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Enhancing Relevance in TVET

Review of Progress in the Asia-Pacific since 2012

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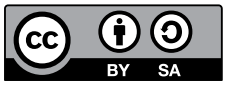

Project coordinator: Cheol Hee Kim

Cover Photo: © R.Javillonar
Three female trainees are taking part in Meralco's comprehensive instruction programme for linewomen – the first in Southeast Asia. Since June 2013, the power utility poles are no longer an exclusive space for men – there are now women in power (lines). The Philippines.

Graphic designer: Warren Field

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Preface

In late September 2015, the global community came together to agree on the 2030 Agenda for Sustainable Development which reflects a common desire to ensure a peaceful, prosperous and equitable future. The Agenda defines a set of 17 universal goals – the Sustainable Development Goals (SDG) – which are to guide governments in their actions in the next 15 years. It recognizes the need for a more holistic approach to education to ensure lifelong learning opportunities for all men and women. With the new Agenda, technical and vocational education and training (TVET) has been placed at the heart of ensuring "inclusive and equitable quality education and promot[ing] lifelong learning opportunities for all" (SDG4).

This education goal reflects the aspirations of Member States who gathered at the Asia-Pacific Conference on Education and Training (Kuala Lumpur, 2015) to agree on a set of regional recommendations to advance the development of quality TVET for sustainable development. Its outcome statement – the Kuala Lumpur Declaration – echoes Member States' ambition to transform their TVET policy and practices to take on challenges resulting from regional developments such as growing integration, demographic changes and increasing inequality in the region. At the global level, these aspirations were expressed at the Third International Congress on TVET (Shanghai, 2012) and in its outcome document – the Shanghai Consensus. These documents are paving the way for a fundamental rethink and reform of TVET systems in the Asia-Pacific region.

To achieve this goal, governments need to be able to look back and consider lessons learned from past policy interventions. For that purpose, I am pleased to share with you this TVET Progress Review which reflects on steps taken in this region since the International Congress on TVET in 2012 that are in line with the recommendations of the Shanghai Consensus. This milestone Review provides an insight into progress made and remaining challenges in ensuring the relevance of TVET, the first recommendation of the Consensus. It takes stock of where we stand and how we can move forward to unleash the full potential of TVET.

I believe that it will provide insights to readers seeking to understand regional developments in TVET and offer examples of countries' good practices in areas such as 'greening' TVET, adapting qualifications and promoting ICT in TVET. I encourage you to use this Review as a resource to inform and mobilise efforts necessary for TVET to meet the commitments of the 2030 Agenda for Sustainable Development.

Gwang-Jo Kim
Director
UNESCO Bangkok

Abbreviations

ACET	Asia-Pacific Conference on Education and Training
ADB	Asian Development Bank
AEC	ASEAN Economic Community
AQRF	ASEAN Qualifications Reference Framework
ASEAN	Association of South-East Asian Nations
ASK	Attitude, skills and knowledge
ASPIRE	Applied Study in Polytechnics and ITE Review
CEDEFOP	European Centre for the Development of Vocational Training
CET	Continued Education and Training
CIESIN	Center for International Earth Science Information Network
CSO	Civil society organization
ESD	Education for Sustainable Development
EPI	Environmental Performance Index
EVI	Environmental Vulnerability Index
GAP	Global Action Programme
ICT	Information and communication technologies
ILO	International Labour Organization
IMF	International Monetary Fund
MCC	Millennium Challenge Corporation
LCR	Learner-to-computer ratio
MDGs	Millennium Development Goals
NGO	Non-governmental organization
NORRAG	Network for international policies and cooperation in education and training
NVQ	National Vocational Qualifications
PAGE	Partnership for Action on Green Economy
PRB	Population Reference Bureau
PSEIs	Post-Secondary Education Institutes
RAVTE	Regional Association for Vocational Teacher Education in Asia
ROI	Return on investment
SD	Sustainable development
SDGs	Sustainable development goals
SEAMEO	Southeast Asian Ministers of Education Organization
SIDS	Small island developing states

SOPAC	South Pacific Applied Geoscience Commission
STEM	Science, technology, engineering and/or mathematics
TESDA	Technical Education and Skills Development Authority
TVET	Technical and Vocational Education and Training
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEVOC	UNESCO International Centre for Technical and Vocational Education and Training
UNIDO	United Nations Industrial Development Organization
UNITAR	United Nations Institute for Training and Research
YCELP	Yale Center for Environmental Law & Policy

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Executive Summary

Rationale

In response to transnational trends and in light of the newly adopted global development agenda,[1] education and training systems in the Asia-Pacific require a fundamental re-appraisal. The Incheon Declaration, adopted at the World Education Forum (Incheon, Republic of Korea, 2015), provides a transformative vision for education over the next 15 years in line with the new sustainable development goals (SDGs).[2] It encourages countries to 'promote quality lifelong learning opportunities for all', including equitable and increased access to TVET, with due attention to quality assurance. The actions required for transforming TVET in line with the needs of rapidly changing labour markets and emerging sustainable development challenges had already been debated at the Third International Congress on TVET (Shanghai, China, 2012) and outlined in the Shanghai Consensus, the main outcome of the Congress.[3]

As a follow-up to the Shanghai Congress and the World Education Forum and as a prelude to the Asia-Pacific Conference on Education and Training (ACET), held in Kuala Lumpur, Malaysia, from 3 to 5 August 2015, UNESCO commissioned a regional study to review progress in the Asia-Pacific since the Shanghai Congress. The TVET Progress Review focuses on the issue of 'relevance of TVET', the first recommendation of the Shanghai Consensus and an essential component for tackling socio-economic challenges through TVET. The review considered primary and secondary evidence concerning actions taken by Asia-Pacific governments since 2012 to enhance TVET relevance. The initial findings of the TVET Progress Review formed the basis of the outcome statement from ACET – the Kuala Lumpur Declaration – which is expected to set the direction for TVET and skills development in the Asia-Pacific in the coming years.[4]

Methodology

Regional progress in enhancing TVET relevance has been assessed on the basis of three surveys distributed to lead TVET ministries, employers' and youth organizations in the Asia-Pacific region, supplemented by findings from secondary literature and discussions held at ACET. Questions across the three surveys addressed five key aspects of TVET relevance:

1. Responsiveness to current and future skills needs;
2. 'Greening' TVET and advancing the 'greening TVET' agenda;
3. Responsiveness to technological changes, in particular by promoting the use of information and communication technologies (ICT) in TVET;
4. Adapting qualifications and developing pathways to higher education and employment; and
5. Encouraging partnerships and facilitating cooperation among TVET stakeholders.

The survey questions focused on how countries are bringing together these five elements into national development.

1 See https://sustainabledevelopment.un.org/post2015/transformingourworld.
2 See http://en.unesco.org/world-education-forum-2015/incheon-declaration.
3 See http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ED/pdf/concensus-en.pdf.
4 See http://www.unescobkk.org/fileadmin/user_upload/epr/TVET/ACET_2015/KL_Declaration_final.pdf.

Progress and challenges

The results of the TVET Progress Review indicate that countries across the Asia-Pacific have made significant progress in enhancing TVET relevance since 2012. The actions that governments have taken to improve the relevance of skills training have included:

- ✓ Increasing TVET responsiveness to current and future skills needs by engaging private sector partners in planning/designing TVET policies and programmes; gathering information on the current/future skills needs of employers and updating TVET training in line with the findings; and offering training in line with occupational standards and/or competences agreed with employers.
- ✓ 'Greening' TVET and advancing the 'greening TVET' agenda by introducing training in skills to promote sustainability in the workplace; integrating sustainable development principles into entrepreneurship training; involving local communities and businesses in green TVET activities; greening TVET learning environments; and formulating national skills development plans to support green transitions.
- ✓ Increasing TVET responsiveness to technological change and promoting use of ICT in TVET by offering training in electronic and/or digital technologies; emphasizing innovation-related skills in the TVET curriculum; using ICT to improve TVET access and equity; and making formal commitments to promote the integration of ICT in TVET.
- ✓ Adapting qualifications and developing pathways to higher education and employment by setting up national/regional qualifications frameworks; offering/accrediting workplace training, including apprenticeships; offering entrepreneurship training in TVET; developing higher-level TVET qualifications; linking TVET to general education at higher education levels; linking TVET to lifelong learning; offering career guidance and support through TVET; and emphasizing transversal skills[5] in the TVET curriculum.
- ✓ Encouraging partnerships and facilitating cooperation among TVET stakeholders by engaging the private sector, NGOs and/or CSOs; establishing mechanisms to facilitate cooperation among TVET stakeholders; and participating in international/regional networks to improve TVET graduates' educational and labour mobility.

Government actions to improve TVET relevance have had positive impacts on TVET outcomes, including:

- ✓ higher employer regard for TVET graduates' core and job-specific skills, in particular their ICT skills;
- ✓ improvement in TVET graduates' entrepreneurial skills;
- ✓ increased TVET pathways to higher education;
- ✓ greater recognition of TVET qualifications in neighbouring countries;
- ✓ better youth understanding of employers' skills needs;
- ✓ greater access to workplace opportunities and jobs by TVET students; and
- ✓ expanded TVET capacity.

However, the findings also point to uneven progress among countries and persisting challenges that limit further enhancements to the relevance and attractiveness of TVET. Many Asia-Pacific countries:

5 Transversal skills include among others problem solving, critical thinking, creativity, teamwork, communication skills and conflict resolution.

- do not regularly gather data on the labour market;
- have a low opinion of the efficacy of evidence-based approaches;
- have made slow progress in 'greening TVET', as well as incorporating ICT in TVET and/or adapting training and career support systems to technological change;
- do not validate, accredit and recognize learning acquired through non-formal and informal channels; and/or
- do not include key stakeholders in TVET systems and processes.

As a result of these issues, skills mismatches have grown across the region, and Asia-Pacific youth are now three to six times more likely than adults to be unemployed. In addition, there are growing concerns that inequalities between countries will continue to widen unless key constraints are overcome. The challenges that remain to be addressed in transforming TVET systems, so as to increase learners' employability and contribute to sustainable development throughout the region include: weak technical, financial and institutional capacity; a lack of broad partnerships involving government, employers, youth and other relevant stakeholders; and weak coordination and monitoring systems.

Conclusions and Recommendations

TVET is playing a significant role in advancing the 2030 Education Agenda[6] that reflects the vision of the 2030 Agenda for Sustainable Development,[7] and in particular Sustainable Development Goal/SDG 4 "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". While Education 2030 is universal, countries in the region face distinct challenges and therefore require different development paths: some countries are struggling to build resilience and escape fragility, while others have to chart a new course for development to escape the middle-income trap. Regional integration and the momentum produced by the new education agenda offer countries unique opportunities to form beneficial partnerships in order to overcome key constraints and better capitalize on the potential of TVET.

As outlined in the Kuala Lumpur Declaration, the recommended actions that governments and other TVET stakeholders in UNESCO's Member States in the Asia-Pacific should consider implementing in response to the challenges identified in this TVET Progress Review include:

Enhance the quality of TVET and its relevance to the changing needs of the world of work

- Governments and training providers should apply the findings of labour market studies to reform TVET policies and develop TVET qualifications and programmes for different users.
- Governments and TVET institutions should also increase TVET's role in promoting youth employability by developing entrepreneurship.
- Governments and training providers should strengthen the links between TVET outcomes and changing labour market needs by promoting a stronger private sector role in TVET systems and processes.
- Governments, training providers and other TVET stakeholders (including the private sector) should enhance TVET quality by developing quality standards, undertaking curriculum reforms, and promoting teachers' professional development, including through setting up appropriate incentives and support systems.

6 The global education agenda (Education 2030) is part of the 17 UN Sustainable Development Goals (SDGs) that make up the 2030 Agenda for Sustainable Development.

7 The 2030 Sustainable Development Agenda, adopted by UN Member States on 25 September 2015, builds on the Millennium Development Goals (MDGs), which focused on reducing poverty, hunger, disease and gender inequality and ensuring access to water and sanitation by 2015. The new agenda encompasses 17 Sustainable Development Goals (SDGs) that aim to end poverty, fight inequality and injustice, and tackle climate change by 2030. Education and skills development are expected to play a key role in the drive to achieve the SDGs. See http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

- International partners should promote evidence-based approaches by supporting Member States in developing capacity to conduct and analyse foresight and feedback mechanisms, such as graduate tracer studies and employer surveys.

Integrate greening skills for sustainable development in TVET programmes

- Governments and training providers should integrate greening skills in TVET programmes for both existing and emerging occupations, with a view to achieving sustainable development, poverty reduction and inclusive economic growth.
- Governments and training providers should systematically include education for 'greening' economies and societies as part of TVET qualifications, standards and programmes.
- Governments and international partners should equip TVET systems with the necessary technical and financial resources to comprehensively green TVET training and learning environments.[8]
- Governments, training providers and other TVET stakeholders (including the private sector) should take steps to expand the professional capacities of TVET teachers and trainers to deliver training in skills to promote sustainability in the workplace.

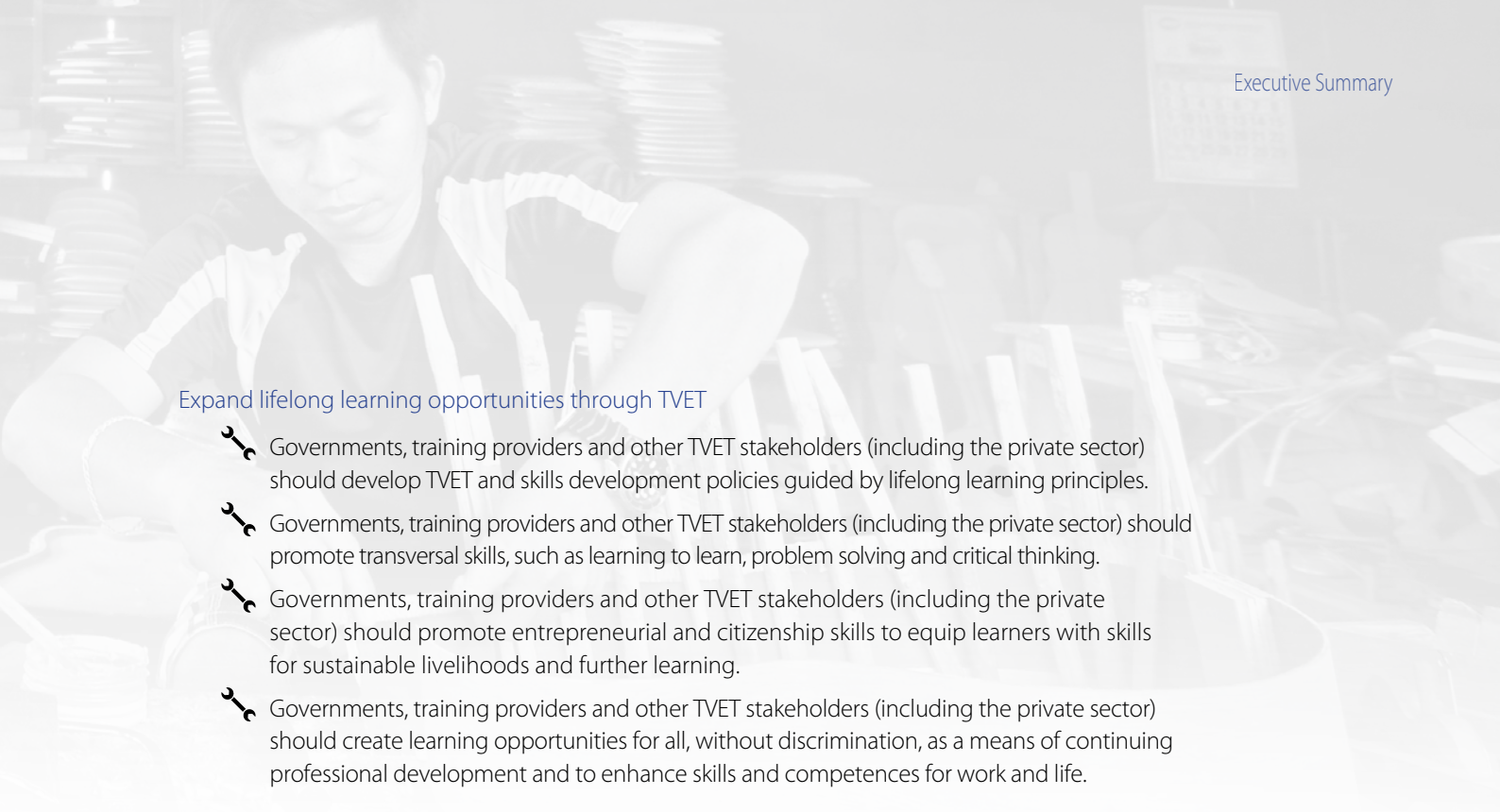
Leverage the potential of Information and Communication Technology (ICT) for TVET

- Governments and training providers should put in place appropriate policies, strategies and affordable solutions to improve ICT facilities in TVET institutions.
- Training providers should offer training in ICT and/or integrate ICT in TVET programmes and activities to prepare learners for a technologically advancing and progressively knowledge-based economy.
- Governments, training providers and other TVET stakeholders (including the private sector) should take steps to expand the professional capacities of TVET teachers and trainers to deliver training in skills to use ICTs in the workplace.
- Governments and international partners should explore the potential of data analytics for enhancing understanding of labour market dynamics, students' behaviour and learning, and strengthening TVET-related labour market management and information systems.

Adapt qualification systems to facilitate learning and career pathways

- Governments, training providers and other TVET stakeholders (including the private sector) should work together to reform national qualifications systems and ensure that they are underpinned by appropriate and affordable quality assurance mechanisms.
- Governments, training providers and other TVET stakeholders (including the private sector) should promote TVET as an attractive learning and career pathway based on effective guidance and counselling services.
- Governments, training providers and other TVET stakeholders (including the private sector) should take steps to raise the public profile and attractiveness of TVET among youth, families and society at large.

8 To holistically support countries' transitions to a green society and green economy, TVET institutions must be transformed in a comprehensive manner, consisting of five dimensions: green campus, green curriculum, green research, green community and green culture (Majumdar, 2012).



Expand lifelong learning opportunities through TVET

- Governments, training providers and other TVET stakeholders (including the private sector) should develop TVET and skills development policies guided by lifelong learning principles.
- Governments, training providers and other TVET stakeholders (including the private sector) should promote transversal skills, such as learning to learn, problem solving and critical thinking.
- Governments, training providers and other TVET stakeholders (including the private sector) should promote entrepreneurial and citizenship skills to equip learners with skills for sustainable livelihoods and further learning.
- Governments, training providers and other TVET stakeholders (including the private sector) should create learning opportunities for all, without discrimination, as a means of continuing professional development and to enhance skills and competences for work and life.

Foster regional integration and labour mobility

- Governments, regional/international partners, training providers and other TVET stakeholders (including the private sector) should work together to establish mechanisms for fair and transparent recognition of qualifications as part of regional integration processes to facilitate mobility for study and professional purposes.
- Governments and regional/international partners should promote exchanges of experiences, knowledge sharing and peer learning through regional organizations, platforms and networks.

Strengthen governance and increase investment in TVET

- Governments and TVET providers should develop an appropriate framework to strengthen the governance of TVET and establish multi-stakeholder partnerships including parents and local communities.
- Governments and TVET providers should engage youth in decision-making processes related to education and training policies and strategies.
- Governments should increase and diversify financing for TVET through sustainable domestic resources and where appropriate with the support of development partners.
- Governments and TVET providers should include private sector stakeholders as true partners in the pursuit of skills development for sustainable livelihoods and decent work.

Ensure inclusive and equitable TVET

- Governments and training providers should promote equality by increasing and diversifying the opportunities for TVET learning available to disadvantaged groups, including people with disabilities, ethnic minorities and populations living in remote and rural areas.
- Governments, training providers and other TVET stakeholders (including the private sector) should promote gender-responsive TVET policies and skills development practices, career guidance and counselling, and information to increase girls' and women's access to TVET programmes.
- Governments, training providers and other TVET stakeholders (including the private sector) should promote TVET in the informal economy through quality apprenticeships in small, micro and household enterprises, as well as through community-based and civil society-managed programmes in rural and urban areas.

1

Introduction

This image is from a culture heritage center where an elderly lady is teaching weaving to younger generations. Pakistan.

Background and context

In response to transnational trends and in light of the 2030 Agenda for Sustainable Development,[9] education and training systems across the world require a fundamental re-appraisal and transformation to respond to the needs for more inclusive, equitable and sustainable development. In the Asia-Pacific, this is driven by factors such as changing labour market structures, demographic changes, political instability and environmental degradation among others. To respond to these challenges, governments in the region are increasingly looking to education and training as an enabler for economic growth and social well-being. In particular, some countries regard technical and vocational education and training (TVET) as a means of escaping or avoiding the 'middle-income trap'.[10] In addition, TVET continues to be considered key for equal access to opportunities and a decent life and work for all.

The Incheon Declaration,[11] adopted at the World Education Forum in May 2015, provides a transformative vision for education over the next 15 years in line with the sustainable development goals (SDGs). It encourages countries to ensure inclusive, equitable, quality education and lifelong learning opportunities for all through providing flexible learning pathways and by recognizing, validating and accrediting the knowledge, skills and competencies acquired through non-formal and informal channels.

The actions required for transforming TVET in line with the needs of rapidly changing labour markets and emerging development challenges had been debated at the Third International Congress on TVET, held in Shanghai in 2012. The Congress acknowledged the significant progress that countries across the world, including those in the Asia-Pacific region, had made in developing national TVET policies and strengthening the articulation between education and training and the role of TVET in lifelong learning. However, it equally recognized that, in many cases, countries had not sufficiently transformed their TVET policies and practices to respond to the emerging challenges resulting from globalization, the emergence of knowledge societies, the rapid spread of information and communication technologies, the implications of climate change and demographic trends, and the need for new and higher-level TVET skills. The Shanghai Consensus, the main outcome of the Congress, outlined seven key actions that governments and other TVET stakeholders in UNESCO's Member States should consider implementing to support the transformation of TVET in response to these challenges: (1) enhance TVET relevance; (2) expand access and improve quality and equity; (3) adapt qualifications and develop pathways; (4) improve the evidence base; (5) strengthen governance and expand partnerships; (6) increase investment in TVET and diversify financing; and (7) advocate for TVET.[12]

As a regional follow-up to the Third International Congress on TVET (Shanghai, 2012) and as a prelude to the Asia-Pacific Conference on Education and Training (Kuala Lumpur, 2015), UNESCO commissioned this TVET Progress Review focusing on the Asia-Pacific region.[13]

9 The 2030 Sustainable Development Agenda, adopted by UN Member States on 25 September 2015, builds on the Millennium Development Goals (MDGs), which focused on reducing poverty, hunger, disease and gender inequality and ensuring access to water and sanitation by 2015. The new agenda encompasses 17 Sustainable Development Goals (SDGs) that aim to end poverty, fight inequality and injustice, and tackle climate change by 2030. Education and skills development play a key role in the drive to achieve the SDGs.

