group for International Cooperation in Skills Development.
- OECD. (2005). *Measuring the social outcomes of learning*. Paris: OECD.
- OECD. (2007). *Education at a glance*. Paris: OECD.
- OECD. (2010). *Education at a glance: OECD indicators*. Paris: OECD. Retrieved November 21, 2011, from <http://www.uis.unesco.org/Education/Documents/45926093.pdf>
- Ouane, A. (2009). UNESCO's drive for lifelong learning. In P. Jarvis (Ed.), *The Routledge international handbook of lifelong learning* (pp. 302–311). London/New York: Routledge.
- Pavlova, M. (2005, September 8–10). *Threats or opportunities for university-TAFE collaboration in Australia: a case study of technology education*. Keynote address presented at the international seminar vocational content in mass higher education? Responses to the challenges of the Labor Market and the Workplace, Bonn.
- Powell and Lindsay. (2010). *Skills development strategies for rapid growth and development: The East Asian economic miracle*. The Center for Employment Initiative. www.cei-international.org

- Power, C., & Maclean, R. (2011, January 12–13). *Background concept paper for the international symposium on lifelong learning for poverty alleviation and sustainable development: Developing a research agenda for the Asia-Pacific*, The Hong Kong Institute of Education.
- Rauner, F., & Maclean, R. (2008). *Handbook of technical and vocational education and training research*. Dordrecht: Springer.
- Stern, N. (2009). *A blueprint for a safer planet: How to manage climate change and create a new era of progress and prosperity*. London: The Bodley Head, Random House.
- The Climate Group. (2008). What is the leadership role for Hong Kong, China in carbon trading? *Hong Kong Climate Change E-Bulletin*, (3), 1–2.
- Tilak, J. B. G. (2007). *Post-elementary education, poverty and development in India*. Edinburgh: Centre of African Studies, University of Edinburgh.
- UNESCAP. (2011). *Asia-Pacific trade and investment report 2011: Post-crisis trade and investment opportunities*. Thailand: United Nations.
- UNESCO. (1999). *Lifelong learning and training: A bridge to the future – Final report*. Paris: UNESCO. (Final Report of the second International Congress on TVET, Seoul, 1999).
- UNESCO. (2011). *Strategy*. <http://www.unesco.org/new/en/education/themes/education-building-blocks/tvet/strategy/>
- UNESCO. (2012). *Regional background paper on TVET: Asia and the Pacific Region*.
- UNESCO, Federal Ministry of Education and Research. (2009). *UNESCO world conference on education for sustainable development: Bonn Declaration*. http://www.esd-world-conference-2009.org/fileadmin/download/ESD2009_BonnDeclaration080409.pdf
- UNESCO-UNEVOC. (2004). *Learning for work, citizenship and sustainability: The Bonn Declaration*. <http://unesdoc.unesco.org/images/0014/001405/140586m.pdf>
- UNESCO-UIS. (2006). *Participation in formal technical and vocational education and training programmes worldwide: An initial statistical study*. Bonn: UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training.
- UNESCO-UIS. (2010). *Global education digest 2010: Comparing education statistics across the world*. Montreal: UNESCO Institute for Statistics.
- United Nations Department of Economic and Social Affairs (UNDESA), Population Division. (2011). *World fertility report 2009*. New York: United Nations.
- UN Population Fund. (1999). *Population issues: Migration and urbanization*. <http://www.unfpa.org/6billion/populationissues/migration.htm>
- World Bank. (2006a). *Pakistan: An assessment of the medium-term development framework*. Higher Education Policy Note. Washington, DC: World Bank.
- World Bank. (2006b). *Skills development in India: The vocational education and training system*. Human Development Unit, South Asia Region. Washington, DC: World Bank (Draft).
- World Bank. (2007a). *Learning for working opportunities: An assessment of vocational education and training in Bangladesh*. Human Development Unit, South Asia Region. Washington, DC: World Bank.
- World Bank. (2007b). *Skills development in India: The vocational education and training system*. Washington, DC: World Bank.
- World Bank. (2010). *Stepping up skills for more jobs and higher productivity*. Washington, DC: World Bank.
- World Bank. (2011, June 1–3). *State and trends of the carbon market*. Carbon Expo 2011, Barcelona, Spain.
- World Bank & ILO. (2011). *Draft report on options for designing and implementing an NVQF for India*. New Delhi, India: ILO.
- Young, M. F. D. (2009). National qualifications frameworks: An analytical overview. In R. Maclean & D. Wilson (Eds.), *International handbook of education for the changing world of work* (Vol. 6, pp. 2867–2880). Dordrecht: Springer.