

Idealistic Roadmap for Myanmar Utility



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International**

**8th Myanmar Oil, Gas & Power Summit
25 Jan 2018- Park Royal Hotel. Yangon**

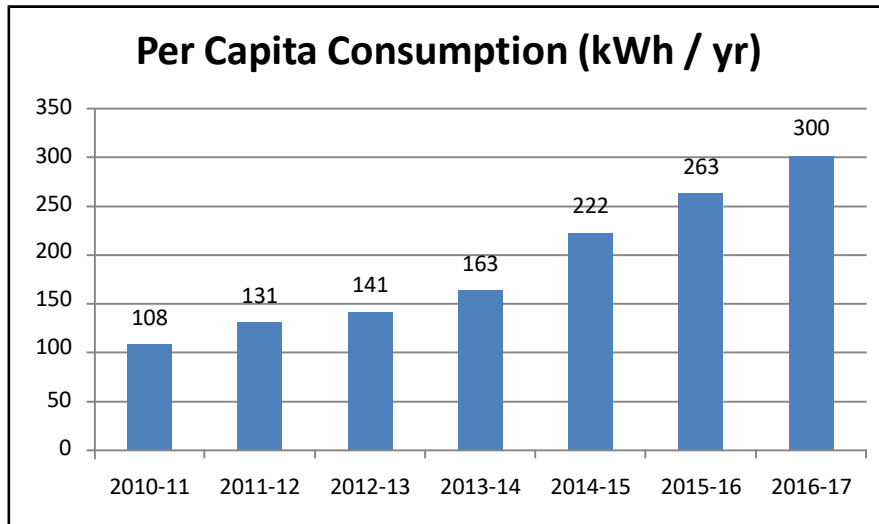
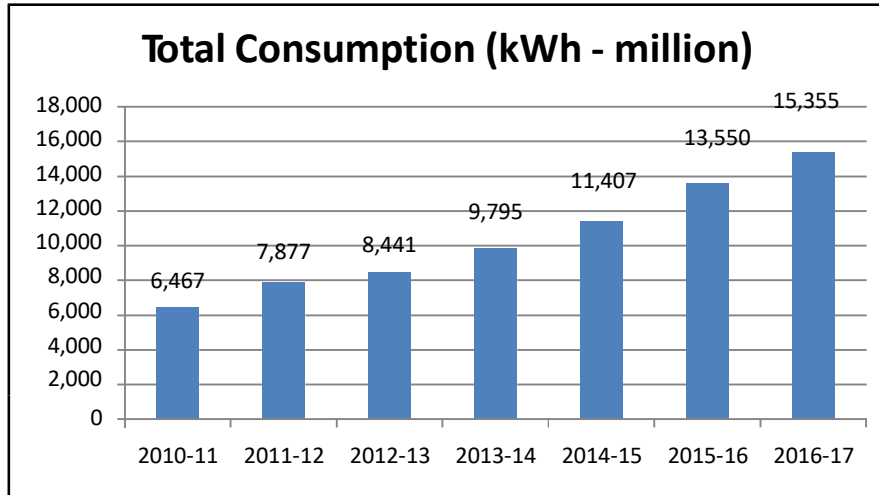
Thanking to EPGE - MOEE



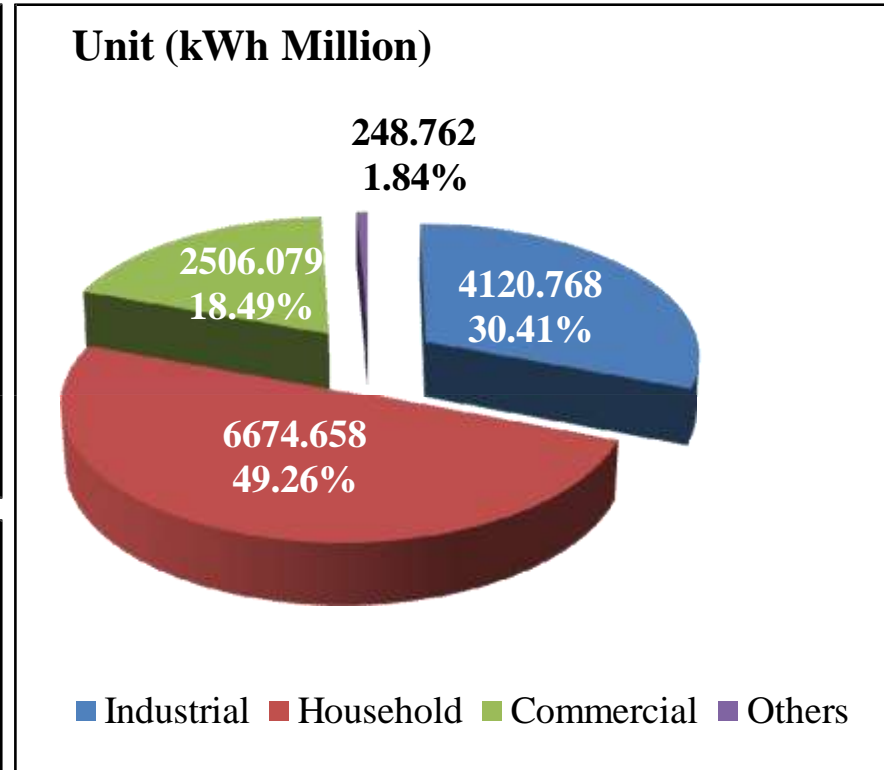
Thank you for EPGE – MOEE for the data.
Special thanks to Dr. Maung Maung Kyaw – Chief Engineer- EPGE
for allowing to use some his slides for ref purpose.

