Appendix A
List of Generic Green Skills

Skills area	High skilled	Medium skilled	Low skilled	Civil society
	The design, analysis, and evaluation of systems/ processes for products and services	The maintenance and monitoring of systems and processes for products and services	The implementation of processes through the production of products and services and recording of information	The knowledge and skills to make responsible choices and maintain a sustainable lifestyle
Environmental awareness				
What is global warming and what is the environment What are natural resources; what is climate change; and why is it occurring What is the impact of climate change and what can be done about it	√	√	√	√
What are the responsibilities of society and industry What are water conservation, energy efficiency, waste segregation, recycling	√	√	√	√

(continued)

R. Maclean et al., *Education and Skills for Inclusive Growth, Green Jobs and the Greening of Economies in Asia*, Technical and Vocational Education and Training: Issues, Concerns and Prospects 27, https://doi.org/10.1007/978-981-10-6559-0

(continued)

Skills area	High skilled	Medium skilled	Low skilled	Civil society
What is happening within the industry sector at a national and international level	√	√		
What are the drivers and benefits	√	√	√	
What are best practice examples of sustainable business and what are the cost savings	√	√	√	
What are the changes in business processes to become more sustainable	√	√		
How do you introduce new sustainable systems	√			
Energy efficiency				
Why energy efficiency is important Energy-efficient technology and energy-efficient labeling: what they mean What can individuals do to be energy-efficient in the home and at work	√	√	√	√
Undertaking a basic energy audit	√	√	√	√

(continued)

(continued)

Skills area	High skilled	Medium skilled	Low skilled	Civil society
What sector-specific procedures best support energy efficiency	√	√	√	
Design energy-efficient production procedures, evaluate, and improve	√			
Monitor approaches in energy efficiency in production processes		√	√	
Calculating the costs of energy and the savings of energy efficiency	√			
Comparing costs of sector-specific energy-efficient technology	√			
Calculating cost savings from energy efficiency measures and return on investment sector wise	√			
Water conservation				
Why water conservation is important What is water efficiency Water-efficient devices and what can individuals do to be water efficient in the home and at work	√	√	√	√

(continued)

(continued)

Skills area	High skilled	Medium skilled	Low skilled	Civil society
Undertaking a basic water-efficiency audit	√	√	√	√
What sector-specific procedures best support water efficiency and conservation	√	√	√	
Comparing costs of sector-specific water conservation and waterless technology	√			
What water conservation systems work best in different environments	√			
Design water conservation production procedures, evaluate and improve	√			
Monitoring approaches in water conservation in production processes		√	√	
Calculate the costs of water conservation and the savings	√			
Calculate cost savings from water conservation measures and return on investment sectorwise	√			

(continued)

(continued)

Skills area	High skilled	Medium skilled	Low skilled	Civil society
Waste reduction and waste management				
Why waste reduction and recycling are important What are waste reduction and recycling Waste segregation and recycling and what can individuals do in the home and at work	√	√	√	√
Approaches to waste management, segregation, waste recycling, and waste reduction for solid and liquid waste	√	√		
What sector-specific procedures best support waste reduction and waste management	√			
Comparing costs of sector-specific waste reduction, waste recycling, and waste management	√			
What waste recycling and waste management systems work best in different environments	√			

(continued)

(continued)

Skills area	High skilled	Medium skilled	Low skilled	Civil society
Design waste reduction and waste recycling production procedures, evaluate and improve	√			
Monitoring approaches in waste reduction and waste recycling in the production processes		√	√	
Calculate the costs of waste reduction and the savings	√			
Calculate cost savings from waste reduction, waste recycling, and waste management measures and return on investment sector wise	√			
Auditing and evaluation				
Certification/ audit/ verification process skills		√	√	
Certification/ audit/ verification process management skills	√	√		
Environmental data analysis	√	√		
Auditing	√	√		
Evaluation	√			

(continued)

(continued)

Skills area	High skilled	Medium skilled	Low skilled	Civil society
Knowledge and understanding of international and national standards and legislation				
Environmental policies	√	√		
Compliance	√	√	√	
Mapping against standards	√	√	√	
Understanding systems				
The environment as a system • Society as a system	√	√	√	√
The dynamics, components, and relationships of different systems	√	√	√	√
The production process as a system	√	√	√	
Designing systems; identifying the processes to transform inputs into outputs	√	√		
Identify problems as part of an overall system	√	√	√	√
Identify improvements as part of an overall system	√	√	√	√
Identifying new connections	√	√	√	√
Examine cyclical cause and effects across the system	√	√	√	√

(continued)

(continued)

Skills area	High skilled	Medium skilled	Low skilled	Civil society
Evaluate the linkages and interactions between the elements that compose the entirety of the system	√	√	√	√
Collaboration skills				
Collaborative thinking, identify the benefits and sustainability opportunities for collaboration	√	√	√	√
Teamwork, compromising, and communication skills for collaboration	√	√	√	√
Develop relationships and work with others to achieve common sustainability goals and a shared purpose	√	√	√	√
Identify opportunities to mutually benefit from shared resources and skills	√	√	√	√
Develop behaviors to problem solve and achieve the objective of the collaboration	√	√	√	√
Identify collaborative opportunities to progress sustainable business goals	√	√		

(continued)

(continued)

Skills area	High skilled	Medium skilled	Low skilled	Civil society
Innovation skills				
Innovation thinking, creative thinking, continuous improvement, risk taking, collaboration	√	√	√	√
Identify, and map needs or opportunities	√	√	√	√
Identify and map needs or opportunities related to your workplace	√	√	√	
Identify and map needs or opportunities related to your organization's sustainability goals	√	√		
Identify needs or opportunities and map using a system thinking approach	√	√	√	√
Generate a number of ideas or solutions	√	√	√	√
Generate a number of ideas or solutions related to your workplace	√	√	√	
Generate a number of ideas or solutions related to your organization's sustainability goals	√	√		
Implement ideas or solutions	√	√	√	√

(continued)

(continued)

Skills area	High skilled	Medium skilled	Low skilled	Civil society
Implement ideas or solutions related to your workplace	√	√	√	
Implement ideas or solutions related to your organization's sustainability goals	√	√		
Evaluate a number of ideas or solutions	√	√	√	√
Evaluate a number of ideas or solutions related to your workplace	√	√	√	
Evaluate a number of ideas or solutions related to your organization's sustainability goals	√	√		

