Team members: Ahmed Merzoug - Algeria
Yousri Kenouna - Algeria
Kenza Ait Larbi - Algeria
Habib Ouadi - Algeria
Mentor:
Gordon Goodman - Canada

Team's name: UNDB
Team's Number: 218

Selected country:

PAPUA NEW GUINA

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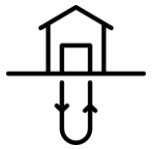
Papua New Guinea

Hydropower



Geothermal energy

Other energy sources

Our plans

Conclusion

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Papua New Guinea

- General information
- Economy
- Energy Demand and Supply Statistics

General information

Papua New Guinea is a small island nation that has over 820 indigenous languages, representing 12% of the world's total, with an estimated population of over 8,935,000 (estimate 2020). The total land area of its mainland and 600 smaller islands is approximately 462,840 square kilometers(178,700sqmi), which are rich in biodiversity and hosts one of the top ten largest rainforests in the world behind Congo and South America. It is the largest Pacific nation that shares its landmass with Indonesia.

The country's economy remains dominated by two broad sectors:

- The agricultural, forestry, and fishing sectors that engage most of PNG's labor force (the majority informally)
- The minerals and energy extraction sector that accounts for the majority of export earnings and GDP.

Papua New Guinea Map
Source: https://geology.com/

	Rural	Urban	Total
Population	**7,750,000** (86.75%)	**1,185,000** (13.25%)	8,935,000

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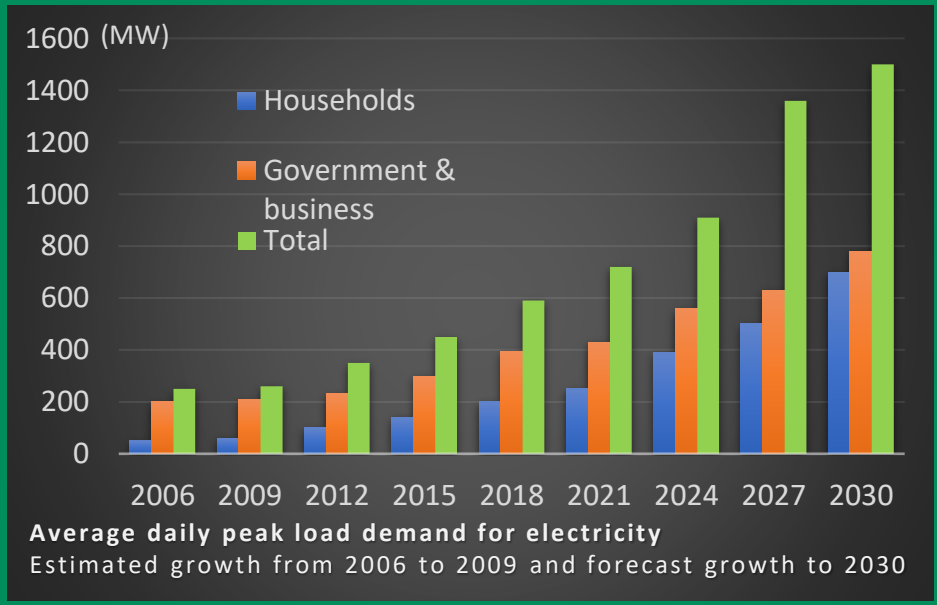
Economy

While PNG's economic growth has been strong over the past decade, the benefits of this growth have not been equitably distributed. A lack of quality infrastructure, insecurity, weak governance, low education levels, and poor health services constrain service delivery and economic development. More than 2 million people live in poverty. Life expectancy is only 62 years. Over half of all pregnant women give birth without the help of trained health workers. One in five children is not enrolled in school. (dfat.gov.au)

Key indicators	Baseline information	2030 target/ objective
Access to electricity	12.4% of households	At least 70% of households
Gas, hydro and other renewable generation capacity	Gas: 72 MW Hydro: 217 MW Other: 56 MW	Gas: 390 MW Hydro: 1020 MW Other renewables: 500 MW
Diesel and coal generation capacity	158 MW grid connected generation	Less than 40 MW capacity diesel generation and 30 MW coal generation
National grid	Does not exist	All major towns and cities to be in the national grid
Easipay domestic customers	4% of households (51,000 households)	Most households have access to Easipay



Average daily peak load demand for electricity
Estimated growth from 2006 to 2009 and forecast growth to 2030

Source: PNG Development Strategic Plan 2010-2030

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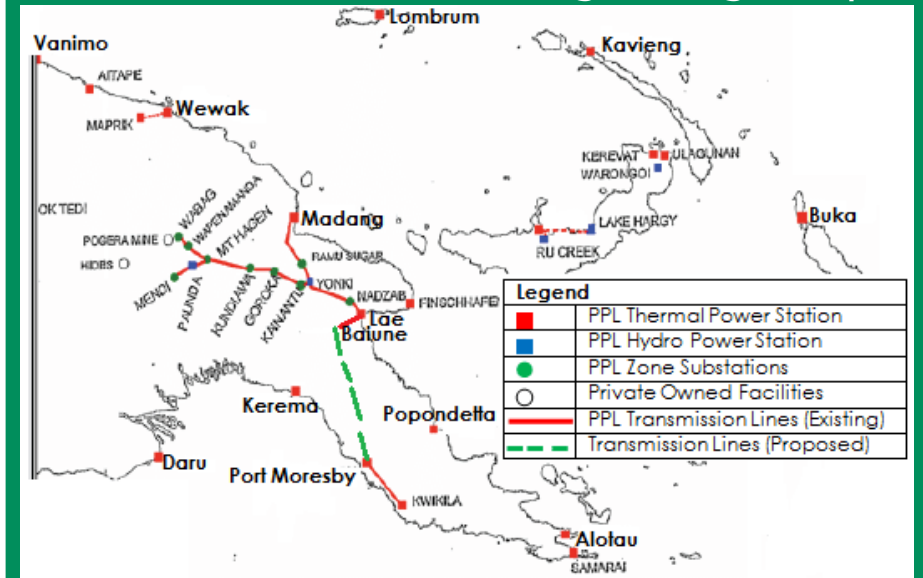
Energy Demand and Supply Statistics

Over half of the households use inefficient kerosene lamps as their main source of light and a quarter rely on open fires. Nearly 90% cook mainly with fuelwood and 3% used liquefied petroleum gas (LPG) or electricity.

PNG has about 580MW of installed generation capacity, including hydropower, diesel, gas-fired, and geothermal.

PNG Power Limited (PPL), the national state-owned corporatized power utility, manages installed generation capacity of about 300 MW, including the two main grids and 26 other smaller urban centers through 19 independent power systems. The remaining capacity comprises Self-generation systems owned and operated by industrial facilities including mining companies, and Private sector generators



Source: PNG Power Limited, Planning Department, 2007

TOTAL	580MW|100%
Hydropower	230 MW|39.7%
Diesel	217MW|37.4%
Gas-fired	82 MW|14.1%
Geothermal	53 MW|9.1%

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Hydropower

- General information
- Hydropower potential
  - Karimui project
  - Ramu 2
  - Busu River

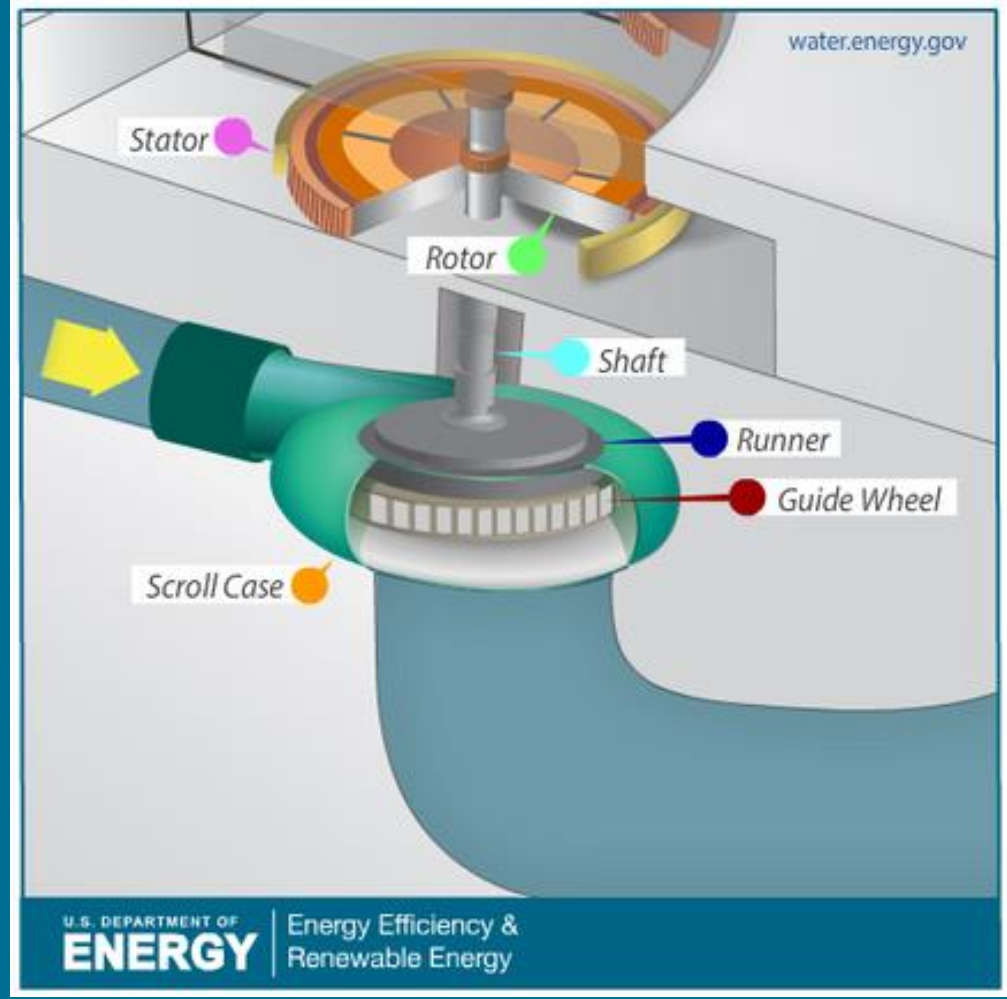
General information

Port Moresby, Ramu and Gazelle Peninsula systems.

