Low-Carbon Energy Sector Development

in Myanmar

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Myanmar NDC Mitigation Targets (summary)

Energy (electricity) + **AFOLU** + **Mitigation co-benefits**

**Unconditionally emission reduction
=
244.52 m t CO2e**

**Conditionally emission reduction
=
414.75 m t CO2e**

# Conditional and Unconditional Target for Energy Sector

The energy sector:

- **conditional target** (with international support) of avoiding 144 $MtCO_{2eq}$ of greenhouse gas (GHG) emissions by 2030 against that predicted under the BAU (Business as Usual) scenario, of 297 $MtCO_{2eq}$.

  - increasing the share of solar and wind to 54% (from 2,000 MW to 3,070 MW) by 2030 and

  - decreasing the share of coal by 73.5% (from 7,940 MW to 2,120 MW) by 2030.

- **unconditional target** (using its domestic resources) in the energy sector avoiding 105 $MtCO_{2eq}$ by 2030 from the BAU.

  - By 2030, the share of solar and wind will remain unchanged, and coal will decrease by 54% from the BAU to 3,620MW.

Energy Supply & Consumption in Myanmar
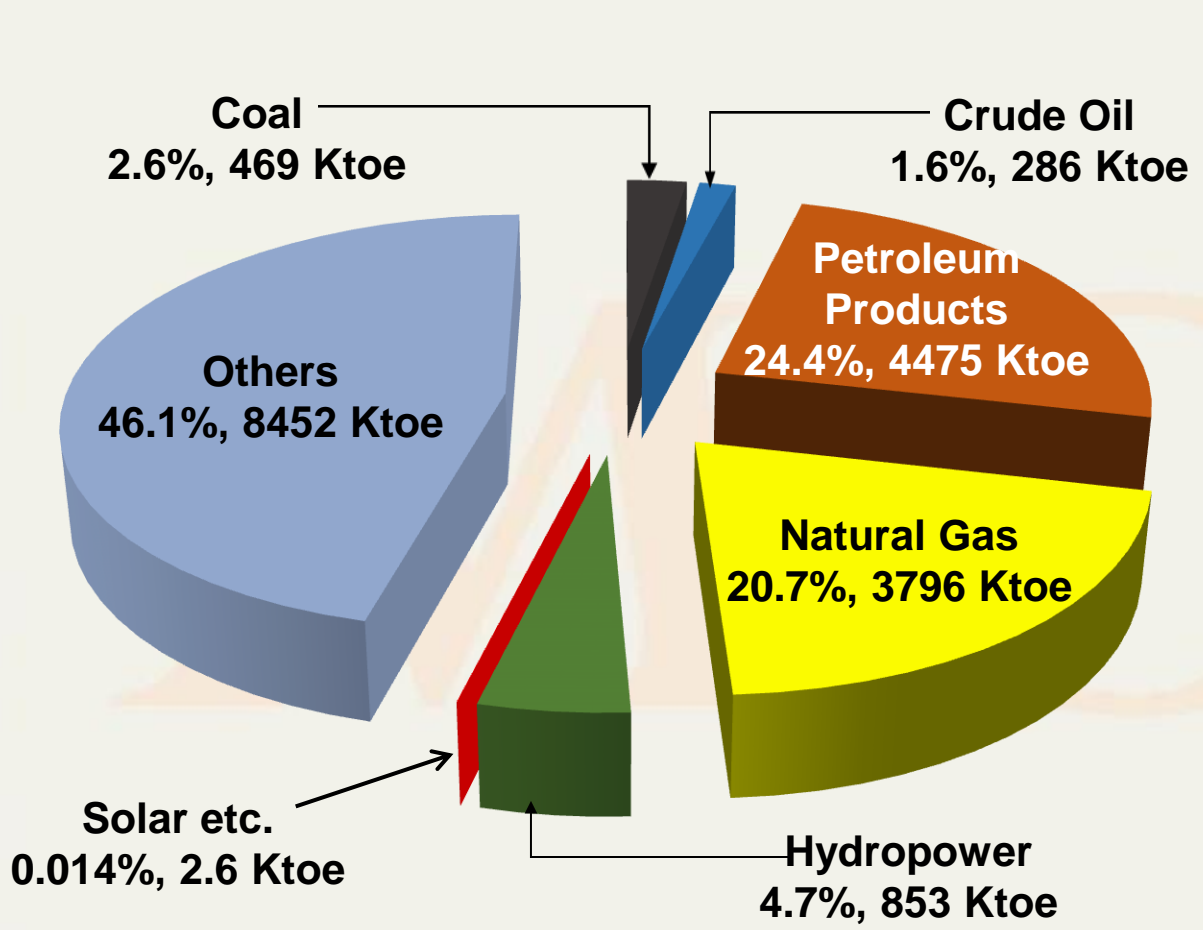
Energy Supply Situation(2021)
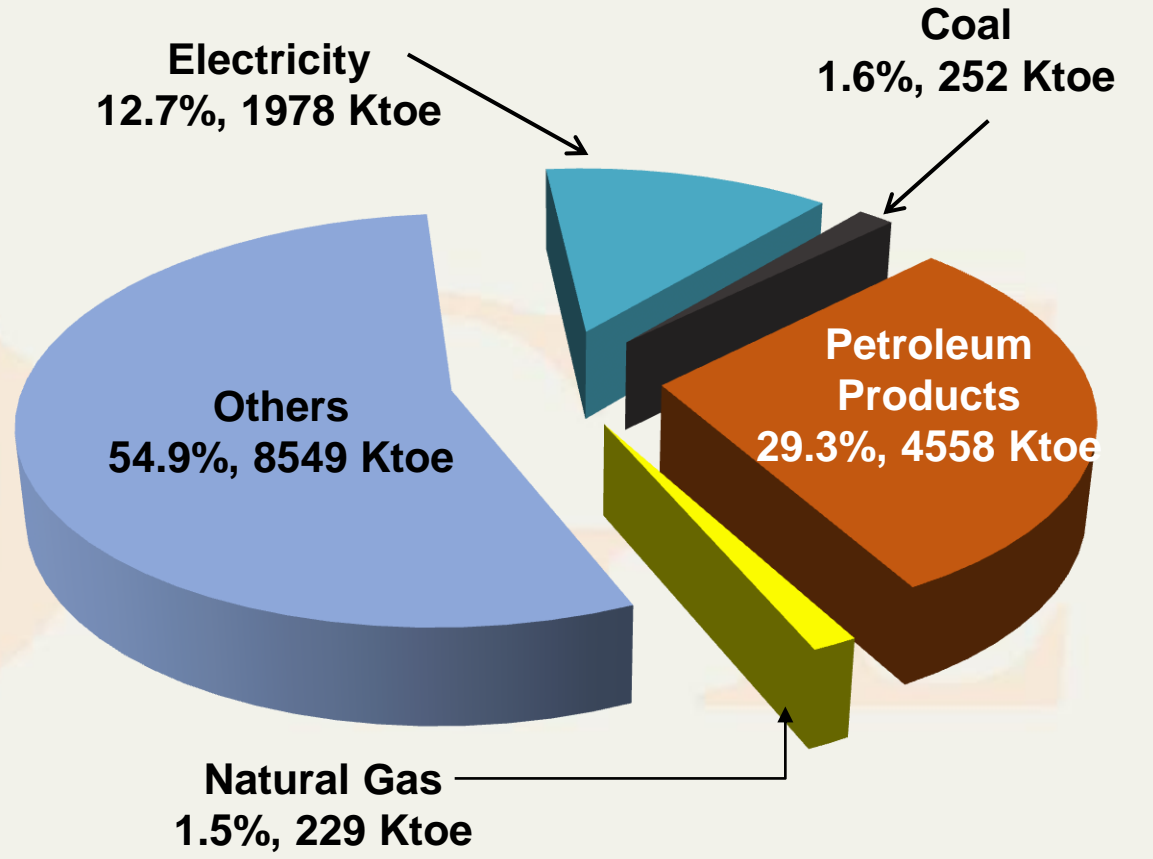
Energy Consumption Situation(2021)

Power Capacity in Myanmar(Up to 2023-2024 FY)

Sr. No.	Type of Power Plant	Quantity of Plant	Installed Capacity(MW)	Remarks
(A) National Grid				
1	Hydropower	28	3225.00	Government 23 units, IPP 2 units & JV 3 units
2	Gas Turbine / Combine Cycle Power Plant	29	3799.62	Government 9 units, IPP & Rental 20 units
3	Coal	2	138.00	IPP
4	Solar	6	150.00	IPP
	Sum (A)		7312.62	
(B) Off Grid				
6	Small Scale Hydropower	32	34.374	
7	Diesel Engine Power Plant	228	91.739	
8	Gas Engine Power Plant	9	18.000	
9	Solar		49.700	
	Sum (B)		193.813	
	Total (A+B)		7506.433	

