

**GREEN JOBS DEGREE PROGRAMS: CASE STUDY OF THE NATIONAL  
ENERGY UNIVERSITY  
(UNITEN) MALAYSIA**

Khathija Zeeshan  
Zainal Ariffin Ahmad  
Graduate Business School,  
Universiti Tenaga Nasional  
KM 7, Jalan Ikram-UNITEN  
Kajang 43009, Selangor, Malaysia  
[Khathijazeeshan@gmail.com](mailto:Khathijazeeshan@gmail.com)  
[azainal@uniten.edu.my](mailto:azainal@uniten.edu.my)

***ABSTRACT***

*Green jobs are jobs focused on environmentally friendly products and services. The Malaysian Ministry of Energy, Green Technology and Water (KeTTHA) is encouraging the use of green technology and the creation of green jobs. This descriptive case study identifies the Green Jobs Degree Programs (GJDPs) offered at the Universiti Tenaga Nasional (UNITEN), Malaysia. GJDPs are those programs which meet the requirements of green occupations. The findings of this study suggest that 18 out of 28 programs in UNITEN can be classified as GJDPs according to the Southwestern Pennsylvania Green Jobs Analysis and Action Plan (GSP Consulting, 2009). (100 words)*

Keywords: Green job, Green Jobs Degree Programs, green job analysis, green occupation, UNITEN

## **BACKGROUND**

Preserving and protecting the environment is considered an important issue that needs proper attention and focus. It is a known fact that global warming is increasing at a rapid pace and humans are responsible for polluting the environment.. Hence, people are encouraged to participate in programs and various projects dedicated to cleaning and protecting the environment. A green job is one of the ways to create awareness among people to save the environment from pollution. Green jobs are jobs that are focused on environmentally friendly products and services. Green jobs mainly boost energy-efficiency, control pollution and increase the supply of renewable energy.

Green jobs have become increasingly prominent over the last several years in many industries and organizations. One of the approaches for reducing the carbon emission is to enhance public education and awareness on green technology and encourage its use. U.S president, Barack Obama has promised U.S.\$150 billion to develop five million green jobs over a period of 10 years (Matthews, 2011). Green jobs are on the rise and are paid well due to the emerging green economy in the U.S. Many governments around the world are seeking opportunities in investing in green economy as it will bring job opportunities for its people. With an increase in the environmental awareness and green-collar jobs, many colleges and universities in the U.S are beginning to add sustainability of the environment into their programs. Many students are joining these programs as they know there is a demand for and a good future in green jobs. Universities in Malaysia can play their part by offering green jobs degree programs which will provide opportunities for the current generation to work in a green economy. Hence it is a good opportunity for those who undertake green jobs degree programs. Green jobs or green collar jobs, is a hot topic of discussion by KeTTHA (Kementerian Tenaga, Teknologi Hijau Dan Air/Ministry of Energy, Green Technology, and Water) in Malaysia. Much emphasis has been given in creating green jobs, transforming the existing jobs to green jobs and the Malaysian government is allocating a large amount of money for this cause. This can be accomplished only if there are enough workforces which have special and unique skills that are required for green jobs. Malaysian Prime Minister Datuk Seri Najib Tun Razak, in his Budget 2011 speech, mentioned that the Government is committed to developing green technology to ensure sustainable development and will provide several incentives for this purpose. This is a good opportunity for those seeking green careers. The purpose of this study is to identify the number of green jobs degree programs at UNITEN.

## **LITERATURE REVIEW**

As green jobs degree programs are a relatively new area of research, there is no standard definition available. But from the literature, the authors have the understanding that green jobs degree programs are those programs which meet the requirements of green occupations. Although several studies have been conducted regarding green jobs, there is to date little information on this area in academic journals. Most of the literature is in the form of technical reports. There is a wide gap in the literature and this area of research needs further exploration. There are no theories or models on green jobs degree programs.

