

Decarbonizing energy systems: The Philippines

Pre-pandemic and in the new normal



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WESM

Wholesale Electricity Spot Market

The Philippines does not subsidize power generation and has evolved a competitive power market with real-time transactions based on economic dispatch of all mostly private power plants under the Wholesale Electricity Spot Market (WESM). Bilateral contracts are not considered in the dispatch but settlement of declared bilateral contracts are done outside the WESM.



Sub-Grids

Being an archipelago, there are several island grids that are interconnected via submarine HVDC cables. Luzon is the main island; Visayas has a group of smaller interconnected islands. Luzon and Visayas are now interconnected but Mindanao is projected to be interconnected by the end of 2020

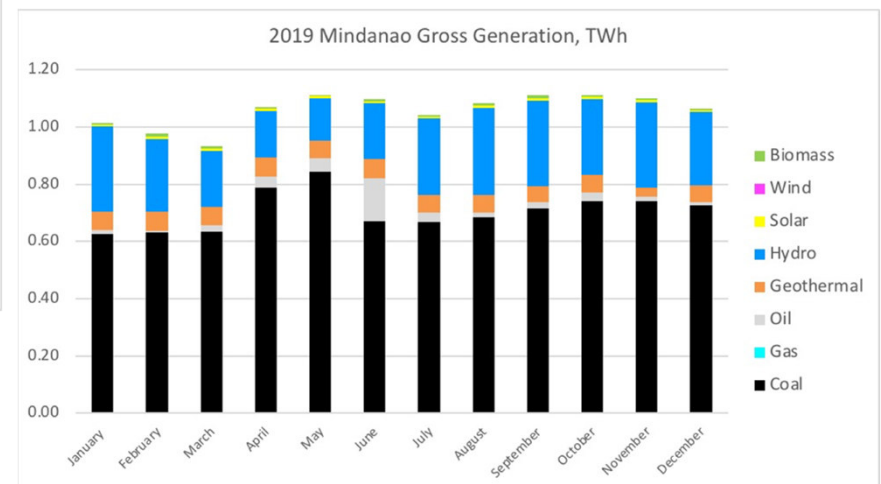
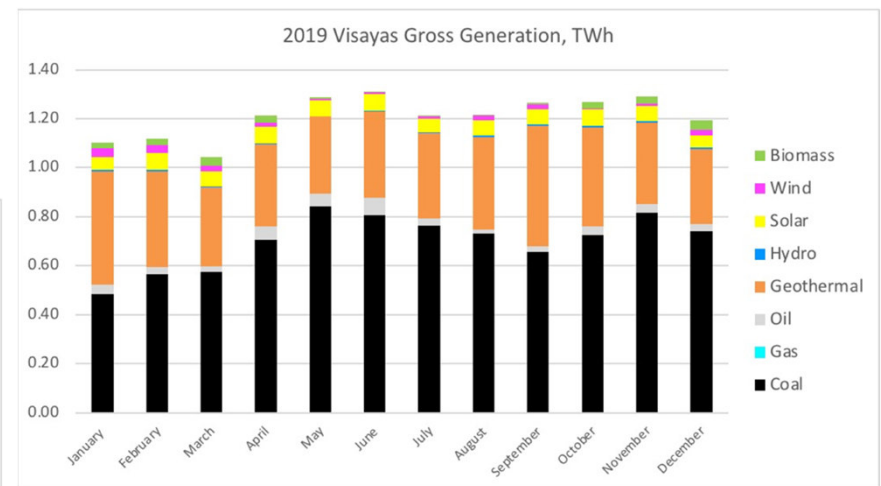
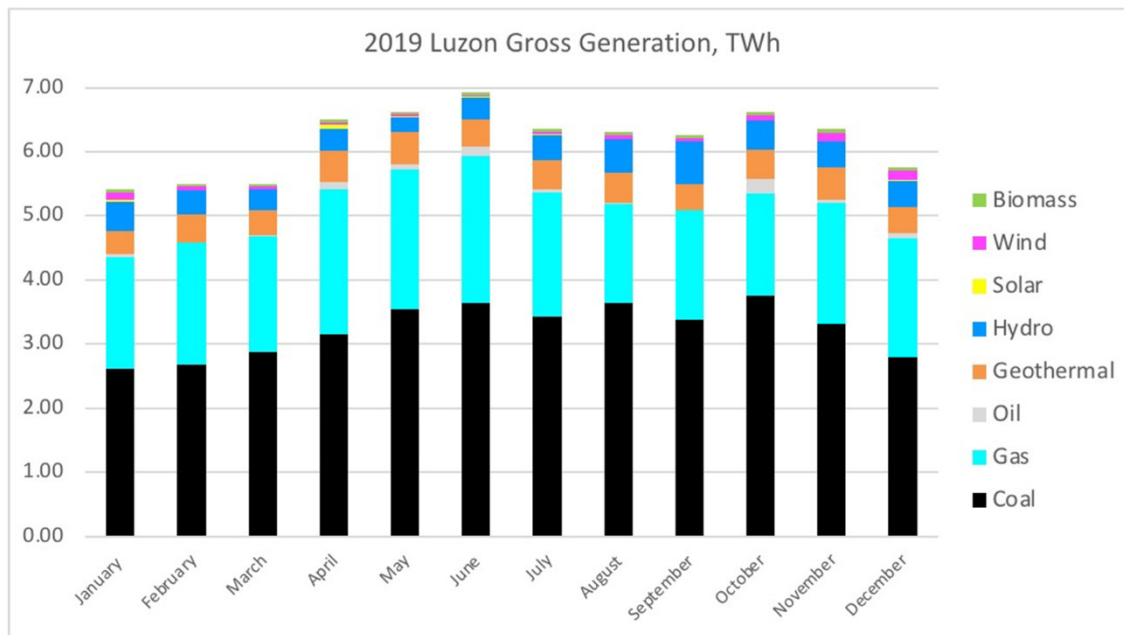


