



MALAYSIA



COUNTRY OVERVIEW

Since the 1970's, Malaysia has been one of the fastest growing nations in the region, with an average GDP growth of 6.5% per year. Initially, the country made good use of its abundant natural resources, from petroleum to timber, but from around the 2000's, Malaysia has transformed its economy towards higher value-added manufacturing, moving towards an innovation-driven, high-tech industrial phase. (Source: Focus Economics).

Since 2010, environmental protection in Malaysia has been slowly improving, along with the increase of green investment. The cleantech industry spent RM 2.89 billion (approx. USD \$0.7 billion) in 2019, 7% higher than the previous year, with most funding going to pollution management, followed by waste management and environmental assessment. This figure does not include renewable energy production, which constitutes the other part of the cleantech sector. (Source: Department of Statistics Malaysia).



SECTOR OVERVIEW

Since 2011, Malaysia has followed a more sustainable economic model, prioritising the reduction of the nation's carbon footprint, whilst increasing and improving investments in sustainable technologies. Malaysia has pledged to reduce its Greenhouse Gas emission intensity by 45% by 2030 (based on GDP), relative to 2005 levels. To achieve this ambitious target, Malaysia is guided by the Green Technology Masterplan (2017-2030) which outlines the strategic plans for green technology development to create a low-carbon and resource efficient economy, while aligning with the UN Sustainable Development Goals.

Renewable energy

Although Malaysia's energy is largely dependent on fossil fuels, the country is committed to the targets agreed under the Paris Climate Agreement to reduce carbon emissions from power by 45% by 2030, compared with 2005 levels. On top of this, the country's total renewable energy capacity from biomass, biogas, solar and small hydro power systems – is predicted to grow to 18,000 megawatts by 2035. This equates to powering up almost 12 million Malaysian homes every year. As of 2021, renewable energy contributes 18% of Malaysia's energy consumption with the largest energy source being hydropower, which provides 86% of the renewable capacity. The Malaysian Investment Development Authority plans for renewable energy excluding hydropower, to account for 20% of energy production by 2025, which essentially means construction of new solar and biomass plants. (Source: The Edge Markets)

As a sunny tropical country, **solar energy** has the highest potential in Malaysia and the government plans to introduce battery energy storage systems with a total capacity of 500MW in 5 years, which will enable storage of excess energy generated by solar panels for later use. The solar market is dominated by foreign companies, though there are some Malaysian companies mostly centred around Penang and Kulim, including TS Solartech, First Solar, JA Solar, Jinko Solar, and Panasonic Energy Malaysia. While the market is dominated by large businesses, there are opportunities for SMEs to supply niche technologies and related services.

Alongside solar, Malaysia has relatively abundant **hydropower** resources, representing about 17% of total renewable energy capacity. However, the development of major hydropower projects in Malaysia is generally undertaken by the utility companies such as Tenaga Nasional Berhad (TNB), Sarawak Energy Berhad (SEB) and the Sabah Electricity Sdn Bhd (SESB). The development of smaller hydropower projects below 30MW, is open to private parties and incentivised by the Feed-in Tariff (FiT) mechanism managed by the government.

Malaysia has substantial potential for **biomass energy** utilisation given its dense tropical forests and widespread agriculture. There are five major sectors contributing wastes to biomass energy in Malaysia – forestry (wood products), rubber, cocoa, sugar cane and oil palm cultivation. Biomass contributes about 14% of the approximately 340 million barrels of oil equivalent of energy used every year. The government's plan to make the palm oil industry more sustainable, includes the potential to generate between up to 7460 MW from palm waste kernels and shells with a further ca. 450 MW biogas from palm oil mill effluent. This includes units ranging from small scale factory or village power stations to large scale industrial plants. (Source: Taylor&Francis Online)

Water treatment

Malaysia receives an average annual rainfall of 3000 mm and over the past decades, the country's water resources have been a catalyst for the socio-economic development of the country. Dams and kilometres of pipelines and canals divert water from rivers to sustain domestic, industrial and agricultural needs. Lately, the water supply situation for the country has changed from one of relative abundance to one of scarcity.

Figures from 2020 published by the Malaysian Department of Environment and Ministry of Environment and Water, and WaterOut show a slight improvement in water quality, partly caused by the COVID-19 lockdown and closure of industry across the country during the nationwide Movement Control Order. However, factors such as population growth and urbanisation, industrialisation and the expansion of irrigated agriculture are imposing pressure on water resources, as well as contributing to water pollution. The government has implemented water treatment regulations and policies to create sustainable water usage and to ensure safe consumption. Reclaimed water from treated effluent is currently being tapped into as an alternative source of non-potable water. This initiative will contribute significantly towards reducing treated water usage which can be utilised for domestic consumption. Water reclamation also an initiative towards promoting circular economy.