Myanmar Utility (Power) Overview

Development of Annual Consumption

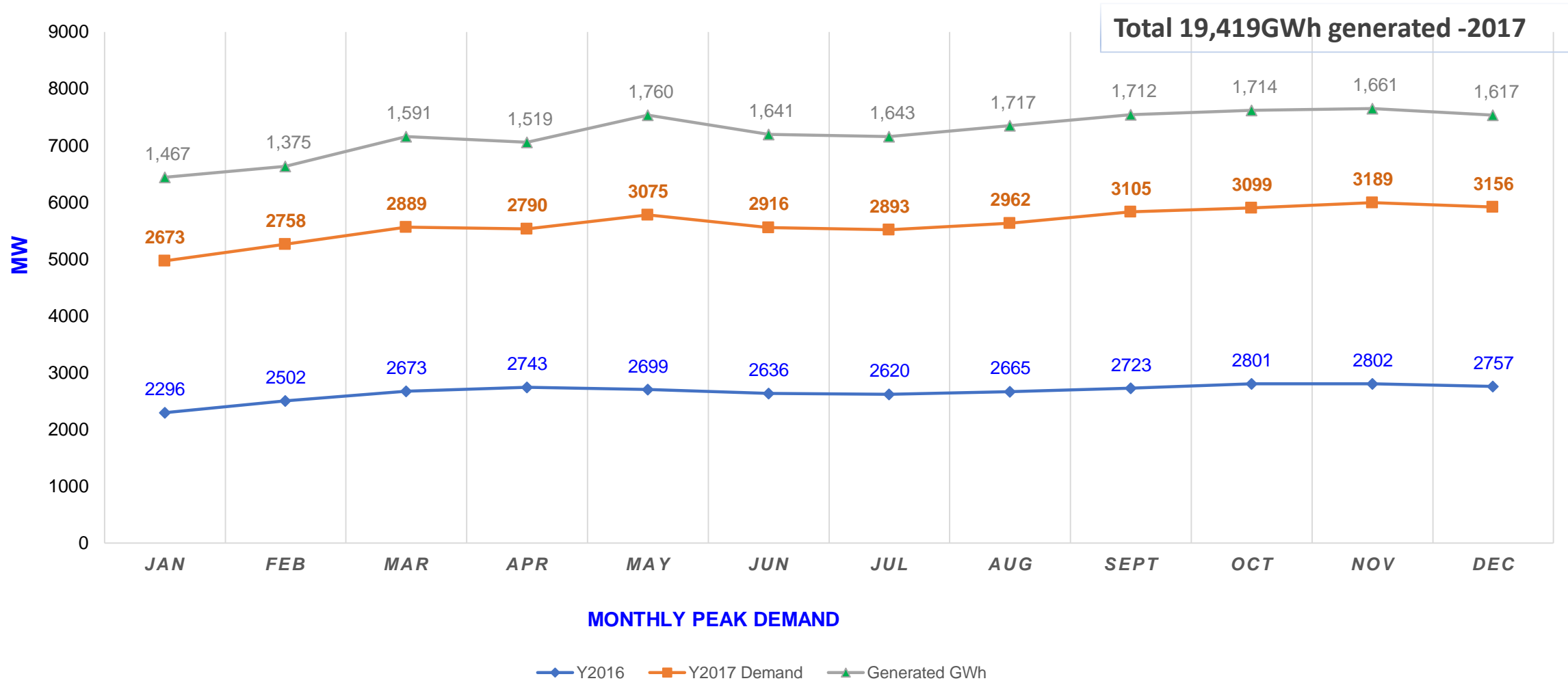


Consumption by Sectors for (2015-2016)



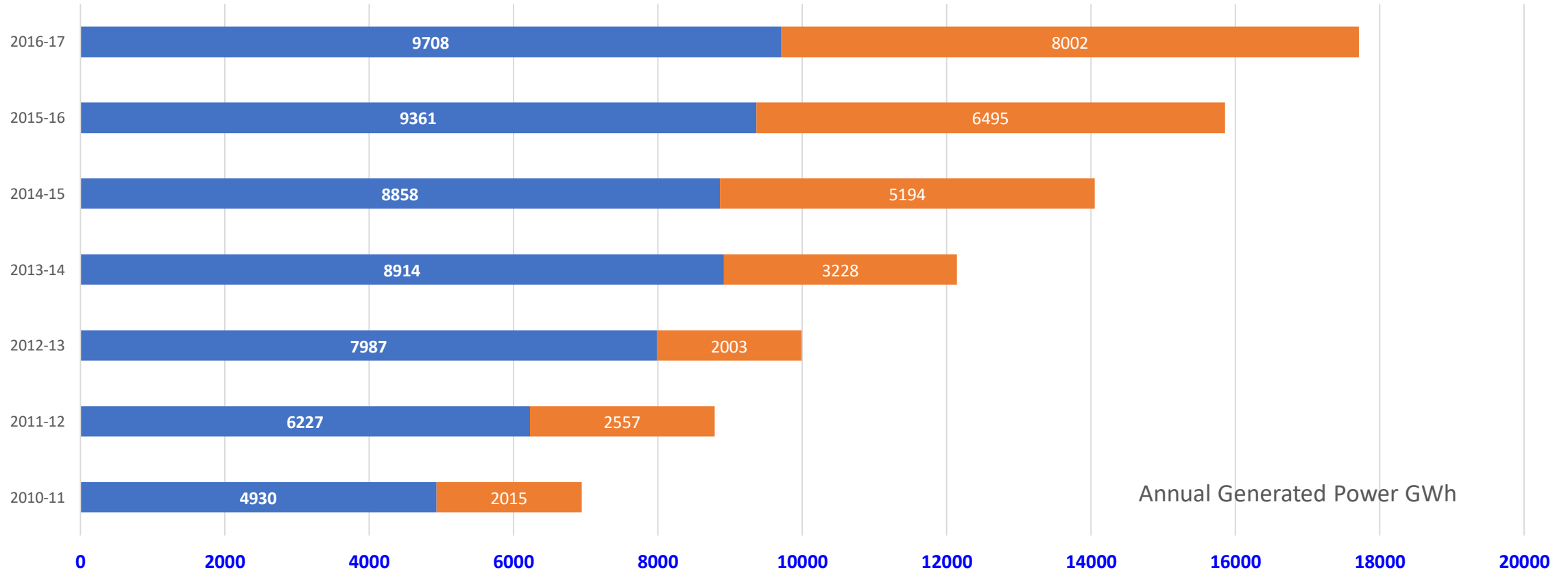
Myanmar Utility (Power) Overview (Continue)

2016-17 PEAK DEMAND



Myanmar Utility (Power) Overview- (Continue)

Annual Generated Power Unit GWh



Annual Generated Power GWh

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
■ Hydro	4930	6227	7987	8914	8858	9361	9708
■ Gas CC	2015	2557	2003	3228	5194	6495	8002

Myanmar Utility (Power) Overview- (Continue)

