

## Country Assessment Report

### Country/Region Name:

Malaysia is situated in Southeast Asia; bordered by Thailand, Singapore and Indonesia. It has a population over 31.5 million and GDP worth 358.5 billion. Its growth rate is 4.9%.

(World Bank 2018)

### Economic structure and activity:

Malaysia's has a market-based economy and regarded as one of the most open across the globe, with a trade to GDP ratio averaging over 130% since 2010. Since its independence in 1957, Malaysia's economy has significantly diversified, shifting from primarily agriculture and an exporter of raw materials (rubber and tin) to a robust manufacturing industry and service sector. The service sector accounts for the majority share of Malaysia's GDP (52.96) and its tourist industry has developed into one of the most popular destinations in Southeast Asia. Industry contributes 38.3% to the GDP, becoming a major destination for FDI is a hub for outsourcing components manufacturing. Malaysia is now one of the largest exporters of semi-conductor devices and other electrical goods in the world. The government intends to mature the manufacturing sector further by specialising in more high-tech products such as software. Agriculture 7.54 is the second largest producer of palm oil and large exporter of rubber and tropical timber.

(Statista 2018; World Bank 2020)

### Top private companies with RE commitments:

Region	Fuel Type	Installed Capacity (MW)	Generation (GWh)
Peninsular Malaysia	Natural gas	354.48	719.71
	Industrial process waste heat	11.49	17.99
	Diesel	399.03	11.06
	Empty fruit bunch	299.38	76.20
	Palm oil shell and fibre	5.38	0.45
	Palm oil mill effluent	4.85	7.14
	Wood dust	4.14	0.25
	Solar	1.00	0.12
	Hydro	2.13	5.28
	Palm oil waste	17.9	25.69
	Paddy husk	25.00	0.03
	<b>Subtotal</b>	<b>1,124.77</b>	<b>863.92</b>
Sabah	Empty fruit bunch	11.12	50.27
	Agricultural waste	6.50	0.61
	Diesel	4.15	73.22
	<b>Subtotal</b>	<b>21.77</b>	<b>124.10</b>
Sarawak	Natural gas	93.00	411.94
	Diesel	9.56	6.35
	Palm oil waste	19.90	34.66
	Wood/sawmill dust	23.90	52.56
	Others	5.05	6.91
	<b>Subtotal</b>	<b>151.41</b>	<b>512.42</b>
<b>Grand total</b>		<b>1,297.95</b>	<b>1,500.44</b>

**Generation and demand:** (type, MW, TWh)

**Table 1.** Total installed capacity and electricity generation by region and source (NEB 2015). IRE

The electrification rate is nearing 100% (currently 99.7%) and peak demand is 17,788 MW, as of 2016.

### Electrical Interconnection and import/export:

Existing interconnectors

- Thailand – Peninsula 380MW
  - Sadao - Bukit Keteri
  - Khlong Ngae – Gurun
- Singapore – Peninsula 450MW

Planned interconnectors:

- Singapore - Peninsula
- 2 Thailand – Peninsula 400MW
- Sarawak – Peninsula 3200MW
- Sumatra – Peninsula 600MW
- West Kalimantan – Sarawak 230MW
- Philippines – Sabah 500MW
- Brunei – Sabah and Sarawak 200MW

### Market Structure:

Malaysia has a vertically integrated government utilities with ring-fenced system operator and single buyer model. The sector is regulated by Tenaga Nasional Berhad in the Peninsula, Sabah Electricity Sdn Bhd in Sabah and Sarawak Electricity Supply Company in Sarawak, amongst some IPPs. There appears to be aspiration towards a competitive clearing wholesale market with potential disaggregation of the VIUs.

### Responsible Government Department: (include key contacts)

*Ministry of Energy, Green Technology and Water (KeTTHA)* is charged with creating policies and the legal framework for regulating the energy sector.

