

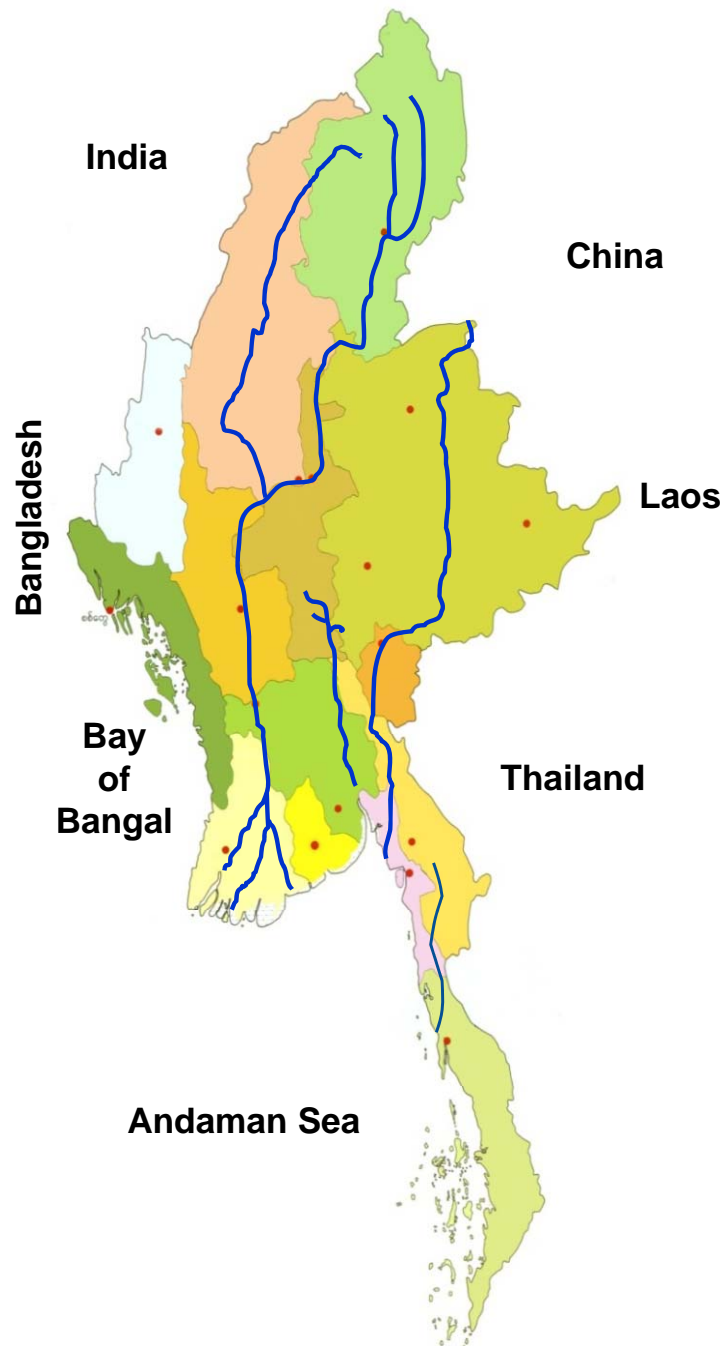
**THE REPUBLIC OF THE UNION OF MYANMAR
MINISTRY OF ELECTRICITY AND ENERGY**



HYDROPOWER DEVELOPMENT PLANS

August 18, 2016

Hydropower Potential in Myanmar



Sr. No	State / Region	Numbers of Potentials		Capacity (MW)
		>10MW ≤ 50 MW	>50 MW	
1	Kachin State	5	14	18,744.5
2	Kayah State	2	3	954.0
3	Kayin State	1	8	7,064.0
4	Sagaing Region	2	4	2,830.0
5	Taninthayi Region	5	1	711.0
6	Bago Region	4	4	538.0
7	Magway Region	2	3	359.0
8	Mandalay Region	3	6	1,555.0
9	Mon State	1	1	290.0
10	Rakhine State	3	3	764.5
11	Shan States			
	East	1	3	719.8
	South	3	5	7,569.5
	North	-	5	4,000.0
12	>10 MW	32	60	46,099.30
13	<10MW	210		231.25
	Total	302		46,330.55

Related Law and Plans

❖ Electricity Law

- Electricity Law had been enacted on 27th October 2014.
- By-law is still in conducting.

