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INTRODUCTION

Greening TVET (Technical and Vocational Education and Training) is a key element of sustainable development and an important priority of the Vietnamese Government in its commitment to successfully implementing the Vietnam National Green Growth Strategy. Greening TVET does not only equip the workforce with necessary skills to perform well in the workplace, but also enhances essential knowledge and competencies to cope with existing and future social, economic and ecological challenges.

Acknowledging the importance of Greening TVET, the Directorate of Vocational Education and Training (DVET), in cooperation with the Vietnamese-German Programme “Reform of TVET in Vietnam”, compiled this “Greening TVET” brochure. The brochure is developed from the results of technical workshops on the ‘Action Plan for Greening TVET’, and on ‘Greening of TVET institutes’ organized in July 2018, as well as various Vietnamese and international reports focusing on this topic. The brochure provides basic concepts and understandings about Greening TVET with the intention to contribute to awareness-raising about this issue, and to successfully integrate Greening TVET in the national TVET system.

TRANSITIONING TO A GREEN ECONOMY

Climate change and employment

- The escalation of industrial and agricultural production and high consumption levels have led to massive depletion of natural resources.
- Climate change, higher temperatures, droughts, floods, sea level rises pose significant challenges to employment, productivity and growth.

Jobs everywhere are dependent on a stable environment

WORLD



40% of total world employment depends directly on ecosystem services (E.g. agriculture, tourism, etc.)



Between 2000 and 2012, greenhouse gas (GHG) emissions, which cause climate change, increased by **33%** worldwide



Between 2000 and 2013, material extraction increased by **62%**



By 2030, work hours lost due to heat stress could be as high as the equivalent of **72 million** full-time jobs



23 million working life-years have been lost every year since 2000 due to natural disasters resulting from human activities

VIETNAM



Vietnam is the **most energy intensive economy** in South East Asia



Vietnam recorded an **eightfold** increase in CO² emissions between 1990 and 2011



Vietnam is among the **top 5** countries most affected by climate change



Vietnam is among the **top 10** countries with worst air quality and 60,000 deaths annually linked to air pollution



Vietnam is among the **top 4** countries that emit the largest amount of plastic waste into the oceans

TRANSITIONING TO A GREEN ECONOMY

Anticipated changes



1.5 billion people

Half of the global workforce is affected by the transition to a greener economy



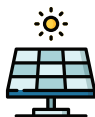
New markets

New markets will be created around technologies and services to cater for new sustainable ways of life and to respond to new environmental regulations



New jobs

Significant new jobs will be created to meet the need for environmentally friendly goods and services
E.g: pollution-control devices manufacturing



New occupations

New occupations will be created to meet certain expertise required by the green economy
E.g: Wind energy mechatronics



Existing jobs become greener

The majority of existing jobs will be transformed and greened, applying green methods to save the environment
E.g: plumbers, electricians, construction workers



Certain jobs will be substituted

E.g: Waste burial jobs will be substituted by recycling jobs



Certain jobs will be eliminated

without direct replacement
E.g: by discontinuation of the production of plastic packaging materials

TRANSITIONING TO A GREEN ECONOMY

Opportunities

WORLD & ASIA PACIFIC REGION



The transition to a greener economy could generate up to **60 million** new jobs



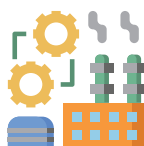
The renewable energy sector currently employs **8.1 million** people worldwide



60% of people working globally in the renewable energy sector are from the Asia-Pacific region



14 million jobs could be created in the region if countries adopted changes in energy use that limit global warming to 2°C



There is a strong realisation among industries that the best way to manage increasing costs is to adopt sustainable and green practices



The demand for green skills in Vietnam is increasing in the five high-growth sectors of construction, transport, energy, hospitality and tourism, and manufacturing



The highest demand for green jobs is in hospitality and tourism, followed by the manufacturing sector



Power sector in Vietnam: Renewable energy is estimated to account for more than **30%** of energy resources in 2030

