



SUSTAINABLE VOCATIONAL TRAINING TOWARD INDUSTRIAL UPGRADING AND ECONOMIC TRANSFORMATION

A KNOWLEDGE SHARING EXPERIENCE

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6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines
Tel +63 2 632 4444
Fax +63 2 636 2444
www.adb.org

For orders, please contact:
Department of External Relations
Fax +63 2 636 2648
adbpub@adb.org

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Abbreviations

ACCC	- Association of Canadian Community Colleges
ADB	- Asian Development Bank
AMTEC	- Automotive Manufacturing Technical Education Collaborative
APA	- Accreditation of Prior Achievement
CEO	- chief executive officer
GIZ	- Deutsche Gesellschaft für Internationale Zusammenarbeit (German Federal Enterprise for International Cooperation)
HRD	- human resource development
HRDF	- Human Resources Development Fund
ICT	- information and communication technology
JICA	- Japan International Cooperation Agency
KRIVET	- Korea Research Institute for Vocational Education and Training
LMI	- labor market information
NCS	- national competency standards
NDTS	- National Dual Training System
PPP	- public-private partnership
PRC	- People's Republic of China
R&D	- research and development
SDL	- Skills Development Levy
SME	- small and medium-sized enterprise
TA	- technical assistance
TVET	- technical and vocational education and training
US	- United States

1.1 Forum Background

Developing relevant skills for industrial upgrading and economic transformation is a key challenge facing many growing and middle-income countries. The Asian Development Bank (ADB) and the People's Republic of China (PRC) conducted a knowledge sharing event to bring together policy makers and practitioners around the topic of technical and vocational education and training (TVET) for meeting national economic objectives. The focus of the knowledge sharing event was on (i) best practice and models for supporting sustainable vocational training; (ii) the role of the government, private sector, enterprises, and vocational training schools; (iii) improving vocational training in a rapidly changing world; (iv) financing vocational training; and (v) policy environment for vocational training governance and management. The first part of the event took place in Beijing on 2–3 December 2013. Demands and policies for improved vocational training in a changing world and good practices of developed and developing countries were discussed with the goal of identifying opportunities for supporting TVET in the PRC and responding to skills challenges in other Asian countries. The second part of the event took place on 4–5 December 2013 and consisted of visits to training facilities in Guangdong province, showcasing good practices and sharing lessons with practitioners.

The event “Sustainable Vocational Training toward Industrial Upgrading and Economic Transformation” is part of the annual PRC–ADB Knowledge Sharing Platform and was supported and organized by the Regional Knowledge Sharing Initiative, a joint initiative between the PRC and ADB.

More than 90 participants from 16 countries participated in this event.

1.2 Forum Introduction

The forum opened with an overview of the growing importance of the PRC in the global economy. This economic transformation is leading to an increasing emphasis on rebalancing rural and urban growth and moving from a manufacturing base to a high skills value-added economy. Human resources are replacing natural resources as an important indicator of a country's wealth. The PRC's rapid transformation offers greater opportunities for the country to continue this successful development, underpinned by new reforms in the TVET system. Emerging challenges were well-recognized in the third plenary session of the 18th Communist Party of China Central Committee, and the decision to further reform the TVET system was clearly defined. The PRC's increased efforts to promote environmentally sustainable and inclusive growth, South–South cooperation, and TVET reform came together in this knowledge sharing forum on TVET industrial upgrading and economic transformation.

Rural and urban income disparities compound the challenges that PRC faces and create extra complexity for education in general. The forum heard that there are three key issues in education:

- (i) in general basic education, ensuring universal completion and not just universal enrollments, especially for the children of migrant workers;
- (ii) improving the quality of education (particularly in rural areas), teaching resources, and facilities; and
- (iii) addressing the special education needs of migrant workers' children.

While participation at the tertiary level has expanded from 3% to 24%, it is still lower than the global average of 30%. Expansion at the higher education level will require public–private partnerships (PPP) and reforms to improve quality and internal efficiency.

Another key challenge is the improvement in the quality and labor market relevance through the introduction of competency standards, competency-based training, and the promotion of school and industry-based collaboration. There is a need to further align TVET graduate outcomes to the industry's demand for higher skill levels. Currently, there is a mismatch between the skills required in industries and the skills of graduates entering the labor market.

Having appropriate human resources has been one of the country's key constraints in recent times. There is a need to adopt new technologies and innovation in moving from manufacturing to an emphasis on services. An inclusive approach to skills development should include schools increasing their overall capacity to deliver technology skills to everyone for an appropriately skilled workforce.

ADB fully appreciates the importance of the comprehensive reform plan adopted by the PRC in its quest to become a prosperous nation by 2020. ADB has been supporting educational reform in the PRC for about 20 years. Since 1993, ADB has supported the central and regional governments' efforts to strengthen institutional capacity and policy support. The first loan support in the education sector was in 2013 in Hunan Province.

The challenges brought about by the changing labor market create specific demands on TVET, in particular:

- the need for elderly care due to the rapidly changing demographic profile of an aging population;
- sustainability, greening of the industry, and green jobs;
- developing pathways between the TVET sector and higher education sectors;
- projects and initiatives that promote regional cooperation generally and in TVET; and
- the sharing and demonstration of good practices for the benefit of the region.

ADB expressed its sincere thanks to the Government of the PRC and the Ministry of Finance for hosting this important initiative in establishing a knowledge sharing platform on TVET industrial upgrading and economic transformation for the benefit of all ADB member countries.

1.3 Forum Themes

A number of common themes were discussed by the speakers during the forum, including the effects of an aging population on the future workforce, rapidly changing technology, and globally connected economies.

A common theme was that it takes decades to develop a multilevel TVET system and governments require a high level of commitment to TVET. It is important to identify what each country's culture can accommodate in the

design of its TVET system and how a country involves and engages the industry in TVET. Policy integration is an important area where multiple agencies are involved. There is an oversupply in the overall market but shortages in key areas, which is a challenge.

A number of important questions were raised during this forum. What kind of TVET management structure is needed to facilitate a closer link to economic development? What kinds of TVET institutional reforms are needed and how do we develop a unified single administrative arrangement for TVET, given there are often multiple government agencies involved in TVET delivery? How do we make sure national TVET policy is implemented as uniformly as possible in regions and states? How can we better align, integrate, and ensure better coordination among different government agencies to avoid duplication of effort? How do we increase accountability linked to incentives and measure the performance level of skills utilization? What needs to be in place to scale up and increase flexibility between higher education and TVET? There is a need for policy integration—e.g., green jobs and TVET. What are the key features that make the systems responsive?

From these common themes, the speakers identified key points relevant to TVET reform. These key points have been grouped under the following headings:

General

- There is a mismatch between the demand for high-level skills and the oversupply of low-level skills.
- Education prepares people for higher levels of learning, but more importantly, it orients learners and workers toward the world of work.
- Improving the status of TVET is very important, as going to university is still a family honor.
- There is a need to raise the status of TVET within the community to attract students from a wide range of backgrounds.

Policy

- Competitiveness in the main industry may rely upon the competitiveness of the supply chain industries. Skills development—upstream and downstream—is valuable to competitiveness of an industry sector.
- An investment in increasing skills and knowledge intensity in small and medium firms is required at a policy level.
- A central coordinating body overseeing TVET is a similarity shared by country examples presented as good practice.
- Skills development policy integration is an important area where multiple agencies are involved.
- The three critical intersections of enrolling in postsecondary education, building skills, and finding a job require additional focus.
- Research from the McKinsey Center for Government found that the three factors of successful education programs are:
 - o employers and education providers actively stepping into each other's worlds;
 - o innovation in delivery of education and training; and
 - o a system design that works.