10 The phrase 'middle-income trap' refers to economic transitions from low-income to high-income status by developing countries. It is based on the observation that, over the past three decades, some countries have managed to attain middle-income status but not transition to the high-income group (see Felipe, 2012).

11 See http://en.unesco.org/world-education-forum-2015/incheon-declaration.

12 See http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ED/pdf/concensus-en.pdf

13 ACET was jointly organized by UNESCO and the Ministries of Education and Higher Education of Malaysia.

Purpose and scope

The TVET Progress Review is a milestone regional report on TVET in the Asia-Pacific. As a first step in reviewing regional progress made since the Shanghai Congress, it focuses on TVET relevance, the first of the seven recommendations of the Shanghai Consensus. According to the Shanghai Consensus, enhancing TVET relevance encompasses four main aspects: (1) responsiveness to current and future skills needs, with specific attention to local needs and demands and to professions suffering from a deficit of skilled personnel; (2) 'greening' TVET and advancing the 'greening TVET' agenda; (3) responsiveness to technological changes, in particular by promoting the integration of information and communication technologies (ICT) in TVET; and (4) encouraging partnerships and facilitating cooperation among TVET stakeholders, in particular the private sector. A fifth aspect may be added to this list: (5) adapting qualifications and developing pathways to higher levels of education and employment. This is the third recommendation of the Shanghai Consensus but an integral part of ensuring TVET relevance.[14]

The TVET Progress Review builds on the findings of a previous review,[15] which focused on the progress made by the UNEVOC Network[16] in meeting the Shanghai Consensus recommendations related to greening TVET and youth skills development. The Review places emphasis on three policy areas – green TVET, youth and skills, and use of ICT in TVET – and sheds light on achievements in TVET in the Asia-Pacific, as well as remaining challenges to be addressed as the region moves forward. It reflects the impact of relevance on other TVET areas and its importance for aligning Member States' TVET systems and SDGs. The initial findings of the Review formed the basis of discussions at ACET and of the outcome document of the Conference, the Kuala Lumpur Declaration,[17] which is expected to set the direction for TVET and skills development in the Asia-Pacific region in the coming years.

Methodology and approach

Progress in enhancing TVET relevance in the Asia-Pacific region is assessed primarily on the basis of three surveys distributed to the main TVET stakeholders in each country: (1) the government, whose views are articulated by the lead ministry responsible for TVET; (2) employers, whose views are represented by their national employers' organization; and (3) young people, whose views are represented by their national youth organization. The online surveys were shared with lead ministry, employers' organization and youth organization representatives in 48 Member States across the Asia-Pacific.[18]

Questions across the three surveys address specific aspects of TVET relevance (see Table 1) and focus on how countries are bringing together these elements into national development, as well as on trade-offs

14 After all, if TVET learners are not equipped with the knowledge, skills and competencies valued in the labour market; if TVET qualifications do not provide pathways to further education and employment; if individual learning is not validated and recognised, nationally and internationally; and if career guidance systems do not exist to assist learners in making appropriate choices by providing them with up-to-date labour market information and the skills to manage their own careers, then TVET relevance is undermined, even if the first four criteria are met. This fifth aspect of TVET relevance is emphasised in the Incheon Declaration.

15 See UNESCO-UNEVOC (2015)

16 The UNEVOC Network is a TVET platform that aims to strengthen South-South and North-South-South cooperation. Coordinated by the UNESCO-UNEVOC International Centre for TVET, the UNEVOC Network consists of UNEVOC Centres established in TVET institutions, which serve as focal points providing services and platforms for international and regional cooperation in TVET.

17 See http://www.unescobkk.org/fileadmin/user_upload/epr/TVET/ACET_2015/KL_Declaration_final.pdf

18 The surveys may be viewed at the following links: Lead ministry survey (https://www.surveymonkey.net/create/survey/preview?sm=9q_2FKFn7xz8rU34bJ6jCLtRHiENffg1vsqKelaLtnJyCOayXGMVTk9EQkqAT3A8WL); Employers' organization survey (https://www.surveymonkey.net/create/survey/preview?sm=LRBKVOw8WVnVOfXKT_2FPmXkL4GEI2OXINQqjkAwJVF8kCvtzjB2KN_2BYnpzCzrR9R4); and Youth organization survey (https://www.surveymonkey.net/create/survey/preview?sm=sGCpoH6eghOflEOQBpuGr5JJ2K2TGlBq0snJtYilx5OKMHZXwDGWtABQeBr_2Fpnan).

between short- and long-term policies and investments. The lead ministry survey asked participants to report on the steps their ministry or government had taken since 2012 to enhance TVET relevance, as well as any issues or challenges their countries continue to face, taking into account the five aspects of TVET relevance shown in Table 1. The employers' and youth organization surveys were designed to assess how far the actions taken by countries in the region have led to more effective outcomes. There were deliberate overlaps in the coverage of questions answered by the different TVET stakeholders, so as to enable responses to be cross-checked and to more accurately identify policies and practices that have aided or blocked countries' progress in enhancing TVET relevance.[19]

TABLE 1 *Focus of TVET Progress Review survey questions*

Relevance in TVET: specific aspects	Lead ministry survey	Employers' survey	Youth survey
Responsiveness to current and future skills needs	Q9, Q20, Q28-32, Q34, Q37-42	Q3-30	
'Greening' TVET and advancing the 'greening TVET' agenda	Q14, Q17, Q25		Q28d
Responsiveness to technological changes, esp. by promoting the use of ICT in TVET	Q15, Q19, Q26		Q28c
Encouraging partnerships and facilitating coordination among TVET stakeholders	Q3-8, Q33, Q43-59	Q31-35	Q22-27
Adapting qualifications and developing pathways to higher levels of education and employment	Q10-13, Q18, Q21-24, Q35-36		Q3-21, Q28

However, the surveys did not generate as much information as expected, due to low and uneven participation rates. Low participation in the surveys may partly reflect the high diversity (socio-economic, linguistic, etc.) of the Asia-Pacific region; for example, the fact that the surveys could only be administered in English may explain why few individuals from the East Asia and Central Asia sub-regions participated in them (see Table 2).[20] In addition, in no Asia-Pacific Member State did representatives from all three TVET stakeholder groups respond to the surveys.[21] This has meant that overlaps built into the questions across the three surveys, designed to provide cross-checks on information received, were for the most part ineffective. In twelve countries, two TVET stakeholder groups participated in the surveys; however, in four of these cases, the surveys were 'incomplete', so could not be used for validation purposes.[22] Surveys were categorized as 'incomplete' if respondents gave the name of their

19 The lead ministry survey contained 61 questions, the employers' organization survey 36 questions, and the youth organization survey 29 questions. Each survey had four sections. The first section of the lead ministry survey asked respondents for general information regarding secondary-level TVET in their country, including which groups provide and fund TVET programmes. The second section was concerned with countries' progress in enhancing TVET relevance; it included a special sub-section on promising practices in green TVET, youth and skills, and use of ICT in TVET. The third section asked about persisting challenges to improving TVET relevance, while the final section sought information on evidence-based approaches and partnerships in TVET. The first two sections of the employers' and youth organization surveys were broadly similar. The first section asked for basic information (name of country and organization), while the second probed respondents about what skills they think employers seek in new hires and what skills are offered by TVET graduates. The second section was aimed at discovering not only how well TVET graduates' skills match the needs of employers, but also how closely youth perceptions of employers' hiring criteria match employers' self-stated preferences. The third section of the employers' organization survey asked about current skills gaps and whether firms' skills requirements have changed over the past three years or are likely to do so in the next ten years, while the final section asked about employers' role in TVET design, delivery and assessment. Questions in the final section overlapped with questions in the lead ministry survey regarding TVET partnerships. The third section of the youth organization survey sought to establish where young people obtain information about their careers, while the fourth section gathered information on how TVET is taught and governed, and what future pathways are open to TVET graduates. Questions in the final two sections were designed to validate information obtained from the lead ministry survey relating to the same themes.

20 After all, contrary to the other three sub-regions, the East Asia and Central Asia sub-regions contain few countries where English serves as an official language.

21 A detailed breakdown of responses received, broken down by survey, country and sub-region is available in the Appendix (see Appendix Table A.1).

22 The twelve countries were Mongolia, Japan, Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Singapore, Afghanistan, Bangladesh, Fiji, New Zealand and Papua New Guinea, while the four cases were Mongolia, Japan, Lao PDR and New Zealand.

country and ministry/organization, but provided no further details.[23] In total, 28 participants submitted 'incomplete' surveys: two for the lead ministry survey, six for the employers' organization survey, and 20 for the youth organization survey (see Table 3).[24]

TABLE 2 *Breakdown of responses to the TVET Progress Review surveys, by sub-region*

Sub-region	Lead Ministries	Employers' Organizations	Youth Organizations	Total responses
Central Asia				
Completed	2	0	0	2
Incomplete	0	1	0	1
East Asia				
Completed	1	0	2	3
Incomplete	0	2	1	3
South-East Asia				
Completed	4	6	49	59
Incomplete	1	2	17	20
South Asia				
Completed	12	3	3	18
Incomplete	0	0	1	1
Pacific				
Completed	10	4	2	16
Incomplete	1	1	1	3

TABLE 3 *Breakdown of responses to the TVET Progress Review surveys, by type*

Survey responses	Lead Ministries	Employers' Organizations	Youth Organizations	Total responses
Total responses	**31**	**19**	**76**	**126**
Incomplete responses	2	6	20	28
Completed responses	29	13	56	98
Multiple responses	15	2	72	89

'Completed' survey response rates were also low. Whereas 94 per cent of participants to the lead ministry survey answered questions regarding their country's TVET policies and practices, less than three-quarters of those responding to the employers' organization and youth organization surveys did (see Table 3). Survey completion rates are partly a consequence of the incentives offered to participants: lead ministry representatives knew that they themselves and/or their minister might attend ACET, so had an incentive to complete the survey; while employers' and youth organization representatives were offered an invitation to ACET on a self-funded basis in exchange for completing the survey. However, regardless of the incentive structures, many participants who 'completed' the surveys did not answer every question or remain engaged until the end of the survey. For example, a respondent from Mongolia disengaged from the lead ministry survey after Question 30 – that is, halfway through the survey.

23 In one instance, a survey participant (representing an employers' organization) did not name his/her country or institution but answered four other questions. This response was also treated as 'incomplete'.

24 In most cases, incomplete surveys were submitted by representatives from countries where English is not one of the main languages used in government.

In several cases across the three surveys, multiple respondents from a single Member State (and sometimes a single organization) participated in the surveys.[25] Since countries could only be represented once in each survey – otherwise there would be a skew in the reporting of results – answers given by multiple respondents were aggregated into a single response. In many cases, participants from the same Member State and/or organization diverged significantly in their responses to a given question; and, because survey responses were collected under strict anonymity, there was no way to determine which participant had the most full and accurate information on TVET policies and practices in his/her country. Therefore, an arbitrary but reasonable decision rule had to be taken: in cases of 'marked divergences', where less than 5/8 of participants from a single Member State agreed in their answers to a given question, the responses for that country were excluded from the analysis.

To summarize, the following decisions were taken regarding the analysis of survey responses. First, 'incomplete' surveys were excluded from the analysis. Second, in cases of 'marked discrepancies' in the multiple responses received for any given question from a single Member State, that country's responses were excluded from the analysis for that question. However, where 62.5 per cent or more of multiple respondents agreed in their answers, the majority opinion was treated as 'fact', and the aggregated majority response for that country was included in the analysis.

The decisions regarding 'incomplete' and multiple responses have resulted in a drastic reduction in the total number of respondents whose views have been taken into account in the survey analysis, and consequently a very low aggregated response rate (see Table 4). Participants from 19 Member States (out of a potential 48 across the Asia-Pacific region) 'completed' the lead ministry survey, translating to a response rate of 40 per cent. Response rates were lower among employers' organizations (12 Member States, or 25 per cent) and youth organizations (8 Member States, or 17 per cent). Few 'completed' responses were received from countries in the Central Asia and East Asia sub-regions. Not only did few TVET stakeholders from those two sub-regions participate in the surveys, but – of those that did – only half 'completed' their surveys.

TABLE 4 *Completed and aggregated responses to the surveys, by sub-region*

Sub-region	Lead Ministries	Employers' Organizations	Youth Organizations	Total responses
Central Asia	2	0	0	2
East Asia	1	0	1	2
South-East Asia	4	6	3	13
South Asia	3	3	3	9
Pacific	9	3	1	13
Total responses	**19**	**12**	**8**	**39**
Response rate	40%	25%	17%	

25 Multiple responses were received from Bangladesh (nine), Afghanistan (two), Lao PDR (two) and Papua New Guinea (two) in the lead ministry survey; from Fiji (two) in the employers' organization survey; and from Singapore (61); Cambodia (four); Taiwan (two); India (two); and Australia (three) in the youth organization survey. 54 of the 76 participants to the youth survey came from a single organization, the Institute of Technical Education in Singapore.

To validate results obtained from the surveys and fill gaps in information arising from non-responses, incomplete responses and/or ambiguous responses, secondary data regarding TVET policies and practices in the region have been gathered and analysed.[26] In addition, the outcomes of discussions held at ACET have been included in the TVET Progress Review.[27]

The findings of the TVET Progress Review are presented in 7 sections:

- Section 2 examines economic, social and environmental trends in the Asia-Pacific and shows how uneven development and emerging challenges in each of these areas make enhancing TVET relevance a key priority for governments and other TVET stakeholders in the region.
- Sections 3-7 consider the progress that Member States in the Asia-Pacific region have made in enhancing TVET relevance since 2012, as well as persisting challenges. Each of the five aspects of TVET relevance shown in Table 1 is allocated a separate section in the report.
- The final section summarizes the findings of the previous five sections and provides key takeaway messages. It proposes future actions that TVET stakeholders in Asia-Pacific countries should consider implementing to meet the challenges and emerging expectations of TVET in light of the 2030 Agenda for Sustainable Development.

26 The documentary sources consulted as part of this review are specified throughout the text and are detailed in the bibliography.

27 A concurrent session at ACET, titled 'Progress in Delivering Relevant Skills in the Asia-Pacific', was dedicated to providing inputs to the report (see: http://www.unescobkk.org/education/tvet/asia-pacific-conference-on-education-and-training/agenda/concurrent-vi/).

2

Regional Context

Auto mechanic students at Sekolah Menengah Kejuruan vocational high school are trained to master and keep up with technology. Indonesia.

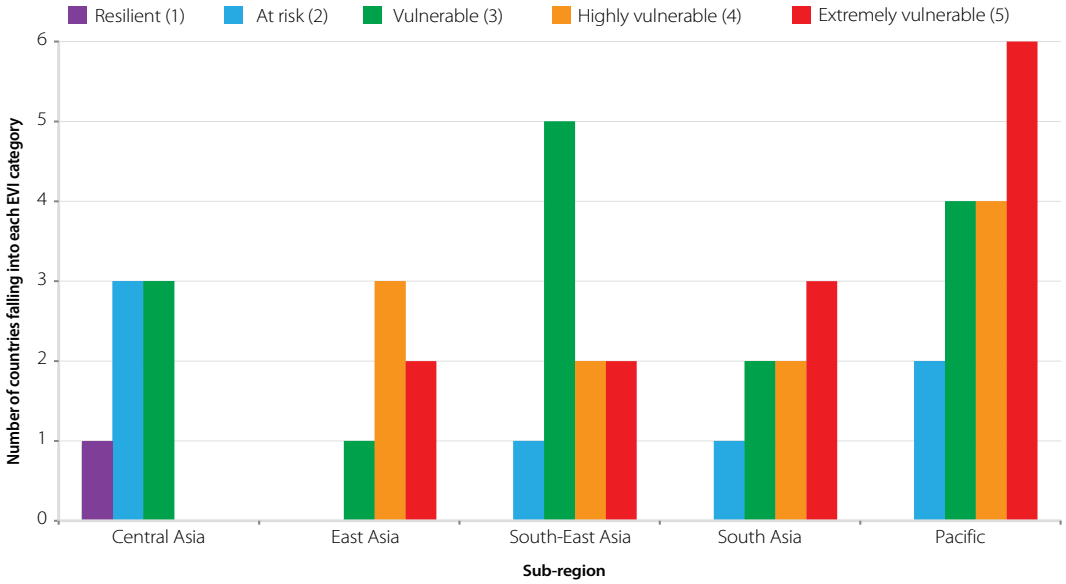
The importance of implementing policies to enhance TVET relevance is evident from observing the geographic, economic and demographic landscape of the Asia-Pacific region and the environmental, economic and social development challenges that the region currently faces.

Geography and environmental vulnerability

The Asia-Pacific region is geographically diverse, comprising the world's largest countries (China and India), landlocked Himalayan countries (such as Bhutan and Nepal), and scattered, sparsely populated Pacific islands. Countries' geographical features render them more or less susceptible to environmental risks (see Figure 1). Countries in the Central Asia sub-region are the least vulnerable to climate change impacts, with most deemed to be 'at risk' or 'resilient', according to the SOPAC/UNEP Environmental Vulnerability Index (EVI).[28] By contrast, small island developing states (SIDS) in the Pacific, South-East Asia and South Asia sub-regions are 'extremely vulnerable' or 'highly vulnerable' to environmental threats such as rising sea levels, making tackling these issues an urgent political, economic and social priority for these countries.[29]

Resource use and the need to conserve resources is a major issue for the Asia-Pacific. The region currently dominates global resource use, accounting for 50 per cent of the world's consumption of biomass, metals, industrial and construction minerals, and fossil fuels (UNEP, 2015). However, some countries in the region perform better than others in terms of taking action to protect the environment. The region's high-income countries rank in the top 50 (out of 178 countries) in the Yale University Environmental Performance Index (EPI), while the region's low-income countries rank among the 50 worst performers.[30]

FIGURE 1 *Environmental Vulnerability Index (EVI) scores, by sub-region, across the Asia-Pacific*



Source: Official Global EVI Website, EVI country profiles (http://gsd.spc.int/index.php/environmental-vulnerability-index)

28 EVI was developed by the South Pacific Applied Geoscience Commission (SOPAC) with the support of the United Nations Environment Programme (UNEP). EVI utilises 50 'smart indicators' to capture the key elements of environmental vulnerability and allows for countries and regions to be compared to one another. More information on the EVI is available here: http://www.sopac.org/index.php/environmental-vulnerability-index.

29 Asia-Pacific countries' EVI scores, as well as other pertinent environmental, economic and social development indicators, may be found in Table A.2 in the Appendix.

30 The Environmental Performance Index (EPI) is a joint project between the Yale Center for Environmental Law & Policy (YCELP) and the Center for International Earth Science Information Network (CIESIN) at Columbia University, in collaboration with the World Economic Forum and with support from the Samuel Family Foundation and the McCall MacBain Foundation. The EPI ranks how well countries perform on high-priority environmental issues in two broad policy areas: protection of human health from environmental harm and protection of ecosystems. The EPI is constructed from 20 indicators reflecting national-level environmental data. More information on the EPI is available here: http://epi.yale.edu/. Asia-Pacific countries' EPI scores, as well as their performance in other pertinent environmental, economic and social development indicators, may be found in Table A.2 in the Appendix.

TVET can play a role in helping countries to tackle environmental challenges. By raising learners' awareness of the importance of preserving the environment and providing them with the knowledge, skills and competences to change the way that businesses and societies operate, TVET can promote resource efficiency, waste reduction and climate-friendly work and living practices. For this reason, the Shanghai Consensus recommended that countries include education for 'green' economies and 'green' societies as a part of TVET qualifications and programmes, and advance the 'greening TVET' agenda towards low carbon and climate-resilient growth and development. These policies are particularly vital for Asia-Pacific countries with low EPI scores and high vulnerability to climate change impacts.

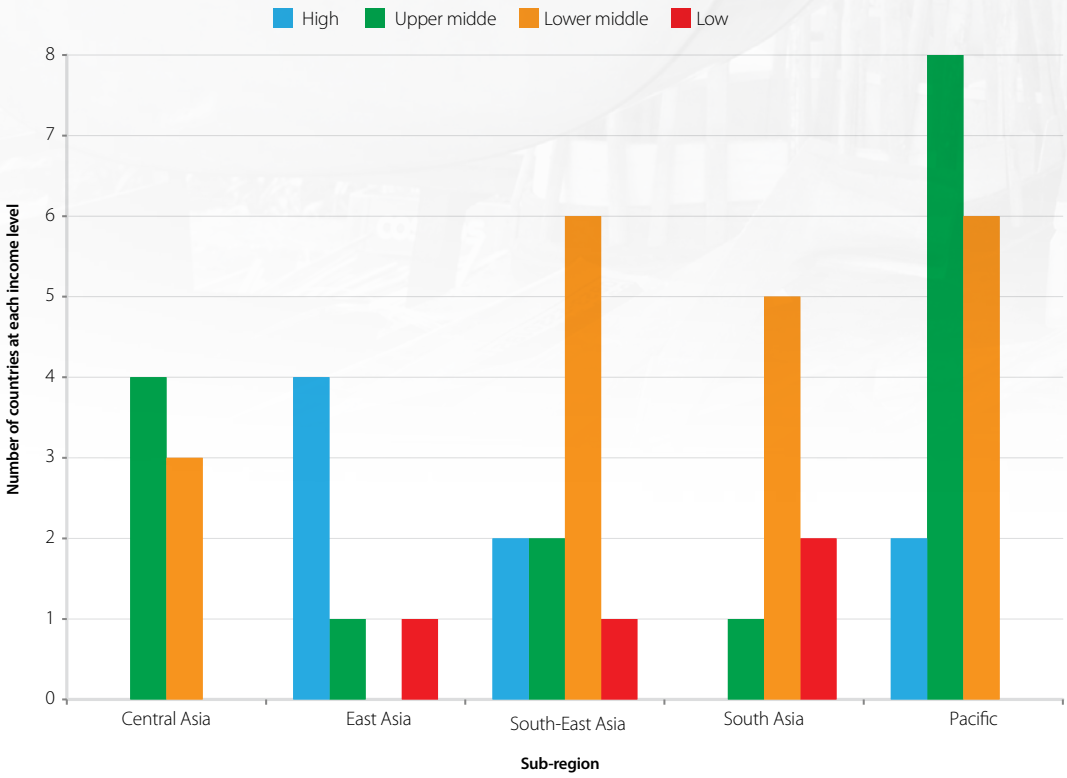
Economic growth and income distribution

Over the past three decades, the Asia-Pacific has grown faster than any other region in the world.[31] The region now accounts for nearly two-thirds of global growth, making it the 'growth engine of the world economy' (IMF, 2015). High growth has had a positive impact on poverty reduction: the percentage of people in the Asia-Pacific living on less than $1.25 per day has fallen from 53 per cent in 1990 to 14 per cent in 2012 (UNESCAP et al., 2015).

