



# **COUNTRY REPORT: ENERGY SECTOR UPDATE in PAPUA NEW GUINEA**

**At the  
JICA KNOWLEDGE CO-CREATION PROGRAM –  
ENERGY POLICY**

**23<sup>rd</sup> June 2025 | JICA Tokyo Center | Tokyo | Japan**

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AUTHORITY**



# 1. GENERAL INFORMATION

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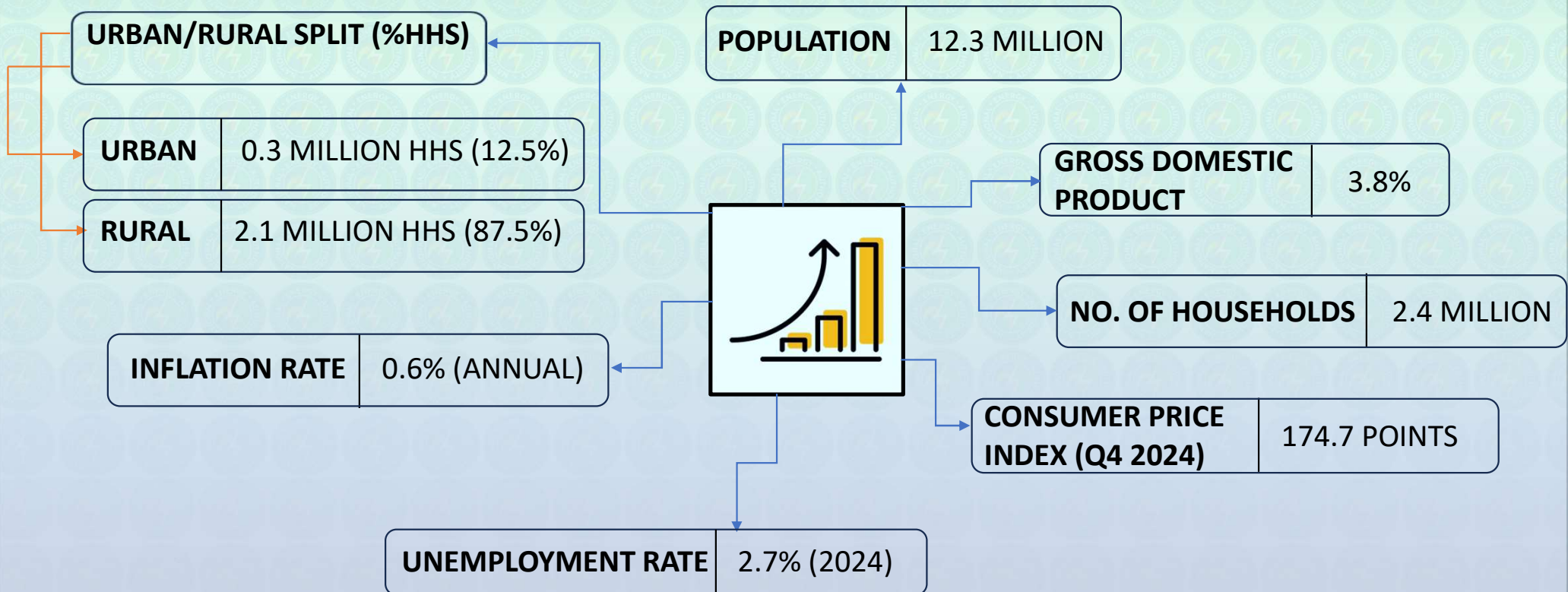
# 1.1 COUNTRY PROFILE – PAPUA NEW GUINEA

- Location: **South Pacific, north of Australia**
- Geography: **Mountainous, forested, over 600 islands**
- Area: **462,840 sq km**
- Government: **Parliamentary democracy under constitutional monarchy**
  - Head of State: **Charles III, represented by a Governor-General**
  - Prime Minister: **James Marape**
- Languages: **English (official), Tok Pisin, Hiri Motu plus 851 local languages**
- Capital: **Port Moresby**
- Currency: **Papua New Guinean Kina (PGK)**
- Life expectancy: **63 years (men) 68 years (women)**