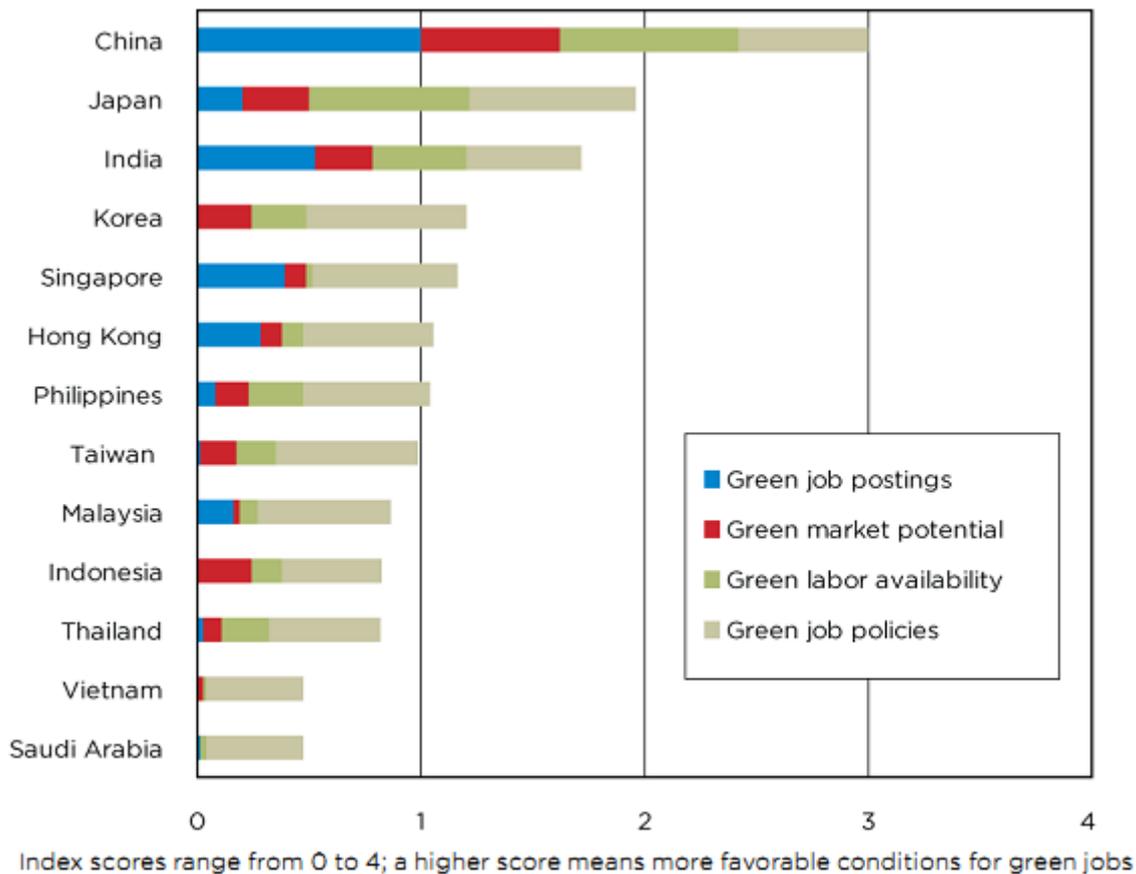
A green job, according to the United Nations Environment Program (UNEP) Report,(2005, 5) is defined as "work in agriculture, industry, services and administration that contributes to preserving or restoring the quality of environment". Green jobs can be found in manufacturing, research and development (R&D), administrative, and service activities that contribute substantially to preserving or restoring environmental quality. Green jobs mainly aim to help to 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 (UNEP, 2008, p.5).

According to The Missouri Green Jobs Report(2009), "a green job can be generally thought as one in which the ultimate outcome directly or indirectly creates a positive impact on the environment". An Employer survey was carried out to identify the number of green jobs in Missouri and the skills required for these jobs. The chosen industries were from the six areas that provide products and services in Energy, Manufacturing, Building, Farming, Salvage/Remediation, and Public Administration. It was found that Missouri has a total number of 131,103 green jobs, including direct and support green jobs. About 80 percent of the surveyed employers trained their employees in green jobs using in-house classrooms or on-the-job training. Only 11.3 percent used community college courses as a method to prepare the green workers. According to the employers, the top skill-set required for future green works include: Waste Minimization, Pollution reduction control and Principles of Energy Conservation (Missouri Economic Research & Information Center, 2009). The Missouri Report limits its boundary to six core areas in industries that provide products and services. Training is mentioned to enhance the skills required for green jobs. Hence, the study lacks focus on the educational service sector and does not highlight the green jobs degree programs offered by universities.

