

## Green Jobs Mapping Study in Malaysia

An output of the Green Jobs Malaysia Project and a brief prepared for the International Workshop on Employment Implications of Environment and Climate Change-Related Measures and Policies (Crafting Malaysia's Roadmap to a Green(er) Economy, 5-6 May 2015.<sup>1</sup>

### QUICK FACTS

**Country:** Malaysia

**ILO Admin/Technical backstopping unit:** ILO ROAP- Green Jobs Programme for Asia and the Pacific (Green Jobs-AP)

**External Partner(s):** Institute for Global Environmental Strategies (IGES) and Malaysia Tripartite Constituents (MOHR, KeTTHA, MTUC, MEF and other groups)

**Technical Area:** Green Jobs/EMPL.

**Keywords:** Green jobs, core environment-related jobs, decent work, green indicators, decent work indicators, environmental protection, skill, occupational change, skilled worker, retraining, training needs, Malaysia.

### BACKGROUND

The green jobs mapping study in Malaysia was conducted under ILO's Green Jobs Programme for Asia and the Pacific (Green Jobs-AP), which aims at, among others, enhancing the capacity of ILO constituents to engage in dialogue on green jobs at the local, national and regional levels by giving them access to quality data and information.

The mapping study for Malaysia follows the working definition of green jobs as identified by ILO and United Nations Environmental Program (UNEP). According to this definition, green jobs are "the direct employment in economic sectors and activities, which reduces their negative environmental impacts, ultimately resulting in levels that are sustainable" (Jarvis et al., 2011). In addition, to be a green job, a job also has to meet the "decent work" criteria, which involves "adequate income from productive work with social security, respect for worker and social rights and the opportunity to voice and defend interests collectively" (Jarvis et al., 2011).

Malaysia, an active participant in many international environmental discussions since the 1970s has enshrined the principles of sustainable development into its five-year development plans since the adoption and implementation of Agenda 21 at the Rio Earth Summit in 1992. Malaysia acknowledges that even if it is not a major emitter of greenhouse gases (GHG), it is not immune from the impacts of climate change. Accordingly, the country is a signatory to the

United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. Actions taken by Malaysia are seen in the National Policy on Climate Change as well as a voluntary pledge of reducing of up to 40 per cent in terms of emission intensity relative to GDP by the year 2020 compared to 2005. At the national level, climate change related concerns are addressed through various sector such as energy; forestry and natural resource management; land-use planning; agriculture; solid waste; and drainage and irrigation.

Malaysia's Vision 2020 is to achieve high-income status through inclusive and sustainable growth. Ensuring inclusiveness and sustainability is anything but trivial. Malaysian policy-makers are faced with the challenge of moving the economy away from competing on costs and natural resources to an economy that is driven by productivity, innovation and that can attract and retain capital, sustainable companies and the best human resource talent. This transition to a green economy in Malaysia is progressing with the implementation of various environment and climate change related policies and measures to drive greater environmentally sustainable economic growth. This structural change towards a greener and more sustainable economic growth path will create demand for new green technologies, green skills and green jobs and will have implications on the employment and labour market dynamics in Malaysian economic sectors. It is important to ensure that any new jobs created for workers in these environment-related sectors and green sub-sectors are decent and sustainable and that existing decent work deficits are addressed. The mapping study was conducted to estimate and identify green jobs in Malaysia and identified potential challenges to developing a greener economy with green jobs and decent work.

### METHODOLOGICAL APPROACH

To analyse the intrinsic linkages among employment, environment and the economy, the study mapped Malaysia's existing environment-related jobs and decent jobs, and then provided an estimate of the scale and distribution of green jobs in the Malaysian labour market. This is the first of ILO's four-phased approach to study the employment-environment-economy linkages (Table 1), and provides the basis for activities under subsequent phases. The methodology applied for the mapping study includes collection and analysis of quantitative and qualitative data for the economy as a whole as well as for individual sectors as well as the development and application of screening criteria to characterise Malaysia's direct green jobs.

<sup>1</sup> This brief has been prepared by Mustafa Moinuddin (Senior Policy Researcher; Trade and Development Economist of the Institute for Global Environmental Strategies (IGES) for the ILO Green Jobs Programme for Asia and the Pacific. It is based on the following document: International Labour Organization (ILO) and Institute for Global Environmental Strategies (IGES). 2014. Green jobs mapping study in Malaysia: An overview based on initial desk research. ILO Regional Office for Asia and the Pacific. Bangkok: ILO. Special Acknowledgement to Ms Narissara Chandravithun for lay-out.