National Electricity Master Plan

conducted by the assistance of JICA

Target

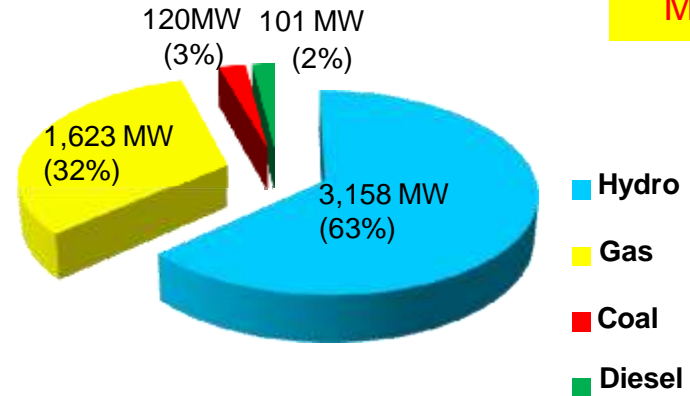
50% to be Electrified in 2020

75% to be Electrified in 2025

100% to be Electrified in 2030

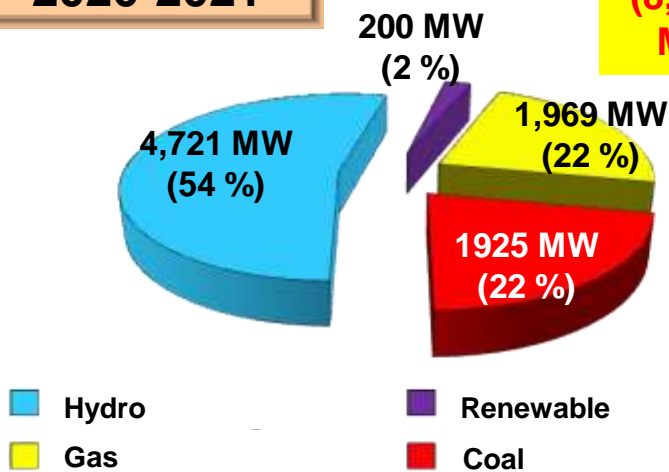
2015-2016

**(5029)
MW**



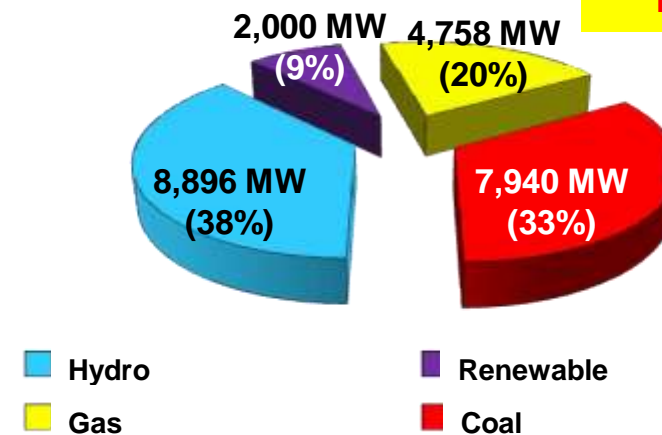
2020-2021

**(8,815)
MW**



2030-2031

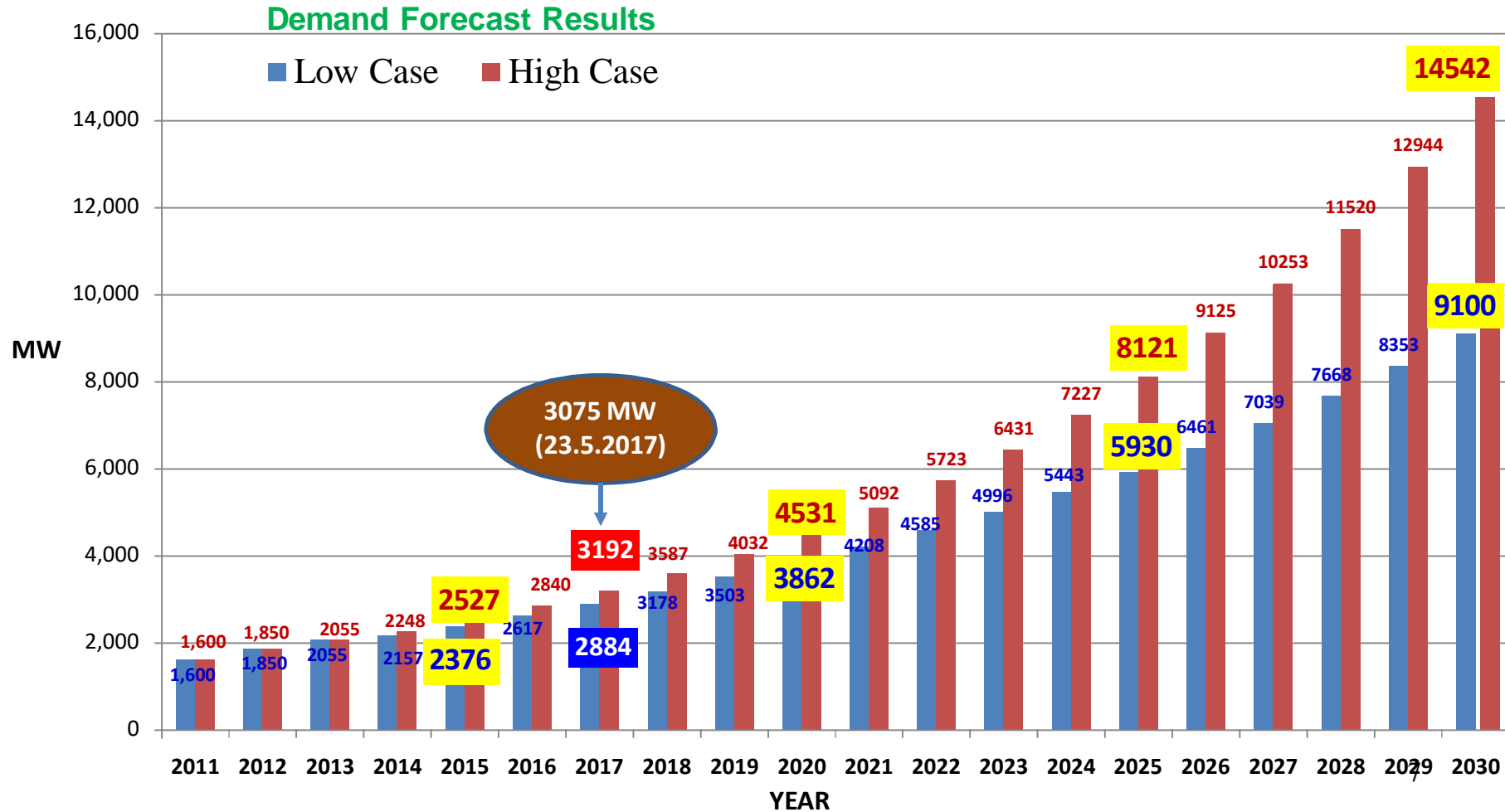
**(23,594)
MW**



Myanmar Utility (Power) Overview- (Continue)

