

Chapter 6

Summary, Conclusions, and Prospects

Abstract Critical themes in selected industry sectors (agriculture, manufacturing, building, transport and tourism) across the four case study countries are identified and discussed. A review also occurred regarding industry response to the demand for green skills; generic and specific green skills across industries of the four case study countries; the role of TVET in addressing industry needs; key impediments to the response of TVET to green skills; and, initiatives that work for countries to fast track reforms in TVET. Potential areas for further research are examined.

Keywords Regulation and sustainable practices • Industry response • Social demand • Consumer demand • Downstream activities • Upstream activities • Industry and TVET linkages • Demand for green products and services • Generic and specific green skills across industries • Green narratives • Role of TVET in addressing industry needs • Internal and external partnerships • Green content • Social demand • Areas for further research

1 Critical Themes in the Selected Industry Sectors

The pace of development in India, Indonesia, Sri Lanka, and Viet Nam demonstrates that growth and industry respond to the demands of the society and progressive policies rather than to different forms of government. While India is the largest democracy, the presidential democracy in Sri Lanka is being driven by a visionary leadership after a difficult, war-torn past. Viet Nam, on the other hand, had been a single-party socialist republic, while Indonesia has been dealing with relatively recent democracy. Despite such differences, in all the cases the pace of economic growth has exceeded expectations and has been due mainly to a positive response to the growth of the world economy, global trade, and high in-country domestic demand.

Industry sectors such as construction, energy, transportation, and hospitality services have been high growth sectors in all four countries. However, each of these sectors, despite their dynamism, faces constraints in the form of

- the informal nature of activities in the sectors,
- unorganized human employment,
- low penetration of new technologies and innovation in the various industries,
- poor implementation of policies related to environment in the sectors, and
- low productivity due to poor human capital development.

The ADB-EdUHK study has systematically evaluated the legislation, standards, and social demand in each of these sectors in the four countries, and has sought to understand the ways in which industry sectors are trying to respond to emerging needs and the key issues, including areas impeding a transition from traditional practices to green practices. The study has also examined various innovations in terms of policies and exemplar practices in both the government and private sectors.

2 Demand for Green Jobs and Industry Response

Unless otherwise specified, all figures are based on the EdUHK Team's analysis of data collected through the surveys and interviews undertaken for the ADB-EdUHK research study.

Strong Regulation Both Deter and Motivate Sustainable Practices

Rising regulatory requirements have an impact on all industry sectors, and many of the companies surveyed believed that being strongly regulated through government interventions was both a deterrent as well as an opportunity to instill environmentally sustainable practices. Forty-five percent of industry respondents in the ADB-EdUHK survey in India and 51% in Sri Lanka agreed that government regulation has an impact on their businesses (Fig. 1). Nearly 80% of construction sector and energy sector respondents in Indonesia also agreed with this proposition; however, respondents from services, transport, and manufacturing believed that

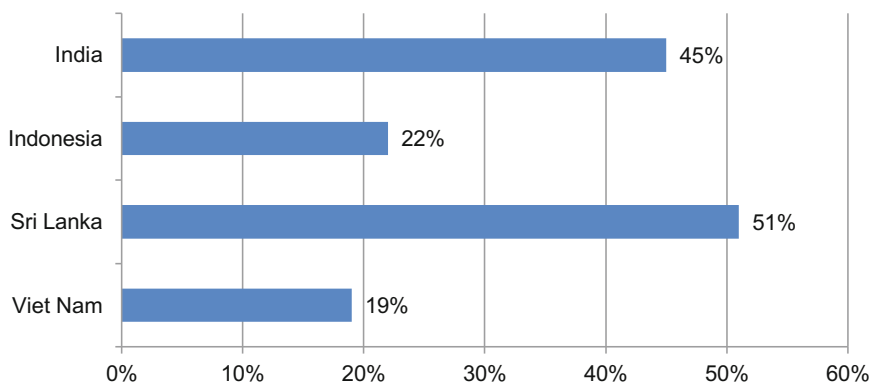


Fig. 1 Government legislation and regulations affect businesses. *Source* EdUHK Research Team Survey Questionnaires

other reasons, more than government regulation, have been influential, bringing the overall proportion in Indonesia to nearly 20%.

Some regulatory requirements, such as impact assessments, are the norm in larger enterprises where they have dedicated staff to manage such assessments. In smaller enterprises, these are usually outsourced, and ways and means are sought to cut corners in the process so that additional requirements do not impact the cost of production. Similarly, waste management is often a costly process in both large and small enterprises, forcing them to manage these matters more casually and cheaply. However, when enterprises come to realize the longer term benefits of such practices, find incentives for investment in practices to adopt green practices, and find skilled human resources to implement the programs, acceptability is much higher. This is the case in the larger enterprises and but less so in smaller ones. The adoption of such practices could give rise to green jobs and subsequently green skills.

While policy challenges exist for industries and businesses, such as a need to integrate economic, industrial, environmental, and skills development policies, institutional bottlenecks also exist to balance multiple efforts, ranging from compliance-related matters to ensuring productivity enhancement to saving costs, managing innovations to be competitive, and developing human capital.