"Michigan Green Jobs: A Regional Analysis" (July 2010) provides green jobs data for five regions in Michigan which comprises Southeast Michigan, Southwest Michigan, Mid Michigan, West Michigan, and Northern Michigan. In this study, the number of green jobs was compared by region, and the total number of private jobs in the region which were considered as green was also calculated. Classification of green jobs is based on one of the five core areas; Clean Transportation and Fuels, Increasing Energy Efficiency, Pollution Prevention and Environmental Cleanup, Agriculture and Natural Resources Conservation, and Producing Renewable Energy. It was found that Michigan has a total of 104,000 green jobs. Southwest Michigan accounted for the largest number of green jobs which is 65.1 percent, followed by North Michigan 9.7 percent and Mid-Michigan had the lowest number of green jobs. Most of the employers in Michigan felt that it is essential to have unique skills to work on green projects. These skills can be acquired through formal education or informal training. The largest number of green jobs was from the auto industry in many regions, especially in the southwest Michigan. Different regions had different concentrations of green jobs. The study also revealed that green jobs by occupation differed in the five regions; however, it was found that employers in all regions considered construction, production, engineering, and installation and repair as green occupations (Waclawek et al., 2010, pp.3, 8, 15, 18). Though it is mentioned that many colleges and universities in Michigan are developing green degree programs, there is no exact number or percentage of green degree programs offered by colleges and universities throughout Michigan.

In a research project conducted by the Asia Business Council (2009), an exploratory assessment is done on developing a green jobs index where 13 Asian economies were studied based on four dimensions which were equally weighted (Asia Business Council [ABC], 2009). This is shown in Figure 1. Green job market demand and green jobs postings are the two dimensions that measures and identifies current employment needs and segments that can create green jobs. The other two dimensions, green labor availability and green jobs policy measures green job enablers. Green labor availability is measured by determining the number of environmental programs offered by top universities and the number of science and engineering graduates and managers with good transferable skills in public and private enterprises. The government policies are measured by environmental performance by international standards to prepare the economy for green jobs.

**FIGURE 1 ASIA GREEN JOBS INDEX (ABC, 2009, p.6)**



The results from this index suggest that China has the most complimentary conditions overall for green job creation. Japan is in the second position followed by India. Among the four dimensions in Malaysia, green jobs postings and green jobs policies are on the greater side than the other two dimensions. Though Malaysia is far behind, it has potential in specific areas. As reported in the Asia Business Council (2009), there are 1,800,000 jobs in biomass of which Malaysia has 500,000 green jobs estimates. This report shows that there is a growing trend in green jobs in Asia. It also mentions that from green jobs postings, engineers in traditional disciplines like mechanical, electrical, and civil engineering are hired by companies to work in renewable energy industries. The report highlights that Japan offers the

highest number of environmental programs at under-graduate and graduate levels followed by China, Korea, Taiwan and India (ABC, 2009, pp.5-13). One of the drawbacks of this study is that it only concentrates on the four dimensions mentioned above. Though some information is available on the degree programs, it is related to engineering and there is none in the information technology area.