❖ National Electricity Master Plan

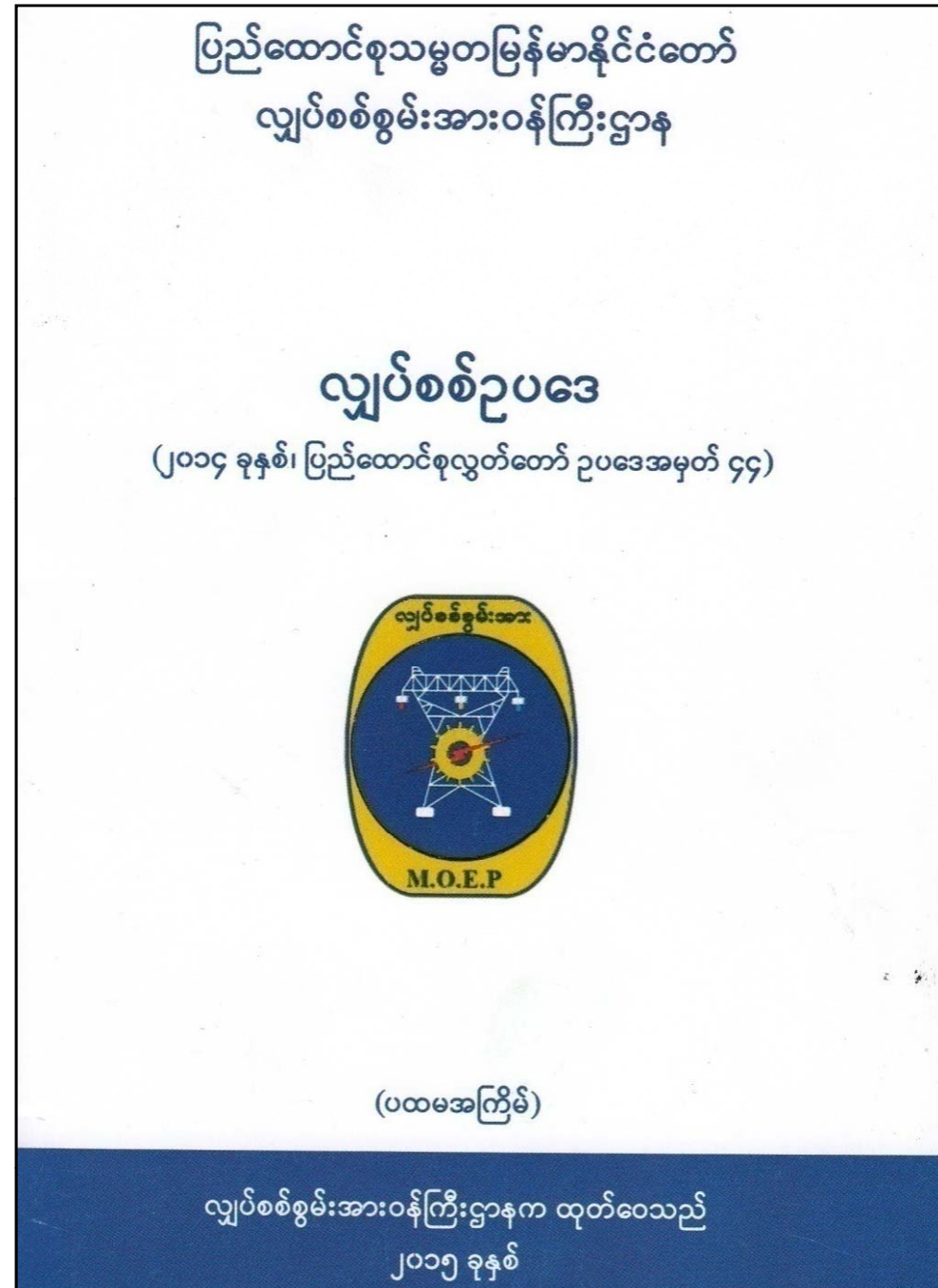
National Electricity Master Plan had been conducted by the assistance of Japan International Cooperation Agency (JICA).

❖ National Electrification Plan

National Electrification Plan had been jointly conducted by Ministry of Electricity and Energy and World Bank in June 2014.

Electricity Law

- Enacted on 27th October 2014.
- Covered with (16) chapters.



National Electricity Master Plan

- National Electricity Master Plan had been conducted by the assistance of Japan International Cooperation Agency (JICA).



