Japan International Cooperation Agency

ENERGY POLICY TRAINING, TOKYO, (23RD JUNE - 20TH JULY) 2024

COUNTRY REPORT PRESENTATION – PAPUA NEW GUINEA

LOCATION : South of Japan & North of Australia

LAND AREA: 452,860 sq km

CLIMATE: Tropical, Wet & Dry

POPULATION:11.8 Million

GDP: 31.15 Billion US Dollars

GDP per Capita: 3,057 US Dollars

LANGUAGE: 839 Known Languages

Content /Presentation Outline

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PAPUA NEW GUINEA OVERVIEW

Geography

Island country comprises of the eastern part of the island of New Guinea (mainland) and other 600 smaller offshore islands in the southwestern Pacific Ocean.

Society

- Estimated Population of 11.8 Million comprise of Melanesian, Micronesia or Polynesia
- Official languages are English, Pidgin and Motu and it has over 860 native languages making it a linguistically diverse country in the world.
- The bulk of the population, some -80 – 85 percent live in traditional village based and 15-20 percent of the population live in urban areas.
- Population growth is estimated to have been 1.9 per cent in 2022 (World Bank) with more than half of the population under the age of 23.
- Urbanization or rural urban shift is causing a lot of stress on the service infrastructures in urban areas.

Politics and Government

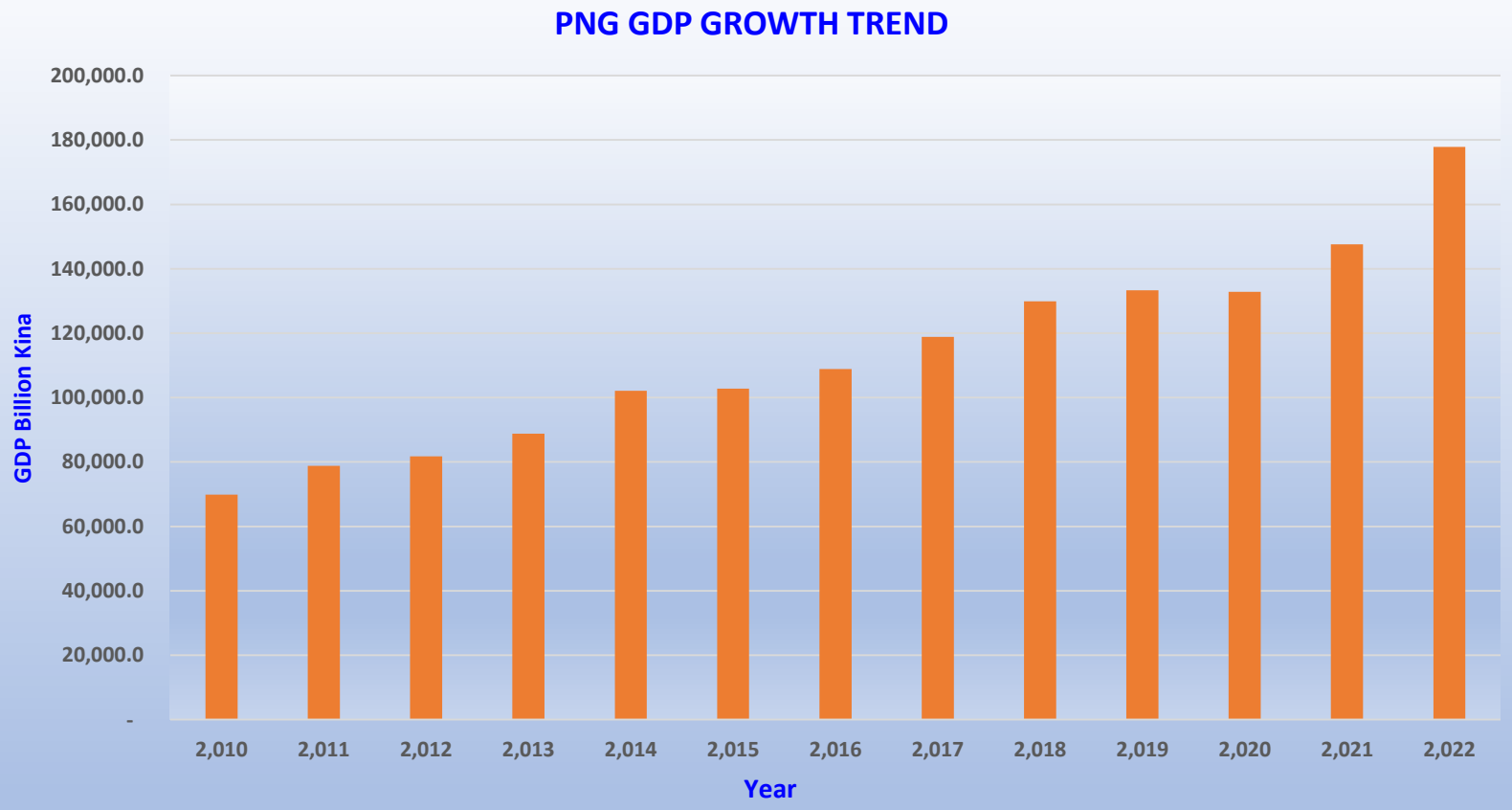
- PNG a Member of the Commonwealth with the head of the state being King Charles II and a parliamentary democracy System.
- Members of parliament are elected through general elections every five (5) years, Parliaments elects Prime Minister who appoints ministers (cabinet)