40 % of total energy

Generators types:

- Run-of-river
- Storage
- Pumped storage hydro
- in-stream



https://www.sciencedirect.com/topics/engineering/hydropower-plantwater-works-hydropower-leads-way-providing-renewable-energy

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Hydropower potential

River basin	Catchment area
Sepik	78,000
Fly River	61,000
Purari River	33,670
Markham River	12,000

https://geology.com/world/papua-new-guinea-satellite-image.shtml

200 cm - 800 cm

175 TWh
35% Non-water revenue

https://oxfordbusinessgroup.com/analysis/water-works-hydropower-leads-way-providing-renewable-energy

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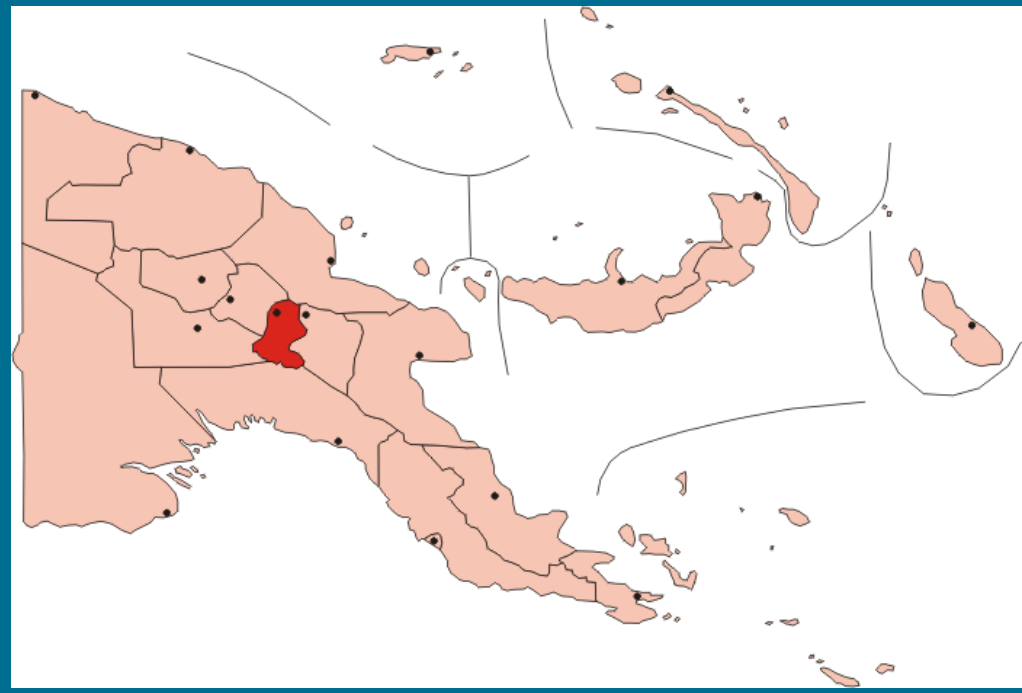
Hydropower potential

Karimui project

1800-MW

Simbu Province Waghi and Asaro Rivers

$2bn



https://en.wikipedia.org/wiki/Chimbu_Province

KCH signed a memorandum of understanding (MoU) with Italian construction company Salini Impregilo in April 2015, and in February 2016 the company released a feasibility study for the project, however there is no public data

https://oxfordbusinessgroup.com/analysis/water-works-hydropower-leads-way-providing-renewable-energy

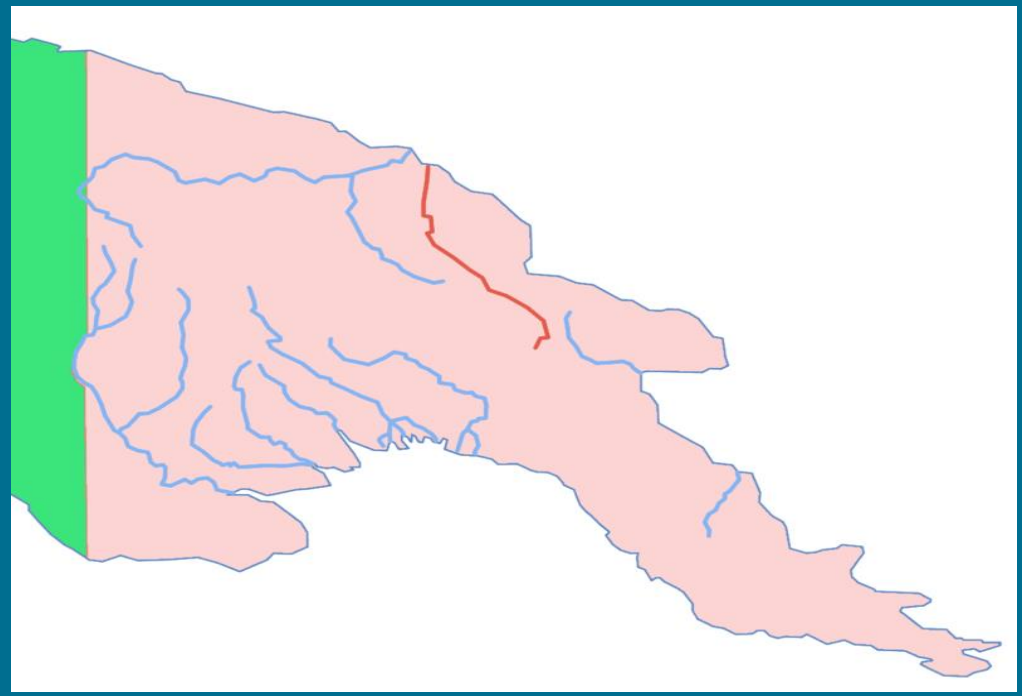
Hydropower potential

Ramu 2

180MW⇒ 273MW

Eastern Highlands Province

$2bn ⇒ $600m



https://en.wikipedia.org/wiki/Ramu

It is being developed under a PPP model in partnership with China's Sinohydro Corporation and Shenzhen Energy Group. Still under negotiation

https://oxfordbusinessgroup.com/analysis/water-works-hydropower-leads-way-providing-renewable-energy

https://postcourier.com.pg/png-can-save-us1-3-billion/

Hydropower potential

Busu River

50 * (2MW-24MW)

Morobe Province

150k

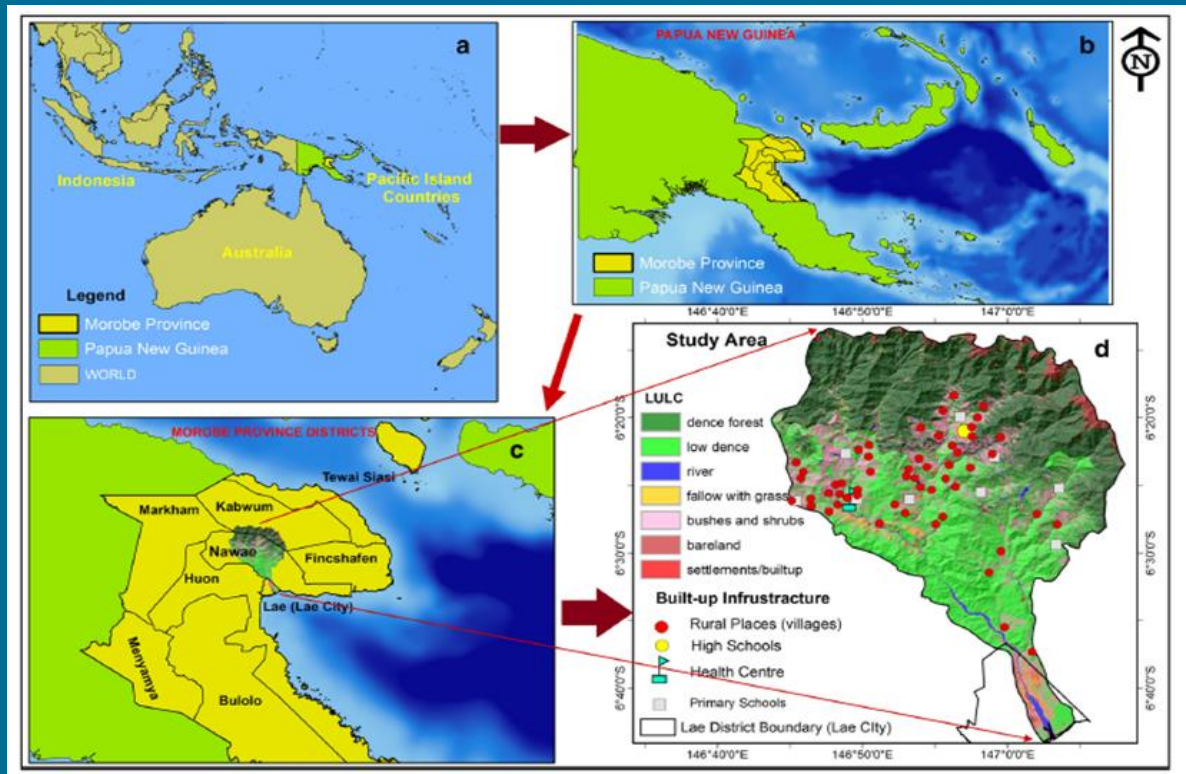


Fig. 1 Study area locality map. a View of study area within part of World, b Papua New Guinea, c Morobe Province, d study area (Busu catchment)

https://www.worldometers.info/world-population/papua-new-guinea-population/
https://www.researchgate.net/publication/339674405_Identifying_potential_sites_for_hydropower_plant_development_in_Busu_catchment_Papua_New_Guinea

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Hydropower potential

Power potential in MW	Total number of sites
2-4 MW	26
5-8 MW	17
9-14 MW	4
15-24 MW	3
Total	50