**Table 1** Four-phased Approach: Understanding the Environment-Employment-economy linkages at national level

<b>Box 1. Four-phased Approach: Understanding the Environment-Employment-economy linkages at national level</b>			
<b>Phase 1</b>	<b>Phase 2</b>	<b>Phase 3</b>	<b>Phase 4</b>
Green Jobs Mapping	Development of Analytical Models (I-O tables, Dynamic Social Accounting Matrix/SAM)	Simulations focusing on green policy and employment	Capacity - Building/ Planning for monitoring and evaluating green policies

Source: ILO (2015).

A step-by-step approach of zooming in from the macro-economy to the green economy to sustainable employment and finally to green jobs was followed in Malaysia's green jobs mapping. Table 2 provides a quick reference to this step-wise approach taken for mapping Malaysia's green jobs.

### Review of the economic structure

In the first step, the overall structure of Malaysia's economy was reviewed to understand the context of green jobs in the country, including how the economy relates to the country's employment and labour market dynamics. Each individual sector of the economy, their size and scale as well as employments in each sector were also examined.

### Identifying key economic sectors and developing sector profiles

Based on this information, environment-related economic activities and employment were identified. For Malaysia, it was identified that the green jobs were clustered in six core economic sectors: agriculture (including fishery and forestry), energy, buildings, transport, water and wastewater management, and solid waste management. These sectors were previously also previously identified by the Malaysian government as priority growth areas for green technology development, thereby creating more future green jobs. The sector profiles explaining the structure and employment statistics of each of these sectors of interest were developed.

**Table 2** Green jobs estimation steps in the mapping study

	<b>Description</b>	<b>Output</b>
<b>1</b>	Review of the overall structure of the domestic economy and total employment	Overview of the economic structure
<b>2</b>	Identifying environment-related economic activity and employment	Sector profiles including total employment generated by the sector
<b>3</b>	Developing screening criteria for identifying economic activities that support "core" environment-related employment	Screening criteria and list of identified core sectors
<b>4</b>	Estimating "core" environmental employment using the screening criteria	Estimates of jobs in "core" sectors
<b>5</b>	Screening "core" jobs using decent work criteria	Decent work criteria and estimates of "green jobs".
<b>6</b>	Summary (green jobs mapping in Malaysia)	

Source: ILO/IGES (2014).

### Screening environmental and decent works

The next steps include estimating "core" environmental employment as well as decent works. For this, a comprehensive set of screening criteria covering various environmental impacts was developed and applied sequentially to the gathered data for each sector. The final step in characterizing green jobs involved the introduction of decent work screening criteria. The decent work screening criteria was developed in line with ILO's concept of decent work criteria as well as the dimensions of decent work articulated in Malaysia's national development policies. Table 3 gives a summary of the general guidelines for environmental and decent work criteria applied in the mapping study.

**Table 3** Environmental and decent work criteria

<b>Environmental criteria</b>	<b>Decent work criteria</b>
Mitigation of GHG emissions	Wage rate
Climate change adaptation and resilience	Working conditions, rights and standards
Biodiversity, desertification, ecosystem services, environmental quality based services	Social protection and representation
Water and natural resource management	Informal employment
Pollution prevention and control	Youth and child employment
Environmental compliance, education and training, etc.	Gender ratio
	Working hours

Source: ILO/IGES (2014).

### Estimating green jobs

For quantifying green jobs, the study followed both the output approach, which identifies establishments that produce certified green goods and services and counts the associated jobs; and the process approach which identifies jobs associated with environmentally-friendly production process and practices, irrespective of whether the sectors concerned are considered to be environmentally-friendly or not.

The desk study approach followed in this report estimated the number of green jobs following the most appropriate method considering data availability. When the percentage of the size of environment-related "core" sub-sector relative to the whole sector is available, it has been used to deduce the percentage of employment of the environment-related "core" sub-sector as a whole. In some cases, initial default values were used. In the instances of no data availability, "what if" scenarios were applied to explore the effect on green jobs creation potential of a given sector.