Generic Green Skills for Medium to Large Organizations

Skills area	High skilled	Medium skilled	Low skilled
	The design, analysis, and evaluation of systems/ processes	The maintenance and monitoring of systems and processes	The implementation of processes through the production of products and services and recording of information
Auditing and evaluation			
Certification/audit/ verification process skills		√	√
Certification/audit/ verification process management skills	√	√	
Environmental data analysis	√	√	
Auditing	√	√	
Evaluation	√		

(continued)

(continued)

Skills area	High skilled	Medium skilled	Low skilled
Knowledge and understanding of international and national standards and legislation			
Environmental policies	√	√	
Compliance	√	√	√
Mapping against standards	√	√	√
Stakeholder engagement			
Collaboration	√	√	
Stakeholder management	√	√	
Product life cycle impact assessment			
Impact measurement/ assessment	√	√	
Compilation of inventories of relevant energy and material inputs and environmental releases		√	√
Evaluation of the potential impact of identified inputs and releases	√		
interpreting results to inform decision-making	√	√	
Green procurement	√	√	
Identify and order green resources, products, and services	√	√	
Determine ratings and test results of resources and products	√	√	
Evaluate the potential impact of using one product, resource or service over another on the overall end product or service	√		
Interpreting results to inform decision-making	√	√	

Source EdUHK team analysis

Appendix B
Project Background and Introduction, Approach, and Methodology

The scope of the Asian Development Bank (ADB) commissioned research project "Education and Skills for Inclusive Growth and Green Jobs" was to increase the knowledge and capacity of the four developing member countries (DMCs) being studied (India, Indonesia, Sri Lanka, and Viet Nam) to match education and skills training to jobs, including green occupations. This research study seeks to examine how the four DMCs can best put in place timely and effective policies and strategies for skills development. It also aims to facilitate dialogue and networking among the public sector, business and sector councils, industry and occupational associations, and employee associations to assess gaps in policy and practice for the development of skills and to anticipate future needs.

B.1 Overall Project Methodology

Green growth requires new green sectors and activities to be developed and new skills for both new jobs and existing jobs that are changing in response to carbon constraints. Therefore, skills development policies can make an important contribution to green growth. The research study reported here attempts to provide a link between green growth and education and training provision. International Labour Organization (ILO) and European Union (EU) (2011a, b) reports also suggest that research focusing on economic-related measures and indicators of green growth is required for green growth, in conjunction with research into skills.

While some studies aim to improve transparency in the training markets in particular sectors and some aim to define the content for new training programs in terms of skills and topics based on employer surveys, others have more complex approaches toward determining skills needs, training and employment policies through sectoral committees that represent different stakeholders (ILO and EU 2011a, b). This study does not focus on skills characteristics as such, but on the training that is available for green skills and on the ways they could best be introduced into technical and vocational education and training (TVET) curricula.

One of the unique features of this study is the primary surveys conducted with a significant number of TVET institutions and industries in selected sectors in

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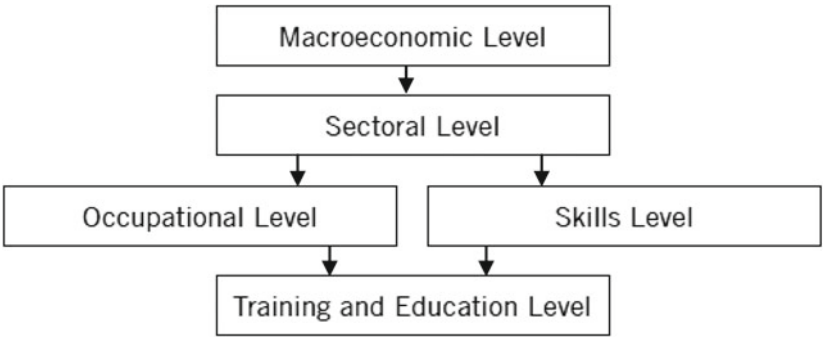

Fig. B.1 Levels of analysis in skills research. *Source* ILO and EU 2011a, b, p. 5

addition to personal interviews and focus group discussions with important stakeholders. The evidence was collected through quantitative surveys, which were later validated through interviews and focus group discussions. Furthermore, expert opinion was also sought through workshops and roundtable discussions involving all the stakeholders in order to authenticate the findings and the subsequent policy advice.

Key stakeholders were identified and consulted both from the labor skills demand side [high-growth selected industries, namely, manufacturing, energy, construction, transportation, and services (tourism and/or hospitality)] and from the supply side [formal government TVET providers and informal private and/or nongovernment organization (NGO) skills trainers] with a special emphasis on emerging green skills and green jobs. It was important to evaluate the extent to which training providers respond to the needs of industry and, second, to the needs of green growth. The project was therefore designed across sectoral, occupational, skills, and training levels (Fig. B.1).

Challenges that need to be met for any research include the need to develop a research approach that is reliable, transparent, and appropriate to the context of specific countries. The following section provides details about the approaches adopted for different components of the study.

B.2 Methodology for Industry and Enterprises

Relevant data were collected from various companies through surveys and interviews. The survey and interview questionnaires were prepared after reading the research on green jobs, sustainable company practices and by focusing on the study objectives and common issues that needed to be addressed including (but not limited to) a lack of awareness on the part of many enterprises in the sector concerning greening issues and their importance, and problems associated with a shortage of skilled labor that has green skills. Interview questions supplemented the

survey by addressing questions concerning the higher costs associated with the greening of processes and the importance of government policy, legislation and incentives to encourage the greening of production and services; and the value of setting industry standards and industry self-regulation to promote the greening of enterprises.

The research employed a multimethod approach involving a desktop review of the literature and relevant grey documents. The in-country component of this study consisted of 2 weeks of interviews in each country involving senior members of enterprises and senior representatives from organizations comprising industry associations, NGOs, government, and international donor organizations.

A survey was developed based on extensive reading of the literature related to green jobs, cleaner production, and engaging the business industry in sustainability. A separate survey of TVET training providers was also undertaken. A roundtable of stakeholders was also held.

Due to limitations in the size of this study and the geographic spread of the interviews, which were in the capital cities of the countries in the case studies, additional secondary sources and government planning documents were also considered as they provide the national context for determining findings that are relevant nationwide. Some secondary industry research data have been reanalyzed through the lens of green skills to further add to this study.

The responses were sorted and analyzed to establish findings indicating the skills gaps, issues, and challenges that have important implications for government, the private sector, and NGOs. The employer interviews and surveys undertaken as part of this study have not only validated earlier research but have resulted in a clearer understanding about what generic green skills are and how they might be applied. These are elaborated upon in this report and are reflected in the policy recommendations arising from this study.