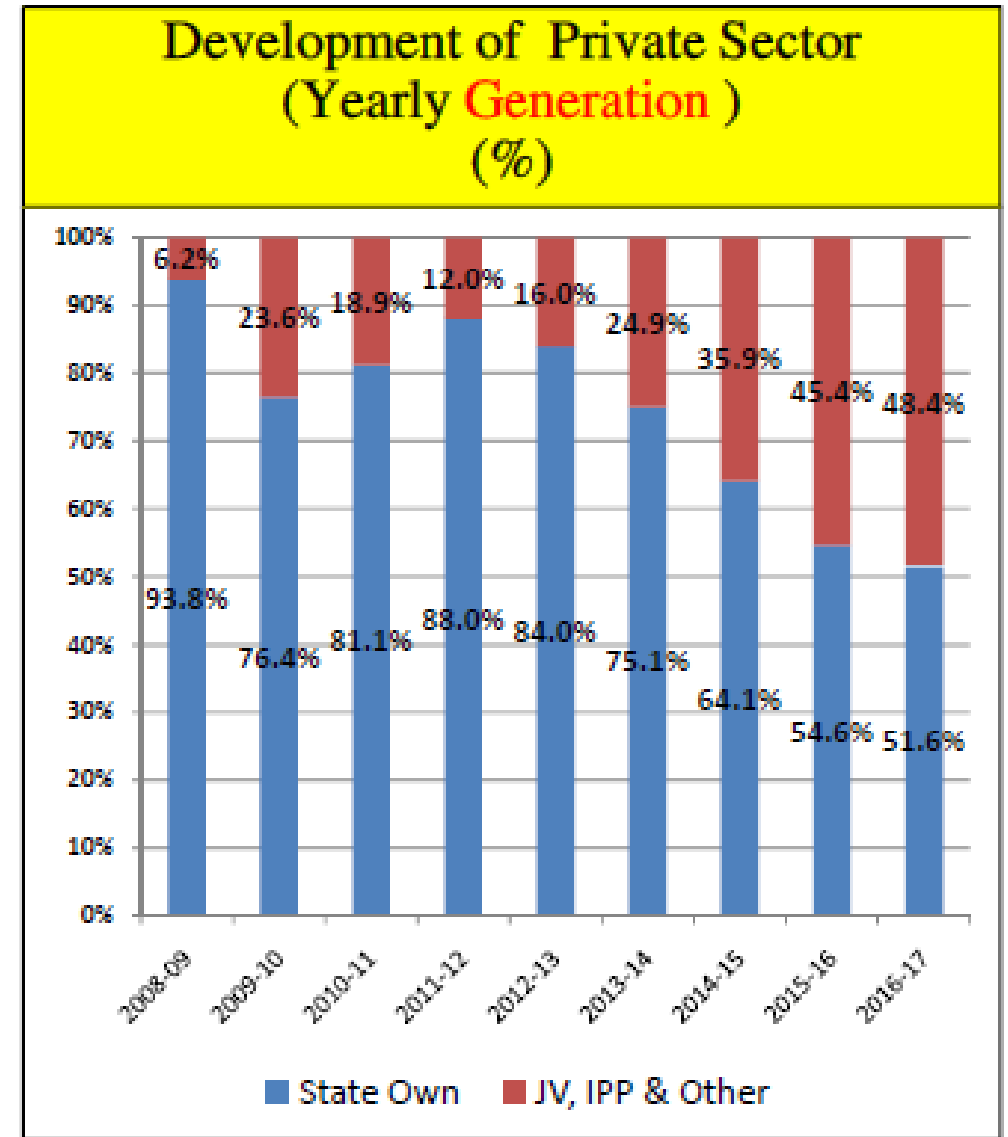
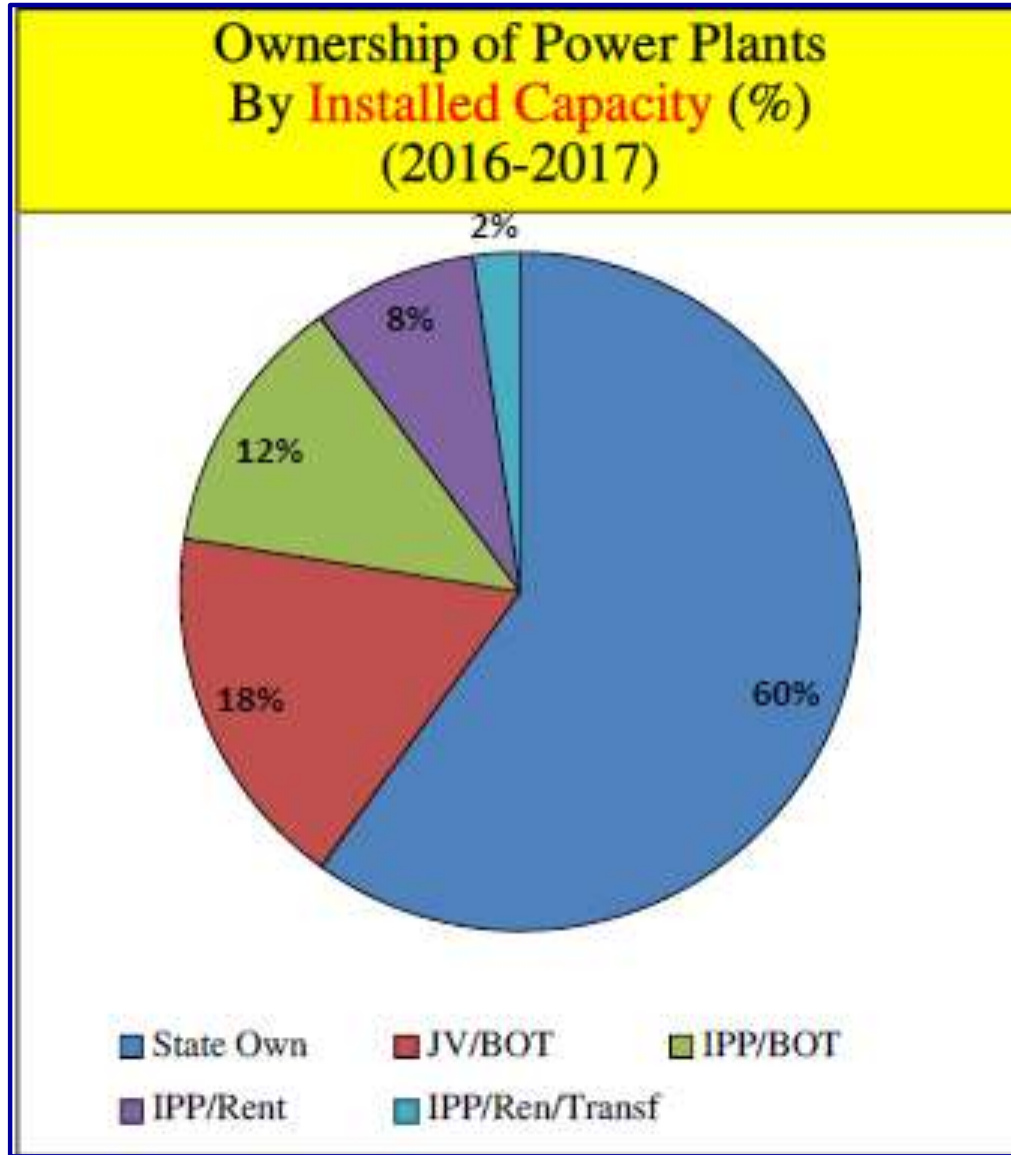
❖ conducted by the assistance of JICA

