ASEAN

ASSOCIATION OF SOUTH-EAST ASIAN NATIONS

EMPLOYMENT AND ENVIRONMENTAL SUSTAINABILITY FACT SHEETS 2019

The Employment and Environmental Sustainability Fact Sheets series provides key features of employment and environmental sustainability performance. Jobs that are green and decent are central to sustainable development and resource productivity. They respond to the global challenges of environmental protection, economic development and social inclusion. Such jobs create decent employment opportunities, enhance resource efficiency and build low-carbon, sustainable societies. The fact sheets include the most recent available data for selected indicators on employment and environmental sustainability: (i) employment in environmental sectors; (ii) skill levels; (iii) vulnerability of jobs; (iv) jobs in renewable energy; (v) scoring on the Environmental Performance Index; and (vi) air quality.

DEMOGRAPHICS

The Association of South-East Asian Nations (ASEAN) is an intergovernmental organisation of ten South-East Asian countries (Fig.1). It comprises diverse cultural, economic and geographical characteristics. On average, the population is growing, with a mean fertility rate of 2.1 children, life expectancy of 73 years and, on average, 68 per cent of the population is of legal working age (15-64 years) (Fig.2).
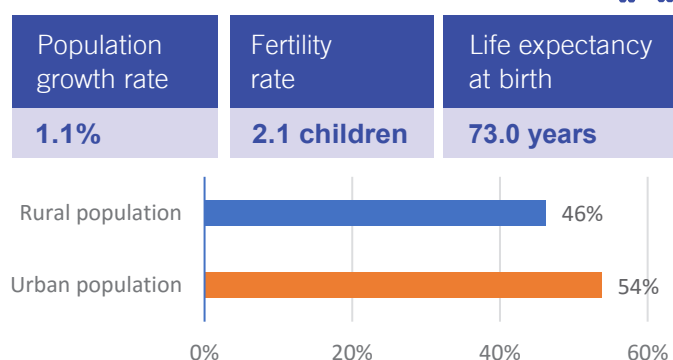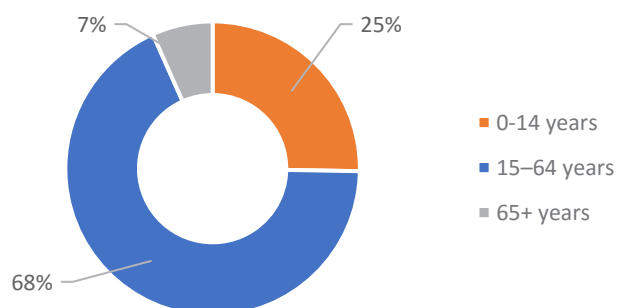
Figure 1. Map of ASEAN region

Source: commons.wikimedia.org/wiki/File:ASEAN-member-countries.jpg

Figure 2. ASEAN population statistics

Population:[2] 647.4 million

Population growth rate	Fertility rate	Life expectancy at birth
1.1%	**2.1 children**	**73.0 years**

Rural population 46%
Urban population 54%

Population age categories

7%
25%
68%

- 0-14 years
- 15–64 years
- 65+ years

Note: All data and graphs calculated from the latest data available.

Source: ILO compilation using World Development Indicators, last updated 21/05/2018; http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#; ESCAP Stat, http://data.unescap.org/escap_stat/ (all accessed on 18 July 2018).

[1] Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
[2] Population data based on 2017 data.

LABOUR FORCE

In 2018, the labour force participation rate in the ASEAN region was 70.3 per cent and the employment-to-population ratio was 66.2 per cent. The labour participation rates for men were 18 percentage points higher than those for women, whereas the difference is even higher for the employment-to-population ratio at 23 percentage points. The unemployment rate was 2.7 per cent and youth unemployment was 9.6 per cent, with near gender parity in both rates (Fig 3).

Employment in the services sector (at 43.7 per cent) provides one job in two in one-third of the region's countries: Brunei Darussalam and Singapore have more than 80 per cent of their employees working in the services sector. Agriculture (at 35 per cent) provides a significant share of employment for more than half of the region's countries. Six countries are heavily reliant on agriculture, with more than 30 per cent of their employment concentrated in agriculture; and the Lao People's Democratic Republic and Myanmar have more than 45 per cent of employees in agriculture. Within the region, some countries have less than 25 per cent of employees in industry, while half the region's countries have lower than 20 per cent and the Lao People's Democratic Republic has less than 10 per cent employment in industry (Fig. 3). Based on the data by occupation classification, 63.1 per cent of workers in the ASEAN region are employed in medium-skilled professions, with the Lao PDR having more than 90 per cent of employees in this professional range. Viet Nam has the highest rate of high-skilled professions (Fig. 3).

