

# Green TVET for a Sustainable Future

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## Abstract

The paper explores the possibilities of re-orienting TVET to meet the needs of a more environmental and sustainable future. Being considered as the ‘master key’ to promote lifelong training and address poverty, TVET policy and implementation must be geared towards the promotion of sustainable practices that are necessary to minimize its impact to the environment and at the same time address labor market demands. The paper tackles ideas such as the green jobs, sustainable development goals, green TVET practices and initiatives to enhance the sustainability of TVET in the future to meet upcoming global challenges.

Keywords: Green jobs, sustainable TVET, Lifelong Learning

## 1.0 TVET and the Sustainable Development Goals (SDGs)

After the implementation of the Millennium Development Goals in 2015, the world embarked on a new set of development goals that will encapsulate the future challenges and needs of the dynamic world and are set to be re-evaluated in 2030. The recommendations of the SDGs are in response to the findings of the Millennium Development Goals and are set to build on its progress and incorporate a more sustainable approach in requiring developing countries to effectively improve the standard of living of their citizens.



Figure 1: UN's Sustainable Development Goals

The role of TVET in ensuring the fulfillment of the development goals came as early as 1999, in which the participants of UNESCO's Second International Congress on Technical and Vocational Education held in Seoul, Korea agreed that the upcoming century will be "an era of knowledge, information and communication" and have recognized TVET's potential to transform society and economy through the encouragement of lifelong learning, social cohesion, international citizenship and sustainable development.

Fast forward to 2017, TVET has consistently reinvented itself to be a discipline that does not only actively provide technical skills to workers but also contributes to the awareness and improvement of education by generating green jobs. In the sustainable development goals matrix, TVET aims to contribute to Goal: 4, which is the promotion and implementation of quality education for all.

UNESCO (2014) acknowledged that improvements in TVET implementation can lead to huge gains not only in the quality of education but also in gender equality and living conditions. However, the recent clamor is to further reorient TVET's goals to sustainable development through the creation of environmentally sound practices and creation of green jobs that will be beneficial to both the worker and the administrator in the long run. An effective TVET also leads to significant improvements in technological capability and innovation, as demonstrated by some of the countries that had a high-technology, export-oriented economy such as Singapore and Korea.

Many avenues were explored on the importance of TVET as a major player in the achievement of the green economy towards a better future. The most common concept of sustainable development translates to the definition below:

*"Sustainable Development is a development that meets the needs of the present without compromising the ability of the future generations to meet their own needs".*

Sustainable development in being lobbied as a battle cry of development advocates as a suited policy direction for the world today, given its ills and problems. However, what is really sustainable development? And how will it be able to provide solutions to the myriad of problems that the world faces.

The 1987 Brundtland Commission highlighted that the goal of achieving sustainable development practices gave rise to several summits and meetings organized by the United Nations specifically convening countries towards the agreement of integrating sustainable development in their economic and social agenda. In response, the World Summit on Sustainable Development reaffirmed this commitment and recommended to the United Nations General Assembly the establishment of a United Nations Decade of Education for Sustainable Development (DESD, 2005-2014), which clearly recognizes the increased need to integrate sustainable development issues and principles into education and learning. Thus, while education clearly is not a sufficient condition in itself for achieving sustainable development, it is certainly a necessary condition.

## *2.0 Education for Sustainable Development and TVET*

The ESD concept was coined by UNESCO as a way to integrate the pillars of education with the common practices in promoting sustainable development. Among other things, ESD promotes a sense of both local and global responsibility, encourages future-oriented, anticipatory thinking, builds recognition of global interdependence and emphasizes cultural changes that embrace the values of sustainable development. Rather than remaining passive in the face of the above-mentioned challenges, ESD seeks to empower societies, communities and individuals everywhere to shape their future actively and responsibly. ESD raises interesting questions, for example, about learning how to generate creative solutions to current global challenges; about reflecting on new lifestyles which combine well-being, quality of life and respect for nature and other people; and about considering the viewpoints of people from different countries about what sustainability means in practice.