Geographically, the highest demand for water treatment technologies is in Sabah and Sarawak, where rural development is behind the rest of the country. From the industry perspective, agriculture and food sectors are the largest users of water treatment facilities, followed by the oil and gas and the electronics and latex production industries. From a technological perspective, ultra-filtration and reverse osmosis technology segments have the highest business potential in Malaysia, as there are strict regulations regarding water discharge and conservation.

The market is largely dominated by domestic and foreign-domestic joint venture companies. Only a small part of the equipment is manufactured domestically and new, and technologically advanced membranes and filters are imported as demand is still growing.

Recycling and circular economy

In 2019, Malaysian authorities shut down 170 illegal recycling factories in a series of raids, as they neither had proper licences for undertaking waste management, nor complied with regulations. Parallel to this action, some 225 containers filled with plastic waste were returned to 21 countries. The government declared that Malaysia would not become a dumping ground for western waste, showing that solid waste treatment and recycling were now politically important.

Based on the latest statistics from Ministry of Housing and Local Government, the recycling rate in Malaysia has improved to 31.5% in 2021 (2020: 30.7%) and is predicted to achieve 40% by 2025. The government has adopted a 'waste to wealth' approach, where waste is no longer seen as something that is not wanted or needed, but as an economic asset. This has led the way to policies aiming to improve technologies in landfill operations, food waste management and generating value-added from food production side-streams, as well as implementing associated tax incentives. (Source: Brunel University).

The Malaysian plastic recycling directory lists 37 plants processing plastic waste into new materials. These focus mostly on high-value materials such as PET and HDPE, which are easier to collect from industry, have a higher value per piece and a higher weight. There is also a large potential market for polypropylene for recycling from food packaging, take-away containers and other items. The recycling industry, in terms of technology, is fairly developed, and produces 1.5 million tonnes of recycled plastics per year. One of the potential challenges for further growth is the provision and use of waste separation of domestic household recyclables, as it is largely driven by public behaviour and perception.



REGULATION

Malaysia has a very structured national level strategy for the development of Green Technology. Under the Green Technology Master Plan (GTMP), the government supports the uptake of green technologies through Feed-In-Tariffs, eco-labelling schemes, tax incentives and duty exemptions, as well as green technology financing schemes. Guided by the GTMP, Malaysia has a clear vision to a more sustainably driven development and economy, for both citizens as well as businesses.

Renewable energy

The core of the national renewable energy policy is implemented through the Large Scale Solar Programme 3 (LSS3) programme, non-solar renewable energy projects, and the setting up of an enhanced Net Energy Metering (NEM) system.

In practice, the most important instrument of government policy is the Feed-in Tariff (FiT) system, which requires Distribution Licensees to buy electricity produced from renewable resources at a fixed rate from Feed-in Approval Holders for a specific duration. By guaranteeing access to the grid and setting a favourable price per unit of renewable energy, the FiT mechanism will ensure that renewable energy becomes a viable long-term investment for companies, industries and individuals. Malaysia has a regulated electricity market and there are caps on installed renewable energy capacities to ensure that there are sufficient funds to make the FiT payments to renewable energy generators. Originally, most power in the FiT system came from solar sources, but the model has since been expanded to include small-hydro, biomass and biogas.

Recycling and circular economy

Malaysia plays an active role at the ASEAN level to address plastic debris and is developing a Circular Economy Roadmap to combat plastic waste nationally. The Malaysian government has recognised the need for greater responsibility from producers to improve packaging designs with less material and higher recyclability, and to support waste collection and separation. The Ministry of Environment and Water announced the formation of Malaysia Sustainable Plastic Alliance (MaSPA), a multi-stakeholder platform which consists of both public and private sectors along the plastic value chain who work collectively in an effort to transform the economic model of the plastics industry towards a clean and healthy Malaysian environment.

In Malaysia, some companies are already incorporating circularity into their products and packaging by switching to recyclable and recycled materials and creating packaging that can be reused. Ten industry leaders have teamed up to establish a voluntary and industry-driven Producer Responsibility Organisation called MAREA (Malaysian Recycling Alliance) with goals primarily revolving around enhancing collection, promoting the use of recycled and renewable materials as well as minimising post-consumer packaging leakage into the environment. The alliance currently comprises of Coca-Cola Malaysia, Colgate-Palmolive Malaysia, Unilever Malaysia, Nestlé Malaysia, Spritzer, Dutch Lady Milk Industries, Fraser & Neave (F&N) Holdings Bhd, Tetra Pak Malaysia, Etika Group of Companies and Mondelēz International Malaysia.