Private Sector

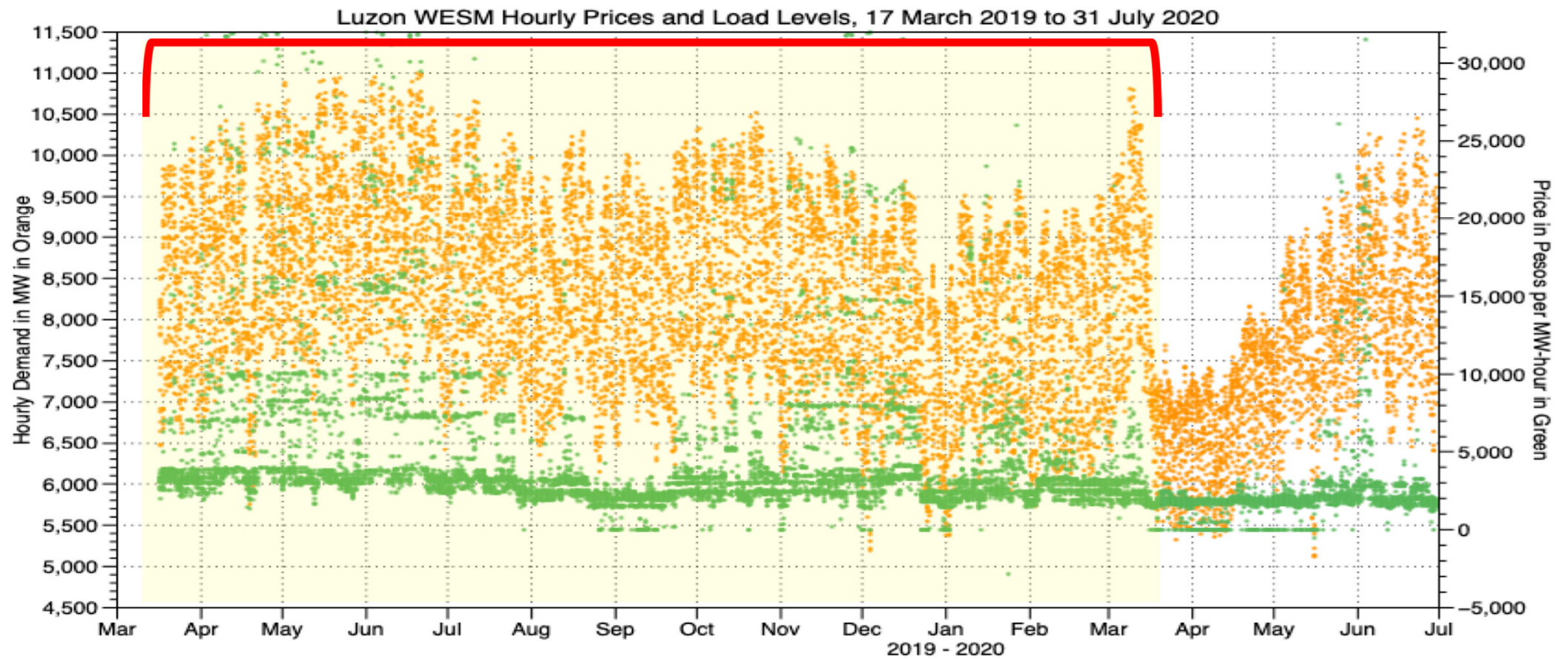
All new power plants shall be privately-owned and operated. The investment decisions shall be made by private companies in a competitive environment. Even distribution utilities are privately owned: either by corporations or by the consumers through rural electric cooperatives.