**TABLE 1 REPRESENTATIVE GREEN JOBS**

<b>Job Requirements</b>	<b>Does not require green industry-specific skills</b>	<b>Requires green industry-specific skills</b>
<b>Requires four-year university degree or above</b>	<p><b>Quadrant 1</b></p> <ul style="list-style-type: none"> <li>Construction engineers</li> <li>Electrical engineers</li> <li>Mechanical engineers</li> <li>Civil Engineers</li> <li>Aerodynamic engineers</li> <li>Material scientists</li> <li>Construction managers</li> <li>Industrial production managers</li> <li>Investment bankers</li> <li>Venture capitalists</li> </ul>	<p><b>Quadrant 2</b></p> <ul style="list-style-type: none"> <li>Environmental architects</li> <li>Environmental engineers</li> <li>Photovoltaic engineers</li> <li>Geotechnical engineers</li> <li>Agronomists</li> <li>Water and waste treatment engineers</li> <li>Ecologists</li> <li>Sustainability executives/managers</li> <li>Compliance managers</li> <li>Power grid integration managers</li> <li>Energy efficiency auditors/inspectors</li> <li>Carbon auditors</li> <li>Pollution monitoring consultants</li> <li>Health and safety officers</li> <li>Agricultural inspectors</li> </ul>
<b>Does not require four-year university degree or above</b>	<p><b>Quadrant 3</b></p> <ul style="list-style-type: none"> <li>Electricians</li> <li>HVAC technicians</li> <li>Heating/Air conditioning installers</li> <li>Carpenters</li> <li>Roofers</li> <li>Insulation workers</li> <li>Welders</li> <li>Metal fabricators</li> <li>Machinists</li> <li>Mechanics</li> <li>Computer-controlled machine operators</li> <li>Engine and equipment assemblers</li> <li>Industrial truck drivers</li> <li>Iron and steel workers</li> <li>Millwrights</li> <li>Material handlers</li> <li>Laborers</li> <li>Retailers</li> <li>Marketers</li> </ul>	<p><b>Quadrant 4</b></p> <ul style="list-style-type: none"> <li>Mixing and blending machine operators</li> <li>Sustainable farmers</li> <li>Farm product purchasers</li> <li>Recycling coordinators</li> <li>Carbon traders</li> <li>Eco tour guides</li> <li>Park rangers</li> </ul>

Source: ABC (2009, p.6)

Table 1 shows that those undertaking a four-year university degree and above do not require green industry-specific skills to work in the positions shown in Quadrant 1. For those who would like to work as environmental architects, environmental engineers, etc. listed in Quadrant 2 requires green industry-specific skills besides a four-year university degree or above. The positions in Quadrant 3 and Quadrant 4 does not require a four-year university degree and above and are not relevant to this study. Quadrant 1 and Quadrant 2 of this table are discussed along with the findings of the study in the latter part of this paper.

Green jobs or the green collar jobs are gaining importance in Malaysia due to the rapid development of green technology programs and policies by the government. The Ministry of Energy, Green Technology and Water/KeTTHA was established on 9 April 2009. KeTTHA was set up to address the issues of global warming, environmental pollution, carbon emission, etc. The four core areas which are focused on by KeTTHA are: Energy Sector, Building Sector, Transportation Sector, and Water and Waste Management Sector.

The increasing importance on the use of green technology and sustainable energy will result in the creation of green jobs in Malaysia. In fact, the Government of Malaysia is encouraging transformation programs. The Prime Minister of Malaysia, Datuk Seri Najib Tun Razak launched the National Green Technology Policy on 24 July 2009. One of the government initiatives on National Green Technology Policy by KeTTHA, is to raise public education and awareness on green technology and encourage its use. The policy also aims at increasing research and development and innovation in green technology in universities and research institutions and hook on local industries with multi-national companies. (Silivarajoo, 2010).

KeTTHA is also encouraging the use of green technology in five key industries namely: Agriculture and Agro-Based Industry, Electronic Industry, Health and Pharmaceuticals Industry, Information and Communication Technology, and Mining Industry. Each of these industries requires skilled and qualified human resources to use the green technology effectively and efficiently. It is mentioned on the KeTTHA website under the National Green Technology Policy Strategic Thrusts that in order to develop green technology, it is vital to have human expertise. This strategic thrust is a strong pillar for the research on green jobs degree programs. KeTTHA is working with the Ministry of Education and The Ministry of Higher Education to develop and integrate green courses into the national education syllabus both in public and private institute. This will lead to designing good education and training programs, providing financial incentives and encouraging students to pursue degrees at undergraduate and postgraduate levels in green technology. (Ministry of Energy, Green Technology and Water [KeTTHA], 2011).

## **METHODOLOGY**

This case study is descriptive in nature as it describes the aspects of green jobs and green jobs degree programs. The study identifies green jobs degree programs offered in UNITEN by analyzing various courses/programs. It then matches the courses/programs with the green degree titles given in Table 2.