Despite these positive trends, the region faces several challenges that could affect its future economic development. First, growth is beginning to slow, partly owing to delays by several large economies – notably China, Japan and India – in making structural reforms to boost productivity (IMF, 2015). Second, growth has been uneven across the region. As a result, the Asia-Pacific is currently divided among mainly high-income countries in the East Asia sub-region, mainly middle-income countries in the Central Asia and Pacific sub-regions, and mainly lower-middle and low-income countries in the South-East Asia and South Asia sub-regions (see Figure 2). Countries at different income levels face distinct developmental challenges: some are struggling to build resilience and escape fragility, while others are seeking to escape the middle-income trap. Third, the benefits of rapid economic expansion have not been evenly distributed across populations, and income inequalities across social groups within countries have widened. This would explain why, despite impressive poverty reduction over the past three decades, more than 1.4 billion people in the Asia-Pacific still live in poverty, and the region continues to house more than two-thirds of the world's poor (UNESCAP, 2015; UNESCAP et al., 2013).

31 The Asia-Pacific is one of five UNESCO world regions. The other four regions are Africa, Arab States, Europe and North America, and Latin America and the Caribbean.

FIGURE 2 National income levels, by sub-region, in 2015



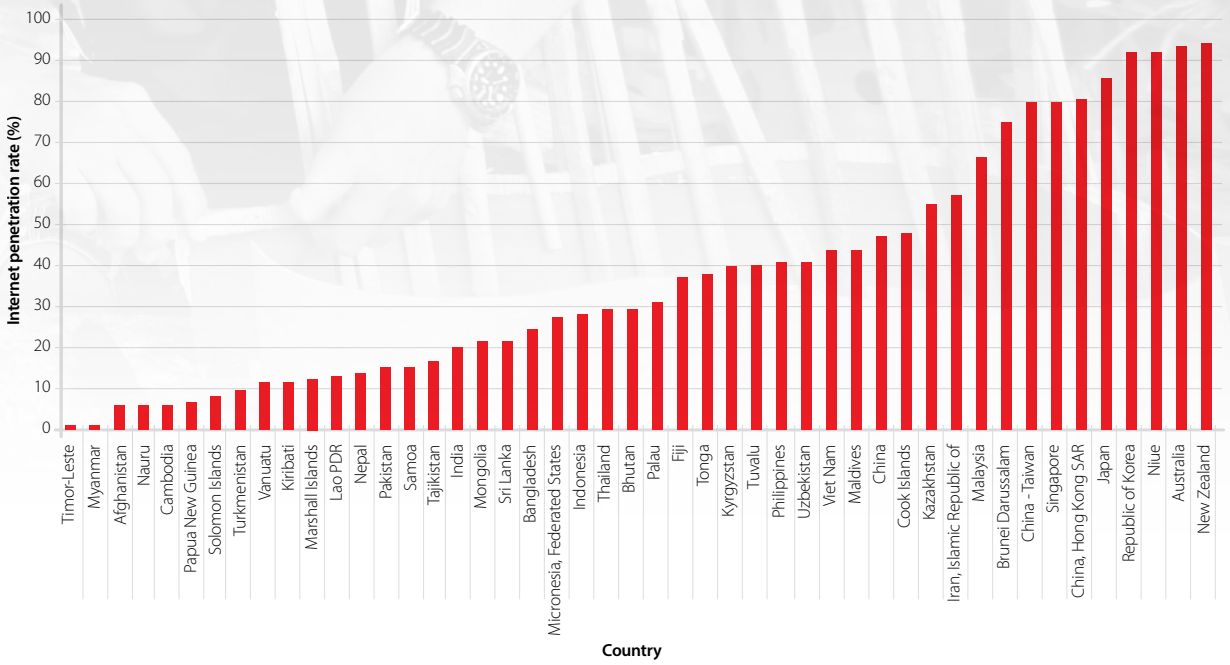
Source: World Bank (2015)

TVET can play a role in raising worker productivity and economic growth by offering training in innovation-related skills[32] and transversal skills[33] and by integrating ICT in TVET curricula and processes. At present, there are huge disparities in the level of ICT use and electronic access across the Asia-Pacific. This can be seen by examining internet penetration rates (See Figure 3). The region's high-income countries have high internet penetration rates – three-quarters or more of their populations use the internet – while the region's low-income countries have very low rates, ranging from 6 per cent in Afghanistan and Cambodia to 13 per cent in Nepal. There is therefore a need to bridge the gap in capabilities and opportunities across the region. This is especially important given rapid changes in technologies and the need for workers to remain competitive in order to stay employed.

32 For example, science, technology, engineering and/or mathematics, or STEM

33 'Transversal skills' are skills not related to a specific job, task, academic discipline or area of knowledge, but which can be used in a wide variety of situations and work settings (UNESCO-UNEVOC TVETipedia). Examples include organizational and communication skills.

FIGURE 3 *Internet penetration rate (% of population) in 2012*



Source: Internet World Stats (http://www.internetworldstats.com/stats.htm); 30 June 2014 estimates

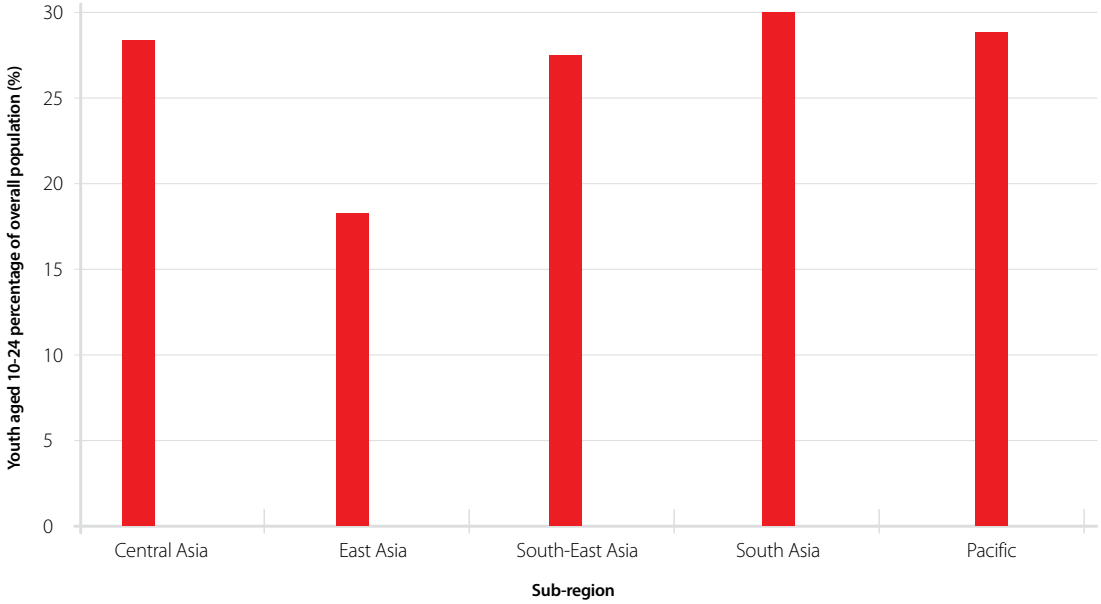
One area in which skills development is expected to play an increasingly important role is regional integration, which provides countries with a valuable opportunity for shared prosperity and more even economic development. For example, the Association of South-East Asian Nations (ASEAN) recently formed a single economic community (the ASEAN Economic Community, or AEC), with the aim to facilitate freer movement of goods, services, investment, skilled labour, and capital across national boundaries. However, the AEC presents challenges as well as opportunities (ILO and ADB, 2014). On the plus side, the AEC could produce rapid structural change from lower- to higher-productivity economic sectors for countries in the South-East Asia sub-region. However, the shift to higher-productivity sectors will require countries to have well-designed and coordinated industrial and sectoral policies aligned with employment and skills development policies. Countries will also require a better understanding of the labour market and skills needs, both nationally and regionally, as well as stronger skills certification and recognition systems cutting across national boundaries. In addition, skills recognition and certification systems will need to recognize the prior learning and experience of workers in the informal economy, with a view to boosting their productivity and competitiveness. Otherwise, the AEC could exacerbate existing income disparities, running counter to its third pillar (equitable economic development).

Demographic distribution and social challenges

Promoting youth employability and employment is another crucial priority for Asia-Pacific countries. After all, young people aged 10-24 make up over one-quarter of the population in every sub-region, apart from East Asia (see Figure 4). While the Asia-Pacific has the lowest youth unemployment rates

in the world, it also has some of the highest youth-to-adult unemployment ratios (ILO, 2014).[34] Young people in South Asia, South-East Asia and the Pacific are between four and six times more likely than adults to be unemployed, compared to three times more likely globally (ibid). A recent study by GSMA and Alcatel-Lucent attributes high youth unemployment levels in the region to a lack of appropriate skills and experience among young people, more so than to a lack of jobs (Dawes and Marom, 2013). Skills mismatches[35] are a widespread and growing problem in the region: 48 per cent of Asia-Pacific employers interviewed in 2014 reported having difficulties finding adequately skilled workers to fill job vacancies, compared with 32 per cent in 2009 (Manpower Group, 2015).[36] Precarious employment and underemployment are also major issues for young people in the region, particularly in low-income countries, where youth are often forced to accept poor-quality, low-paying jobs in order to survive (ILO, 2014). Gender inequalities are an additional problem, with differences across sub-regions: in East Asia young men are subject to higher unemployment than young women, whereas in South Asia the opposite is true (PRB, 2013).

FIGURE 4 *Population proportion of youth aged 10-24, by sub-region, in 2013*



Source: ILO Key Indicators of the Labour Market (KILM) database

These trends highlight the need to ensure that the skills taught in TVET are those sought and valued in the labour market. Governments and other TVET stakeholders can address skills mismatches and improve youth employment prospects by investing in foresight and feedback mechanisms, such as graduate tracer studies and employer surveys, and applying these findings to reforming TVET policies and developing TVET qualifications and programmes for different users. Another way is by strengthening partnerships and cooperation between TVET institutions and the private sector and/or between TVET

34 In 2013, the youth unemployment rate in East Asia was 10.1 per cent, in South Asia 10.2 per cent and in South-East Asia and the Pacific 13.0 per cent, compared with the global youth unemployment rate of 13.1 per cent (ILO, 2014). However, countries in the region vary in their exposure to youth unemployment. Some, such as Thailand and Lao PDR, have very low youth unemployment rates (both 3 per cent), while others – notably, Kiribati (54 per cent) and Iran (30 per cent) – have very high rates (for further details, see Appendix Table A.2).

35 A 'skills mismatch' arises when the skills acquired by young people through education and training are not those demanded in the labour market.

36 In some countries, these proportions are much higher. For example, 83 per cent of employers in Japan reported having difficulties filling jobs in 2014 (Manpower Group, 2015).

institutions in different countries. The benefits to be gained from cross-regional knowledge sharing and technology transfer can be appreciated by observing the employment rates of formal TVET graduates across different countries. In some East Asian countries, secondary-level TVET graduates enjoy very high employment rates, reaching as high as 95 per cent in China; meanwhile, in the region's low-income and lower-middle income countries, employment rates among TVET graduates tend to be low – just 10 per cent in Bangladesh and Pakistan (UNESCO and UNICEF, 2012, p. 31).[37]

An additional challenge is that Asia-Pacific countries' distinct mix of income levels, geographic features and demographic characteristics often act as a constraint on their capabilities for providing accessible, high-quality skills training to their large youth populations, which in turn reduces the positive impact that TVET can have on youth employment outcomes.[38] Many countries in the region – in particular, the small Pacific islands – face high capacity constraints that preclude their extending TVET access. In the Solomon Islands, for example, vocational schools can accommodate only 1,200 students, while the country's youth population exceeds 90,000 (UNDESA, 2007: 149). Examining trends in formal TVET enrolments across the region, it is evident that formal TVET programmes do not extend to the bulk of young people in the Asia-Pacific; they are offered as an alternative to upper secondary programmes mainly in the region's high-income and upper-middle income countries (see Figure 5).[39] In most other countries for which data are available, formal TVET makes up less than 12 per cent of gross upper secondary enrolments.[40] Moreover, in the region's low-income countries, most young people do not remain in education until upper secondary level (see Figure 6).[41] There is also a gender bias in TVET in many countries in the region (UNESCO and UNICEF, 2012a: 20). Hence, women's enrolment rates in upper secondary level TVET tends to be low compared to men's (see Figure 5).

37 One of the problems in Bangladesh and Pakistan is a perception among employers that TVET serves the needs of economically disadvantaged groups with low academic abilities (Ruth and Grollmann, 2009).

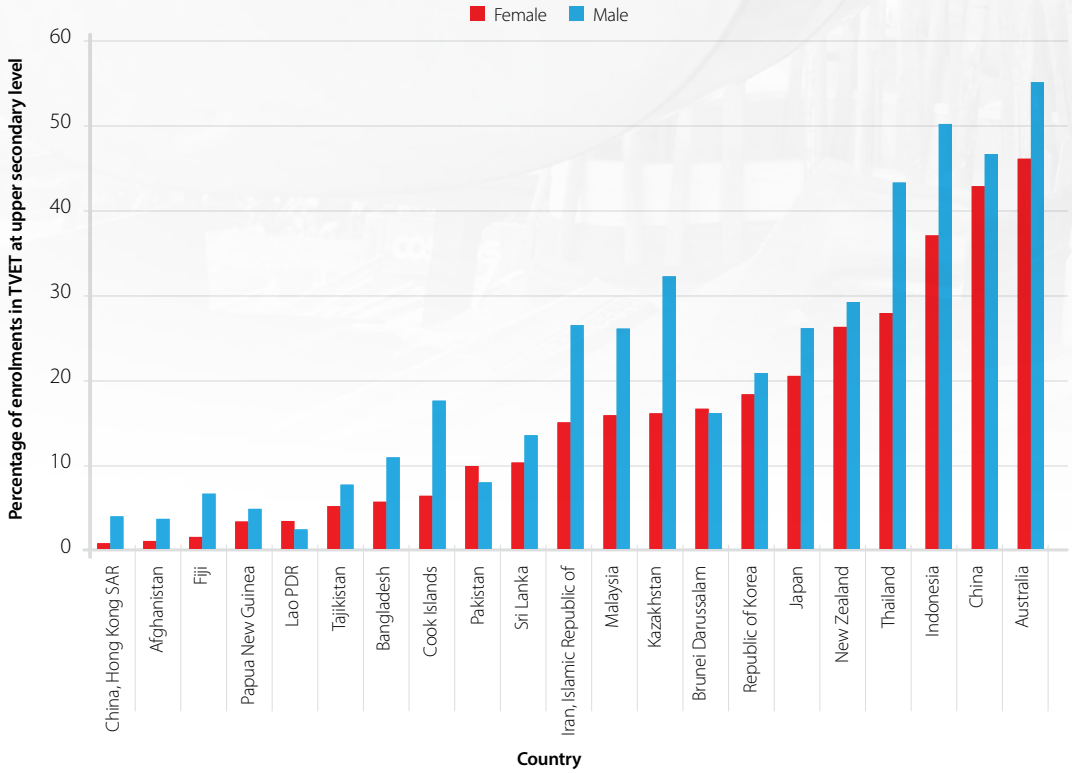
38 TVET is often viewed as a potential solution to the global youth employment crisis – although skills training must be relevant and of high quality in order to have a positive impact (UNESCO-UNEVOC, 2013).

39 Formal TVET as a percentage of gross upper secondary enrolments exceeds 20 per cent mainly in the high-income and upper-middle income countries in the region. Few countries (Australia, India, Lao PDR and Papua New Guinea) offer formal TVET at lower secondary level, and TVET enrolments at post-secondary level tend to be low (UNESCO-UIS, 2006). Information on informal and non-formal TVET provision is under-documented in many developing Asia-Pacific countries (UNESCO-UNEVOC World TVET Database). However, according to one estimate, approximately 5-7 per cent of TVET in the region takes place in the formal sector (UNESCO-UIS, 2006).

40 'Gross enrolment rate' refers to the number of students enrolled in a given level of education, regardless of age, expressed as a percentage of the official school-age population corresponding to that level of education. The gross enrolment rate can exceed 100 per cent if students aged below or above the official age bracket (for example, because of early or late school entrance or grade repetition) are enrolled in education programmes.

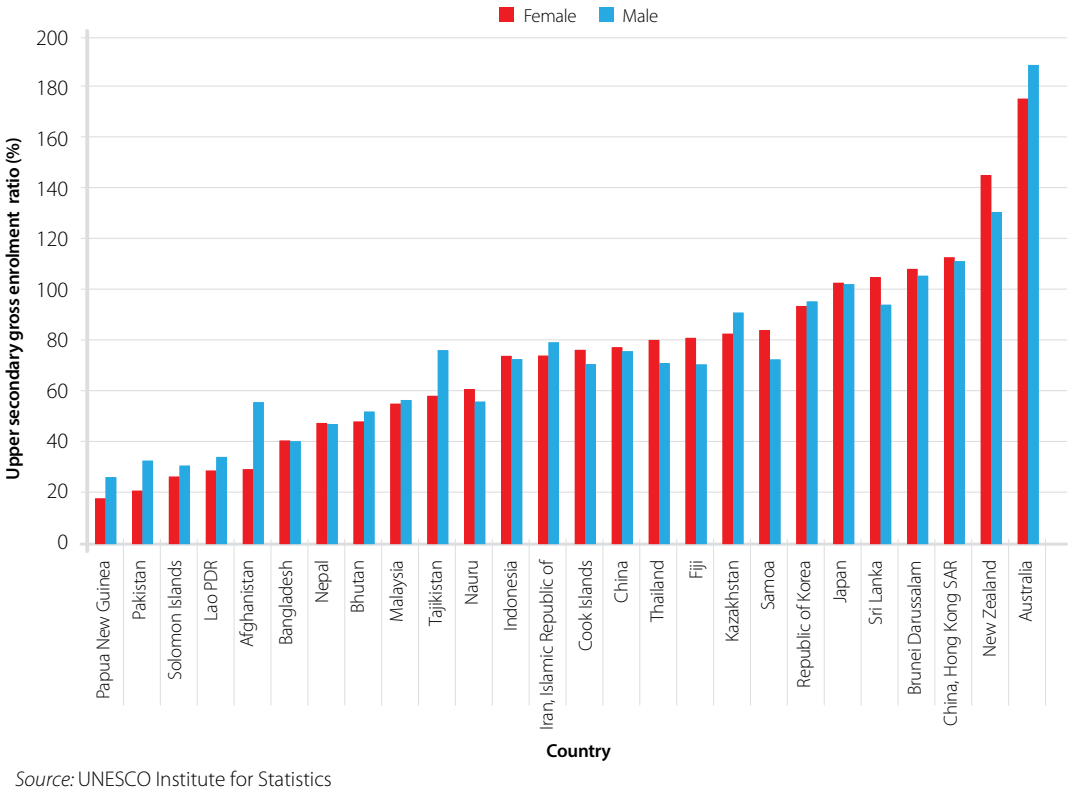
41 In these countries, as well as in some lower-middle income countries in the region, the gross enrolment rate at upper secondary level is below 50 per cent.

FIGURE 5 *TVET enrolments as a percentage of gross upper secondary educational enrolments, by sex, in 2012*



Source: UNESCO Institute for Statistics

FIGURE 6 *Gross upper secondary enrolment rate, by sex, in 2012*



Source: UNESCO Institute for Statistics

To increase TVET's role in promoting youth employability and employment, Asia-Pacific countries will need to find ways of extending access, in particular to marginalized and disadvantaged groups. Integrating ICT in TVET can be a powerful means of expanding access while improving the employability of learners. However, to increase access without reducing quality, governments in the region will need to make a stronger commitment to TVET. Currently, the percentage of public spending allocated to education and training in the Asia-Pacific is lower than in the world's low-income and lower-middle income countries (UNESCAP et al., 2013). TVET in particular is often underfunded, owing to its low enrolment rates in some countries (UNESCO, 2013). In addition, some low-income and lower-middle income countries face financial constraints that limit their ability to increase TVET funding. Involving a range of stakeholders in TVET systems and processes can be one way of expanding the level of financial and technical resources available to effect change.

Summary

Uneven economic and social development and emerging environmental and other challenges in the Asia-Pacific highlight the need for enhancing TVET relevance along the five aspects listed in Table 1. Environmental threats and the need to conserve natural resources point to the importance of 'greening' TVET and advancing the 'greening TVET' agenda. The need to remain economically competitive in a rapidly changing and globalizing environment underscores the importance of offering training in skills to boost worker productivity and innovation and of ensuring that TVET keeps pace with technological change, in particular increasing use of ICT. The need to secure inter-generational equity and provide greater pathways to employment for young people points to the importance of aligning skills training with labour market needs and of recognizing and certifying learning and experience gained in formal, informal and non-formal settings. Enhancing TVET relevance in all of these areas requires strong government commitment; but given differing levels of resources and capacities across the region, fostering partnerships and cooperation with a range of relevant stakeholders may be necessary for effecting rapid and meaningful change. The imperatives outlined here are closely aligned with the new SDGs, which emphasize the need to balance the three dimensions of sustainable development – environmental, economic and social – in national policy.

The next five sections of the TVET Progress Review explore how far Asia-Pacific countries have progressed in enhancing TVET relevance since 2012. Each aspect of TVET relevance shown in Table 1 is allocated a separate section in the report, and each section provides an overview of Member States' progress, as well as persisting challenges, as reported by respondents to the lead ministry survey. Where relevant, findings from the employers' and youth organization surveys are used to validate lead ministry survey results. In addition, information from secondary literature and/or from discussions held at ACET is used to fill gaps and corroborate findings.

3

Responsiveness to Current and Future Skills Needs

Students are practicing in their laboratory classroom of a polytechnic college in West Bengal. India.

TVET's main purpose is to provide students with the knowledge, skills and competences that will allow them to live productive and fulfilled lives. The relevance of TVET policies and programmes is therefore often measured by their success in providing graduates with a smooth transition from school to the world of work. However, skills mismatches are a major problem in the Asia-Pacific and a main factor in explaining why young people in the region are between three and six times more likely than adults to be unemployed (ILO, 2014). Skills gaps are now reported by around half of all employers across the region, including in some fast-growing economies (Manpower Group, 2015).[42] A failure to link the skills taught in education and training to those required in the labour market has long-term implications, not only for learners' transitions but also for countries' economic competitiveness.

Governments and TVET institutions can improve school-to-work transitions by focusing training on the skills required in the labour market today, particularly in areas suffering from a deficit of skilled personnel. In addition, to prevent skills mismatches in the longer-term, they can gather information to anticipate future skills needs and update TVET training in line with their findings. Several ways of collecting data on current and future skills needs include: investing in foresight and feedback mechanisms, such as graduate tracer studies and employer surveys; directly liaising with employers to improve understanding of the knowledge, skills and competences required in the labour market; engaging private sector partners in TVET planning and design; and involving local communities[43] in TVET planning and design.