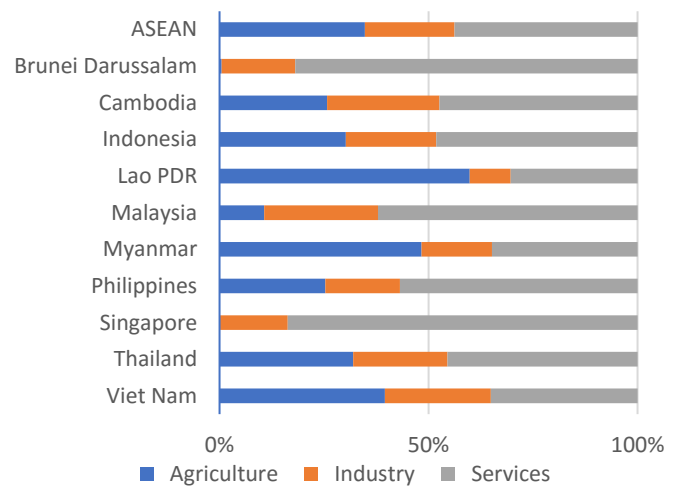### Figure 3. Basic employment statistics for the ASEAN region

Employment-to-population, 2018 (15+ years)
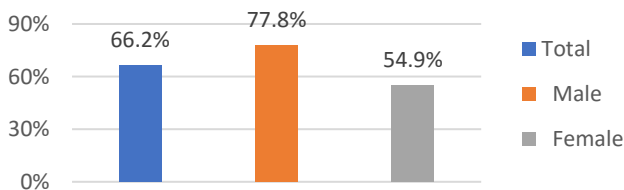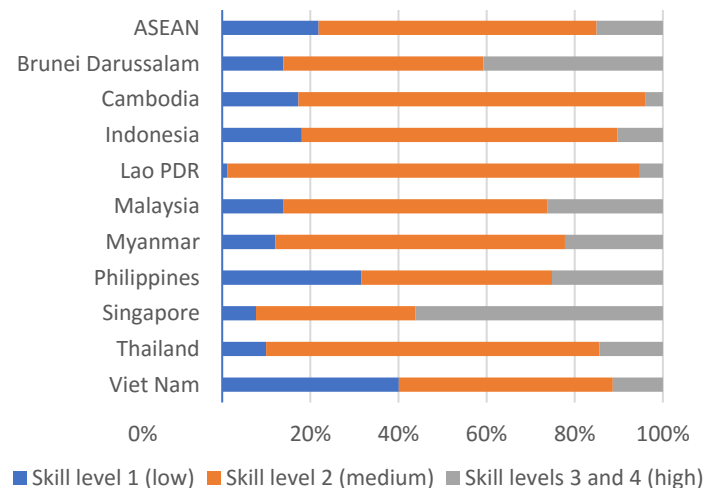

Unemployment, 2018
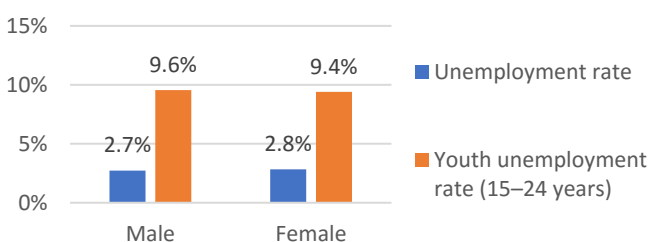
Employment by sector, 2018 (15+ years)

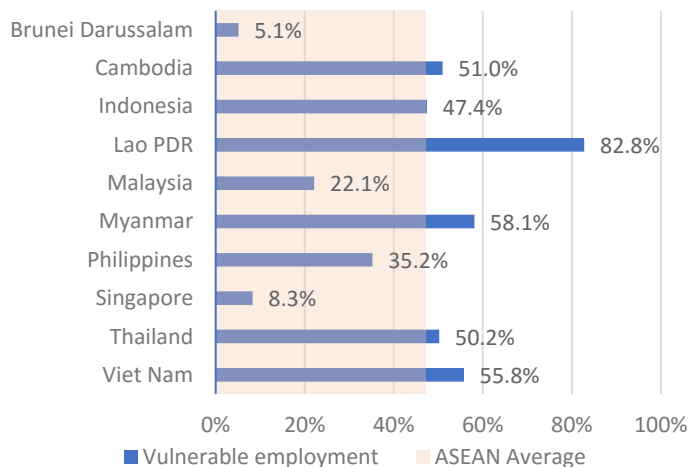
Employment by occupation, 2018

Note: ILO estimates data. Labour force participation rate and unemployment: aged 15 years and older. Youth unemployment: aged 15–24 years. Employment by occupation: skill level 1 (low) for elementary occupations; skill level 2 (medium) for clerical, service and sales workers, skilled agricultural and trade workers, plant machinists and assemblers; and skill level 3 and 4 (high) for managers, professionals and technicians.