The Government of the Republic of the Union of Myanmar

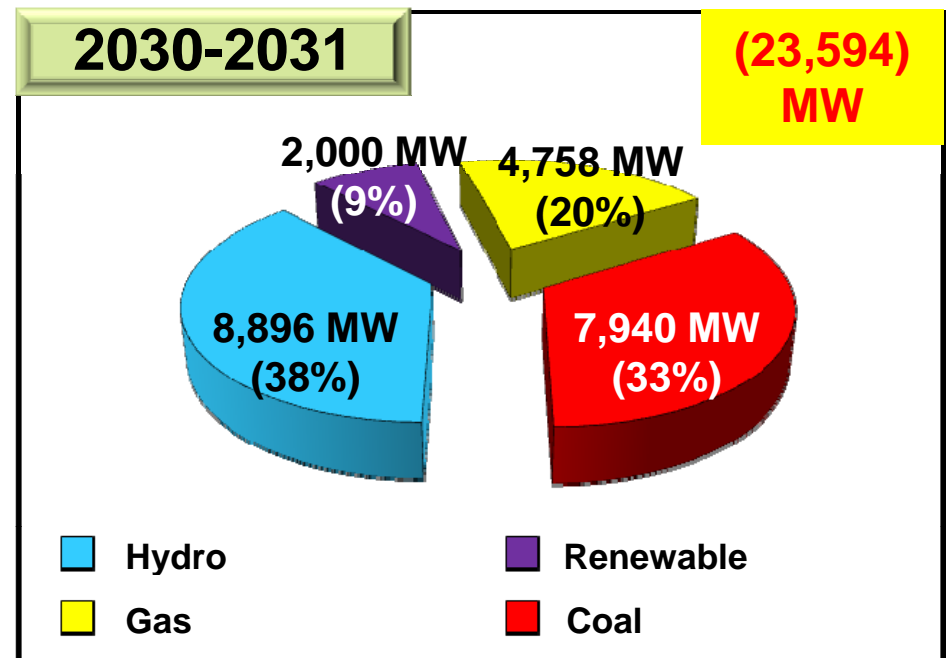
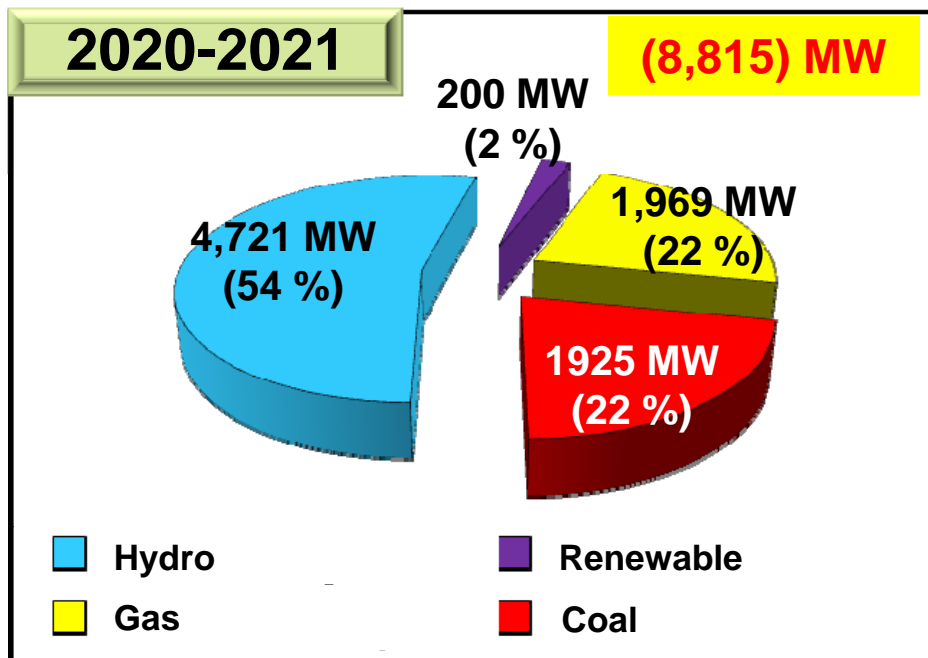
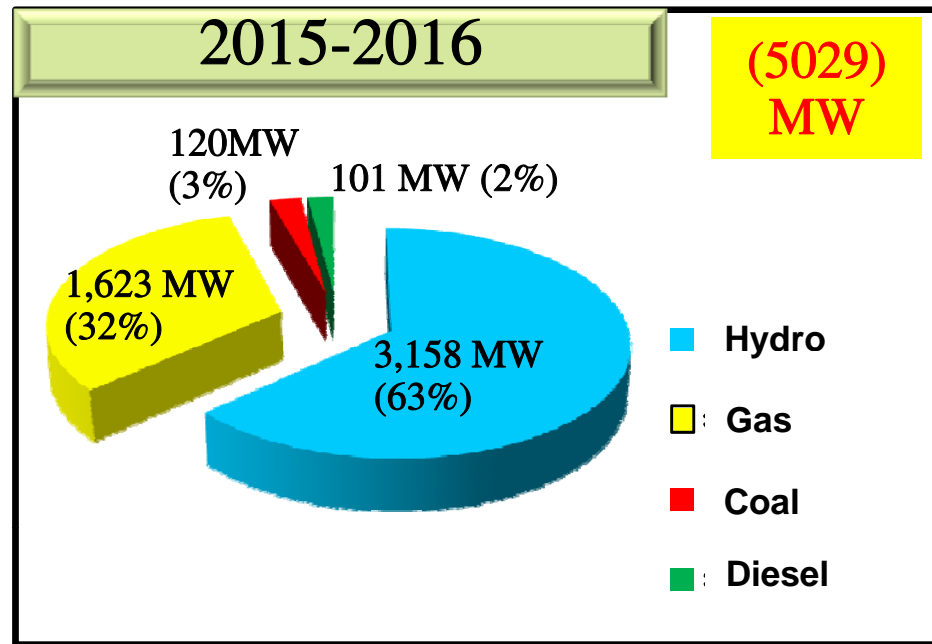