Demand Forecast for 20 years period (2011-2030)



Source: EPGE / MOEE

Myanmar Utility (Power) Review- Continue



Myanmar Utility (Power) Review- Continue

National Electrification Plan(NEP)

NEP Electrification Target

- 47% HH to be Electrified in 2020
- 76% HH to be Electrified in 2025
- 100% HH to be Electrified in 2030

conducted by MOEE and WB from May, 2014 to Sept,2014.

- 99 % Electrify by National Grid
- 1 % Electrify by Off Grid (Mini Grid, Solar Home, etc.)

Investment required to fulfill the NEP Target

- Distribution Portion : **USD 5.4 Billion** (for 6.767 million Household)
- Transmission & Distribution Portion : **USD 40 Billion**.

First 5 year plan (2015 ~ 2019) : 1.7 million Household to be electrified.

- Investment Needed : USD 670 million (for Distribution only)
- World Bank IDA Loan : USD 400 million (OnGrid:310MUSD+OffGrid:90MUSD)
- Requirement : USD 270 million

ICB, NCB, Shopping

Myanmar Utility (Power) Review- Continue

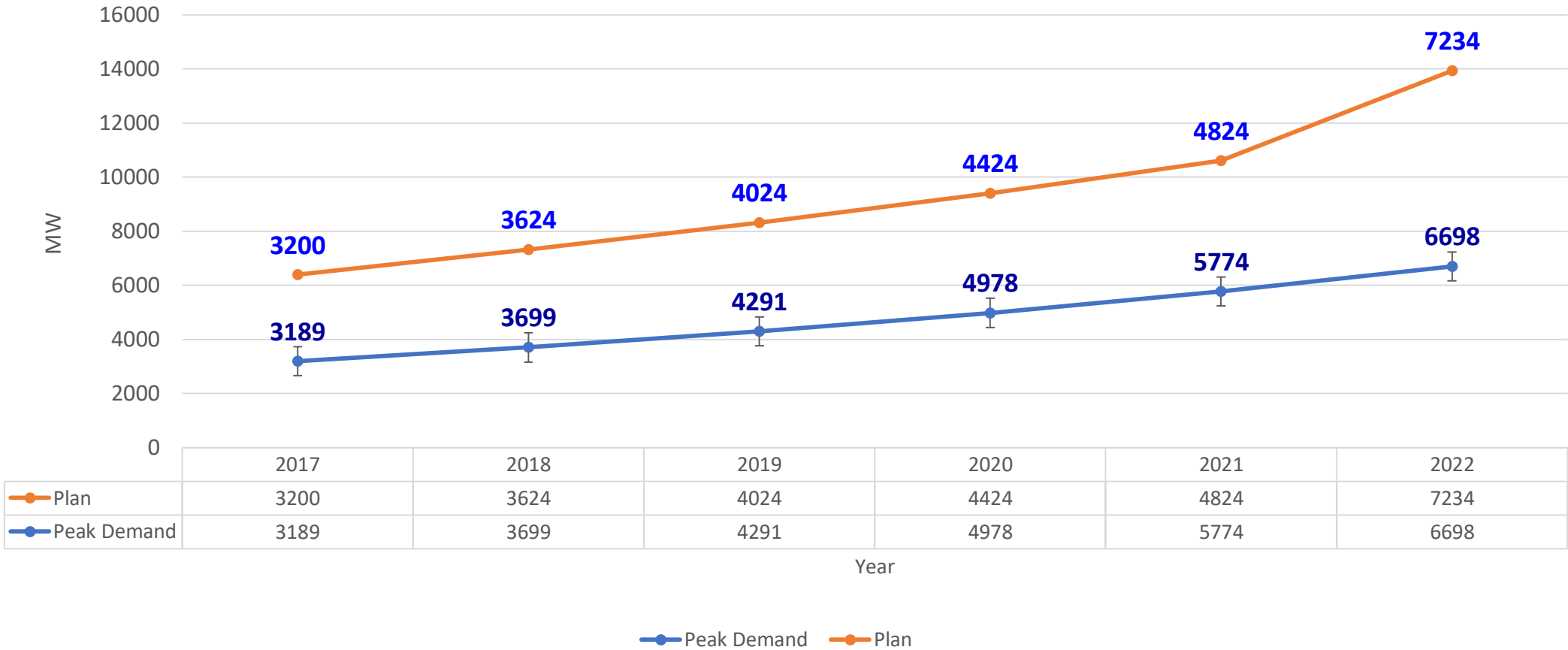
New Generations Projects in the pipeline (realistic)