VIETNAM

GREEN CONCEPTS

Green economy

A green economy is one that results in:

Improved human
well-being and
social equity



Significantly reduced
environmental risks and
ecological scarcity

GREEN CONCEPTS

Green jobs

 **Green jobs are jobs that:**



Reduce consumption of energy and raw materials



Minimise waste and pollution



Limit greenhouse gas emissions



Protect and restore ecosystems



Meet the criteria for decent work: adequate wages, safe conditions, social protection, workers' rights

 **Green jobs can be found in all sectors: agriculture, industry, services & administration**

 **All jobs can be and should become greener**



GREEN CONCEPTS

Green skills

Green skills are:

The knowledge, abilities, values and attitudes needed to live in, develop and support a sustainable and resource-efficient society

Areas of competences needed both for green jobs and sustainable lifestyles include:



Ecological literacy

Do you know how your actions affect natural systems?



Systems thinking

Can you develop a 'systems thinking' or lifecycle approach to what you buy and use, which looks at when the raw materials are mined, right through to when the different parts are disposed of?



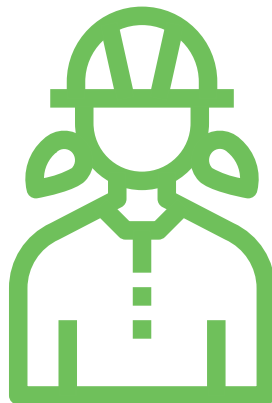
Design and technology understanding

Do you know about the appropriate designs or technologies to minimise the impacts of technologies you use?



Cultural contexts

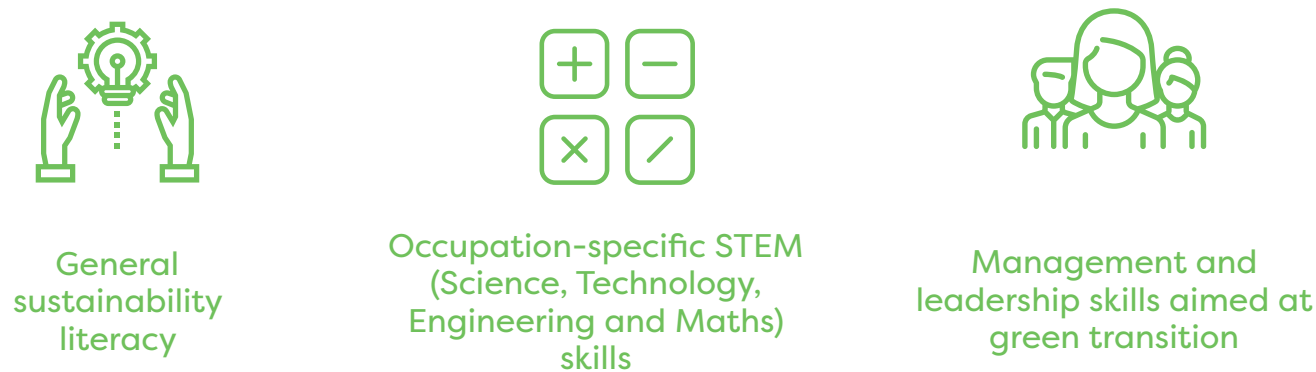
Do you understand your cultural context, so that you can adapt relevant solutions to local contexts or places?