Economy

Made up of two distinct economies including (1) a modern, formal economy and (2) a traditional, subsistence economy.

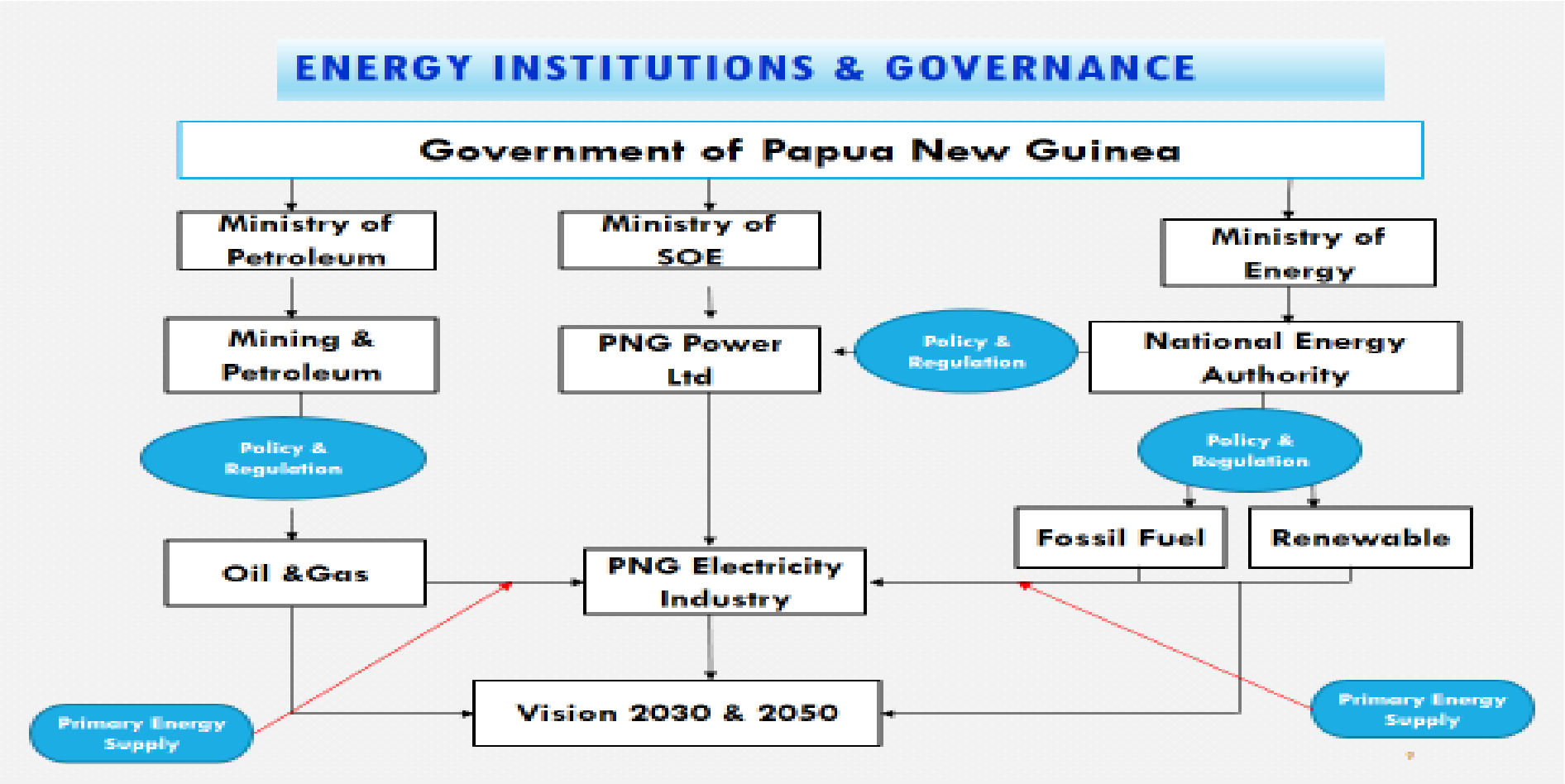
- The two main economic drivers are the export-earning sector (minerals extraction and energy) and the labor-intensive sectors (agriculture, fishing, and forestry).
- LNG production facility, completed in 2014, is a significant factor in PNG's economic
- The GDP growth rate has been increasing at an average rate of 1.8% every year since 2000 and was hit hard by covid pandemic and reduced by 3.5% between 2019 and 2020 as illustrated by the graph below.