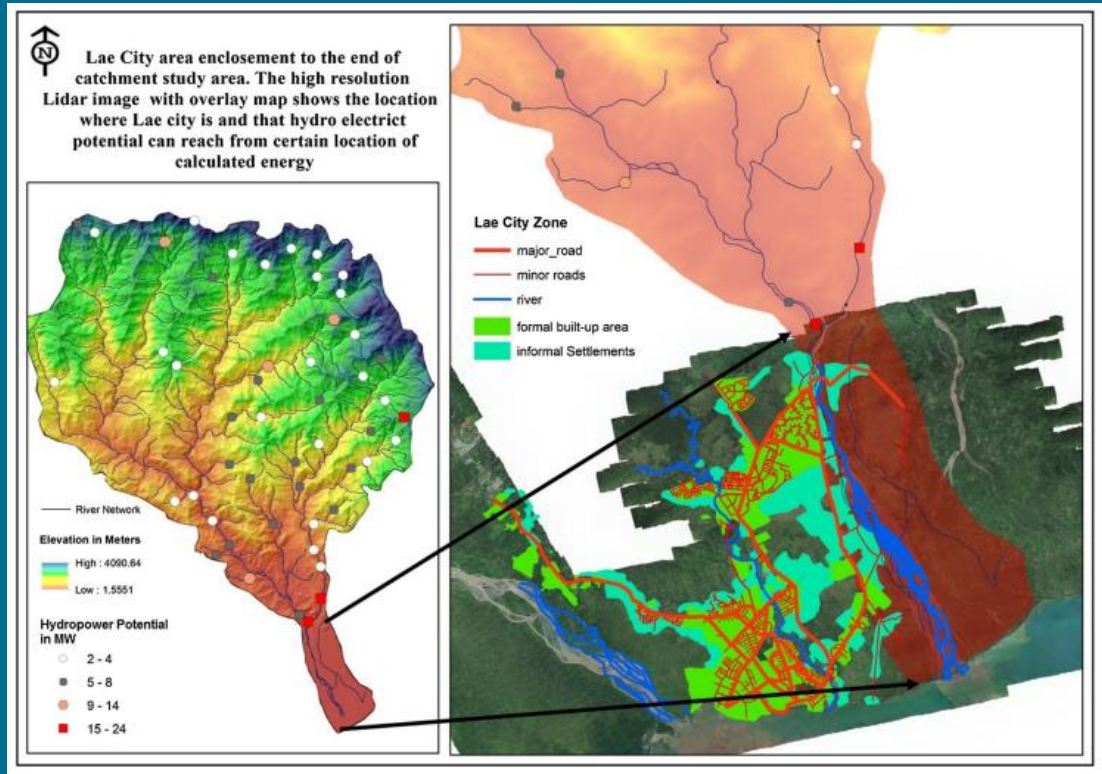

Fig. 7 Possible location of major city (Lae) comparing to the study area and location of possible major power potential

Industries:

Mainland Holdings Ltd
DuluxGroup (PNG) Ltd
Consort Express Lines Limited
Paradise Foods Limited
Halla Cement
HBS PNG Limited
iPi Group
Trukai Rice
Prima Smallgoods
Lae Biscuit Factory
Citylink Motel
MMK Transport
Barlow Industries Ltd
Mapai Transport
PNG Metal Fabricators Ltd
Araweld Ltd
Niugini Electrical Ltd
Bismark Maritime
South Pacific Steel
Papindo Group of Companies
Homestate Co-operation
SP Brewery

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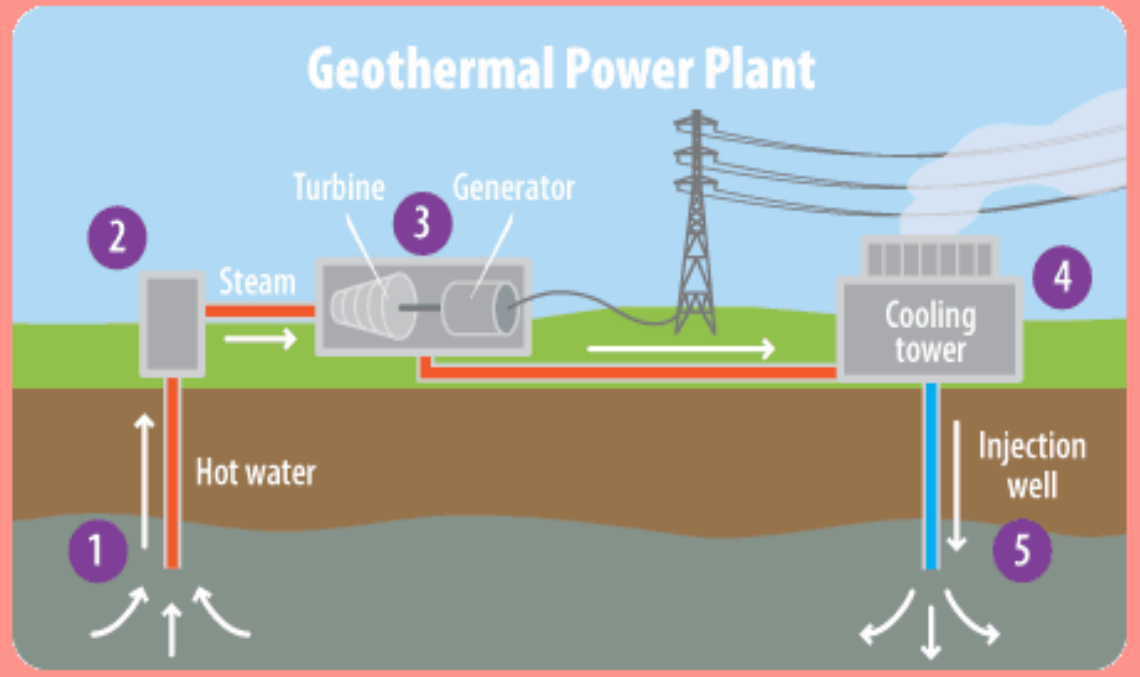
Geothermal energy

- General information
- Geothermal potential
- Geothermal energy challenges

General information

The Lihir gold mine in Papua New Guinea's New Ireland Province



geothermal power plant

Lihir Gold Mine

9 % of total energy
56 MW

https://archive.epa.gov/climatechange/kids/solutions/technologies/geothermal.html

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Geothermal potential

PNG is located on the 'Pacific Ring of Fire' where tectonic plate movements and associated volcanic activity occurs.

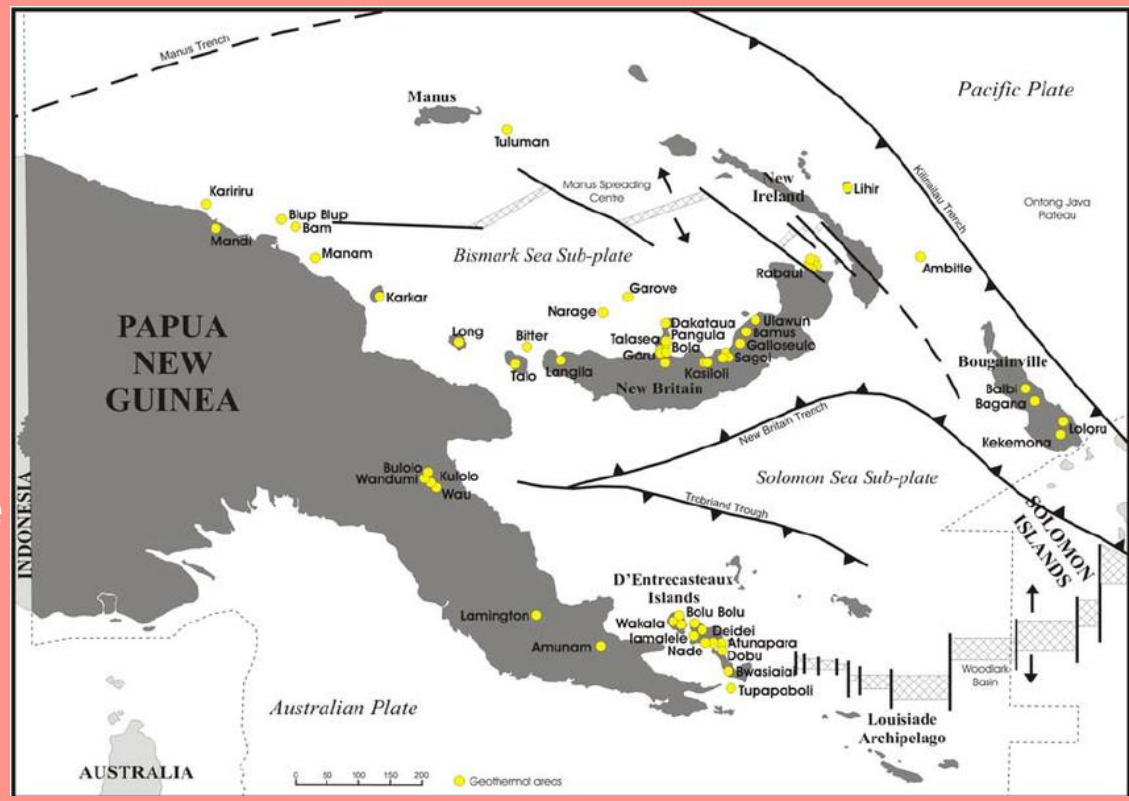
From Mandi to New Britain, New Ireland and Bougainville

Northern zone

From Mt.Lamington in the Northern Province to Milne Bay Province's D'entrecasteaux islands

Southern zone

4000 MW (Hairai, 2004)



researchgate.net/figure/Map-of-Papua-New-Guinea-showing-the-locations-of-known-geothermal-areas-from-Mosusu_fig2_229036839

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Geothermal energy challenges

1- Absence of policy on geothermal energy development. The policy should guide the investors on how to develop geothermal energy potential sites to encourage the private sector and foreign investments.

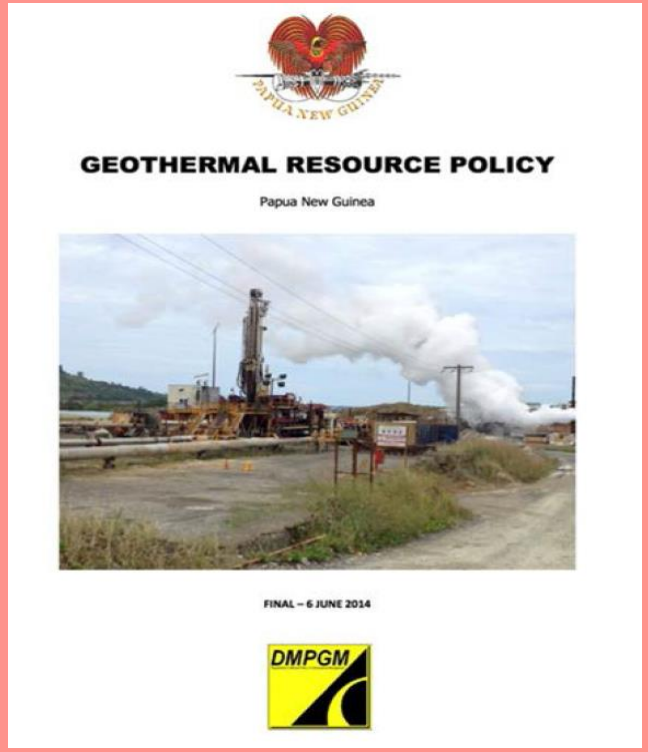
2011 licenses to explore for geothermal energy in the Mt Lamington area and at Mt Trafalgar.

