1. Country Assessment Report

Country/Region name:
Myanmar/Southeast Asia

Myanmar has long struggled with low levels of electrification, holding the lowest grid-connected rate in Southeast Asia at just 38% in 2016-17, though this marked a significant increase from 16% in 1995. By 2019, electrification had risen to 50%, with urban areas like Yangon City leading at 83%, followed by Loikaw (77%), Mandalay (56%), and Nay Pyi Taw (39%). However, the military coup in 2021 has reversed much of this progress, causing widespread degradation of the national grid, diminishing access to reliable electricity, and significantly affecting power supply across the country. Energy consumption per household in urban areas, which averaged 435 kWh per month before the coup, and 300 kWh in rural areas, has been severely disrupted.

Generation and demand (type, MW, TWh)

The Department of Power Transmission and System Control (DPTSC) is responsible for developing, regulating, and implementing the Myanmar National Grid System. The DPTSC is part of the Ministry of Electric Power (MOEP), which controls the electricity industry in Myanmar.

Myanmar's installed electricity generation capacity has seen a significant decline in recent years. As of December 31, 2022, total installed capacity had reached 7,179 MW, but only 4,500 MW was available for dispatch, with the energy mix consisting of 42% hydro, 53% natural gas, 3% solar, and 2% coal.

A World Bank survey revealed that 95% of local firms in Myanmar have experienced power outages, with more than half relying on diesel generators as backup. In response to the ongoing power challenges, the junta government recently announced a hike in electricity tariffs. While this increase is expected to raise living costs and business expenses, potentially leading to inflation and economic instability, it also holds some potential for positive change. The additional revenue could help fund much-needed energy infrastructure improvements, though it may deter foreign investment in an already high-risk environment. On the other hand, the higher costs may spur greater adoption of renewable energy solutions, such as Commercial & Industrial (C&I) solar and large-scale solar projects and promote energy efficiency—laying the groundwork for a more sustainable energy future.

RE Market Potential

Historically Myanmar has benefitted from renewable energy due to the many grid-connected hydropower plants. With installed hydropower capacity of ~3.2GW, hydro provides up to half of all power supplied to the national grid. However, due to financial, maintenance, security and logistics constraints, many of Myanmar's hydropower turbines are either turned off or only operating intermittently. According to World Bank estimates, the aggregate power output of Myanmar's hydropower plants are only at about 50% of installed capacity. While the hydropower potential of Myanmar is vast – as much as 39GW – development of hydropower plants has come to a halt due to the constraints of the coup as well as concerns around the environmental impact of development of new dams for hydropower.

Myanmar's theoretical solar energy potential is estimated at about 51,973.8 TWh per year. The solar radiation intensity in Myanmar is more than 5 kWh/m^{2}day during the dry season. In the context of this large potential solar resource, the large decline in the costs of solar PV modules and enabling technologies provides Myanmar with the opportunity to also significantly decarbonize its electricity system. Under the pre-coup government's National Electrification Plan, the projected renewable energy installed capacity in 2030 is 2000 MW. Although this target is uncertain under the current conditions, a significant rise in the adoption of solar by businesses, households and rural communities can be expected.

Due to the current political situation, it is unlikely that Myanmar will see utility scale solar plants installed in the near future. Much of the adoption is expected to be driven by DRE installations catalyzed by private financing from local commercial banks and, to a lesser extent, by international donors.

Electrical interconnection and import/export

Cross-border electricity connections have existed between Myanmar and China for years, allowing import and export between two of Myanmar's hydropower plants and China. In 2020, Myanmar exported approximately USD $34 million worth of electricity to neighbouring countries, though specific details about these exports are limited. One known example is the Shweli 1 hydropower plant, which exports 200 MW of its 600 MW capacity to China.