B.3 Methodology for TVET Providers

Qualitative questionnaire surveys and interviews were used to elicit informed opinion and expert knowledge on structured information relevant to current training practices and issues, as well as green skills. This was undertaken in a structured way that helped to capture the current practices of TVET providers in terms of approaches used by institutions to respond to skills needs; to government policies and initiatives that are relevant to skills development; and to economic restructuring and staff training. A particular emphasis was placed on approaches used by institutions to include green skills (skills that are required to reduce the adverse environmental impact of enterprises and the economic sectors, ultimately to levels that are sustainable) in their programs and courses. Representatives from government, NGOs, and donor agencies were also interviewed.

B.4 Methodology for Identifying Skills Profiles

The industry survey data and interviews were the primary source for identifying green skills and the evolving nature of jobs in green industry sectors associated with this study. Additional information was sourced from job advertisements, company career information, and relevant green industry associations. The resulting information was also validated against internationally available green or sustainable national occupation standards (competency or skills standards), documented sustainable businesses practices, and cleaner production processes.

B.5 Outcomes of the Report

This study found that the skills profiles of workforces that encourage successful sustainable growth are more likely to involve the widespread use of generic green skills. Furthermore, specific underpinning knowledge of sustainable technology or processes and greater awareness of environmental issues related to work practices combined with these generic green skills vary in complexity depending on how they are applied. According to industry, these generic green skills lead to cost reductions as well as reducing the individual company's carbon footprint. The identification of generic green skills will allow governments and industry to develop strategies for mainstreaming these skills across the labor market and potentially reducing carbon footprints of individual enterprises and value chains. Training and education providers will be able to integrate these generic green skills into existing training programs to improve the sustainable work practices of TVET graduates.

The study identified a number of generic green skills and that many of the new green jobs draw on hybrid skills sets; for example, installing solar hot water requires low-level electrical and plumbing skills. The interviews highlighted that most of the generic green skills have elements that occur at different levels of complexity and operational independence.

The contents of this report can be put to use by skills development NGOs, NGO partners such as public sector undertakings, corporate and noncorporate donors who fund skills development programs, and policymakers alike. The green practices identified for skills development programs can also help align TVET with the larger picture of green jobs for a greener and more sustainable economy.

Appendix C
Employers' Survey Instrument

Please read each question carefully and tick whichever response is appropriate

Please add your names and contact details if you are happy to be interviewed.

We value your views

Questionnaires will be analyzed by the project researchers and will be treated as strictly confidential.

Background Information on the Project

This survey is for an Asian Development Bank project on Education and Skills for Growth and Green Jobs. The information that you provide will help us identify successful practices in addressing industry needs in skills development, challenges, and requirements for training providers in the Technical Vocational Education and Training (TVET) sector to develop training programs with specific focus on meeting the changing skills needs of the labor market due to demands of climate change and environmental sustainability issues. Most of the questions require you simply to tick a box but there is an opportunity at the end of the survey to add any details you feel are important, but have been missed in earlier questions.

The Asia-Pacific region uses three times the resources as the rest of the world to create one unit of GDP, and between 2000 and 2005 the resource intensity of its economy increased, in contrast to trends in the rest of the world (*UN* 2012a, b).

Green jobs are jobs that reduce the environmental impact of enterprises and economic sectors, ultimately to levels that are sustainable (ILO.)

Greening is a term for moving from traditional production processes or services to production processes or services that have a reduced environmental impact.

The Asia-Pacific region, while emitting relatively low levels of greenhouse gases on a per-capita basis, is one of the fastest-growing sources of climate impacting emissions (UN 2012a, b). *This is the context in which this survey is*

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being conducted. Comparative surveys are being held with a sample of members of government, nongovernment, and private sector business and industry organisations.

Thank you,
Prof. Rupert Maclean
Chair Professor of International Education
The Education University of Hong Kong

1. **Does your business USE any of the following?**

	Yes	No	Would like to but do not have worker skills	Would like to but do not have the technology	Would like to but do not have business processes
Recycled materials					
Energy-efficient products/services					
Energy-efficient infrastructure like solar power, water recycling, waste disposal, etc.					

2. **Does your business PROVIDE any of the following?**

	Yes	No	Would like to but do not have worker skills	Would like to but do not have the technology	Would like to but do not have business processes
Recycled materials to others					
Energy efficiency to others through your products/ services					
Energy-efficient infrastructure to others like solar power, wind power, water recycling, waste disposal, etc.					

3. **How important are the following to your company for becoming environmentally friendly**:

	Very Important	Important	Neutral	Not so Important	Not Important
Innovation in technology, products, processes, and services?					
Collaboration with others especially with those in the supply/value chain?					
Requirement or need to undertake impact assessments related to climate change or environmental issues?					
Understanding environmental standards and legislation?					
Technical and Vocational Training (TVET) of employees?					

4. **How much importance you give to government policies on**

	Very important	Important	Neutral	Not so important	Not important
Economic development policies?					
Environmental policies?					
Skills development policies?					
Green job policies?					

5. **To what extent the following issues have affected your business in the last 12 months?**

	Greatly	To some extent	Cannot say	Not much	Not at all
Government legislation, regulations or requirements					
Industry standards and competition					
Rising consumer demand for green products/services					
Increasing costs (e.g., cost of energy)					

(continued)

(continued)

	Greatly	To some extent	Cannot say	Not much	Not at all
Ethical/corporate responsibility issues					
Demand for "green skills" of workers					

6. **To what extent have the following forced you to develop new skills in your company?**

	Greatly	To some extent	Cannot Say	Not much	Not at all
The introduction of new international standards (ISO, OHS related to climate change or environmental issues)					
Corporate social responsibility related to climate change or environmental issues					
Import–Export requirements related to climate change or environmental issues					
Government legislation related to climate change or environmental issues					
Requirement or need to undertake impact assessments related to climate change or environmental issues					
Customer/ client expectations related to climate change or environmental issues					

7. **In the last 12 months, has your company….**

	Yes	No	Can't Say
Needed to employ new workers or train employees in new skills related to dealing with climate change or environmental issues?			
Needed to integrate jobs related to dealing with climate change or environmental issues and inclusive growth into work environment?			
Witnessed growing awareness amongst senior managers on climate change or environmental related jobs?			
Faced a shortage of skilled workers in climate change or environmental related jobs which might be detrimental to the business?			
Experienced opening up of new markets or business lines related to climate change and environment?			
Needed to account for inclusive policies in labor force planning?			