2012 Kula Energy took a managing role to explore for geothermal energy over the Willaumez Peninsula in West New Britain.

2019 The only license applications specifically for geothermal exploration in PNG are those held by KUTh over Talasea in West New Britain.

2- Lack of resource assessment on geothermal energy potentials, Only surface data (surface manifestations) are available.

3- Local experts are also very limited.

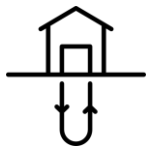


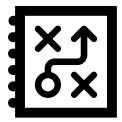
Front Cover of the Geothermal Resource Policy

Other energy sources

- Oil and Gas
- Solar energy
- Wind energy
- Bioenergy, Biomass








Oil and Gas

In 2014 PNG's oil and gas sector constituted 11.3% of GDP

	Oil	Gas
Reserves (2015)	180,249,000 barrels	4,996,000 MMcf
Production (2015)	56,074.80 barrels/day	346,087 MMcf/year

https://www.worldometers.info/gas/papua-new-guinea-natural-gas/#:~:text=Papua%20New%20Guinea%20holds%205.00,gas%20reserves%20of%206%2C923%20Tcf.&text=This%20means%20it%20has%20about,levels%20and%20excluding%20unproven%20reserves).
https://www.worldometers.info/oil/papua-new-guinea-oil/

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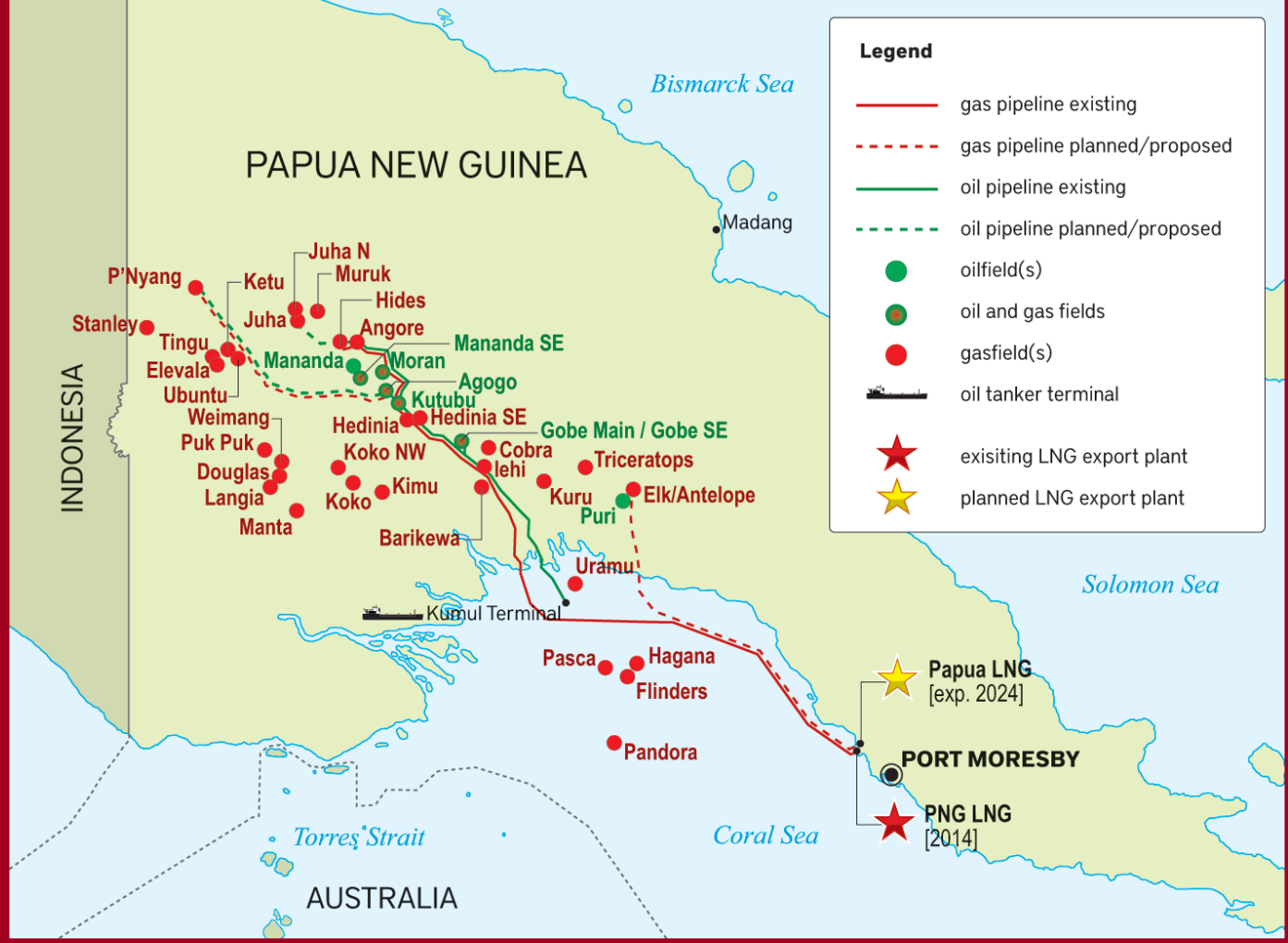
Oil and Gas

Gas engine plant
58 MW

Port Moresby



86 % of produced gas is exported

https://www.petroleum-economist.com/articles/midstream-downstream/lng/2020/pressure-rises-in-png-gas-standoff

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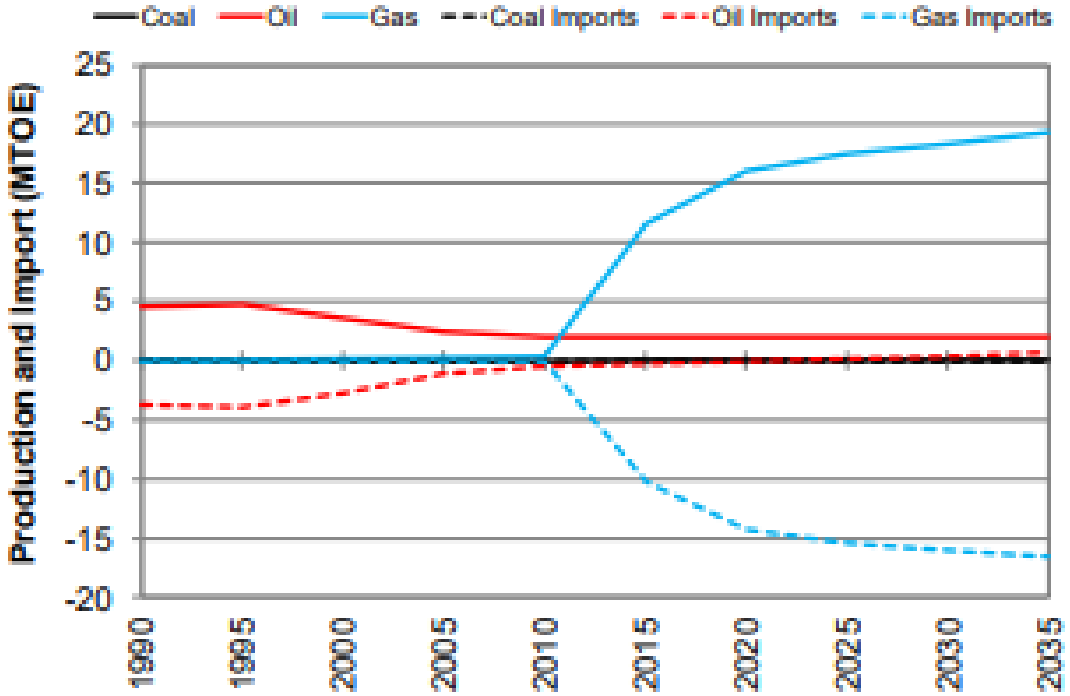
Oil and Gas

Global analogue benchmark for Tcf Technically recoverable Shale Resources	
China	1275
USA	862
Argentina	774
Mexico	681
S.Africa	485
Australia	396
Canada	388
Libya	290
PNG	282
Algeria	231



Source: APERC Analysis (2012)
Historical Data: APEC (2011)

https://www.asx.com.au/asxpdf/20160704/pdf/438bjbqn4qp1xh.pdf

Oil and Gas

Parameter	Oriama High	Morehead Sub-Basin	Fly Platform	Papuan Foreland	Omati Trough
Thickness					
Total area					
TOC > 2%					
Shale volume in gas window					
Depth >3km					
Silt/Sand content (Low/High)					
Known/ gas source					
Overall Rating					