- Making TVET work at a system level requires new incentives and structures. The initial answer from McKinsey research is that there are three pieces to this.
 - First, there is a need for better data collection and dissemination to youth, providers, and employers. For youth, they need to know what programs are available, what jobs they lead to, and what the career prospects are in those fields. For providers, they need to know the needs of the labor market for both curriculum design and capacity planning. And for employers, they need to know how effective different providers are in supplying them with the talent they need.
 - Second, there is a need for more sector-wide collaborations, where large employers come together to develop solutions.
 - Finally, there is a major role to be played by system integrators.
- Less developed countries will need to adjust their education and learning systems to respond to the changing demands for human resources and to compete in the global economy.
- Core principles for the reformed TVET system are that it will be performance-based—that is, the institutes will be accountable for their performance. TVET will be demand-driven by students and economic needs. The industry will be led through collaborative development of TVET sectors and there will be clear governance for better monitoring of performance.

Pathways

- Strategies to accelerate labor reform and attract and retain top talent while upgrading the existing talent pool are important. Policies to ensure that students entering the TVET sector have the basic skills to undertake a higher level of skills development are also in place.
- There should be a rethinking of the scope of TVET delivery and the types of qualifications and pathways offered within the TVET sector. New qualifications and assessment tools should be developed and endorsed or recognized by the industry.
- TVET activities that can serve multiple but interrelated industries mean that the workforce can move across different industries based on demand.
- There is an increased need for skill updating or up-skilling and access to achieving multiple certificates and degrees.
- Up-skilling the existing workforce ensures a quality flow of workers from low-skilled to semi-skilled to high-skilled to support economic growth and industry demand. This supports the country's move toward a knowledge economy where workers across all sectors will need to be able to add value and contribute in a higher skills environment.
- Pathways into university are an important step to increasing a positive perception of TVET.

Access and Equity

- The number of domestic migrant workers who remain unskilled is 750 million. A big challenge is reaching out to them and training their children.
- The implications for TVET include ensuring:
 - a flexible system to respond to the learning needs for all, and a second, third, and fourth chance at education;

- o new and soft skills to enable people to gain employment and contribute to society; and
- o multiple roles to increase employability.
- TVET reform should develop systems that lead to the integration of urban and rural development to reflect the new expectation of people of all nationalities for better lives. Vocational education should be consistent with needs of people from different backgrounds while offering cohesion, flexibility, and choices in skills provision.

Industry, Student, and Technical and Vocational Education and Training Engagement

- Becoming closer to the industry and establishing an ongoing, effective two-way partnership in many areas such as labor market information (LMI), curriculum, standards, career orientation, internships, hiring, and equipment can produce additional outcomes for the TVET sector.
- The three major stakeholders—employers, educational institutions, and students—have limited interaction and appear to be operating in parallel worlds.
- Three factors are important for maximizing human resources:
 - o building a flexible education system;
 - o developing and updating needed skills; and
 - o enhancing employability.

Innovation

- To simulate innovation, it is important to identify workable solutions suitable to the local context. If aiming to make a bigger impact, it is important to be strategic in what we test and how we identify solutions to scale up.
- Innovation is a core requirement for economic growth, and the importance of creative power and entrepreneurship in high skill economies should not be underestimated. These creative and entrepreneurial skills need to be embedded into the formal education curriculum, programs supporting small and medium-sized enterprises (SMEs), and on-the-job training.
- It is important to foster a TVET paradigm shift toward skills-based TVET and to position TVET teachers and/or trainers as “agents of change.”

Public–Private Partnerships and Funding

- There are a number of benefits and risks that need to be weighed when considering negotiating a PPP. Associated benefits can include improved quality and access to new skills while risks can include inadequate regulatory environments and a lack of competition in some markets.
- Challenges to implementing PPPs in education and training include: (i) a traditional focus on infrastructure, (ii) government resistance to private sector and/or PPPs, (iii) procurement issues related to contracting, and (iv) the financial viability of the potential projects. Additionally, there is a lack of appropriate policy frameworks to support PPPs and a need for incentives that support innovation.
- There are many potential PPP models for TVET, and the context is important as to which model is taken. The country’s governance, financial management, and administrative capacity must all be taken into

consideration. The size and nature of the nongovernment sector and fiscal situation, among others, all play a role in determining the PPP model for a particular country.

- Levies have the potential of providing large amounts of funding. However, levies do not on their own guarantee greater participation in training, and research suggests that levies alone do nothing to improve the quality of skills development. Combined with other TVET systemic mechanisms, levies can have a magnifying effect on the quality, relevance, and employer demand for training.
- The evolution in funding models is also linked to the practice of systems improvement based on evaluations and research of the TVET system, which affects how funds are targeted.
- For smaller developing economies, supporting industry involvement in TVET can be difficult. There is divergence in the research as to whether small employers benefit from levy schemes.
- Incentives for training providers must be explicitly changed to respond to external labor market demands and improve system performance, becoming outward rather than inward-looking.

Teachers

- Teacher quality is an important area. While there has been investment in facilities and equipment, teachers require more skills.
- Investing in leadership programs for schools and attracting and developing the best teachers will work to improve the overall skill levels of future workers entering the labor market.
- In a diversified industrial society where highly skilled human resources are required, in-house vocational training will play a major role.
- The challenge is keeping the mutual relationship with the industry going and maintaining qualified teaching staff and good instructors. It is also a challenge keeping the curriculum of the school up-to-date with industry needs and maintaining equipment.

Curriculum Content

- The curriculum needs to be developed with the industry. It should be considered a “living” curriculum that changes as required, with a focus on employment.
- High value service industries increasingly need highly skilled workers who also have soft skills (e.g., skills for teamwork, communication, problem-solving, and management).
- One of the important concerns for skills acquisition is ensuring that workers have strong productivity skills and technology training.
- Employers have consistently identified the need to increase and improve soft skills (e.g., literacy, numeracy, critical thinking, and digital skills) so employees have more transferable skills. Strong employer partnerships also enable colleges to provide students with work placements and internships, which is a key approach to ensure graduates are job-ready.

Session 1: Improving Vocational Training in a Changing World

This session discussed how vocational training can meet the needs of a fast changing world and keep up with changing economic structures.

Moderator: Ayumi Konishi, director general, East Asia Department and cochair, Education Community of Practice, ADB

Industrial Structure Determines Education Structure

Jiang Dayuan, executive member of the council, the Chinese Society of Vocational and Technical Education

Priority Issues in Technical and Vocational Education and Training Workforce Skills Development for Asia in the Global World

Jouko Sarvi, advisor, concurrent practice leader (education), ADB

Education to Employment: Designing a System that Works

Tom Isherwood, team leader of education report, McKinsey Center for Government

Skills Development in the Fast Changing World

Wang Yidan, senior education specialist, World Bank

2.1 Industrial Structure Determines Education Structure

Jiang Dayuan, executive member of the council, the Chinese Society of Vocational and Technical Education

The presentation identified that TVET structural change should reflect industrial structural changes. This was discussed within the global context whereby developing countries in the first phase of industrialization are labor and resource intensive, relying predominately on lower level skills. Middle-income countries are characterized by being technology and capital intensive, while developed countries tend to be knowledge and human resource intensive. The speech drew on a number of differences between the Chinese approach to TVET and the German and American approaches. In particular, the observation was that TVET in Germany is highly regarded by the community.

Key point: There is a need to raise the status of TVET within the community to attract students from a wide range of backgrounds.

The three countries' approach to TVET was compared, particularly in relation to pathways and soft skills, to identify what lessons PRC can extrapolate from the German and American approaches. The presenter proposed that in order to meet the PRC's aims, TVET needs to focus on value-added and high-end manufacturing as well as service skills and employment. As the migrant workforce continues to grow, issues of social harmony and educational equity will arise.

From a systems level, there is a need to develop long-term planning processes that incorporate new approaches such as e-learning, self-directed learning, and TVET delivery situated in a range of sites, including online delivery.

Key point: Curriculum needs to be developed with the industry and considered as “living”—changing as required, with a focus on employment.

The presenter identified that the TVET sector needed to:

- adapt to changes in priorities in economic development and industrial structural adjustment requirements;
- reflect the concept of lifelong education;
- harmonize the development in vocational education at the secondary and tertiary levels; and
- raise the status of TVET within the industry and general community.