Increasing Costs of Production Push Back the Importance of Sustainable Practices

Short-term targets often overshadow long-term outcomes, both in government and in the private sector. Rising costs, increased competition, and low profitability outweigh the efforts of technological innovations, skills development, and sustainable practices. Over 60% of respondents in Sri Lanka, and more than 40% of industry respondents in India, felt the adverse impact of rising costs (Fig. 2). Though the overall response rates in Indonesia and Viet Nam were relatively lower, sectoral response rates such as 70% in construction (in Indonesia) or approximately

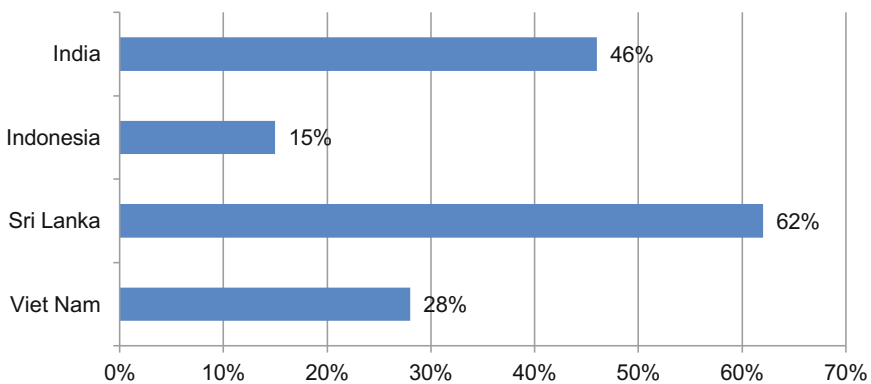


Fig. 2 Increasing costs affect businesses. *Source* EdUHK Research Team Survey Questionnaires

60% in manufacturing (in Viet Nam) confirm that the increasing costs of production are a serious issue.

Industries realize that the best way to manage increasing costs is to adopt sustainable practices. However, the dilemma persists that adopting sustainable practices adds up to increasing costs. While an institutional approach to sustainability has yet to evolve, individual motivation remains high among survey respondents across the four countries.

SMEs Have Less Motivation to Adopt Sustainable Practices; Larger Corporations are More Sensitive to Meeting Green Demands

The burden of existing issues often overshadows the importance of emerging issues in both public and private institutions. In addition, institutions are more responsive to complying with policy directions and regulatory provisions than they are to developing priorities for themselves. The urgency to deliver targets or exhaust budgets often results in institutions neglecting issues that may have a long-term impact and may go past a point of no return where no future action is likely to occur.

While it is difficult for government institutions to move out of the framework of their constitution to address emerging issues quickly, SMEs are focused primarily on achieving profits. Although they may superficially agree with emerging issues such as the green growth agenda, they may find it difficult to accommodate this in a highly competitive market. For example, almost 50% of respondents in Sri Lanka and in India agreed that they are influenced by industry standards and competition (Fig. 3); and 80% of construction and 100% of transport respondents in Indonesia felt the pressure of industry standards over their businesses.

Fortunately, every country has a combination of large public and private corporations where an awareness of the importance of sustainable practices and green skills is high. In addition, the idea that green skills are appropriate for all jobs is more widely understood than is the concept of green jobs, and companies that have

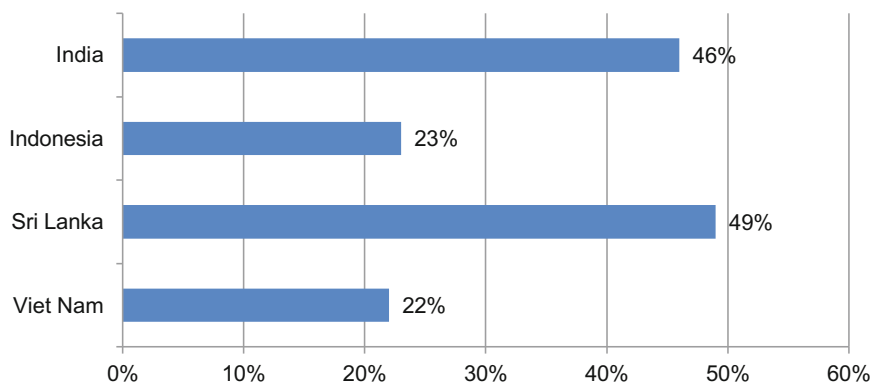


Fig. 3 Industry standards and competition affect businesses. *Source* EdUHK Research Team Survey Questionnaires

strong international linkages tend to be more appreciative of the importance of sustainable practices. They also possess international and national environmental accreditations of one kind or another, and value customer demands for green products, and compliance across supply chains. In many large corporations, CSR mandates and import–export requirements are key drivers toward developing green jobs and green skills.

Strong Social Demand and/or Customer Demand Is a Big Incentive for Encouraging Change Toward Sustainable Practices and the Requirement of Green Skills

National and international standards for products and services depend on the changing preferences and choices of consumers. Awareness about the involvement of child laborers in production activities has dissuaded many customers from patronizing products where child labor is involved. Sensitivity toward greener production has attracted customers to buy more “green products” even if more expensive. Such buying behavior, and pressure from rights-based groups, have influenced the structuring or restructuring of the standards set for different industry sectors. Thirty-four percent of respondents in India, 29% in Indonesia, and nearly 20% in Viet Nam and Indonesia regard rising consumer demand for green products and services as being important (Fig. 4).

In addition to changing customer demand, industry standards have also influenced global climate change mandates, competitive pressures, and government regulations, which get reflected in skill demands by industry. For example, cleaner technology processes in power plants have triggered the need for corresponding training and education. The introduction of CNG has highlighted the need for training about clean and green fuels.

