



RENEWABLE ENERGY SITUATION IN MYANMAR

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KEY ELEMENTS OF THE NDC (SUMMARY)

Based on the country's development status, in accordance with the Paris Agreement, we will join the efforts to reduce global climate change in 2030 with the following goals (2021-2030):

energy (electricity)



Agriculture, Forest and Land Use



Co-benefit sectors

Conventional emission without Agriculture, Fuel efficient cookstove Distribution, Energy Efficiency Measures = 842.75 million Tons

Amount of carbon emissions to be reduced
with national funding (Unconditional target)

=

244.52 million tons

The amount of carbon emissions that could
be reduced with international financial and
technical support (Conditional target)

=

414.75 million tons

KEY ELEMENTS OF NDC (CONT'D)

- ❖ Myanmar commits to an unconditional target for **new renewable energy of 11%** (2000MW) by 2030.
- ❖ With sufficient international support, Myanmar aims to increase the RE (other) contribution to 3070 MW (17% of the total energy mix) and would make a proportionate reduction in the percentage of energy generation from coal.
- ❖ Myanmar is eager to explore a wide range of technological innovations, first and foremost related to solar and wind energy and potentially exploring mini-hydro, biomass, tidal and other sources of renewable energy as well.
- ❖ The Government established a National Renewable Energy Management Committee in 2019 under the former President's mandate to explore improvements in faster, cleaner, and cheaper energy sources.

POLICIES, STRATEGIES AND PLANS OF THE ENERGY SECTOR (ELECTRICITY)

- ❖ Myanmar's NDC targets for the electricity sector are guided by **the Myanmar Energy Policy (2015)** and the **National Electricity Master Plan (2014)**.
- ❖ The **National Energy Policy** aims to systematically explore the available energy resources of the country in order to supply the demand of the country and to export as value added products for surplus resources, thus ultimately targeting to sustainably improve the living standard of the country people.
- ❖ The purpose of **the National Electricity Master Plan** was to demonstrate a harmonized medium/long term of power sources and transmission systems while sharing information closely with relevant organizations in Myanmar and other development organizations under the necessary technical transfer to the counterpart(s) of Myanmar.
- ❖ The **Myanmar Climate Change Policy, Myanmar Climate Change Strategy (2018-2030)** and **Myanmar Climate Change Master Plan 2018-2030** are also relevant in considerations of energy and electricity in line with the strategy on Resilient and low carbon energy transport and industrial systems for sustainable growth.
- ❖ Myanmar is also in the process of developing its **National Renewable Energy Policy** which will be submitted to the UNFCCC once it is endorsed and launched.

UNCONDITIONAL TARGET FOR THE ENERGY SECTOR

- By 2030, the share of new renewable energy technology will remain unchanged as to 2000MW and coal will decrease by 54.4% from BAU (7940MW), reducing to 3620MW. Due to social and environment safeguards concerns, the proportion of large hydropower generation will also decrease, but both hydropower and coal will be replaced by Natural Gas/LNG as shown;

Generation Technology	2020		2025		2030	
	MW	%	MW	%	MW	%
Renewable (Hydro)	2,771	46.5 %	3,388	31 %	5,156	28 %
Renewable (Other)	40	0.7 %	1,440	13 %	2,000	11 %
Natural Gas/LNG	3,031	50.8 %	5,031	46 %	6,063	33 %
Coal	120	2 %	720	6.5 %	3,620	20 %
Intl Interconnection	-	-	400	3.5 %	1,400	8 %
Total	5,962	100 %	10,979	100 %	18,239	100 %

ANNUAL GHG EMISSION SCENARIO FROM ELECTRICITY UNDER 2021-2030 UNCONDITIONAL TARGETS (MTCO2E)

➤ The average annual emission by 2030 is 19.2 million tCO₂e and the average annual avoided emission will be 10.5 million tCO₂e (29.7-19.2) in 2030 compared to BAU as shown;

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Renewable (Hydro)	-	-	-	-	-	-	-	-	-	-	-
Renewable (Other)	-	-	-	-	-	-	-	-	-	-	-
Natural Gas/LNG	7.150	8.329	9.509	10.688	11.868	12.354	12.841	13.328	13.815	14.302	114.185
Coal	0.647	1.455	2.263	3.071	3.879	7.004	10.129	13.254	16.379	19.504	77.584
Intl Interconnection											
Total	7.796	9.784	11.772	13.759	15.747	19.359	22.970	26.582	30.194	33.806	191.769

CONDITIONAL TARGET FOR THE ENERGY SECTOR

- The objectives related to the Energy Sector (Electricity) of the Nationally Determined Contributions (NDC) report to be implemented on climate change mitigation at the national level of Myanmar are as follows:

Generation Technology	2020		2025		2030	
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Coal	120	2 %	720	6.5 %	3,620	20 %
Intl Interconnection	-	-	400	3.5 %	1,400	8 %
Total	5,962	100 %	10,979	100 %	18,239	100 %

- If the price and performance of the new RE technologies are attractive , and if there is more appetite for investments through international support and access to climate finance, by 2030 the share of new renewable energy technology will increase by 53.5% from BAU (2000 MW) to 3070 MW and coal will decrease by 73.3% (5820 MW) from BAU (7940 MW), reducing it to 2120 MW.