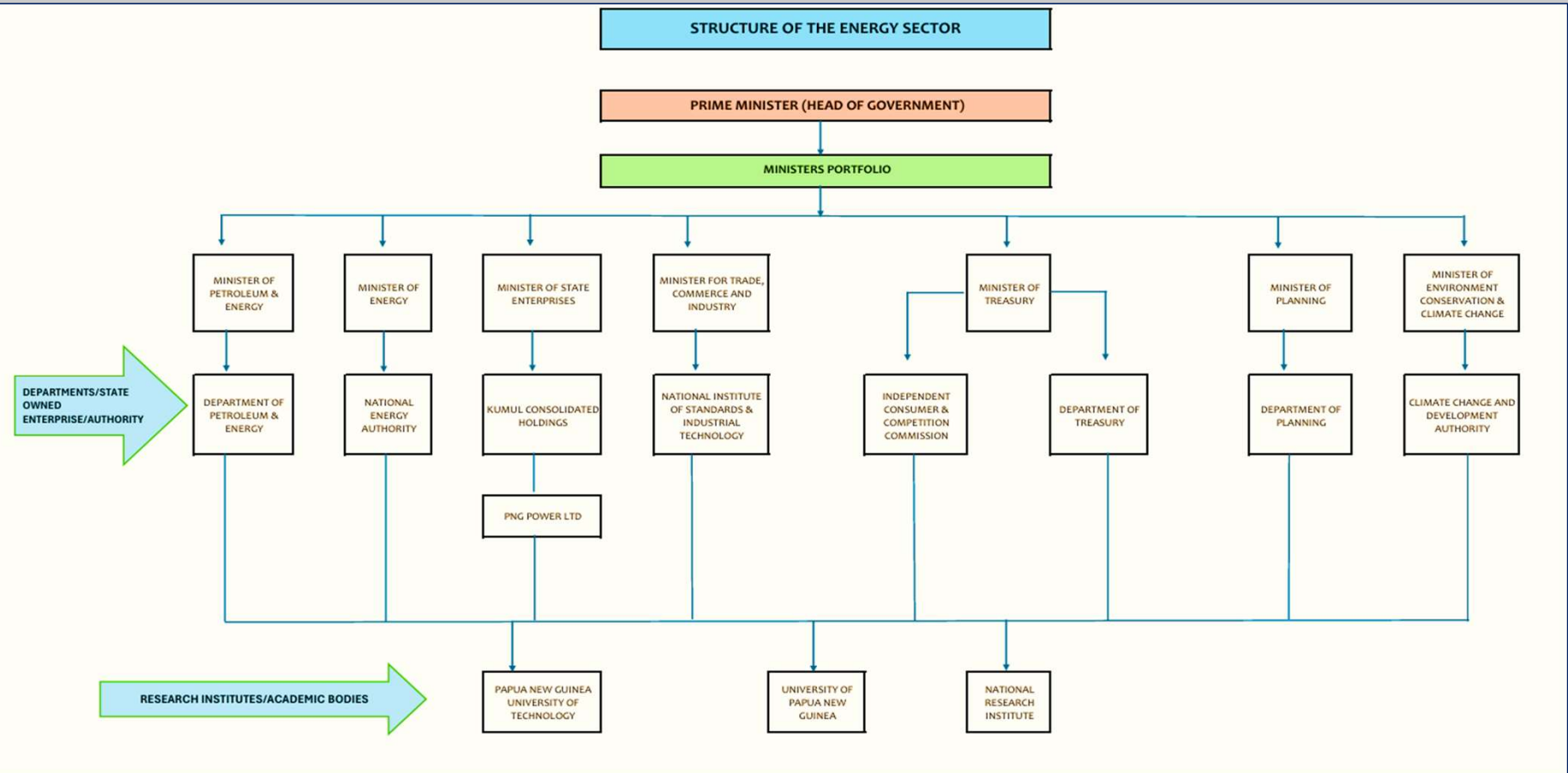


# 1.2 ECONOMIC INDICATORS



Source: National Statistical Office (NSO)