Papua New Guinea Gross Domestic Product



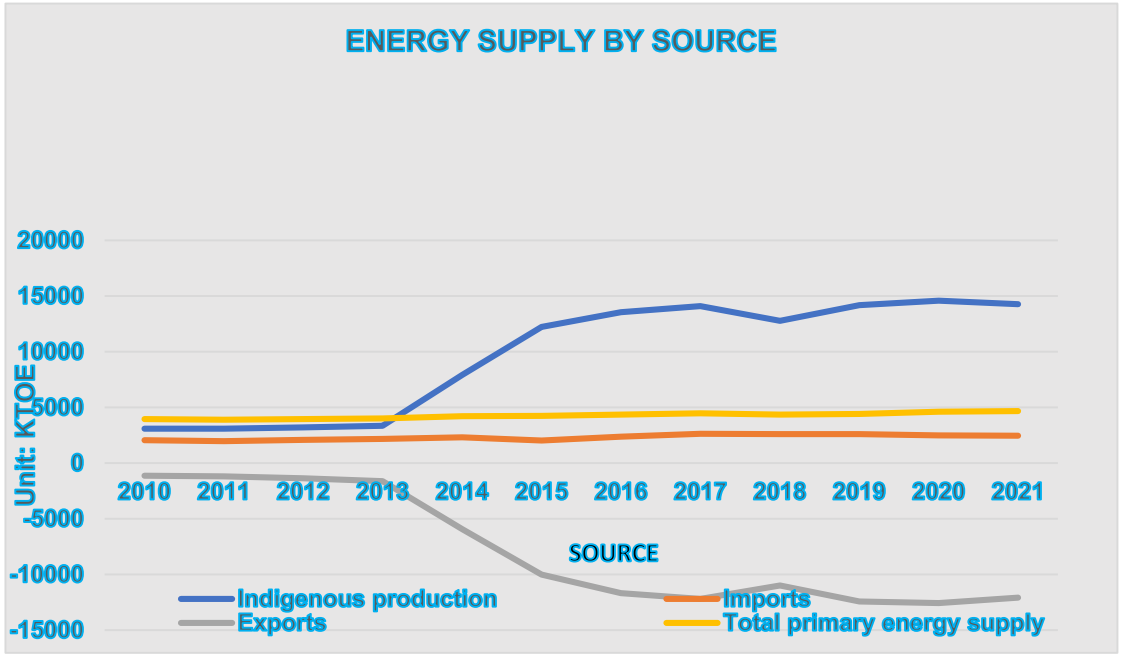
Energy Institutions & Governance

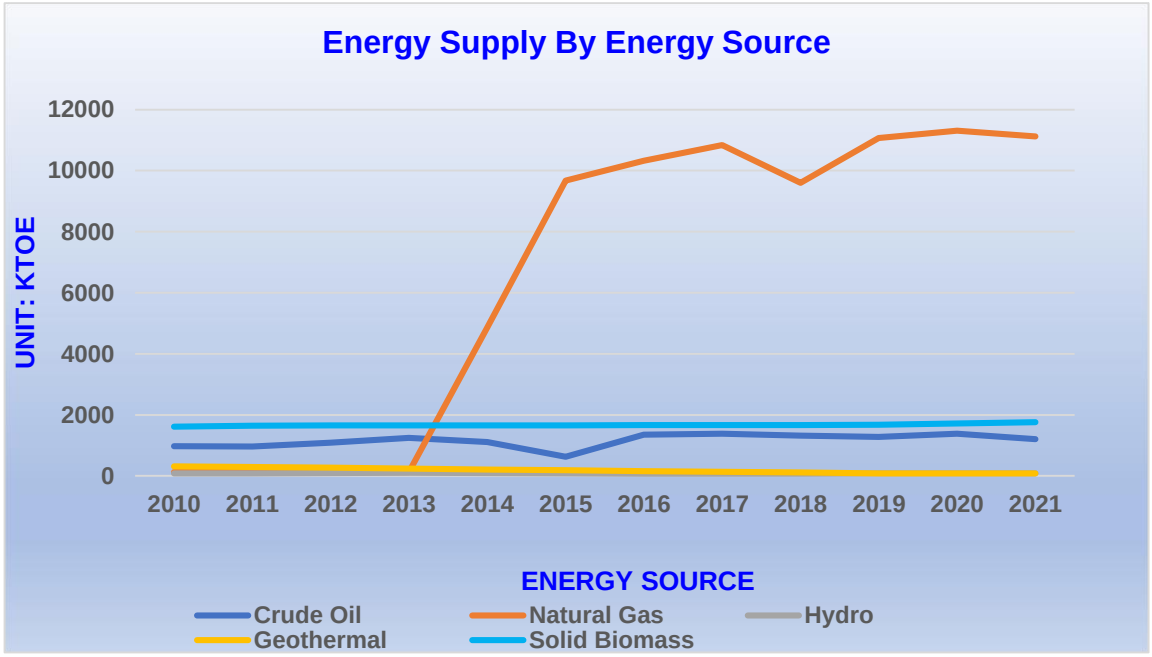
- Energy policies historically focused on developing its rich natural resources but focus has shifted recently towards strengthening the governance and institutional frameworks
- National Energy Authority (NEA) was established to coordinate the policy reforms and regulate the Fossil fuels and renewable energy resources



HISTORICAL ENERGY SUPPLY & DEMAND

-The Sector has three key energy resources: (i) electric power, (ii) fossil fuels (including petroleum, and natural gas) and iii) renewables (including biomass, geothermal, Solar PV, Hydro energy sources)