### ECONOMY AND EMPLOYMENT STRUCTURE IN MALAYSIA

Growing by 6.5% from 1957 to 2005 Malaysian economy is one of the best performers in Asia. Per capita income is close to US\$8,000, making it an upper middle income country. With growth, poverty has decreased quite dramatically, although 2.3% of its population was still below poverty line in 2009. Malaysia has a highly open economy with diverse commodity exports. The economic structure developed from primary sector in the 1970s to manufacturing and now more



towards services. The country's labour force has also been improving in terms of possessing educational attainment. Unemployment rate has been relatively low, 3.3% in 2011. New vacancies (1.3 million in 2011), mostly in manufacturing, agriculture and construction sectors, outweigh the country's jobseekers (0.3 million) by a large margin. A large number of foreign workers (1.8 million in 2005) work in Malaysia, most of whom are employed in jobs that require lower skills.

A quick reference to the employment profile (in terms of contribution to the GDP and number of people employed) of Malaysia's economic sectors in 2011 is given in Table 4.

**Table 4** Major economic sectors of Malaysia, share in GDP and total employment

Sector	Share in GDP	No. of people employed (% of total)
Service	58.6%	6.5 million (53.3%)
Manufacturing	27.5%	3.5 million (28.7%)
Agriculture	7.3%	1.4 million (11.5%)
Mining and quarrying	6.3%	0.042 million (0.34%)

Source: ILO/IGES (2014).

Additionally, Malaysia's informal sector, which is important for understanding the distribution of economic risks and sources of income inequality, contribute comprise important share in the GDP. In 2005, this sector contributed approximately 10.7% to the GDP.

## RESULTS: SECTOR-SPECIFIC SCREENING CRITERIA AND ESTIMATED GREEN JOBS (A SNAPSHOT)<sup>2</sup>

This section discusses the current status of green jobs in the identified six sectors. Table 5 presents a quick summary of the findings.

**Table 5** Estimates of core environment-related jobs, decent jobs and green jobs

Green Sector	Total Jobs in the Sector	Core Env. Jobs	Decent Jobs	Green Jobs
Agri - culture	1,400,000	122,745	390,708	122,253
Energy	N/A	5,510	35,261	5,510
Water Waste - water	NA	9,960	9,960	9,960
Solid waste	N/A	15,780	15,780	15,780
Trans - port	312,962	46,577	46,577	46,577
Const - uction	974488	10,906 46,155	552,028	10,906 46,155

Source: Based on ILO/IGES (2014).

For each sector, the applied screening criteria as well as the results in terms of total number of environment-related and decent works, thereby green jobs are presented in more details in the following part.

### Agriculture

**Table 6** Environmental and decent work criteria in agriculture sector

Environmental criteria	Decent work criteria
Relevant national certification schemes for sustainable production (for farming, organic farming, fishery, forestry, palm oil)	Establishments covered by National Census are assumed to comply with decent work criteria

Source: ILO/IGES (2014).

Agriculture sector in Malaysia is an important economic sector in employment terms. In 2011, as many as 1.4 million people (11.5% of total) were employed in this sector, and it accounted for 7.3% of the country's GDP. The sub-sectors covered in this sector are palm oil, sustainable fishery, sustainable forestry, and organic agriculture. The total number of core environment related jobs in the agriculture sector was 122,745 in 2011. This accounted for 8.8% of total jobs in this sector. On the other hand, as many as 390,708 (27.9% of the total) persons are assumed to have decent work. Out of the jobs identified as environment related and decent, 122,253 jobs or about 8% of the total are considered to be green as they meet both the environmental and the decent work criteria.

### Energy

**Table 7** Environmental and decent work criteria in the energy sector

Environmental criteria	Decent work criteria
Various national policies, action plans and related benchmarks (for energy efficiency, solar PV, hydro, biofuel and biogas)	Jobs employed under power generation, transmission and distribution assumed to satisfy decent work criteria

Source: ILO/IGES (2014).

Malaysia's abundant fossil fuel resources have been the main energy source of the country. The country is also exploring nuclear energy as a long term fuel option as well as promoting the development of renewable energy. With Malaysian economic growth, its energy demand is increasing rapidly. As the country aims at becoming a greener economy, there are ample opportunities for green jobs creation in the energy sector. Currently the number of green jobs in this sector is very low. A total of 35,262 jobs in power generation, transmission and distribution were found to meet the decent work criteria. Among them as low as 5,510 jobs (2010 in renewable energy power generation and the others in one single solar power plant) were found to also meet the environmental criteria. This low number of green jobs, however, may be a low estimate as there is no data available for the total number of workers employed in the renewables industry.

<sup>2</sup> Refer to the full report for all sectors mapped "Green jobs mapping study in Malaysia: An overview based on initial desk research."