# 1.3 ORGANISATIONAL STRUCTURE RELATED TO ENERGY





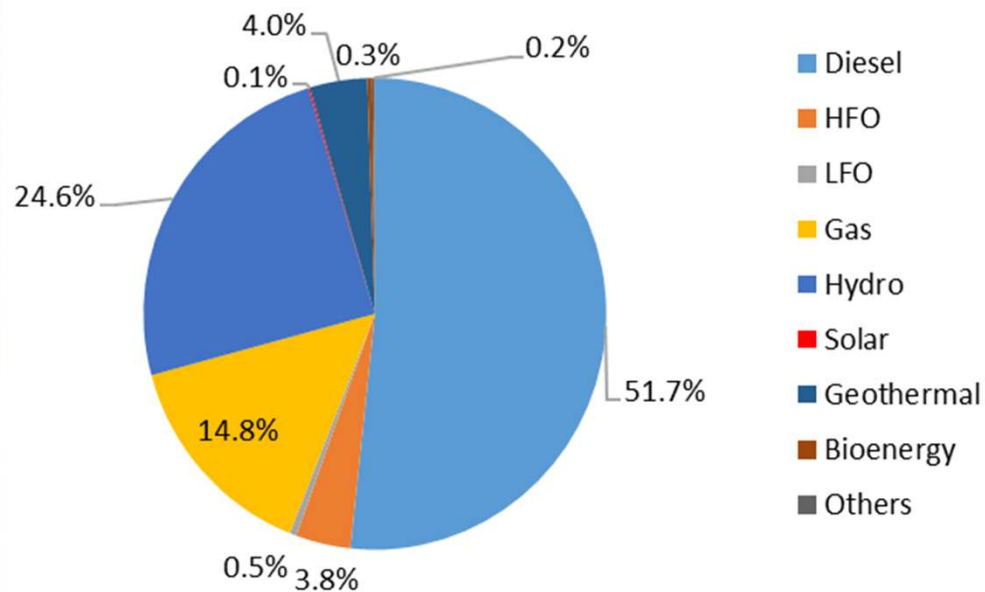
## **2. PAST ENERGY DEMAND AND SUPPLY**

**(AT LEAST PAST 10YEARS)**



## 2.1 PRIMARY ENERGY SUPPLY BY SOURCE & ENERGY SOURCE

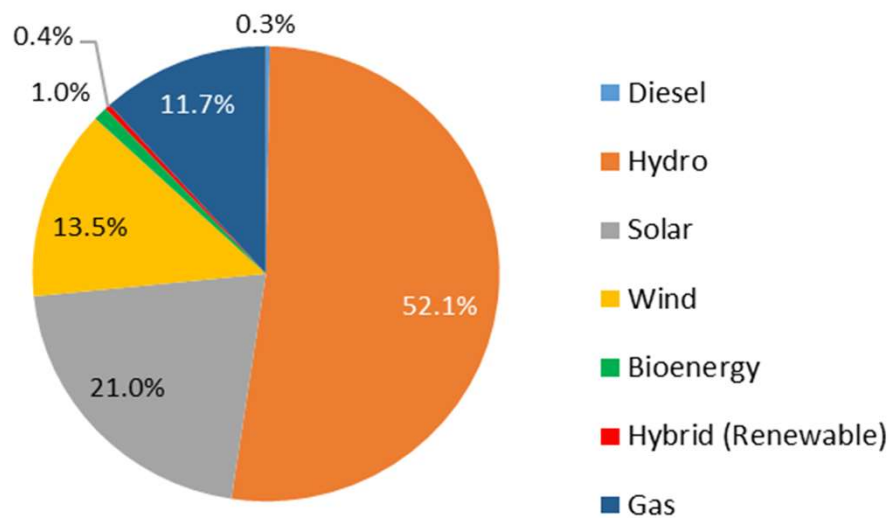
PNG's Current Energy Capacity by Source



|              |                  |
|--------------|------------------|
| ➤ Diesel     | - 645.9 MW       |
| ➤ HFO        | - 47.8 MW        |
| ➤ LFO        | - 6 MW           |
| ➤ Gas        | - 185 MW         |
| ➤ Hydro      | - 306.8 MW       |
| ➤ Solar      | - 1.5 MW         |
| ➤ Geothermal | - 50 MW          |
| ➤ Bioenergy  | - 4.2 MW         |
| ➤ Others     | - 2.3 MW         |
| <b>Total</b> | <b>- 1,25 GW</b> |