While most industry respondents across industry sectors recognized the importance of green jobs, a smaller percentage agreed that the absence of green skills is

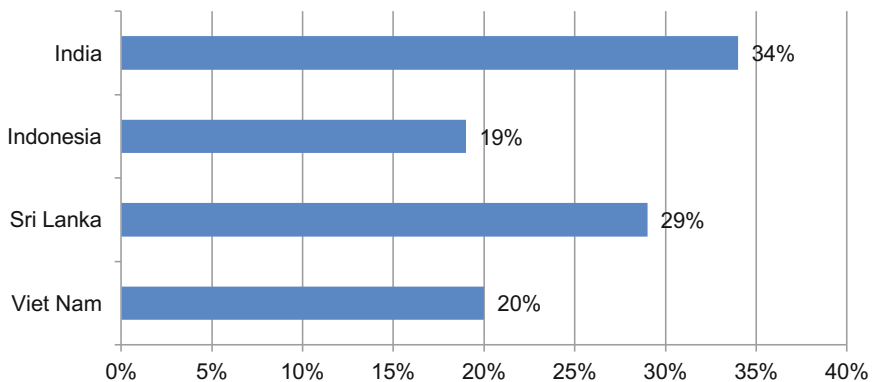


Fig. 4 Increasing demand for green products and services, standards, and competition affect businesses. *Source* EdUHK Research Team Survey Questionnaires

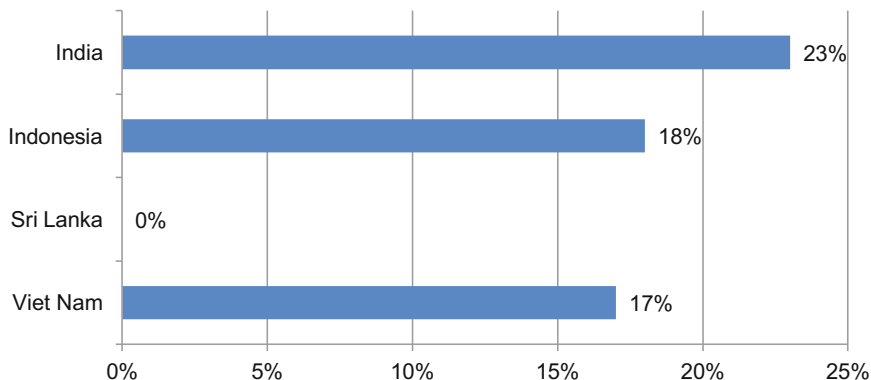


Fig. 5 Demand for green skills affect businesses. *Note* No data available from Sri Lanka. *Source* EdUHK Research Team Survey Questionnaires

impacting their businesses. Only 23% in India, 18% in Indonesia, and 17% of businesses in Viet Nam agreed that demand for green skills had an impact on their businesses (Fig. 5).

Expectations from Downstream Members of the Supply Chains Vary, but Compliance with Upstream Supply Chains Remains High

Industry sectors such as services (e.g., hospitality) and manufacturing (e.g., apparel), which have a strong dependence on raw materials from downstream members of the supply chain, also have strong expectations regarding sustainable practices from their vendors. This may also be because the customers are closer to industry and so there is a direct interface between the two parties. However, this situation is not as strong in other sectors, such as construction, energy, or transport, because supply chain products are less likely to have a direct interface with customers. When it comes to upstream supply chain mandates, enterprises across sectors are robust in managing international standards, client demands, and global trade treaties and mandates.

Industry and TVET Linkages are Weak and Cosmetic, Giving Rise to Parallel Training Provision

The low level of engagement between industry and TVET institutions continues to deter the improvement of courses and development of industry-relevant curricula. Although the nature of links may differ across the four countries, with a few institutions doing extremely well in terms of industry links (such as the Central Institute of Plastics Engineering and Technology Micro Small and Medium Enterprises [CIPET, MSME] tool room in India, or the University of Vocational Technology or NAITA in Sri Lanka, or some of the VSSs in Indonesia), the majority of training providers work in isolation and continue to do traditional training as mandated by archaic government content and curricula. Often the faculty

designing and teaching courses remain complacent and not updated about new technologies and developments in the industry concerned.

As a result, several large, formal corporations have provision for in-house training in order to develop customized training programs for employees to facilitate a smooth transition into their respective jobs. For example, Infosys Technologies in India has invested more than \$450 million in building its own training center. Wipro Technologies in India allocates 1% of its revenue every year to the specific purpose of training fresh graduates (Technopark 2009). The Hayleys group in Sri Lanka has identified “sustainability champions” in its 12 sectors, each of which organizes sustainable skills training in areas such as promoting energy efficiency, waste reduction, and meeting Global Reporting Initiative requirements. Even smaller companies such as Vo Trong Nghia Architects in Viet Nam have developed a niche in sustainable practices by promoting the use of natural and local materials in construction.

Apart from apprenticeships and other traditional in-house training mechanisms, internships have recently gained popularity. By providing internships, enterprises effectively address the deficiency in practical and up-to-date knowledge imparted by TVET institutions. This also proves to be a potential way of recruiting good employees.

Given the large and burgeoning shortage of skilled workers, coupled with poor training and accreditation mechanisms, a number of large corporations, for-profit institutions, voluntary organizations, and NGOs have also started working in the area of human resource development and training. For example, in India, of approximately 10,000 industrial training institutes (ITIs), nearly 7300 are private. Similarly, nearly 73% of TVET institutions in Indonesia are private. There are also efforts by industry associations such as CII and FICCI in India or VBCSD and VEIA in Viet Nam and through the work of international development agencies such as the World Bank, ILO, and ADB to bring in new perspectives and models, flexible funding, high-quality research, and best practices, and to develop individual and institutional capacities to deliver large-scale programs. Although global experience may not provide a solution to all the challenges being faced in these countries; the experience can generate an array of options that could be leveraged and contextualized to meet field-level conditions and realities.

The Green Narrative Is Both Dispersed and Disconnected

The concepts of green workplaces, green jobs, and green skills are relatively new in most countries. There is not as yet a proven set of methods, policies, and approaches to successfully implement green initiatives. While each country has strong environmental policy frameworks that seek to meet global standards, implementation mechanisms at the grassroots continue to be weak. Punitive measures encouraging defaulters to behave differently are lacking, and incentives to urge enterprises to comply are weak. For example, the *Viet Nam National Green Growth Strategy 2012* seeks to promote green thinking by aiming to reduce GHG emissions and increase clean and renewable energy. Similarly, presidential orders in Indonesia regulate CO₂ emissions, waste management, and renewable energy.