Individuals participating in the three surveys were asked a number of questions regarding the actions their government or ministry has taken since 2012 to align TVET training with current and future skills needs. Their answers suggest good progress across the region but also highlight a number of challenges that still need to be addressed.

Progress and challenges

Most respondents to the lead ministry survey said that their government has implemented measures to more closely align TVET training with current and future skills needs. The specific steps taken include (in order of importance):

- ✓ engaging private sector partners in the planning/design of TVET policies and programmes;
- ✓ gathering information on the current/future skills needs of employers and updating TVET training in line with these findings/forecasts;
- ✓ offering training in line with occupational standards and/or competences agreed with employers; and,
- ✓ to a lesser extent, involving local communities in the planning/design of TVET policies and programmes.

42 More than half of all employers in Japan, Hong Kong, India and Taiwan report difficulties locating adequately skilled candidates to fill job vacancies (Manpower Group, 2015).

43 Local communities are a particularly important resource in countries with large informal economies.

The results of the employers' organization survey suggest that the actions taken by Asia-Pacific governments to align TVET training with current and future skills needs have had a positive impact on employers' regard for TVET graduates' skills. Asked whether secondary-level TVET graduates' core[44] and job-specific skills have improved over the past three years, respondents from nearly every country participating in the survey indicated that both their core and job-specific skills have on balance improved.[45] In terms of their core skills, TVET graduates have improved most in the following areas: computer skills, team work/collaboration skills, communication/customer relations skills, time management/organizational skills, and English language skills. These skills are among the most valued by employers seeking candidates for skilled entry-level positions across technical and service-related areas. Asked whether employers in their country would rather hire a general secondary graduate or a secondary-level TVET graduate, survey respondents indicated that they might prefer either, depending on the sector and occupation of the job vacancy – except in South Asia, where employers exhibit a slight preference for TVET graduates. The employers' organization representative from Sri Lanka explained: 'With the introduction of the NVQ framework, an increasing number of employers have shown a tendency to prefer secondary TVET graduates to general secondary school graduates'. A recent report by the Asian Development Bank on TVET in South Asia corroborates this finding for Sri Lanka, concluding that 'employment rates for TVET graduates [in the country] appear to be relatively high', but also suggests that employers' preference for TVET graduates varies across the sub-region, as well as across TVET disciplines (ADB, 2014: 10-12).[46]

Moreover, it seems that, at least in some countries in the region, evidence-based approaches have resulted in more effective TVET policies and programmes. In Afghanistan and Fiji, labour market analyses have led to TVET curricula becoming more demand-driven and competency-based. In Thailand, improvements to TVET as a result of evidence-based approaches have generated greater demand for TVET courses[47] and higher employment rates (close to 80 per cent) among TVET graduates. In Singapore, two evidence-based reviews led to the formulation of the SkillsFuture movement, a masterplan for economic transformation with TVET at its centre (see Box 1).

BOX 1 *Evidence-based TVET policies in Singapore: the SkillsFuture movement*

The SkillsFuture movement in Singapore was formulated based on two reviews. The first was a review of Continued Education and Training (CET) 2020. The other was the Applied Study in Polytechnics and ITE Review (ASPIRE). These evidence-based reviews led to the formulation of policies focused on improving TVET relevance as a means of lifting the economy. The new model involves enhancing career and academic progression prospects for TVET graduates through the strengthening of industry linkages to provide work-relevant training for students, enhanced educational and career guidance, and industrial research, innovation and enterprise activities.

Source: http://www.wda.gov.sg/content/wdawebsite/L209-001About-Us/CET_2020.html and http://www.moe.gov.sg/aspire/

44 'Core skills' are 'skills that enable individuals to constantly acquire and apply new knowledge and training. They build upon and strengthen the skills developed through basic education; the technical (or job-specific) skills needed for specific occupations or to perform specific tasks or duties; and personal attributes such as honesty, reliability, punctuality and loyalty. Examples of core skills include: the abilities to learn and adapt; to read, write and compute competently; to listen and communicate effectively; to think creatively; to solve problems independently; to manage oneself at work; to interact with co-workers; to work in teams or groups; to handle basic technology; and to lead effectively as well as follow supervision' (ILO, 2013). The ILO uses the terms 'core skills' and 'transversal skills' interchangeably when referring to the generic skills sets of workers. However, other authors note that there may be a subtle difference between the two sets of terms (Hart and Howieson, 2009).

45 Only in Timor-Leste were TVET graduates' skills deemed to have eroded and, even then, only in three areas.

46 The study found that, in Bangladesh, the unemployment rate among TVET graduates tends to be higher than among general education graduates; and, in Nepal, TVET graduates' employment rate depends on their course of study – varying from 100 per cent among nursing graduates to 46 per cent among agricultural trades graduates (ADB, 2014, p. 11-12). In any case, trends in TVET outcomes in South Asia should be treated with caution, since the sub-region has the lowest formal TVET enrolment rates in the Asia-Pacific (Kingombe, 2012, p. 4).

47 Upper secondary level TVET enrolments as a percentage of total upper secondary educational enrolments in Thailand have increased from 35 per cent to nearly 40 per cent in the past three years.

Despite this progress, there are still challenges to be overcome. Around half of all respondents to the lead ministry survey stated that they do not believe that TVET policies and programmes in their country have been made more effective as a result of evidence-based approaches. Details of why this is the case are not available for every country taking part in the survey. However, in Bhutan, negative perceptions of TVET seem to have prevented evidence-based approaches from having a more positive impact. As the lead ministry representative from that country remarked: 'TVET is still seen as the last choice among the youth'. A recent study of nine Asian countries sheds light on attitudes towards evidence-based approaches in some parts of the region (UNESCO and UNESCO-UNEVOC, 2013).[48] The study found that some governments believe that simply expanding access to TVET programmes and raising the quality of training will automatically improve graduates' employability. In other words, they do not fully understand the concept of TVET relevance or appreciate the importance of aligning skills training with labour market needs.

A low opinion of the efficacy of evidence-based approaches can lead to a lack of commitment in implementing these measures and partly explains why only a minority of countries in the Asia-Pacific regularly conduct TVET graduate tracer surveys or skills forecasts/skills mapping exercises. This finding is validated by a recent study on the information infrastructure supporting school-to-work transitions in nine Asian countries (UNESCO and UNESCO-UNEVOC, 2013).[49] The study found that few of the nine countries have sustained programmes for tracking graduates.[50] In addition, while all nine countries collect data on employers' skills needs, some do so irregularly and few undertake national-level employer surveys on skills needs. Instead, most surveys containing detailed information on the skills needs of employers are carried out by external donors and are implemented on an ad hoc basis.

The main reasons why many countries in the region do not regularly conduct graduate tracer surveys or skills forecasts/mapping exercises are (in order of importance):

- lack of financial or human resources for conducting these exercises;
- lack of trained staff with relevant knowledge and expertise;
- weak coordination between ministries/agencies involved in skills needs assessments;
- poor statistical infrastructure;
- lack of perceived usefulness of these exercises; and
- lack of interest or support among policymakers, TVET institutions and/or other partners.

In addition, in some Asia-Pacific countries, data gathering is complicated by the existence of a large informal sector, where most firms are small-to-medium-sized and/or unregistered, or by geographic or demographic factors – for example, because the population is scattered across small islands or located in remote areas (UNESCO and UNESCO-UNEVOC, 2013).

48 The nine countries are Bangladesh, Cambodia, Lao PDR, India, Indonesia, Kazakhstan, Mongolia, Philippines and Viet Nam.
49 The nine countries are Bangladesh, Cambodia, Lao PDR, India, Indonesia, Kazakhstan, Mongolia, Philippines and Viet Nam.
50 The study found that, even where countries had policies in place to implement graduate tracer surveys, their efforts were often hindered by a lack of resources, low capacity for data collection and/or lack of expertise among staff on how to conduct these surveys.

At an aggregate level, beyond but including data collection, the issues that have blocked Asia-Pacific countries from aligning TVET training with current and future skills needs are (in order of importance):

- lack of financial and/or technical capacities;
- not yet having established a labour market information system, occupational standards and/or a competency-based system;
- lack of interest/support among policymakers, TVET institutions and/or other partners;
- weak coordination among ministries linked with TVET; and
- difficulty in applying the findings of skills forecasts.[51]

Lack of sufficient use of and/or support for evidence-based approaches may explain why many Asia-Pacific employers have had difficulties finding adequately skilled workers for jobs. The main skills deficit cited by survey respondents, as well as by Asia-Pacific employers participating in the Manpower Group's Talent Shortage Survey 2015, is a lack of technical skills and competencies (Manpower Group, 2015, p. 23). 34 per cent of Asia-Pacific employers in 2014, up from 31 per cent in 2013, reported difficulties finding candidates with relevant industry-specific certifications and/or professional qualifications.[52]

In addition, in many countries, TVET graduates' problem solving/analytical skills and creative/critical thinking skills are said to fall below employers' job requirements. These skills, referred to as higher-order thinking skills, are considered essential for countries' transition to a knowledge-based economy (Majumdar, 2011, p. 8). The main way of teaching these skills is by adopting learner-centred, applied and/or experiential pedagogies. Yet over half of all respondents to the lead ministry survey said that their ministry or government has not yet adopted student-centred approaches to prepare TVET learners for their country's transition to a digital and/or knowledge-based economy. Survey respondents pinpointed problem solving/analytical skills as the most important core skill for employment over the next 10 years, so TVET pedagogies will need to change.

Moreover, according to 32 per cent of Asia-Pacific employers in 2014 – up from 28 per cent in 2013 – TVET graduates often lack 'soft skills', including the single most important attribute employers seek: a positive work ethic.[53] Most employers consider candidates' personal qualities to be more important than their core or job-specific skills, and assess jobseekers' attitude, skills and knowledge (or ASK) – in that order – when hiring candidates for skilled entry-level positions.[54] The most important personal attribute that employers seek is 'reliability and punctuality', followed closely by 'commitment and hard work'.[55] Young people who are punctual, reliable, committed and hard-working, but lack job-specific skills, may get hired and then trained on the job; however, those who lack a good attitude to work are unemployable. Because TVET training tends to focus on skills rather than attitudes, TVET graduates often enter the job market without realizing the importance of a positive work ethic and therefore find it difficult to obtain employment. Recent studies of Asian countries have noted this issue. For example, an evaluation of TVET in Malaysia concludes: 'The lack of soft skills such as positive work ethics, communication skills, teamwork

51 As the survey respondent from Singapore put it: 'It is difficult to predict the required skill sets despite labour market forecasting systems in place. It is also difficult to align students' preferences and aspirations to demands from the industry.'

52 Sam Haggag, country manager of Manpower Group, Malaysia and Indonesia, provided these statistics during his presentation at ACET.

53 Sam Haggag also provided these statistics. 'Soft skills' are defined as 'a set of intangible personal qualities, traits, attributes, habits and attitudes that can be used in many different types of jobs' (UNESCO-IBE, 2013).

54 This observation was made by a Malaysian employers' organization representative who took part in the discussions at ACET. However, the survey responses received by employers' organization representatives from across the region support this finding.

55 These two attributes were rated as 'very important' by nearly every employers' organization representative participating in the TVET Progress Review survey. The level of importance of specific attributes was assessed by the frequency of 'very important' responses received.

and decision-making and leadership abilities is a main factor affecting the marketability of Malaysian graduates' (Rashidi, 2013, p. 4). A TVET review of Papua New Guinea states: 'Fresh graduates lack the attitudes needed in the workplace, for example punctuality and general discipline. This occurs partly because the culture of the training institutions differs significantly from that in industry' (ADB, 2007).

The reasons for these skills shortages, according to survey respondents, are: local institutions train an insufficient number of students; the quality of local training is inadequate; employers' adoption of new technologies/work models has generated new skills needs; and candidates are looking for more pay than is offered. Survey participants noted that Asia-Pacific employers' skills requirements have increased over the past three years as a result of three main changes in workplace organization and practices: (1) growing use of computers, meaning a higher demand for workers with IT/computer skills; (2) a more client-centred approach, placing a greater emphasis on soft skills; and (3) job rotation, requiring workers with strong core/transversal skills. They unanimously agreed that the level and types of skills required by employers will continue to grow over the next 10 years.

On a more positive note, the lead ministry survey showed that countries that regularly conduct graduate tracer studies and/or skills forecasts tend to use the results of these exercises to develop and/or reform TVET policies and programmes. In Bhutan and Afghanistan, the results of information-gathering exercises have been used to more closely align TVET programmes with labour market needs, while in Samoa, Fiji and the Cook Islands they have been used to adjust the content or level of TVET programmes. For example, engaging in these exercises has prompted Fiji to incorporate entrepreneurship training into TVET and has helped TVET institutions to identify areas where there is an oversupply of skilled personnel. In Thailand, Singapore, New Zealand and Afghanistan, the results of graduate tracer studies and/or skills forecasts have been used to develop TVET policies and strategies. As the lead ministry respondent from Singapore pointed out, they 'tell us what the trends are and highlight possible areas of concern which need to be addressed'.

In addition, countries that regularly conduct skills forecasts tend to ensure that policy responses are coordinated across different administrative levels. In terms of the mechanisms or systems in place to facilitate collaboration across administrative levels, Thailand focuses on both bilateral cooperation and cooperation under the framework of international bodies, while Singapore, Iran, Fiji, Samoa and Tuvalu tend to rely on national and sub-national policy coordination mechanisms.[56]

However, the effectiveness of these policy responses is circumscribed by the data that is collected, and the results of the lead ministry survey show that countries that regularly conduct graduate tracer studies and/or skills forecasts rarely collect information on:

- TVET graduates' labour migration patterns: This represents a major flaw in labour market information systems in the region, given the high mobility of young workers in the Asia-Pacific and in light of the AEC (UNDESA, 2013).

56 In Singapore, the National Manpower Council – comprising members from the Ministry of Manpower, Ministry of Education and Economic Agencies – conducts an annual meeting to formulate workforce strategies and review the needs of each industry. In Fiji, the Ministry of Labour is responsible for coordinating policy responses across ministries and institutions in the country. In Samoa, the Samoa Qualifications Authority coordinates and implements the TVET Support Programme, which aims to 'increase the number of skilled Samoans available to fill priority workforce needs'. In Iran, regular meetings are held between the Ministry of Education and the provincial Education Departments to agree on TVET development indicators and methods/strategies for TVET evaluation. In Tuvalu, policy responses are coordinated through a meeting between school heads and secretaries of the island council.

- Employers' skills needs at sub-national or local level: One of the key recommendations of the Shanghai Congress for enhancing TVET relevance was that countries should pay attention to local needs and demands.
- Skills required in their country's transition to a Green Economy or a Digital Economy: Green skills and ICT skills have been cited as two areas in which there are critical skills shortages in the Asia-Pacific (Manpower Group, 2015; Hays Group, 2012; Raina, 2007).

On the other hand, some countries, such as Tuvalu, gather information on seasonal jobs available overseas. This data is of great relevance for a small island developing state struggling with high youth unemployment and under-employment in an environment where decent jobs are not being generated fast enough to absorb available labour (International Business Publications, 2011, p. 91).

A recent World Bank discussion paper suggests that Central Asian countries fit the trends identified in the survey results for other sub-regions (Kuddo, 2009). According to the paper, public employment services across Central Asia lack funds, are understaffed and fragmented, and lack access to labour market information and modern labour market measures and techniques.[57] The paper concludes: 'The information and research function in the labour and employment sector in many countries in [Central Asia] is underdeveloped. This has a negative impact on countries' ability to prepare and implement adequate labour and employment policies and measures. Labour market information is also critical for educational and training institutions' (p. 5).

By contrast, labour market information systems in East Asia are generally strong, but recent trends have caused skills mismatches in the sub-region to grow. Some East Asian countries – notably, Republic of Korea and Taiwan – are recognized leaders in producing skills to fuel economic growth and, since the 1960s and 1970s, have implemented strategic plans to create demand for high-skilled labour and then subsidized technical training to meet this demand (Packard and Nguyen, 2014, p. 116-117). However, in recent years, the number of higher education graduates in East Asia has increased rapidly, outstripping industry demand. As a result, graduate unemployment has risen to high levels, even in some of the sub-region's fast-growing economies (Sharma, 2014). Hence, 83 per cent of employers in Japan, 65 per cent in Hong Kong and 57 per cent in Taiwan report difficulties finding adequately skilled workers to fill job vacancies (Manpower Group, 2015). Another issue affecting labour market dynamics in East Asia, apart from the types of skills being produced by education and training institutions, is a rapidly ageing population. This has often made it necessary for countries in the sub-region to recruit skilled personnel from abroad.

Lessons learned and way forward

In general, Asia-Pacific countries have made good progress in aligning TVET training with current and future skills needs, mainly by involving private sector partners in TVET planning and design. Government actions have had a positive impact, which is most evident from employers' views that TVET graduates' skills have on balance improved over the past three years. While TVET continues to suffer from a negative image in some countries in the region, in most countries employers no longer prefer general education graduates to TVET graduates. Moreover, in some countries in the South Asia sub-region, TVET graduates are the more popular choice, owing to recent policies ensuring that TVET qualifications are recognized and valued in the labour market.

57 The survey results for Mongolia and Iran likewise conform to the trends identified in the World Bank paper.

However, there are still challenges to be overcome. Across the region, many policymakers have a low opinion of the efficacy of evidence-based approaches. In addition, outside of East Asia, few countries gather labour market information on a regular basis, owing to financial or technical capacity issues, weak coordination between ministries, and/or a lack of understanding or appreciation of the potential value of data gathering exercises. Moreover, countries that regularly conduct these exercises often neglect key pieces of information, such as TVET graduates' labour migration patterns, highlighting the need for further training and support.

Employers cite difficulties finding candidates with relevant technical skills and competencies, industry-specific certifications and/or professional qualifications, and many consider TVET graduates' problem solving/analytical skills and critical/creative thinking skills to fall below their job requirements. In addition, TVET graduates often lack soft skills, including the single most important characteristic that employers seek – that is, a positive work ethic.

These issues highlight a clear need to more closely align TVET training with labour market requirements, especially in areas where there are critical skills shortages or, alternatively, a growing demand for skills. Critical skills shortages are currently reported in green skills and ICT skills areas. In addition, the survey results indicate that the focus of TVET needs to extend beyond training students in 'hard' job-specific skills to include an emphasis on core skills, soft skills and higher-order thinking skills. Moreover, given growing regional integration, labour market information systems need to collect data on skills needs at regional and sub-regional, as well as national and local, levels.

Asia-Pacific employers' contention that there are too few candidates with relevant industry-specific certifications and/or professional qualifications in the labour market points to the need for TVET institutions to expand their role in validating and certifying learning and experience gained in informal and non-formal settings. After all, research shows that less than 10 per cent of TVET in the Asia-Pacific takes place in the formal sector (UNESCO-UIS, 2006). Hence, formally recognizing the skills of individuals who have participated in informal and non-formal learning can address skills shortages in a rapid and meaningful way, by providing employers with a ready supply of qualified candidates to fill job vacancies.

Some of the actions that will be required to address these challenges include:

- Increasing TVET stakeholders' commitment to and effectiveness in implementing evidence-based approaches. Governments and international partners should promote evidence-based approaches by disseminating examples of promising practices where these measures have resulted in more effective policies and programmes or better employment outcomes. In addition, they should allocate greater financial and technical support to helping countries to establish or strengthen labour market information systems and to effectively implement evidence-based approaches. Weaknesses in coordination mechanisms also need to be addressed.
- Developing and/or strengthening links with the private sector and local communities. Governments and TVET institutions need to involve employers and local communities in the planning and design of TVET policies and programmes, both to improve understanding of the knowledge, skills and competences required in the labour market and to ensure that TVET training is aligned with skills needs at national and local levels. TVET partnerships involving a broad range of stakeholders could also attract resources to help overcome financial and technical capacity constraints.

- Transforming TVET systems and processes to achieve better outcomes. To rapidly and meaningfully address skills mismatches, TVET stakeholders should develop or strengthen systems for validating and certifying skills gained in informal and non-formal settings. To improve learners' employability, the TVET curriculum should focus more on soft skills, in particular emphasizing the importance of a positive work ethic, and on developing students' higher-order thinking skills. To improve students' problem-solving and critical reasoning skills, TVET pedagogies should become more learner-centred, interactive and constructivist.

4

‘Greening’ TVET and Advancing the ‘Greening TVET’ Agenda

Rattan Hammock Craftsmanship. The Philippines.

TVET tends to prepare learners for jobs that consume large amounts of energy, raw materials and water; yet resource use and the need to conserve resources is a major issue for the Asia-Pacific. The region currently dominates global resource use, accounting for 50 per cent of the world's consumption of biomass, metals, industrial and construction minerals, and fossil fuels (UNEP, 2015). Moreover, the region's consumption of resources is expected to rise rapidly, as economies grow, infrastructure is built and the middle class expands. The Asia-Pacific lags behind the rest of the world in terms of resource efficiency, although countries in the region vary in their environmental performance.[58] In many countries, the need to achieve more rapid economic growth and poverty reduction means that environmental sustainability often receives secondary focus. However, countries' failure to conserve natural resources can undermine their future development, as well as their ability to sustain economic growth over the medium- to long-term.

TVET can play a role in overcoming these developmental threats by supplying the knowledge, skills and competencies required to promote resource efficiency and reduce waste in a wide range of sectors, including construction, manufacturing, transportation, logistics, hospitality services, waste management and agriculture. 'Greening' TVET – that is, including education for 'green' economies and 'green' societies as a part of TVET qualifications and programmes – in these sectors can have a major impact on countries' transitions to low-carbon and climate-resilient economies and societies. Governments can also support green transitions by putting in place national development plans that include green skills development as a strategic objective, thereby advancing the 'greening TVET' agenda.

Greening TVET can address the twin challenges of slow unsustainable economic development and social inequality (UNESCO-UNEVOC, 2015). By supplying the skills needed for green jobs, TVET can move workers up the skills ladder, raising both their productivity and contribution to economic growth. If workers in the informal economy were to benefit from green TVET initiatives, these policies could have an impact on reducing poverty and inequality in those countries. Given that green skills are identified as an area where there are critical skills shortages in the Asia-Pacific (see Section 3), offering training in the knowledge, skills and competencies for green jobs could be a way of lowering unemployment. Moreover, if green TVET initiatives successfully move workers up the skills ladder and improve their employment prospects, then it is likely that negative perceptions regarding the efficacy of TVET would be overturned and TVET programmes would become more popular, creating a virtuous circle.

The lead ministry survey asked participants a number of questions regarding the steps their ministry or government has taken since 2012 to incorporate education for 'green' economies and 'green' societies as a part of TVET qualifications and programmes and/or to advance the 'greening TVET' agenda. The results show that most countries in the region have made some progress in greening TVET, while some countries have put in place comprehensive policies to support green transitions through green skills development.