## 2.2 DISTRIBUTION OF LICENCED ENERGY PROJECTS BY SOURCE (NEXT 3 YEARS)

Licensed Energy Projects for next 3 years



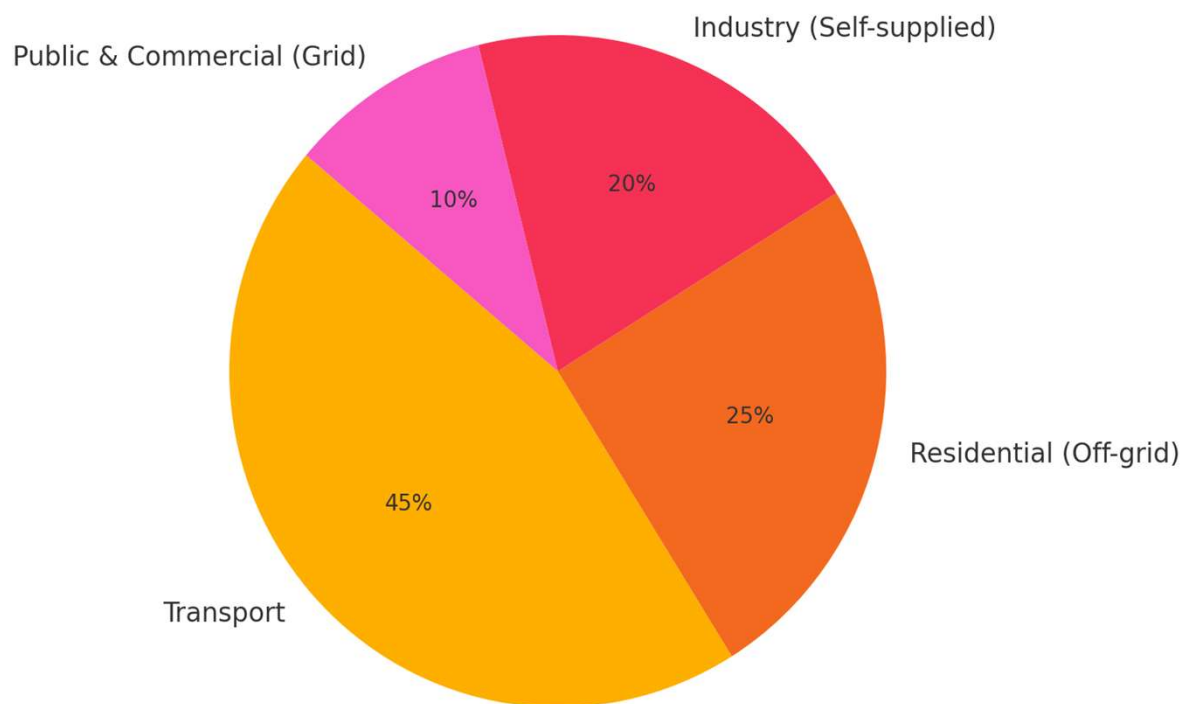
|                                |                  |
|--------------------------------|------------------|
| ➤ Diesel                       | - 2.7 MW         |
| ➤ Gas                          | - 120 MW         |
| ➤ Hydro                        | - 535.15 MW      |
| ➤ Solar                        | - 216 MW         |
| ➤ Wind                         | - 139 MW         |
| ➤ Bioenergy                    | - 10 MW          |
| ➤ Hybrid Renewables            | - 4 MW           |
| <b>Total Licensed Projects</b> | <b>- 1.02 GW</b> |



## 2.3 FINAL ENERGY CONSUMPTION BY SECTOR



Final Energy Consumption by Sector in Papua New Guinea



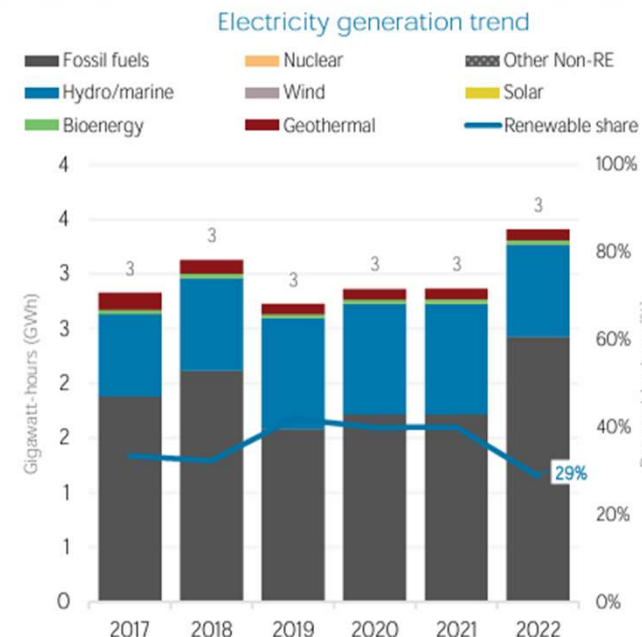
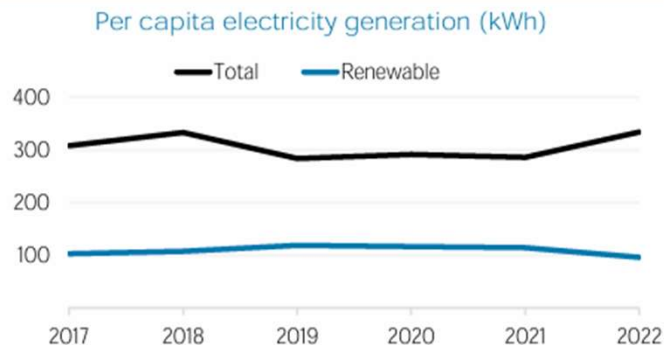