Water and wastewater treatment

The government has consistently measured water pollution for many decades and in 2017, around 43% of rivers were classified as slightly polluted or very polluted (11%). The main pollution source is sewage from household waste and from industry. Overall, Malaysia has strong structures to control water policy and to design and formulate policies relating to river water management. This includes governmental and non-governmental bodies, at the federal and state level, such as the National Water Services Commission, and National Water Resources Council. There are, however, serious issues in enforcing river water management and coping with rapid urbanisation, and run-off from agriculture. However, the Malaysian government has recognised the need for more effective implementation of Integrated Water Resources Management (IWRM) and is strengthening legislation and enforcement."

(Source: Science Direct)



MARKET ENTRY

While Malaysia is one of the more advanced economies in South-East Asia, the cleantech sector is relatively underdeveloped. The cleantech market is growing quickly, but certain segments like monitoring and measuring, remote operation in energy and water, recycling equipment or water treatment solutions need to be imported. This presents opportunities for ASEAN businesses, including SMEs to participate in related industries in Malaysia.

To enter the Malaysian cleantech market, foreign companies need to analyse market opportunities, prices, and applicable regulations to better understand the landscape. Companies can also participate in regional trade shows, trade missions and fairs to gain personal contacts and experience, and develop links to distributors, local business groups and networks. A successful market entry should focus on finding the most competent local distributor or other business partner. In the cleantech sector, success can rarely be reached without having a local partner. It is, however, not necessary at the first phase to establish a costly local branch or set-up a newly registered company in Malaysia.

Establishing a business network in Malaysia is not difficult, though it requires time and personal involvement. There are several channels where the first contacts can be made:

- MATRADE: This government body is the official trade promotion agency in Malaysia (www.matrade.gov.my) and offers a professional service. Their website includes a Malaysia Product Directory and Services Directory, and resident advisors can organise personal B2B meetings with their clients. MATRADE also hosts trade fairs.
- Chambers of Commerce and Industry: In Malaysia, each ethnic group (Malays, Indians and Chinese) has its own chamber of commerce.
 - The Associated Chinese Chamber of Commerce and Industry (ACCCIM) prides itself on the largest number of members, and 600,000 companies of all sizes are involved in their activities.
 - The Malay Chamber of Commerce Malaysia (Dewan Perniagaan Melayu Malaysia) provides services such as issuing certificates of origin, as well as offering business match-making services, and organising overseas trade missions.
 - The Malaysian Associated Indian Chamber of Commerce and Industry (MAICCI) provides good access to the otherwise closed Indian business community
- The Malaysian Photovoltaic Industry Association (<https://mpia.org.my/>) is also a good starting point.

Business opportunities

Business opportunities are different for manufacturers, technology providers, including engineering companies and consultancies, and potential main contractors/construction companies.

- Manufacturers can often find good distributors in Malaysia. However, competition is tough, and many European, American, Japanese and Chinese producers are present on the market. An interesting trend in 2021 is sensorification - the wide use of sensors to collect data for analysis and measuring equipment is increasingly being used by energy providers, water treatment facilities and utility companies.
- Technology providers, which can be traditional engineering companies with special knowledge or experience, or tech-consultancies also need local partners or to build up a local business network. Gaining some references is vital to be a successful bidder for large projects. Entering the Malaysian market as an engineering consultancy requires more time and effort than in the case of manufacturers.
- Main contractors: small or medium-sized construction companies can play the role of the main contractor in some cases, but generally after market entry, ASEAN companies are more likely to start as subcontractors to local companies. In the cleantech sector especially with the renewable energy sector, sales cycles are long, and can often take at least three years from the first steps to the first contract.

Most of the new contracts for small-scale projects are garnered by local companies, while some large-scale projects are often handled by industry leaders in Malaysia and may include foreign joint ventures. For smaller businesses, a more achievable form of market entry would be through distributors, agents, or representatives, instead of opening a business in the country, as a way to test the waters.

