ENERGY
CATALYST

Country Guide: Myanmar

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Myanmar is a country located in the western portion of mainland Southeast Asia. Myanmar (also known as Burma) is the largest and Northernmost country in Southeast Asia and is bordered by Bangladesh and India to the West/Northwest, China to the Northeast, and Laos and Thailand to the East/Southeast. Myanmar has a long coastline that borders the Andaman Sea and the Bay of Bengal. Its topography is dominated by central lowlands that are ringed by steep, rugged coastal mountains. The climate is considered tropical monsoon and has hot, humid summers with rain from June to September, and dry, mild winters from December to April.

Since 2011, Myanmar has undergone widespread policy reform, which has in turn led to substantial increases in foreign investment. Foreign investments increased from US $300 million in 2009–10 to US $20 billion in 2010–11.

In 2015, Myanmar held the first openly contested election since 1990. The results gave the National League for Democracy an absolute majority of seats in both chambers of the national parliament, enough to ensure that its candidate would become president.

Figure 1: Map of Myanmar. Source: d-maps

Economy

While Myanmar continues to have the poorest economy in Southeast Asia, it has also become one of Asia's most rapidly growing economies, showing a 6.4% growth rate in gross domestic product (GDP) in 2016–17. However, as of October 2017, less than 10% of Myanmar's population has a bank account and 24.8% of the population fall below the poverty line. The agriculture sector is the backbone of Myanmar's economy, making up 37.8% of gross domestic product (GDP) in 2017 and employing almost two-thirds of the workforce. Other sectors include manufacturing, natural resource extraction, power generation and services.

Myanmar's ranking in the World Bank's Ease of Doing Business 2020 list is 165th, jumping six spots from the previous year. Still, with a score of 46.5, Myanmar ranks the lowest among all countries in Southeast Asia, making it the least favourable ASEAN member in which to conduct business. A World Bank report, however, listed Myanmar among the top 20 improvers in its Doing Business 2020 report citing many areas of improvement, including the launching of an online company registration platform, strengthening of minority investor protections by requiring greater disclosure of transactions, and making the process of obtaining building permits more efficient by introducing service quality standards.

Table 1: Myanmar at a glance

Capital	Naypyitaw
Area	676,575 km²
Population	53.71 million (2018)
Official languages	Burmese
Rural Population	69% (2018)
GDP	US $ 71,215M (2018)
GDP Per Capita	US $ 1,244 (2019)
Currency	Burmese Kyat (K)
Exchange rate 2020	1 GBP = 1707.27 Kyat
Exchange rate 2018	1 GBP = 1895.6 Kyat
Access to Electricity	86.5% (2019)
On grid electricity access	38.6%
Off grid electricity access	48.0%

Figure 2: The ease of doing business scores and rankings of ASEAN countries in The World Bank's Doing Business 2020 report. Data from: World Bank Group, 2020

The energy sector in Myanmar

As of 2019, Myanmar had an installed electricity generation capacity of about 5,700 MW. This is made up of 3,255 MW of hydropower and 2,387 MW of thermal power using gas, oil, and coal, and up to 140 MW in solar power.

As of 2017, according to the World Bank, 86.6% of households in Myanmar had access to at least one source of electricity, with 38.6% having access through the national grid and 48.0% having access through off-grid solutions, including the 11.4% that have access through a solar home system (SHS). There are big differences between regions; Kayah State (96%) and the Yangon Region (79%) lead in electrification, while rates in Rakhine, Chin, Kachin, Ayeyarwady, and Tanintharyi fall below 20%. The country plans to achieve 100% electrification by 2030 and is targeting 12% of all electricity to be generated from renewable sources by 2025.