Sr. No.	Type of Project	Qtty	Installed Capacity(MW)
(C) Ongoing Project			
1	Hydropower Plant	8	1336.40
2	Gas	2	200.00
3	Solar(Ground & Floating)	3	390.00
4	Solar(Ground Mounted)	6	170.00
	Sum (C)	22	2096.40

NDC targets 1: Energy (Electricity)

No.	Sector	Resource	BAU	Unconditional	Conditional
1	**Energy**	RE (Hydro)	8896 MW (38%)	5156 MW (28%)	5676 MW (31%)
		RE (Solar/Wind)	2000 MW (9%)	2000 MW (11%)	3070 MW (17%)
		Natural Gas/LPG	4758 MW (20%)	6063 MW (33%)	6063 MW (33%)
		Coal	7940 MW (33%)	3620 MW (20%)	2120 MW (11%)
		Interconnection	-	1400 MW (8%)	1400 MW (8%)
		Energy total	23594	18239	18329

NDC targets (Mitigation co-benefits) 2: Fuel efficient cook stoves & LPG based cooking technology

Unconditional targets	GHG EMISSION REDUCTION
➢ Dissemination of 0.27 million Fuel-Efficient cook stoves (A-1) by Dry Zone Greening Department, MONREC by 2030. ➢ The replacement of traditional fuel wood cooking across the 1 million households with LPG based cooking technologies by Ministry of Energy (MOE) by 2030.	➢ 0.350 million tCO2e by 2030 ➢ 14.94 million tCO2e by 2030
Conditional targets	**GHG EMISSION REDUCTION**
➢ Dissemination of 0.54 million Fuel-Efficient cook stoves (E Free) by Dry Zone Greening Department, MONREC + Korea CCC by 2030. ➢ Dissemination of 4.32 million Fuel-Efficient cook stoves (E Free) by Department of Agriculture, MOALI + Korea CCC by 2030.	➢ 0.140 million tCO2e by 2030 (10% of total) ➢ 2.246 million tCO2e by 2030 (20% of total)

Program	Year	Stove (Unit)	Annual Emission Reduced (tCO2e/yr)
DZGD Program	**2018-2030**	**811,479**	**1,054,923**
DoA Program	**2019-2024**	**4,320,000**	**5,616,000**
Total		**5,131,479**	**6,670,923**

NDC targets (Mitigation co-benefits) 3:
Mini- Grids & Off- Grid Rural Electrification

Unconditional targets	GHG EMISSION REDUCTION
➢ 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 (RE) sources through Off-Grid Rural Electrification by 2030. ➢ Taking both the existing INDC implementation mini-grids and the NDC mini-grid contributions into account by 2030.	➢ 0.155 million tCO2e by 2030 ➢ 0.719 million tCO2e by 2030
Conditional targets	**GHG EMISSION REDUCTION**
➢ 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. ➢ Taking both the existing INDC implementation mini-grids and the NDC mini-grid contributions into account.	➢ 0.310 million tCO2e by 2030 ➢ 0.874 million tCO2e by 2030

Solar Home System and Mini-Grid Projects for the rural areas in Myanmar

Sr: No.	FY	Solar Home System(SHS)				Mini-Grid					Total(SHS+Mini-Grid)			
		Village	Housing	Public Own	Total (MW)	Village	Business	Housing	Public Own	Total (MW)	Village	Housing	Public Own	Total (MW)
1	2016-2017	2708	141465	19195	8.877	1	8	1503	369	0.393	2718	142968	19564	9.27
2	2017-2018	1684	88020	13370	7.75	35	25	6864	2469	2.162	1719	94884	15839	9.912
3	2018-2019	3274	124859	19066	11.42	39	37	9774	2040	3.864	3313	134633	21106	15.284
4	2019-2020	1490	60019	8157	2.266	35	29	11937	2251	4.474	1525	71956	10408	6.74
5	2020-2021					27	16	5416	1418	2.117	27	5415	1418	2.117
6	2021-2022					8	5	1696	482	0.773	8	1696	482	0.773
7	2022-2023	919	43728		2.964	13	7	2835	876	1.47	932	46563	876	4.434
	Total	10,075	458,091	59,788	33.277	167	127	40,024	9,905	15.254	10,242	498,115	69,693	48.531