2.2 Priority Issues in Technical and Vocational Education and Training Workforce Skills Development for Asia in the Global World

Jouko Sarvi, advisor, concurrent practice leader (education), ADB

As the global economy fluctuates, relying on exports and currency exchanges is no longer an easy option for developing countries. Good economic policy builds upon the link between skills development and the country's economic policy to ensure the use of skills in adding value to products and services. The service sector is a growing source of jobs, accounting for about 30%–40% of all workers in Asia. These are linked to traditional services such as wholesale, retail trade, and personal services; and suffer from low labor productivity. A central challenge for Asia's service sector is to move from traditional, low value-added activities to modern, high value-added activities. This includes knowledge intensive services such as information and communication technology (ICT), finance, legal services, business services, and management support, which require an increase in the supply of high-level skills and soft skills. A more productive and dynamic service sector would help sustain the region's economic growth, make it more inclusive, and contribute to poverty reduction.

Key point: High value service industries increasingly need highly skilled workers who also have soft skills (e.g., skills for teamwork, communication, problem solving, and management).

Interestingly, higher order service sectors complement the manufacturing sector and can lift the productivity of both manufacturing and service sectors. Therefore, this has a complementary effect on labor market competence.

Key point: This requires rethinking the scope of TVET delivery and the types of qualifications and pathways offered within the TVET sector. New qualifications and assessment tools should be developed and endorsed or recognized by the industry.

Key point: Having TVET activities that can serve multiple but interrelated industries mean that the workforce can move across different industries based on demand.

Economies can develop full sectoral competitiveness by mapping the skill needs of the entire value chain to increase the strength of the manufacturing and downstream service sectors.

Key point: Competitiveness in the main industry may rely upon the competitiveness of supply chain industries. Skills development—upstream and downstream—is valuable to the competitiveness of an industry sector.

Informal labor markets dominate the Asian region, with small and medium firms making up a large proportion of the informal sector. However, small and medium firms mainly do not have adequate resources to invest in building and upgrading skills. Yet, small and medium firms are vital to increasing creativity and innovation in the economy, which can have an impact on the competitiveness of the value chain as a whole.

Key point: This requires an investment in increasing skills and knowledge intensity in small and medium firms at a policy level.

There is evidence of growing problems in skills mismatch between what skills graduates have upon entering the labor market and what skills the industry requires, despite the increase in investment in education and training. Several mechanisms exist that can help reduce the gap in the transition from training to the workplace, including:

- industry and employer-developed and validated credentials, and
- industry and employer-developed assessment systems.

Developing a skills ecosystem that supports demand-led systems requires consideration and development of the constituent elements, particularly the interplay between the government's role as a regulator and in its support of affirmative action and the industry's role in identifying skill needs and standards. Good practice design tends to focus on innovative delivery of training and flexible modular approaches that incorporate workplace solutions.

Participation of private providers and collaboration with employers are built into ADB projects to ensure a responsive, diverse, and viable skills ecosystem. Project design works to strengthen sustainable financing options for skills development and skills for sustainability such as green sectors and the greening of the industry. Finally, ADB works to ensure that skills development projects work for different demographic profiles such as large or small populations, disadvantaged communities, women, and ethnic groups.

2.3 Education to Employment: Designing a System that Works

Tom Isherwood, team leader of education report, McKinsey Center for Government

Governments and businesses face a conundrum: high levels of youth unemployment and a shortage of job seekers with critical skills. Around the world, the International Labor Organization estimates that 75 million young people are unemployed. At the same time, 34% of employers could not find skilled workers. So how can a country successfully move its young people from education to employment? What are the challenges? Which interventions work? How can these be scaled up? These are the crucial questions.

To start answering these questions, McKinsey undertook an analysis of more than 100 education-to-employment initiatives from 25 countries, which were selected on the basis of their innovation and effectiveness. What the McKinsey research found was that 39% of employers say a skills shortage is the leading reason for entry-level vacancies. At the same time, only one in two—or 50%—of youth believe that their postsecondary education improved their chances of finding a job. The research suggests a significant disconnect between the worlds of employers and training institutions, with 72% of educational providers believing new graduates are job-ready.

Similarly, incongruent views are evident between educational institutions and students, with 39% of education providers believing the main reason students drop out is that the course of study is too difficult, yet only 9% of youth consider this to be the case.

Key point: The three major stakeholders—employers, educational institutions, and students—have limited interaction and appear to be operating in parallel worlds.

This raises the question of why the three major stakeholders are not seeing the same thing. A large part of this is that they are not engaged with one other, with one-third of employers saying they never communicate with education providers. For those employers that have communicated with training institutions, fewer than half say it proved effective. Meanwhile, more than a third of education providers report that they are unable to estimate the job placement rates of their graduates. Of those education providers who track student placement, 20% overestimated this rate compared with what was reported by the youth themselves. At the same time, less than 50% of young people had a good understanding of which courses led to professions with job openings and good wage levels.

Key point: This disconnect suggests that the three critical intersections of enrolling in postsecondary education, building skills, and finding a job require additional focus.

When it comes to the enrollment intersection, one difficulty is that in many economies, a large number of the jobs being created are in technical or vocational fields, but strong social biases against many of these fields exist. When young people were asked what type of education they thought would prepare them best for a job, they felt vocational education would be better. When asked which type of education is valued by society, the majority said academic; regardless of this, roughly half of them said they would prefer vocational streams. However, of those that preferred vocational streams, more than half ended up attending academic programs. This bias is consistent across gender and country.

If what it takes for a program to succeed is very close collaboration between employers and providers, the next question is how to make that happen in not just one intervention, but across an entire system.

Key point: The McKinsey research found that the three factors of successful education programs are:

- employers and education providers actively stepping into each other's worlds;
- innovation in delivery of education and training; and
- a system design that works.

Other examples of close collaboration can be codeveloping curriculum. One example of this in the United States (US) is the Automotive Manufacturing Technical Education Collaborative (AMTEC), which is a collection of 30 automotive manufacturing plants and 30 community colleges. AMTEC developed a very detailed common curriculum, which focuses on 100 skills that every entry-level automotive manufacturing employee needs to know. The program was designed with employers in the lead, and is now a commonly accepted qualification for the industry.

Collaboration can also occur through simulations and apprenticeships. In Australia, the Technical and Further Education system makes extensive use of simulations. For instance, in a baking school, there is a full-scale bakery paid for by an employer that hires a majority of the graduates. In a mining school, there is a mine simulator that lets trainees experience a mine before even going inside one. Finally, another example of collaboration is where providers and employers establish regular routines for feedback. From the examples looked at, this is not a

high-level committee meeting once a year, but a regular monthly evaluation of how well the provider's graduates are doing and, therefore, the necessary consequent adjustments to the training.

Key point: The answer is that making this work at a system level requires new incentives and structures. The initial answer from the McKinsey research—and this is definitely an area requiring further research—is that there are three pieces:

- First, there is a need for better data collection and dissemination to the youth, providers, and employers. For the youth, they need to know what programs are available, what jobs they lead to, and what the career prospects are in those fields. For providers, they need to know the needs of the labor market for both curriculum design and capacity planning. And for employers, they need to know how effective different providers are in supplying them with the talent they need.
- Second, there is a need for more sector-wide collaborations, where large employers come together to develop solutions.
- Finally, there is a major role to be played by system integrators.

There are examples of system integrators from all over the world. They are often government entities, which coordinate all the different pieces of this system.

2.4 Skills Development in the Fast Changing World

Wang Yidan, senior education specialist, World Bank

This paper puts education under the lens of the changing demands of technology, the labor market, demography, and migration. It identifies the weaknesses in current education systems such as restricted access, skills mismatches, and weak school-to-work linkages. It calls for making education systems more flexible and responsive to change so that they maximize human resources, equip people with updated skills, and prepare youth for the world of work.

When attempting to understand the changing context that TVET operates in and the implication of these changes on TVET, we need to consider the changing world. New technologies, globalization, the information revolution, and labor market changes have affected the world economy on an unprecedented scale. Computers have replaced many human tasks and technologies have shortened the production cycle and increased productivity. This has increased the demand for a higher skilled workforce while the demand for low-skilled workers continues to decline. Employment in agriculture is declining with a drop of around 8% annually in East Asia, from 48.5% in 1996 to 40.9% in 2006. The services sector in East Asia has seen a growth in demand from 27.2% in 1996 to 33.5% in 2006. In developed countries the demand for high skilled workers has increased by 40%.