While such initiatives are cutting edge and progressive, in both cases implementation is yet to happen on a large scale.

The actual green practices required in agriculture, industry, and the services sector are quite different. The agriculture sector has connotations of “green” such as water conservation, minimum use of fertilizers, and adoption of appropriate cropping patterns. The services sector is concerned more with conserving energy, while the industry sector is interested in processes such as pollution control, recycling, waste management, procurement, and energy audits. The demand for green skills in traditional industries arises mostly out of the need to comply with regulations. Green skills demands in new industries, such as renewable energy production, arise out of the need to conserve resources and to comply with global sustainability agreements. Within the industry sector, there are different “shades of green” between the sectors that need to be considered when developing strategies.

3 Generic and Specific Green Skills Across Industries

While the demand for green skills in all jobs is being increasingly expressed by industry, not much interest is currently shown in differentiating between green and nongreen jobs. Though academic efforts may continue to identify green jobs across sectors, industry subsectors are more interested in introducing sustainable practices in production and services, which may have implications for creating new job roles that are green or where there is a requirement for top-up skills for the existing workforce.

The evidence is clear that skill shortages are impeding the profitability, productivity, and competitiveness of enterprises. For example, in all four countries, time and cost overruns are one of the major problems faced by the construction industry, these being triggered by a lack of formal training and inadequate systems related to skills assessment and the certification of construction workers. In Viet Nam, the changing preferences of domestic consumers for green buildings are putting pressure on developers and construction companies to develop low-cost as well as sustainable infrastructure options for consumers. Green skills are increasingly required in impact assessments, in using innovative construction materials and building techniques, and for training in the correct use and application of materials and in retrofitting. Some other areas of skills requirements are green certification, green construction techniques, and waste management at construction sites.

Similarly, the labeling requirements of equipment and appliances, efficiency in residential lighting, agricultural pumping, and reducing emission in coal-based energy production are cross-country issues in the energy sector, triggering a demand for specialized skills such as in operating and managing supercritical units, carbon capture and storage, expansion of nonconventional gas resources such as shale gas or coal bed methane, and coal washing. The renewable energy sector, on the other hand, does not identify green skills as an “add-on” in the industry, because it regards the sector itself as green and considers all jobs as green jobs. Yet, skills in

project management; installation, commissioning, and grid integration of large-scale renewable energy projects; wind resource assessment; and techno-commercial marketing are increasingly required in wind energy. Similarly, solar energy skills in installing Building Integrated Photovoltaic (BIPV) in buildings; project development skills in handling CSPs; integration of solar PV systems; construction, installation, and commissioning of solar thermal systems; and operation and maintenance skills in troubleshooting of circuitry of solar PV lanterns and home lighting systems are increasingly demanding formal training.

Across all four countries, vehicular emission standards are getting progressively tightened. CNG is being rapidly introduced for public transportation. The changes are demanding skills in different forms for lower as well as higher level operations. For example, rapid mass transport needs top-up skills in driving safety, communications, using complex machinery, and handling hazardous materials. Freight transport includes skills in materials-handling equipment such as stackers, hydraulic or hand pallet trucks, forklift trucks, and jib cranes; and handling hazardous materials; and an ability to handle increased tonnage and higher capacity trucks.

Hospitality (travel and tourism) is one of the largest service industries in all four countries. Although the issue of environmental sustainability is actively being pursued by large and organized corporations, the same is not true for SMEs and in the informal sector. While a number of standards and certifications such as Green Globe, ISO 14001, Earth Check, and Sustainable Tourism Eco-Certification are available for larger corporations, these have not as yet been adopted by smaller enterprises.

Even though an increasing number of enterprises are adopting energy-efficient technologies, specialized people are not as yet in great demand in the hospitality sector. The enterprises are largely dependent on top-up skills for existing staff. Some top-up green skills that the sector is actively seeking include recycling, reusing, and reducing fuel consumption in operations; disposing of non-biodegradable garbage in a responsible way; procuring green materials; converting the use of polythene bags to paper and cloth bags; and using biodegradable cleaning chemicals. Some other emerging roles and green jobs in the sector are homestay owners/workers, golf caddies, polo grooms, nature guides, rural and water/hill adventure guides, security guards, tourist vehicle drivers, and masons for heritage constructions.

While dependence on formal TVET is low, a number of examples from the four countries demonstrate that innovation does not wait for regulation. Innovation is triggered mainly by the intrinsic needs of the enterprises and the preferences of consumers. BIMO Transport in Indonesia commissioned tourist buses that meet European emission standards and immediately became the preferred choice of environmentally conscious tourists from western nations. The Sri Lanka Sustainable Energy Authority (SLSEA) initiated a voluntary program for energy managers and energy auditors, and training is being given for managing air conditioning and efficient combustion in boilers. SLSEA is rapidly expanding, and already has 75 major companies and industries as its clientele.

Some companies such as Colombo Dockyards in Sri Lanka or the Responsible Travel Club of Viet Nam have piloted newer concepts such as recognition of prior learning and remote location tourism involving local communities and have become pioneers in promoting decent work, and providing training that is comprehensive and sustainable. There are many similar examples from India and Indonesia.

As the needs of industries in different sectors rapidly change, the nature of jobs is also changing, becoming more modular than linear in nature. Assembly line production is gradually becoming a thing of the past. Therefore, the training for such jobs also needs to become nonlinear or modular. Multidimensional skills are needed that include an understanding of raw materials or resources, an ability to transform them into final products, along with ensuring sensitivity toward the environment during the whole process. Vocational training or skills development can no longer afford to take a linear approach to the learning of generic content, followed by specific components and later advanced content. Skills development and training clearly need a major overhaul as the global economic and environment scenario changes.