### Water and wastewater management

**Table 8** Environmental and decent work criteria in water and wastewater management sector

Environmental criteria	Decent work criteria
National water quality standards, various national strategies and policies, and related benchmarks (for water and wastewater management, and water use reduction)	Companies covered by the environmental goods and services (EGS) survey 2009 assumed to comply with decent work criteria

Source: ILO/IGES (2014).

Water comprises a major cross-cutting sector for Malaysia's national development. Agriculture sector is the single-most important water consumer (76% of total), followed by industries (13%) and municipal water demand (11%). Less than 1% is available for drinking water supply. Under this sector, three sub-sectors have been considered: water management, wastewater management, and water use reduction. A total of 9,960 jobs were found to be consistent with core environmental criteria. These jobs were distributed among water equipment and chemicals (1,020 persons), wastewater treatment (4,120 persons) and water utilities (4,820 persons). All these jobs were also found to meet the decent work criteria, making all of them green jobs.

### Transport

**Table 9** Environmental and decent work criteria in transport sector

Environmental criteria	Decent work criteria
Various national guidelines and benchmarks on emissions, resource efficiency etc. (in public transport, vehicle retrofitting, cleaner fuels, electric vehicles)	Average annual salary is above minimum wage; assumed that other decent work criteria are also satisfied.

Source: ILO/IGES (2014).

For an open economy like Malaysia which is heavily dependent on trade, the role of the transport sector is crucial. According to 2011 census results, the transport sector (including storage) employed 312,962 persons, and 85.2% of them were full-time employees. The identified sub-sectors in the mapping study were public transport systems, vehicle retrofitting, cleaner fuels, and electric vehicles. The screening criteria was applied on the land transport as most transport establishments (89.2%) are engaged in land transport. Among 150,248 persons employed in the land transport, 31% or 46,577 persons were

estimated to have environmentally-friendly work. The employments were also found to meet the decent work criteria, making all of them green jobs.

### Construction

**Table 10** Environmental and decent work criteria in construction sector

Environmental criteria	Decent work criteria
Private as well as government standards on green building, energy efficiency, green materials, recycling materials etc.	Average annual salary is above minimum wage; assumed that other decent work criteria are also satisfied.

Source: ILO/IGES (2014).

Malaysia's construction sector offers great potential for green jobs if their environmental performance deficits can be overcome. In terms of overall employment in the construction sector, the non-residential sector accounted for the largest share with 285,695 employments (29.3% of total), followed by civil engineering sub-sector (251,793 employments or 25.5 % of total), residential sub-sector (223,163 employments or 22.9% of total) and special trade sub-sector (213,837 employments or 22.0% of total). The mapping study found that a very small number of works among them, ranging from 1.11% to 4.74%, or 10,906 to 46,155 employments, can be considered as satisfying the environmental criteria. On the other hand, as many as 552,028 jobs were found to meet the decent work criteria. These jobs include the jobs that also meet the environmental criteria and hence total number of green jobs in this sector is the same as the range of 10,906 to 46,155 environment-friendly jobs.

## CONCLUSION

The mapping study proposed a conceptual framework for characterisation of green jobs in Malaysia and provided a selection of technical indicators in the environmental and labour fields used in this process. It offers an initial estimation of direct green jobs at the national level. However, the objective of the mapping study was not to establish accuracy of the green jobs estimates but to consider those numbers as guides in framing strategies to further clarify what green jobs are in the context of a particular sector, and to find ways how to effectively green that sector. Overall, the validity of the assumptions made is hinged on rational scenarios but more information is needed to validate them. The subsequent activities, consultations, focus group discussions and actual establishment surveys will provide the necessary data and insights to refine and further validate both the indicators use and the resulting green jobs estimates.

### Green Jobs Programme for Asia and the Pacific

Regional Office for Asia and the Pacific  
 International Labour Organization  
 United Nations Building, 10<sup>th</sup> Floor  
 Rajdamnern Nok Avenue  
 Bangkok 10200, Thailand

ILO Decent Work Technical Support Team  
 for East and South-East Asia and the Pacific

### Contact:

**Lorraine Baybay Villacorta**

Environment & Decent Work Specialist/  
 Coordinator, AP Green Jobs Programme  
 Tel: +66 2 288 2304  
 Fax: +66 2 280 1735  
 Email: villacorta@ilo.org  
 www.apgreenjobs.ilo.org