Source: ILO estimates and compilation using ILOSTAT, www.ilo.org/ilostat (accessed 18 July 2018)

Across the ASEAN region, more than 47 per cent of the employment is classified as 'vulnerable'.[3] The Lao PDR has the largest concentration of vulnerable employees, at 83 per cent, probably due to its large reliance on agriculture, followed by Myanmar, Viet Nam, Cambodia and Thailand, all of which have more than 50 per cent of workers classified as vulnerable (Fig. 4). The proportion of vulnerable employees is less than 10 per cent in Brunei Darussalam and Singapore, possibly because these countries have less reliance on agricultural employment. Own-account and contributing family workers are more likely to experience low job and income security than employees and employers, as well as lower coverage by social protection systems and employment regulation.

[3] Vulnerable employment includes own-account workers and contributing family workers from ILO status of employment data.

Figure 4. Vulnerable employment, 2018

Legend: ■ Vulnerable employment   ▨ ASEAN Average

- Brunei Darussalam — 5.1%
- Cambodia — 51.0%
- Indonesia — 47.4%
- Lao PDR — 82.8%
- Malaysia — 22.1%
- Myanmar — 58.1%
- Philippines — 35.2%
- Singapore — 8.3%
- Thailand — 50.2%
- Viet Nam — 55.8%

Note: ILO estimates. Vulnerable employment includes own-account workers and contributing family workers from ILO status of employment data.

Source: ILO estimates and compilation using ILOSTAT, www.ilo.org/ilostat (accessed 13 June 2018).

Agricultural land area increased slightly from 2000 to 2015, while agricultural employment declined from 121 to 107 million. The share of agricultural employment within total employment fell by 15 percentage points over the years from 2000 to 2015 (Fig. 5). This decline probably reflects both mechanization and better working conditions resulting in higher efficiency within the agriculture arena and faster job creation in other sectors.

Figure 5. Agricultural land and agricultural employment, 2000-2015

Legend:
- Employment in agriculture (% of total employment)
- Agricultural land (% of land area)
- Agricultural employment (Million, 2nd Axis)
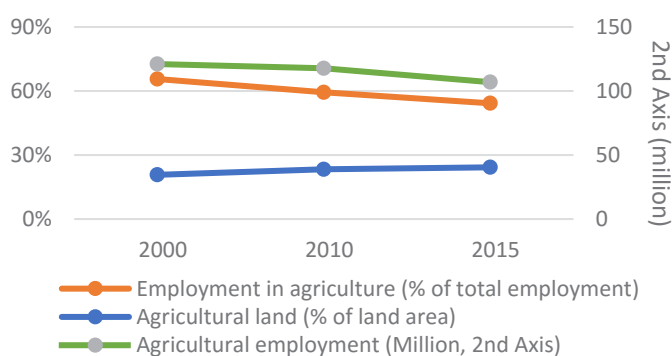
Note: Agricultural land area is the average data of ASEAN member countries.

Source: ILO compilation using World Development Indicators, last updated 21/05/2018; http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators# (accessed on 22 July 2018).
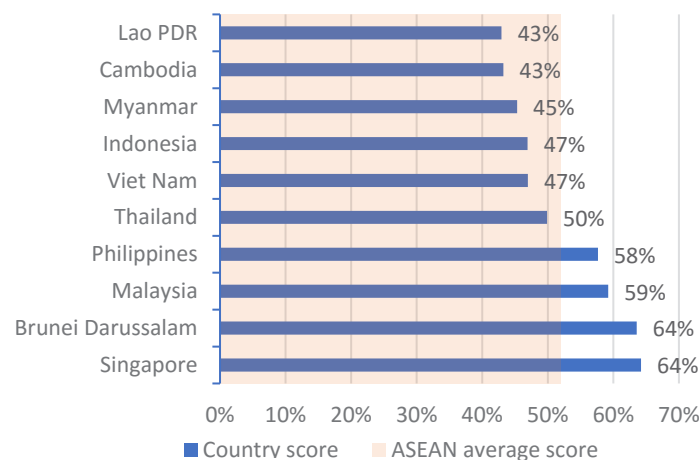
ENVIRONMENTAL ISSUES

The average Environmental Performance Index (EPI)[4] score for the ASEAN region is 52, with 0 being furthest from the high-performance benchmark target of 100.[5] Generally, countries with more more advanced economies show better environmental performance; high-income countries, such as Singapore and Brunei

Darussalam, are the best-performing countries, while lower-middle-income countries, such as Cambodia and Lao PDR, have the lowest EPI score (Fig. 6). There is significant room for improvement in all environmental areas, especially in forests, agriculture, and water resources particularly for lower-middle-income countries (Fig. 7). Measures to address climate change and improve environmental health, ecosystem vitality and resilience to weather disasters have the potential to spur job creation, green economy, growth and innovation.