Projects	MW	Nett Add MW	Type	New/ Replacement	COD Target
Myingyan	225	225	IPP	New Apr 18 CC	Feb-18
Thaketa UREC	105	80	IPP	New, Gas quota replacement of TKA GT- 25MW	Feb-18
Thahton	119	119	EPGE-EPC	New	Jun-18
Shwetaung Daewoo	70	30	IPP	Replacement of existing EPGE Shwetaung plant	Jun-19
ToyoThai	300	300	IPP	New	May-21
Total- Siemens	700	700	IPP	New	Dec-21
Supreme	1400	1400	IPP	New	Dec-21
Kyauk Phyu	100	0	IPP	Replacement of existing 2x 50MW Rental from V-Power	May-21
Kyauk-se	90	0	Rental	Renewal /Replacement of existing contract	Dec-18
Myingyan Rental	130	0	Rental	Renewal /Replacement of existing contract	Dec-18
Total	3239	2854			
Effective Add Capacity 2018		424			

Myanmar Utility (Power) Review- Continue

Short term target: by 2022

Short term plan till 2022



Myanmar Utility (Power) Review- Continue

Summary of Transmission Expansion Plan (From 2013 to 2031)									
No.	Type	2013-2016		2017-2021		2022-2026		2027-2031	
		Line Length Mile (km)	MVA	Line Length Mile (km)	MVA	Line Length Mile (km)	MVA	Line Length Mile (km)	MVA
1	500 kV	167 (269)	1,500	752 (1,211)	5,000	299 (481)	1,000	250 (402)	-
2	230 kV	1,838 (2,957)	2,700	1,963 (3,160)	4,010	366 (589)	1,150	-	700
3	132 kV	60 (96)	990	60 (97)	0	44 (71)	260	50 (81)	300
4	66 kV	1,371 (2,206)	641	858 (1,381)	405	93 (150)	150	-	75
Total		3,436 (5,528)	5,831	3,633 (5,849)	9,415	802 (1,291)	2,560	300 (483)	1,075

- Not allow Ownership for foreign and local company in Transmission Sector.
- It is considerable for low interest rate and soft financing term.

Myanmar Utility (Power) Review- Continue

Summary of Distribution Expansion Plan (From 2013 to 2031)									
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		Line Length Mile (km)	MVA	Line Length Mile (km)	MVA	Line Length Mile (km)	MVA	Line Length Mile (km)	MVA
1	66 kV	119 (192)	750	182 (293)	500	152 (245)	1,050	152 (245)	1,050
2	33 kV	1,079 (1,736)	1,060	1,108 (1,783)	1,210	1,506 (2,423)	1,880	1,695 (2,727)	2,450
3	11 kV	2,121 (3,413)	446	2,876 (4,627)	1,405	3,400 (5,471)	2,043	5,192 (8,354)	3,322
4	0.4 kV	2,039 (3,281)	-	5,692 (9,158)	-	7,783 (12,523)	-	8,239 (13,257)	-
Total		5,358 (8,622)	2,256	9,858 (15,861)	3,725	12,841 (20,661)	4,973	15,278 (24,583)	6,822

➤ Franchise system in township-wise utility task improving private sector.

Thinking differently for the betterment

Think big



stockfresh



Is this enough for fastest growing the last frontier economy???

Thinking differently for the betterment

Wish List or Dream Big



Yangon

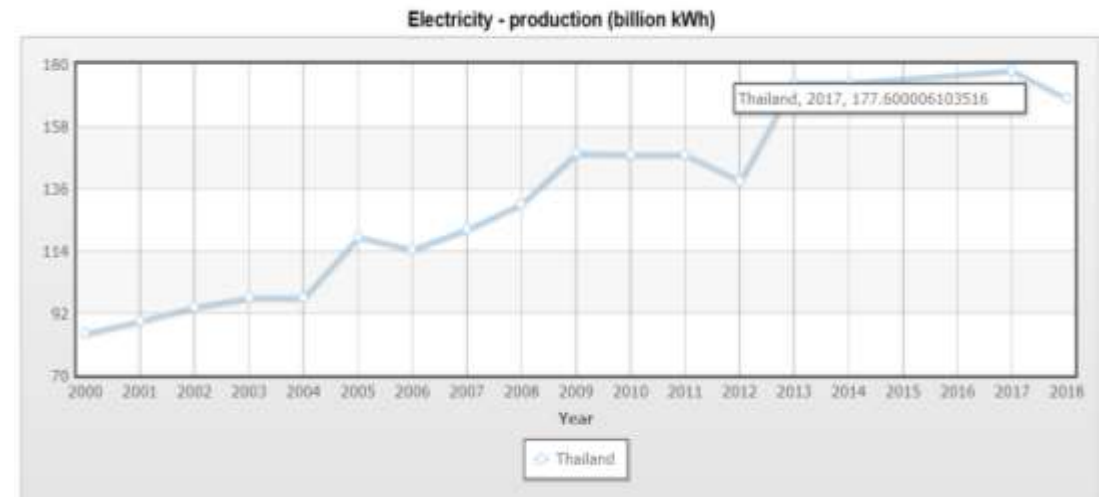
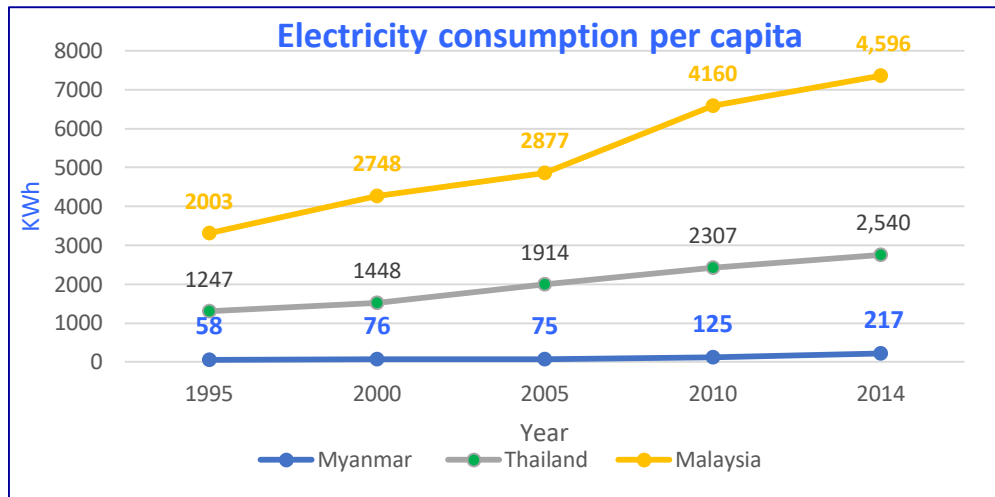