GREEN CONCEPTS

Green skills

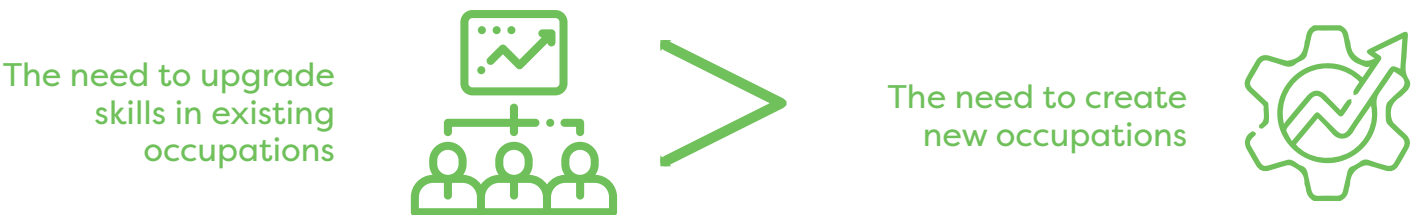
Skills for green jobs can be broken down into three categories of skills sets:



New green occupations and jobs in a green economy often require better qualifications and skills to meet:



In the transformation to a green economy:



GREEN CONCEPTS

Green skills

The International Labour Organisation (ILO) provides a list of core skills necessary for green jobs

- Adaptability and transferability skills to learn and apply the new technologies and processes required to green jobs
- Strategic and leadership skills to help policy-makers and business develop cleaner production, cleaner transportation and so forth
- Environmental awareness and willingness to learn about sustainable development
- Coordination, management and business skills attain economic, social and ecological objectives
- Systems and risk analysis skills to assess, interpret and understand both the need for change and the measures required
- Entrepreneurial skills to seize the opportunities of low-carbon technologies
- Innovation skills to identify opportunities and create new strategies to respond to green challenges
- Communication and negotiation skills to discuss conflicting interests in complex contexts
- Marketing skills to promote greener products and services
- Consulting skills to advise consumers about green solutions and to spread the use of green technologies
- Networking, IT and language skills to perform in global markets

Source: ILO: Skills for Green jobs – A global view (2011)



GREEN CONCEPTS

Green skills

Green skills checklist (United Kingdom)

- A substantial checklist of green skills needed for the transition to a greener economy was developed within the framework of a report for the UK Government. The list includes 10 broad groups of skills (Tier 1):

1. Design skills

2. Waste skills

3. Energy skills

4. Water skills

5. Building skills

6. Transport skills

7. Material skills

8. Financial skills

9. Management skills

10. Policy and planning skills
- Broad groups of skills in Tier 1 are further specified in Tier 2 and Tier 3

Example:

Tier 1	Tier 2	Tier 3
7. Material skills	Sourcing	Sources of low-energy materials, sources of low-mileage materials, recyclates (secondary materials), energy-efficient raw material extraction, industrial symbiosis, transport mileage
	Procurement and selection	Use and properties of low-energy materials and of recyclates, industrial symbiosis, low-carbon and resource-efficient procurement, cost impact of climate change on material procurement
	Material use and impact quantification	Material usage calculations, life-cycle assessment and costing
	Management systems	Material use planning, material flow process design and implementation, energy-efficient process design and implementation
	Impact and use minimization	Life-cycle assessment and costing, energy-efficient process implementation, material flows analysis

GREENING TVET

Characteristics of green TVET

Green TVET:

- Is a role model for eco-friendliness in the community
- Reduces environmental impacts on their campus
- Is a trusted strategic partner for sustainable development issues in the region
- Integrates green issues into their programmes systematically
- Actively integrates internal and external partners in the greening process
- Improves the living conditions of the local communities



GREENING TVET

Characteristics of a green TVET

Greening TVET



IS NOT ABOUT

- X** A one-time makeover of the institution or programme
- X** A destination
- X** An add-on accomplishment or one-time success story