Southwestern Pennsylvania Green Jobs Analysis and Action Plan (2009) classified the green job degrees as shown in Table 2 (GSP Consulting, 2009). The table basically shows the average annual degrees awarded to students in green occupations. This study uses Table 2 as a model to identify the green jobs degree programs in UNITEN, since the area of this research is new and there is little information available locally. The researchers compared the degree programs (Bachelors, Masters, and PhD) in UNITEN with the green job degree titles in Table 2.

**TABLE 2 CLASSIFICATION OF GREEN JOBS DEGREE PROGRAMS**

<b>N0.</b>	<b>Degree Title</b>	<b>Institutions</b>	<b>Awards</b>
1	Agriculture, Agriculture Operations and Related Sciences	11	96
2	Architectural Engineering Technologies/Technicians	2	8
3	Architecture and Related services	12	154
4	Biochemistry, Biophysics and Molecular Biology	16	80
5	Biological and Biomedical Sciences	40	832
6	Biology, General	37	678
7	Business, Management, Marketing, and Related Support services	137	9624
8	Chemical Engineering	6	160
9	Chemistry	29	252
10	Civil Engineering	4	136
11	Civil Engineering Technologies	7	32
12	Construction Engineering Technologies	4	4
13	Construction Trades	20	844
14	Ecology, Evolution, Systematic and Population Biology	2	14
15	Engineering	31	1706
16	Engineering Technologies/Technicians & Related	64	2064
17	Environmental/Environmental Health Engineering	2	6
18	Geological/Geophysical Engineering	3	-
19	Materials Engineering/Science	8	92
20	Natural Resources and Conservation	23	96
21	Operations Research	2	22
22	Parks, Recreation, Leisure, and Fitness studies	20	1546
23	Physical sciences	43	666
24	Science technologies/Technicians	16	46
	<b>Grand Total</b>	<b>539</b>	<b>19,158</b>

Source: GSP Consulting (2009, p.18)

Universiti Tenaga Nasional (UNITEN) was established in 1996. It is a private university and is fully owned by Tenaga Nasional Berhad (TNB) which is one of the largest utility company in South-East Asia (UNITEN, 2011a). There are five colleges in UNITEN offering Foundation, Bachelors, Masters and PhD programs namely, College of Foundation and General Studies (CFGS), College of Business Management and Accounting (COBA), College of Engineering (COE), College of Information Technology (COIT), and College of

Graduate Studies (COGS). College of Foundation and General Studies (CFGS) is not included in this study as it does not offer degree programs. This study uses secondary data from the UNITEN Database. The data was extracted from the MQA (Malaysian Qualification Agency) document with permission from the College of Graduate Studies (COGS), UNITEN.

Detailed information on the list of colleges and the programs offered by each college is given in Table 3. The College of Graduate Studies offers the highest number of programs though they belong to the respective colleges, followed by the College of Business Administration and Accounting and the College of Information Technology followed by the College of Engineering. Structure A is a full research program. Structure B is a partial research program. It is a Master's degree by coursework and research. Structure C is by coursework and a vproject.

**TABLE 3 COLLEGES AND PROGRAMS OFFERED IN UNITEN**

<p><b>College of Business Management and Accounting (COBA)</b>            Bachelor of Accounting (Hons.)            Bachelor of Administration (Hons.) in Entrepreneur Development            Bachelor of Business Administration (BBA, Hons.) in Human Resource Management            Bachelor of Business Administration (BBA, Hons.) in Marketing            Bachelor of Finance (Hons.)</p>
<p><b>College of Engineering (COE)</b>            Bachelor of Civil Engineering (BCE, Hons.)            Bachelor of Electrical Power Engineering (BEPE, Hons.)            Bachelor of Electrical and Electronics Engineering (BEEE, Hons.)            Bachelor of Mechanical Engineering (BME, Hons.)</p>
<p><b>College of Information Technology (COIT)</b>            Bachelor of Information Technology (Hons.)            Bachelor of Information Technology (Information System) (Hons.)            Bachelor of Information Technology (Graphics and Multimedia) (Hons.)            Bachelor of Computer Science (Systems and Networking) (Hons.)            Bachelor of Computer Science (Software Engineering)</p>
<p><b>College of Graduate Studies (COGS)</b>            Master in Engineering Management (MEM, Structure C)            Master of Business Administration (MBA, Structure C)            Master of Civil Engineering (MCE, Structure A)            Master of Electrical Engineering (MEE, Structure A)            Master of Electrical Engineering (MEE, Structure B)            Master of Industrial Science (Structure A)            Master of Information Technology (Structure A)            Master of Information Technology (Structure B)            Master of Mechanical Engineering (MME, Structure A)            Master of Mechanical Engineering (MME, Structure B)</p>
<p>Doctor of Philosophy in Business Management (Structure A)            Doctor of Philosophy in Engineering (Structure A)            Doctor of Philosophy in Industrial Science (Structure A)</p>