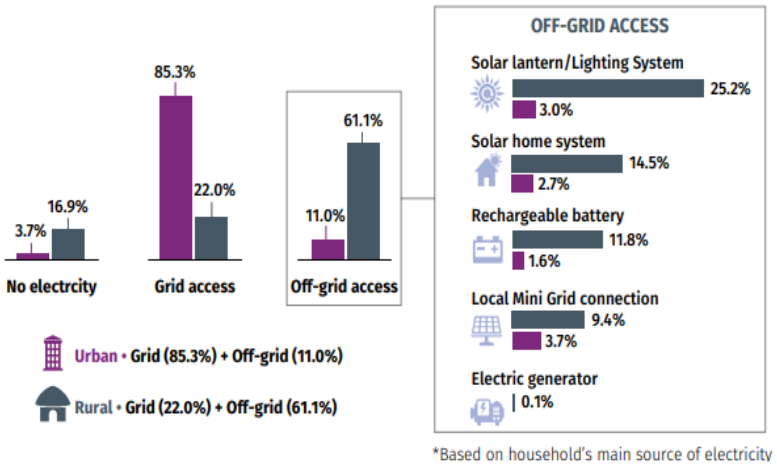

Figure 3 Access to Electricity by Technology, Urban and Rural. Source: World Bank Group, 2019

In January 2020, Mandalay Electricity Supply Corporation, Electricity Supply Enterprise, Ministry of Electricity and Energy (MoEE) and HISEM signed a contract agreement to launch the second phase of the National Electrification Project (NEP). The objective of the NEP is to help increase access to electricity in Myanmar. There are four components to the project:

1. Grid extension to support the distribution utilities to extend distribution networks and connect communities and households to the national power grid
2. Off-grid electrification to help the estimated 5.5 million households that remain without access to the national grid until at least 2021.
3. Technical assistance and project management to provide support to strengthen institutional capacity, to implement the national electrification plan and improve the policy and regulatory framework related to electrification and renewable energy
4. Contingent emergency response (CER): with an initial allocation of zero dollars, this is part of IDA's support of an Immediate Response Mechanism (IRM) in Myanmar

Table 2: Overview of the main stakeholders in the energy sector in Myanmar

Institution	Role
Ministry of Electricity and Energy (MOEE)	Establishing and implementing policies and regulations related to electrification Promoting foreign direct investment across the sector
Myanmar Engineering Society	Energy exploration, including finding geothermal project sites
Ministry of Environmental Conservation and Forestry (MoECaF)	Directs environmental and sustainability initiatives Monitors biomass and fuel wood production
Department of Rural Development (DRD)	Responsible for off-grid electrification
Ministry of Science and Technology	Leads renewable energy research, development, and deployment
Ministry of Industry	Leads electricity-related standardisation Promotes the involvement of private sector in state-owned enterprises for enhancing the private sector development
Renewable Energy Association Myanmar (REAM)	Information, education and communication are the three main services provided by REAM, to promote the use of renewable energy

Small hydropower

Hydropower is the country's main source of energy for electricity generation, representing about 55% or 3,331 MW of the power generation mix, including small and mini-hydropower plants. The NEP has laid out initiatives to triple hydropower capacity to reach 9,000 MW by 2030, and as of 2017, there were 69 identified hydropower totalling 43,848 MW in various stages of development.

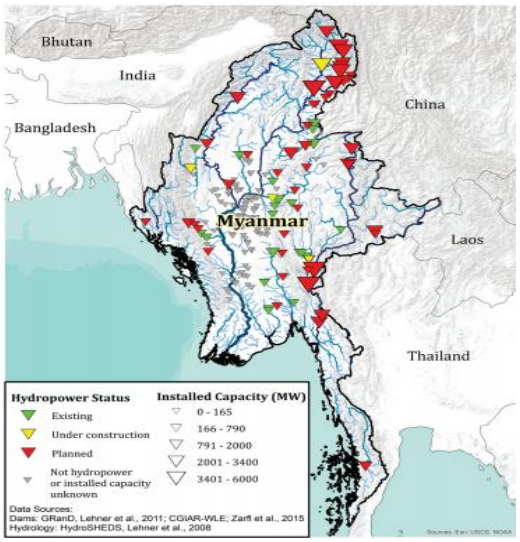

Figure 4 Map of hydropower projects in Myanmar. Source: TNC, WWF, and the University of Manchester, 2016