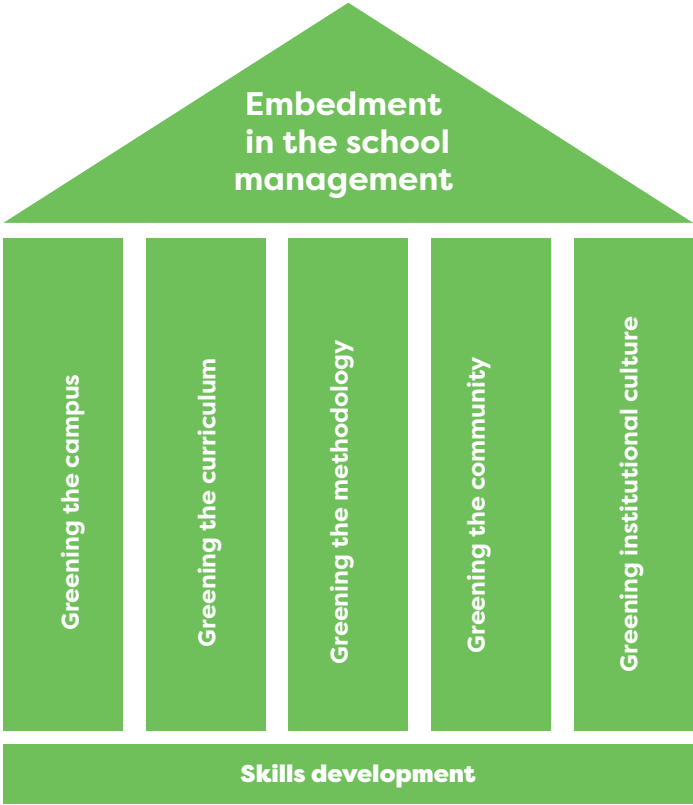
IS ABOUT

- ✓** Part of the institution's culture and DNA. Can be observed and measured over time
- ✓** An ongoing and evolving process that responds to the changing needs and opportunities of the institution, the world of work and the world
- ✓** An on-going item built into the core framework of education and training

GREENING TVET

The whole-institution approach

Based on TVET performance that meets the skills requirements of the labor market, green TVET institutes follow a holistic framework that is built upon the following:



Greening is an integral part of the TVET management system

GREENING TVET

Greening the campus

Objectives

- Consistently reduces the campus environmental impacts
- Improves the quality of staff and students working conditions
- Creates a healthy and safe environment for all social groups, religious beliefs and genders
- Makes the campus accessible for people with disabilities

Fields of actions



Air and climate

Green house gas emission reduction
Air pollution reduction



Waste

Waste minimization
Recycling



Transportation

Accessibility to public transport
Shared transportation
Bicycle use



Hazards management

Handling of hazardous substances



Water consumption

Reduction of water consumption
Reduction of water pollution



Energy consumption

Efficient use of energy
Renewable energy use



Soil and eco-system

Green areas preservation
Biodiversity



Food service

Local food products
Healthy food products



Building

Design and construction
Operation and maintenance
Campus density

GREENING TVET

Greening the curriculum



Integrate green skills requirements into existing courses

- **Add green skills requirements that are cross-occupational**
- **Add green skills requirements for specific occupations**
 - New modules on green technologies/ green processes can be added to existing courses
 - Adapt relevant contents to ensure that learners acquire skills and knowledge to perform jobs in a more sustainable manner



Develop training programmes for new green occupations

GREENING TVET

Greening the curriculum

 **Integrate green skills requirements into existing courses:**

● **Add green skills requirements that are cross-occupational**

Example: Cross-occupational learning outcomes for Green TVET

(Catalogue of learning outcomes for “Green TVET” – Vietnamese-German “Programme Reform of TVET in Viet Nam”)

At the end of the training the student is able to:

- 1** Explain the relevance of the Vietnam Green Growth Strategy and the Green Growth Action Plan for his/her college and partner company and his/her occupation using examples
- 2** Apply relevant environmental protection regulations at the workplace
- 3** Give examples of organisational, technical and behavioural measures for environmental protection/efficient use of energy and resources in the college and the partner company
- 4** Describe possible environmental risks at his/her workplace and how he/she can minimize these risks by correct occupational behaviour
- 5** Use energy effectively and efficiently
- 6** Use natural resources and materials effectively and efficiently
- 7** Apply the "3 Rs" of the so-called waste hierarchy (reduce, reuse, recycle)
- 8** Store and handle hazardous substances as well as hazardous waste in an environmentally friendly manner