Myanmar's cross-border energy trading is primarily governed by the Electricity Law of 2014, which outlines the legal framework for electricity generation, transmission, distribution, and trade within and beyond Myanmar's borders. This law empowers the Ministry of Electricity and Energy (MOEE) to oversee and regulate cross-border energy transactions. In addition, in March 2018, Myanmar, China, and Bangladesh signed an agreement on trilateral power trade.

Since early 2023, electricity imports from China to Myanmar's border trade posts have increased. While expanding the power import-export capacity between the two countries remains feasible, progress on building the necessary infrastructure has been slow. A project to import 1,000 MW of power via a high-voltage transmission line between Northern Shan State in Myanmar and Yunnan Province in China has been under discussion for years. Although included in Myanmar's Generation Plan 2018-19, with a completion target of 2025, technical and commercial discussions between the utilities have made little progress, and construction of the high-voltage transmission line has yet to begin on either side.

Historical support or development of renewables in the country/region

Myanmar has installed 240 MW of grid-connected solar PV power plants to date. While there were plans to expand this capacity, with the pre-coup civilian government issuing tenders in 2020 for 30 new solar power plants, only one of these projects was completed and commissioned. The remaining 28 contracts have since been cancelled.

Given the lack of new utility-scale solar projects to help bridge the country's growing supply-demand gap, off-grid Distributed Renewable Energy (DRE) solar has emerged as the most accessible and reliable alternative. Many businesses have already installed rooftop solar systems, and several companies are offering solar home systems to households. With financial and technical support from Smart Power Myanmar, banks are increasingly willing to lend to businesses seeking capital for solar installations. This shift has been further accelerated by the sharp rise in diesel prices—up more than fivefold since the coup—leading to sustained demand for off-grid solar solutions.

As of April 2023, the Ministry of Planning and Finance announced exemptions from customs duties for solar panels and related components, including charge controllers, inverters, and installation systems, under the

Union Tax Law 2023. These exemptions are applicable only when the components are imported together with photovoltaic solar controllers and batteries. While this move has made solar systems more accessible to businesses, the bureaucratic customs process can still lead to significant delays in the import of solar panels and equipment.

In March and April 2023, the Electricity Supply Enterprise and Yangon Electricity Supply Corporation introduced feed-in tariffs for small-scale solar systems in Nay Pyi Taw and Yangon. The tariff is set between 80-85 MMK/kWh, which is significantly lower than the cost of grid-supplied electricity (between 3-500 MMK/kWh), making the feed-in tariff largely unattractive for power producers.

Electricity market structure

Electricity Power Generation Enterprise EPGE, the entity then responsible for gas fired electricity generation and transmission, was the single buyer having the authority to purchase electricity from different operators including IPPs through individual power purchase agreements and sell it to state-owned distributors. In 2016, Myanmar Electric Power Enterprise's functions were split between the Power Transmission and System Control Department and EPGE. Single buyer responsibility is now allocated to EPGE.
The private sector has previously demonstrated strong interest in developing commercially operated power plants. These projects are at various stages of development. Since 2013, 620 MW of gas-fired IPP projects have been added, representing 40% of the total gas-fired power output. Since the 2021 coup, interest from international investors in funding new power plants has largely disappeared.

Description of renewables support mechanism

While many Southeast Asian countries have comprehensive renewable energy policies like feed-in tariffs, net metering, and auctions, Myanmar lacks such regulatory mechanisms, or the mechanisms are offered un unsustainable terms. Unlike its neighbors, Myanmar has no guaranteed offtake, renewable portfolio standards, or net metering in place. The operation of behind-the-grid/DRE infrastructure such as C&I solar is not limited by the electricity law.

This absence of government support forces project developers and businesses to rely on private sector or development agency assistance. Smart Power Myanmar is currently the only in-country to enhance DRE ecosystem by offering technical support and financial guarantee for commercial and industrial (C&I) solar projects. Although foreign investors can benefit from general incentives under the Myanmar Investment Law, these are not tailored to renewable energy needs.