*Ministry of Natural Resources and Environment (RE)* is responsible for the management and conservation of natural resources, wildlife protection, land surveying and mapping administration.

[REDACTED] (Energy Commission) deals with the regulatory functions of KeTTHA).

Malaysian Green Technology Corporation (GreenTech Malaysia) is a government agency under the purview of KeTTHA. Its purpose is to encourage the development of green technology as an engine of socio-economic growth and sustainable development.

### Existing/Planned Energy Legislation: (is there a CPO)

Renewable Energy Act – passed in 2011 to establish a FiT in support of RE development. In order to benefit from the tariffs, developers must secure a Feed in Approval (FiA) from the Sustainable Energy Development Authority (SEDA) and create a RE Power Purchase Agreement at the Distribution Levels (eg. TNB, SESB, public power utilities).

No CPO evident.

### Environmental Legislation for RE:

The Sustainable Energy Development Authority of Malaysia (SEDA) is a statutory body formed under the Sustainable Energy Development Authority Act 2011. The key role of SEDA is to administer and manage the implementation of the feed-in tariff (FiT) mechanism

that has been implemented since 1st December 2011, whereby the implementation of the FiT mechanism is mandated under the Renewable Energy Act 2011. In Part III of the Renewable Energy Act deals with the connection, purchase and distribution framework for renewable energy, including renewable energy power purchase agreements (PPAs).

**Existing/Planned Certificate Systems:** (purpose, extent)

None found.

	2020	2030	2040	2050
Hydro	5,967	8,510	8,543	8,543
Natural Gas	14,439	24,837	37,667	51,467
Coal	13,067	18,511	29,311	43,311
Diesel / MFO	1,309	1,137	1,197	1,197
Biomass	867	888	916	916
Solar	1,349	2,619	2,679	2,679
Biogas	189	194	194	194
Others	39	39	39	39
<b>Total</b>	<b>37,226</b>	<b>56,735</b>	<b>80,546</b>	<b>108,346</b>

MFO = Medium Fuel Oil.

humidity and high rainfall volume. In comparison to neighbouring countries, wind potential is considered low, but there is plenty of potential for offshore and high-altitude areas where speeds between 9 and 11 m/s have been recorded. Malaysia's agricultural industry produces 168 million tons of biomass, including by-products from palm oil, rice, coconut, sugar cane and forestry. Biomass has the potential to deliver up to 2400 MW of electricity. Table 2 outlines the projected capacity for electricity sources until 2050.

**RE market potential:**

Malaysia is geographically well positioned to deliver a diversified energy mix, with significant renewable energy reserves. It is rich in hydro potential, with consistently high temperatures,

**Table 2.** Future installed capacity by source (IREA 2018).

**Market risks and challenges:**

The FiT is functioning, but the rates are insufficient for some renewable technologies when considering potential risks (financial, technical etc.) For example, the development of mini hydro projects often requires compensations to Aboriginal and other affected communities which increases the overall project cost.

A subsidy remains for fossil fuel projects and must be gradually eliminated and/or distributed to RE projects to incentivise clean energy installations.

(Abdullah et al. 2019)

**Extent of Engagement with Government:** (brief summary of any contact already made with the national government regarding certification in general and I-REC)

None.

**Expected response from Government:**

**Current Environmental Reporting in Energy:**

National system level only.  
No fuel mix disclosure at the consumer or supplier level.  
Renewables standard PPA terms have been reviewed and do not explicitly convey environmental attributes.

**Any other Relevant Information:**

Towards the Five-Fuel Strategy, the Malaysia policy has a target of Renewable Energy (FiT) being the source of 11% of electricity generation, which amounts to 2,080MW of installed capacity by 2020. The government is anticipating through to 2050.  
The Green Technology Policy (2009) seeks to bring low carbon technologies into mainstream

Report Prepared by	I-REC Services BV
Contributors	Jules CHUANG, Mt.Stonegate Andrea YU, Mt.Stonegate
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