**FINDINGS/RESULTS**

**Descriptive Analysis: Green Jobs Degree Programs offered in UNITEN**

Table 4 shows how the programs offered by different colleges in UNITEN are matched with the green degrees shown in Table 2 and the total number of green jobs degree programs offered in UNITEN by different colleges are identified. The findings are positive as there are a good number of green jobs degree programs offered in UNITEN. It was found that the highest number of green jobs degree programs are offered by the College of Graduate Studies (9), followed by the College of Business Management and Accounting (5) and the College of Engineering (4). Unfortunately, there are no green jobs degree programs in the College of Information and Technology. The College of Foundation and General studies is not included in the analysis as it offers only foundation programs. The findings of the analysis are depicted in Table 5. The highest number of green jobs degree programs are offered at Bachelors level which comprises of five programs from Business and four from Engineering. There are seven programs offered at the Masters' degree level, of which two are from Business and five are from Engineering. The Doctorate level has two green jobs degree programs, one each from Business and Engineering. The Engineering discipline (10) has a slightly higher number of green jobs degree programs than the Business discipline (8).

**TABLE 4 DESCRIPTIVE ANALYSIS - GREEN JOBS DEGREE PROGRAMS IN UNITEN**

Template (from Table 2)	Relevant courses offered in UNITEN	COBA	COE	COGS	
				Masters	Doctorate
Business, Management, Marketing & Related Support Services		BBA (HRM)		MBA	PhD (Business Management)
		BBA (Marketing)			
		BBA (Entrepreneur Development)		MEM	
		Bachelor of Accounting			
		Bachelor of Finance			
Civil Engineering				MCE	

Civil Engineering Technologies/ Technicians	CECB112 Civil Engineering Drafting Technology		BCE		PhD (Engineering)		
Environmental/Environmental Health Engineering	CEEB223 Introduction to Environmental Engineering						
Geological/Geophysical Engineering	CEGB212 Geology						
Materials Engineering/Science	CEMB113 Civil Engineering Materials						
Engineering						BEP E	MEE (A)
						BEE E	MEE (B)
Environmental/Environmental Health Engineering	MEHB443 Environmental Engineering					BME	MME(A) MME(B)
Materials Engineering/Science	METB113 Engineering Materials						
<b>Total</b>		<b>5</b>	<b>4</b>	<b>7</b>	<b>2</b>		

\* A & B refers to Structure A and Structure B

**TABLE 5 GREEN JOBS DEGREE PROGRAMS OFFERED BY DIFFERENT DISCIPLINES IN UNITEN**

<b>BUSINESS</b>	<b>ENGINEERING</b>
<b>Doctorate</b> <ul style="list-style-type: none"> <li>• <b>Doctor of Philosophy in Business Management</b></li> </ul>	<b>Doctorate</b> <ul style="list-style-type: none"> <li>• <b>Doctor of Philosophy in Engineering</b></li> </ul>
<b>Masters</b> <ul style="list-style-type: none"> <li>• <b>Master of Business Administration</b></li> <li>• <b>Master in Engineering Management</b></li> </ul>	<b>Masters</b> <ul style="list-style-type: none"> <li>• <b>Master of Civil Engineering</b></li> <li>• <b>Master of Electrical Engineering (A)</b></li> <li>• <b>Master of Electrical Engineering (B)</b></li> <li>• <b>Master of Mechanical Engineering (A)</b></li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Master of Mechanical Engineering (B)</b></li> </ul>
<b>Bachelors</b> <ul style="list-style-type: none"> <li>• <b>Bachelor of Business Administration (Hons.) in Human Resource Management</b></li> <li>• <b>Bachelor of Business Administration (Hons.) in Marketing</b></li> <li>• <b>Bachelor of Business Administration (Hons.) in Entrepreneur Development</b></li> <li>• <b>Bachelor of Accounting (Hons.)</b></li> <li>• <b>Bachelor of Finance (Hons.)</b></li> </ul>	<b>Bachelors</b> <ul style="list-style-type: none"> <li>• <b>Bachelor of Civil Engineering (Hons.)</b></li> <li>• <b>Bachelor of Electrical Power Engineering (Hons.)</b></li> <li>• <b>Bachelor of Electrical and Electronics Engineering (Hons.)</b></li> <li>• <b>Bachelor of Mechanical Engineering (Hons.)</b></li> </ul>