4 Role of TVET in Addressing Industry Needs

The TVET system in all four countries has a colonial past and has evolved with the prevailing legacy of responding to traditional approaches to manufacturing as expected during the Industrial Revolution. While the economy changed, technology prowess dominated, and global trade boundaries lessened, the education and training system was slow to respond and could not match the speed of the changing demands of industry and society. The training system was never able to lead change in the economy and was never responsive to change, being too uncoordinated in approach.

TVET, historically, was a second-choice option in society when compared with more academic, general education. TVET therefore assumed relatively low status over the years and never became as aspirational when compared with many western economies. As a result, the TVET system in all four countries has been grappling with the problems of

- poor relevance of training when compared with the demands of industry;
- unclear pathways for learning, with little convergence with general education or higher education systems;
- low quality of trainers and a lack of professional development of faculty to respond to the changing needs of the economy;
- lack of formal jobs in the organized sector, which contributes to making TVET education unattractive; and
- absence of common standards and certification, and duplication of efforts due to multiple agencies.

The TVET landscape in the four countries needs to be understood by decoupling government and private institutions. While government institutions function to perform a social obligation, private institutions exist to earn a profit, hence the need to respond to market gaps and industry requirements. Any change in TVET has to be triggered through government orders, and decrees for government institutions and industry requirements in the case of private institutions. While government TVET systems are enthusiastic in discussing emerging issues, this should not be confused with sensitivity toward those issues. At an individual level, there may be agreement with changing norms, but at an institutional level there are limited mechanisms in place to encourage or bring about that change.

4.1 Key Impediments to TVET Response to Green Skills

While businesses and industries are slow to respond to adopting sustainable practices, the formal TVET system has yet to come to terms with the rapidly changing economic environment. Less than half of the TVET respondents in Indonesia, Sri Lanka, and Viet Nam agreed that policies and practices are in place that are effective in developing “green” skills to meet industry demands (Fig. 6). However, in India, nearly 60% of respondents agreed to put policies in place for developing green skills. ITIs in India agree that they are able to provide green skills, which is counterintuitive to the overall situation with government ITIs. It could be productive to explore further the reasons why ITIs rate their programs high in green skills. It would also be worthwhile to explore further the kind of challenges that institutions face while addressing the development of green skills (Fig. 6).

While TVET institutions claim to be engaged in green skills development, they also believe demand for green skills from industries is not enough. Except for India, not more than 24% of respondents agreed that there is any demand (Fig. 7). These

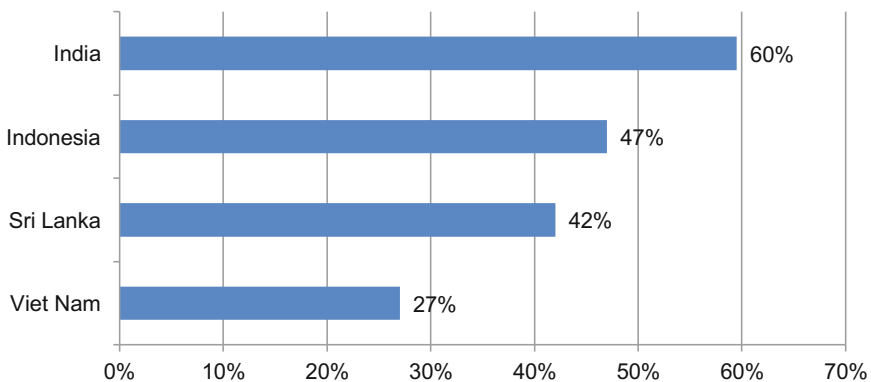


Fig. 6 Effectiveness of Institutional policies and practices in developing students’ green skills and knowledge for industry needs. *Source* EdUHK Research Team Survey Questionnaires

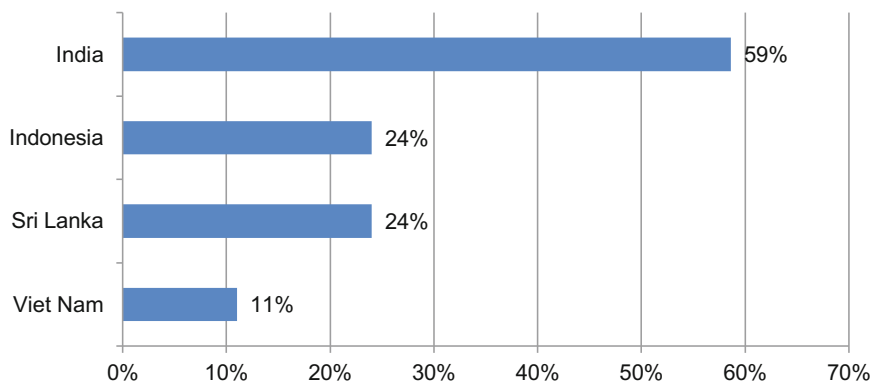


Fig. 7 Demand for green skills. *Source* EdUHK Research Team Survey Questionnaires

findings also confirm that the communication between industry and TVET institutions is passive. The high response rate in India is mainly because of the response of government. Otherwise, NGOs and private sector training providers echo the same message as in Indonesia, Sri Lanka, and Viet Nam.

A further problem in imparting green skills is low individual and institutional capacity. The faculty and trainers of TVET institutions continue to lack updated knowledge and skills in generic as well as green skills. Therefore, the dependence on internal or external partnerships is relatively high. While the dependence is more than 50% in India, it exceeds 80% in Indonesia and is relatively low in Sri Lanka and Viet Nam (Fig. 8). However, the critical need for the professional development of faculty was echoed consistently in both the country interviews and surveys. The high response rate concerning partnerships to impart green skills in Indonesia also emerges from the close linkage of the vocational education system with higher education. Since most training faculty in TVET institutions come from the university system, the presence of vocational education in higher education (as is the case in Indonesia) is highly recommended in other countries as well.