Risk levels

High

Moderate

Low

https://www.asx.com.au/asxpdf/20160704/pdf/438bjbqn4qp1xh.pdf

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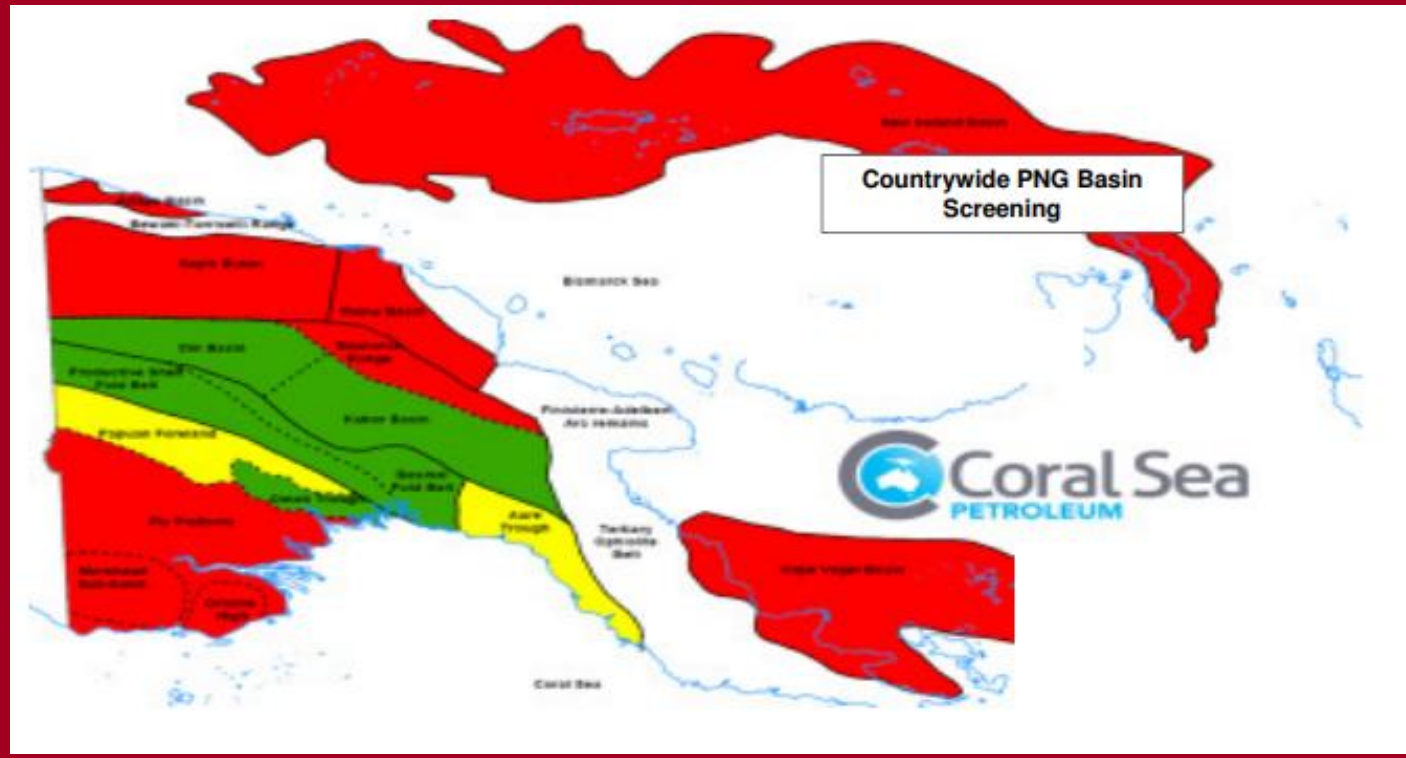
Oil and Gas

- Near existing oil field
- Ability of transforming existing well into unconventional ones
- Lower Cost development
- Government issues new policies for exploration



https://www.asx.com.au/asxpdf/20160704/pdf/438bjbqn4qp1xh.pdf

Solar energy

Solar energy is among PNG's largest potential sources of renewable energies. The average insolation is between 4.5 and 8 hours daily.

The sunniest location in PNG is Port Moresby with 2478 hours per year and the lowest is Tambul, Western highlands with 1292 hours/year.

The best location for solar PV are the offshore islands and southern regions due to the fewer clouds caused by mountains.

The sunniest location in PNG is Port Moresby with 2478 hours per year and the lowest is Tambul, Western highlands with 1292 hours/year.

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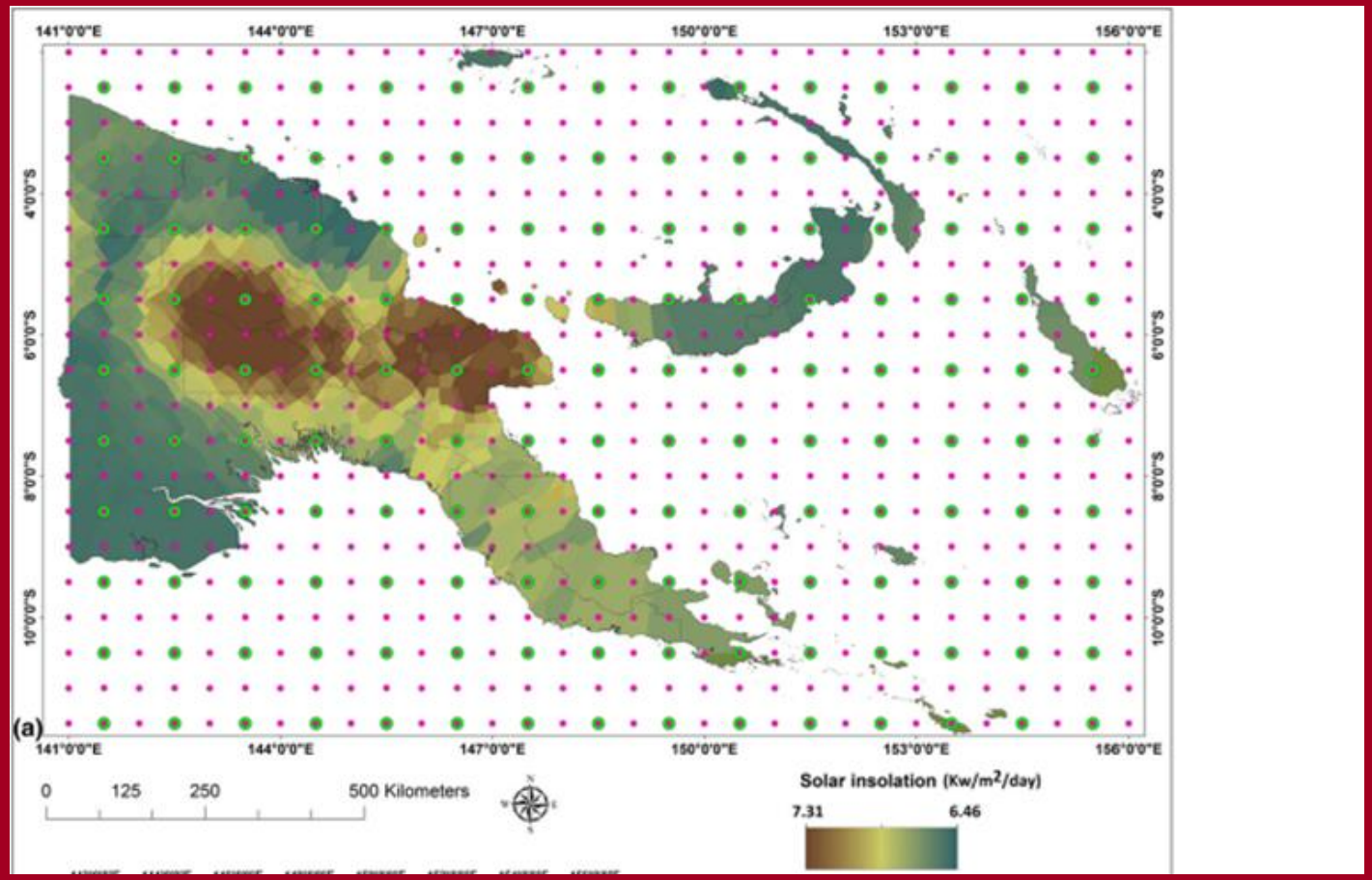
Solar energy



https://link.springer.com/article/10.1007/s41324-016-0050-x

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Solar energy

•Even though solar energy is still in its infancy in PNG, it has been spreading gradually over the last 30 years through small independent solar systems marketed by private suppliers.

•There are some stand-alone photovoltaic systems applied in rural areas and remote telecommunication stations. Adding to that, about 1000 solar home lighting systems are sold every year since 2002.

•The expansion of the mobile phone system into rural areas is increasing the demand for solar-powered phone chargers.

•Another positive point is that there are more than 25 small-scale solar energy researches at Unitech and the University of PNG (UPNG) is also willing to establish a solar project at its campus for research purposes. Adding to that, the solar energy installation target of 50 MW by 2022 is highly commendable

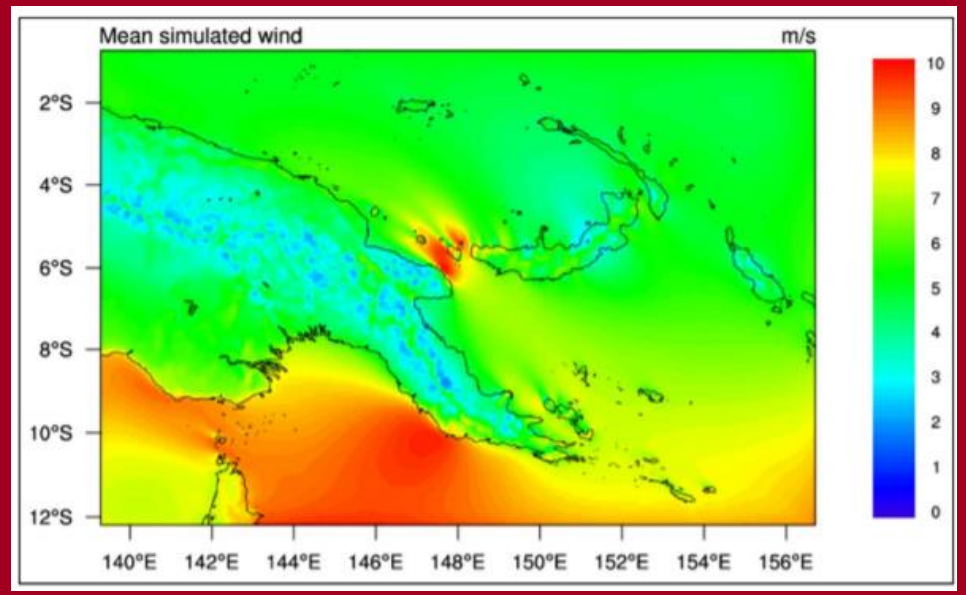
https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2013/Sep/Papua-New-Guinea.pdf?la=en&hash=3E847FD95A91ADAA4CC34614F7A325F80CE36D39