## 2.4 FINAL ENERGY CONSUMPTION BY ENERGY SOURCE

- **Diesel & petrol:** Main fuels for transport & industry
- **Biomass:** Predominant in rural homes
- **Electricity:** Used mainly in urban areas
- **Gas:** Mostly exported, little domestic use

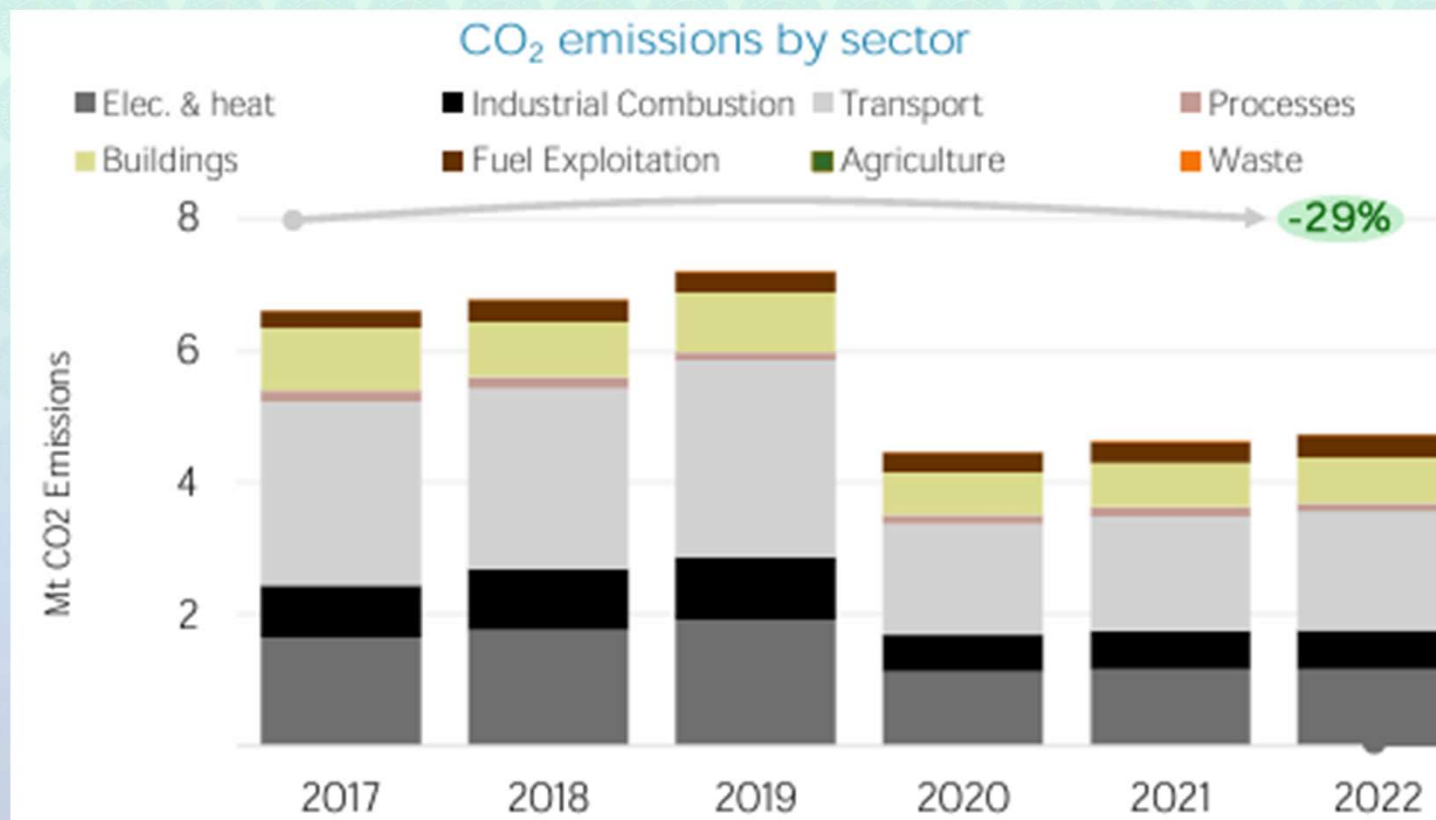
## 2.5 ELECTRICITY GENERATION BY ENERGY SOURCE (UNIT: GWh)