Labor market structures have changed and the division of labor is less clear-cut. Workplace composition has evolved, with smaller work teams and a larger emphasis on soft skills such as language, management, interpersonal relations, problem solving, and decision making. Additionally, more people work in SMEs and job change is frequent. In the US, people change jobs 10.5 times between the ages of 18 and 40, and the younger generation changes jobs more often than their parents.

Key point: This leads to an increased need for skill updating or up-skilling and access to achieving multiple certificates and degrees.

Key point: Less developed countries will need to adjust their education and learning systems to respond to changing demands for human resources and to compete in the global economy.

Due to globalization and global and local migration, the world has become more integrated, with more mobility of workers and expanded international trade. There are 210 million mostly skilled international migrant workers.

Key point: The number of domestic migrant workers who remain unskilled is 750 million, and a big challenge is reaching out to them and training their children.

Key point: The implications for TVET include ensuring:

- a flexible system to respond to the learning needs for all, and a second, third, and fourth chance at education;
- new skills and soft skills to enable people to gain employment and contribute to society; and
- multiple roles to increase employability.

Education is supposed to deliver the competencies and skills that enable people to participate in society and live successful lives. But the competencies and skills in demand change over time. Emerging important competencies and skills include ICT skills, languages, science, mathematics, and engineering.

Key point: There is a mismatch between the demand for high-level skills and the oversupply of low-level skills. It is interesting to note that this situation coexists in almost all countries worldwide. The oversupply of certain types of workers is indicative of an education system that lacks relevance and quality and has thus failed to respond to the changing demand for skills in the labor market.

Key point: Three factors are important for maximizing human resources:

- building a flexible education system,
- developing and updating needed skills, and
- enhancing employability.

A flexible system provides learners with what they need in response to changing circumstances, imparting knowledge and skills when they need them and delivering learning where it is convenient. Such a system goes beyond school-age students to cover adults who need to update their skills and knowledge, enabling all learners to maximize their capacities at different stages of life.

Key point: Education prepares people for higher levels of learning, but more importantly, it orients learners and workers toward the world of work

Session 2 (Part 1): Vocational Training, Industrial Upgrading, and Economic Transformation

This session focused on the close nexus of economic growth, industrial upgrading or transformation, and skills. It offered insights into how to develop vocational training policies against a background of national economic upgrading and transformation, including the role of the government, private sector, enterprises, and vocational training schools.

There is a mismatch between the skills required by the industry and those held by graduates globally and in Asia. Asian economies are rapidly expanding, creating greater demands on higher level skills development systems to keep up with the transition.

Moderator: Diwesh Sharan, director, Urban and Social Sectors Division, East Asia Department, ADB

People's Republic of China Experience: Preparing Students for the Labor Market

Wang Xiaojun, deputy director general, Occupational Skill Testing Authority, Ministry of Human Resource and Social Security; and secretary general, China Association of Worker's Education and Vocational Training

Korean Experience with Skills for Economic Growth

Namchul Lee, director general, Office of Research in Integration of Education, Training and Labor, Korea Research Institute for Vocational Education and Training (KRIVET)

Qualifying Teachers and/or Trainers for Praxis-Oriented Technical and Vocational Education and Training: Experiences from the German Federal Enterprise for International Cooperation

Liu Bangxiang, senior training expert, China Wind Power Programme (Training and Research), German Federal Enterprise for International Cooperation (GIZ)

3.1 People's Republic of China Experience: Preparing Students for the Labor Market

Wang Xiaojun, deputy director general, Occupational Skill Testing Authority, Ministry of Human Resource and Social Security; and secretary general, China Association of Worker's Education and Vocational Training

There are huge employment problems in the PRC, with large numbers of people waiting to be employed and rural workers waiting to be transferred to the city. In 2011, PRC's total population reached 1.347 billion. From 2011 to 2015, the annual unemployed urban workforce will exceed 24 million, and only approximately 12 million jobs could be provided. The employment task is arduous in terms of the various target groups. The annual size of fresh graduates will reach 7 million by 2015. More than 100 million surplus rural laborers have created calls for an

annual transfer of 8 to 9 million rural workers to urban jobs. Moreover, out of more than 200 million rural migrant workers, many do not have a stable job.

Complicating this are structural issues affecting labor force dynamics. Rapid economic growth saw a shortage of highly skilled people, and the demand for skilled labor outstrips the supply.

Approximately 80% of employment demand is concentrated in industries such as manufacturing, wholesale and retailing, accommodation and catering, service industries, leasing and business services, and construction. Jobs in companies account for 97% of the demand, while demand from government and public sector institutions account for a mere 0.6%.

Initiatives for strengthening vocational training provision based on labor market demand and for relieving structural employment conflicts have included implementing job training plans and the national revitalization program for highly skilled personnel, strengthening teambuilding skills in enterprises, and conducting training programs targeting different skill levels for migrant workers.

The job training plans initiative is supported by a training subsidy policy and has organized on-the-job trainings for employees in poverty, practical skills training for migrant workers, job training for the unemployed, prejob trainings, and free vocational trainings for ex-soldiers from 2009 to 2010.

Implementing the national revitalization program for highly skilled personnel focused on technician training. From 2011 to 2020, 3.5 million technicians and 1 million senior technicians are scheduled to be trained in the PRC, thus taking the total number of technicians to 10 million. A project for building a skills base of highly skilled professionals will focus on 10 major industries, strategic emerging industries, and industries urgently needed or in shortage of for economic and social development. Strengthening the teambuilding of skilled workers for enterprises was initiated in June 2012 to promote prejob training, on-the-job training for skills upgrading, and highly skilled worker training. Governments at all levels are following the goal of promoting employment and focusing on the needs of the labor market while working to reform and develop vocational training institutions.

3.2 Korean Experience with Skills for Economic Growth

Namchul Lee, director general, Office of Research in Integration of Education, Training and Labor, KRIVET

In human capital, the important move has been from no skills to high skills to creative skills. The Republic of Korea is suffering from an aging society, leading to a decreasing number of workers.

Key point: One of the important concerns for skills acquisition is ensuring that workers have strong productivity skills and technology training.

Inefficiency in the skills development system caused an unemployment crisis of college graduates and a long lead time before employment. It led to inconsistency in the skills of graduates, unemployment, and deterioration in the quality of employment.

Strategies promoting and strengthening the linkage between qualifications and workplace relevance saw the introduction of the national competency standards (NCS). By the end of 2011, competency standards were developed for 291 out of the 800 trades. NCS identify the required standard of performance for a worker to perform in an industrial setting. The aim is to make society competency-oriented rather than academically oriented.

Recommendations include:

- education and training by human capital contracts such as learning contracts;
- restructuring of the skill development system of workers through on-the-job training;
- introduction of a job search period (gap year) policy where university entrants can choose a job experience period for a year and the experience can be linked to a strong student loan system;
- expansion of skill development in service sectors from the existing manufacturing industry-centered skill development approach; and
- especially, characteristic skill development such as skill development in high value-added service sectors and self-employed business or entrepreneurial skills.

Key point: Innovation is a core requirement for economic growth, and the importance of creative power and entrepreneurship to high-skill economies should not be underestimated. These creative and entrepreneurial skills need to be embedded into formal education curriculum, programs supporting SMEs, and on-the-job training.

3.3 Qualifying Teachers and/or Trainers for Praxis-Oriented Technical and Vocational Education and Training: Experiences from the German Federal Enterprise for International Cooperation

Liu Bangxiang, senior training expert, China Wind Power Programme (Training and Research), GIZ

GIZ has a 30-year relationship with the PRC as a partner in sustainable development. The focus has been on sustainable economic development and sustainable environmental and energy policy development. TVET is GIZ's core competence domain and in 2011, a Sino-German alliance in TVET was formed. Parents in the PRC still think more about sending their children to receive higher education rather than going into work.