Solar power

Solar power in Myanmar has the potential to generate 51,973.8 TWh/year, with an average of over 5 sun hours per day and an average solar irradiance of 4.5–5.1 kWh/m^2/day. Even though most electricity is produced from hydropower in Myanmar, the country has rich technical solar power potential that is the highest in the Greater Mekong Subregion. Currently, Myanmar only has one utility-scale solar power project that has reached full commercial operation: the 170 MW Minbu solar project, located in Minbu Township, Magway Region. As the seasonal variability in the country is very low, vast parts of Myanmar have very good potential for the development of solar power generation, predominantly in lowlands of the central part of the country where demand is also the highest. Monsoon season reduces solar radiation in southern and coastal regions from June to August, so microclimate features should be considered in future planning.

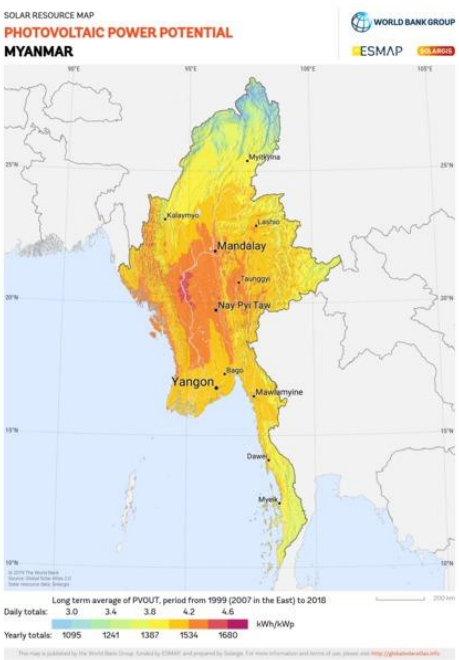

Figure 5 Solar PV potential in Myanmar. (2019 The World Bank, Source: Global Solar Atlas 2.0, Solar resource data: Solargis)

There are many challenges in implementing solar projects in the country. Firstly, there is much regulatory uncertainty, given that Myanmar's power sector is still a vertically integrated monopoly under the state-owned Electric Power Generation Enterprise (EPGE). Secondly, electricity tariffs in Myanmar are highly subsidized, making electricity in Myanmar the cheapest among neighbouring countries. Last year, the subsidies amounted to USD $330 million. Thirdly, there is a lack of policies targeting renewable energy developments. The NEP does not place much emphasis on renewable energy, with wind and solar being limited to 10% of the total capacity mix. Ultimately, the attraction of private investment at the lowest possible cost is the main goal to foster utility-scale solar.

Wind power

There are currently no operating utility-scale wind power projects in the country. Based on feasibility studies, however, there are 10 project areas in Chin State with the potential to generate a total of 1472 MW, 10 in Rakhine state with the potential for 1484 MW, five project areas in Ayeyarwady region

with the potential for 478 MW and two in Yangon region with the potential for 274 MW, according to the MOEP.

Geothermal

Myanmar is rich in geothermal resources which could additionally fulfil the energy requirements of the country for heat and power generation. There are 93 potential locations in Myanmar commercially suited for generating geothermal energy, though no projects have been initiated or completed. Hot springs are found in Kachin State, Shan State, Kayah State, the Southern Part of Rakhine State in Kyaukphyu, Central Myanmar Area, Shwebo-Monywa Area and especially in Mon State and Tanintharyi Division.

Biomass

Myanmar has an abundance of biomass energy sources due to the agriculture-based economy and 48% of forest cover. The major biomass sources in Myanmar are fuelwood, wood residues, rice husks, rice straw, coconut residues, sugarcane residues, palm oil residues, cassava residues, maize residues, manure from livestock and poultry sector. It is estimated that biomass energy makes up around 50% of total energy consumption in the country.