58 Asia-Pacific countries' EPI scores may be found in Table A.2 in the Appendix.

Progress and challenges

The survey results show that most governments in the region have implemented policies since 2012 to 'green' TVET. The specific measures they have adopted include (in order of importance):

- ✓ introducing training in skills to promote sustainability in the workplace;[59]
- ✓ offering competency-based training in TVET emphasizing green competencies;
- ✓ integrating sustainable development (SD) principles into entrepreneurship training;
- ✓ involving local communities and/or businesses in green TVET training activities; and
- ✓ greening TVET learning environments to promote green values and attitudes.

In addition, some countries had taken steps to advance the 'greening TVET' agenda by including green TVET in their national curriculum and/or development plans. Countries that have done this, according to the survey results, are Japan, Thailand, Indonesia, Singapore, Fiji and Bhutan. However, some countries not represented in the survey – for example, Malaysia and the Philippines – have also included TVET in their national development plans.

Promising practices of greening TVET and advancing the greening TVET agenda are evident across the region. These promising practices can be grouped into four categories:

- National green growth strategies: Some countries in the region are systematically taking action to advance the 'greening TVET' agenda by formulating national development plans and strategies to support green transitions through skills training. Examples of such policies include Malaysia's Roadmap on Green Technology (see Box 2), the Philippines' National Technical Education and Skills Development Plan for 2011–2016 (see Box 3) and the Republic of Korea's Energy Vision 2030 Plan (see Box 4).
- Green TVET curriculum: The Iranian government is in the process of deepening its commitment to green TVET: while environmental skills are already taught in non-formal vocational education subjects such as forestry, the Iranian Ministry of Education and Training and the Department of Environment have just signed a cooperation agreement to implement environmental education programmes, integrate environmental themes into the secondary school curriculum, and design new TVET disciplines relating to environmental protection.
- Green TVET programmes: Some countries have implemented measures to 'green' specific TVET programmes. For example, tourism and hospitality programmes in Palau now emphasize eco-tourism. Refrigeration and air conditioning courses in Bhutan include a component on green skills, and from 2016 forward will cover sustainable production and consumption principles. SD principles have also been injected into a woodcraft technology programme in Fiji (see Box 5).
- Green TVET campuses: A recent government policy in Indonesia encourages vocational schools to use renewable energy. In Lao PDR, the country's TVET Master Plan for 2016-2020 includes a policy on improving the environment in TVET schools.

59 This was the most popular green TVET policy, particularly among the region's low-income and lower-middle income countries.

BOX 2 *Malaysia's Roadmap on Green Technology*

In 2010, the Government of Malaysia formulated a Roadmap on Green Technology to address the issue of global warming and to support the transition to a low-carbon economy by integrating low carbon technologies in different sectors and services. The Roadmap lists human capital development in green technology as a strategic objective and seeks to integrate green topics in vocational and technical education to meet the demands of green jobs. Consistent with the training provisions attached to the roadmap, Malaysian polytechnics have taken steps to support the implementation and expansion of green activity and new technologies by skilling new workers and topping up the skills of the existing workforce.

Source: UNESCO-UNEVOC (2015c)

BOX 3 *Philippines' National Technical Education and Skills Development Plan for 2011–2016*

The Philippine Government's National Technical Education and Skills Development Plan for 2011–2016 focuses on promoting green skills and 'green-collar jobs' through TVET. In line with this aim, the Technical Education and Skills Development Authority (TESDA) has developed qualifications with green competences that clearly specify environment-related knowledge, skills and attitudes in the Training Regulations. In addition, TESDA is reforming the TVET curriculum to incorporate green competencies, environmental concerns and climate change issues.

Source: UNESCO-UNEVOC (2015d)

BOX 4 *Republic of Korea's Energy Vision 2030 Plan*

The Republic of Korea's Energy Vision 2030 Plan is a unique development case of converting traditional engineering high schools into specialized vocational high schools that cater to the needs of industries for skilled workers in the renewable energy sector. The Busan Energy Science High School has re-organized its curriculum, supplemented specialized sector equipment, put in place faculty training programmes, and strengthened school promotion activities to provide the skills required for the transition to green energy technologies. The Korean government also vigorously promotes green growth and sustainable development through the Young Leaders Training Programme for future industry leaders, which integrates green research and development, industry promotion tools, and best practices in TVET.

Source: UNESCO-UNEVOC (2014)

BOX 5 *Incorporating SD in Woodcraft Technology in rural Fiji*

A lead ministry representative from Fiji described how a vocational school in a rural area of the country has partnered up with a local timber mill to improve the relevance of and inject SD principles into a programme called Woodcraft Technology. The programme teaches students how to add value to 'waste' wood from the sawmill. Students construct lamp stands, ornaments, statues, etc. from waste timber and this is sold to interested customers. In addition to teaching practical and applied skills in a learner-centred manner, the programme includes a commercial component that raises funds for the school, thus contributing to the sustainability of the programme.

Notwithstanding these favourable examples, the Asia-Pacific region still faces difficult challenges. The lead ministry survey results show that some countries in the region have made slow progress in greening TVET and suggest that income levels may explain the differences between countries in terms of the level of progress made. A respondent from Afghanistan commented: '[W]e are learning to concentrate on green TVET issue but there is a lack of resources'. Participants from Bangladesh explained that the country is 'still far behind to introduce green concept in TVET institutions' and that 'no significant initiative has been taken for greener TVET institution from Govt. side but lot of initiatives have been taken by private sector and NGOs'. Responses from Mongolia, Niue, Papua New Guinea, Lao PDR and Tonga also reflected that green TVET initiatives have not yet been fully implemented. Slow progress in greening TVET is a challenge that many low-income and lower-middle income countries across the world face in preparing students for the greening of existing and emerging occupations (Martinez-Fernandez and Choi, 2012, p. 34).

The main obstacles to countries' progress in greening TVET and/or advancing the greening TVET agenda are (in order of importance):

- lack of knowledge and/or technical capacity on how to green TVET;
- lack of funds;
- lack of information regarding the knowledge, skills and competences required for green jobs;
- weak coordination between ministries in charge of TVET; and
- lack of interest/support among policymakers, TVET institutions and/or other stakeholders.

The high costs of re-tooling training facilities pose a major constraint to greening TVET (UNESCO, 2014b). After all, the equipment and materials required to provide training in new technologies for more sustainable vocations can be significant: changing chemicals, using sustainably produced and certified wood, installing equipment for training in solar and wind technologies, etc. These modifications also require corresponding changes to the budgets and management of TVET facilities.

Given these high costs, one concern is that the 'greening TVET' agenda could serve to widen existing inequalities between countries. After all, most countries lagging behind in terms of offering training in green skills are low-income and lower-middle countries in the Pacific and South Asia, the two sub-regions with the greatest vulnerability to climate change impacts (see Figure 1). While greening TVET offers the potential to reduce poverty and unemployment, hasten economic growth and productivity, and address environmental issues, if only some countries can afford to green TVET, there is a danger that economic, social and environmental gaps between countries could grow. Measures therefore need to be put in place to help disadvantaged countries to 'catch up' with countries at a more advanced stage of supplying the skills needed for green jobs.

Countries' speed of progress in greening TVET is partly tied to how the business sector frames its demand for green skills. The results of the employers' organization survey indicate that employers in many South-East Asia, South Asia and Pacific countries assign a relatively low value to sustainability skills, such as resource efficiency and waste reduction. Resource efficiency/waste reduction is ranked as only the seventh most important skill sought by employers seeking to fill current vacancies and does not rank among the top five skills that employers predict will be needed for jobs over the next 10 years. By contrast, employers in some countries not covered by the survey seem to place a much higher emphasis on green skills. For example, in the Philippines, employers rank environmental awareness and sustainable development as the second most important soft skill required for tradesmen, and identify green building certifiers and green material suppliers as among the top-five most in-demand occupations over the next five years (UNESCO-UNEVOC, 2015e).

However, the extent to which employers' skills needs act as a driver for the inclusion of green skills in TVET varies across the region and seems to be linked to there being a supportive policy environment promoting green transitions. A recent survey of TVET teachers and students in four Asian countries showed that 75 per cent of respondents in China agreed that the emergence of new occupations has caused green skills to be taught in TVET programmes in construction, whereas only 43 per cent of respondents in Sri Lanka did (UNESCO-UNEVOC, 2015e). The study concluded that the inclusion of green skills in TVET construction programmes was closely linked to how far government policies support the transition to low-carbon economies – for example, through establishing green targets for the economy, promoting greening training standards and/or passing environmental legislation. It was less often due to the emergence of new occupations requiring training in green skills or independent actions by TVET institutions to introduce green skills in their training programmes. These findings highlight the importance of governments and businesses working together with TVET institutions to advance the greening TVET agenda. They also illustrate why countries with strong policy frameworks focused on green growth tend to have made swifter progress than other countries in greening TVET.[60]

Lessons learned and way forward

Greening TVET can address the twin challenges of slow unsustainable economic development and social inequality; however, countries in the Asia-Pacific are currently at different stages in terms of their progress in greening TVET. Countries that started early in integrating SD principles into their education and training systems are now at a more advanced stage of supplying the skills needed for green jobs. Likewise, countries that have strong policy frameworks emphasizing and supporting green growth have tended to make faster progress in greening TVET than other countries. These trends explain the differences between countries that have already integrated green skills in TVET and those that are still at an early stage.

The main challenges blocking countries from making progress in greening TVET are weak technical and financial capacity. Capacity constraints are especially a challenge for countries in the Pacific and South Asia, the two sub-regions with the greatest vulnerability to climate change impacts. The danger that economic, social and environmental gaps between countries could grow if only some countries can afford to green TVET highlights the need for measures to help disadvantaged countries to 'catch up' with countries at a more advanced stage of supplying the skills needed for green jobs.

60 These findings are corroborated in a recent OECD publication, which lists Republic of Korea, Singapore and Australia as having strong SD policy frameworks and discusses how India and Thailand are pursuing more proactive green growth policies, including increased public and private investment, to try to close the skill gap (Martinez-Fernandez and Choi, 2012, p. 34-36).

Actions to assist countries to advance the greening TVET agenda and adjust TVET training in line with these aims must be pursued through partnerships at local, national and international levels:

- Local communities need to be involved in green TVET policies and activities to ensure that training is responsive to local needs, utilizes local resources, and has a positive impact on the local environment.
- Employers and TVET institutions need to work together to ensure that TVET training delivers the skills required for both emerging green occupations and the gradual greening of existing occupations.[61]
- Governments need to ensure that national policies and strategies promote green growth as a means of advancing the greening TVET agenda, as well as addressing other key social and economic issues. To improve the quality and effectiveness of green TVET policies and programmes, governments should gather data on the skills required in countries' transition to a green economy and examine promising practices from other countries. Finally, policies need to be put in place to strengthen coordination between ministries in charge of TVET.
- International donors should, if desirable, offer financial and/or technical assistance to help disadvantaged countries to 'catch up' and compete with countries at a more advanced stage of greening TVET.

61 Recent research suggests that, as countries transition to a green economy, new occupations, skills profiles, and qualification and training frameworks will be created, while existing occupations and industries will be greened (CEDEFOP, 2010).

5

Responsiveness to Technological Changes by Promoting ICT in TVET

A 15-year-old is receiving ICT training from CPD, a non-government organization. Bangladesh.

It is well acknowledged that globalization and other emerging technological, economic and social trends have had a tremendous impact on society and the workplace. For example, the rapid spread of ICT has transformed the world of work and raised the demand for 'new skills' to improve productivity and competitiveness. Workers' employability increasingly depends on their abilities to use ICT effectively and efficiently. Investments in human capital development are therefore needed to prepare workers for their new role in a technologically advancing and progressively knowledge-based economy.

The need for training in 'new skills', particularly among new entrants to the labour market, is highlighted by the ILO (2014) finding that young people in the South Asia, South-East Asia and Pacific sub-regions are between four and six times more likely than adults to be unemployed, while those in East Asia are three times more likely to be unemployed. At the same time, employers report critical skills shortages in ICT areas (Manpower Group, 2015; Hays Group, 2012; Raina, 2007). These issues highlight the urgent need to transform TVET systems and processes to increase their effectiveness in providing students with the knowledge, skills and competencies required for the rapidly changing world of work, in particular ICT.

ICT has the potential to transform TVET by expanding access and improving equity, raising the quality of teaching and learning, and enhancing the relevance of the TVET curriculum. One main benefit of incorporating ICT in TVET is that students can participate in training at any time and from any location, thereby reducing issues that block access for working people, individuals with family commitments and/or people living in rural or remote areas. Integrating ICT in TVET can also facilitate the implementation of education and training, the provision of learning content, and communication between teachers and learners. In addition, by enhancing teaching and learning experiences and making them more relevant to employers' skills needs, ICT in TVET can develop students' higher-order thinking and transversal skills, thus making them more employable as well as more adaptable to changes in the workplace.

To assess the responsiveness of TVET systems in the Asia-Pacific to technological changes – in particular, increasing use of ICT – the lead ministry survey asked participants what steps their ministry or government has taken since 2012 to prepare TVET students for the transition to a digital and/or knowledge economy, and/or to incorporate ICT in TVET. Responses to the survey suggest good progress across the region, although with marked differences between countries.

Progress and challenges

The survey results show that most governments in the region have introduced measures since 2012 to prepare TVET students for the transition to a digital and/or knowledge economy. The policies they have put in place include (in order of importance):

- ✓ offering training in electronic and/or digital technologies;
- ✓ emphasizing innovation-related (STEM) skills in the TVET curriculum; and
- ✓ integrating electronic and/or digital methods and technologies across the TVET curriculum.

Most Asia-Pacific governments have also made formal commitments to promoting the integration of ICT in education (UNESCO-UIS, 2014). National policies on ICT in education usually consist of general principles, guidelines and strategies, with short- to medium-term targets (e.g. 5- to 10-year plans) aligned with longer-term goals and objectives. They often apply to the education sector as a whole, rather than to TVET specifically, although measures targeting TVET may be implemented.

Examples are available from across the region of policies and/or practices aimed at integrating ICT in TVET and/or expanding access to TVET through ICT. These promising practices can be grouped into four categories:

- Policies to promote use of ICT in TVET: Government policy in Thailand now requires that TVET colleges include ICT in their provision. In addition, ICT is a criterion for quality assurance and assessment in the country. In Indonesia, national exams now take place through computer-based tests. The Government of Iran has introduced a one-to-one tablet programme in public TVET institutions to encourage the use of ICT in TVET. The Government of New Zealand has also raised its commitment to ICT in the TVET curriculum and on TVET campuses, in particular by increasing funding for STEM-related subjects.
- ICT-related TVET programmes: TVET institutions in Tuvalu and Palau now offer accredited and/or mandatory programmes in applied computing. In Bhutan, Lao PDR and New Zealand, ICT-related subjects are included in the TVET curriculum.
- Use of ICT to promote TVET access and equity: The Government of Fiji has recently invested in the IT infrastructure in rural and remote locations to upgrade TVET quality and expand TVET access (see Box 6). In addition, some Asia-Pacific countries have adopted open educational resources (OER), open and distance learning (ODL), and massive open online courses (MOOCs) to widen access to TVET and improve equity. In India, ODLs provide multiple and flexible learning pathways for a large number of students (see Box 7). In the Philippines, the TESDA Online Programme opens up quality training opportunities to a wide range of learners on an equitable basis (see Box 8).
- ICT as a tool to promote lifelong learning and employment: The Government of Singapore has recently launched a professional development portal for working adults (see Box 9).

BOX 6 *Expanding access to ICT and TVET in Fiji*

The Government of Fiji is currently opening Tele Centres in rural and remote locations to assist TVET institutions and local communities to access the internet. Most of these centres have been opened in rural schools, fully funded by the government. The computers are accessible to the community during evenings and weekends, while students have access to these facilities during school hours. Many schools in rural and remote areas, which previously could not afford to set up IT labs, now have access to them. The new government initiative has improved TVET access and equity while supporting rural development.

BOX 7 *Use of ICT to promote TVET access and equity: NIOS in India*

The National Institute of Open Schooling (NIOS) in India, often referred to as the world's largest open school, offers online secondary and senior secondary level vocational courses that lead to certification. NIOS recently introduced virtual open schooling and offers two online vocational courses on 'ICT Applications' and 'Rural Technologies'. NIOS programmes reach a large number of students: cumulative enrolments totalled 2.2 million by 2011. Moreover, since 2007, female enrolments have significantly outnumbered male enrolments.

Source: http://vos.nios.ac.in/niosvirtual/newsdocs/Virtual_Open_Schooling_1409821860.pdf; UNESCO (2015, p. 125)

BOX 8 *Use of ICT to promote TVET access and equity: e-TESDA in the Philippines*

The Technical Education and Skill Development Authority (TESDA) in the Philippines has been running the TESDA Online Programme (TOP), also known as e-TESDA, since 2012. The programme provides free access to training to a range of individuals, including out-of-school youth, unemployed adults, workers, professionals and Filipino migrants. The programme is popular and has expanded over time. TOP began with nine online courses consisting of 38 modules, but now covers as many as 34 online courses consisting of 99 modules. The number of registered users is estimated at around 97,000, of which around 20,000 are located abroad. Programmes such as e-TESDA enable students to learn at their own pace, place and convenience.

Source: ://www.e-tesda.gov.ph/; Pascua (2013)

BOX 9 *ICT as a tool to promote lifelong learning and employment in Singapore*

The Ministry of Education (MOE) in Singapore recently launched a new website that provides access to continuing education and training across all industries (see www.getcet.sg). Continuing Education and Training (CET) is a professional development portal that helps working adults to keep their skills relevant and upgrade their skills amidst rapid technological advances and shifts in the economic landscape. At the same time, CET helps to address workforce and skills gaps to support industry development and job creation. Post-Secondary Education Institutes (PSEIs) in Singapore offer a wide range of CET programmes including: MOE-subsidized courses that lead to qualifications such as Nitec and Diploma; Workforce Skills Qualification courses subsidized by the Singapore Workforce Development Agency; and professional short courses.

Findings from the employers' organization survey indicate that the policies and programmes implemented by Asia-Pacific governments to improve TVET students' IT and innovation-related skills have had a positive impact. For example, survey respondents from across the region agreed that TVET graduates' computer skills have improved over the past three years. In some countries, such as Viet Nam and Fiji, TVET graduates' computer skills now exceed employers' job requirements.

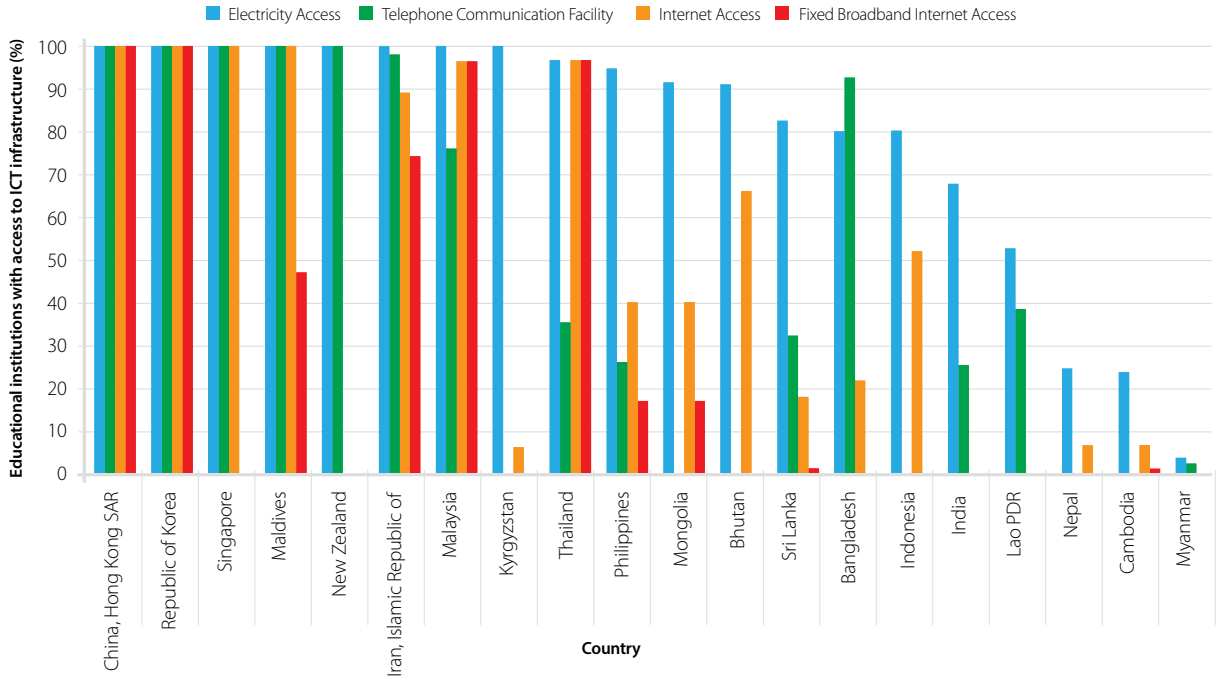
Moreover, the IT and innovation-related skills of TVET graduates in the East Asia sub-region seem to be among the best in the world. East Asian students – in particular, those from Republic of Korea, Japan, Hong Kong and Taiwan – regularly top the charts in OECD PISA assessments for skills such as creative problem solving.[62] They are also frequent winners of World Skills competitions in areas such as IT software solutions for business, manufacturing team challenge, and mobile robotics.[63] In the high-income East Asian countries, students' success may be partly attributed to ICT-enhanced education having been institutionalized at primary and secondary education levels (UNESCO-UIS, 2014). Virtually every school in those countries has a computer laboratory and ICT support services to ensure the sustainability of computer-assisted programmes.

Despite these positive indications, some challenges remain. The lead ministry survey results show that some countries in the region have made slow progress in adapting TVET training to technological advances, and suggest that income levels explain the differences between countries in terms of the level of progress made. According to the lead ministry survey results, most low-income and lower-middle

62 See http://www.oecd.org/pisa/keyfindings/pisa-2012-results-volume-v.htm
63 See https://www.worldskills.org/what/competitions/wsc2013/results/

income countries in the region have only just begun introducing ICT in TVET,[64] while most high-income and upper-middle income countries have been incorporating ICT in their TVET policies, strategies and national development plans over a long duration.[65] The reason for this divergence is because responding to technological change, including incorporating ICT in TVET, is an expensive venture – from the initial costs of investing in the telecommunications infrastructure and retraining teachers and trainers, to the ongoing expense of updating training materials and purchasing new equipment to keep abreast of changes in industrial standards and practices. In addition, there is a need to continually upgrade the knowledge, skills and competencies of TVET staff and provide incentives to persuade them to undergo constant upskilling and reskilling. As one survey participant remarked: 'The rapid change of technology is an obstacle for updating TVET according to new labour market needs.' The telecommunications infrastructure at secondary education level is under-developed in some low-income and lower-middle income countries in South and South-East Asia, which lack universal access to electricity and/or telephone communications – a significant obstacle to integration of ICT in the classroom (see Figure 7). By contrast, secondary schools in most of the region's high-income and upper-middle income countries have widespread access to the internet and/or fixed broadband.