MYANMAR

National Electricity Master Plan



National Electricity Master Plan



National Electrification Plan

- National Electrification Plan had been jointly conducted by Ministry of Electricity and Energy and World Bank in June 2014.



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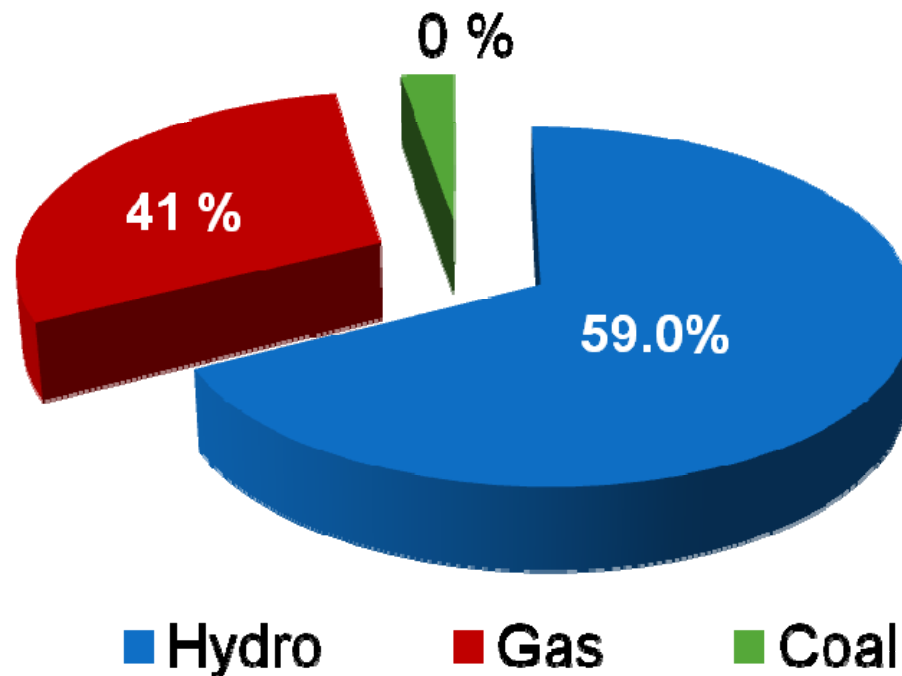


MYANMAR
National Electrification Plan

National Electrification Plan

- ❖ (1.7) millions of house-hold will have access to electricity in 2015-2019 (5 –year plan).
- ❖ 99 % of house-hold will have access to electricity in 2030.
- ❖ USD (5.8) billions shall be needed for electricity distribution.
- ❖ **Key issue** : Further investments shall be needed to extend the Electricity Generation and Transmission.

Present Situation in Power Sector



Total Installed Capacity : 5,201.9 MW

- ❖ As a base-load of hydropower, hydropower stations are rendered inefficient in dry season.
- ❖ Due to the constraint of natural gas, gas power stations can't be able to fully operate from time to time.