TVET for sustainable development seeks to provide a new image and direction for TVET besides from it being just a “mere supplier” of skilled labor to industry. In order to reconcile these two concepts, Majumdar (2009) suggests the need to reorient the TVET curriculum towards the “6R” principles of: Reuse, Reduce, Renew, Recycle, Repair and Rethink in order to say that TVET education is heading towards sustainability. Moreover, it has three pillars based on three concepts: (1) a change of the “business as usual” approach to “sustainable development approach” through the wise and practical usage of resources, (2) economic sustainability which requires a different and wider set of economically related knowledge skill and attitude for production, management and consumption of goods and services and (3) social sustainability, which involves ensuring that the basic needs of people regardless of classification are satisfied.

## *3.0 Green Jobs*

Green jobs, as defined by the International Labor Organization (2011) refer to employment in any industry that contributes to preserving or restoring environmental quality in that sector and allowing for sustainable development. Specifically, but not exclusively, this includes jobs that help protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high efficiency strategies; de-carbonize the economy; and minimize (or altogether avoid) generation of all forms of waste and pollution.

Green jobs encourage the following activities: (1) the adaptation and mitigation of resources, (2) contribution in preserving environmental quality, (3) promotion in protecting ecosystems and biodiversity, (4) leadership in reducing energy, materials and water consumption, (5) de-carbonization of the economy and encouragement of the reduction of pollution and wastes. On the other hand, green employment practices encourages the use energy-efficient materials in building materials and maintenance, Proper solid waste management, controlled water supply and reduction of CO<sub>2</sub> and the use of green technology.

UNESCO (2014), on its part, have made significant strides in merging ESD and TVET in the same arena partly due to its massive information campaign on the relevance of both concepts and its applicability on TVET. As shown in figure 2, UNESCO layouts the possibilities that may arise if ESD is applied on TVET such as the benefits of green jobs,

which according to them result in the preservation and restoration of the environment while ensuring a high quality way of life through the assurance of fair wages, safe working conditions and adequate legal rights to the members of the community.

The infographic is divided into three main sections, each with a title, an icon, and a list of reasons:

- Why invest in ESD?**
  - Icon: A person pointing at a whiteboard.
  - Reasons:
    - Because ESD can help everyone to acquire the values, skills and knowledge needed to build a sustainable future.
    - Because the transition to green economies and societies requires informed citizens and consumers who can move the sustainable development agenda forward.
- What is Green TVET?**
  - Icon: A person walking up a set of stairs.
  - Reasons:
    - Green TVET encompasses pre-employment education and training, learning in the workplace and further training that address environmental, economic and social sustainability, while meeting the needs of industries and individual learners.
    - Green TVET prepares people for green jobs that contribute to preserving or restoring the quality of the environment, while improving human well-being and social equity.
- Why invest in Green TVET?**
  - Icon: Four stylized human heads representing diversity.
  - Reasons:
    - Because Green TVET helps production move to more environmentally conscious practices.
    - Because national governments need to seize the potential for job creation by providing skills needed in new green sectors.
    - Because disadvantaged groups in the labour market (youth, women, persons with disabilities, rural communities, and other vulnerable groups) require targeted support to develop knowledge and skills for green jobs.

Figure 1: Rationale of UNESCO (2014) in emphasizing the need for ESD and Green TVET to address the challenges of a changing environment

Figure 3 below illustrates that by combining the best of TVET innovation and development typology and by creating a balance between the world of work and the world of life, policymakers achieve ESD in TVET. It also illustrates that efforts to spearhead ESD are not only limited in changing limited facets of TVET development but will sometimes require an overhaul of systems, ideas and habits to bring about that balance. It also shows that the skills required to achieve ESD are a product of several factors created in the policy level, brought about by extensive research of the needs of the community and society.



**Figure 3: World of Life and World of Work Balance Achieved by a Successful ESD policy (UNESCO, 2014).**

The different organizations concerned with labor and employment have seen the adoption of green jobs as a sure direction towards addressing the issues brought by the recent challenges of economic development and its imminent halt due to climate change and environmental degradation. Thus, the International Labor Organization (2011) launched the Green Jobs Initiative as a way to promote green jobs as an alternative to address pressing issues like poverty, unemployment and economic disparity. Alongside organizations such as the United Nations Environment Program (UNEP), the International Employers Organization (IOE) and the International Trade Union Confederation (ITUC), this initiative was created as a way to encourage government action in the mobilization of stakeholders to come up with effective programs that will lead to the green economy. The program concentrates on six priorities such as (1) Analysis of the employment and labor market conditions, (2) practical approaches to greening enterprises, (3) Green jobs in waste management and recycling, (4) renewable energy and energy efficiency, (5) a just transition towards a green economy and a sustainable society and (6) adaptation to climate change.