Figure 6. Environmental Performance Index 2018 Score (0 worst - 100 best) for ASEAN countries
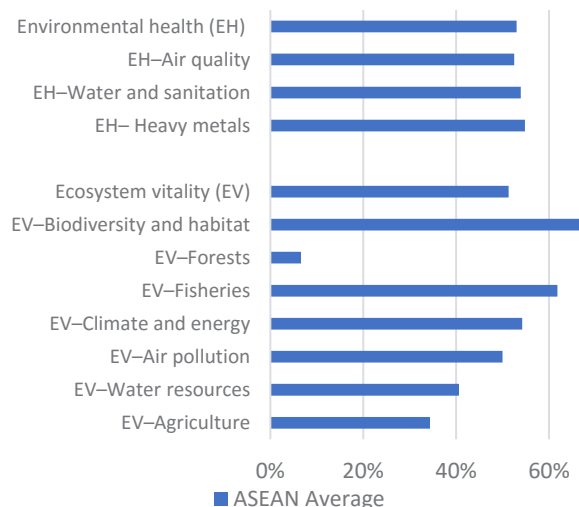

Legend: ■ Country score   ▨ ASEAN average score

- Lao PDR — 43%
- Cambodia — 43%
- Myanmar — 45%
- Indonesia — 47%
- Viet Nam — 47%
- Thailand — 50%
- Philippines — 58%
- Malaysia — 59%
- Brunei Darussalam — 64%
- Singapore — 64%

Note: Sorted by country score.

Source: ILO compilation using "2018 EPI Scores – Current". EPI Yale. Retrieved 14-06-2018. Available: https"//epi.envirocenter.yale.edu

Figure 7. Average ASEAN region EPI environmental category scores

Environmental Performance Index (2018)

Legend: ■ ASEAN Average

- Environmental health (EH)
- EH–Air quality
- EH–Water and sanitation
- EH– Heavy metals
- Ecosystem vitality (EV)
- EV–Biodiversity and habitat
- EV–Forests
- EV–Fisheries
- EV–Climate and energy
- EV–Air pollution
- EV–Water resources
- EV–Agriculture

Note: Sorted by country score.

Source: ILO compilation using "2018 EPI Scores – Current". EPI Yale. Retrieved 14-06-2018. Available: https"//epi.envirocenter.yale.edu

[4] Yale Center for Environmental Law & Policy / Center for International Earth Science Information Network at Columbia University. "2018 EPI Scores – Current". EPI Yale. Retrieved 14-06-2018. Available: https"//epi.envirocenter.yale.edu
[5] Average calculated from the scores for 10 ASEAN member countries

Marine protected area increased slightly over the 16 years from 1990, while terrestrial protected areas had notable increases and forest area decreased slightly (Fig. 8). Among the sectors with the greatest potential for green jobs creation, only agriculture currently has a large employment footprint in the ASEAN region.

## Figure 8. Forest area and terrestrial and marine protection 1990-2016
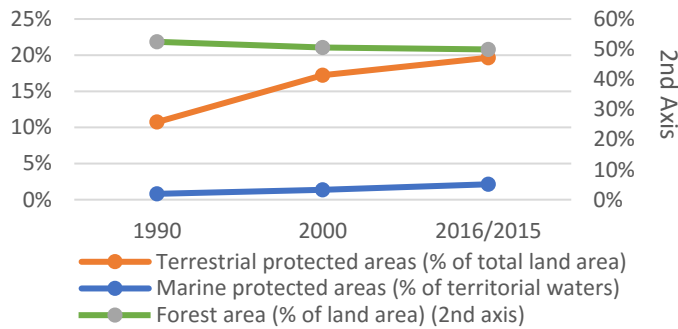
Note: The graph reflects averages for the ASEAN member states. The latest data for forest area is from 2015 and other data is from 2016.

Source: ILO compilation using World Development Indicators, last updated 21/05/2018; http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators# (accessed on 20 July 2018).

Since 2000, there has been a gradual increase in access to basic drinking water, to an average of 89 per cent in 2015, and access to basic sanitation to an average of 80 per cent in 2015 (Fig. 9). However, both are still below the ideal threshold of 100 per cent. Only 0.4 per cent of the labour force was employed in water supply, sewerage, waste management and remediation activities (Fig. 13). Improvement in water supply and sanitation access could provide decent job opportunities in the future.

Figure 9. Basic drinking water and sanitation access, 2000-2015
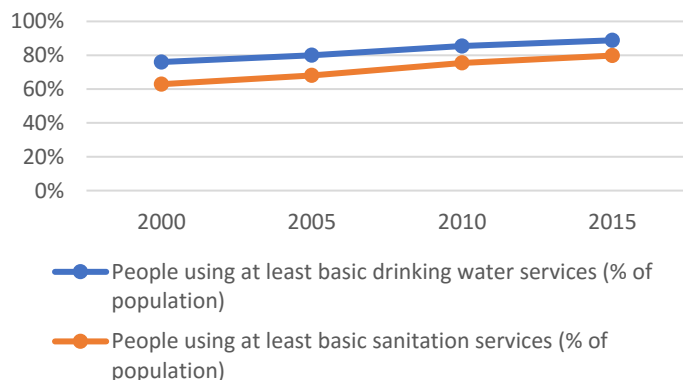
Note: Data is the average for the ASEAN member states.