SPECIAL CIRCUMSTANCES WITH REGARD TO THE ENERGY SECTOR (ELECTRICITY)

- **44% of Myanmar is yet to be electrified**, with electrification being a key driver to boost economic growth across the country. Therefore, the Government has a dedicated and keen interest to deploy cheap, fast, and clean electricity. At the same time, Myanmar faces numerous barriers to investment in renewable energy technologies in the national grid. These include **limitations in 1) technical capacities; 2) policies, laws and regulatory processes; and 3) financing mechanisms.**
- **The government is similarly seeking to reduce its reliance on coal.** Unfortunately, while solar and wind electricity generation technologies are recognized as being critical for the future, as yet, there is low capability of power system in most renewable energy technologies other than large hydropower. **Coal will not increase beyond 2030 and completely phase out in 2050.** In the midterm, until it develops the technical, institutional, and financial infrastructure needed to scale up its RE generation capacity, Myanmar will rely on natural gas/LNG to provide one third of its national energy mix.
- The timeframe of this NDC (2021-2030) should be considered as a transition period during which increased investments in financial, technical, and institutional resources will allow new measures to be tested, and during which capacity building will enable the country to learn how best to target its emissions reduction efforts. **It is expected that rural electrification through mini-grids, micro-hydro, and solar home systems will expand.** In due course, Myanmar will also **investigate feed-in tariff systems and net metering** to ensure the sustainability of mini-grids should the national grid extend to these areas.

RENEWABLE ENERGY PROJECTS IDENTIFIED TO HELP MEET NDC TARGETS

- MOEE has a pipeline of ongoing investments in renewable energy-based projects that are expected to generate **1268.25MW in solar power and wind power by 2030.**
- It should be noted that several of these tenders were just recently announced by the Government as prioritized actions in its **COVID-19 Economic Response Plan (CERP).**
- In addition, the Government has identified a total of **10215MW in potential solar, wind, and floating solar projects** to be developed but feasibility studies pending.
- It should be noted that many of the projects under development are at exploratory stages and will be subject to prefeasibility and feasibility studies. **These are currently not included in the national NDC targets.** (Ongoing and Planned RE Projects that may contribute to the NDC)

MICRO-GRIDS AND OFF-GRID RURAL ELECTRIFICATION

- Rural electrification is a key demand in Myanmar as only 50% of the population has access to electricity. In the absence of renewable electricity, people in rural areas use diesel generators. Off-grid minigrids will be located outside to ~~at~~ a distance of at least 10 miles from the national grid.
- As of 2019-2020, the off-grid electrification project had contributed to installing 166.4MW which included 44.41MW of renewable energy mini-grids helping to avoid of 0.0564 million tCO₂e/year, and a total 0.564 million tCO₂e avoided from 2021-2031 under BAU (Table 16). However, since the rural electrification projects are demand based, Myanmar will report the total energy and emissions reduced/avoided based on the actual results.

- Having met the INDC objective of reaching 1.8m people (30% of the target rural off-grid population), Myanmar set additional unconditional and conditional NDC objectives to reach the remaining target populations as follows (Table 16):
- **NDC Unconditional Target:** Under the NDC, in addition to the 30% INDC target achieved, **15% of the total rural off-grid rural population** (0.9 million) will gain access to renewable energy sources through Off-Grid Rural Electrification by 2030, resulting in an additional GHG emissions reduction of 0.155 million tCO₂e emissions by 2030. Taking both the existing INDC implementation mini-grids and the NDC mini-grid contributions into account, the NDC unconditional target would result in a total GHG emissions reduction of 0.719 million tCO₂e emissions by 2030.
- **NDC Conditional Target:** Under this NDC, **15% addition to the Unconditional Target a total of 30%** of the off-grid rural population will gain access to renewable energy sources through Off-Grid Rural Electrification by 2030, resulting in additional GHG emissions reduction of 0.310 million tCO₂e emissions by 2030. Taking both the existing INDC implementation mini-grids and the NDC mini-grid contributions into account, NDC conditional target would result will result in a total GHG emissions reduction of 0.874 million tCO₂e emissions by 2030.

MICRO-GRIDS AND OFF-GRID RURAL ELECTRIFICATION

- To meet the conditional targets, the DRD will need international financial assistance of USD 20 million per year co-financed with domestic resources of USD 9 million/year to fund implementation and capacity building needs.
- Myanmar is also interested in understanding and developing NEP projects under Article 6 for up-scaling programs.
- Myanmar is currently developing small-scale electricity enterprise guidelines to integrate microgrids to the grids.
- It nonetheless needs both technical and financial assistance to enhance rural electrification under a NEP- Phase 2 project.
- DRD is also interested to learn more about technologies like biomass gasifiers and mini-hydro.