While the PRC has invested in facilities and equipment, the teachers are often unable to use the equipment, or they receive specific training but not all the skills needed to use and maintain the equipment. The GIZ TVET Platform for Wind Power Operation and Maintenance Staff (2011–2014) has an overall objective to partner and build the technical and educational capacity for practical skills-based TVET, particularly by enhancing the skills of operations and maintenance teaching staff. Fourteen TVET institutions are involved, along with three wind power companies and three turbine manufacturers. Forty teachers have been trained domestically and in Germany to provide skills-based or praxis-oriented TVET. Chosen vocational colleges participated in the pilot program to develop a practical skills-based education modeled on the German experience. The approaches have included professional and didactical training of teaching staff, competence enhancement of directors and management personnel, and the development of quality standards for vocational and advanced training.

One of the main foci is the development of curricula and standardization of vocational education and advanced training for wind energy service technicians. Collaborations between enterprises and educational institutions and blended learning strategies have been established.

Key point: The program aims to foster a TVET paradigm shift toward skills-based TVET and position TVET teachers and/or trainers as “agents of change.”

Finally, the program hopes to encourage more enterprises to participate in training.

Discussion

A common theme is that it has taken decades to develop a multilevel TVET system and the governments in the three examples have a high level of commitment to TVET. The Republic of Korea links TVET to economic development and the PRC has linked the development of high skills to economic growth. The German system involves high government facilitation of business involvement with the TVET sector. It is important to identify what the culture of each country can accommodate in the design of its TVET system, and how a country involves and engages industry in TVET.

Key point: Policy integration is an important area where multiple agencies are involved.

Key point: A central coordinating body overseeing TVET is a similarity shared by the country examples presented in this session.

Key point: Teacher quality is an important area, and while there has been investment in facilities and equipment, teachers require more skills.

Improving the status of TVET is very important as going to university is still a family honor.

Key point: Pathways into university are an important step to increasing a positive perception of TVET.

Session 2 (Part 2): Vocational Training, Industrial Upgrading, and Economic Transformation

Moderator: Xing Yuqing, director, Capacity Building and Training, ADB Institute

Malaysia's Vocational System and Human Resource Development Planning

Gazali Abas, Economic Planning Unit in the Prime Minister's Department, Malaysia

Japanese Vocational Model and its Applications

Koichi Hori, chairman, Dream Incubator (supported by the Japan International Cooperation Agency [JICA])

Teaching Industries: Good Practices in Polytechnics in Indonesia

Priyono Eko Sanyoto, director, Polytechnic Batam; and M. Mahmud, director, Shipbuilding Institute of Polytechnic in Surabaya

4.1 Malaysia's Vocational System and Human Resource Development Planning

Gazali Abas, Economic Planning Unit in the Prime Minister's Department, Malaysia

Malaysia is running to transform from a middle-income to an advanced nation by 2020. To achieve this goal requires the speedy removal of multiple barriers that have weighed on Malaysia's growth potential. Moving forward, the Government of Malaysia wants to see greater public involvement in TVET to increase the number of skilled workers for a knowledge-based economy. Rapid changes in technology, the increasing complexity of work processes, and an emphasis on workforce productivity in Malaysian industries have created new demands on the skilled workforce. The Human Capital Development Unit is part of the Economic Planning Unit of the Prime Minister's Department. It is responsible for identifying and analyzing issues pertaining to human capital development and the labor market and proposing recommendations to address these issues. The unit formulates policies and strategies on education, training, and lifelong learning; and ensures that the delivery systems can produce sufficient, highly qualified human capital required to sustain the growth and competitiveness of the economy. The approach to skills development in Malaysia is a demand-side approach.

The development of human capital in Malaysia requires the collaboration of multiple ministries and the private sector to address all segments of the population. One of the important roles of the unit is to ensure that all government agencies have buy-in to the big picture and coordinate their efforts to achieve the national outcomes. The Human Capital Development Unit coordinates the planning and policy and program functions at the national level for human capital supply. It identifies labor supply and manpower requirements and provides related information for policy formulation at the national level. The unit also monitors implementation of policy and programs.

In the last decade, TVET reform has been about stronger involvement of industries in TVET delivery. Now the discussion is about access to quality TVET. Access to TVET is divided into two approaches: institution-based training and industry-based training. Industry-based training is the expansion of access to TVET and certification for workers through various programs such as the National Dual Training System (NDTS) and Accreditation of Prior Achievement (APA) initiative. The APA initiative was developed to recognize the existing skills of workers and expertise developed through their work experience. Workers do not have to attend formal training but instead register and present evidence of their acquired expertise for evaluation and verification based on specific national occupational standards requirements.

The Skills Development Fund is managed by the Skills Development Fund Corporation. It was established in 2000 to provide financial assistance in the form of loans to trainees, particularly to those leaving school and undergoing training programs under the Malaysian Skills Certification System. The Human Resources Development Fund (HRDF) was created from the imposition of a levy on employers in the services and manufacturing industry sectors. Levies were collected into the HRDF as a central pool of resources for training. All employers who contribute to the levy are eligible to apply for training grants or financial assistance for employee training. Human resource development (HRD) costs are classified as allowable expenses for tax purposes and considered as an expense incurred in the production of gross income. The fund aims to enhance the private industry's role in the provision of training to increase the supply of trained workers in the country.

Key point: Up-skilling the existing workforce ensures a quality flow of workers from low-skilled to semi-skilled to high-skilled in order to support economic growth and industry demand. This supports the country's move toward a knowledge economy where workers across all sectors will need to be able to add value and contribute in a higher skills environment. The aim is to move the 11% low-skilled and 61% semi-skilled workers into the higher skilled workforce.

Key point: Strategies are identified to accelerate labor reform and attract and retain top talent while upgrading the existing talent pool. Policies to ensure that students entering the TVET sector have the basic skills to undertake higher level skills development are also in place. Revamping the education system to significantly raise student outcomes and holding schools accountable for outcomes are part of the Tenth Malaysia Plan.

Key point: Investing in leadership programs for schools and attracting and developing the best teachers will improve the overall skill levels of future workers entering the labor market.

There are four strategies toward mainstreaming TVET by 2015 as identified under the Tenth Malaysia Plan. The first is improving the perception of TVET. A national media campaign to improve public awareness has been developed. Also supporting this is the introduction of counselors in schools to provide comprehensive career guidance in TVET. The second strategy involves streamlining the delivery of TVET, with funds to be allocated based on the performance of institutes. The process of developing a system to rate the institutions is underway. Alongside this, there is greater emphasis on workplace training and expanding NDTS. There will be an increase and expansion of the approach of buying places from private institutions in areas where demand for skills that the government does not provide is high. The third strategy involves upgrading and harmonizing the quality of TVET curriculum through alignment with industry requirements and the establishment of a national curriculum bank to deposit all curricula. The Malaysian Skills Certificate will also be adopted as the national certificate for TVET.

The final strategy for mainstreaming TVET is developing highly effective TVET instructors by accelerating the TVET teaching professional with attractive career options and flexible entry pathways. Part-time working arrangements will be expanded to encourage participation of instructors from the industry. The strategy also calls for expanding the Centre for Instructor and Advanced Skill Training and incorporating new approaches and methodologies to increase instructors' competencies.

To rationalize and enhance the TVET landscape, the five key components are:

- (i) **Employer demand.** Demand for a skilled workforce is expected to rise by about 60% for all new jobs created under the National Key Economic Areas initiative, of which one-third requires TVET qualifications.
- (ii) **Students.** There is a need to better define the educational and professional pathways for TVET that will support and encourage students' intellectual and career advancement, and to reposition TVET as a viable option to the traditional education path.
- (iii) **TVET providers.** The performance and quality of TVET providers could be improved through several levers such as funding, key performance indicators, and a rating system. The optimal business and operating models of public sector providers also need to be reviewed to support the rationalization of TVET.
- (iv) **TVET offerings.** Many public sector TVET providers focus on lower level courses while the industry values higher level skills, and this situation needs to be readjusted. The setting up of a database and coordination of information and institutions will mean, from 2013, carrying out tracer studies and participating in centralized reporting to the Economic Plan Unit and Ministry of Finance for performance analysis on graduate employability to ensure further funding.
- (v) **Governance.** Governance provides the opportunity to optimize coordination between ministries, agencies, and institutes. There is a need to increase cooperation and linkages with industry players, improving employability and increasing demand for TVET graduates.