Understanding the Philippine Power Situation

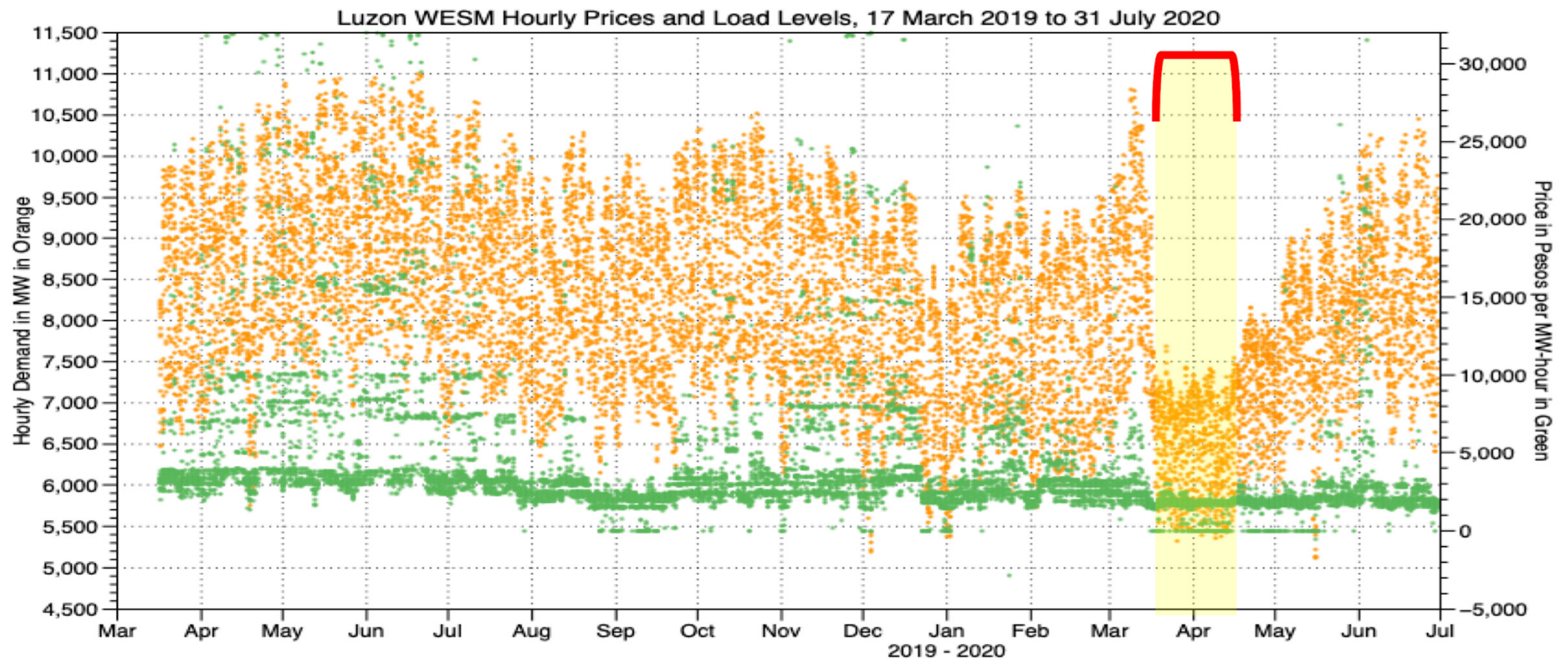
2019 Philippines Monthly Gross Power Generation in TWh