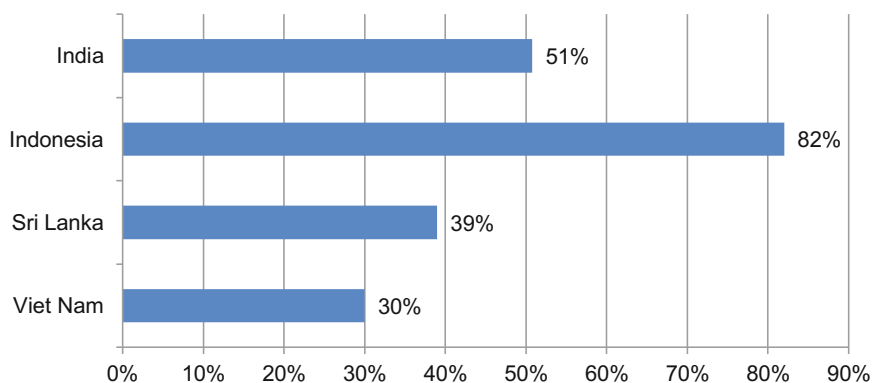


Fig. 8 Dependence on internal or external partnerships to provide green skills training. *Source* EdUHK Research Team Survey Questionnaires

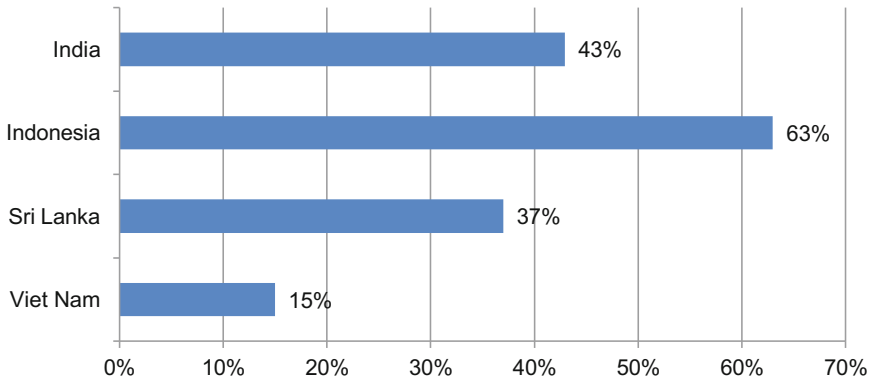


Fig. 9 Green Content learned on the job as part of training programs. *Source* EdUHK Research Team Survey Questionnaires

Poor institutional capacity also leads to higher dependence on industry exposure visits to learn green content. While more than 60% of TVET institutions in Indonesia reported industry exposure as being critical to learning green content, more than 40% in India, 37% in Sri Lanka, and only 15% in Viet Nam agreed to the importance of industry exposure to learn green skills (Fig. 9). It is likely that, among those who believe otherwise, their understanding is limited to providing theoretical inputs as part of general training content, such as environmental awareness subjects, conservation, or recycling.

Another trigger for the lack of faculty development, and the overall passive approach of TVET institutions toward green skills development, is the absence of green skills standards or certification systems. Apart from Indonesia, where 56% noted having green standards, the other countries reported on the poor availability of any standards related to green skills (Fig. 10). Similarly, the availability of certification on green practices was reported as being lowest in Sri Lanka and Viet Nam and just above 35% in India and Sri Lanka (Fig. 11).

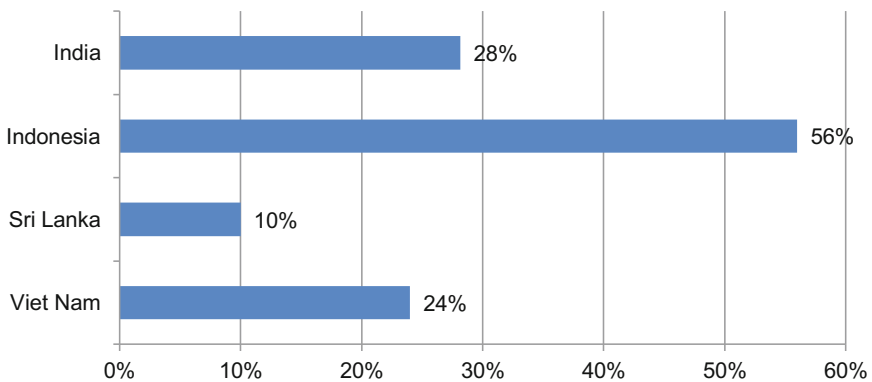


Fig. 10 Existence of Green skills standards. *Source* EdUHK Research Team Survey Questionnaires

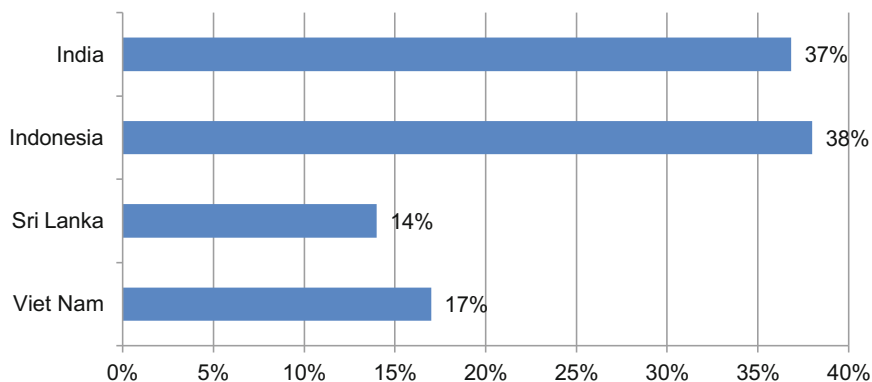


Fig. 11 Availability of green skills certification. *Source* EdUHK Research Team Survey Questionnaires

4.2 What Works? Initiatives from Countries to Fast-Track Reforms in TVET

Evidence shows that skill shortages may be impeding the transition to green growth. However, the demand from industry sectors for jobs that are environmentally sustainable and decent is on the rise. Initiatives within industries and the society as a whole are needed to develop awareness about sustainable practices and green employment. TVET cannot work in isolation, but must be aligned with economic policies and with new climate change and industry requirements. Standard approaches to addressing issues within education and training urgently need to be revisited and aligned with sustainable growth. Although the problems appear to be enormous, the range of innovative and appropriate activities through the efforts of government, industry, private entrepreneurs, NGOs, and international institutions, should not be ignored.