FIGURE 7 *ICT infrastructure in secondary educational institutions in 2012*



Source: UNESCO Institute for Statistics (2014)

64 Lead ministry representatives from Lao PDR, Bhutan and Afghanistan listed their promising practices as including ICT in the TVET curriculum, teaching basic IT in TVET, and offering ICT as a field of study, respectively, while the respondent from Papua New Guinea said his/her country is 'just starting' to introduce ICT in TVET.

65 These trends are also evident in Central Asia (ADB, 2012), which was sparsely represented in the survey. Governments in most upper-middle income countries in that sub-region, such as Kazakhstan, have invested in their telecommunications infrastructure and made a commitment to ICT as a teaching and learning tool. Hence, virtually every school in Kazakhstan now has internet connectivity. However, in the sub-region's low-income countries, the telecommunications infrastructure tends to be weak, precluding ICT-enhanced pedagogies in TVET. Only 7 per cent of schools in Tajikistan and 3-5 per cent in Kyrgyzstan had internet connectivity in 2012.

Geography also plays a role in terms of TVET responsiveness to technological change. In many countries in the Pacific sub-region, use of ICT in TVET has until recently been hampered by lack of an adequate telecommunications infrastructure, including undersea fibre optic cables (PRIF, 2015). This would explain why only two of the Pacific countries represented in the lead ministry survey – New Zealand and Niue – have already incorporated online or digital resources in TVET. In addition, in some Asia-Pacific countries, there are marked disparities between urban and rural areas with regard to access to ICT – for example, because of the difficulty of extending the telecommunications infrastructure across mountainous terrains, the unwillingness of internet service providers to operate in unprofitable rural areas, and/or the inability of poor rural parents to contribute to the costs of ICT use in schools to the same extent as wealthy urban parents (ADB, 2012).

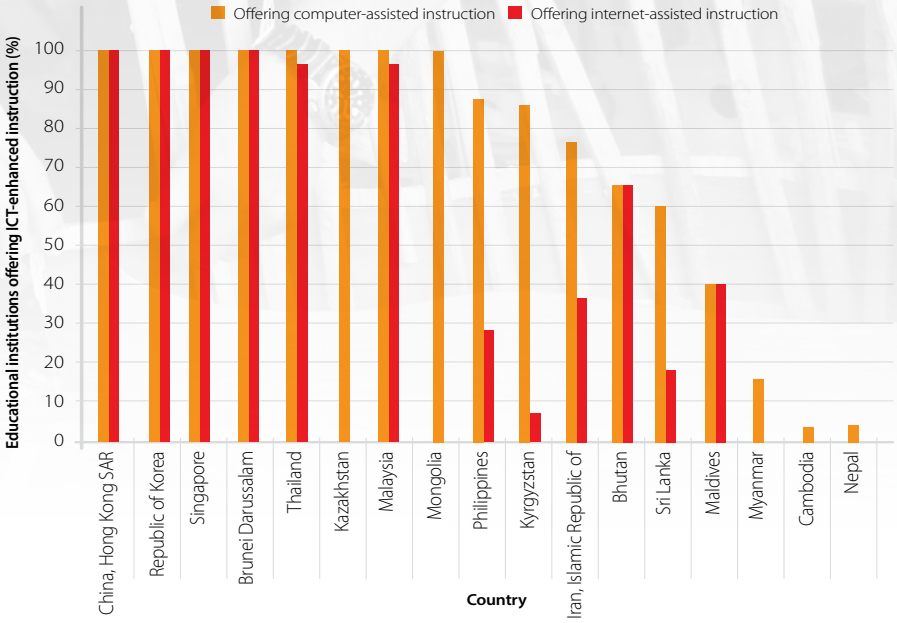
Recent research suggests that a firm government commitment to integrate ICT in education could increase formal TVET institutions' propensity for providing ICT-enhanced instruction; however, it will not by itself overcome the financial constraints that some countries face (UNESCO-UIS, 2014). Asia-Pacific countries' policy commitments regarding the integration of ICT in education encompass four levels, from strongest to weakest: (1) formal, stand-alone sector-wide plans on ICT in education; (2) stand-alone plans relating to upper secondary education only; (3) national ICT master plans that include components on education or national education plans that include an ICT component; and (4) no national plan or policy in place. A weak correlation exists between countries' income levels and their level of commitment to integrate ICT in education. While governments in high-income countries tend to have made the strongest political commitments, so have those in some lower-middle and low-income countries, such as the Philippines, Sri Lanka and Nepal. Similarly, countries with no ICT in education plan or policy in place include both upper-middle income countries, such as the Maldives, and lower-middle income countries, such as Bhutan. On the other hand, having a strong national policy in place regarding ICT in education does tend to correlate with educational institutions' propensity to offer computer-assisted or internet-assisted education. Hence, the bulk (87 per cent) of formal secondary education institutions in the Philippines – a lower-middle income country with a stand-alone sector-wide plan on ICT in education – offer computer-assisted instruction (see Figure 8).[66] Similarly, but at the other end of the scale, only 40 per cent of secondary education institutions in the Maldives – an upper-middle income country with no policy in place – offer computer-assisted or internet-assisted education. However, this correlation becomes weak at the low-income end of the scale: while governments in both Nepal and Cambodia have made strong political commitments to ICT in education, neither government has been able to uphold those commitments. Less than 5 per cent of secondary educational institutions in both countries offer computer-assisted instruction (see Figure 8). The effect of countries' income levels on their capabilities to implement ICT in education policies can be best understood by examining learner-to-computer ratios (LCR) for pedagogical purposes across the region (see Figure 9).[67] The correlation between income level and LCR for Asia-Pacific countries is strong: the high-income countries have low LCRs of less than 10, while the low-income countries have very high ratios – 378 in Nepal and over 500 in Cambodia.[68] The constraints that low-income countries face are enormous: after all, students need access to computers if policies regarding ICT in education, including in TVET, are to have a positive impact on learners' capabilities.

66 A lower proportion of secondary education institutions offer internet-assisted instruction in that country, owing to infrastructural weaknesses regarding internet access (see Figure 7).

67 'For pedagogical purposes' refers to teaching purposes only, excluding the use of computers in schools for administrative purposes.

68 Cambodia is not displayed in Figure 9, because its exact LCR is unknown.

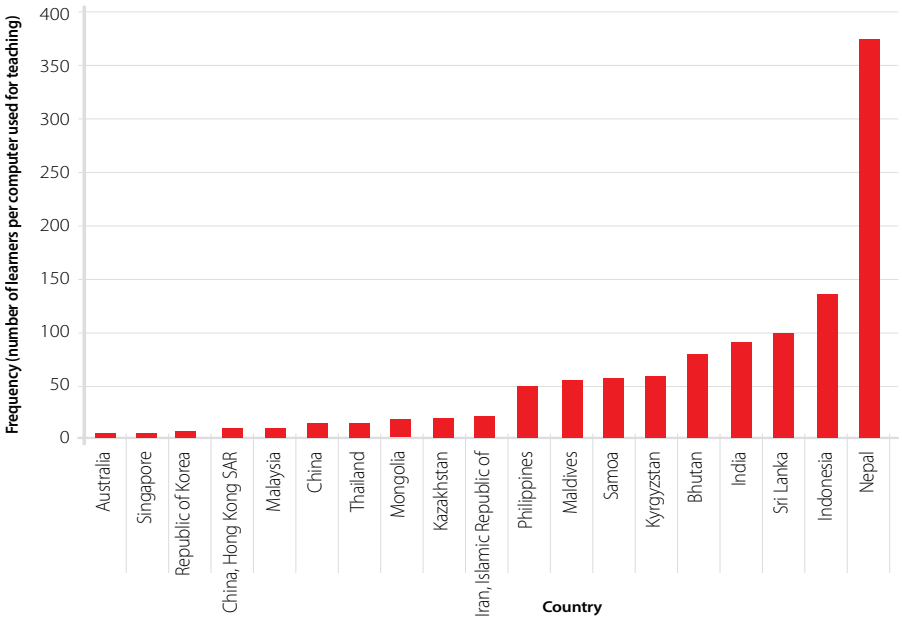
FIGURE 8 *ICT-enhanced instruction in secondary educational institutions in 2012*



Source: UNESCO Institute for Statistics (2014)

When asked what challenges their country faces in preparing TVET students for the transition to a digital and/or knowledge economy, most survey participants cited financial, technical and/or infrastructural issues. Lack of funds was the most frequent response, especially in the Pacific and South Asia sub-regions. Other frequently cited reasons included lack of trained staff with relevant knowledge and expertise, and an inadequate IT, technological and/or physical infrastructure. The least-cited challenge was negative attitudes towards new technologies and/or resistance to change; hence, there appears to be a willingness to adapt to technological change across the Asia-Pacific, but financial, technical and structural issues are blocking progress.

FIGURE 9 *Learner-to-computer ratios (pedagogy purposes) at secondary education level in 2012*



Source: UNESCO Institute for Statistics (2014)

One concern regarding the uneven use of ICT in TVET across the region is whether countries that are only just beginning to integrate ICT in TVET will be able to eventually 'catch up' and compete with those that already have well-established systems in place. A 2002 UNESCO/ILO joint report on TVET raised this issue, warning that:

'ICT has the potential to improve enormously people's access to quality education and training, including in the workplace. There is however a danger that these technologies may create a "digital divide" and worsen existing inequalities in education and training between urban and rural areas, between rich and poor, between those who possess and those who lack literacy and numeracy skills and between developed and developing countries' (UNESCO and ILO, 2002, p. 61).

The logic is obvious: without external assistance, some low-income and lower-middle income countries may not be able to afford the investment required to continuously update their TVET systems and processes in line with the speed at which new technologies are emerging. The high LCR ratios shown on the right-hand side of Figure 9 illustrate the constraints that these countries face.

On a more positive note, a promising practice from Bangladesh demonstrates that governments can implement beneficial policies to overcome capacity constraints that prevent TVET institutions from adapting to technological change and integrating ICT in teaching and learning (see Box 10). Other ideas, which specifically address infrastructural constraints, include use of mobile phones to affordably increase learners' internet access in schools and USB-saved tutorials using projectors not requiring internet connection to widen TVET access to disadvantaged youth in offline areas.[69]

BOX 10 *Overcoming capacity constraints that prevent use of ICT in TVET in Bangladesh*

The Government of Bangladesh has recently implemented policies to address key constraints that prevent TVET institutions from upgrading their teaching and learning processes to incorporate ICT. To address technical capacity issues, the Government has begun offering teachers training in 'Development of Digital Content and Multimedia Classroom'. It has also upgraded the IT infrastructure, so that internet is now available in all educational institutions. Finally, it has addressed cost constraints by offering educational institutions reduced-price internet connection, as well as providing financial support to trainers and trainees.

Lessons learned and way forward

ICT offers the potential to increase TVET access and equity, while also enhancing the quality and relevance of training and contributing to economic growth and dynamism. However, countries across the Asia-Pacific are currently at very different stages in terms of their adoption of new technologies, including ICT. Countries that started early in integrating ICT into their TVET policies, strategies and national development plans are now at a more advanced stage than those that are only beginning to introduce ICT into TVET teaching and training. This raises the concern as to whether countries that are still at an early stage will be able to eventually 'catch up' and compete with those that already have well-established systems in place.

69 Pascal Mabille from the TVET Academy in Cambodia demonstrated the latter innovation at ACET.

The main challenges blocking countries from making progress in integrating ICT in TVET are weak financial and technical capacity and an inadequate IT, technological and/or physical infrastructure. Capacity constraints are particularly a challenge for low-income and lower-middle income countries with an under-developed telecommunications infrastructure in schools. The evidence presented in this section suggests that some countries may require external financial and/or technical support to transform their TVET systems and processes in line with the speed of rapidly changing technologies.

Actions to assist countries in overcoming these financial, technical and infrastructural barriers must be pursued through partnerships at local, national and international levels.

- Employers and TVET institutions: Partnerships with industry experts are vital for making 'great leaps forward' in terms of integrating new technologies into TVET in innovative ways; they also offer the potential for attracting funding to TVET for ICT-related programmes and activities. Similarly, 'pooling' resources with other TVET providers – for example, sharing the costs of upgrading ICT facilities and/or retraining TVET teachers, and/or engaging in knowledge/technology transfer – can increase TVET institutions' material and technical capacities in a cost-effective manner.
- Governments should invest in developing and/or upgrading the telecommunications infrastructure and ICT facilities in TVET institutions. They should also ensure that national policies and strategies promote the integration of ICT in education and encourage the development of ICT-enhanced innovative pedagogies in TVET to prepare learners for a technologically advancing and progressively knowledge-based economy.[70] Governments can also support TVET transformations by engaging in data gathering exercises on a regular basis and paying explicit attention to the skills required in their country's transition to a digital and/or knowledge economy. To meet the high costs of improving the ICT infrastructure and/or gathering data on rapidly changing skills needs, governments should consider sharing costs and pooling resources with other governments and/or private sector partners.
- International donors should, where necessary, offer financial and/or technical assistance to low-income and lower-middle income countries to help them to 'catch up' and compete with countries that are at a more advanced stage of integrating ICT in TVET.

70 Although governments in many low-income countries in the Asia-Pacific cannot afford to increase TVET funding, in some cases governments fail to provide adequate financial and material resources for TVET and should be persuaded to increase their budgetary allocations (UNESCO, 2013).

6

Adapting Qualifications and Developing Pathways

Ms. Mohshanat Zohora Zoha, 16 years old, wants to build her career in the garment sector specializing in quality control. She is receiving a six-month quality control training course. Bangladesh.

Relevance in TVET must be judged, not simply by how well TVET training meets the skills needs of employers, but also by how well TVET fulfils the aspirations of its main stakeholders – that is, learners. To be considered relevant from a learners' perspective, TVET must offer qualifications that employers and educational institutions recognize and value, and provide flexible pathways to further education and employment. Only then can intergenerational equity and inclusion be achieved.

TVET's role is transforming, and is increasingly being viewed from a lifelong learning perspective. The concept of lifelong learning is based on the principle that all individuals, at every stage of their life, should have opportunities to acquire the knowledge and skills they need to fulfil their aspirations and contribute to their societies. From a provider perspective, lifelong learning is about meeting the diverse and context-specific learning needs of all age groups through both formal education and alternative learning pathways. In today's fast-changing environment, workers need to be lifelong learners and continuously adapt their skills to changes in the workplace. TVET can play a role in up-skilling and re-skilling workers at all stages of their careers, in line with their changing aspirations or shifts in employment patterns. In addition, on the understanding that skills can be acquired through non-formal and informal means, TVET is expected to play a greater role in validating and certifying individuals' prior learning and experience to increase the educational and employment pathways available to them. An important tool for promoting an integrated approach to skills development in the context of lifelong learning is a transparent, well-articulated and outcome-based national or regional qualifications framework (NQF or RQF). Qualifications frameworks are also important in the context of closer regional integration, as a means of enabling skills recognition and facilitating labour mobility.

The lead ministry survey asked participants a number of questions regarding the actions their ministry or government has taken since 2012 to improve the relevance and recognition of TVET skills and qualifications and/or to develop pathways to further education and employment through TVET. The findings show that most countries in the region have made significant progress in adapting TVET qualifications and/or developing flexible pathways to further education and employment. However, there are still challenges that need to be addressed.

Progress and challenges

Since 2012, many countries in the Asia-Pacific region have implemented measures to improve the relevance and recognition of TVET skills and qualifications. The specific actions they have taken include (in order of importance):

- ✓ reforming qualification systems and/or developing NQFs and/or RQFs;
- ✓ involving private sector partners in implementing and/or assessing TVET programmes;
- ✓ offering and/or accrediting workplace training (including apprenticeships) as part of the TVET curriculum;[71]
- ✓ encouraging or assisting TVET students to obtain work-relevant licences and certificates; and
- ✓ refocusing the TVET curriculum to develop students' transversal skills.

71 However, workplace training takes place more often at post-secondary level than at secondary level.

NQFs and RQFs represent significant advances for the region, although countries and sub-regions are at different stages in developing these frameworks (UNESCO, 2014, p. 65; ETF et al., 2015). Some countries, such as Cambodia and Lao PDR, are at the beginning stages, having recently passed legislation to establish NQFs. Other countries (such as India and Vietnam) have already begun drawing up implementation plans and piloting their frameworks. A final group are in the vanguard, having already established dedicated authorities or agencies, and/or designated government departments to lead the change. Some countries (for example, Malaysia, Philippines and Sri Lanka) have already begun to populate their frameworks with new outcome-based qualifications. In addition, some sub-regions or country groupings have developed mechanisms for translating and comparing workers' skills and qualifications across national borders; one such device is the ASEAN Qualifications Reference Framework (AQRF).

Government actions in adapting TVET qualifications have had a positive impact on employers' regard for TVET graduates' skills, according to the results of the employers' organization survey. Most Asia-Pacific employers surveyed consider TVET graduates' core and job-specific skills to have improved over the past three years. In addition, in Sri Lanka, the introduction of an NQF has raised employers' propensities to hire TVET graduates.[72]

Responses to the lead ministry survey show that, since 2012, many Asia-Pacific governments have also put in place policies to provide flexible pathways to further education and employment for TVET graduates. The measures they have implemented include (in order of importance):

- involving private sector partners in implementing TVET programmes;
- offering entrepreneurship training in TVET to assist learners in creating their own jobs;[73]
- offering career guidance and support to TVET students;[74] and
- developing pathways to further education, by offering higher-level TVET qualifications, linking TVET with general education at higher levels, and/or linking TVET to lifelong learning (see Box 11 for how this has been achieved in Palau).

In addition, some countries in the region have established systems to recognize and certify skills and experience gained in informal and/or non-formal settings to develop education and employment opportunities for individuals operating outside the formal sector.

BOX 11 *Developing flexible pathways to further education and employment in Palau*

In Palau, all secondary students in public schools are required to select a TVET programme major, in addition to meeting academic requirements. Hence, by graduation from secondary school, students will have met the requirements needed to enter either a two-year college or a four-year university. To facilitate pathways to employment, the Government of Palau has also developed, in partnership with employers, multiple work-based learning opportunities for secondary school students.

72 For further details, see Section 3

73 Moreover, in many cases, entrepreneurship training in TVET is competency-based and/or included in countries' national curriculum/development plans.

74 To aid students in making informed career choices and/or finding work, TVET institutions in most countries now hold career fairs and/or employ careers counsellors to provide one-to-one guidance and support. In addition, in many countries, TVET students benefit from job-matching services and/or careers advice by local businesses.

These measures have led to improved TVET graduate transitions, according to respondents to the employers' and youth organization surveys. Most youth survey participants said that TVET graduates in their country now have the skills they need to start and run their own businesses and that top graduates from TVET programmes in their country can now gain entry to university. In addition, some said that TVET qualifications in their country are now recognized by employers in neighbouring countries – the result of expanded use of qualification frameworks. Moreover, the combined results of the employers' and youth organization surveys suggest that greater access to career guidance and support has given young people in the Asia-Pacific a better understanding of employers' skills needs. Looking across the two surveys, it seems that youth perceptions of the skills and personal characteristics that employers seek when hiring skilled entry-level workers closely match the self-stated preferences of employers.[75]

Despite this progress, some challenges remain. First, many countries have encountered obstacles to substantively improving the relevance of TVET qualifications. While most Asia-Pacific countries have made progress in offering and/or accrediting workplace training as part of the TVET curriculum, many have found it difficult to secure relevant training opportunities for students. In addition, some Pacific countries have been unable to offer on-the-job training due to limited availability of relevant training opportunities, lack of technical capacity or experience in setting up workplace training, lack of qualified/trained trainers, and/or lack of funds. Some countries in the region have not yet refocused the TVET curriculum to develop students' transversal skills, owing to a lack of knowledge and/or technical capacity on how to develop transversal competences. These issues may explain why most respondents to the employers' organization survey judged the relevance of formal TVET in their country to be weak.[76]

Second, in many countries, progress in facilitating pathways to employment has been hampered by a lack of adequate support for TVET initiatives. For example, although entrepreneurship training in TVET is now widespread across the Asia-Pacific, in many countries – particularly in the Pacific sub-region – self-employment programmes do not incorporate measures to support entrepreneurs, such as mentoring arrangements, access to credit, access to factors of production, etc. According to the World Bank, entrepreneurship initiatives that lack these features are less likely to succeed (Valerio et al., 2014). The level of support given to entrepreneurship initiatives tends to vary by sub-region and income levels: in many high-income and upper-middle income countries in East Asia and South-East Asia, governments are able to offer entrepreneurship programmes extensive support, such as establishing business incubators or technology parks on TVET campuses (Awasthi, 2008). Meanwhile, most Pacific and South Asian countries cannot afford the high costs of business incubation and clusters. The main challenges that governments, especially in the Pacific and South Asia, face in promoting entrepreneurship through TVET are: lack of funds, lack of trained staff with relevant knowledge and expertise, and/or lack of information regarding the knowledge, skills and competences required for fostering entrepreneurship and innovation. In addition, TVET institutions often have difficulties locating private sector partners willing to act as mentors. Nevertheless, some countries, such as Fiji, have found ways of overcoming obstacles to entrepreneurship (see Box 12).

75 However, these findings must be treated with caution, given the low response rates in both surveys and the fact that the two sets of respondents come from different countries.

76 It should be noted that most survey participants also regarded the relevance of general education and non-formal education in their country to be weak.

BOX 12 *Overcoming obstacles to entrepreneurship and employment: Hospitality schools in Fiji*

Students in vocational programmes in secondary schools in Fiji are encouraged to sell their projects and services. In some schools, a portion of the sales of trainees' projects is deposited into school bank accounts. The amount saved is given to students on graduation day in the hope that it can be used as seed funds to help them to start their own small businesses if they cannot find employment immediately. Hospitality schools in the western side of Fiji have a good relationship with local hotels and resorts. Students benefit from work placements and therefore easily find employment after graduation. In addition, hotels often assist schools in obtaining tools and equipment for vocational training.

Similarly, although the majority of countries in the region now offer some form of career guidance and support to TVET students, access to these services is often restricted by countries' low use of ICT to disseminate careers advice and/or labour market information. It is mainly the high-income and upper-middle income countries in the region – that is, the early adopters of ICT – that use online methods to provide career guidance and support to TVET students (see Boxes 13 and 14 for examples from New Zealand and Singapore). Most low-income and lower-middle income countries in the region are only just beginning to integrate ICT in TVET, so have not yet adopted electronic methods to dispense careers advice to students. Likewise, most Asia-Pacific governments do not disseminate the results of graduate tracer studies and/or skills forecasts online or via social media, preferring instead to publicize their findings in printed reports or at conferences. However, in doing so, they seldom communicate intelligence on changes in work patterns or jobs to young people, who tend to consult online sources, notably social media, news media, job portals and industry websites, for such information. The mismatch between where data is reported and where it is sought has implications for young people's access to labour market information. As a youth organization representative from Nepal put it: '[Y]ouths are facing many problems in getting up to date information on youth and employment issues'.