Source: ILO compilation using World Development Indicators, last updated 21/05/2018; http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators# (accessed on 20 July 2018).

[6] The value is calculated on the basis of CAGR (compound annual growth rate).
[7] Global fire emissions database and CAIT, World Resources Institute. www.globalforestwatch.org.

AIR QUALITY

The aggregate carbon dioxide (CO_2) emission levels for the ASEAN region have increased gradually, by an average of 5.2 per cent from 1990 to 2014.[6] Among the top five CO_2 emitting countries in the ASEAN region from 1990 to 2014, Indonesia has the largest share followed by Thailand, Malaysia and Viet Nam (Fig. 10). One of the major reasons behind Indonesia's high CO_2 emission is the country's fire emission levels[7] due to forest fires and agricultural burning (small scale farmers using slash and burn method to clear vegetation for palm oil, pulp and paper plantations). Of the five countries in the ASEAN region with the highest CO_2 emissions, the Philippines had the lowest levels over the past 10 years.

Figure 10. CO_2 emissions in the ASEAN region, 1990-2014
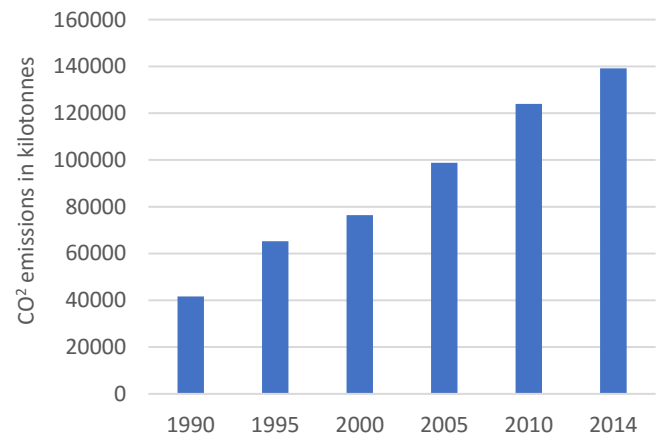
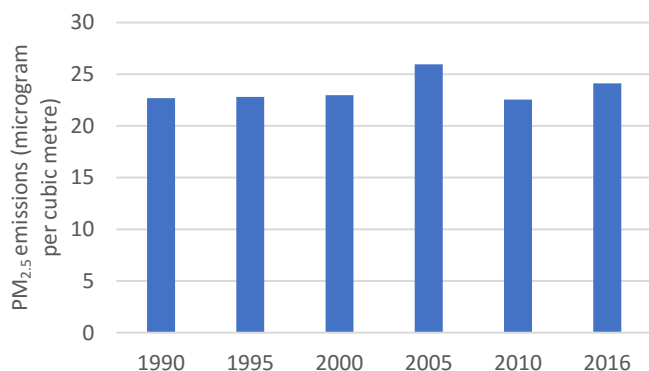## CO_2 emissions in the top five emitting countries in ASEAN
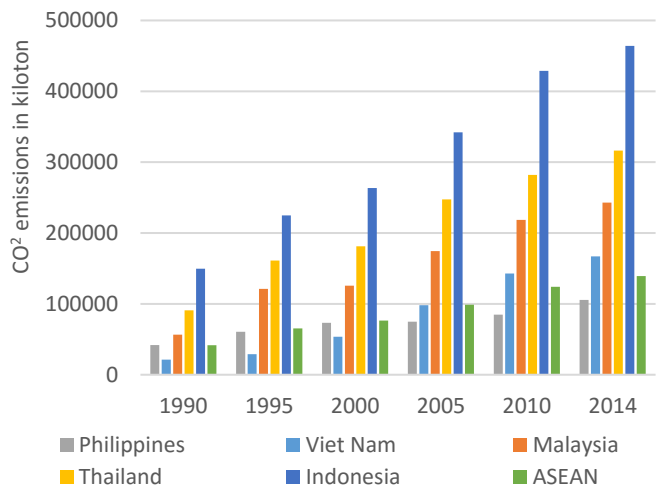
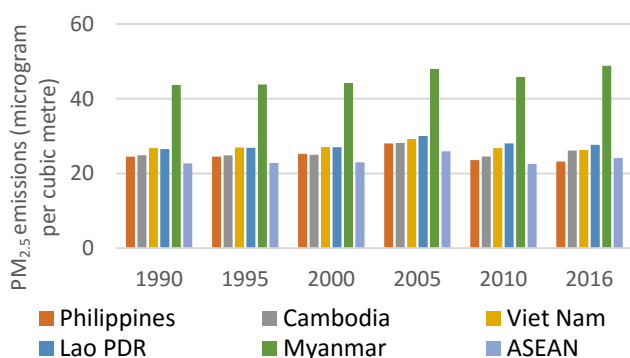Note: The graph is the sum of data from all ASEAN member states.