Existing Power Stations (Hydro & Coal-fired)

No.	Stations	Installed Capacity (MW)	Annual Generation (GWh)	Remarks
1	Balu Chaung (2)	168	1190.0	Sole Investment
2	Kinda	56	165.0	
3	Sedawgyi	25	134.0	
4	Balu Chaung (1)	28	200.0	
5	Zawgyi (1)	18	35.0	
6	Zawgyi (2)	12	30.0	
7	Zaungtu	20	76.0	
8	Thaphanseik	30	117.2	
9	Mone Chaung	75	330.0	
10	Paunglaung	280	911.0	
11	Tigyit (Coal-fired)	120	600.0	
12	Yenwe	25	123.0	
13	Kabaung	30	120.0	
14	Keng Taung	54	377.6	
15	Yeywa	790	3550.0	
16	Shwekyin	75	262.0	
17	Kyee Ohn Kyee Wa	74	370.0	
18	Kun Chaung	60	190.0	
19	Nancho	40	152.0	
20	Phyu Chaung	40	120.0	
21	Upper Paunglaung	140	454.0	
22	Myogyi	30	135.7	
23	Thaukyegat (2)	120	604.0	B.O.T
24	Balu Chaung (3)	52	334.0	JV/B.O.T
25	Shweli (1)	600	4022.0	
26	Dapein (1)	240	1065.0	
27	Chipwe nge	99	433.0	
Total		3,301	11013.5	

Existing Power Stations (Gas Turbine)

No.	Stations	No. of Stations	Installed Capacity (MW)	Annual Generation (GWh)
1	Sole Investment	11	814.9	5,232
2	Public Private Partnership	6	213	1,407
3	Independent Power Producer	5	405.83	2,003.179
4	Rental	5	467.14	3,549.585
Total		27	1,900.87	12,191.764

Strategies on Power Sector

- **Sole investment by Ministry**
- **Investment by local entrepreneurs on B.O.T basis**
- **Investment by foreign companies on J.V / B.O.T basis**

Resources	Ministry		BOT		JV/BOT	
	No.	Installed Capacity (MW)	No.	Installed Capacity (MW)	No.	Installed Capacity (MW)
Hydro	5	1,495.2	7	692.4	38	39,524
Coal	-		2	350	10	9,475
Gas	-	-	6	3,525	2	989
Wind	-				5	6,538
Solar	-		-		5	1,510
Total	5	1,495.2	15	4,567.4	60	58,036

Note : All are still in on-going projects.



Hydropower Development Plans

List of Foreign Investors (Country- Wise)

No.	Investors' Countries	No. of Companies	No. of Projects	Installed Capacity (MW)	Remarks
1.	P.R. China	11	30	38,073	
2.	Thailand	1	-	-	Two projects are to be jointly implemented with Chinese Companies.
3.	Norway	1	1	700	
4.	Austria	1	1	66	
5.	Singapore	2	6	685	
	Total	16	38	39,524	

Note: All hydropower projects are to be implemented on JV/B.O.T basis.

Hydropower Development Plans up to 2030-2031

No.	Completion Year	No. of Projects	Installed Capacity (MW)	Remarks
1.	2016-2017	1	66	Mong Wa HPP (B.O.T)
2.	2018-2019	1	3.2	Upper Nattrum HPP (Sole Investment)
3.	2019-2020	4	381.4	Two are on sole investment. Two are on B.O.T basis.
4.	2020-2021	17	10,087	Two are on sole investment. Fifteen are on JV/B.O.T basis.
5.	2021-2022	6	1,196	Four are on B.O.T basis. Two are on JV/B.O.T basis.
6.	2022-2023	1	140	Dapein (2) HPP (JV/B.O.T)
7.	2023-2024	1	1,400	Upper Thanlwin (Kunlong) (JV/B.O.T)
8.	2024-2025	1	225	Mang Taung HPP (JV/B.O.T)
9.	2025-2026	5	828	All are on JV/B.O.T basis.
10.	2026-2027	5	2,400	All are on JV/B.O.T basis.
11.	2027-2028	1	285	Nam Tabak HPP (JV/B.O.T)
12.	2030-2031	6	18,700	All are on JV/B.O.T basis.
	Total	49	35,711.6	

Note : Myitsone HPP is suspended.