**Table 1: Asian Initiatives towards the Adoption of Clean and Green Technology**

|                   |  |
|-------------------|--|
| China             | <ul style="list-style-type: none"><li>• Investments in renewable energy more than any other country</li><li>• Creation of a National Policy that sees clean and green as a major market in the future</li></ul>  |
| India             | <ul style="list-style-type: none"><li>• Transition has already begun on adopting cleaner energy practices</li><li>• Indian industries are looking on the corporate environmental impact to avoid pressures of unsound environmental practices, as well as their own policy for corporate social responsibility</li></ul> |
| Republic of Korea | <ul style="list-style-type: none"><li>• Adopted a national strategy and a five year plan for green growth</li><li>• Share of green growth tool kits and experience</li><li>• Leaderships in international efforts to help build physical infrastructures in developing countries</li></ul>                               |
| Nepal             | <ul style="list-style-type: none"><li>• Community forest management intensified to generate employment and income from sustainable harvesting of forest products</li></ul>   |
| Malaysia          | <ul style="list-style-type: none"><li>• Establishing green economy through the adoption of low carbon emissions use, and a well-educated populace in the aim of attaining the status as a manufacturing hub in the region</li></ul>  |
| Bangladesh        | <ul style="list-style-type: none"><li>• Grameen Shakti (Grameen Energy) Program initiated as a way to finance households following clean energy solutions such as the installation of Solar House Systems</li></ul>  |

Some critics argue that the emissions trading scheme is not a radical solution to an increasing climate change problem since it requires nothing less than the “reorganization of the society and technology that will leave most of the remaining fossil fuels underground”. Weak points such as “perverse incentives” or incentives that will actually cause the reverse of what is targeted to be achieved are also included in the criticisms.

The Asia-Pacific Partnership on Clean Development and Climate, also known as the APP, was formed by Australia, Canada, India, Japan, China, South Korea and the United States on July 28, 2005. The basis of this formation was through a shared vision of “advancing clean development and climate objectives” through the building of existing bilateral and multilateral initiatives to increase cooperation in terms of meeting needs and challenges associated with growing energy demands in accordance with national objectives.

This partnership brings an alternative to the Kyoto Protocol, which imposes mandatory limits on greenhouse gas emissions. This partnership encourages member countries to accelerate the development and deployment of technologies promoting clean and green procurement of energy without mandatory enforcements. Although supporters have hailed the partnership as “overcoming the impasse between developed and developing countries”, environmentalists criticized it as a mere “public relations ploy” (Rustin, 2011). This is due to the non-imposition of mandatory targets and incentives as presented in the Kyoto protocol. The criticism was again highlighted on the fact that none of the signatories have lowered greenhouse gas emissions. Despite these, proponents have lauded a record of promoting collaboration with the governments and private sector in key collaborative projects on developing the key energy sectors and activities.

#### *4.0 Transforming TVET to a More Sustainable Direction*

Majumdar (2009) identified that TVET is directly attributable to the policy shifts towards sustainable development since it plays a major role in the development of the workforce for the creation, re-creation and transformation of resources. This forges the role of TVET in upholding the recommendations of the United Nations in terms of developing a green economy as a future direction.

The examples shown on the previous section show that that governments and organizations in the Asia-Pacific region are taking massive steps in achieving a green economy through stronger ties and wider understanding on its scope and strategies. However, TVET has to have a major involvement in this initiative, being a major supplier of skills and training initiatives to the emerging workforce.

The International Forum on Vocational-Technical Education held on November 17-19, 2008 at Hangzhou, China recognized the “paramount necessity” of TVET improvement and has called several measures to make TVET a catalyst to transform the vast potential of human resources in the region. It has forwarded the following recommendations in lieu with this call:

1. TVET should encourage and implement political will and commitment of national governments so it can assume a unique and key role in ensuring the provision of education
2. The image, values and attitude towards TVET must be continually be enhanced
3. Reform TVET based on the recommendations from the UN Millennium Development Goals and Education for Sustainable Development Concepts
4. TVET should strive to provide lifelong learning and a lifetime upgrade of knowledge in the age of rapid technological advancement
5. Closer international partnership and linkages between the TVET and industry must be pursued, as well as the public-private cooperation and initiatives.
6. Competency-based TVET should be emphasized as a clear need to develop individual learning, relevance and efficient use of resources.
7. Entrepreneurship and entrepreneurship training must be promoted to facilitate the development of knowledge
8. Networking between TVET institutions and other countries across the region should be greatly encouraged to facilitate institutional development
9. The assistance of organizations such as the UNESCO-UNEVOC will play a key role in providing the needs for TVET reform and expansion.