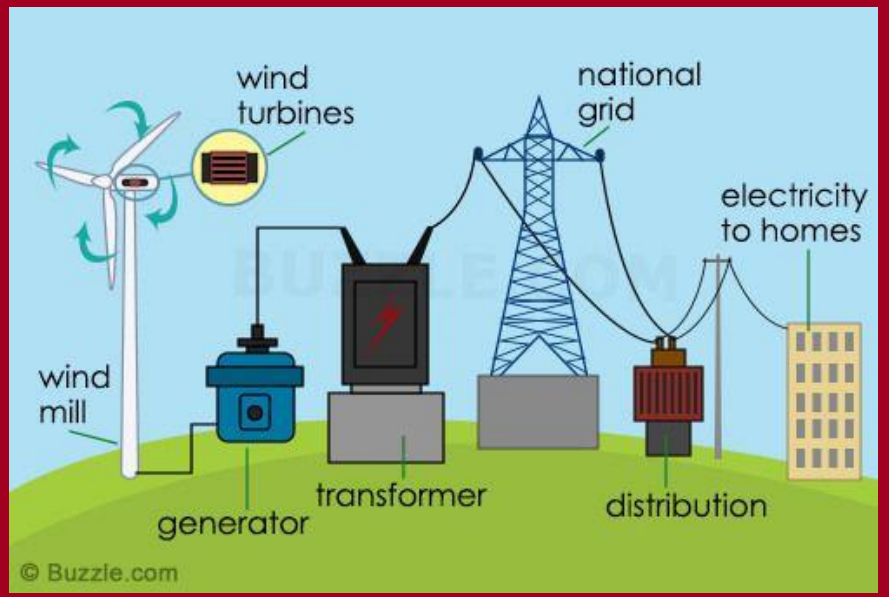
Solar energy challenges

- **Challenge 1:** Clear guidelines and project development mechanisms are required
- **Challenge 2:** Difficulties in land acquisition for large-scale solar farms.
- **Challenge 3:** Security issues leading to numerous thefts of panels, vandalism, poor design...
- **Challenge 4 :** poor installation quality and inadequate maintenance and support, difficulties in transport of spare parts.
- **Challenge 5:** PPL has not been under pressure to institute a net metering policy since private investors see little or no benefit from connecting solar energy systems to the grid.

https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2013/Sep/Papua-New-Guinea.pdf?la=en&hash=3E847FD95A91ADAA4CC34614F7A325F80CE36D39

Wind energy





No commercial scale

grid-connected wind power

https://www.pinterest.com/pin/609230245692285 74/

http://pubdocs.worldbank.org/en/194701472046081438/PNG-Wind-Mapping-Mesoscale-Modeling-Report-WB-ESMAP-Aug2015.pdf

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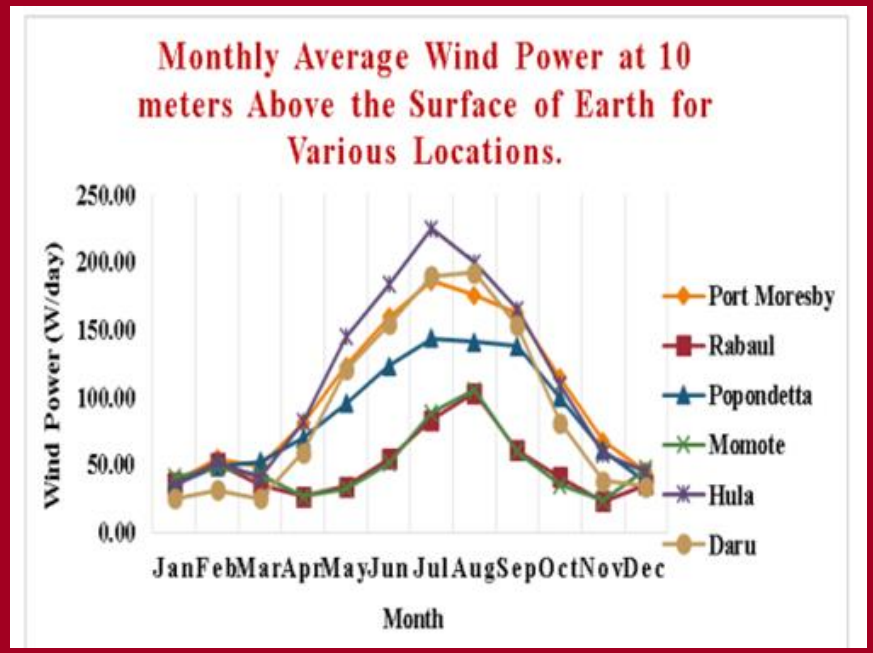
Wind energy potential

The regions indicated are areas in Papua New Guinea with relatively high wind resources. Around Dura Island there are higher modelled winds in the coastal areas. From Port Moresby and southward and eastward there are higher modelled winds due to a combination of orographic blocking and stronger winds coming off the sea



The average wind speed is around 4 m/s and average wind power is 60 W/day with good wind spots along the coastal areas and on the islands.

https://www.researchgate.net/publication/313717544_PNG's_energy_sector_and_estimation_of_renewable_energy_resources_in_Morobe_Province_Papua_New_Guinea_Solar_and_Wind_power_for_New_Umi_township

http://pubdocs.worldbank.org/en/194701472046081438/PNG-Wind-Mapping-Mesoscale-Modeling-Report-WB-ESMAP-Aug2015.pdf

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Wind energy challenges

- **Challenge 1:** Conflicting information Based on the background information provided by PNG, the economy is noted to have good wind resources but no concrete data was available to support the claim.
- **Challenge 2:** Uncertain return on investment of wind power projects, the financial sector may not show great interest in wind power developments, which are often viewed as risky investments due to high initial costs and long payback period.
- **Challenge 3:** Lack of experience and professional working in wind power Currently, there is no commercial scale grid-connected wind turbine installed in PNG, and no information regarding stand-alone off-grid installation.
- **Challenge 4:** Land accessibility and environmental issues The installation of onshore wind turbine/farm needs a vast area, particularly for a wind farm. Although the land underneath the wind farm can be cropped or farmed, it still depends on the willingness of landowners. As 97% of the land in PNG is occupied by landowners, problems may arise due to the accessibility of land for any potential wind power project.

Bioenergy, Biomass

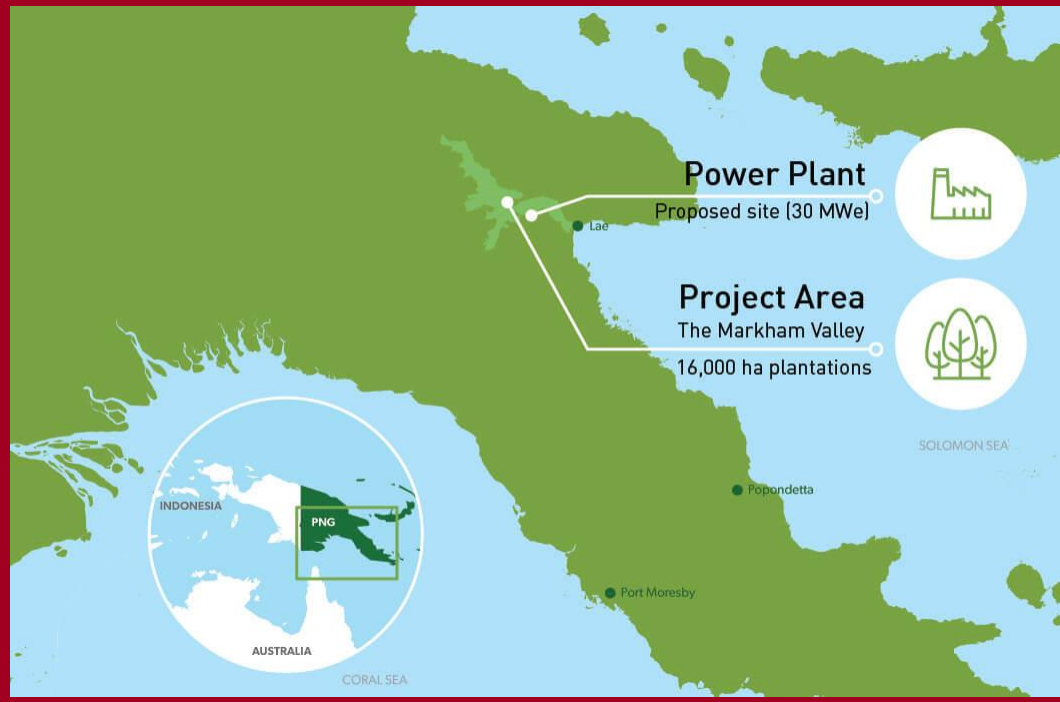
Biomass is renewable plant material that has been grown using energy from the sun. It includes wood, and other cellulosic plant fibers. Wood is favored as a biomass fuel due to its low ash content and a relatively constant heating value. Unlike wind and solar power, wood chip biomass electricity generation is not intermittent but is a reliable baseload power source.

Papua New Guinea (PNG) has been using biomass resource mainly for residential cooking due to high price of liquefied petroleum gas (LPG) and limited access to electricity (13% as of 2010). Recently PNG has pursued biomass for electricity generation to achieve 100% renewable electricity target in PNG Vision 2050. However, PNG's plan on biofuel utilization is still limited in research scale.

https://pngbiomass.com/biomass-power/

Bioenergy, Biomass potential and challenges

Oil Search's PNG Biomass project in the Markham Valley is a long-term renewable energy initiative in Morobe Province, Papua New Guinea (PNG). It will use wood chips from trees sustainably grown and harvested in surrounding plantations to fuel a biomass power plant to provide up to 30 Megawatt (MWe) into the Ramu grid.



Challenges:

- **Challenge 1:** Lack of specific targets/mechanisms for biofuel usage in transportation sector
- **Challenge 2:** Lack of technical standards/guidelines for biofuel promotion
- **Challenge 3:** Access to land is one of the most crucial assets for PNG Biomass. Land in Papua New Guinea is for 97% still customary land

Pngbiomass.com
http://pngbiomass.com/wp-content/uploads/documents/PNG-Biomass-brochure-v2.1-16022018-web.pdf

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Our plans

- Short-Term
  - Geothermal Energy
  - Wind Energy
  - Short-Term Strategy
- Mid-Term
  - Geothermal Energy
  - Wind Energy
  - Solar Energy
  - Mid-Term Strategy
- Long-Term
  - Geothermal Energy
  - Wind Energy
- Finance opportunities
- Factors taking into consideration in the development plan

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Short-Term (~5years)

Geothermal Energy recommendations

- Enact a law that provides policy direction and incentives on developing geothermal energy resources In order to intensify and encourage the development and to guide the investors on how to develop geothermal potential sites.

- Conduct resource assessment of geothermal potential sites. This is necessary to guide investors on the sites which are ready for development. PNG can seek both technical and financial assistance from international donor agencies. To complement the programme, local capacity building should be included.