Key point: Core principles for the reformed TVET system are that it will be performance-based—that is, the institutes will be accountable for their performance. TVET will be demand-driven by students and economic needs. Through industry-led, collaborative development of TVET sectors, there will be clear governance for better monitoring of performance.

4.2 Japanese Vocational Model and its Applications

Koichi Hori, chairman, Dream Incubator (supported by JICA)

The Dream Incubator is a global strategic consulting firm funded by JICA that incubates businesses and industries, sometimes across borders. There are over 500 projects covering strategy consulting, industry production, leadership training, and merger and acquisition advisory. The Dream Incubator works on the integration of technology, public policy, and strategy accumulated from its experience advising companies at all stages of development.

Due to urbanization and shift in the industrial structure, PRC is now facing challenges in building capacity in its labor force through vocational training. There is an observed absence of necessary skill sets as the industry shifts from labor-intensive primary and secondary industries to high value-added third industries. The role of companies is important to adapt to the growing demand for diversified and high-skill vocational training. Similar challenges were observed in Japan when the industrial structure shifted, and this was mainly dealt with by in-house vocational training by companies. However, it is important to recognize the differences of practices and customs in the working and training environment between the PRC and Japan. In the PRC, low average service years of workers could become a bottleneck for companies to invest in in-house vocational training.

To tackle this challenge, there could be several possible solutions. One would be to provide diversified and high-skill vocational trainings through training schools. Another would be to develop a system in which companies will not lose from investing in vocational training. In the PRC, the issues surrounding vocational training became tangible due to urbanization and change in the industrial structure. The lack of skills and number in the urban workforce

due to rapid urbanization and the lack of skills for new industries emphasize the problems facing the TVET system. Companies play an important role in adapting to the diversified needs of vocational training. Japan has overcome the challenges through in-house training. Unlike Japan, the service years of employees in the PRC are generally short and companies hesitate to pay for vocational training when employees leave.

Key point: In a diversified industrial society where highly skilled human resources are required, in-house vocational training will play a major role.

However, the efforts of individual companies alone are not sufficient to solve the structural challenges that the PRC faces. It is essential to establish a social system in which economic development and vocational training proceed together by utilizing regional knowledge sharing and collaborating among companies, schools, and the government. The Dream Incubator is committed to cooperating with the stakeholders in the PRC and solving social challenges that they face, including but not limited to vocational training.

4.3 Teaching Industries: Good Practices in Polytechnics in Indonesia

Priyono Eko Sanyoto, director, Polytechnic Batam; and M. Mahmud, director, Shipbuilding Institute of Polytechnic in Surabaya

Batam State Polytechnic is located on Batam Island of Indonesia, which is bordered by Singapore, Malaysia, and the Indonesian provinces Riau, South Sumatra, Jambi, and West Kalimantan. Batam Island is almost identical in size to Singapore and is located 20 kilometers off Singapore's south coast. In 2009, the President of the Republic of Indonesia officially launched Batam–Bintan–Karimun as a free trade zone; this commenced on 1 April 2009. A free trade zone is an area within the jurisdiction of the Republic of Indonesia that is exempted from import duties, sales tax, value-added tax, tax on luxury goods, and any customs duties.

There are 21 industrial estates in Batam. Industry makes up 57% of all businesses in Batam, followed by tourism at 28% of business investment, trade at 6%, and agriculture by only 1%. Skills demand according to industry needs is broken down into engineering and nonengineering skills. The Batam State Polytechnic was officially established in 2001 with three study programs: (i) electronics, (ii) informatics, and (iii) accounting.

To meet local workforce needs, Batam State Polytechnic added further study programs to the above three. These new programs are:

- mechanical engineering,
- electronics engineering,
- mechatronics,
- informatics,
- multimedia and network engineering,
- accounting,
- managerial accounting, and
- business administration.

The Batam State Polytechnic has a teaching factory approach where different products are produced by students for the local industry within a learning environment, with profit from products going back to the institution. Once

students gain the manufacturing skills and graduate, they can work in the industry. Students are trained with expensive, high technology.

The Shipbuilding Institute of Polytechnic Surabaya introduced production-based learning. It is the only state polytechnic focusing on shipbuilding and technology of marine-related industries. The objective of the institution is to increase the relevance of education to industry needs with up-to-date equipment while maintaining a professional teaching staff and technicians. The institute aims to bring an industrial culture to the school and generate funding, as it is a not-for-profit organization wherein funds earned go back into training students and staff.

Key point: The challenge is keeping a mutual relationship with the industry going and keeping qualified teaching staff and good instructors. It is also a challenge keeping the curriculum of the school up-to-date with industry needs and maintaining equipment.

The role of the industry is to provide feedback on the quality of students for employability improvement and as motivation for graduates to upgrade their competencies.

Session 3: Public–Private Partnership and Financing Vocational Training

This session discussed different models of PPP and different modes for financing vocational training.

Moderator: Dr. Wang Changwen, president, Harbin Vocational and Technical College

Frameworks and Models for Public–Private Partnerships in Technical and Vocational Education and Training

Michael Latham, PPP expert and consultant, ADB

Innovative and Cutting Edge Financing Models for Technical and Vocational Education and Training: Case Studies from Australia, India, Malaysia, and Singapore

Belinda Smith, TVET PPP specialist and consultant, ADB

5.1 Frameworks and Models for Public–Private Partnerships in Technical and Vocational Education and Training

Michael Latham, PPP expert and consultant, ADB

In an increasingly globalized and knowledge-based world, natural resources alone do not determine economic growth. Human resources are critical for a country's competitiveness. Postbasic education—including secondary education, vocational and technical education, and tertiary education—is essential for economic growth and a country's competitiveness. This poses the challenge for governments to find innovative ways to effectively involve the private sector to increase access, quality, and choices for young people in education and skills training.

A PPP refers to a contractual arrangement between public (national, state, provincial, or local) and private entities through which the skills, assets, and/or financial resources of each of the public and private sectors are allocated in a complementary manner, thereby sharing the risks and rewards, to provide optimal service delivery and good value to citizens.

PPP differs from traditional models of service delivery and involves public financing plus private delivery, as compared to traditional models of public financing, which involve public funds and public delivery.

Key elements of PPP include formal arrangements between the public and private sectors, including private delivery of public services, where public agencies remain ultimately responsible for service delivery. The arrangement is often based on an explicit contract with a focus on outputs and/or outcomes—not inputs—and the risk sharing is between the public and private sectors.

Key point: There are a number of benefits and risks associated with PPPs that need to be weighed when considering negotiating a PPP. Examples of benefits include improved quality and access to new skills, while risks include inadequate regulatory environments and a lack of competition in some markets.

PPPs are widely used around the world at all levels of education and can involve private sector contributing to the public sector and vice versa. There are a range of PPP models for education and training, including: (i) service delivery PPPs such as vouchers, scholarship programs, private management of public institutions, contracting for the purchase of places at private institutions, and franchising and/or affiliations; (ii) infrastructure PPPs; (iii) PPPs in ICT for education; (iv) education financing; (v) skills development initiatives such as apprenticeships and on-the-job training; (vi) industry involvement in curriculum development and standard setting; (vii) quality assurance and certification; and (viii) innovation PPPs, including mechanisms for strengthening university–industry linkages, research, and development and commercialization of scientific research.

Key point: Challenges to implementing PPPs in education and training include: (i) a traditional focus on infrastructure, (ii) government resistance to private sector and/or PPPs, (iii) procurement issues related to contracting, and (iv) the financial viability of the potential projects. Additionally, there is a lack of appropriate policy frameworks to support PPPs and a need for incentives that support innovation.

PPPs are generally well-suited to the TVET sector because they are relatively stable and there is a large and growing private sector in many countries. PPPs usually have relatively short project lead times and less technically complex infrastructure than other sectors. PPPs in education and TVET usually have fewer safeguard and/or land clearance issues as well.