Sat San Village, Bogalay, Ayeyawaddy Region

Nga Ta Yaw Village, Yesagyo, Magwe Region

Se Pin Kyun Village, Shwe Bo, Sagaing Region

Myanmar NDC mitigation targets' progress up to June 2023 (Energy Sector)

No.	Line departments	Progress (%)	
		Unconditional Targets	Conditional Targets
1	**ENERGY SECTOR** (Electricity)		
(a)	Department of Electric Power Planning	Renewable energy (Hydro) 56.85 % Renewable (Other) 100 % Natural Gas/ LNG 100 %	-
(b)	Department of Hydropower Implementation	45.73 %	-
2	**MITIGATION CO-BENEFIT SECTOR**		
(a)	Dry Zone Greening Department(DZGD)	82.21 %	61.88 %
(b)	Department of Agriculture(DoA)	-	40 %
(c)	Myanmar Petrochemical Enterprise(MPE)	60.4 % (Yearly Target)	-
3	**MITIGATION CO-BENEFIT SECTOR** (RURAL ELECTRIFICATION)		
	Department of Rural Development	33 %	2 %
4	**MITIGATION CO-BENEFIT SECTOR** (ENERGY EFFICIENCY)		
	Department of Industrial Cooperation	-	150 %

Key Success Factors

Myanmar is

❖ one of the least GHG emitting countries in the world, contributing only 0.61 tons of CO_2e/person, based on 2018 data.

❖ rich in energy resources, especially hydropower and natural gas. Similarly, regarding renewable energy in Myanmar, Solar, Wind and Hydrogen have much potential.

❖ cooperating with international organizations to speed up the distribution of improved cook stoves. (Distributed 742,000 stoves by DZGD and 218,955 stoves by CCC) and has set an unconditional target to support the distribution of one million LPG stoves by the private sector resulting in an emission reduction of 14.94 million tCO_2e by 2030. (Approximately 60.4% distributed annually)

❖ Rural communities without access to electricity from the national grid will further develop their villages by providing solar home systems and mini-grid projects.

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Challenges

❖ As more than 70 percent of Myanmar's total population lives in rural areas and uses firewood and charcoal as their main fuel, the high demand for firewood is a major challenge for the sustainability and conservation of forest resources.

❖ Still dependent on biomass energy, electricity availability is low due to population growth and lack of electricity infrastructure.

❖ Currently, there is a lack of international aid and investment in low-carbon development projects for the energy sector in Myanmar.

❖ Some of Myanmar's neighboring countries are among the largest emitters of greenhouse gases in the world. Although Myanmar's greenhouse gas emissions are low, these side effects affect our country.

Recommendations for Bilateral and Regional Cooperation

❖ Recommend that capacity building training on low-carbon development continue to be delivered through the regional program. The Ministry of Energy (MOE) will participate in workshops and training programs and will continue to collaborate with regional partnerships to more effectively deploy low-carbon technologies and implement clean energy (such as hydrogen/CCS/EV/CNG etc.) projects.

❖ Conditional targets may be achieved the total national GHG emission reduction that if international support is provided.

❖ Myanmar seeks international support including Green Climate Fund, grants, grants with operating funding mechanisms or concessional loans and various bilateral and multilateral development partners and financing institutions.

Conclusion

❖ Myanmar is eagerly exploring GHG emission reduction strategies across the agriculture, energy, transportation sectors and etc. Priority will be given to electric vehicles, the development of clean energy (Solar, Wind, Biofuel and Hydrogen) and so on.

❖ Technical and financial assistance is needed to increase access to sufficient capacity and technologies to contribute to SDG 7 energy sector with low-carbon renewable energy production technologies.

❖ In order to provide the nation's energy requirements, future energy security and for the purpose of the country development, it is necessary to explore renewable energy sources without relying on a single source of energy. In addition, to develop low-carbon technologies, Carbon trading activities such as carbon capture, carbon transport and carbon storage (CCS) in old decommissioned oil and natural gas wells should be encouraged.

Thanks for your attention