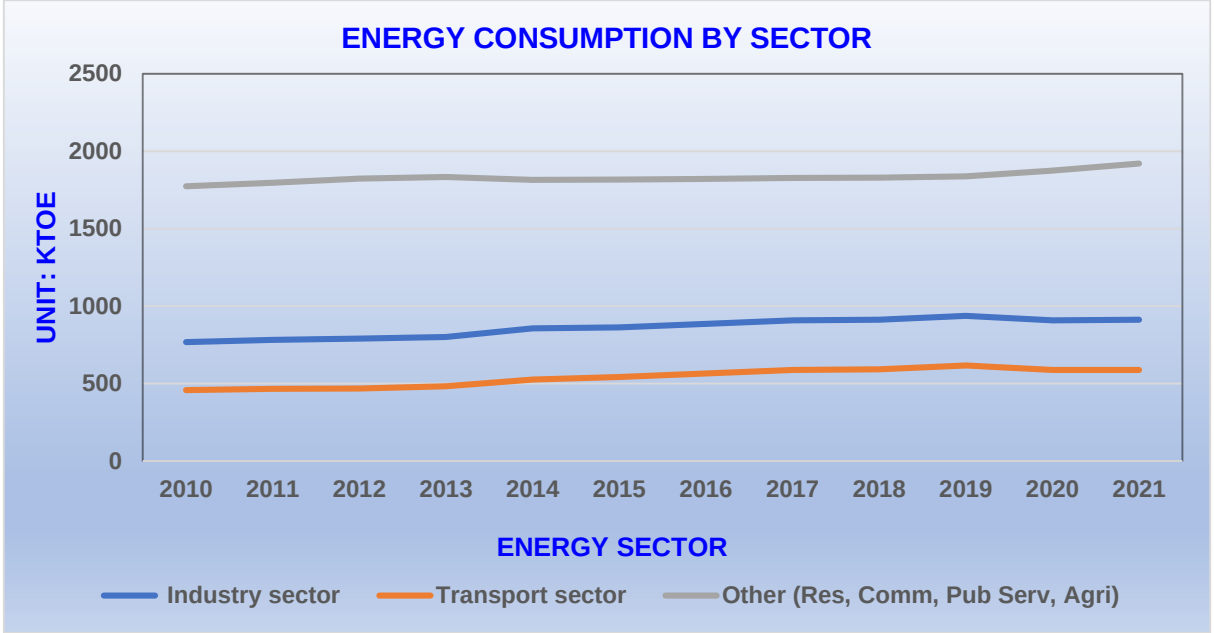


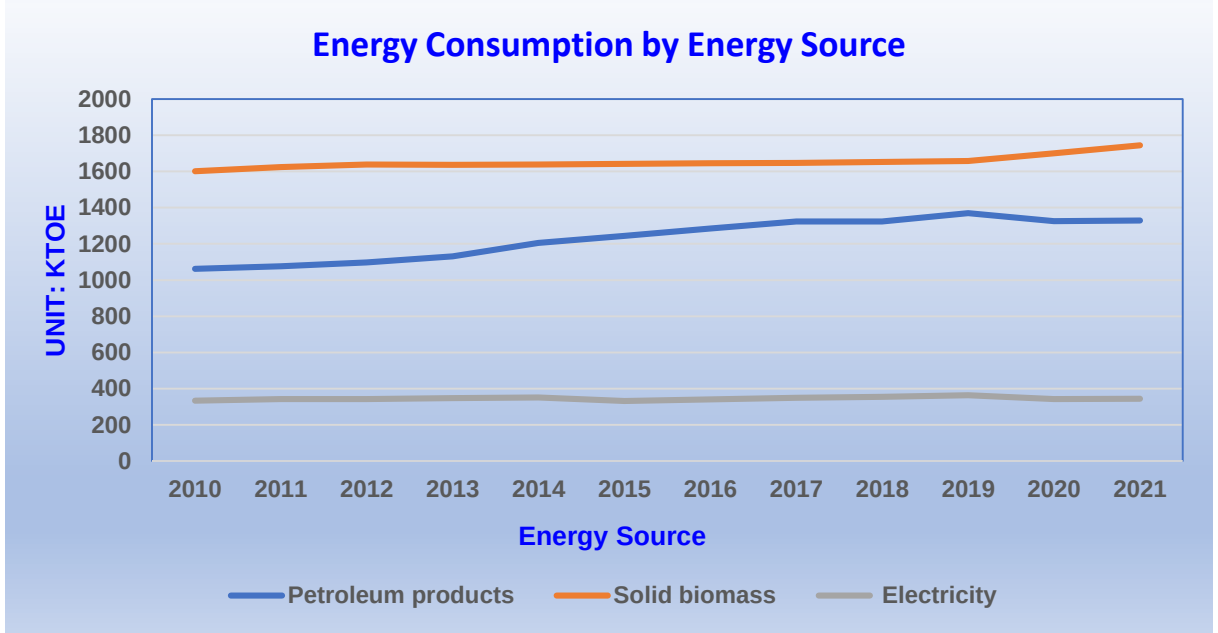


The completion of the LNG production facility in 2014 is a significant factor causing the spike in the Natural gas supply from 2014 onwards.

ENERGY CONSUMPTION

PNG's energy demand is dominated by oil 39% and renewables 51% of which is firewood. Electricity consumption was 10% of final energy demand and is mostly consumed by the industrial sector