Key point: There are many potential PPP models for TVET, and context is important as to what model is taken up. The country’s governance, financial management, and administrative capacity must all be taken into consideration. The size and nature of the nongovernment sector and fiscal situation, among others, all play a role in determining the appropriate PPP model for a particular country.

PPPs are not a panacea for every situation, nor can a government can shirk its responsibilities because of PPPs. However, PPPs do require different policy tools. Good design, regulation, and implementation are critical to the success of a PPP and to the extent of the value it adds to the skills development system.

5.2 Innovative Financing Models for Technical and Vocational Education and Training: Case Studies from Australia, India, Malaysia, and Singapore

Belinda Smith, TVET PPP specialist and consultant, ADB

An important element in the financing of TVET is to ensure that funding models and incentives work to support industry involvement in a TVET system while reinforcing quality training provision. As TVET moves from being supply-driven to demand-led, its underpinning financial systems can be refined to reinforce this change in outlook. Under traditional budget-oriented funding models, the process involves internally reviewing what has been previously expended to determine what will happen in the future. This is essentially a closed system.

Performance-based funding models often target a particular group such as women or other socially disadvantaged groups in an attempt to increase their participation. These funding schemes are usually ring-fenced from overall budget approaches and the rationale is typically to increase the target groups’ participation in training and employment.

This approach can also be useful in implementing training reforms, particularly when reforms stall and government implementation needs incentives or indicators to measure reform outputs (e.g., providing incentives to states or regions for delivering competency-based training pedagogy for teachers).

Contracted training provision and voucher system funding models are more outcome-focused and seek to extend outside involvement in the training system. Contracted training usually evolves from identifying training needs that the larger system cannot—or does not— provide, and buying the training from credible providers. The voucher approach is often introduced to improve the quality and employment outcomes associated with training. Yet for voucher systems to be successful in improving the quality of provision, it requires two ingredients: an educated consumer who has access to information to identify quality provision, and the availability of data to consumers on graduate outcomes for employment of different training institutions. While examining the different models, it is also worth considering the source of the funding and its effect on the overall aims and objectives of the TVET system.

Key point: Levies have the potential of providing large amounts of funding. However, levies do not on their own guarantee greater participation in training, and research suggests that levies alone do nothing to improve the quality of skills development. Combined with other TVET systemic mechanisms, levies can have a magnifying effect on the quality, relevance, and employer demand for training.

We know through research that how levies are collected and disbursed will have an impact on how well employers support the introduction of levies. For example, research indicates that if levies are collected and disbursed at a sectoral level, employers are more supportive than if the levies go into central revenue. Likewise, employers are less keen to see levies spent on system administration than on training.

In Singapore's case, the government's aim was to overhaul their economy and become an economic leader. The government moved the policy and planning responsibility for TVET and placed it within the Economic Development Board, and introduced the Skills Development Levy (SDL) and the Singapore Skills Development Fund.

SDL collected is channeled into the Skills Development Fund, which provides grants to companies for workforce training. SDL is a mandatory contribution by employers. Training assistance from the Skills Development Fund is given as financial incentive to employers to upgrade the skills of their workforce.

Employers are exempt from paying SDL for students who are on full-time industrial attachments arranged by TVET institutions, universities, and other postsecondary educational institutes. Therefore, using incentives reinforces the quality and relevance of the wider skills development system.

What is interesting here is that the government funds administrative costs—their area of responsibility—and has designed incentives to build the kind of employer participation required to build quality and relevance for a robust TVET system.

Key point: Based on evaluation and research, the evolution in funding models is also linked to the practice of systems improvement of the TVET system, which affects how funds are targeted.

The Malaysian HRDF is notable for its comprehensive approach to workforce development and offers training schemes that are designed to move the country from a middle-income country to a high-income, knowledge and innovation-based economy. The program Recognition of Prior Learning and overseas training schemes are particularly innovative aspects of their fund. The Recognition of Prior Learning program will allow greater numbers of workers without previous qualifications to participate in formal learning, meaning that a greater percentage of the workforce can be up-skilled and reskilled. The Malaysian HRD Council, with representatives from the private sector and relevant government agencies, administers HRDF.

Key point: For smaller developing economies, supporting industry involvement in TVET can be difficult. There is divergence in the research as to whether small employers benefit from levy schemes.

However, inefficient collection mechanisms and the cost of collecting levies make it less likely that small businesses will become involved. In smaller economies, engaging the industry may need a regional perspective to identify where a country's industry sectors sit in a value chain. This would determine what kind of support the industry can provide and gain from the most.

A common feature of schemes in which training has increased is the presence of an effective system for administering the levy—both for levy collection and administration of grants.

Key point: Incentives for training providers must be explicitly changed to respond to external labor market demands and improve system performance, becoming outward rather than inward-looking.

Where a government links skills development policies with economic development strategies, skills formation is a continuous and expanding process reflecting economic development needs and is underpinned by funding models that are updated to reinforce the changing requirements.

6 Session 4: Policy Implications for Vocational Training, Governance, and Management

With the backdrop of shared experiences, this session discussed policy implications for future vocational training in the PRC and globally. The panelists identified concrete actions and concluded with a discussion on the way forward.

Moderator: Diwesh Sharan, director, Urban and Social Sectors, East Asia Department, ADB

Opportunities for Supporting Technical and Vocational Education and Training in the People's Republic of China

Liu Yufeng, director and research professor, Division of International Cooperation and Comparative Education Research, Central Institute for Vocational and Technical Education, Ministry of Education, PRC

Responding to the Skills Challenge in Asia and Beyond

Denise Amyot, president and chief executive officer (CEO), Association of Canadian Community Colleges (ACCC); chair, World Federation of Colleges and Polytechnics

Strategic Opportunities for Technical and Vocational Education and Training: Experience and Directions of ADB Support

Sofia Shakil, senior education specialist, ADB

6.1 Opportunities for Supporting Technical and Vocational Education and Training in the People's Republic of China

Liu Yufeng, director and research professor, Division of International Cooperation and Comparative Education Research, Central Institute for Vocational and Technical Education, Ministry of Education, PRC

The PRC has experienced rapid growth since the 1980s, creating a demand on natural resources and the environment. Two of its major issues are energy efficiency and environmental pollution.

Industrial restructuring needs to be further improved to remove bad practices that have not been phased out. Small workshops that pollute the environment still exist. While there is extensive production in the country, it is low value; PRC ranks 80 in gross domestic product per capita. The Chinese leadership has recognized the importance of TVET in moving the economy forward. The Twelfth Five-Year Plan for National Economic and Social Development of the PRC has acknowledged the position of TVET in supporting economic development, particularly in:

- scientific development;
- transforming and upgrading of industries;
- promotion of the service industry;
- balance between the region's urban areas;
- green development and innovation; and
- implementation of strategies to reinvigorate the country through science, education, and human resource.

Strategic economic restructuring should be a major task of the transformation process, and the promotion of scientific and technological progress and innovation are important to support the transformation. The decision of the Chinese Communist Party Central Committee identified that deepening educational reform and speeding up the building of the modern vocational education system requires strengthening the integration of production and education and the training of high quality labor.

The PRC's strategy for the development of vocational education requires adjusting the TVET structure and changing the mode of training to support industrial upgrading. By improving and enhancing the quality of the vocational education system, vocational education should match the country's economic development needs and should be consistent with the needs of a green economy and sustainable development. This will require a new emphasis on professional development and curriculum revision to incorporate green skills.

Key point: TVET reform should develop systems, which lead to the integration of urban and rural development to reflect the new expectation of people of all nationalities for better lives. Vocational education should be consistent with needs of people from different backgrounds while offering cohesion, flexibility, and choices in skills provision.