Source: ILO compilation using World Bank indicators. https://data.worldbank.org/indicator/EN.ATM.CO2E.KT (accessed on 23 July 2018)

The aggregate $PM_{2.5}$ (atmospheric particulate matter with a diameter of less than 2.5 micrometres) emission levels[8] for the ASEAN region have increased slightly by an average of 0.24 per cent from 1990 to 2016 (Fig. 11). Among the top five $PM_{2.5}$ emitting countries in the ASEAN region from 1990 to 2016, Myanmar had the highest rate because of high emission levels from transportation and coal-power plants[9]. It is followed by Lao, Viet Nam, Cambodia and the Philippines. The top five countries show a consistent level of $PM_{2.5}$ emission over the years. Applying the Just Transition Guidelines, an area of possible intervention includes efforts to reduce harmful emissions that can potentially generate green jobs in high emitting sectors such as transportation and fuel-intensive industries. Reducing emissions is a significant challenge –which can be achieved not only by mitigation methods but also by adapting to, and coping with, the changes required by the transition to a low-carbon economy.

Figure 11. $PM_{2.5}$ emissions in the ASEAN region, 1990-2016

### $PM_{2.5}$ emissions in the top five emitting countries in the ASEAN region

Note: The graph is the sum of data from all ASEAN member states.

Source: ILO compilation using World Bank indicators. https://data.worldbank.org/indicator/EN.ATM.PM25.MC.M3?view=chart (accessed on 23 July 2018).

CLIMATE CHANGE IMPACTS

According to the World Risk Report,[10] four ASEAN countries are among the top 20 countries globally that are most affected by disaster risks – they are particularly vulnerable due to exposure to natural hazards owing to their poor economic and social situations. The concern is that while only 4 per cent of the region's total land area is less than 5 metres above sea level, 9.6 per cent of the total population lives there.[11] According to the Emergency Event Database[12], there has been a general increase per decade since the 1980s in natural disasters,[13] and the value of associated damage costs (Fig. 12). Moreover, it shows that the damage costs have increased rapidly since 2000, although the number of disaster occurrences has decreased. Developing preventative measures to limit infrastructure and property damage and increasing institutional capacity to respond to climate events, particularly for small businesses, can be a source of decent job creation while building resilience.

Figure 12. Natural disaster occurrence and damage costs in ASEAN countries
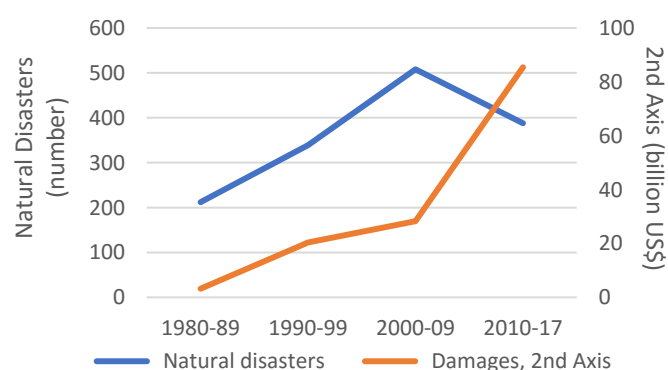
Note: Sum of data for ASEAN member states. Natural events include climatological, hydrological and meteorological.

Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium. Data accessed on: 20 July 2018.

GREEN JOBS POTENTIAL

According to recent data, 28.5 per cent of employment in the ASEAN region was in the agriculture, forestry and fishing sectors (Fig. 13). Although reliance on agriculture is already heavy, there are opportunities for additional job creation in the transition to sustainable production. There will also be increased job prospects in other sectors of the green economy where employment

---

[8] PM refers to Particulate Matters. Source: Brauer, M. et al. 2016, for the Global Burden of Disease Study 2016. Data provided by Institute for Health Metrics and Evaluation, University of Washington, Seattle. https://data.worldbank.org/indicator/EN.ATM.PM25.MC.M3?view=chart

[9] https://www.mmtimes.com/national-news/22840-myanmar-s-air-pollution-among-the-worst-in-the-world-who.html

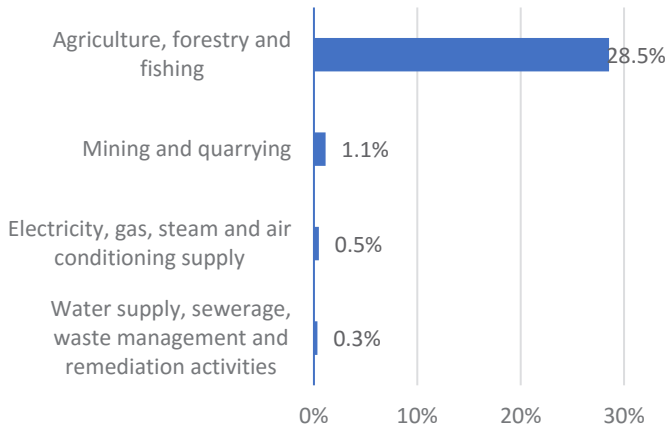[10] Bündnis Entwicklung Hilft and United Nations University – EHS (2016) World Risk Report 2016, available at: http://weltrisikobericht.de/english/

[11] World Bank (2018) Data: World Development Indicators, available at http://data.worldbank.org/data-catalog/world-development-indicators

[12] EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium. Date accessed on: 13 June 2018

[13] Climatological, hydrological and meteorological disasters.