8. **Do you want your business to become more environmentally friendly in the following areas?**

	Yes	No	Would like to but do not have worker skills	Would like to but do not have the technology	Would like to but do not have business processes
Involvement in recycling					
Involvement in new green products or services					
Energy-efficient infrastructure like solar power, water recycling, waste disposal, etc.					
Become more informed on green issues					

9. **What is the possible impact on your business in the absence of any jobs related to climate change?**

☐ We are not able to expand our work (business)
☐ We are not working as well as we could be
☐ Our costs are higher than they should be
☐ We have higher workloads on our existing workers
☐ We have problems maintaining our equipment
☐ We cannot meet our sustainability target goals
☐ No effect

10. **Does your business regularly review its employee skills with respect to changing business requirements?**

☐ Yes on its own initiative
☐ Yes, at the request of outside bodies
☐ Cannot say
☐ No

11. **Does your business use any of the following data sources or forecasting tools/mechanisms to make decisions about what employee skills will be needed? (Please tick)**

☐ Business research (including market surveys)
☐ Published statistical data
☐ Government directions/advice
☐ Labor market analysis
☐ Industry magazines
☐ Job announcements analysis
☐ Links with TVET institutions

12. **Methods of training used in your organization? (Please tick all that is applicable)**

- ☐ Professional development like time management, decision-making, planning, etc.
- ☐ Mentoring new joinees/ Buddy system
- ☐ Internal technical training on operations
- ☐ Training of your employees by vendors or distribution channels
- ☐ Apprenticeships/ Internships/ Industrial placement—students placed in your company
- ☐ Sponsoring employees for external training programs
- ☐ Capacity building through attending conferences, trade shows, industry association meetings, union meetings, etc.

13. **With respect to your suppliers how important are the following to your business**

	Very important	Important	Neutral	Not so important	Not important
Suppliers using skilled and trained workers					
Suppliers adhering to international standards in manufacturing					
Suppliers engaged in recycling of materials					
Suppliers producing energy-efficient products					
Suppliers using energy-efficient infrastructure like solar power, water recycling, waste disposal, etc.					

14. **How do the various institutions mentioned below respond to your company's skill requirement?**

	Greatly	To some extent	Cannot say	Not much	Not at all
Polytechnics					
ITIs					
Vocational education in secondary schools					
Private professional colleges					
Universities					
Other					

15. **As part of work force planning do you have any involvement with TVET institutions in providing feedback on student/graduate skills and providing input on changes to courses/programs?**

- ☐ Yes, frequently
- ☐ Yes, occasionally
- ☐ Cannot say
- ☐ Not at all

16. **In what ways, if any, does your business engage with TVET institutions?**

- ☐ Provide workplace for on-the-job training (industrial placements)
- ☐ Member or Chair of accreditation panels at TVET institutions
- ☐ Engaged in content development of TVET courses
- ☐ Allow site visits for students as part of their course
- ☐ Provide TVET teachers with industry experience

17. **Would you like to have more opportunities to engage with TVET institutions in various ways?**

- ☐ Yes, frequently
- ☐ Yes, occasionally
- ☐ Cannot say
- ☐ Not at all

18. **What are the key changes related to greening in your business/sector? Please tick as many as are appropriate**

- ☐ Job role changes (including knowledge and basic skills, specialized and technical skills, attitudes, and other personal traits)
- ☐ Changes of enterprise systems (processes and procedures)
- ☐ Changes in work systems (including people, technology, infrastructure, work environment, and materials)
- ☐ Changes in value chain requirements and processes

19. **Your Name/Designation/Mobile/Email**

20. **Name of Company**

21. **What is the Industry sector to which your business/company belongs to?**

- ☐ Construction
- ☐ Automobile
- ☐ Hospitality
- ☐ Energy
- ☐ Others

22. **Type of ownership of your company**

- ☐ Private/Family Owned
- ☐ Multinational

- ☐ Govt. owned
- ☐ Autonomous under Govt.

23. **What is the location of your business where bulk of production or services happen?**

- ☐ Metropolitan
- ☐ Regional (Urban)
- ☐ Regional (Rural)

24. **Would you like your company name to be acknowledged in the published report?**

- ☐ Yes
- ☐ No

Appendix D
TVET providers' Survey Instrument

Asian Development Bank (ADB) along with The Education University of Hong Kong (EdUHK) has undertaken an ambitious project across four nations Viet Nam, Indonesia, Sri Lanka, and India to increase knowledge and capacity of the member countries to put in place timely and effective policies and strategies toward developing skills for environmentally sustainable jobs or green jobs. The project will facilitate dialogue between the public sector, business sector, academic councils, and industry and employee associations to assess gaps in policy and practice for the development of skills and to anticipate future needs. The project will address both technology-oriented high-end skills as well as middle and lower end skills to ensure that issues of inclusiveness are addressed in the context of rapidly growing economic sectors, including greening sectors through green jobs (Green jobs are jobs that reduce the environmental impact of enterprises and economic sectors, ultimately to levels that are sustainable as per ILO. Greening is a term for moving from traditional production processes or services to production processes or services that have a reduced environmental impact. For example —Manufacturing fuel-efficient cars, Solar Panels, Green-building construction work, Renewable energy products, Public Transport Operators, Smart electricity grids, Water and sanitation infrastructure, and green professionals such as green auditors.).

In order to assess the present scenario of skills development initiatives undertaken by TVET (Technical Vocational Education and Training) providers, we welcome your valuable inputs on how your training system is identifying skill gaps, developing courses to fill these gaps, placing trained students in jobs and following up with the employers/industry sectors to review programs. We would also like to understand the profile of students enrolling in your courses along with operational challenges you face to run such technical and vocational courses. We are enclosing a brief objective-type questionnaire which has seven sections, the last one being optional. It would be helpful if you could insert e-brochures/web links in the form or

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email it to us separately. If you agree, we would also like to acknowledge your contribution by mentioning the name of your institution in the final report or you may choose to be anonymous. You may appropriately fill the last section at the end of the questionnaire. This information will be analyzed by the project researchers and will be treated as strictly confidential. We look forward to your response and hope that your inputs would help ADB and Govt. of India, develop robust and feasible policies and practices for the industry, training institutions, and markets which may complement each other for inclusive growth and green jobs.

Thank you,
Prof. Rupert Maclean
Chair Professor of International Education
The Education University of Hong Kong

If you have any questions about this survey or would like additional information please email: maclean@eduhk.hk

Q1. What is the Name of your Institution?

Q2. What is the Location/s of your Institution/s?