Bangkok

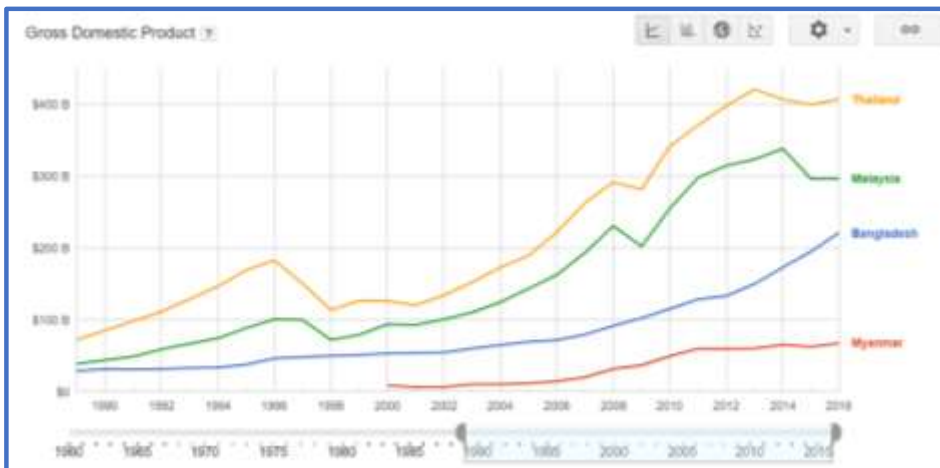
Myanmar Utility (Power) Review- Continue

Wish List or Dream Big

(Wish to see the key indicators to be increased catching up Thailand of 2010)

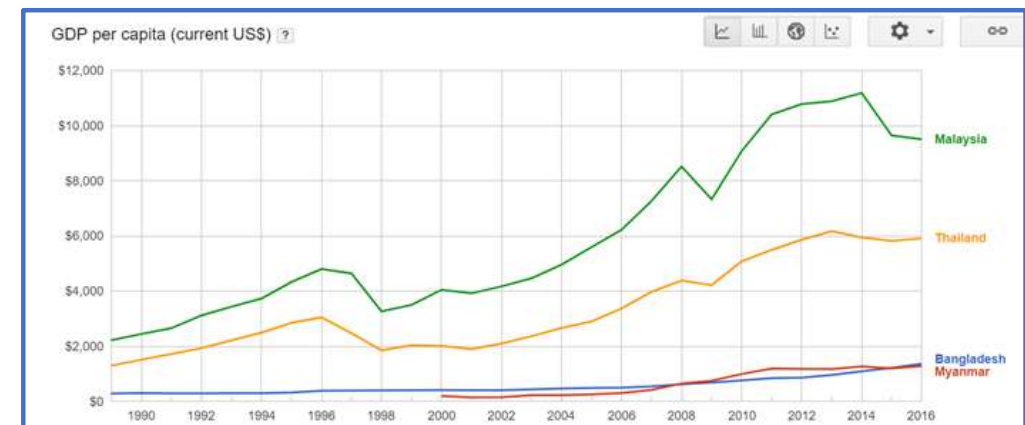


GDP



Source: World Bank

GDP per Capita (Current US\$)



Thinking differently for the betterment

✓ Challenge

S

- Low Electricity Tariff : Government Subsidize (23Kyat/kWh) Difficult to Increase Tariff. Tariff proposed by Investors could be high comparing to the Government subsidized tariff.
- Payment : We can pay local currency (Kyat). US\$ is applicable to the Investors for Power Purchased.
- Government Guarantee : No practice for **Sovereign Guarantee**.
- Legal Framework : Electricity Law already established. But ERA was not founded. Regulation for Tariff not established yet. Renewable Energy Policy not established yet. Grid Code in Draft Condition.
- System Condition : Myanmar National Grid System not strong enough to integrate the huge **Renewable Energy** Power Plants. / (N-1).
: Need to construct new Based Load Power Stations such as Hydro, Coal and Gas. And also related New T/L & S/S.
- Public Acceptance : Since some members of the public are concerned about Environmental & Social impact of the large Hydro & Coal Fired Power Projects, the investors need the acceptance of the people. The public awareness and education of the pros and cons as well as the criticalness of the urgent power required in the country. Without public acceptance, the investors could not proceed the projects in time.
- **Hard decision by the government** : **In my view the government's hard decisions are necessary for unpopular subjects for the sake of the country.**

Thinking differently for the betterment

What should we do to reach 2010 level of Thailand within next 5 years ?????

In my dream, I would love to see :

- Review the challenges faced and brain storming for solutions by the top leaders.
- Increase power generation, transmission and distribution network **intensively and aggressively**.
- Create the investor friendly environment for investors both local and foreign into the utility sector.
- Protect their investments and rights by the government.
- Sovereign guarantee funds to be set up with the assistance & coordination of MIGA/WB.
- Relax some rules limiting /restricting the investment.
- Electricity Tariff to be floated quarterly based on market fuel price and inflation.
- The electricity law to be amended to implement above tariff adjustment for the sake of country development.
- Plan and allow annual growth rate of Generation by IPP **2000MW to be built persistently** for next 20 years.
- The three pillars – generation, transmission and distribution be leave them for private investments. **(T/L and SS to be managed & controlled by MOEE)**.
- Let private sector to invest on Transmission lines includes main sub-station.
 - Let local and foreign investors to jointly invest on Distribution networks of below 66KV and minor substations
 - collect the fees (tariff from the end users for paying back the investment and financing cost (both equity and debt) with reasonable profit margin).
- Let create the electricity bond market for institutional investors and public for safe guarantee return of the excess funds rather than sitting in the banks. (bank Interest rates to be effectively lowered than current rates).