## DISCUSSION

The results of the analysis show that there are a good number of green jobs degree programs offered in COBA, COE and COGS in UNITEN. Surprisingly, there are not any green jobs degree program offered in COIT. Based on Table 2 (Classification of Green Jobs Degree Programs) there are no degree titles related to information technology and there is nothing mentioned about software engineers. Earlier, Table 1 shows the green jobs requirements and the specific skills required by the green industries. Those seeking positions such as construction engineers, electrical engineers, mechanical engineers, civil engineers, investment bankers, etc. do not require green industry-specific skills besides a four year and above university degree. It is also noted from Table 1 that those who want to work as environmental architects, environmental engineers, Geotechnical engineers, Agronomists etc. require green industry-specific skills, besides a four year and above university degree. Based on the research findings, most of the students graduating from UNITEN can be considered as candidates who have a good potential for working in green industries in positions shown in Table 6 as Job Set 1. However, for the students to work in jobs listed in Job Set 2 (Table 6), they would require green industry-specific skills besides a four-year university degree. In the future, UNITEN can highlight the green degree programs it offers. This will create awareness among the students that by undertaking these programs they have a good opportunity of working in green areas. This will encourage the students to take green jobs degree programs and will benefit UNITEN as well.

The scope of this study is limited to identifying the green jobs degree programs in different colleges and disciplines in UNITEN. The findings of this research cannot be generalized to other universities in Malaysia. Each university will have different results based on the programs they offer. The model used in this study may not be completely accurate to identify all green jobs degree programs and hence there may be some loopholes. For example, there are not any green jobs degree programs in Information Technology. Although Table 1 shows that software engineers do not require specific green industry skills, the findings of this study does not support it as there is no evidence in the literature on green jobs where software engineers appear and the criteria for them is stated. Most of the reports reviewed in the literature review did not comment on green jobs in the information technology area so this

area requires further investigation. At the same time, the tool used to measure green jobs degree programs cannot be blamed, as this study is relatively new in Malaysia and needs further exploration.

In order to overcome the limitations, the authors intend to build a model/ tool to measure the green jobs degree programs in future research work. Even though the study is focused on UNITEN alone, it will serve as a platform for further research on green jobs degree programs in universities throughout Malaysia. This will create awareness on the importance of green jobs degree programs among the students. Future research is intended to create alliances between higher education providers and employers to make projections on the skills required for green jobs and design green syllabi. By providing green jobs degree programs, universities and colleges can educate the students in disciplines which will result in green employment opportunities. The fact that there are no green jobs degree programs in IT in UNITEN needs further exploration and investigation on the green jobs in the Information and Communications Technology (ICT) sector. One of the ways to explore this in the future is through KeTTHA as ICT is one of the five industrial areas on which it is focusing to develop in terms of green technology.