Responsible government department (include key contacts)

The military government manages much of Myanmar's power infrastructure, and there are significant challenges in their ability to effectively implement renewable energy projects. The lack of trust in the government, established regulatory mechanisms for renewables, combined with bureaucratic inefficiencies, often leads to delays and inconsistencies in project execution. These factors pose substantial risks for developers and investors working with government stakeholders. Given these challenges, Smart Power Myanmar suggests focusing on partnerships with the private sector or development agencies, which offer more reliable and efficient support, particularly in commercial and industrial (C&I) solar projects.

The regulatory framework for the power sector in Myanmar includes the Electricity Act of 1948 (as amended in 1967), the Myanmar Electricity Law (1984), the Electricity Rules (1985), Updated Electricity Law (2014), and Electricity Rules (2015).

The power sector is under the mandate of Ministry of Electric Power (MOEP) and the Ministry of Electricity and Energy (MOEE). The ministries have distinct responsibilities, although they are closely related, as both play important roles in managing the country's energy and electricity sectors:

- **Ministry of Electric Power (MOEP)**:
  The MOEP historically focused on electricity generation, transmission, and distribution in Myanmar, specifically overseeing the operation and development of power plants (hydropower, thermal, and renewable energy) and the national grid. The ministry's primary role was to ensure the country's power generation capacity and electricity distribution to meet growing demand.
- **Ministry of Electricity and Energy (MOEE)**:
  The MOEE was established as a broader ministry that merged responsibilities for electricity and the energy sector as a whole. It manages not only electricity generation and distribution but also oil and gas exploration, production, refining, and distribution. The MOEE plays a more comprehensive role in Myanmar's energy infrastructure, covering both the power (electricity) sector and the upstream and downstream sectors of oil and gas.

Due to international sanctions and scrutiny of the Myanmar military government, it is not recommended to actively engage those ministries or other government agencies in issuing IRECs. The authors of this report are not aware of any desire or interest from government agencies to get involved in the IREC market.

Environmental legislation for RE

Aside from the customs exemption for solar equipment, described above, there is currently no effective legislation or regulation in place to drive the adoption of renewable energy. The government's ability to effectively implement and enforce this policy is currently hindered by severe political instability, economic limitations, and inadequate infrastructure. Overcoming these obstacles will be crucial for Myanmar to realize its renewable energy potential and transition away from fossil fuels.

Existing/Planned energy certificate systems (purpose, extent)

Currently, there are no existing energy certificate systems available to renewable energy developers in Myanmar.

As part of its commitment to develop a robust Distributed Renewable Energy market in Myanmar, Smart Power Myanmar actively seeks partners capable of managing Renewable Energy Certificates (RECs), helping project developers gain financial benefits for using renewable energy. By leveraging RECs, developers can monetize their sustainable energy use, strengthening the economic feasibility of their projects while contributing to Myanmar's clean energy transition.

Extent of engagement with government

Due to international sanctions against ministries and individuals within the Myanmar military government, it is not recommended to actively engage or collaborate around electrification or related priorities.

From 2017 to 2019, during the pre-coup period, Smart Power Myanmar (SPM) worked closely with the Department of Rural Development (DRD) to advance mini-grid projects aimed at providing off-grid communities in Myanmar with access to reliable electricity. These efforts were part of a broader national strategy(NEP) to address energy poverty in rural areas, where mini-grids powered by renewable energy sources played a critical role in improving livelihoods and promoting economic development.

However, following the political events of 2021, SPM halted direct collaboration with the government, including DRD. Instead, SPM shifted its focus to working more intensively with private sector partners. By

fostering partnerships with private companies, developers, and investors, SPM aims to continue driving the growth of renewable energy in Myanmar. This strategic pivot has enabled SPM to support decentralized energy projects, particularly in the commercial and industrial (C&I) solar space, and maintain momentum in advancing renewable energy despite the complex political environment.