Tariff Adjustment

- Unpopular but essential to be done **timely**.
- Cost (Generation+ T + D) to be covered by the Tariff
- Thinking hard formula
 - Residential 50 Kyats (limit to consumption of 200KWh)
 - Commercial & Industrial 100Kyats – 0-500 KWh
 - 125 Kyats - 501-10,000KWh
 - 150 Kyats – 10, 001 – 50,000 KWh
 - 175 Kyats - 50001- 200000 KWh
 - 150 Kyats - 200001- 300000 KWh
 - 125 Kyats - 300001 – Above.



Thinking differently for the betterment

Looking forward short to medium term -10-15 Years

Generation

- Targeting additional 10,000MW by 2023
- Let IPP to invest 2000MW per annum persistently
- For the energy (fuel) security, think about relying LNG to power for the short and medium term.
- Secure long term LNG Contract for price stability when the spot price is volatile, and unstable. For fuel security, long term contract benefits outweigh short term lower price. (Japan, Korea are largest LNG importer and always used long term contract.

Transmission & Distribution System

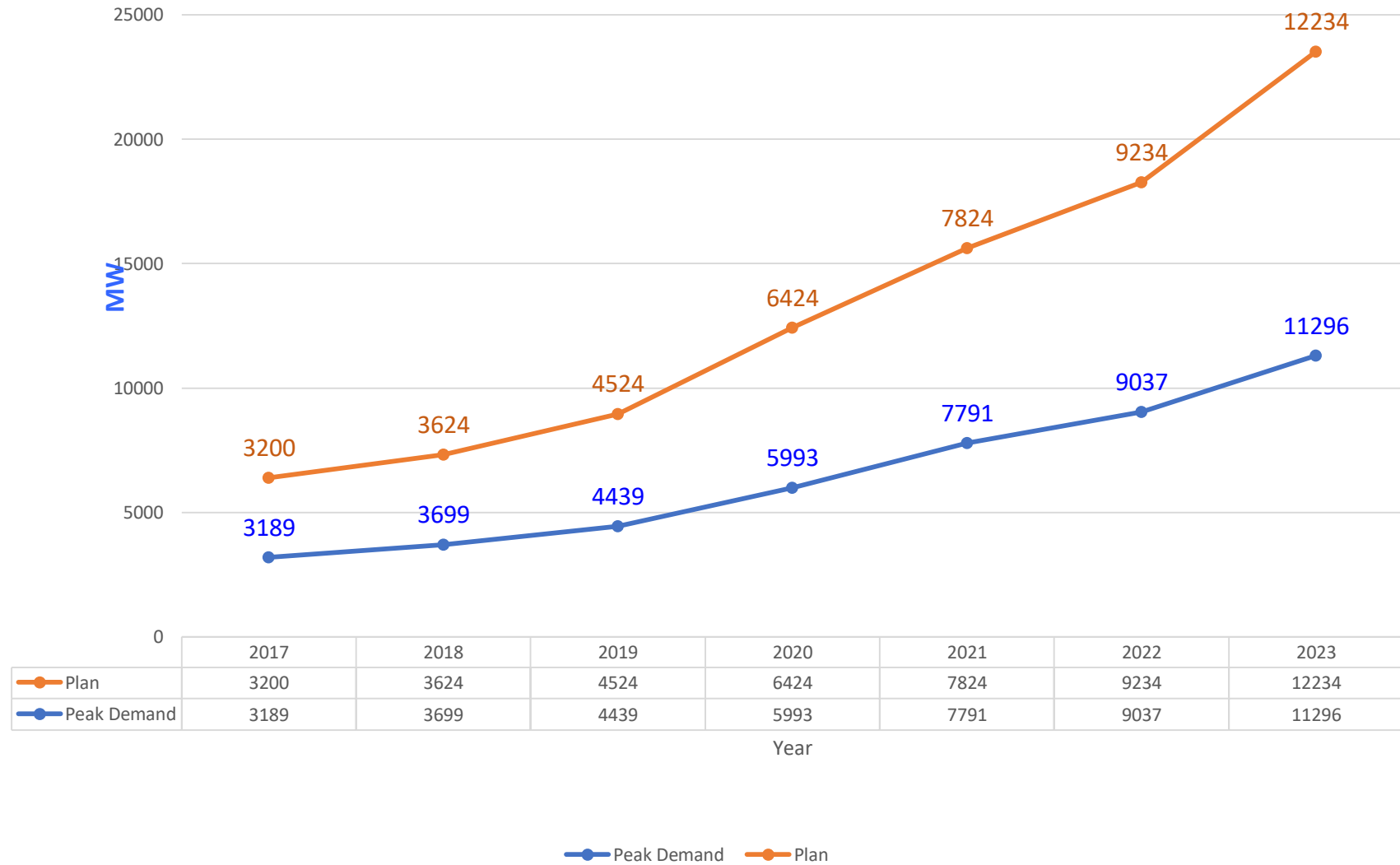
- T & D shall be built by private investors (local & foreign)
- Build 230KV Double Ring Circuits at major cities -Ygn/MDY
- Operation of the transmission & substation should be done by MOEE
- Maintenance shall be done by private sector.
- Distribution networks shall be operated by private sector.
- The entire T & D network to be built within 3-5 years with effective financing by private sector.

Financing & Guarantee to the investors

- Sovereign Guarantee to be assisted / managed by MIGA
- Local & foreign investment are allowed for effective financing.
- Equity & Debt to be raised by financial professionals and syndicated loans.
- Bond market to be allowed for utility sectors.
- Bond to be issued by JV Corporations, sold by financial institutions .

My Dream in 2023

Dream Idealistic Growth Plan



The Idealistic Roadmap of Myanmar Utility

The ways to achieve the dream

1. Amend the Electricity Law for market driven tariff
2. Increase the tariff for covering the cost (G + T + D)
3. Set up Sovereign Guarantee Funds with the international assistance from friendly countries & WB/MIGA
4. Create investor friendly environment for utility and energy sector. SG to be provided for safe investment.
5. Relax the limitation of LNG Import.
6. Secure long term LNG Contract
7. Set up Regulatory Body of Electricity as Myanmar Electricity Authority
8. Invite the investors on Generation, Transmission and Distribution
9. Let private sectors run the utility. (MOEE Only control and operate the Transmission Lines & Substation)
- 10. Assure all potential foreign and local investors that power shortage and outage is a history after 2023.**

**THANK
YOU**

PresenterMedia



Q & A Section