Decent
Work

is currently much lower, such as new green jobs in resource management and protection, and natural resource utilization within public administration.

Figure 13. Employment in sectors with strong green jobs potential, ASEAN region

Agriculture, forestry and fishing — 28.5%

Mining and quarrying — 1.1%

Electricity, gas, steam and air conditioning supply — 0.5%

Water supply, sewerage, waste management and remediation activities — 0.3%

(0% — 10% — 20% — 30%)

Note: These sectors have the most potential for green job opportunities. Employment by selected 1-digit sector level (ISIC - Rev. 4, 2008).

ASEAN average calculated form the latest data available (2008-17). Myanmar, Philippines, Vietnam (2017); Malaysia, Thailand (2016); Indonesia (2015); Brunei Darussalam (2014); Cambodia (2012); Lao PDR (2010); Singapore (2008). Only data for mining and quarrying is available for Singapore.

Source: ILO estimates and compilation using ILOSTAT, www.ilo.org/ilostat (accessed 25 June 2018).

The share of renewable energy in total energy consumption has declined steadily from an average of 41.6 per cent in 2000 to 31.4 per cent in 2015 as other energy sources have grown more rapidly (Fig. 14). Nonetheless, three countries utilise more than 50 per cent renewable energy in their total energy consumption, with Cambodia using almost 65 per cent (Fig. 15). Total renewable energy electricity generation increased over the past 16 years, with a high reliance on hydropower (Fig 16). In 2016, the ASEAN region accounted for more than 6 per cent of the 10.3 million persons employed in the renewable energy sector worldwide (with 2 per cent in Indonesia and 1 per cent in Thailand).[14] Most of the region's employment is in liquid biofuels (53 per cent) followed by large-scale hydropower (19 per cent) (Fig. 17). The ASEAN average employment rate in electricity, gas, steam and air conditioning was 0.5 per cent in 2017. However, with the increasing reliance on renewable energy, these utility subsectors will provide new job opportunities in the future.
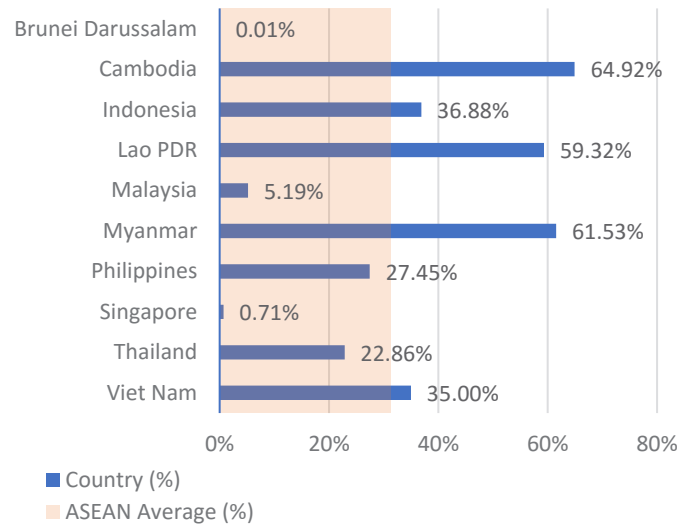
Figure 14. Trend in renewable energy share within total energy consumption, 2000-15
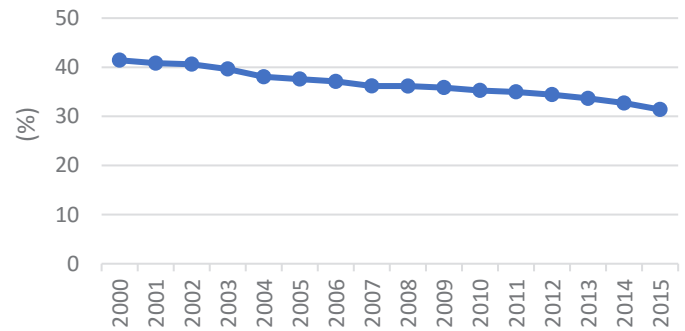
Note: Data is the average for ASEAN member states.

Source: ILO compilation using UN SDG indicators: Global Database. Available at: https://unstats.un.org/sdgs/indicators/database/ (accessed on 19 July 2018)

Figure 15. Renewable energy share within total energy consumption in 2016, by ASEAN country

Brunei Darussalam — 0.01%
Cambodia — 64.92%
Indonesia — 36.88%
Lao PDR — 59.32%
Malaysia — 5.19%
Myanmar — 61.53%
Philippines — 27.45%
Singapore — 0.71%
Thailand — 22.86%
Viet Nam — 35.00%

(0% — 20% — 40% — 60% — 80%)

■ Country (%)
▨ ASEAN Average (%)

Note: Data is the average for the ASEAN member states.