Response from Government in relation to attribute tracking systems

The parties behind this report does not engage actively with the Myanmar government, and does not recommend other parties to seek collaboration around attribute tracking systems.

Demand-side market potential or strategic nature of market development

Myanmar's demand-side market potential for renewable energy, particularly off-grid solar, is significant due to its large rural population, high reliance on diesel generators, and unstable grid supply. The surge in diesel prices and unreliable electricity access post-2021 coup have heightened demand for alternative energy sources. Small and medium-sized enterprises (SMEs), especially in agriculture and manufacturing, are increasingly seeking solar solutions to reduce costs and improve reliability. The strategic development of this market hinges on expanding financial support mechanisms, fostering partnerships, and simplifying regulatory processes, which will enhance access to affordable solar technologies and drive long-term sustainable growth in Myanmar's energy sector.

Analysis of political disruptions or market risks

The 2021 coup has severely destabilized the local economy and financial systems, resulting in exchange rate fluctuations, inflation, and currency devaluation. These factors create significant financial uncertainty, disrupt project financing, and increase costs, affecting various aspects of project execution:

- Exchange rate volatility drives up the cost of imported materials and equipment, leading to budget overruns.
- Currency devaluation reduces purchasing power and strains project finances, creating funding gaps, while inflation raises the cost of labor, materials, and services, making it harder for projects to manage rising expenses.
- These financial risks deter donors, investors, and lenders from committing funds, making it challenging to secure essential project financing.

Analysis of regulatory risks including linkages with carbon markets and support systems

In addition to these macroeconomic challenges, Myanmar's **investment climate** has deteriorated due to political instability and governance risks:

- **Political instability**: Since the 2021 military coup, Myanmar has become an increasingly volatile and unpredictable environment for foreign and local investors. The ongoing civil unrest, security issues, and lack of clear governance have raised the risk profile for businesses and investors operating in the country.
- **Regulatory uncertainty**: The absence of clear and stable regulatory frameworks for renewable energy and other industries complicates the investment landscape. Policies are often subject to sudden changes, creating additional risks for developers and investors trying to navigate government processes.
- **Sanctions and reputational risk**: Myanmar is subject to international sanctions, which further complicate foreign investment. Investors may face reputational risks associated with working in a country under military control and operating in sectors linked to government institutions.

Given these challenges, Smart Power Myanmar (SPM) strongly recommends focusing on partnerships with the private sector and development agencies. These entities provide more stable, reliable, and efficient support, particularly for commercial and industrial (C&I) solar projects. They offer a better framework for securing financing and implementing projects without the additional risks associated with government involvement.

Current environmental reporting in energy

There are currently no governmental or institutionalized mechanisms in place for environmental reporting in energy. Some of the most reliable data is published by World Bank (sometimes, with the support of Smart Power Myanmar). Recent data and reports can be found here: https://www.worldbank.org/en/country/myanmar

Mechanisms in place to support the reliable verification and issuance of I-RECs

Together, Energy Peace Partners (EPP) and Smart Power Myanmar (SPM) have the capacity, experience and local rooting (through SPM's Myanmar team) to support verification and issuance of I-RECs in Myanmar. EPP brings international experience and credibility in the REC markets that will ensure global best practices are being followed. As a key player in the country's Commercial and Industrial (C&I) solar sector, SPM has the technical capacity to manage I-REC standards and verification, ensuring accurate issuance and trading. Our extensive network across private sectors and development agencies enables us to scale I-REC adoption, providing project developers with financial benefits for their renewable energy production while driving a sustainable energy market.

Local organizations of importance and their opinion on local I-REC market development

Local and international organizations that support the growing DRE market include:

- World Bank
- EU (through the SENTRUM project)
- Responsible Business Fund Plus (RBF+)
- Chambers of Commerce (including but not limited to EuroCham, British Chamber of Commerce)

Smart Power Myanmar works with all of the above organizations and seeks to leverage their capacity and expertise in building a healthy market for I-RECs in Myanmar.

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