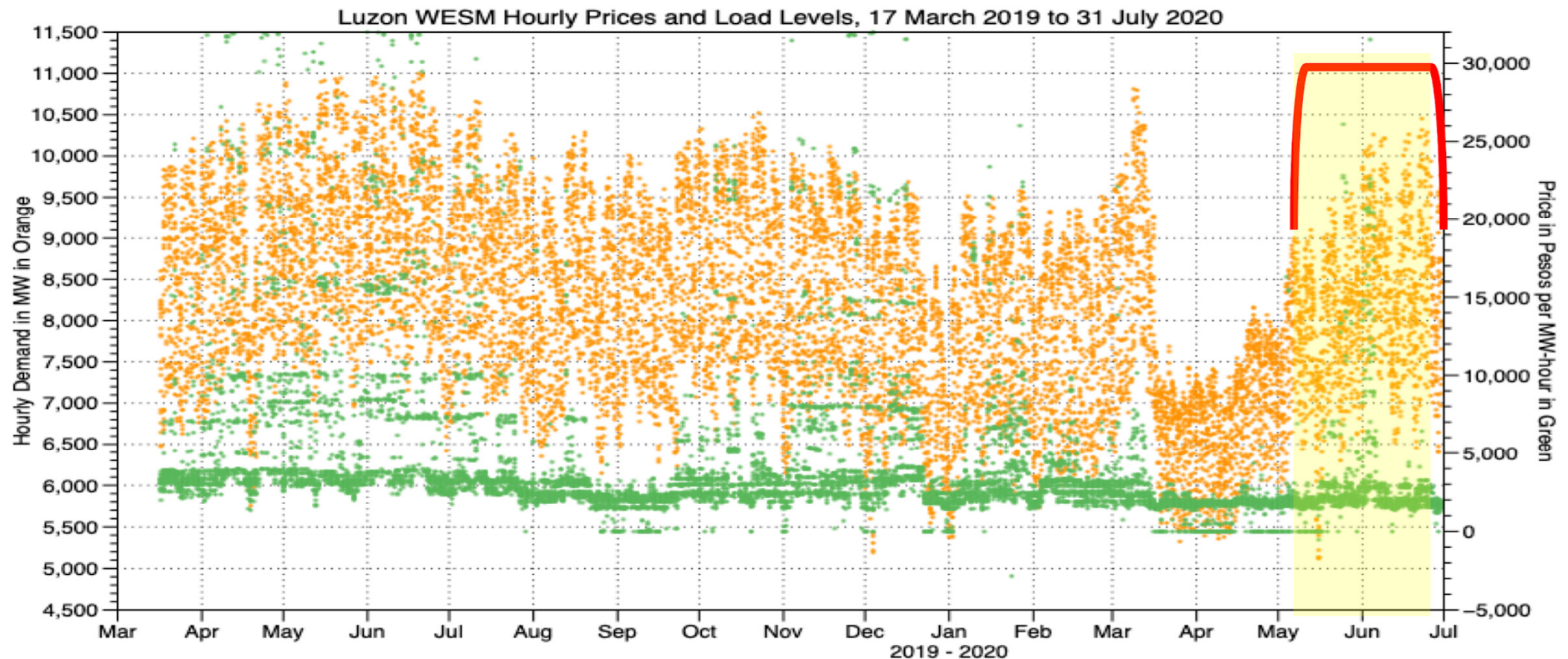
Inflexible Grid



Sudden drop in March 2020 caused the prices to also fall

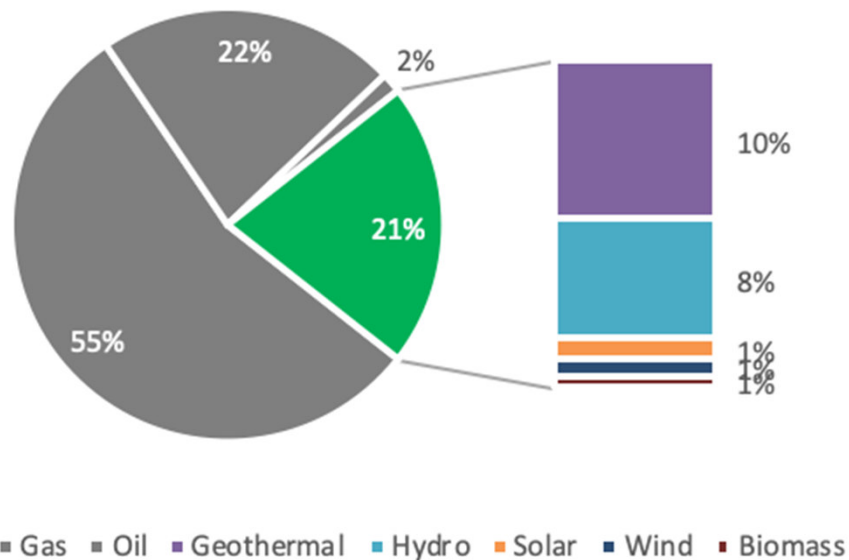


Once the demand recovered, the price also began to increase



New normal: Government plans and targets to address grid inflexibility

2019 Generation Shares by Type



2020

“One Grid”

Interconnection of the Visayas grid to the Mindanao grid

2020

Enhanced WESM Design

Implementation by December 2020, including 5-minute trading interval, ex-ante pricing only, economic dispatch or all generation types, and demand-size bidding

Green Energy Auctions

2,000 MW initially that will support DU compliance with Renewable Portfolio Standard (1% annual increase in RE procurement until 35% share is reached)

More competitive power procurement

By distribution utilities that will remove current practices that favor thermal power plants, including automatic fuel price pass-through