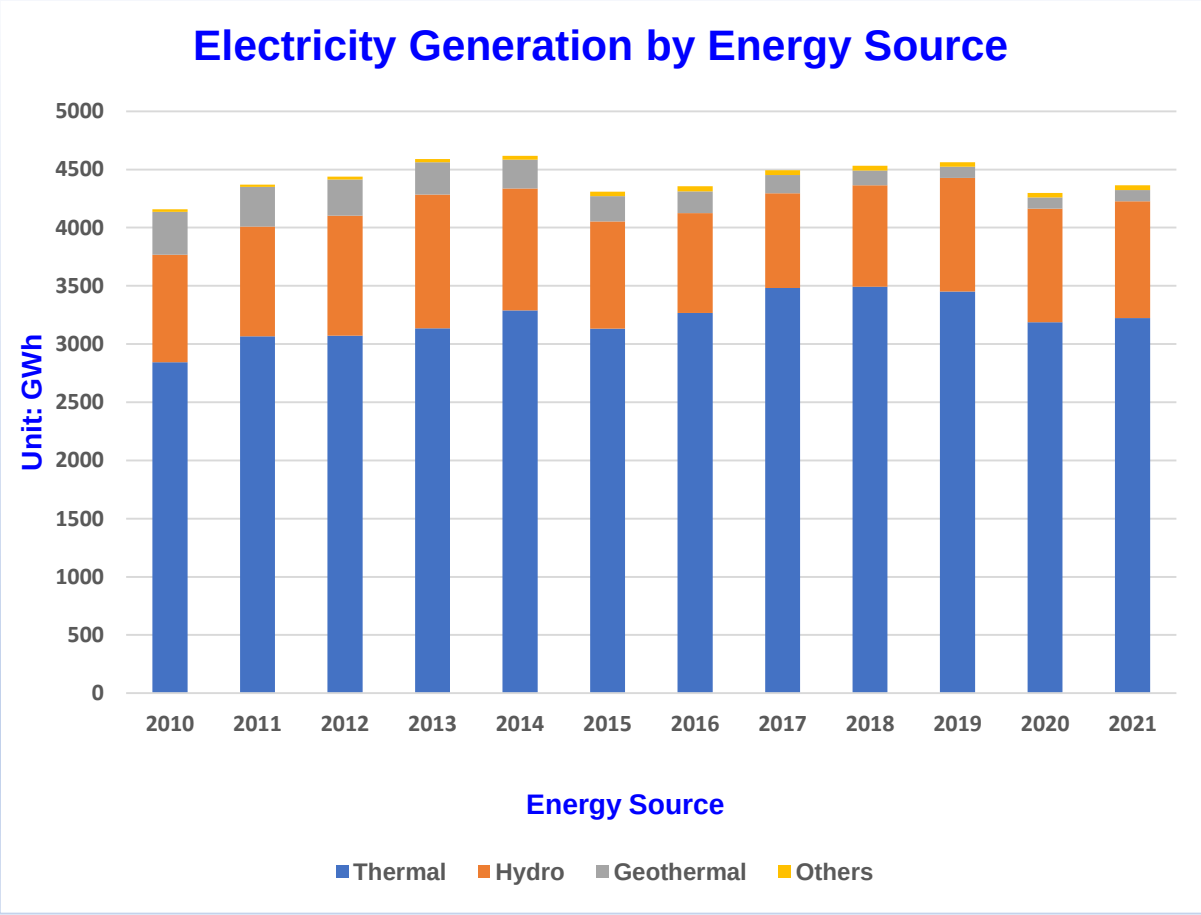


Renewable energy, mostly firewood, contributes the largest share of final energy consumption, partially due to limited access to electricity. The National Electrification Rollout Plan is expected to reduce traditional biomass use as access to electricity increases

Use of renewables is especially high because PNG relies more on firewood for heating and cooking in buildings, compared to electricity, gas and coal, which are much more efficient, in other economies.

Electricity Generation

PNG's electricity network is relatively undeveloped. Only around 15% of the population have access to the grid due to poor infrastructure, network and the rugged topography