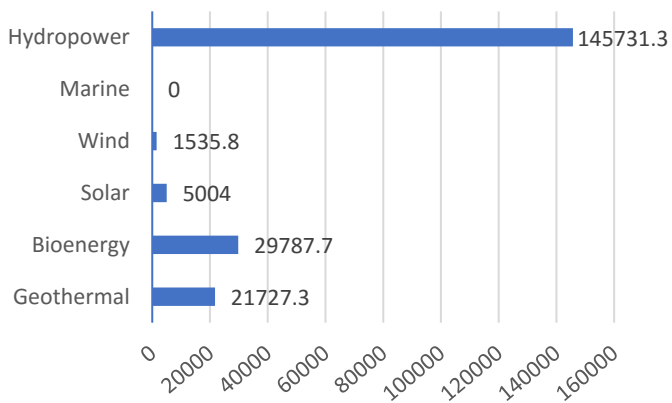Source: ILO compilation using UN SDG indicators: Global Database, last updated 30 November 2017. Available at: https://unstats.un.org/sdgs/indicators/database/ (accessed on 13 June 2018).

Figure 16. Renewable energy generation, ASEAN

Total renewable energy electricity generation (gigawatt hours - GWh)

72822.3 (2000) — 80136.2 (2005) — 120300.7 (2010) — 202587.4 (2016)
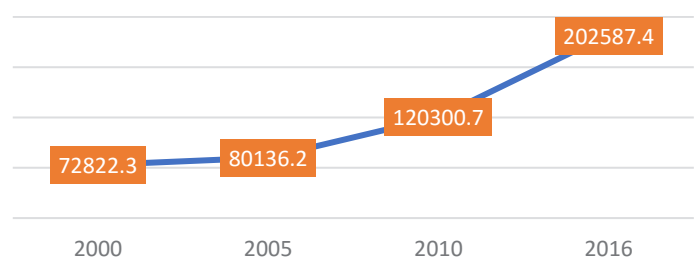
[14] Source: IRENA (2018), Renewable capacity statistics 2018, Last Updated on December 2017, available at: http://resourceirena.irena.org/gateway/dashboard/index.html?topic=7&subTopic=10

Decent
Work

Renewable energy electricity generation (GWh) in 2016, by technology

Hydropower — 145731.3
Marine — 0
Wind — 1535.8
Solar — 5004
Bioenergy — 29787.7
Geothermal — 21727.3

(x-axis: 0, 20000, 40000, 60000, 80000, 100000, 120000, 140000, 160000)

Note: The graph is the sum of data from all ASEAN member states.

Source: ILO compilation using IRENA (2018), Renewable capacity statistics 2018, updated on December 2017, available at: http://resourceirena.irena.org/gateway/dashboard/ (accessed 24 July 2018).

Figure 17. Renewable energy employment, by energy source, 2017
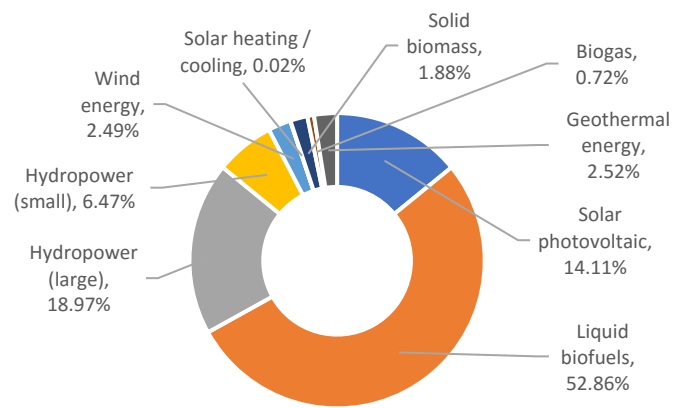
Solar heating / cooling, 0.02%
Solid biomass, 1.88%
Biogas, 0.72%
Wind energy, 2.49%
Geothermal energy, 2.52%
Hydropower (small), 6.47%
Solar photovoltaic, 14.11%
Hydropower (large), 18.97%
Liquid biofuels, 52.86%

Note: The graph is the sum of data from all ASEAN member states.

Source: ILO compilation using IRENA (2018), Renewable capacity statistics 2018, updated on December 2017, available at: http://resourceirena.irena.org/gateway/dashboard/ (accessed 24 July 2018).

Better data collection relating to the green economy and the environmental sector would be very valuable for policy-makers in ASEAN countries. Better data on green and decent jobs is particularly needed to assess the impact of climate change and climate-related policies on social inclusion. Without better data, it will be difficult to determine what policy changes are needed to assure a just transition to environmental sustainability and to monitor progress going forward.