With proper engagement of all stakeholders and sound policy, biomass energy could be sustainably developed to increase energy self-sufficiency and promote utilization of renewable energy sources in the future.

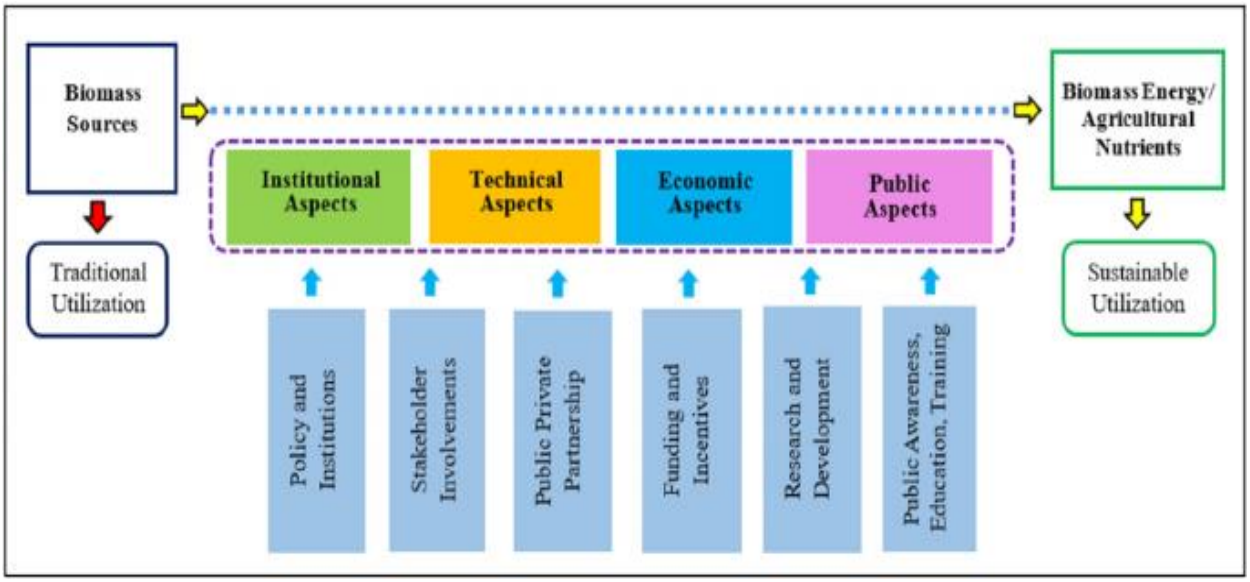

Figure 6 Challenges and possible solutions to the development of biomass energy in Myanmar

Mini grids

Across Myanmar, there are already numerous mini grids in operation powered by diesel generators. A project launched by ADB and the DRD in 2017 set up 12 mini-grid pilot projects in rural villages throughout Myanmar, seeking to understand the viability of mini grid systems in the country. Research showed that the potential for further mini-grid development in the Dry Zone is large, particularly in the Magway and Sagaing region, where renewable resources are readily available. However, due to a lack of regulatory frameworks, there is uncertainty about what happens when the new grid arrives at villages with mini grids, which leads to hesitancy from investors and developers.

References and further reading

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Myanmar Energy Sector Assessment, Strategy and Road Map
https://www.adb.org/sites/default/files/institutional-document/218286/mya-energy-sector-assessment.pdf

Developing Renewable Energy Mini-Grids in Myanmar
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A SWOT Analysis of Utility-Scale Solar in Myanmar
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https://www.doingbusiness.org/en/data/exploreeconomies/myanmar

DRD Solar Home Systems (SHS) in Myanmar: Status and Recommendations
https://energypedia.info/images/2/20/Assessment_of_DRD_SHS_Myanmar25Jan15-Greacen.pdf

Official UK Government travel advice for Myanmar
https://www.gov.uk/foreign-travel-advice/myanmar

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