The PNG Government made a press release on 18 August 2020 in the daily newspapers (Post Courier) to introduce the new PNG Geothermal Resource Policy. In the press release, the Minister for Mining, Hon. Johnson Tuke, MP advised that the National Executive Council has endorsed the new policy.the endorsement of this new policy is a step in the right direction for future geothermal projects in PNG. This will also be a welcoming news for the global investment community.

Mining Minister Johnson Tuke

https://www.thenational.com.pg/

SWITCH Energy Alliance

The University of Texas at Austin
Hildebrand Department of Petroleum and Geosystems Engineering
Cockrell School of Engineering

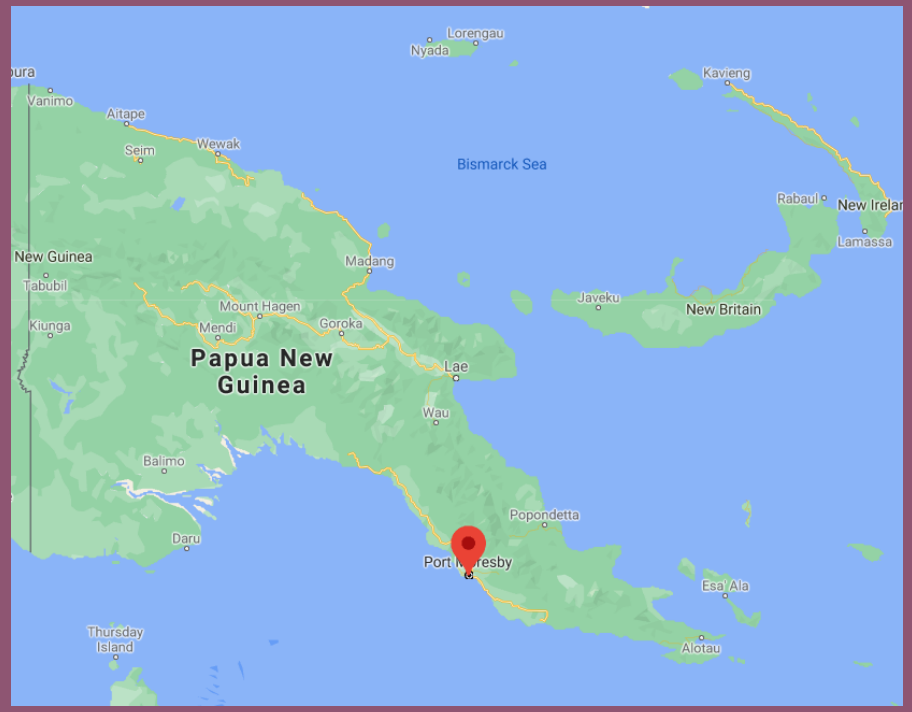
Short-Term (~5years)

Wind Energy recommendations

2022 the first 10 MW of wind power in Port Moresby.

A sizable wind farm project should establish a grid code, which defines the requirements of a wind farm connected to the national grid to ensure safe, secure and economic operation.

Small Wind Turbine Generator source (Amazon)



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Short-Term (~5years)

Short-Term Strategy

Selling to local communities:

- Small microhydro in-stream systems
- PV chargers
- Power banks

Implementing:

- Run-of-river projects: Lae City Busu river
- Gas engine generators near new gas discoveries in Elk, Antelope and Muruk.

Increasing GDP by focusing on:

- the 3 main ports: Port Moresby, Lae and Kimbe.
- Small businesses for short-term projects

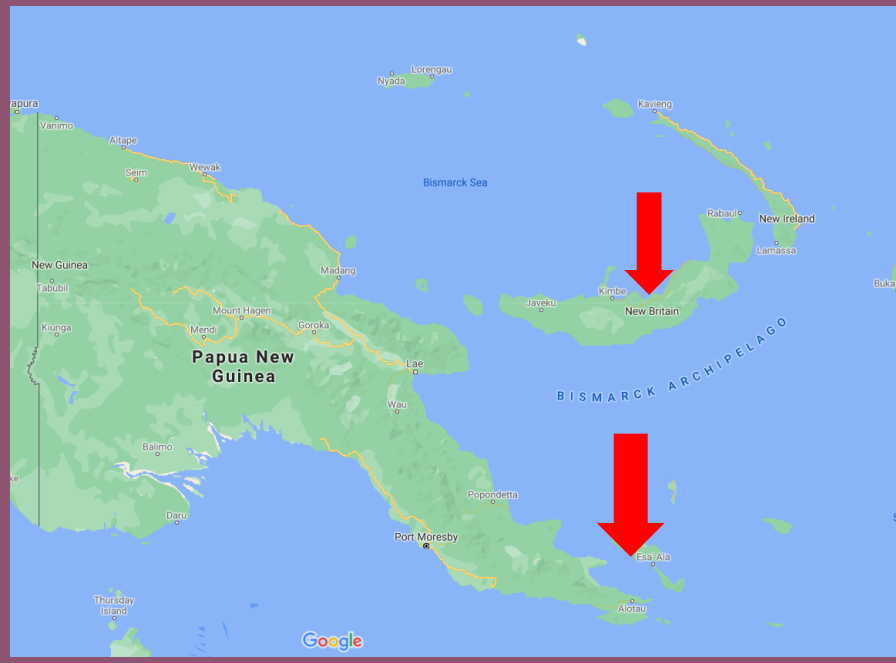
Invest in local people:

- Targeting schools and familiarizing kids with energy to have a larger impact in the long term.
- Providing scholarships and trainings
- Energy awareness campaigns

Mid-Term (~10years)

Geothermal Energy recommendations

- Areas of interest for midterm geothermal projects are New Britain and the D'Entrecasteaux Islands. The locations of these resources are typically remote from large population centers but close to areas of mineral exploration. Early development of such resources may be attractive for established mining operations. Any medium to large scale plant generating electricity using geothermal resources is most likely to be associated with a mining operation located within the same general vicinity. Any surplus generating capacity could supply local communities for commercial and domestic purposes.



- Kimbe on the Island of New Britain with a population of 20,000+ which could be a source of demand for a small scale generation plant.

Mid-Term (~10years)

Wind Energy recommendations

- Start planning as soon as the results of wind resource mapping is proved to be positive.the initial cost of developing a wind power system is high. In order to attract the interest of private investors, more incentives should be considered, such as tax rebates, tax concessions on RE equipment, higher return rate and so on.
- Construction of standalone off-grid wind turbine is comparatively easy and has fewer constraints as compared to grid-connected wind power. Private sectors should be encouraged to engage in construction of off-grid wind turbines, particularly in remote areas with sufficient wind resource but not connected to the national electric grid.
- In the market, the largest available power capacity of wind turbine is 8 MW that has a tower height of 140 m and swept area of 21 000 m2. Given sufficient wind resources, building two to three wind turbines of medium capacity can fulfil the development target.

Rooftop Wind Turbine Generator Kits

offgridpowerboom.com/residential-wind-turbine-kits/

Mid-Term (~10years)

Solar Energy recommendations

- Despite PNG's big solar potential, the fact that the citizens mostly live in separate remote mountainous areas makes large-scale on-grid systems very hard, if not impossible to apply. The solution is small-scale off-grid systems.

- Introducing legislations and policies supporting private off-grid electrification.

- Conducting more efficient researches about solar energy in PNG in order to be able to improve the systems over-time

Off-grid solar system

Mid-Term (~10years)

Mid-Term Strategy

- •Rehabilitation of the Ramu River.
- •Widening and improvement of the electrical network.
- •Maintenance of the electrical grid and providing safety measures.
- •Building hydro power generator factories (to supply the demand).
- •Offering more mobile coverage using the new energy existing places.
- •Provide more technology agriculture related to enhance the productivity.

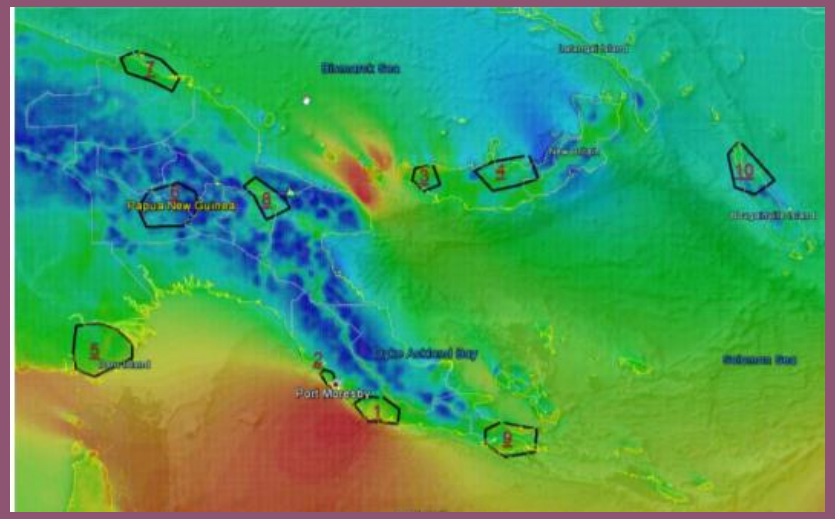
- •Conducting effective surveys in order to have reliable data and informations.
- •Launch hydro power potential studies in the main rivers.

- •Improving of the schooling system in order to have engineers that can take the lead of the energy sector in the long term.
- •Have a full understanding of the Wantok mindset and get a direct contact with the main figures.

Long-Term (~10years)

Wind Energy recommendations

- PNG wind capacity target 30 MW by 2030 and 50 MW by 2050
- Encourage more communications with landowners and various stakeholders in order to develop a win-win situation. The messaging could be focused on exploring the feasibility of creating a better environment for the landowners and the villagers, profit sharing for the project and so on.
- Government support for research and training in terms of funding.