Although this is one of the important regional responses to make TVET practices sustainable, there is still a need to reinvent it towards the greener direction. Thus, the Colombo Plan Staff College, an inter-regional organization for human resource development in the Asia-Pacific region, has continuously spearheaded ways to serve as a model of greening TVET through the launch of the “Green CPSC Program”. The college aims to serve as a model towards the green campus approach based from the five pillars of greening TVET.



**Figure 4: The Five Pillars of Greening TVET**

In connection to this initiative, a conference on the TVET education for sustainable development was held in Manila on November 2-3, 2010 organized by CPSC and its international partners IVETA and InWENT from Germany. This initiative has recognized the need for TVET to pursue an environmentally sound direction through the inclusion of economic, cultural and social considerations to drive a more sustainable human resource path in its contribution to the green economy. In conclusion, the delegates representing 39 countries across the world, called to implement the following green TVET practices through the following recommendations:

1. Recommend to integrate ESD in TVET as high in the international agenda
2. Develop policies and strategies to integrate ESD in TVET system
3. Mobilize a green TVET Framework to support socio-economic aspects in sustainable development
4. Promote capacity building to integrate ESD in TVET systems
5. Re-orient TVET curriculum and teacher education to integrate ESD at all levels of education
6. Increase public awareness through seminars, conferences and workshops to promote ESD as an advocacy
7. Strengthen networking and linkages to enhance multi-stakeholder partnership for evolving green TVET
8. Promote evidence-based research, monitoring and evaluation strategies for ESD in TVET
9. Develop clean and green technology programs to address the needs of the green economy
10. Prioritize capacity building of trainers to increase investments in education for the youth in creating a strong foundation of society for sustainable development.

### *5.0 Challenges to Transform TVET for a Greener Economy*

Despite the relevance of TVET in forwarding the cause of SD, it still remains locked up to the role of being a mere supplier of skilled labor to industry and is thereby unable to respond effectively to the needs of the sustainable development strategies (Majumdar, 2009). Thus, the challenges emerge centering on how professionals should transform TVET towards green economy while maintaining the principles of 6R: Reduce Reuse, Renew, Recycle, Repair and Rethink.

As the modern world evolves and adapts to the constant changes in lifestyle and perspectives, TVET is reinforced with the urgent need to invent and re-invent ways in infusing the concepts of green economy for sustainable development into the curriculum or diffusing GE principles from specific technical subject domains. As per McKeown, et al (2002) some of the challenges and Barriers to SD are:

- Increasing awareness: Green Economy is Essential:
- Structuring and Placing SD in the TVET Curriculum
- Facing the Complexity of Sustainable Development Concept
- Developing International and Regional Cooperation and Networking on SD
- Engaging Traditional Disciplines in a Trans-Disciplinary Framework
- Building Teacher Educator's Capacity
- Developing Instructional Materials and Resources
- Developing TVET Policy
- Developing a Creative, Innovative and Risk-taking Climate in the TVET Institution
- Promoting Sustainability in Popular culture in TVET Schools

In the recent DESD mid review, it was observed that there is a necessity to give special prominence on a) Structuring and Placing SD in the TVET Curriculum b) Building Teacher Educator's Capacity and c) Developing Instructional Materials and Resources.

### *7.0 Conclusion and Recommendations*

The need towards transforming TVET to a more sustainable option encourages the transformation of "brown jobs" to "green jobs" while increasing awareness and promoting technological advancements. Being the proponent of skills development, TVET should adopt the green jobs initiative towards the creation of skilled workforce to fuel the economy. So far, considerable efforts have been done especially in the Asia-Pacific region. This translates to major and bigger responsibilities to the TVET implementing bodies, policymakers and funding organizations to sustain, if not exceed, the expectations towards the adaptation of the green economy.

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