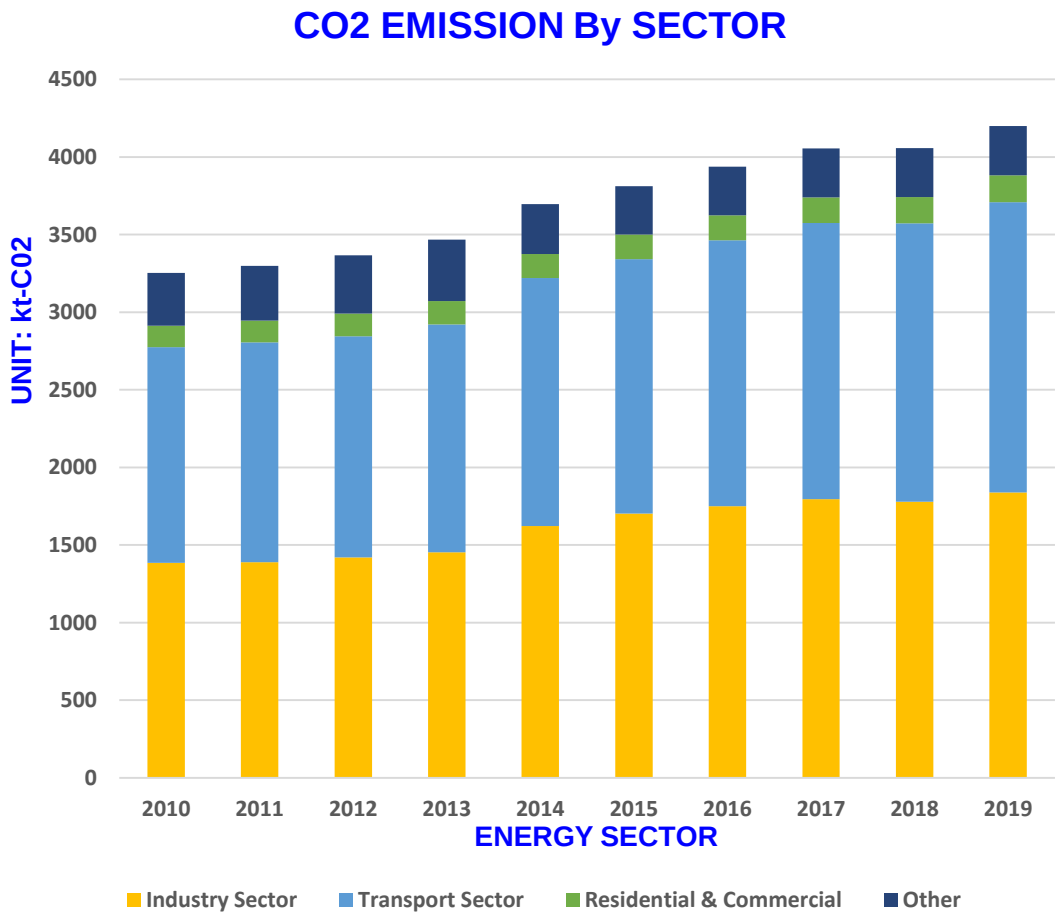
- An Important Government Objective is to increase access to electricity to 70% of the population by 2030 and 100% by 2050
- Developed the The National Electrification Rollout Plan with assistance from APEC Members