| Generation in 2022 | GWh   | %   |
|--------------------|-------|-----|
| Non-renewable      | 2 427 | 71  |
| Renewable          | 981   | 29  |
| Hydro and marine   | 847   | 25  |
| Solar              | 6     | 0   |
| Wind               | 0     | 0   |
| Bioenergy          | 32    | 1   |
| Geothermal         | 96    | 3   |
| Total              | 3 408 | 100 |





## 2.6 CO<sub>2</sub> EMISSIONS BY SECTOR AND ENERGY SOURCE (UNIT: Mt CO<sub>2</sub>)





# **3. OUTLOOK OF ENERGY DEMAND & SUPPLY**

**(YEARS 2030, 2040 & 2050 if possible)**



### 3.1 PROJECTED PRIMARY ENERGY SUPPLY BY SOURCE & ENERGY SOURCE

- 2030: Hydro, gas, and solar increase; diesel imports still high
- 2040: Decline in diesel; rise in domestic hydro, solar, and biomass
- 2050: Majority supply from hydro, solar, and bioenergy
- LNG remains key export; domestic gas use remains limited





## 3.2 PROJECTED FINAL ENERGY CONSUMPTION BY SECTOR & ENERGY SOURCE

- 2030: Transport still dominant; more electricity in households
- 2040: Growth in industrial and residential electricity demand
- 2050: Decarbonized transport, higher renewable electricity use
- Rural energy access expanded through off-grid systems



### 3.3 ELECTRICITY GENERATION FORECAST BY ENERGY SOURCE (UNIT: GWh)

- 2030: Hydro (45%), gas and diesel (50%), solar (5%)
- 2040: Hydro (50–60%), solar and biomass growth, diesel reduced
- 2050: Hydro and solar dominate; gas as backup
- Smart grids and storage introduced in urban centers



## 3.4 PROJECTED CO2 EMISSIONS – BY SECTOR & ENERGY SOURCE (UNIT: Mt CO2)

- 2030: Moderate reductions as solar and hydro increase
  - 2040: Significant drop in emissions from power sector
  - 2050: Near-zero emissions from electricity; transport shift
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- Aligned with PNG's Nationally Determined Contributions (NDCs)





# 4. CURRENT ENERGY POLICY & MEASURES

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## 4.1 CURRENT ENERGY POLICY & MEASURES

- National Energy Policy 2017–2027 guides the sector
- NEROP aims to achieve 70% electricity access by 2030
- Draft Energy Transition Plan targets clean energy and resilience

## 4.2 MAJOR DIFFICULTIES IN POLICY FORMULATION

- Lack of reliable and current energy data
- Capacity gaps in planning and regulation
- Overlapping institutional roles and weak coordination







# **5. LEARNING PRIORITIES IN THIS PROGRAM**

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**SUPERVISOR'S EXPECTATIONS FOR  
THIS PROGRAM**



## 5.1 LEARNING GOALS & SUPERVISOR EXPECTATIONS

- Understand Japan's energy policy design and planning
- Learn renewable integration models (solar, hydrogen, hybrid grids)
- Study regulatory frameworks and energy governance
- Supervisor expects practical policy knowledge to support NEA



# APPENDIX







# ENERGY PRICES

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# APPENDIX 1: CURRENT RETAIL FUEL PRICES (MAY 2025)



| Location      | Petrol (tpl) | Diesel (tpl) | Kerosene (tpl) |
|---------------|--------------|--------------|----------------|
| Port Moresby  | 417.70       | 388.79       | 360.55         |
| Lae           | 424.94       | 394.39       | 365.54         |
| Mt Hagen      | 444.82       | 413.07       | 385.64         |
| Goroka        | 435.63       | 403.25       | 375.50         |
| Madang        | 429.63       | 398.33       | 369.89         |
| Wewak         | 431.97       | 400.12       | 371.96         |
| Rabaul/Kokopo | 431.82       | 400.30       | 372.19         |
| Alotau        | 431.28       | 398.73       | 370.91         |
| Kavieng       | 440.45       | 409.67       | 381.99         |
| Buka          | 438.09       | 407.70       | 380.12         |