For example, one of the key strategies adopted by the Government of India has been to put skills development as a high priority on political agenda. The government has set up dedicated institutions such as the Ministry of Skill Development, Entrepreneurship, Youth Affairs and Sports with dedicated agencies such as NSDC and NSDA, to channel and facilitate private sector and government sector efforts in a cohesive manner. While NSDA is encouraging cross-institution learning and sharing, NSDC is extending loans to the private sector for skills development training. Initiatives by other ministries, such as *Hunar Se Rozgar* (skill to employment) of the Ministry of Tourism or “*Aajeevika Skills*” (livelihood skills) of the Ministry of Rural Development, are being implemented through NGOs. The private sector is also actively engaging in developing a sustainability-orientated curriculum, green skill courses, and certification systems. Similar initiatives such as “Greening TVET” in Viet Nam, “Factory in Schools” in Indonesia, or the “*Harita Lanka Programme*” in Sri Lanka are important policy directions and platforms to fast-track reforms in the TVET system.

All four counties demonstrate models of TVET practices that are at different stages of development but that establish some underlying principles critical to initiating general skills development or green skills development reforms.

Initiatives Driven and Sustained by Apex Government Agencies, Large Corporations, and Strong Leadership are Most Likely to be Successful

NSDC in India is a unique initiative between the government and the private sector to expand the reach of skills development through private training providers, as well as to instill quality by setting quality standards in training, and occupational standards through sector skill councils (SSCs). This initiative is backed by strong government funding and corporate sector support of the highest order. Two leading industry corporations, CII and FICCI, are key stakeholders in NSDC. In addition, leading sector-specific industries are part of the SSCs initiated by NSDC. It is also important to note that the leadership of NSDC has not changed since its formation in 2009.

In a similar way, the National Cleaner Production Centre (NCPC) in Sri Lanka has emerged as the foremost cleaner production solutions provider there. NCPC was established by UNIDO under MOIC to help enterprises adopt cleaner production. NCPC has also expanded due to continuous government and multilateral agency support.

Initiatives Catering to International Demands to Meet International Standards and Global Mandates are Easily Acceptable

The Brandix green factory in Sri Lanka has surpassed all green factory standards stipulated for energy consumption, water conservation, solid waste management, and carbon emissions by the Leadership in Energy and Environmental Design Green Building Rating System of the US Green Building Council. It is one of the leading plants manufacturing apparel for Marks and Spencer. The Brandix Eco Centre provides on-the-job training to all employees in clean technology, waste management and environmental preservation, ongoing environmental awareness raising, wastewater management, and solid waste disposal through reuse or recycling. Other apparel enterprises such as the Hirdaramani Group in Sri Lanka have also achieved high levels of international standards and made Sri Lanka into the only outsourced apparel manufacturing country in Asia that has signed up to 30 ILO conventions. It stands out as a reliable sector that pays fair wages to its workers while discouraging sweatshops and child labor in its supply chain businesses. Environmental issues are also given precedence.

Similarly Balai Latihan Pendidikan Teknik (BLPT) in Indonesia, which was established in association with a provincial government, is focused on developing the quality of TVET graduates to meet international standards. BLTP offers its services not only to its own students but also to other TVET students in the region who do not have the opportunity to gain practical exposure. BLTP has a production center that meets international standards for waste management and recycling, and

it has a number of industry partners in car parts production, tractor manufacturing, and electric tricycle production. BLTP sends its instructors to the Vocational Education Development Centre for professional development and for benchmarking with other centers. PT Esemka is another leading example, where students make cars that are sold in the market. The cars are built adopting international standards and are competitive with leading car manufacturers in the world.

Initiatives Having Large Social Demand are Sustainable

The Tran Hung Dao Vocational College in Viet Nam trains farmers in clean production to improve their productivity and develop the ability to export clean products. The short-term training courses provided under their rural training policy strategy bring in experts from the Vietnam National University of Agriculture and the Bristol Research Institute of Agriculture to consult on curriculum development and technology. The college is in great demand among rural youth and farmers in Viet Nam.

Likewise, Basix Academy for Building Lifelong Employability, an NGO in India, runs programs on green skills in the province of Sikkim, the only organic agricultural production state in India. In the design of its courses, it uses a green skills inventory (which identifies training classes) that incorporates agriculture, forestry, animal husbandry, fisheries, and horticulture. Some classes are in green construction, retrofitting for energy efficiency, green personal and social services, and basics of green habitats.

Both programs are able to sustain and expand their work because of the popularity and utility of their programs for their catchment communities. Such programs survive and become successful because of a high degree of local support and very low dependence on external funds and resources.

Initiatives Should Have Sound Processes Such as Strong Communication, Monitoring, Reporting, and Should be Easily Replicated

There are many examples from the four countries studied wherein institutions that have established strong operational management systems and standard operating procedures are popular, and their work easily becomes replicable. NSDC in India has supported nearly 31 SSCs to develop accreditation systems as well as occupational standards for industries. Replication has been possible mainly due to strong standard operating procedures across the SSCs. NSDC is now keen to promote green occupational standards through the SSCs. Similar rigor is evident in MSME tool rooms and CIPET institutions in India.