- ☐ Metropolitan
- ☐ Regional (Urban) or City
- ☐ Regional (Rural)
- ☐ All the above

Q3. How many students are currently enrolled in your institution? Example: 100

Q4. How many students are male? Example: 34

Q5. How many students are female? Example: 10

Q6. What is the age group of your students in years? Example: 18–25

Q7. What are the previous educational qualifications of students enrolling in your courses? (You can select more than one option, if applicable)

- ☐ Std. 5th Pass
- ☐ Std. 8th Pass
- ☐ High School

- ☐ Higher Secondary
- ☐ Graduate
- ☐ Postgraduate
- ☐ No Educational Qualifications
- ☐ Any Technical Certification
- ☐ Other:

Q8. How many total staff members are employed in your institution?

Q9. Out of the total number of staff members, how many are teachers/lecturers?

Q10. Out of the total number of staff members, how many are core workshop teachers/lecturers?

Q11. Out of the total number of staff members, how many are external/contract teachers/lecturers?

Q12. Out of the total number of staff members, how many are support staff (admin, mobilizers, accounts, etc.)?

Q13. Out of the total number of staff members, how many are females?

Q14. How do potential students find out about courses and programs offered by your institution? (You can choose more than one option)

- ☐ Family and friends (Word of Mouth)
- ☐ Former student(s)
- ☐ Career guidance in schools
- ☐ Career guidance outside schools
- ☐ Employer
- ☐ Road Shows and Public advertisement
- ☐ On line
- ☐ Other:

Q15. How important is work practice-based training in the courses/programs of your institution?

- ☐ Not Important
- ☐ Neutral
- ☐ Somewhat Important
- ☐ Very Important

Q16. How effective in your opinion are policies and practices of your institution in increasing the employability of its students and graduates? For example—Practices on Job Placement, On-the-job Training, etc.

- ☐ Not Effective
- ☐ Neutral
- ☐ Somewhat Effective
- ☐ Very Effective

Q17. How important does your institution rate student functional literacy/soft skills (like Spoken English, Basic IT, Life Skills) as part of its programs?

- ☐ Not Important
- ☐ Neutral
- ☐ Somewhat Important
- ☐ Very Important

Q18. Is your Institution a member of, or involved in, any of the following industry groups? (Please tick all that apply)

- ☐ Industry Association (e.g., CII, PHD Chamber, Retailer's Association of India, etc.)
- ☐ Professional Body (e.g., NSDC)
- ☐ Particular Employers
- ☐ None
- ☐ Other:

Q19. Can you name the Industry Associations and Professional Bodies you ticked in the previous question?

Q20. Has your institution been approached over the last year by any companies asking for training assistance for the following groups?

- ☐ Existing Workers
- ☐ New Workers
- ☐ Both of the above
- ☐ None of the above

Q21. Has your institution conducted surveys within the last year for any of the following groups in order to evaluate its courses and programs and in response to employer demands and labor force requirements?

- ☐ Enrolled Students
- ☐ Student Alumni
- ☐ Employers
- ☐ No Surveys Conducted
- ☐ Other:

Q22. What are the Industry Sectors your Skill Training Programs cater to?

- ☐ Construction/Building (cement, paints, masonry, carpentry, electrical, etc.)
- ☐ Energy and Power
- ☐ Transport/Automotive
- ☐ Hospitality
- ☐ Textile and Apparel
- ☐ Financial and Banking
- ☐ Consumer Durables (Plastic, Paper, Jute, Coir, etc.)
- ☐ Fast Moving Consumer Goods (Biscuits, Soap, Toiletries, etc.)
- ☐ Health Care (Patient Assistance)
- ☐ Metal and Mining (Pearl, Diamond, Aluminum, Graphite, etc.)
- ☐ Oil and Gas
- ☐ Retailing
- ☐ Telecom and Electronics
- ☐ Travel and Tourism
- ☐ Agriculture based (Dairy, Tobacco, Cotton, Sugar, Poultry, etc.)
- ☐ Other:

Q23. What are the types of certification provided to your students at the end of courses/training programs?

- ☐ Degree
- ☐ Masters
- ☐ Diploma
- ☐ PG Diploma
- ☐ Trade Skill Certificate
- ☐ Other:

Q24. Please provide information about each of your courses in the short format explained below—Course Name/Type of Certificate/Duration/Qualification of Students/MALES/FEMALES (Example—Basic Carpentry/Trade Certificate/6 Months/8th Pass to Higher Secondary/28 M/No F).

Q25. Does the institution regularly review and update its course and programs?

- ☐ No
- ☐ Not Sure, Don't Know
- ☐ Yes, on its own initiative
- ☐ Yes, as a response to external requests and directions

Q26. If you answered Yes to the previous question, how often are your courses reviewed?

- ☐ After each course/program delivery
- ☐ Once per semester
- ☐ Once per year
- ☐ Once in 2–4 years
- ☐ Every 5 or more years
- ☐ Other:

Q27. What is the main purpose of reviewing courses and programs?

- ☐ Quality control
- ☐ Meeting employers' requirements
- ☐ Responding to student satisfaction surveys
- ☐ Addressing the gap between graduate skills and labor market requirements
- ☐ Meeting institutional development needs
- ☐ Responding to government policies/guidelines
- ☐ Other:

Q28. In planning ahead to predict the labor market needs for workforce skills, does your institution use any of the following data sources or forecasting tools/ mechanisms to make decisions about required training (types and content of course and programs?

- ☐ Institutional research (including feedback surveys)
- ☐ Published statistical data
- ☐ Government directions/advice
- ☐ Labor market analysis
- ☐ Skills observatories/skills councils
- ☐ Job announcements analysis
- ☐ Links with other TVET institutions
- ☐ Other:

Q29. Please state on a scale of 1–5, how you rate the strength of your institution's response to government initiatives with regard to economic development, environmental policies, skills development and green jobs. 1—Not Considered at all and 5—Very Closely Considered.

	1	2	3	4	5
Economic development					
Environmental policies					
Skills development					
Green jobs					

Q30. Please state on a scale of 1–5, the priority your institution gives to upskilling teachers and trainers to meet the needs of a greening economy? 1—Not Prioritized at all and 5—Highly Prioritized.

	1	2	3	4	5
Green upskilling of teachers					

Q31. Please let us know how strongly you agree or disagree with the following statements related to Institution's Approach to Economic Restructuring. Strongly Disagree (SD), Disagree (D), Unsure (U), Agree (A), Strongly Agree (SA).