Limited access to accurate labour market information and/or careers advice appears to have contributed to young people having unrealistically high expectations regarding the value of their skills in the job market. This would explain why respondents to the employers' organization survey said that candidates looking for more pay than is offered is a chief cause of skills shortages in the region. The main challenges that Asia-Pacific governments face in supporting TVET students to make informed career choices and/or find work are: lack of information on the availability of jobs and/or skills required in the labour market, lack of trained staff with relevant knowledge and expertise, and lack of funds.

BOX 13 *Use of ICT to inform career choices: New Zealand's Tertiary Education Strategy*

New Zealand's Tertiary Education Strategy notes the need for the tertiary education system to do more to help students and their families to make informed career choices. There are a number of projects underway focused on improving the quality and availability of labour market information. These include: the Vocational Pathways to support students to progress into a specific industry, as well as helping to identify which industries value their skills and interests; the employment outcomes of tertiary education (EOTE) resource that provides key information about salary and employment outcomes, taking into account students' study choices; the Occupation Outlook Reports that provide information on around 40 selected occupations; a job profile builder tool that helps students, schools, families and whānau[77] to build clearer sightlines to future employment and qualifications; and a Rate my Qualification pilot survey of employer and graduate views of qualifications.

BOX 14 *Use of ICT to expand access to career guidance: SkillsFuture in Singapore*

The Government of Singapore recently launched SkillsFuture, a national movement to provide Singaporeans with the opportunities to develop their fullest potential throughout life, regardless of their starting points. Under the SkillsFuture movement, students in all schools will be provided with trained education and career guidance counsellors. An individual learning portfolio will be made available online for every Singaporean to plan their education and training throughout their working life.

Finally, while most Asia-Pacific countries have introduced measures to improve formal TVET graduates' pathways to further education and employment, many still lack systems for recognizing and certifying learning gained in informal or non-formal settings. Hence, opportunities for many young people in the Asia-Pacific remain restricted, particularly in the region's low-income and lower-middle income countries, which tend to have large informal economies (Tripney et al., 2013). Inequalities between countries, as well as between groups within countries, could widen unless skills recognition and certification systems are extended and strengthened. Issues that have blocked countries' progress in improving their skills recognition and certification systems include: limited/overstretched TVET capacity and weak coordination between ministries in charge of TVET.

Lessons learned and way forward

The attention of decision makers in the Asia-Pacific is shifting increasingly to enhancing the employability of learners as a means of addressing youth unemployment. Countries across the region have made good progress in strengthening TVET students' linkages to the world of work, improving the recognition of formal TVET qualifications, and developing pathways to further education, employment and self-employment for TVET graduates. The success of these measures is evident from employers' increased regard for TVET graduates' skills and youth perceptions that many TVET graduates now have useable entrepreneurial skills and access to higher education, including university. In addition, investments in career guidance systems by TVET institutions seem to have produced a convergence between employers and youth as to what skills and characteristics are valued and required in the labour market.

77 Māori-language word for extended family

However, major steps still need to be taken towards improving education and employment opportunities for young people in the region. Greater progress is required in reforming qualification and certification systems, especially with regard to recognizing and validating learning gained in informal and non-formal settings. TVET institutions also need to find ways of more deeply engaging private sector partners to increase students' access to relevant workplace training opportunities and other forms of support, such as mentoring.

In addition, more emphasis needs to be placed on enabling young people to manage their own careers, supported by accurate and up-to-date labour market information and online career management tools. The low availability of regularly gathered labour market information is blocking the effectiveness of career guidance and support mechanisms, while methods of disseminating data in countries that collect this information are not targeting a key audience – that is, youth. In turn, unrealistically high youth expectations of the value of their skills in the labour market – the result of limited access to accurate labour market information and/or careers advice – is contributing to skills shortages and high youth unemployment levels in the region, producing a vicious circle.

The challenges outlined in this section point to marked disparities between countries in terms of the opportunities available to TVET learners and graduates. Countries with lower income levels have been less able to support the success of TVET initiatives, such as entrepreneurship training, than countries with higher income levels. Countries with large informal economies and/or scattered populations have had greater difficulties engaging private sector partners in TVET activities, including workplace training, than countries with a high proportion of formally established businesses. Countries with less-developed telecommunications infrastructures have been slower to incorporate ICT in supporting students to make career decisions and find jobs than countries with well-developed ICT frameworks. Low-income countries also face higher barriers in developing robust skills recognition and certification systems than middle- or high-income countries.[78] These issues affect the relevance and quality of TVET training and have an impact on TVET graduate outcomes.

A few suggested actions for addressing these challenges, which have proven successful in some countries, include:

- Offering incentives to private sector employers to encourage their involvement in TVET. A recent UNEVOC e-forum online conference on youth and skills highlighted ways that TVET providers can increase employers' involvement in TVET programmes and activities in a cost-effective way – for example, by offering them free training or free office space on TVET campuses in return for their participation in TVET programmes and activities (UNESCO-UNEVOC, 2013).
- Raising funds through TVET programmes and activities. Involving students in school-run, income-generating activities can make TVET programmes more sustainable, reinforce students' technical and entrepreneurship training, and meet the demands of the local community by supplying products and/or services that they need or value (Collett, 2008).
- Pooling resources to address common challenges – for example, teaming up with other governments, TVET institutions and/or private sector partners to share the costs of developing online career management systems or other improvements to TVET programmes and systems.

These three actions may be combined into an overall strategy to overcome capacity limitations while simultaneously improving the relevance and quality of TVET training.

78 For example, designing, implementing and maintaining a National Qualifications Framework is expensive and requires a well-developed education and labour market infrastructure. Many low-income countries lack the capabilities to put in place such a policy (Dunbar, 2013).

7

Encouraging Partnerships and Facilitating Cooperation in TVET

'Jari', or ornamental embroidery, had been a dying art from ancient India. The Government, both state and central levels, has provided the possibility to teach this craft to enable rural women to earn an income in their leisure time. India.

International experience shows that broad, well-designed and effectively coordinated partnerships are key for expanding the capacity and improving the quality and relevance of TVET training (Marope, et al., 2015, p. 131-133). Governments alone cannot fulfil the growing expectations of TVET. Therefore, partnerships with a range of stakeholders, in particular the private sector, are necessary for transforming TVET systems in line with changing industrial standards and practices, for several reasons:

- Informational: Businesses are on the front line in terms of needing to respond to changes in technologies and production processes in order to survive. Therefore, active partnerships with the private sector are necessary for improving knowledge of local labour markets and providing students with pathways to the world of work. Without links to the private sector, governments and TVET institutions will not find out about changes in the workplace and be able to alter TVET training in response to these changes in a timely manner.

- Financial: Transforming TVET in line with the needs of a rapidly changing, globalizing and technologically advancing world of work is expensive. Few governments can afford these costs without external help. Partnerships with the private sector and other stakeholders can generate income for TVET and/or reduce costs and, through diversification of funding sources, ensure the sustainability of TVET policies and programmes.

- Technical: Involving partners in the planning, design and delivery of TVET programmes can expand training capacity while reducing the risk that governments bear, since responsibility for service delivery is shared. Private provision can also result in greater equity, since the private sector tends to be more effective in delivering services that meet the needs of the informal economy (Dunbar, 2013). Moreover, the cheapest and most effective way of upskilling/reskilling TVET teachers and/or quickly altering TVET systems in line with the needs of a changing labour market is to draw on private sector expertise and experience.

- Reputational: Without private sector involvement, TVET lacks credibility, negatively affecting its image and TVET graduate pathways. This would explain why some of the most successful TVET systems in the world – that is, the 'dual systems' of the Netherlands, Switzerland, Austria and Germany, which are characterized by high employment rates among TVET graduates – are run in close cooperation with businesses (CEDEFOP, 2013).

While the above explanations accord special priority to the private sector, involving civil society and learners, including young people, in TVET systems is also necessary for assuring the quality and relevance of skills training. The term 'civil society and learners' may be broken down into four components: (1) non-governmental organizations (NGOs) and civil society organizations (CSOs), which often provide TVET to communities on a non-profit basis; (2) trade unions, which as representatives of workers may offer training or simply act as advocates for TVET within the framework of lifelong learning; (3) learners and parents, who are the main service users; and (4) local communities, which occupy the environment in which TVET learning and activities take place. It is vital that each of these groups is involved in TVET processes and/or activities for the following reasons. NGOs and CSOs need to be included in TVET governance structures to ensure that the training they provide meets recognized quality standards and enable national-level policymakers to better understand the training context at local level.[79] The same rules apply to trade unions that offer training and information on employment rights to workers. Trade union involvement

79 These considerations also hold with regard to for-profit private sector TVET providers.

in policymaking is also vital for bolstering TVET's role in lifelong learning, since workers' perceptions of TVET and take-up rates are influenced by union activities (Heyes and Stuart, 1998).[80] Including young people and their parents in TVET planning and evaluation improves learning outcomes by enabling governments and TVET institutions to be held accountable for the quality and relevance of the training they provide (Ringold et al., 2011). In addition, including service users in training decisions can overcome negative attitudes towards TVET. Involving communities in TVET planning and activities can mobilize local resources and ensure that skills training is responsive to local needs and demands. Moreover, communities that reap benefits from TVET are more likely to champion its growth and development.

Growing global and regional competition has produced a worldwide trend towards closer economic integration, providing greater opportunities for the mobility of industries, workers and learners, but also new responsibilities for governments and TVET institutions. National-level TVET planning and design must now take into account labour market trends across borders, and TVET qualifications now require recognition by employers and educational institutions in other countries. The need to skill individuals to participate in an increasingly interconnected world has rendered international partnerships critically important for the success of TVET initiatives. Cooperation between countries has been strengthened by the proliferation of international and regional networks or 'communities of practice' designed to improve countries' understanding of labour market needs and facilitate educational and labour mobility, and to coordinate efforts to transform TVET in line with these aims.

To assess Asia-Pacific countries' progress in encouraging partnerships and facilitating cooperation in TVET, individuals participating in the three surveys were asked a number of questions regarding the actions their government has taken since 2012 to involve a range of stakeholders in TVET systems and processes and to steer and monitor their activities. The surveys focused mainly on national-level partnerships; they did not also explore countries' participation in regional and/or international networks. However, this latter aspect was covered during discussions at ACET, and these are summarized in this section.

Responses to the partnerships and coordination questions were remarkably similar across the three surveys, notwithstanding the fact that there were few overlaps in terms of the countries covered by each survey. Survey responses suggest a high level of progress across the region in encouraging partnerships in TVET and putting in place systems to facilitate cooperation, but also a number of challenges that still need to be addressed.

80 A recent study showed that limited engagement of trade unions in the skills agenda in India led to adversarial attitudes towards TVET among workers in the IT and automotive sectors (Smith, 2014).

Progress and challenges

Since 2012, most Asia-Pacific governments have made progress in developing and/or extending TVET partnerships with the private sector. Most countries in the region have introduced new frameworks (or already had frameworks in place) to engage the private sector – for example, national qualifications frameworks, dual training systems and/or TVET advisory bodies with employer representation – while some governments have altered legislative and/or administrative frameworks to encourage greater private sector participation. As a result of these measures, employers are now involved in TVET planning, design, delivery and/or assessment in nearly every country in the Asia-Pacific. In addition, in some countries, such as India, private sector partners now play a lead role in TVET funding and provision (UNESCO-UNEVOC, 2015). Moreover, private sector involvement in TVET systems and processes tends to be substantive, rather than symbolic: most respondents to the employers' organization survey said that their government actively encourages employers' participation; that consultations between government and industry take place regularly; and that employers' input is taken seriously and valued by government.

Survey participants were in broad agreement that TVET outcomes in their country have improved as a result of partnerships with the private sector. Some of the positive impacts they noted include:

- ✓ better knowledge and information about the labour market;
- ✓ greater access to workplace opportunities and jobs for TVET students;
- ✓ expanded resources for TVET institutions; and
- ✓ increased TVET capacity.

NGOs and/or CSOs are also included in TVET systems and processes in most Asia-Pacific countries. These organizations are active in providing and/or funding TVET programmes, and in many countries also participate in defining core competences, updating occupational standards and/or updating qualifications frameworks. In some countries, NGOs and/or CSOs are involved in TVET certifications, assessments, teacher training and/or career guidance.

Most governments in the region have established systems or mechanisms to facilitate cooperation among TVET stakeholders. Nearly every country in the region now has a national skills policy in place, and in most cases this is linked to broader development strategies – primarily countries' national development plan, but in some cases specific goals, such as youth employment, environmental protection, industry sector development and/or local economic development. In line with these aims, in most countries, responsibility for TVET planning and coordination is shared by two or more government ministries – primarily the ministries of education and labour, but in some cases other ministries, such as social welfare, environment, trade and industry, science and technology, and culture. To enable cross-ministerial collaboration, most countries have established formal committees or boards that meet regularly; however, in some countries, inter-ministerial collaboration takes place through ad hoc committees or by having a designated contact point within each ministry. To coordinate TVET stakeholders' activities, some countries have established tripartite steering committees, while others have encouraged employers' participation in qualifications frameworks, human resource development boards, sectoral councils, and/or school committees.

In addition, many Asia-Pacific countries now take part in international and regional organizations, platforms and networks that focus on improving TVET relevance and quality and facilitating the educational and labour mobility of TVET graduates.[81] One such partnership is the ASEAN Qualifications Reference Framework (AQRF), designed to improve cooperation and foster mutual recognition of skills and qualifications across countries in the South-East Asia sub-region. Another initiative is the German Dual Vocational Training Programme, an international public-private partnership coordinated by the German Chamber of Commerce and run jointly with Malaysia's Department of Skills Development and several large corporations (including BOSCH). The 3.5-year programme combines theoretical and practical skills training and is based on Germany's successful TVET model.

Despite these positive indications, there are still challenges. Across the region, key stakeholders are not included in TVET systems and processes. In some countries – particularly in the Pacific and South Asia sub-regions – private sector participation in TVET is weak. The reasons given by survey respondents for why this is the case vary: according to lead ministry representatives, employers are often too busy and/or not interested in participating in TVET systems and activities; according to employers' organization representatives, employers are sometimes excluded by government.[82] For example, some of the region's small Pacific islands have not yet put in place frameworks to engage the private sector in TVET. In addition, in some of the region's low-income and lower-middle income countries, even when the private sector is involved, only a minority of employers participate in TVET systems and processes. This is because informal sector firms, which constitute the bulk of businesses in those countries, are rarely included in TVET systems and processes (ADB, 2008).

Lack of deep engagement of the private sector may explain why many countries in the Asia-Pacific cite financial and technical capacity issues as key challenges to improving TVET relevance and quality. In many countries, the government continues to be the main (or, in some cases, the sole) funder and provider of TVET programmes. In addition, in some of the region's low-income and lower-middle income countries, TVET financing comes mainly from foreign donors, which leaves those countries vulnerable to funding gaps should the priorities of their donors change. The survey results also show that few countries in the region – and mainly the high-income and upper-middle income countries – have established sustainable sources of TVET financing, such as equity-oriented training funds financed by levies on workers' salaries.

Trade union participation in TVET also tends to be weak, especially in low-income and lower-middle income countries in the South Asia and Pacific sub-regions. Except in some of the region's high-income and upper-middle income countries, trade unions tend not to be involved in TVET planning, design or implementation. Low trade union involvement in TVET has implications for workers' rights and labour conditions and could in some cases impinge on TVET's role in providing pathways to decent employment opportunities.[83] Many low-income and lower-middle income countries in the Asia-Pacific are characterized by large informal economies and low trade union participation in TVET.

81 The regional and international initiatives described here had been highlighted during discussions at ACET.

82 Hence, the employers' organization representative from Brunei Darussalam argued that 'a more formalised set up' involving employers and industry players is needed to ensure 'proper planning and matching of the educational output and employers needs'.

83 According to the ILO, decent employment 'involves opportunities for work that are productive and deliver a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men' (see http://www.ilo.org/global/topics/decent-work/lang--en/index.htm, accessed 25 October 2015). The ILO's Decent Work Agenda corresponds with SDG 8, which aims to 'promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all'.

Local communities are not involved in TVET planning and activities in most countries in the region. TVET activities tend to take place inside schools, even when they relate to real-world problems happening outside – an issue of particular concern in regard to green TVET initiatives, where communities could provide (or serve as) potentially valuable resources and where TVET activities could have a positive impact on the local environment. However, there seem to be sub-regional differences in terms of the level of engagement of communities in green TVET initiatives: teachers in South-East Asian countries such as Thailand and Indonesia widely engage local communities, while those in East Asia tend to do so irregularly (Kennedy and Chow, 2013). Community involvement is especially crucial for gaining an understanding of the local labour market in countries with large informal economies.

In many countries, youth and/or their parents are not consulted on TVET decisions – for example, through surveys or by having representatives on school committees. In cases where service users' opinions regarding TVET provision are gathered, the main vehicle tends to be parent-teacher association meetings. Young people's views are seldom taken into account, even though decisions concerning TVET affect them most. These issues explain why a youth organization representative from Nepal commented in his/her survey response: 'The current bureaucratic system is not youth friendly'.

Across the region, mechanisms for coordinating partnership activities tend to be weak. Smooth cooperation among TVET partners has been impeded by a number of factors, including: lack of a central coordinating body; too many government agencies involved in TVET; conflicts of agenda among TVET ministries and/or stakeholders; lack of technical capacity; and/or lack of funds. Moreover, several countries – most notably, in the Pacific sub-region – do not yet have a national skills policy or plan in place and therefore lack a comprehensive TVET strategy linked to broader development goals.

In addition, in many countries, monitoring and evaluation systems are weak, affecting both the quality and image of TVET.[84] Regular TVET evaluations are rare across the region, and in many countries systems are not in place to monitor TVET providers and hold them accountable for the quality and relevance of training. Low involvement (or non-involvement) of young people and/or their parents in TVET planning and assessments is an additional problem. Poor TVET quality has an impact on perceptions of TVET: the youth survey results show that in some countries, such as Nepal, TVET is regarded as a second-choice educational option catering to academic under-achievers. The youth organization representative from Nepal remarked: 'It seems like in Nepal, the TVET programs are focused for students who cannot pass the school and those who are not very good in formal education, which is good in a way because it gives some hope to many youth, but it doesn't attract majority of youth'.

One way to overcome negative perceptions of TVET is to invest in raising the quality of training. However, many low-income and lower-middle income countries lack the resources to increase public funding for TVET, while the private sector is unlikely to invest in a sector where there are no profits to be made. In most countries in the Asia-Pacific region, return on investment (ROI) has not been a focus of TVET policy or a means of attracting private sector funding to the TVET sector.[85] This points to the need to market TVET differently – perhaps on the basis of ROI – and to engage and build trust with the private sector. International NGOs can play a role in supporting sustainable local

84 Weak monitoring and evaluation of TVET programmes is not a feature of the Asia-Pacific region alone. A recent study of 345 youth-focused training programmes across 90 countries globally showed that only one-third of these programmes were subject to any kind of evaluation and only 9 per cent were rigorously evaluated, measuring net impact and cost-effectiveness (Fares and Puerto, 2009).

85 This point was made by Phil Loveder from the National Centre for Vocational Education Research (NCVER) in Australia during his speech at ACET.

partnerships in TVET (Collett, 2008). For example, the Millennium Challenge Corporation was instrumental in re-engaging Wagner Asia, a Mongolian Caterpillar dealer, as a partner – rather than a competitor – in the country's official TVET system (see Box 15).

BOX 15 *International NGOs' role in supporting PPPs in TVET: MCC and Wagner Asia in Mongolia*

During compact development in Mongolia, the Millennium Challenge Corporation (MCC) surveyed local businesses to determine their unmet needs for skilled employees. One of the firms it contacted was Wagner Asia, the local Caterpillar dealer. It found that Wagner Asia had given up on the country's official TVET system as a venue for sourcing trained heavy machinery technicians. The company instead scoured the countryside for young people with mechanical aptitudes and set up its own training programme using a competency-based curriculum appropriate to its workforce needs and the Mongolian context. The company used its own machinery maintenance and repair workshop to train Mongolian youth and hired technicians that had received its highly technical Caterpillar training. However, MCC was eventually able to convince Wagner Asia to become its partner in establishing a Mining Center of Excellence at the Polytechnic College in Gobisumber Province, therefore re-engaging the company in the country's TVET system.

Source: MCC (2015)

Challenges also exist in relation to regional and international networks and partnerships. Although countries participating in regional and/or international networks often face similar issues, which is why their joint efforts can contribute to innovative solutions, transferring lessons from one country context to another has often proven problematic. In addition, international and regional efforts are sometimes not well harmonized and therefore result in duplication and waste.

Lessons learned and way forward

Partnerships can boost countries' institutional capacity and improve the quality and relevance of TVET. Countries across the Asia-Pacific exhibit a high level of progress in encouraging partnerships – in particular, in involving the private sector, NGOs and/or CSOs in TVET planning and activities – and in establishing mechanisms to facilitate cooperation among TVET partners. Greater engagement of stakeholders, in particular the private sector, in TVET systems and processes has led to improved labour market information, expanded resources for TVET institutions, increased TVET capacity and better TVET outcomes. Many Asia-Pacific countries have also expanded their involvement in international and regional networks to coordinate efforts to improve TVET relevance and quality and facilitate the educational and labour mobility of TVET graduates.