Sole investment by Ministry

No.	Projects	Location	Installed Capacity(MW)	Completion (Estimation)
1.	Shweli-3	Mandalay	1,050	2020-2021
2.	Upper Yeywa	Shan	280	2019-2020
3.	Thahtay	Rakhaing	111	2020-2021
4.	Upper Kengtawn	Shan	51	2019-2020
5.	Upper Nattrum	Kachin	3.2	2018-2019
Total			1,495.2	

Investment by local entrepreneurs on B.O.T basis

No.	Projects	Location	Installed Capacity(MW)	Completion (Estimation)
1.	Upper Baluchaung	Shan	30.4	2019-2020
2.	Mong Wa	Shan	66	2016-2017
3.	Nam Paw	Shan	20	2019-2020
4.	Nam Tu	Shan	100	2021-2022
5.	Nam Lin	Shan	36	2021-2022
6.	Bawgata	Bago	160	2021-2022
7.	Belin	Mon	280	2021-2022
	Total		692.4	

Investment by foreign companies on J.V / B.O.T basis

No.	Projects	Location	Installed Capacity(MW)	Completion (Estimation)
JVA - Signed Projects (6 Nos.)				
1.	Myitsone	Kachin	6,000	Suspended
2.	Chipwi	Kachin	3,400	2020-2021
3.	Laza	Kachin	1,900	2020-2021
4.	Upper Thanlwin (Kunlong)	Shan	1,400	2023-2024
5.	Gaw Lan (Ngaw Chang Kha)	Kachin	120	2026-2027
6.	Tongxinqiao (Ngaw Chang Kha)	Kachin	340	2026-2027
	Total		13,160	

Investment by foreign companies on J.V / B.O.T basis

No.	Projects	Location	Installed Capacity(MW)	Completion (Estimation)
MOA- Signed Projects (12 Nos.)				
1.	Wutsok	Kachin	1,800	2030-2031
2.	Kaunglanhpu	Kachin	2,700	2030-2031
3.	Yenam	Kachin	1,200	2030-2031
4.	Hpizaw	Kachin	2,000	2030-2031
5.	Khan Kan (Ngaw Chang Kha)	Kachin	140	2026-2027
6.	Laung Din (Ngaw Chang Kha)	Kachin	600	2026-2027
7.	Hutgyi	Kayin	1,360	2020-2021
8.	Shweli-2	Shan	520	2021-2022
9.	Ywa Thit	Kayah	4,000	2030-2031
10.	Naopha	Shan	1,200	2026-2027

Investment by foreign companies on J.V / B.O.T basis

No.	Projects	Location	Installed Capacity(MW)	Completion (Estimation)
11.	Mang Taung	Shan	225	2024-2025
12.	Nam Tabak	Kachin	285	2027-2028
	Total		16,030	
MOU - Signed Projects (20 Nos.)				
1.	Dapein-2	Kachin	140	2022-2023
2.	Upper Thanlwin (Mongton)	Shan	7,000	2030-2031
3.	Keng Tong (Nam Lwe)	Shan	170	2025-2026
4.	Solue(Nam Lwe)	Shan	240	2025-2026
5.	Keng Yang(Nam Lwe)	Shan	70	2025-2026
6.	Hekou(Nam Lwe)	Shan	138	2025-2026
7.	Nam Kha	Shan	210	2025-2026
8.	Manipur	Sagaing	380	2020-2021

Investment by foreign companies on J.V / B.O.T basis

No.	Projects	Location	Installed Capacity(MW)	Completion (Estimation)
9.	Middle Yeywa	Shan	700	2020-2021
10.	Dee Doke	Mandalay	66	2020-2021
11.	Nam Li	Kachin	165	2020-2021
12.	Dum Ban	Kachin	130	2020-2021
13.	Middle Paunglaung	Mandalay	100	2021-2022
14.	Pha Nam (Nam Pawn)	Kayah	105	2020-2021
15.	Phe San(Nam Pawn)	Kayah	45	2020-2021
16.	Upper Nam Pawn (Nam Pawn)	Kayah	150	2020-2021

Investment by foreign companies on J.V / B.O.T basis

No.	Projects	Location	Installed Capacity(MW)	Completion (Estimation)
17.	Lower Nam Pawn (Nam Pawn)	Kayah	105	2020-2021
18.	Upper Hawkhan (Nam Pawn)	Kayah	180	2020-2021
19.	Namlang	Shan	210	2020-2021
20.	Namhsim	Shan	30	2020-2021
	Total		10,334	

Key Requirements

- ❖ Internationally friendly principle
- ❖ Technical know-how and Financial assistance
- ❖ Reasonable tariff rate
- ❖ Environmentally & Socially Responsible manner

THANK YOU