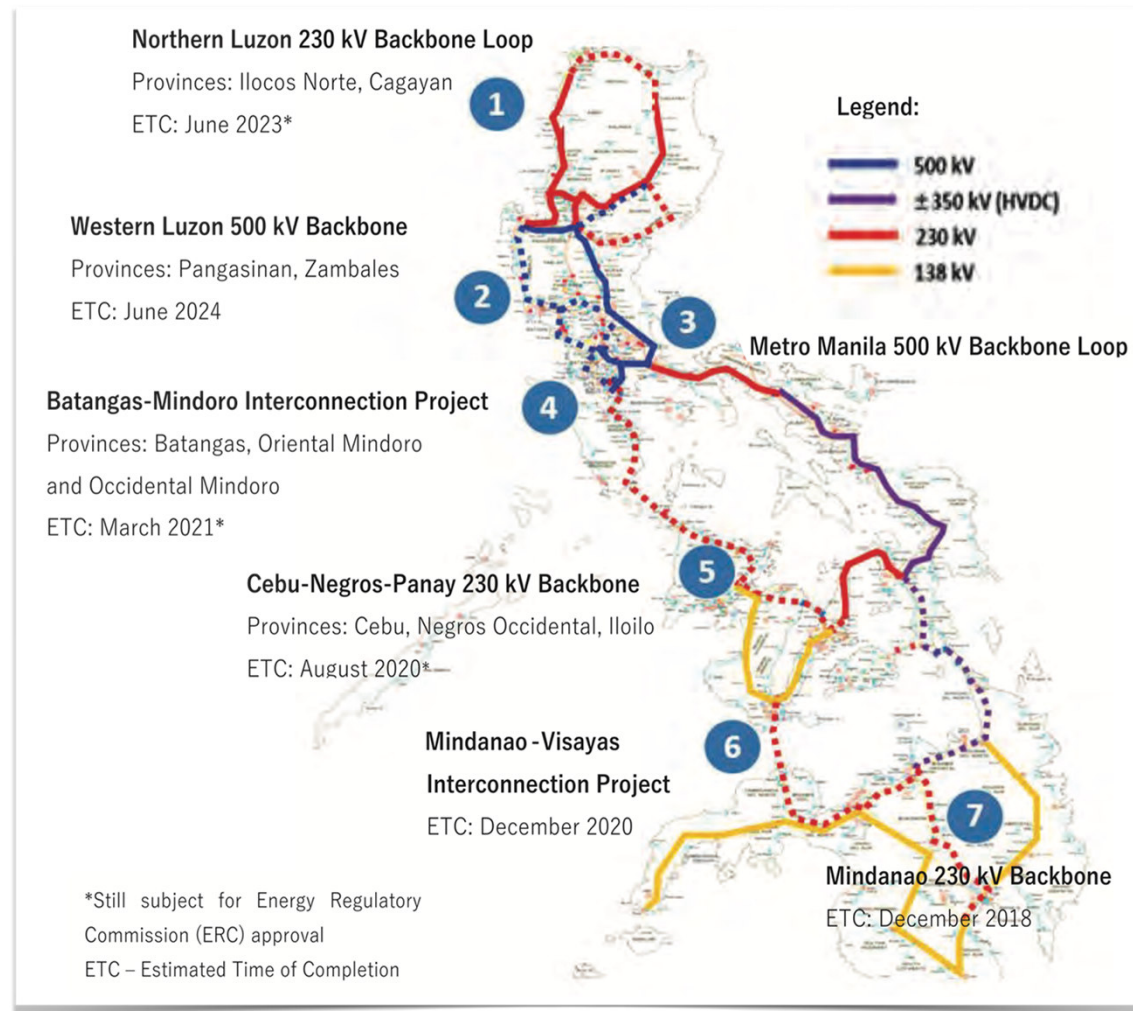
“One Grid” by end of 2020

✓ Metro Manila is in Luzon, the main island in the north of the Philippines. Luzon accounts for more than 70% of total power demand.

✓ Luzon and Visayas are interconnected but with the Mindanao-Visayas 350 kV HVDC line via Cebu, all major islands will be interconnected as One Grid.

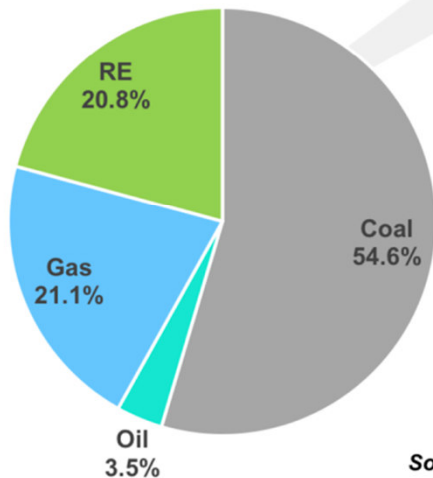
✓ Any power plant connected to the transmission system can technically supply power to the interconnected grid.

✓ The completion of 5 and 6 will remove current congestion's in the grid.



Renewable Portfolio Standard (RPS) is the key to decarbonization of the grid.

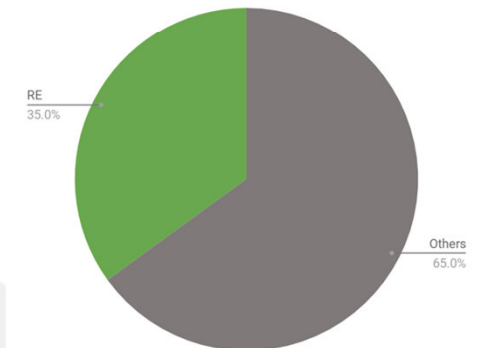
2019 Gen Mix Per Plant Type



Source: 2019 DOE Powerstat

RPS Increment	2030 Gen Mix				2040 Gen Mix			
	Coal	Oil	Gas	RE	Coal	Oil	Gas	RE
2.52% RPS starting 2023	41.0%	0.5%	21.3%	37.3%	29.7%	0.3%	14.2%	55.8%
1% RPS Flat	43.3%	0.8%	28.7%	27.2%	34.2%	0.4%	33.3%	32.1%
No RPS	43.7%	0.8%	34.6%	20.9%	34.6%	0.4%	49.8%	15.1%

Generation Mix Goal by 2030



National Renewable Energy Plan

35% share of renewable energy cannot be reached with current plans and programs. The National Renewable Energy Plan is being updated to bring the target back on track.



Green Energy Auction at 2,000MW

Green Energy Auction at 2,000 MW will have to be done every 2 years for the next 20 years to meet the Department of Energy's goal of 20,000 MW of RE capacity in support of the UN's Sustainable Energy for All initiative as stated in the Philippine Energy Plan.



Improvements - NGCP, CSP, WESM

The (1) completion of key transmission system expansion projects, (2) improvement of power procurement towards more transparency and a level playing field and (3) the implementation of the enhanced WESM design will all help address current constraints to more renewable energy generation.

Key Messages and Recommendations