GREENING TVET

Greening the curriculum

- Add green skills requirements for specific occupations
 - New modules on green technologies/green processes can be added to existing courses

Example: Modules on environmental protection and sustainable tourism are integrated into Vietnam Tourism Occupational Standards (VTOS) – Travel operator and travel agent, issued by the National Administration of Tourism in 2016



Ref	Unit No	Unit Title	Levels					Core	Generic
			1	2	3	4	5		
38	RTS4.1	ADOPT GREEN OFFICE PRINCIPLES				✓			
39	RTS4.2	DEVELOP AND DESIGN RESPONSIBLE TOURISM PRODUCTS AND SERVICES				✓			
40	RTS4.3	SELECT SUPPLIERS BASED ON RESPONSIBLE TOURISM PRINCIPLES				✓			
41	RTS4.4	DEVELOP, MANAGE AND MONITOR SUPPLIERS				✓			
42	RTS4.5	ENSURE CUSTOMERS ARE AWARE OF RESPONSIBLE TOURISM POLICIES				✓			
43	RTS4.6	MAINTAIN RESPONSIBLE TOURISM PRACTICES				✓			
59	RTS5.1	ENSURE RESPONSIBLE EMPLOYMENT CONDITIONS					✓		
60	RTS5.2	BUILD CAPACITY OF STAFF IN SUSTAINABLE AND RESPONSIBLE TOURISM PRINCIPLES AND PRACTICES					✓		
61	RTS5.3	MONITOR AND EVALUATE TOUR PRODUCTS AND SERVICES					✓		
62	RTS5.4	SUPPORT TOURISM DESTINATIONS IN IMPLEMENTING RESPONSIBLE TOURISM PRACTICES					✓		
63	RTS5.5	SUPERVISE THE APPLICATION OF RESPONSIBLE TOURISM PRINCIPLES					✓		

GREENING TVET

Greening the curriculum

● Add green skills requirements for specific occupations

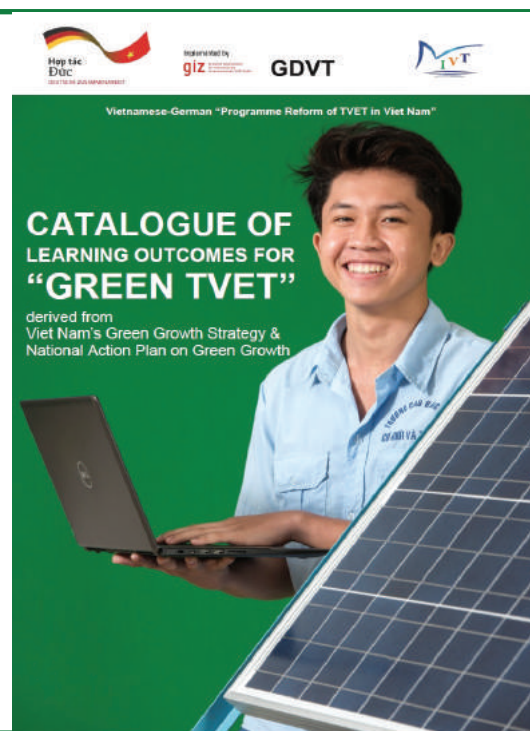
- Adapt relevant contents to ensure that learners acquire skills and knowledge to perform jobs in a more sustainable manner

Example: Requirements for green knowledge and skills to be integrated into the learning outcomes for Construction Mechanics Technicians

(Catalogue of learning outcomes for “Green TVET” – Vietnamese-German “Programme Reform of TVET in Viet Nam”)

At the end of the training the student is able to:

1. Evaluate the ecological impacts of different joining and separation techniques
2. Avoid unnecessary energy consumption by correct planning, processing and maintaining of manufacturing processes
3. Avoid scrap and high rate of material consumption by correct planning, processing and maintaining of manufacturing processes
4. Handle auxiliary and operating materials (E.g: cooling lubricants, solvents, oils, fuels and anticorrosive) in an environmentally friendly manner (especially avoidance of emissions to air, soil or water)
5. Separate and dispose unusable components as well as scrap metals and plastics according to the requirements of the waste management system of the college and the partner company