Public procurement

In the cleantech sector the largest contractors or project owners are state-owned bodies, including utility companies, which means that public procurement procedures are very important sources of financing. From 2014, there is a Government Green Procurement system in force which refers to the acquisition of products, services and work in the public sector, and takes into account environmental criteria to conserve natural environment and resources and to minimise the negative impacts of human activities. In practice, this means that the selection of procured products and services should be based on:

- Availability of standards - criteria or standards are available under the MyHIJAU Mark
- Readiness of local suppliers to help local manufacturers, especially SMEs
- Environmental impact - new green products or services should significantly reduce the carbon footprint, water or energy consumption, or the emission of other toxic substances

In summary, challenges to enter the Malaysian market for lower capitalised small businesses include non-legal obstacles, such as lack of references and in-sector specifications such as long sales' time, and long technology installation projects. In recent years, more and more foreign companies have started their operations in Malaysia, recognising the need to operate from inside the country.



TRENDS AND RECOMMENDATIONS

Under the recently published Twelfth Malaysia Plan 2021–2025, green economy has been given special focus in ensuring business sustainability and resilience. The adoption of circular economy, initiative towards a low-carbon nation as well as agenda in enhancing the energy and water sustainability are among the key areas that will help to boost green growth in the country. Businesses, especially SMEs, will be encouraged to further embrace the idea of sustainability and green concept in their design, production, logistics, consumption and waste management of products and services.

To combat climate change and reduce greenhouse gas emissions, Malaysia continues to promote cleaner fuels. Although Malaysia accounts for only 0.7% of global emissions, the government is committed to reaching its international goals. Several initiatives were undertaken to improve energy efficiency, including the formulation of the Energy Efficiency and Conservation bill in 2020 to regulate energy demand on electricity and thermal use. The accompanying regulations will push industrial companies towards more energy efficient operations.

As untouched water resources are scarce in Malaysia and citizens demand for safe drinking water is rising, it is certain that standards and pollution limits will be more strictly enforced in the future. This will result in increasing consumer prices, which will ultimately lead to the demand for more efficient utility services. It is also expected that the state-owned utility companies will need to spend money on improving their service performance.

Another notable global trend is the increasing importance of waste treatment, both municipal solid waste and industrial waste. Malaysia has its own timetable of installing circular economy segments, but the first steps should be to start a country-wide selective waste collecting system.

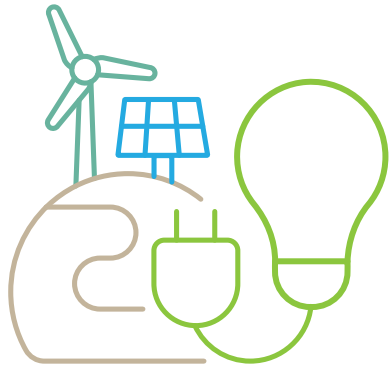
While the government's ambitious plans for expansion of renewable energy are welcome, there is a need to diversify energy sources to ensure stability in grid services. The efficient management of palm oil biomass will significantly increase bioenergy generation and decrease the demand for high-carbon fossil fuel-based energy. To promote both energy transition and transformation of the palm oil industry, the Malaysian government should establish an appropriate policy in collaboration with key stakeholders, to develop a comprehensive and inclusive national bioenergy policy.

As such, the cleantech sector and business circularity in Malaysia have massive untapped opportunities. Despite creating opportunities for businesses along the value chain, most businesses especially small players find it hard to see the commercial value in being better for the environment. They lack knowledge on the possible value-add that being part of 'clean environment' can bring them. Thus, it is essential to provide deep market insights that will give them access to local or international knowledge / data on cleantech and circular economy, information on best practices in local or regional market as well as benchmarking exercises for large and small players in other developing / developed countries.

Furthermore, with the current lack of awareness and interest of Malaysian consumers in sustainable products – which are often more expensive, there is a lower demand for such products in the market, which then make businesses reluctant to invest into a green business model. Change of mindset to switch towards sustainable consumption needs to happen at consumer level via education or incentives. Larger market penetration among sustainability-educated consumers will certainly attract more businesses towards a clean business model.

Zooming in to the key element of businesses which is the financial aspect, a special financial assistance that is customised towards circularity will be introduced to better cater for the clean and circular needs of green businesses including production capacity, raw material, R&D activities, innovation or talent. Economic instruments, environmentally motivated subsidies, government procurement and the existing green financing incentives will be leveraged to support businesses in greening their activities and change their business model towards circularity.

Moving forward, these initiatives are translated and further implemented under the policy document of the Twelfth Malaysia Plan 2021–2025. As Malaysia has a proven record of transforming its economy twice in a generation's time, we can presume that a sustainable and green economy is within reach as the adaptation and these mitigation strategies will meet people's expectations and global demand. Sustainable development of cleantech segments and circularity in Malaysia will continue to prosper as this sector could be the leader into a new economy.



CLEANTECH SECTOR BRIEF