	SD	D	U	A	SA
Over the last 3 years, economic development has influenced development of our programs					
Our institution is involved in initiatives with industry that influence development of training programs for required skills					
We have offered new courses/programs and closed others over the last 2 years					
There is increasing demand for a number of our courses/ programs					
Our current training programs are meeting skills demands at local or regional levels					
Recent program changes like course revisions and new courses reflect shifts from low skills (labor intensive) to middle-level skills jobs					
Recent program changes reflect shifts from low and mid-level skill jobs to high skills knowledge-based jobs.					
Our programs are guided by training/education standards of specific occupations					
Our programs are guided by skills profiles/occupational standards used in the industry					
Policies and practices in my institution are very effective for keeping graduates' skills and knowledge up to date					

Q32. Please let us know how strongly you agree or disagree with the following statements related to institution's approach toward green skills. Strongly Disagree (SD), Disagree (D), Unsure (U), Agree (A), Strongly Agree (SA).

	SD	D	U	A	SA
Institution needs to develop a full approach to adjust training to needs of greening economy					
Institution faces many challenges in addressing the development of skills needed for green jobs					
Institution is involved in internal and/or external partnership on green skills inclusion in courses/programs					
There is increasing demand for a number of our courses/ programs					
Institution needs to start new or continuing training programs to meet the demand for green skills					
New courses/programs have been developed to train students in "green" skills					
Additional skills and competencies have been added into existing courses to meet green skills requirements					
In this institution, "green" content is mainly learnt in "general" subjects					
In this institution, "green" content is mainly learnt in specialized technical subjects					
Green content is mainly learnt through industry exposure visits during the courses of the institution					
Comprehensive "green" skills standards have been developed in my institution					
A comprehensive certification system for "green" standards has been developed in my institution					
My institution is training students for industry/ies that are key drivers for economic growth in my region					
Scope of "green" job creation in my region is limited so it does not generate enough demand for green skills training					
My institution's policies and practices are very effective in developing the "green" skills and knowledge of our students so they are up to date to meet industry demands					

Q33. Changes in your programs/courses are the result of the following aspects of green economic changes: Strongly Disagree (SD), Disagree (D), Unsure (U), Agree (A), Strongly Agree (SA).

	SD	D	U	A	SA
Changes about greater use of energy from renewable sources (e.g., solar, wind, biomass, ocean, landfill gas, municipal solid waste, etc.)					
Changes about greater use of products and services that increase energy efficiency (energy-efficient equipment, appliances, vehicles, building design, etc.)					
Changes about greater use of processes that reduce/remove pollution and greenhouse gas emission and transition to recycling and reuse					
Changes about greater use of products and services that save natural resources (e.g., organic agriculture, sustainable forestry, land and soil management, water management)					
Changes about greater use of products and services that comply with environmental regulations and standards					

Q34. Please indicate below and rank the effectiveness of these teacher training methods at your institute.

	Not used	Not effective	Somewhat effective	Effective	Very effective
Individual mentoring by more experienced teacher					
Small group meetings/ discussions at the institute					
In-house seminars and courses by teachers themselves					
External trainer at the institute					
Online courses					
Industry organized training courses for your teachers at the institute					
Industry organized training courses for your teachers at the industry site					
Professional associations, skills councils					
Training arranged by teachers themselves					
Others					

Q35. Are teachers trained toward building green skills at your institution?

☐ Yes
☐ Not Yet

Q36. If you answered Yes to the previous question, please indicate below and rank the effectiveness of these teacher training methods toward green skills at your institution.

	Not used	Not effective	Somewhat effective	Effective	Very effective
Individual mentoring by more experienced teacher					
Small group meetings/ discussions at the institute					
In-house seminars and courses by teachers themselves					
External trainer at the institute					
Online courses					
Industry organized training courses for your teachers at the institute					
Industry organized training courses for your teachers at the industry site					
Professional associations, skills councils					
Training arranged by teachers themselves					
Others					

Q37. Do you have any further general comments to make?

Q38. What do you see as the outstanding opportunities offered by the development of education for inclusive economic growth and green jobs? (Can you provide any examples?)

Q39. What do you see as the outstanding challenges faced in the development of education for inclusive economic growth and green jobs? (Can you give any examples?)

Q40. Do you think that there are any particular issues faced by rural and regional institutions in providing skills development training, access, and opportunities?

Q41. What is your current position in the institution? Example—CEO, Program Manager, etc.

Q42. What is your age (years)? Example - 25

Q43. Are you Male or Female?

- ☐ Male
- ☐ Female

Q44. What are your qualifications? You can select multiple options below.

- ☐ Certificate
- ☐ Diploma
- ☐ Advanced Diploma
- ☐ Bachelor Degree
- ☐ Postgraduate Degree
- ☐ Other:

Q45. Would you like your organization's name to be acknowledged in the published report?

☐ Yes
☐ No

Q46. We invite you to participate in follow-up activities on some of the issues raised in this questionnaire. If you consent to be contacted as a potential participant (on an entirely voluntary basis), please give your contact details below. If you do not wish to participate, please ignore this invitation and no further contact will be made. Name/Phone Number/Email ID.

Appendix E
Employers' Interview Protocol

E.1 Interview Protocol with Industry Bodies

A key aspect of strong, sustainable, and inclusive growth is assuring adequate quality employment, which requires an adequate skills base. Durable links are needed between the world of work and training providers to match training provision with employment needs.

Sustaining economic growth without compromising the environment is a policy challenge that Asia has begun to address:

- the Asia-Pacific region uses three times the resources as the rest of the world to create one unit of GDP, and between 2000 and 2005 the resource intensity of its economy increased, in contrast to trends in the rest of the world.[1]
- the Asia-Pacific region, while emitting relatively low levels of greenhouse gases on a per-capita basis, is one of the fastest-growing sources of climate impacting emissions.[2]
- a number of studies estimate that by 2030, 100 million green jobs will be available worldwide—about 2% of the global workforce. Of these, 50 million green jobs are anticipated in Asia.

Enterprise surveys by the World Bank since 2000 reveal that 50% of firms surveyed in East Asia, Southeast Asia, and the Pacific are concerned with inadequate worker education and skills. Industry and business have initiated steps to train workers for green processes and products; however, governments, industries, and educational

[1]UN (2012a, b). *Low Carbon Green Growth Roadmap for Asia and the Pacific: Turning Resource Constraints and the Climate Crisis into Economic Growth Opportunities*. United Nations Economic and Social Commission for Asia and the Pacific. Korea International Cooperation Agency. Retrieved from: www.unescap.org/esd/environment/lcgg/.
[2]*Ibid*.