**TABLE 6 UNITEN DEGREE PROGRAMS SUITABLE FOR REPRESENTATIVE GREEN JOBS**

<b>UNITEN Green Job Degrees</b>	Does not require green industry-specific skills
PhD (Business Management)	<b>Job Set 1</b> Construction engineers Electrical engineers Mechanical engineers Civil Engineers Aerodynamic engineers Material scientists Construction managers Industrial production managers Investment bankers Venture capitalists
PhD (Engineering)	
MBA	
MEM	
MCE	
MEE	
MME	
BBA (HRM)	
BBA (Marketing)	
BBA (Entrepreneur Development)	
Bachelor of Accounting	
Bachelor of Finance	
BCE	
BEPE	

<p>BEEE BME</p>	<p><b>Job Set 2</b>  Environmental architects  Environmental engineers  Photovoltaic engineers  Geotechnical engineers  Agronomists  Water and waste treatment engineers  Ecologists  Sustainability executives/managers  Compliance managers  Power grid integration managers  Energy efficiency auditors/inspectors  Carbon auditors  Pollution monitoring consultants  Health and safety officers  Agricultural inspectors</p>
---------------------	---

### CONCLUSION

This study has identified the green jobs degree programs in different colleges and disciplines in UNITEN. The study describes the aspects of green jobs and green jobs degree programs whereas the area of green jobs in the educational sector is still unclear. Most of the studies done on green jobs are in the form of reports. Unfortunately, there are no theories and models of green jobs and there is no standard definition on green jobs degree programs in educational sector in the literature. However, in practice, green jobs exist in many industries especially in the U.S. Malaysia is promoting green jobs as having much importance and green technology through KeTTHA.

## REFERENCES

- Asia Business Council (2009). Addressing Asia's New Green Jobs Challenge. Retrieved from <http://www.asiabusinesscouncil.org/docs/GreenJobs.pdf> [Retrieved 21 May 2012]
- GSP Consulting (2009). Southwestern Pennsylvania Green Jobs Analysis and Action Plan. Green Building Alliance. Retrieved from [http://gtechstrategies.org/assets/Green\\_Jobs\\_Report.pdf](http://gtechstrategies.org/assets/Green_Jobs_Report.pdf) [Retrieved 21 May 2012]
- Matthews, R. (2011). Green Stimulus Investments and Job Creation. Retrieved from <http://www.greenconduct.com/jobs/green-stimulus-investments-and-job-creation-51/> [Retrieved 21 May 2012]
- Ministry of Energy, Green Technology and Water, Malaysia (2011). Green Technology. Putrajaya, Malaysia: Author. Retrieved from <http://www.kettha.gov.my/en/content/national-green-technology-policy-strategic-thrusts> [Retrieved 21 May 2012]
- Missouri Economic Research and Information Center (2009). The Missouri Green Jobs Report. Missouri Division of Workforce Development, Missouri Department of Economic Development: Author. Retrieved from [http://missourieconomy.org/pdfs/mo\\_green\\_jobs\\_report.pdf](http://missourieconomy.org/pdfs/mo_green_jobs_report.pdf) [retrieved 21 May 2012]
- Silivarajoo, P. (2010). Government Initiatives Towards Carbon Reduction. [Retrieved 21 May 2012]
- United Nations Environmental Program (2008). Green Jobs: Towards decent work in a sustainable low carbon world. United Nations, International Labor Organization: Author. Retrieved from [http://www.unep.org/labour\\_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Towards-Sustainable-Summary.pdf](http://www.unep.org/labour_environment/PDFs/Greenjobs/UNEP-Green-Jobs-Towards-Sustainable-Summary.pdf) [Retrieved 21 May 2012]
- Universiti Tenaga Nasional (2011). Colleges. Retrieved from [http://www.uniten.edu.my/newhome/content\\_list.asp?ContentTypeID=1](http://www.uniten.edu.my/newhome/content_list.asp?ContentTypeID=1) [Retrieved 21 May 2012]
- Universiti Tenaga Nasional MQA~Document(2011). Part A: General Information on the Higher Education Provider. [Retrieved 21 May 2012]
- Waclawek, R., Weaver, B., Acuna, R., Astalos, J., Murembya, L., Palmer, J., Reffitt, M., & Woods, S. (2010). Michigan Green Jobs Report: A Regional Analysis: Occupations & Employment in the New Green Economy. Michigan Department of Energy, Labor & Economic Growth, Bureau of Labor Market Information & Strategic Initiatives. Retrieved from [http://milmi.org/admin/uploadedPublications/1747\\_Green\\_Jobs\\_Regional\\_Report\\_2010.pdf](http://milmi.org/admin/uploadedPublications/1747_Green_Jobs_Regional_Report_2010.pdf) [Retrieved 21 May 2012]