- This will help to stimulate economic activity and quality of life throughout the economy.

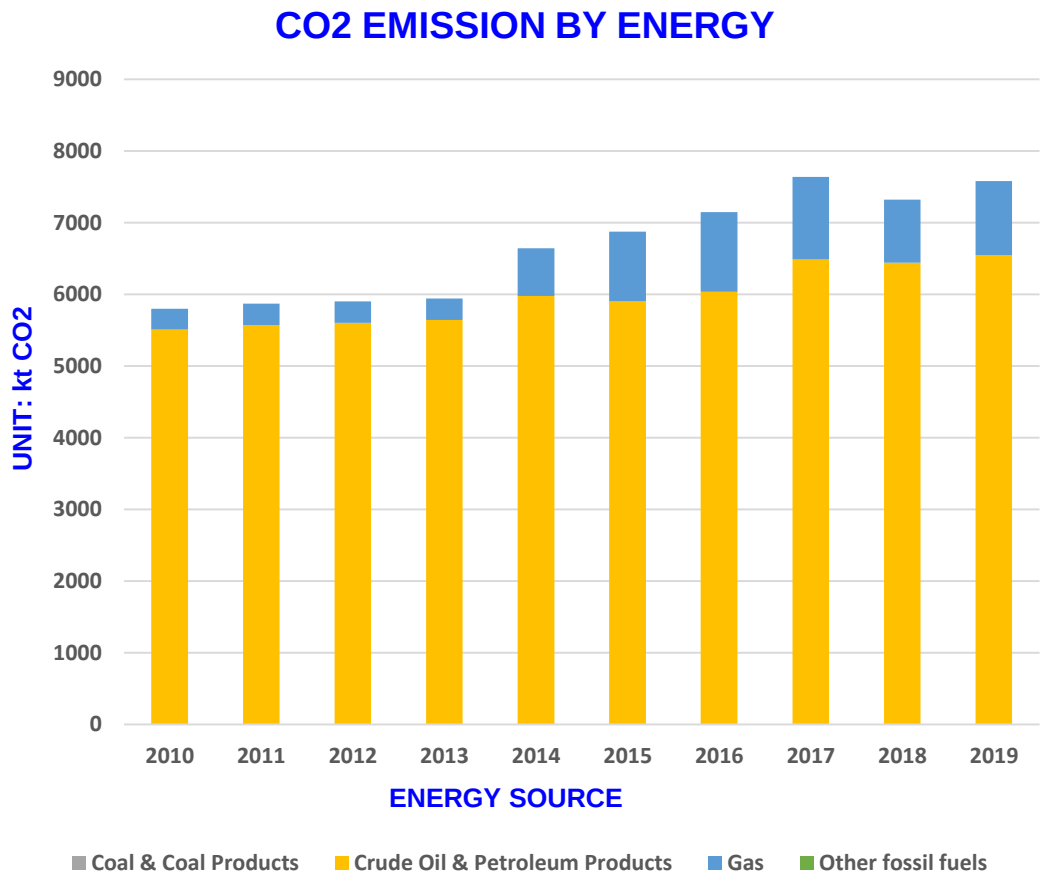
About two-thirds of electricity generation in PNG is carried out by auto producers, such as mining facilities, which are quite far away from urban centres and are therefore not connected to the grid.