R. Maclean et al., *Education and Skills for Inclusive Growth, Green Jobs and the Greening of Economies in Asia*, Technical and Vocational Education and Training: Issues, Concerns and Prospects 27, https://doi.org/10.1007/978-981-10-6559-0

institutions have not yet developed coordinated actions to prepare the workforce in middle and higher green skills.

To support a coordinated approach to green growth in the region, the Asian Development Bank is funding this project, Education for Inclusive Growth and Green Jobs, in four countries, India, Sri Lanka, Viet Nam, and Indonesia. The intended impact of the research concerns improved and increased availability of job-oriented courses and skills training, including for green occupations.

Green jobs are jobs that reduce the environmental impact of enterprises and economic sectors, ultimately to levels that are sustainable.[3]

Greening is a term for moving from traditional production processes or services to production processes or services that have a reduced environmental impact.

(Have on cards which you let them have throughout the interview in case they need to refer back to the definitions?)

The information from this interview will be used for the sole purposes of the research project. Your comments will not be made public, if there may be a reason to link your comments to you, I will contact you first to seek your approval.

Do you mind if I record this interview solely for my purpose of developing comprehensive notes. No one else will listen to the recording.

Thank you for participating. This interview will take up to 2 hours.

E.2 Organizational Profile

1. What industry sectors does your organization cater to? Can you expand on the membership. Partners/clients breakdown per industry sector?
2. What services do you provide to your membership/partners/clients? (Training, lobbying, policy development, investment promotion, etc)
3. What kind of services around climate change/sustainability/carbon footprint reduction/greening business does your organization provide to your membership/partners/clients?
4. Does your organization work closely with other organizations that are involved in climate change/sustainability/carbon footprint reduction/greening business? If so, who and how do the organizations work together?
5. Is there a section or person dedicated to climate change/sustainability/carbon footprint reduction/greening business? If so what is their main focus over the next 12 months to 2 years?
6. Does the organization facilitate member networks, for example, an HR or training working group or a greening transitions working group? If so, what are these networks?

[3]ILO Greens Job definition.

7. Is the organization looking to change its services or membership based on climate change/sustainability/carbon footprint reduction/greening business issues?
8. Does the organization provide services to the value chain partners of the membership/clients that fall outside the industry sector?
9. Does your organization provide services to government? If so what is the nature of services? Do any of them relate to climate change/sustainability/greening business?

E.3 Forecasting—Helps Industry Develop a Coordinated Approach to Different Issues. The Following Section Prompts Discussion Around How we can Best Forecast Trends to Identify and Meet the Skills Development Needs of Industry more Actively.

10. What are some of the big issues that are facing the industry generally over the next 1 to 2 years?
11. What are your members identifying as the changing, or soon to change, business operational issues related to climate change/sustainability/carbon footprint reduction/greening business?
12. What are your members identifying as the changing, or soon to change, workforce/staff/contractor development needs to meet sustainability and greening challenges?
13. What approaches does the organization use to forecast trends and issues relevant to the membership/partners/clients?
14. Does the organization work with other organizations to forecast trends affecting the industry? If so, how?
15. Does the organization work with other organizations to identify and forecast the skills development needs of the industry? If so, how?
16. Has the organization been invited to participate in forecasting the skills development needs of industry? If so, by who and what did the participation involve?
17. Thinking about forecasting trends, are there any organizations, nationally or internationally, that standout as doing this well?
18. Thinking about forecasting skills development needs, are there any organizations, nationally or internationally, that standout as doing this well?
19. Has the organization discussed how forecasting could be improved? If so, what options have been discussed?
20. Has the organization discussed how forecasting skills development needs could be improved? If so, what options have been discussed?

E.4 Policy development—can Help Facilitate or Hinder Industry Growth and Involvement in a Number of Spheres within the Economy and Society. Generally, the following Section Prompts Discussion Related to Supporting Industry Leadership in Forecasting Skill Needs Generally with a Particular Emphasis on Green Jobs.

21. Are there particular government policies that are supporting industry involvement in the green economy/sustainability/climate change? Can you identify how these policies are affecting the industry?
22. Are there particular government policies that are hindering industry involvement in the green economy/sustainability/climate change? Can you identify how these policies are affecting the industry?
23. What processes does the organization use to influence policy? Can you cite an example?
24. What kinds of strategic processes does the organization use to seek to influence policy development, for example, the beginning of an electoral cycle or annual government priority setting exercises, to review, refine and implement new policy goals?
25. Does the organization participate in government forums on TVET training? If so, what are these forums and what is their mandate?
26. Does the organization have formal relationships with training organizations? Explain expand on the nature of the relationship.
27. Does the organization facilitate dialogue between its industry members and training providers to improve the relevance of training provision?
28. What internal resources does the organization need to be effective in influencing policy?
29. Thinking about skills development, are there organizations that you can work with/partner to influence the quality of training outcomes?
30. Are there examples where members are working with training organizations to improve the relevance of training provision for industry?

E.5 Skill Needs—for the Industry Sector Members

31. What new jobs, if any, do you envisage the sector will need in the future to meet the challenges of sustainability and greening?
32. Thinking about future trends and challenges facing the industry, what new skill sets do you think existing workers in the industry sector will require?
33. Which jobs do your members and your organization believe will change the most and why?

- Operators
- Technicians
- Service personnel
- Supervisors
- Administrators
- Management

34. Is the sector finding it difficult to recruit workers with the skills needed to meet greening and climate change challenges?
35. Is there a particular set of jobs that the sector is finding hardest to recruit in relation to green jobs? Please list them in order of importance to the sector
36. Overall according to the membership, what general or basic skills do workers lack?
37. What is the main effect of a lack of skilled workers in the sector?

- Not able to expand trade/services
- Not able to expand labor force
- Not as efficient as the sector could be
- Sectoral costs are higher than they should be
- The sector cannot meet sustainability targets/goals

38. Please tell me whether your organization/association provides training in green skills/green technologies to your members? This may be informal or formal
39. Does it involve the following:

- Member networks on greening and CC issue
- Lean Management, 3Rs
- Technology training
- Paid training programs through the organization/association
- Conferences or trade shows
- Industry association updates
- Speakers and experts
- Facilitation of government/industry meetings, roundtables
- Meritorious recognition for achievement in sustainability/green jobs

40. Are you aware of any current training courses conducted by enterprises in sustainability, the 3Rs, etc.?
41. Are you aware of any current training courses that could meet your industry sectors sustainability needs?
42. Do you think the sector could be responsive to flexible apprenticeships or internship for new or existing workers tailored specifically to your industry sector's needs?
43. What could be done by Government, other agencies, training providers to support your greening transition?
44. What coordination mechanisms could support the sector to successfully make the transition to a green economy?