Don Bosco in Sri Lanka aims to develop a coherent approach toward greening, including the development of a green campus across its centers throughout the country. They have developed common guidelines and documentation on waste management, the use of biogas for cooking, and the recycling of scrap metal and timber. Likewise in Indonesia, eight TVET schools on Java Island have created a framework on sustainable practices.

Each of the examples presented demonstrates the power of the principles of leadership, international acceptance, social demand, and standardization toward

triggering change, be it in reforming the TVET system or introducing a green skills mandate. To be successful, policy needs to make way for the adoption of such principles, the implementing cadre needs to build its capacity to carry forward the agenda, and consumers need to be sensitive and responsive to the intended transformation.

5 Potential Areas for Further Research

This research has been an exploratory study of education and skills for inclusive growth and green jobs, and the greening of the economy in India, Indonesia, Sri Lanka, and Viet Nam.

The research has highlighted the need to undertake further research in the following areas in order to fill the gaps that exist in the current data, with regard to:

- (i) **Examining various geographical parts of each country.** The respondents to the survey questionnaires and the interviewees were mainly from the capital cities and nearby areas in each of the four countries. India, Indonesia, Sri Lanka, and Viet Nam are diverse countries in terms of rural as well as urban characteristics, and with regard to the socioeconomic status of their different regions. It would therefore be useful to undertake the same survey and conduct interviews with population groups in other parts of each of these four countries.
- (ii) **The importance of the informal and nonformal economy, sometimes called the disorganized sector.** This study focuses on the formal, organized economy, but much of the economic activity in the four countries studied occurs in the disorganized sector. It would be helpful therefore to also survey the nonformal economy to ascertain whether the findings from this study also hold true for it.
- (iii) **The rural sector.** The emphasis in this study has been on various secondary industries such as construction, transport, and hospitality. But most employment in India, Indonesia, Sri Lanka, and Viet Nam currently occurs in the rural sector, so it would be relevant to undertake a study to examine the same issues, concerns, and challenges among those working in the rural sector.
- (iv) **Small and medium-sized enterprises.** SMEs are underrepresented in this study, yet most businesses in the four countries are SMEs. It would be helpful to focus more on SMEs by administering to them the same survey instruments and conducting interviews.
- (v) **Gender issues with regard to inclusive growth and green jobs.** This research study did seek to gather information about and survey the matter of gender issues, but overall there is a paucity of information available and a lack of reliable research evidence in this area, most the data being anecdotal in nature.

- (vi) **Unemployed and underemployed youth.** Likewise, in the case of youth, with particular reference to unemployment and underemployment, there is a lack of useful or reliable evidence. Given the major problem of youth unemployment, further research in this area would be helpful for policy makers.

In addition, this ADB study has examined four countries in Asia: India, Indonesia, Sri Lanka, and Viet Nam. There is rich potential to study other important countries in the Asia and Pacific region using the same research methodology, survey instruments, and interview schedules as have been used for the four countries reported on here. It could, for example, be helpful to study the Republic of Korea, the People's Republic of China, Thailand, and Malaysia, and also some of the Pacific Island economies, for comparison purposes. The People's Republic of China would be a particularly interesting country to study, because, as a country that faces major environmental problems, it is at the forefront, internationally, and very proactive in promoting green jobs, the greening of the economy, and inclusive growth through innovative means and stressing the replication of best practice.

If further country studies were undertaken, for comparison purposes these could be based on the same surveys and interview research instruments as used in this study, but in a modified form to take account of any of the shortcomings of the current study, particularly regarding areas of coverage as referred to above, and to take account of the varying contexts of the countries concerned regarding any additional studies undertaken.

6 Concluding Comments

The four country studies of India, Indonesia, Sri Lanka, and Viet Nam, and the regional analysis, undertaken as part of *ADB Project TA-7879 REG: Education and Skills for Inclusive Growth and Green Jobs in Asia* is unique in this field. Unlike other studies undertaken in Asia into this area, which rely and report on mainly secondary sources of information, this study has relied largely on primary data collected through surveys and interviews with key players including those in government, business enterprises, business associations, TVET providers, international development agencies, NGOs, and others in each of the four countries studied. These primary data, which are unique in this field for Asia, are the main value added of this research study.

Skills development and training need to be overhauled as the global economic and environmental scenario changes in Asia. Vocational training or skills development can no longer afford to take a linear approach to learning generic content, followed by specific components and later by advanced content. What is required is a nonlinear approach, because jobs today are becoming more modular in nature. Multidimensional skills are needed that include the understanding of raw materials and resources, and the processes that transform them into final products, with

sensitivity toward the environmental issues embedded into the whole process. Therefore, generic green skills are viewed by industry as measures to reduce costs and increase profitability, suggesting that the holders of these skills are valued by employers.

The labor market across industry sectors is demanding jobs that are more environmentally sustainable and decent, as there is growing evidence that skills shortages may be impeding the transition to green growth in some sectors. Taking a wider view of green skills, similar to the ILO's decent work agenda, initiatives should be integrated into local communities and industry that can produce results leading to new business opportunities and further generate supplementary green employment.

Policy makers and practitioners have a major task to balance emerging needs and priorities with existing implementation frameworks. The balance has to accommodate norms and standards from global agreements, whether they be the Millennium Development Goals or climate change agreements. They need to tread a fine line between industry demand, economic priorities, and environmental mandates or inclusive development.

Fortunately, there is no lack of knowledge about the subject. Knowledge from within and about other countries, and partnerships with international agencies, are available to bring new perspectives; new models; innovative practices; flexible funding; and high-quality research to develop individual and institutional capacities to deliver large-scale programs around green economy, green jobs, and green skills.

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