The economy depends heavily on fuel oil for electricity generation followed by Hydro and currently Policy objectives are drafted to tap into more use of renewables.

C02 Emissions

The majority of PNG's emissions currently come from electricity generation (40%), transport (20%) and industry (20%). The emissions from burning firewood are not considered





On Average, 90% of PNG's CO2 emission comes from Crude oil and petroleum energy sources with others making up 10%.

ENERGY DEMAND & SUPPLY OUTLOOK

PNG is a relatively small economy dominated by mining and as such, a single mine closure or opening can have a huge immediate impact on energy demand

Primary Energy Supply by Source & Energy Source

- Papua New Guinea's primary energy supply in the 2020s–2035 period is projected to grow at an annual rate of 4.5%.
- Oil, which was the predominant form of energy will be increasingly supplemented with natural gas and new renewable energy (NRE) (mainly geothermal).

Primary Energy Consumption by Sector & Energy Source

- Industry Energy demand is projected to increase at an average annual rate of 4.4% which will account for 59% of final demand in 2035, driven by the LNG projects.
- demand in the transport sector is expected to increase at an average annual rate of 2.3% over the outlook period. This demand will be met almost entirely by oil-derived fuels.
- The final energy demand in the 'other' sector, which includes residential, commercial and agricultural users, is projected to increase at an average annual rate of 4.8% over the outlook period.

Electricity Generation by Energy Source

- Electricity in PNG is generated by PNG Power Limited (PPL), the national electricity provider and a wholly government-owned through Kumul Consolidated Holdings (KCH)
- There are vague plans Electricity generation is projected to grow by 4.9% annually over the outlook period and to reach 12.2 TWh in 2035.

CO2 Emission by Sector & Energy Source

- PNG emitted about eight million tonnes of CO2 in 2020, but this is only about one thousandth of APERC's total emissions. PNG's low amount of emissions is expected to grow quickly over time as the economy increases power generation, as well as industrial and transport activity.
- Papua New Guinea's CO2 emissions from the combustion of fuels are projected to reach 14.8 million tonnes in 2035, which is almost a 2.8 times increase from the 2010 level of 5.5 million tonnes.

PNG's CURRENT ENERGY POLICIES

PNG's Energy Policies have been focused on developing its natural resources until recently the focus has shifted to strengthening the governance and institutional capacity building and framework to develop the resources in a sustainable manner and meeting future challenges such as climate change.

Current Energy Policies & Measures

- The National Energy Policy (NEP) 2018-2028
- The Power Sector Development Plan
- Promoting Rural Electrification

Major Difficulties & Bottlenecks Encountered

- Over Dependent on Imported Expensive Oil
- Urban Power Shortages
- Lack of Rural Electrification/Connectivity

For PNG as a whole, a continued lack of rural electrification presents a severe challenge to economic growth and equal opportunity and indirectly puts pressure on local forests as fuel wood collection continues to constitute a major factor in deforestation.

EXPECTATIONS FROM ENERGY POLICY TRAINING PROGRAM

From this KCCP Program for Energy Policy Training, we would like to gain substantial understanding and in depth knowledge on the process of policy formulation through to delivery. The policy formulation, planning and delivery process in Japan, the numerous field trips, sharing experiences through dialogue and collaboration among industry experts and partners being built in to the training program gives us that confidence.

PNG Power's plan going forward is to reduce the cost of power production by moving away from burning expensive imported fuel oil and utilize appropriate technology to tab into clean renewable energy resources that are available in abundance including; hydro, natural gas, geothermal and even solar photovoltaic. This can only be achieved with the assistance from other development partners like JICA through sponsoring such Programs and technical assistance.

We expect to integrate the energy transition models used in Japan or any other partner country that suits our needs and that is workable. We are confident of supporting the established institutions to deliver energy policies through applying effective planning processes and appropriate strategies and methods. And most importantly, we will support and coordinate with key agencies to address the challenges to deliver policies.

“ARIGATO GOZAIMUS”

THANK YOU