6.2 Responding to the Skills Challenge in Asia and Beyond

Denise Amyot, president and CEO, ACCC; chair, World Federation of Colleges and Polytechnics

ACCC has been in existence for 44 years and has undertaken 900 projects. Global evidence of skills gaps and labor shortages, resulting from aging populations and increased technology in the workplace, is evident. The 2013 ManpowerGroup survey of over 38,000 employers across 42 countries found:

- On average, 35% of employers worldwide have difficulty filling jobs.
- Examples of countries' top three most difficult jobs to fill and its percentage include:
 - o Canada: skilled trades, engineers, and management (34%);
 - o PRC: technicians, sales representatives, and management (35%);
 - o Brazil: technicians, production operators, and accounting and finance staff (68%);
 - o Australia: skilled trades, engineers, and sales representatives (45%);
 - o Germany: skilled trades, engineers, and accounting (35%); and
 - o US: skilled trades, sales representatives, and drivers (39%).

Across the world, employers seek highly skilled individuals to fill available jobs; existing workers require skills upgrading. Disadvantaged groups have the least access to postsecondary education, which is generally consistent internationally.

Key point: Employers have consistently identified the need to increase and improve soft skills (e.g., literacy, numeracy, critical thinking, and digital skills) so employees have more transferable skills. Strong employer partnerships also enable colleges to provide students with work placements and internships, which is a key approach to ensure graduates are job-ready.

In 2008, ACCC commissioned a national economic impact study of colleges and institutes from an independent firm that conducted provincial level studies. This study reported a strong return on investment in college education for students, taxpayers, and the overall Canadian economy. For every dollar a student invests, they receive \$4.33 in higher future earnings. Taxpayers have a rate of return of nearly 16% on their annual investments in colleges and recover all investments in less than 9 years.

That teachers and/or faculty staff require new skills learning to teach in an applied way and learning to work with the industry is particularly important. They need to upgrade their skills regularly to ensure that they can meet the needs of the changing world of work and that students have the essential soft and technical skills. The TVET system must educate learners to continuously learn, adapt, and take on new challenges. This means more emphasis on essential employability skills, which allow such continuous learning and adaptation.

TVET administrators have a role to dispel the myth that colleges are second best after universities. Administrators need to become entrepreneurial due to the diminishing resources in many jurisdictions around the world. Governance approaches have also had to change as partnerships with particular industries increase and new revenue sources are found.

Curriculum developers also require new skills to consult with the industry, facilitate program advisory committees, and continuously update and develop curriculum. Developers need to expand curriculum and learning resources to incorporate leading edge equipment while maintaining awareness of new developments in the industry and in their own areas such as online learning.

Transferability is particularly important given the rapid pace of change occurring in workplaces. Transferability of program credentials is particularly important for people who are moving jobs or up-skilling.

Key point: Becoming closer to the industry and establishing an ongoing, effective two-way partnership in many areas (LMI, curriculum, standards, career orientation, internships, hiring, equipment, etc.) can produce additional outcomes for the TVET sector.

An example is the Employers Coalition in Canada, which realized and appreciated the quality of skills of those graduating from colleges and successfully lobbied for the government to increase the budget allocated to community colleges.

Best practice strategies include:

- essential investments by governments and industries in research and development (R&D) and diversified training investments (e.g., improvements to apprenticeship systems);
- new recruitment strategies incorporating incentives and scholarships (e.g., Singapore has 3-year scholarships, work for 6 years); and
- attracting of underrepresented groups such as persons with disabilities, new immigrants, indigenous people, and older workers.

6.3 Strategic Opportunities for Technical and Vocational Education and Training: Experience and Directions of ADB Support

Sofia Shakil, senior education specialist, ADB

There are several interconnected and rapidly shifting developments that are changing the context of TVET in the PRC. The country has seen rapid urbanization, with a policy of industrial expansion in urban areas requiring a large portion of the population to be employed in manufacturing, which is labor-intensive and export-oriented. This has gradually moved toward industries with high value added due to the PRC government's efforts to rebalance the economy, and from reforms in state-owned enterprises and growth of the services sector. There has been some growing diversification of the economy, with new forms of employment and patterns of work emerging. Further, recent policy awareness and direction to promote environmentally sustainable development and inclusive growth such as exploring green growth industries, low carbon technologies, and investment in improvements in technology for agriculture will only further increase the demand for skilled labor.

In response to the PRC's evolving context, ADB has supported its efforts to strengthen the education and training sectors. Since 2001, there have been 16 related investments or projects—12 of which were technical assistance (TA) projects—but there is now movement toward loans and assistance for TVET. In 2006, ADB provided its first TA for TVET, which marked a strategic shift that was consistent with the PRC's socioeconomic context as articulated in the government's 11th Five-Year Plan that recognized the need to address the severe skills shortages being faced by industries.

ADB intends to stimulate innovation and create an impact based on workable solutions that fit the local and national context while responding to the evolving requirements of the society and economy, using demonstration, testing, and a knowledge sharing approach. Projects and TAs will focus on action research, sharing of experiences and knowledge, and capacity development.

Key point: To simulate innovation, it is important to identify workable solutions suitable to the local context. Since ADB financing is just a tiny portion of overall financing in the PRC, to make a bigger impact it is important to be strategic in what we test and how we identify solutions to scale up.

In the background of these operating principles of engagement, key special or innovative features of all of ADB projects and TAs include:

- improving the quality of TVET programs and institutions;
- enhancing the relevance of TVET, especially through industry involvement and partnerships, innovation funds to support school–industry collaboration, and testing of innovative pilots;
- promoting inclusive TVET to address inequalities and promote social development such as more use of ICTs for imparting training, and developing training programs for rural teachers and health workers; and
- going green by supporting the development of training programs and undertaking analysis for regional opportunities to expand the low carbon industry.

There is a very large and growing demand for skills training. TVET is regarded as a tool for addressing the economic and social development needs of the nation, and this is well articulated in the national policy directives and embraced by many provincial plans.

Key point: Reducing the gap between policy directives and aspirations and actual implementation on the ground is a major challenge. While structuring functioning systems and vehicles for the industry or employer, participation in TVET is a strategic goal.

Keeping these demands and challenges in view, we see the following strategic opportunities going forward:

- remaining consistent with national policy objectives and responding to emerging priorities;
- expanding TVET interventions for the adoption of green technology and processes;
- building a critical mass of best practice through demonstration for replication (innovation fund, industry partnerships), knowledge transfer, and regional cooperation;
- responding to emerging priorities;
- highlighting elderly care as an area of growing importance; and
- transforming the economy through expanded R&D, bridging the porous boundaries between tertiary education and TVET.

7.1 Introduction and Objective

To gain further insight of the experiences and models of TVET, the delegates visited Guangzhou Industry and Trade Technician College, Guangzhou Xiangxue Pharmaceutical, and Guangzhou Shunde Vocational and Technical College. During this session, delegates from ADB's developing member countries exchanged ideas with the representatives from secondary schools, TVET colleges, enterprises, and students; and held discussions on school-enterprise cooperation.

7.2 Practical Training for Technical and Vocational Education and Training and School-Enterprise Cooperation

The field visit demonstrated how effective collaboration between TVET schools and employers can lead to more practical training and experiences and to better matching of skills with jobs. Several schools have developed systematic partnerships with employers to secure on-the-job training and/or internships for students, and some employers are engaged in providing placement and training opportunities for teachers.

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Sustainable Vocational Training toward Industrial Upgrading and Economic Transformation

A Knowledge Sharing Experience

This report summarizes results of the workshop “Sustainable Vocational Training toward Industrial Upgrading and Economic Transformation” held from 2 to 5 December 2013 in Beijing and Guangzhou, the People’s Republic of China (PRC). A joint initiative of the PRC and the Asian Development Bank (ADB), the workshop—attended by more than 90 participants from 16 countries—is part of the annual PRC–ADB Knowledge Sharing Platform and was supported and organized by the Regional Knowledge Sharing Initiative. The report summarizes workshop discussions on (i) best practice and models for supporting sustainable vocational training; (ii) the role of the government, private sector, enterprises, and vocational training schools; (iii) improving vocational training in a rapidly changing world; (iv) financing vocational training; and (v) policy environment for vocational training governance and management.

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ASIAN DEVELOPMENT BANK

6 ADB Avenue, Mandaluyong City

1550 Metro Manila, Philippines

www.adb.org