REGIONAL INTEGRATION

- Myanmar, as an ASEAN member state, hopes to enhance cooperation and collaboration in actions addressing both Climate Change Adaptation and Mitigation, as well as contributing to establishing a platform for learning and sharing.
- Key areas for regional integration could be **technology transfer, capacity building and financial support**. The Energy Sector has great potential for further regional collaboration.
- If Myanmar is able to enhance renewable energy production beyond local uptake, it could export energy to a number of neighboring ASEAN and other Asian countries through the use of „smart“ regional grids.
- The transport sector is also of major interest to Myanmar, in particular a regional railway network to connect with ASEAN and neighboring countries.
- Electric high-speed railway networks, powered by renewable energy, could be a solution to minimize GHG emissions which are subject to further bilateral and/or multilateral agreements.
- This could be pursued through ASEAN or under the Greater Mekong Railway Association. Myanmar Railways is also currently working with UNESCAP on activities related to the linkages between Asia and Europe in the northern corridor and India, China and Thailand in the southern corridor.
- Additionally, within the transport sector, Myanmar is also interested in further regional engagement in the ASEAN Green Ship Strategy to reduce emission from non-convention ships (NCS) where International Maritime Organization (IMO) rules do not apply.
- Electric vehicle

MEANS OF IMPLEMENTATION

Gaps and Needs for Financing the NDC

- For mitigation actions the Government plans to rely on a mix of grants, support from revolving funds, and project financing through concessional loans, etc.
- The country applied for a soft-loan of US\$400 million for power sector development (US\$310 upgrading transmission systems, US\$90 million rural electrification), and MOEE has developed a financing needs outline for the further promotion of renewable energy of \$874m.

IMPLEMENTATION OF THE GOALS AND COMMITMENTS RELATED TO THE ENERGY SECTOR

Generation Technology		Existing Power Plants (2022)		On-going Projects		Planned Projects	
		Quantity	MW	Quantity	MW	Quantity	MW
Renewable (Hydro)	Hydro	28	3,225	8	1,516	30	18,587.6
	Mini-Hydro					3	11.07
Renewable (Other)	Solar	2	70	2	70	31	1,310
	Biomass					1	1.8
Natural Gas/LNG		15	3,438	3	477	10	5,185
Coal		1	120	-	-	5	3,800
Intl Interconnection		-	-	1	100	1	300
Total		46	6,853	14	2,163	81	29,195.47

IMPLEMENTATION OF THE GOALS AND COMMITMENTS RELATED TO THE ENERGY SECTOR

- In the RE (Hydro) sector, there are already 3,225 megawatts of installed power from 28 hydropower plants, so if the targeted projects can be carried out according to the specifications, the 2025 target can be achieved. Mini-hydro projects are also being encouraged. Other potential hydropower projects are being planned to meet the 2030 target.
- In the RE (Other) sector, there are (2) Solar plants (70 MW). Plans are underway to implement (2) solar projects (70 MW) and (3) locations (1,310 MW) in 2025. In addition, the Biomass Project (1.8 MW) using rice husk fuel is also being implemented.
- There are already 3,558 megawatts of installed power from 16 thermal power plants that have been built, so if the targeted projects can be carried out according to the specifications, the target will be achieved by 2025.
- Other potential thermal power plant projects are also being planned to meet the 2030 target.
- When the NDC targets were formulated, the Unconditional Target was based on mandatory activities using the national budget, and the Conditional Target was expected to be carried out depending on the availability of loans/subsidies from international organizations.
- However, in 2021, After February, the conditions of loan/grant offers by international organizations are stopped, so it is possible to meet the Conditional Target and the Unconditional Target is likely to be met according to the conditions of the completion of the work up to now.
- Therefore, the Department of Rural Development is implementing an annual budget to meet the goals and commitments of the off-grid rural lighting sector in the Nationally Determined Contributions-NDC report within the specified period. **46.3% of the Unconditional Target has been met.**

CONSIDERATION

- In promoting coal-fired power generation, the MOEE should be mindful of the need to apply **clean coal technologies**.
- The continuous use of biomass will fully depend on the MOEE's support, which should provide **efficient biomass cooking stoves** to households (especially in rural areas) at reasonable prices.
- There is a need for a detailed **policy mechanism for the renewable energy** sector to implement potential programmes and projects. This mechanism should be developed and planned in conjunction with external stakeholders who can offer experience, advanced technologies, new markets, and investment.
- The MOEE should seek international cooperation with entities such as the Asian Development Bank and the International Renewable Energy to support the increase in variable renewable energy in Myanmar.
- A dedicated energy efficiency body should be established to oversee Myanmar's energy efficiency programme.

CONSIDERATION

- The current energy efficiency target should be refined to include all sectors' numerical targets and detailed action plans.
- Myanmar needs to establish a comprehensive integrated energy plan to guide the development of the energy sector, including an energy efficiency labelling programme for energy service companies and appliances.
- **The Ministry of Planning, Finance and Industry** should set specific targets for each sector on energy efficiency, and the government should implement the committed energy policy to achieve these targets.
- Importing liquified natural gas in the form of floating terminals should be considered in the short term to meet the projected rapid growth of electricity demand while new domestic natural gas resources are being explored.



Thank You Very Much