# APPENDIX 2: ELECTRICITY TARIFFS IN PAPUA NEW GUINEA (2025)

| Customer Category  | Tariff Type             | Rate (PGK/kWh) | Notes                     |
|--------------------|-------------------------|----------------|---------------------------|
| Domestic (Urban)   | Easipay (Prepaid)       | 0.65           | Standard residential rate |
| Domestic (Urban)   | Credit Meter (Postpaid) | 0.65           | Monthly billing           |
| Commercial (Small) | Easipay                 | 0.75           | Small businesses          |
| Commercial (Large) | Credit Meter            | 0.85           | Large enterprises         |
| Industrial         | Credit Meter            | 0.90           | High-demand users         |





# **ENERGY – RELATED INVESTMENT FOR DOMESTIC AND OVERSEAS**





# APPENDIX 3: ENERGY INVESTMENTS – IPPs & DONOR-FUNDED PROJECTS

## Independent Power Producers (IPPs):

- Dirio Gas & Power – 45 MW gas-fired power plant supplying Port Moresby.
- PNG Forest Products – Baiune Hydro supplying power in Bulolo, Morobe Province.
- Naima Hydro – planned hydro development projects in Hela and Southern Highlands.
- IPPs sign Power Purchase Agreements (PPAs) with PNG Power Ltd.

## Donor-Funded Projects:

- ADB – Town Electrification Investment Program, grid expansion in Port Moresby.
- World Bank – Energy Utility Performance & Expansion Project, technical assistance.
- JICA – Capacity building in energy policy and planning, feasibility studies for RE.
- EU – Solar mini-grids and energy access for schools and clinics.



# APPENDIX 4: DOMESTIC ENERGY INVESTMENTS – PAPUA NEW GUINEA

| Institution/Initiative                | Role / Contribution                                                             |
|---------------------------------------|---------------------------------------------------------------------------------|
| National Energy Authority (NEA)       | Leads policy direction and energy sector coordination.                          |
| PNG Power Ltd                         | Operates Edevu Hydro, installs solar mini-grids, rural electrification rollout. |
| Department of Treasury                | Allocates Public Investment Program (PIP) funding for energy infrastructure.    |
| Department of National Planning       | Ensures energy alignment with MTDP IV and Vision 2050 goals.                    |
| Dirio Gas & PNG Forest Products       | Private sector developers: gas-to-power and industrial hydro generation.        |
| PNG Electrification Partnership (PEP) | Coordinates donor support for on-grid and off-grid access.                      |
| ADB, UNDP                             | Fund and implement rural energy and renewable energy demonstration projects.    |





# APPENDIX 5: INTERNATIONAL ENERGY INVESTMENTS – PAPUA NEW GUINEA

| Partner/Investor                                      | Project/Support                                     | Relevance to PNG                           |
|-------------------------------------------------------|-----------------------------------------------------|--------------------------------------------|
| ADB                                                   | Port Moresby Grid Development, Town Electrification | Infrastructure expansion & reliability     |
| World Bank                                            | Energy Utility Performance & Expansion Project      | Utility reform, system efficiency          |
| PNG Electrification Partnership (PEP)                 | Grid rollout support by US, Japan, Australia, NZ    | 70% electrification target by 2030         |
| JICA                                                  | Technical training, policy support                  | Capacity building (including this program) |
| Papua LNG Project (TotalEnergies, ExxonMobil, Santos) | Up to \$10B investment in gas infrastructure        | Private energy investment, export revenue  |
| EU & UNDP                                             | Renewable energy and rural electrification          | Clean energy and access expansion          |
| Green Finance Centre PNG                              | Blended finance for clean energy                    | Mobilizing private capital for renewables  |



# ADDITIONAL INFORMATION





# APPENDIX 6: ADDITIONAL INFORMATION

- PNG has over 600 islands; many are unelectrified
- 87.5% of households are in rural areas
- Biomass and kerosene are still widely used for cooking
- NEA is drafting sectoral and provincial energy plans





# END OF PRESENTATION