Thank you for generously spending the time to share this information with us.

Appendix F
TVET Providers' Interview Protocol

F.1 Introduction

Thank you for agreeing to be interviewed. All information shared with me will be treated in the strictest confidence. Our report (based on the materials collected from different TVET providers) will not identify individuals or institutions: the published information will be anonymous.

This interview is a part of an Asian Development Bank project on Education and Skills for Growth and Green Jobs. *The aim of this interview is* to identify successful practices, opportunities, challenges, and requirements for training providers to develop training programs in addressing industry needs in skills development, with a specific focus on meeting the demands of climate change and environmental sustainability issues that industry is addressing.

Do you have any questions you would like to ask about the project?

In the interest of improved accuracy, would you mind if I tape record the interview and later transcribe some parts of it? I assure you that comments made will be treated in the strictest confidence.

F.2 Approaches Used by your Institution to Respond to Skills Needs

Please briefly describe your institution.

1. What is your role in the institution? Your responsibilities?
2. What are the main industries you are training for and what are the levels (low skills–high skills)?
3. Do you have links with industry? What sort of links? (e.g., workplace for training/industrial placement as a part of TVET courses; industry involved in accreditation panels; engaged in content development for courses; Allow site visits for students as part of their course; provide opportunities to gain industry experience for TVET teachers; engaged in skills policy formulation)

R. Maclean et al., *Education and Skills for Inclusive Growth, Green Jobs and the Greening of Economies in Asia*, Technical and Vocational Education and Training: Issues, Concerns and Prospects 27, https://doi.org/10.1007/978-981-10-6559-0

4. Does your institution receive any feedback from industry/employers about your graduates?
5. What other types of data (sources of information) is your institution using to make decisions about required training (types of courses and programs)?(e.g., types of statistical data, governments directions, and our research)
6. Does your institution use skills forecasting tools/mechanisms to predict the needs of the labor market (to anticipate skills needs) so you can update your courses/programs? (e.g., use of labor market information, involved with skills observatories or skills councils; job announcements' analysis) On a scale of 1–10, what is the priority given by your institution to skills forecasting and the matching of graduate skills to changing labor market needs?
7. Are there any procedures in place to review your courses/programs in response to industry/employer feedback received and information gained from forecasting tools? How often do you update your courses and programs?
8. What are the main opportunities and challenges in carrying out the above activities?

F.3 Approaches Used by your Institution to Respond to Government Policies/Initiatives That are Relevant to Skills Development

9. Does your institution try to respond to government initiatives that set up directions for *country's (region's) in terms of*

    - economic development;
    - environmental policies;
    - skills development policies;
    - if it does, what are the ways in which it responds?

10. Please give examples of recent policy documents in the areas of economic and social development, environment, and skills development that have influenced your institution's decisions about development of new courses/programs and updating existing ones?
11. What mechanisms, if any, has your institution used to translate policies into institutional practices)?
12. What are the main opportunities and challenges in trying to respond to government policy initiatives?

F.4 Approaches you Use to Respond to Economic Restructuring

13. What programs/courses are increasingly in demand in your institution? What are the reasons?
14. What programs/courses are declining in demand? What are the reasons?
15. To what extent do you think your institution meets changing skills demands at the local or regional levels? Could more be done? In what ways?
16. Do any recent changes in your programs reflect shifts from training for low skills jobs (labor intensive) to middle-level skills jobs? From low- and middle-level skills jobs to high skills jobs (knowledge-based, create opportunities for high-quality or high-wage jobs)?
17. In order to meet new skill demands what are your institution's plans in terms of courses/programs development? Revisions? Closures? Other activities?
18. What are the opportunities and challenges that relate to policies and practices in your institution for keeping skills and knowledge of your graduates up to date to meet industry demands?

F.5 Approaches your Institution Uses to Include Green Skills (Skills that are Required to Reduce the Environmental Impact of Enterprises and Economic Sectors, Ultimately to Levels that are Sustainable) in its Programs/Courses

19. What is the scope for green job creation in your region? Is it sufficient to generate needs for green skills training in institutions like yours?
20. Does your institution have, or is planning for, development of a comprehensive approach toward adjusting your training to the needs of a greening economy?
21. What are the main ways students are learning the "green content":

    - "general" subjects
    - "specialised" subjects
    - industry placement during the courses
    - other?

22. Has your institution implemented or planned changes in programs/courses as the result of the different aspects of green economic transitions: (*refer to the handout*)
23. If changes have been implemented or planned, do these relate to updating new skills and competences of students in existing courses or setting up new training programs/courses to meet the demand for green skills? Please give examples and the level of skills represented (Low, Middle or High).

24. What are the main reasons for adopting a changed approach?
    - changing natural or built environments;
    - policy and regulation;
    - technology and innovation; and
    - markets for green industries and consumer habits.
25. Does your institution use any skills forecasting tools to predict the needs of greening economies? On a scale of 1 to 10, what is the priority given by your institution to skills forecasting of "green jobs" and the matching of graduate skills to the needs of greening economies?
26. What are the roles of social partners (e.g., industry, government bodies, and associations) in adopting new approaches to training for "green jobs"?
27. Does your institution have/apply green skills standards? certification system for training courses and programs?
28. What are the opportunities and challenges faced by your institution in addressing the development of skills required for green jobs?

F.6 Approaches to Staff Training (Professional Development of Teachers and Workshop Teachers)

29. What guides teaching and learning in your institution's programs? (e.g., training/education standards for specific occupations; skills profiles/occupational standards used in the industry)
30. How is training provided in your institution to update skills and knowledge of general and workshop teachers? (refer to the handout)
31. What processes, if any, are in place or planned to support staff in their inclusion of "green" components in the training they provide?
32. Which of the ways of training you have outlined seems to be most effective, and why?
33. What are the main opportunities and challenges in helping teachers at your institution to update their skills and knowledge?

Are there any other comments you would like to make which are relevant to this study? If so, please feel free to make them. If you wish them to be off the record, I will stop the tape.

Thank you very much for your time and interest in being interviewed.

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Index

R. Maclean et al., *Education and Skills for Inclusive Growth, Green Jobs and the Greening of Economies in Asia*, Technical and Vocational Education and Training: Issues, Concerns and Prospects 27, https://doi.org/10.1007/978-981-10-6559-0