GREENING TVET

Greening the curriculum

- 🌿 If a specialisation in an already existing occupation as well as additional training modules/qualifications are not seen as meeting the specific skills requirements in green economic sectors specific green occupations can be developed.
- 🌿 Examples of green occupations:
 - Water supply engineering technician
 - Sewage engineering technician
 - Recycling and waste management technician
 - Pipe, sewer and industrial service technician
 - Organic farmer
 - Solar energy technician
 - Wind energy mechatronic



GREENING TVET

Greening the methodology

- 🌿 Greening the methodology is the use of practice-based and trainee-oriented methods to find out practical ways to make products, processes and services greener
- 🌿 Green methodology encourages project-based activities, cross-subject or cross-disciplinary learning and learning by doing
- 🌿 Example of green learning activities where such methods can be used:

TVET teachers and trainees survey the energy efficiency of buildings in the campus to recommend solutions to improve the efficiency



TVET teachers and trainees research and design learning materials using recycled materials

Trainees calculate and compare the costs of energy consumption/reduction options in the class/building



GREENING TVET

Greening the community

Refers to TVET contribution to the greening of work environments/businesses and the community through:

- Promoting practices to reduce environmental impacts of business operations
- Joint development of sustainability programmes to address local issues

Example: In Ninh Thuan Vocational College, a volunteer club called “For a green-clean-beautiful Ninh Thuan province” was established. Every month, the club organises clean-up activities on the beach, in the main square and public spaces. Such activities raise public awareness and responsibilities to protect the environment.

Ninh Thuan Vocational College
(Ninh Thuan province)

GREENING TVET

Greening the institutional culture

- The institute's vision for sustainable development is reflected in the whole-institutional approach, whereby greening is embedded in all aspects of school operation:



Teaching methodology and content:



School management and ethics



Human capacity development



Campus and facility management



Quality management



Cooperation with the business sector and partnership

- Environmental awareness is reflected in the daily behaviors and habits of everyone in the school, from the school management board to teachers and trainees
- Environmental friendliness and sustainable development are values to promote the school branding, benefiting both trainees when looking for jobs and schools to have effective and long lasting partnerships with enterprises

Example: Vocational College of Mechanics and Irrigation (VCMI) in Dong Nai province, under the Ministry of Agriculture and Rural Development is trying to build a green institutional culture via small daily actions: say no to plastic bottles, keep classes and workshops clean... Every Friday, all teachers and managers clean the campus.

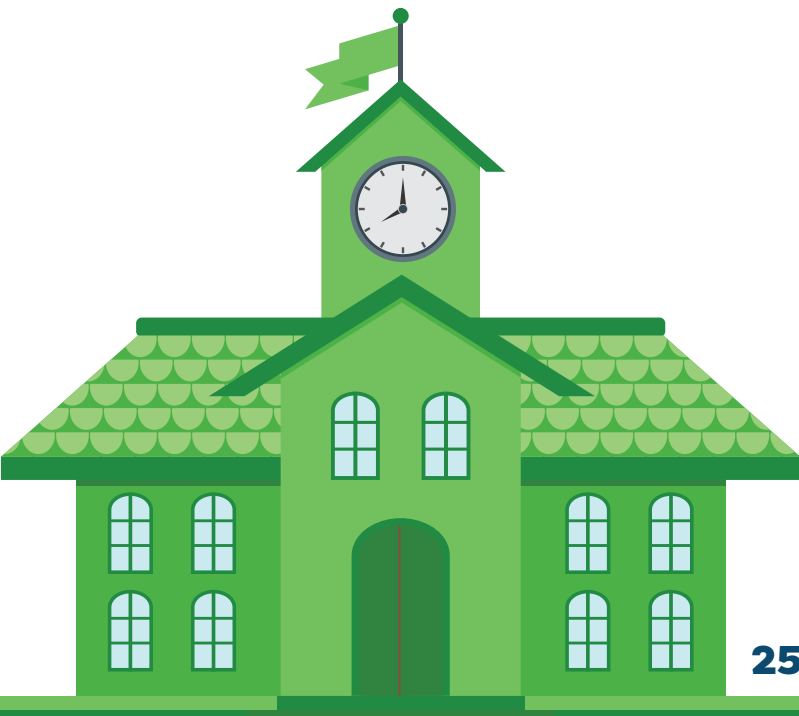
VCMI is integrating green aspects in its existing occupations and also developing two new green occupations based on German standards.