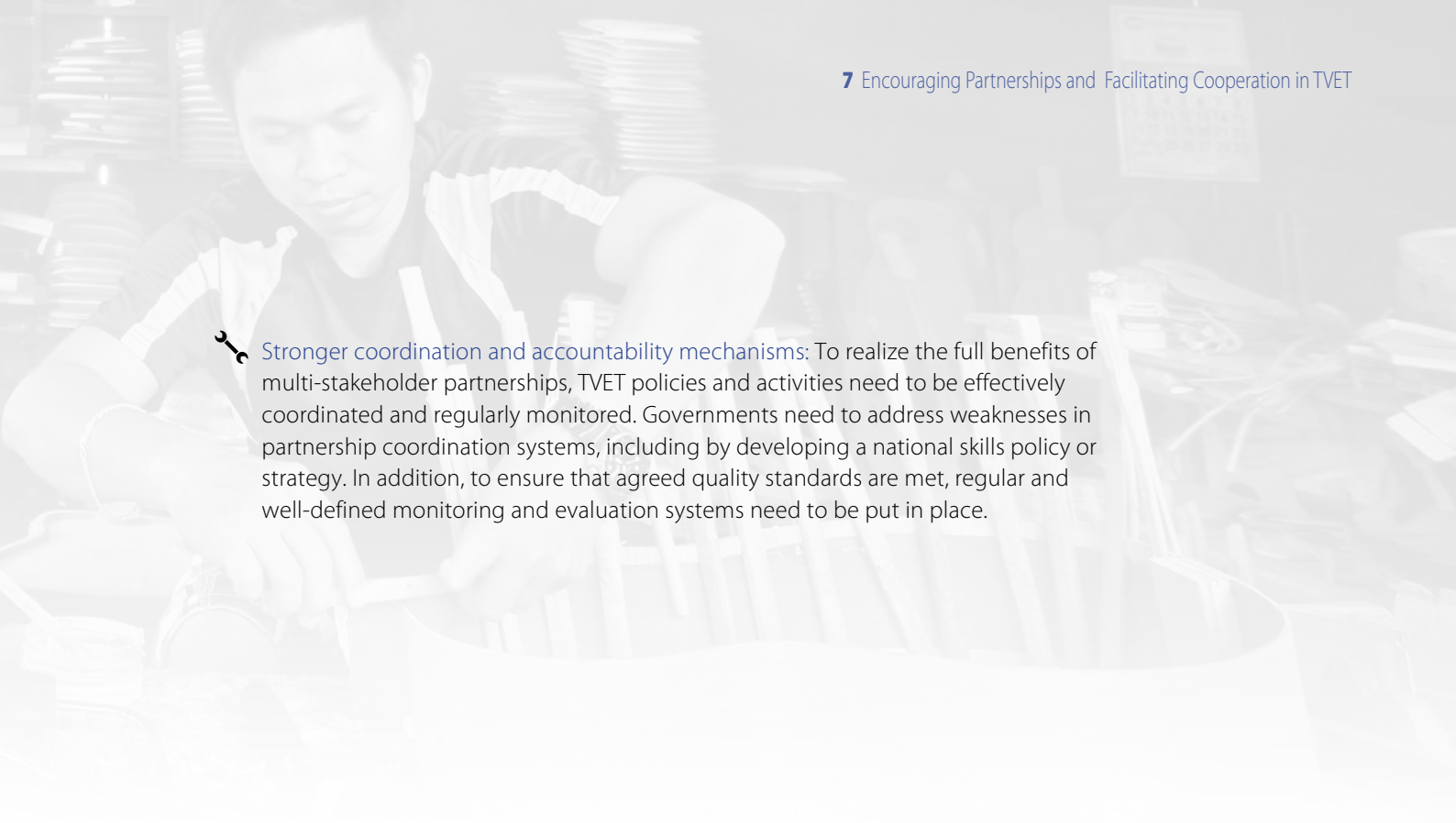
However, progress in capitalizing on the potential of TVET partnerships has been uneven across the region, which in turn has affected the level of resources available to countries for improving the relevance and quality of TVET. The region's low-income and lower-middle income countries, as well as some small Pacific islands, have made slower progress in developing TVET partnerships, including with the private sector, than the region's high-income and upper-middle income countries. Lack of broad partnerships partly explains why many low-income and lower-middle income countries cite financial and technical capacity issues as key challenges to improving TVET relevance and quality. In addition, weaknesses in coordination systems – both at national and regional/international levels – have often hindered the smooth functioning of partnerships and reduced their potential benefits.

Moreover, the potential for partnerships to boost TVET quality has often been compromised by low involvement of youth and parents in TVET systems, as well as weak and irregular TVET monitoring and evaluation. Poor quality has in turn affected perceptions of TVET, making it difficult for countries with low resources to engage key stakeholders as partners in improving TVET quality, thus creating a vicious circle.

Some of the actions that will be required to address these challenges include:

- Broader partnerships: TVET partnerships in the Asia-Pacific currently focus more on TVET providers (e.g. the private sector, NGOs and/or CSOs) than on service users. To improve the relevance and quality of skills training, greater emphasis must be given to involving learners, including youth, and parents in TVET planning, design and assessments. In addition, trade unions – in their role as representatives of lifelong TVET learners – must be included in TVET systems, to assure the quality of learners' transitions by ensuring that workers' rights are accorded a central role in TVET policy. Greater efforts must also be taken to engage local communities in TVET planning and activities. This is especially important in the context of green TVET initiatives – to ensure that training is responsive to local needs, utilizes local resources, and has a positive impact on the local environment – and in countries with large informal economies, as a means of ensuring the relevance of training and the accuracy of local labour market information.

- Deeper engagement of existing partners: Governments and TVET institutions will need to find ways of more deeply engaging the private sector in TVET financing and provision, both as a means of diversifying funding sources and to increase students' access to workplace training opportunities, mentoring support and jobs. A recent UNEVOC e-forum online conference on youth and skills highlighted ways that TVET providers can increase employers' involvement in TVET programmes and activities in a cost-effective way – for example, by offering free training or free office space on TVET campuses in return for employers' participation in TVET programmes and activities (UNESCO-UNEVOC, 2013). In light of closer economic integration, Asia-Pacific countries should increase their involvement in regional and international networks as a means of improving TVET provision (for example, through group learning and knowledge exchange) and reducing regional disparities. In addition, governments should work with regional and international partners to strengthen qualifications recognition systems in order to facilitate TVET graduates' educational and labour mobility.



- Stronger coordination and accountability mechanisms: To realize the full benefits of multi-stakeholder partnerships, TVET policies and activities need to be effectively coordinated and regularly monitored. Governments need to address weaknesses in partnership coordination systems, including by developing a national skills policy or strategy. In addition, to ensure that agreed quality standards are met, regular and well-defined monitoring and evaluation systems need to be put in place.

8

Conclusions and Recommendations

Female welding students.
The Philippines.

The results of the TVET Progress Review indicate that countries across the Asia-Pacific have made significant progress in enhancing TVET relevance since 2012. The actions that governments have taken to improve the relevance of skills training have included:

- ✓ Increasing TVET responsiveness to current and future skills needs by engaging private sector partners in planning/designing TVET policies and programmes; gathering information on the current/future skills needs of employers and updating TVET training in line with the findings; and offering training in line with occupational standards and/or competences agreed with employers.
- ✓ 'Greening' TVET and advancing the 'greening TVET' agenda by introducing training in skills to promote sustainability in the workplace; integrating sustainable development principles into entrepreneurship training; involving local communities and businesses in green TVET activities; greening TVET learning environments; and formulating national skills development plans to support green transitions.
- ✓ Increasing TVET responsiveness to technological change and promoting use of ICT in TVET by offering training in electronic and/or digital technologies; emphasizing innovation-related skills in the TVET curriculum; using ICT to improve TVET access and equity; and making formal commitments to promote the integration of ICT in TVET.
- ✓ Adapting qualifications and developing pathways to higher education and employment by setting up national/regional qualifications frameworks; offering/accrediting workplace training, including apprenticeships; offering entrepreneurship training in TVET; developing higher-level TVET qualifications; linking TVET to general education at higher education levels; linking TVET to lifelong learning; offering career guidance and support through TVET; and emphasizing transversal skills[86] in the TVET curriculum.
- ✓ Encouraging partnerships and facilitating cooperation among TVET stakeholders by engaging the private sector, NGOs and/or CSOs; establishing mechanisms to facilitate cooperation among TVET stakeholders; and participating in international/regional networks to improve TVET graduates' educational and labour mobility.

Government actions to improve TVET relevance have had positive impacts on TVET outcomes, including:

- ✓ higher employer regard for TVET graduates' core and job-specific skills, in particular their ICT skills;
- ✓ improvement in TVET graduates' entrepreneurial skills;
- ✓ increased TVET pathways to higher education;
- ✓ greater recognition of TVET qualifications in neighbouring countries;
- ✓ better youth understanding of employers' skills needs;
- ✓ greater access to workplace opportunities and jobs by TVET students; and
- ✓ expanded TVET capacity.

However, the findings also point to uneven progress among countries and persisting challenges that limit further enhancements to the relevance and attractiveness of TVET. Many Asia-Pacific countries:

- do not regularly gather data on the labour market;
- have a low opinion of the efficacy of evidence-based approaches;
- have made slow progress in 'greening TVET', as well as incorporating ICT in TVET and/or adapting training and career support systems to technological change;

86 Transversal skills include among others problem solving, critical thinking, creativity, teamwork, communication skills and conflict resolution.

- do not validate, accredit and recognize learning acquired through non-formal and informal channels; and/or
- do not include key stakeholders in TVET systems and processes.

As a result of these issues, skills mismatches have grown across the region, and Asia-Pacific youth are now three to six times more likely than adults to be unemployed. In addition, there are growing concerns that inequalities between countries will continue to widen unless key constraints are overcome. The challenges that remain to be addressed in transforming TVET systems, so as to increase learners' employability and contribute to sustainable development throughout the region include: weak technical, financial and institutional capacity; a lack of broad partnerships involving government, employers, youth and other relevant stakeholders; and weak coordination and monitoring systems.

TVET is playing a significant role in advancing the 2030 Education Agenda[87] that reflects the vision of the 2030 Agenda for Sustainable Development,[88] and in particular Sustainable Development Goal (SDG) 4 "*Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*". While Education 2030 is universal, countries in the region face distinct challenges and therefore require different development paths: some countries are struggling to build resilience and escape fragility, while others have to chart a new course for development to escape the middle-income trap. Regional integration and the momentum produced by the new education agenda offer countries unique opportunities to form beneficial partnerships in order to overcome key constraints and better capitalize on the potential of TVET.

As outlined in the Kuala Lumpur Declaration, the recommended actions that governments and other TVET stakeholders in UNESCO's Member States in the Asia-Pacific should consider implementing in response to the challenges identified in this TVET Progress Review include:

Enhance the quality of TVET and its relevance to the changing needs of the world of work

- Governments and training providers should apply the findings of labour market studies to reform TVET policies and develop TVET qualifications and programmes for different users.
- Governments and TVET institutions should also increase TVET's role in promoting youth employability by developing entrepreneurship.
- Governments and training providers should strengthen the links between TVET outcomes and changing labour market needs by promoting a stronger private sector role in TVET systems and processes.
- Governments, training providers and other TVET stakeholders (including the private sector) should enhance TVET quality by developing quality standards, undertaking curriculum reforms, and promoting teachers' professional development, including through setting up appropriate incentives and support systems.
- International partners (and/or governments) should promote evidence-based approaches by building Member States' (and/or TVET providers') capacity to conduct and analyse foresight and feedback mechanisms, such as graduate tracer studies and employer surveys.

87 The global education agenda (Education 2030) is part of the 17 UN Sustainable Development Goals (SDGs) that make up the 2030 Agenda for Sustainable Development.

88 The 2030 Sustainable Development Agenda, adopted by UN Member States on 25 September 2015, builds on the Millennium Development Goals (MDGs), which focused on reducing poverty, hunger, disease and gender inequality and ensuring access to water and sanitation by 2015. The new agenda encompasses 17 Sustainable Development Goals (SDGs) that aim to end poverty, fight inequality and injustice, and tackle climate change by 2030. Education and skills development are expected to play a key role in the drive to achieve the SDGs. See http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

Integrate greening skills for sustainable development in TVET programmes

- Governments and training providers should integrate greening skills in TVET programmes for both existing and emerging occupations, with a view to achieving sustainable development, poverty reduction and inclusive economic growth.
- Governments and training providers should systematically include education for 'greening' economies and societies as part of TVET qualifications, standards and programmes.
- Governments and international partners should equip TVET systems with the necessary technical and financial resources to comprehensively green TVET training and learning environments.[89]
- Governments, training providers and other TVET stakeholders (including the private sector) should take steps to expand the professional capacities of TVET teachers and trainers to deliver training in skills to promote sustainability in the workplace.

Leverage the potential of Information and Communication Technology (ICT) for TVET

- Governments and training providers should put in place appropriate policies, strategies and affordable solutions to improve ICT facilities in TVET institutions.
- Training providers should offer training in ICT and/or integrate ICT in TVET programmes and activities to prepare learners for a technologically advancing and progressively knowledge-based economy.
- Governments, training providers and other TVET stakeholders (including the private sector) should take steps to expand the professional capacities of TVET teachers and trainers to deliver training in skills to use ICTs in the workplace.
- Governments and international partners should explore the potential of data analytics for enhancing understanding of labour market dynamics, students' behaviour and learning, and strengthening TVET-related labour market management and information systems.

Adapt qualification systems to facilitate learning and career pathways

- Governments, training providers and other TVET stakeholders (including the private sector) should work together to reform national qualifications systems and ensure that they are underpinned by appropriate and affordable quality assurance mechanisms.
- Governments, training providers and other TVET stakeholders (including the private sector) should promote TVET as an attractive learning and career pathway based on effective guidance and counselling services.
- Governments, training providers and other TVET stakeholders (including the private sector) should take steps to raise the public profile and attractiveness of TVET among youth, families and society at large.

Expand lifelong learning opportunities through TVET

- Governments, training providers and other TVET stakeholders (including the private sector) should develop TVET and skills development policies guided by lifelong learning principles.

89 To holistically support countries' transitions to a green society and green economy, TVET institutions must be transformed in a comprehensive manner, consisting of five dimensions: green campus, green curriculum, green research, green community and green culture (Majumdar, 2012).

- Governments, training providers and other TVET stakeholders (including the private sector) should promote transversal skills, such as learning to learn, problem solving and critical thinking.
- Governments, training providers and other TVET stakeholders (including the private sector) should promote entrepreneurial and citizenship skills to equip learners with skills for sustainable livelihoods and further learning.
- Governments, training providers and other TVET stakeholders (including the private sector) should create learning opportunities for all, without discrimination, as a means of continuing professional development and to enhance skills and competences for work and life.

Foster regional integration and labour mobility

- Governments, regional/international partners, training providers and other TVET stakeholders (including the private sector) should work together to establish mechanisms for fair and transparent recognition of qualifications as part of regional integration processes to facilitate mobility for study and professional purposes.
- Governments and regional/international partners should promote exchanges of experiences, knowledge sharing and peer learning through regional organizations, platforms and networks.

Strengthen governance and increase investment in TVET

- Governments and TVET providers should develop an appropriate framework to strengthen the governance of TVET and establish multi-stakeholder partnerships including parents and local communities.
- Governments and TVET providers should engage youth in decision-making processes related to education and training policies and strategies.
- Governments should increase and diversify financing for TVET through sustainable domestic resources and where appropriate with the support of development partners.
- Governments and TVET providers should include private sector stakeholders as true partners in the pursuit of skills development for sustainable livelihoods and decent work.

Ensure inclusive and equitable TVET

- Governments and training providers should promote equality by increasing and diversifying the opportunities for TVET learning available to disadvantaged groups, including people with disabilities, ethnic minorities and populations living in remote and rural areas.
- Governments, training providers and other TVET stakeholders (including the private sector) should promote gender-responsive TVET policies and skills development practices, career guidance and counselling, and information to increase girls' and women's access to TVET programmes.
- Governments, training providers and other TVET stakeholders (including the private sector) should promote TVET in the informal economy through quality apprenticeships in small, micro and household enterprises, as well as through community-based and civil society-managed programmes in rural and urban areas.

Appendix tables

TABLE A.1 *Breakdown of TVET Progress Review survey responses, by Member State and sub-region*

Member State/Sub-region	Lead Ministries	Employers' Organizations	Youth Organizations
Central Asia			
Iran, Islamic Republic of	1 (complete)		
Kazakhstan			
Kyrgyzstan			
Mongolia	1 (complete)	1 (incomplete)	
Tajikistan			
Turkmenistan			
Uzbekistan			
East Asia			
China		1 (incomplete)	
China - Hong Kong SAR			1 (incomplete)
China - Taiwan			2 (complete)
DPR Korea			
Japan	1 (complete)	1 (incomplete)	
Republic of Korea			
South-East Asia			
Brunei Darussalam		1 (complete)	1 (complete)
Cambodia		1 (complete)	4 (3 incomplete)
Indonesia	1 (complete)	1 (complete)	
Lao PDR	2 (1 incomplete)	1 (incomplete)	
Malaysia		1 (complete)	
Myanmar		1 (incomplete)	
Philippines			
Singapore	1 (complete)		61 (14 incomplete)
Thailand	1 (complete)		
Timor-Leste		1 (complete)	
Viet Nam		1 (complete)	
South Asia			
Afghanistan	2 (complete)		1 (complete)
Bangladesh	9 (complete)	1 (complete)	
Bhutan	1 (complete)		
India			2 (1 incomplete)
Maldives			
Nepal			1 (complete)
Pakistan		1 (complete)	
Sri Lanka		1 (complete)	
Pacific			
Australia			3 (1 incomplete)
Cook Islands	1 (complete)		
Fiji	1 (complete)	2 (complete)	
Kiribati		1 (complete)	
Marshall Islands			
Micronesia, Federated States of			
Nauru	1 (incomplete)		
New Zealand	1 (complete)	1 (incomplete)	
Niue	1 (complete)		
Palau	1 (complete)		
Papua New Guinea	2 (complete)	1 (complete)	
Samoa	1 (complete)		
Solomon Islands			
Tonga	1 (complete)		
Tuvalu	1 (complete)		
Vanuatu			
TOTAL RESPONSES	**31**	**19**	**76**

TABLE A.2 *Economic, environmental and demographic characteristics of Asia-Pacific countries*

Country/Sub-region	Income level	Environmental vulnerability index (EVI)	Yale EPI ranking (out of 178 countries)	Youth (aged 10-24) % of total population	Youth u/e rate
Central Asia					
Iran, Islamic Republic of	Upper middle	Vulnerable (3)	83	25	29.7
Kazakhstan	Upper middle	At risk (2)	84	23	4.5
Kyrgyzstan	Lower middle	At risk (2)	125	29	15.6
Mongolia	Upper middle	Resilient (1)	111	27	9.2
Tajikistan	Lower middle	Vulnerable (3)	154	34	15.6
Turkmenistan	Upper middle	At risk (2)	109	29	20.2
Uzbekistan	Lower middle	Vulnerable (3)	117	30	20.3
East Asia					
China	Upper middle	Highly vulnerable (4)	118	22	10.1
China - Hong Kong SAR	High	Vulnerable (3)	-	16	9.1
China - Taiwan	High	Highly vulnerable (4)	46	-	-
DPR Korea	Low	Highly vulnerable (4)	-	24	9.9
Japan	High	Extremely vulnerable (5)	26	14	6.8
Republic of Korea	High	Extremely vulnerable (5)	43	19	9.2
South-East Asia					
Brunei Darussalam	High	Vulnerable (3)	37	24	11.7
Cambodia	Low	Vulnerable (3)	145	32	0.7
Indonesia	Lower middle	Highly vulnerable (4)	112	26	21.6
Lao PDR	Lower middle	At risk (2)	127	34	3.4
Malaysia	Upper middle	Vulnerable (3)	51	28	11.1
Myanmar	Lower middle	Vulnerable (3)	164	26	9.9
Philippines	Lower middle	Extremely vulnerable (5)	114	31	16.7
Singapore	High	Extremely vulnerable (5)	4	20	10.3
Thailand	Upper middle	Vulnerable (3)	78	22	3.1
Timor-Leste	Lower middle	-	132	35	13.3
Viet Nam	Lower middle	Highly vulnerable (4)	136	26	5.4
South Asia					
Afghanistan	Low	Vulnerable (3)	174	34	17.5
Bangladesh	Lower middle	Highly vulnerable (4)	169	30	9.2
Bhutan	Lower middle	At risk (2)	103	29	6.7
India	Lower middle	Extremely vulnerable (5)	155	28	10.5
Maldives	Upper middle	Extremely vulnerable (5)	-	31	26.5
Nepal	Low	Vulnerable (3)	139	33	4.6
Pakistan	Lower middle	Extremely vulnerable (5)	148	32	8.5
Sri Lanka	Lower middle	Highly vulnerable (4)	69	22	17.6
Pacific					
Australia	High	At risk (2)	3	20	12.2
Cook Islands	Upper middle	Extremely vulnerable (5)	-	-	-
Fiji	Upper middle	Highly vulnerable (4)	76	27	19.2
Kiribati	Lower middle	Extremely vulnerable (5)	59	-	54.0
Marshall Islands	Upper middle	Highly vulnerable (4)	-	-	-
Micronesia, Federated States	Lower middle	Extremely vulnerable (5)	-	34	-
Nauru	Upper middle	Extremely vulnerable (5)	-	-	-
New Zealand	High	Vulnerable (3)	16	21	15.8
Niue	Upper middle	Vulnerable (3)	-	-	-
Palau	Upper middle	Highly vulnerable (4)	80	-	-
Papua New Guinea	Lower middle	At risk (2)	122	31	4.7
Samoa	Lower middle	Highly vulnerable (4)	-	33	-
Solomon Islands	Lower middle	Vulnerable (3)	152	31	9.7
Tonga	Upper middle	Extremely vulnerable (5)	47	31	-
Tuvalu	Upper middle	Extremely vulnerable (5)	-	-	-
Vanuatu	Lower middle	Vulnerable (3)	106	31	10.6

Sources: Income levels for 2015 from World Bank (2015) *World Development Indicators* 2015 (Washington DC: World Bank)
Youth population proportions for 2013 from Population Reference Bureau (2013) *The World's Youth: 2013 Data Sheet* (Washington DC: PRB)
Youth unemployment rates refer to modeled ILO estimates for 2013 and are from ILO Key Indicators of the Labour Market database.
EVI data from SOPAC/UNEP (http://www.sopac.org/sopac/evi/EVI_Country_Profiles.htm)
EPI rankings for 2014 from Yale University EPI website (http://epi.yale.edu/epi/country-rankings)
Countries shown in dark red are small island developing states (SIDS).

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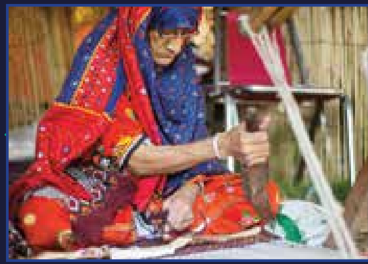











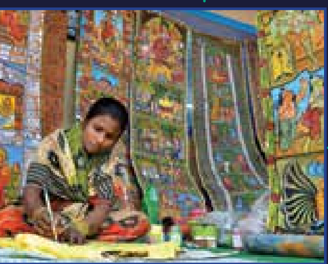




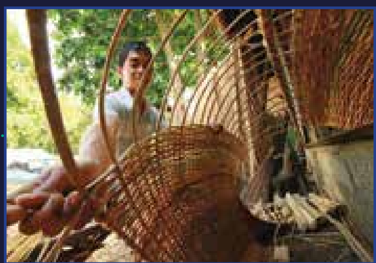
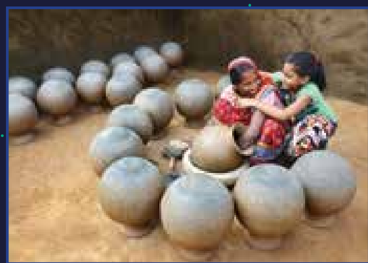

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