Vocational College of
Mechanics and Irrigation
(Dong Nai Province)

GREENING TVET

Embedment in the school management

- 🌿 Greening is an essential & integral part of TVET management and leadership
- 🌿 TVET managers:
 - Initiate, promote and support the greening process
 - Provide human resources, financial and physical support for the greening process
 - Lead the process through personal examples and active collaboration
- 🌿 Green activities are an essential part of the institute's:
 - Vision and mission
 - Strategic plan and operation procedure
 - Quality management system



REFERENCE

1. ILO, 2018: Greening with jobs – World Employment Social Outlook 2018, p7
2. OECD Publishing, 2014: Green Growth Studies – Towards Green Growth in Southeast Asia, p25-27
3. World Bank, 2016, Mook Bangalore, Andrew Smith & Ted Veldkamp, Exposure to Floods, Climate change and poverty in Vietnam, p2
4. World Health Organization Vietnam, 2018, http://www.wpro.who.int/vietnam/mediacentre/releases/2018/air_pollution_vietnam/en/
5. Vietnamnet, 2018: <https://english.vietnamnet.vn/fms/environment/204133/-vietnam-plastic-waste-among-highest-in-world.html>
6. ILO, 2012, Working towards sustainable development, p9
7. UNESCO & UNEP, 2016, Youth Exchange: Green skills and Lifestyles Guidebook, p22-23, p33
8. ILO, 2012, <https://www.ilo.org/global/topics/green-jobs/lang--en/index.htm>
9. ILO, 2017, Employment and climate resilience in the Asia Pacific region
10. ADB, 2017, Education and Skills for Inclusive Growth, Green Jobs and the Greening of Economies in Asia, p75-76
11. Vietnam Government Portal, 2015: Decision 2068/QĐ-TTg Approval of the Strategy on renewable energy development for Vietnam until 2030, with vision to 2050
12. UNEP, 2011, Towards a Green Economy – Pathways to sustainable development and poverty eradication: A synthesis for policy makers, p1-2
13. ILO, 2011, Skills for Green Jobs, A Global View: Synthesis report based on 21 country studies, p4, p105-107
14. ILO, 2016, What is a Green job: https://www.ilo.org/global/topics/green-jobs/news/WC-MS_220248/lang--en/index.htm
15. UNESCO, 2012: ESD + TVET, Promoting Skills for Sustainable Development, p4
16. OECD Publishing, 2014, Greener Skills and Jobs, p18
17. ADB, 2018, Education and Skills for Inclusive Growth, Green jobs and the Greening of Economies in Asia, p11
18. ILO, 2013, Meeting skills for green jobs, p4-5
19. UNESCO UNEVOC, 2017, Greening Technical and Vocational Education and Training, A practical guide for institutions, p33
20. Vietnamese-German Cooperation in TVET, 2016, Greening TVET in Viet Nam
21. Vietnamese-German “Programme Reform of TVET in Vietnam”, 2016, Catalogue of learning outcomes for “Green TVET”
22. Vietnam National Administration of Tourism & Ministry of Culture, Sports and Tourism, 2015, Vietnam Tourism Occupational Standards Travel & Tour Operations (VTOS)



NOTE

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