Potential sites for the installation of wind masts (10 black polygons)

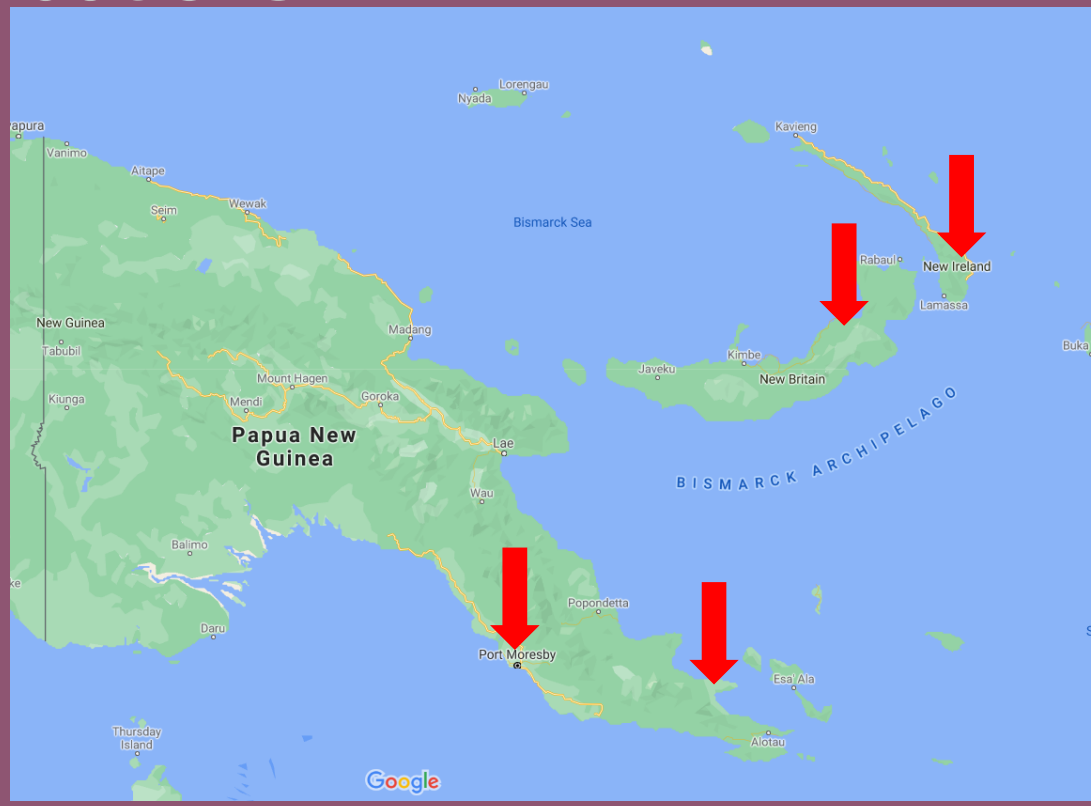
	Province	Area
1	Central	Kamali Village and Launakalana Agricaltural Station
2	Central	LNG plant
3	West New Britain	Bagai and Kakumo villages
4	West New Britain	NBPOL plantations
5	Western	Ture-Ture, Oriomo and Mabaduan villages
6	Highlands	Ponowi Village
7	East Sepik	Tring, Yawasoro – Wewak Town and Angoram Villages
8	Morobe	UMI Station, Markham Valley
9	Milne Bay	Siasiada and Kaigulan Villages, Nube Village and Oil Palm Nursery
10	Bougainville	Buka and Bougainville islands

http://documents1.worldbank.org/curated/en/429101482221927312/pdf/111151-ESM-P145864-PUBLICPNGWindMappingSiteIdentificationReportWBGESMAPNov.pdf

Long-Term (~10years)

Geothermal Energy recommendations

- The Gazelle grid needs to be extended and cover West New Britain Province. An additional 95 MW should be added to the Gazelle grid by 2030 and another 110 MW to the Ramu Grid by 2050.
- Establishment of Geothermal Center or training institution.
- Investment cost for geothermal power plants in the New Ireland, Mt. Lamington, Talasea, Pangalu and Kasoli, on the north coast of West New Britain and Rabaul
  Cost (M$) = (-0.9 ± 4.6) + (1.29 +0.31/-0.19) *MW

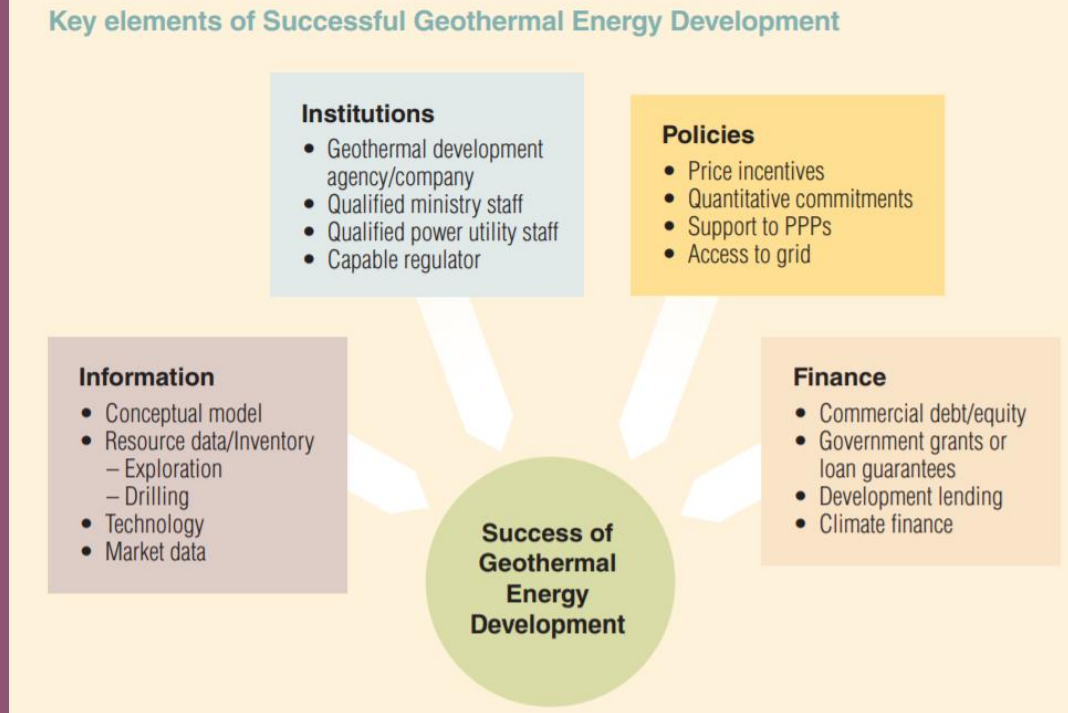


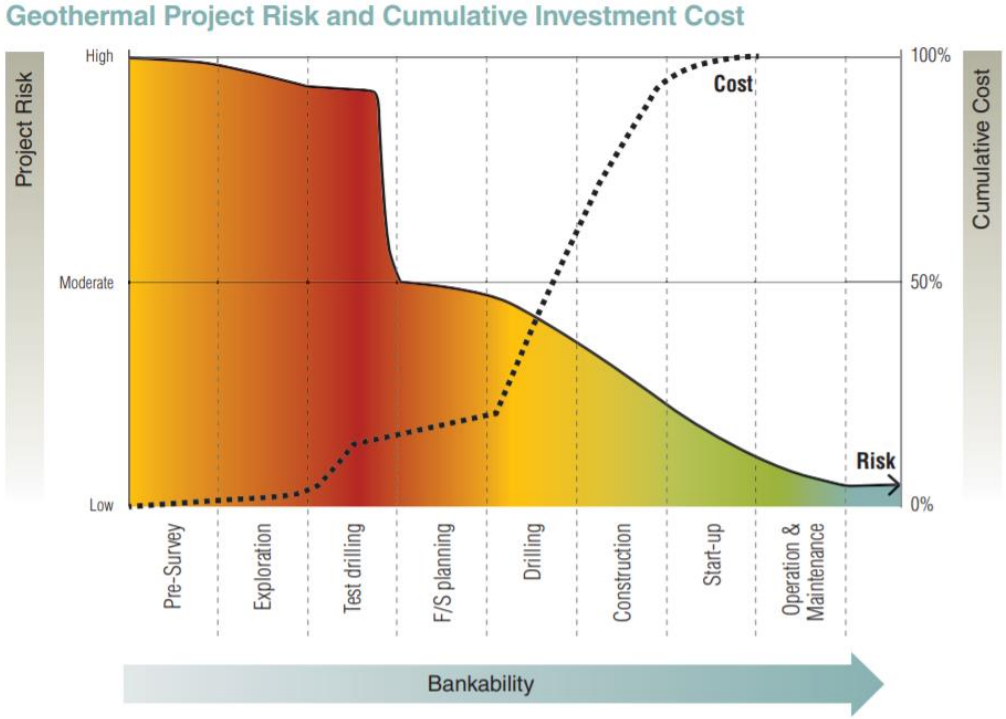
	Expectation value $/kW	Range within one standard deviation $/kW
Surface cost only	977	762 - 1192
Total cost in a known field	1267	1062 - 1692
Total cost in a unknown field	1440	1122 - 1992

https://www.geothermal-energy.org/pdf/IGAstandard/INAGA/2001/2001-27.pdf

Long-Term (~10years)

Geothermal Energy recommendations





There are 4 Key Elements of Successful Geothermal Development: Availability of sufficiently accurate geothermal resource data and other relevant information; effective and dedicated institutions; supportive policies and regulations; and access of the project developer to suitable financing.

https://www.esmap.org/sites/default/files/esmap-files/FINAL_Geothermal-ES.pdf

https://www.esmap.org/sites/default/files/esmap-files/FINAL_Geothermal-ES.pdf

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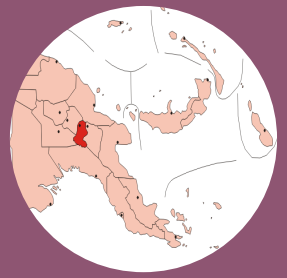
Long-Term (~10years)

Long-Term strategy



Implementation of the Karimui project

Extract the unconventional resources

Implementation of big project dam in Sepik, Fly River, Purari river, Markham river once the study is established from short and mid term.

Geothermal implementation plan

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Finance opportunities

Port Moresby, Lae and Kimbe are the economy's busiest seaports

80% of all cargo

DNPM (Department of National Planning and Monitoring, Papua New Guinea) (2010a), Development Strategic Plan 2010–2030, https://aperc.or.jp/publications/reports/outlook/5th/volume2/EDSO5_V2_Papua_New_Guinea.pdf

Finance opportunities

Finance opportunity: Mining

Under negotiation
1 Newcrest and South Africa
2 The Frieda River venture of Chinese-owned PanAust
45 years A$12.5bn in tax

https://oxfordbusinessgroup.com/overview/rich-source-potential-major-projects-pipeline-could-be-boon-economy-first-they-will-have-navigate

Finance opportunities

Finance opportunity: Oil and Gas

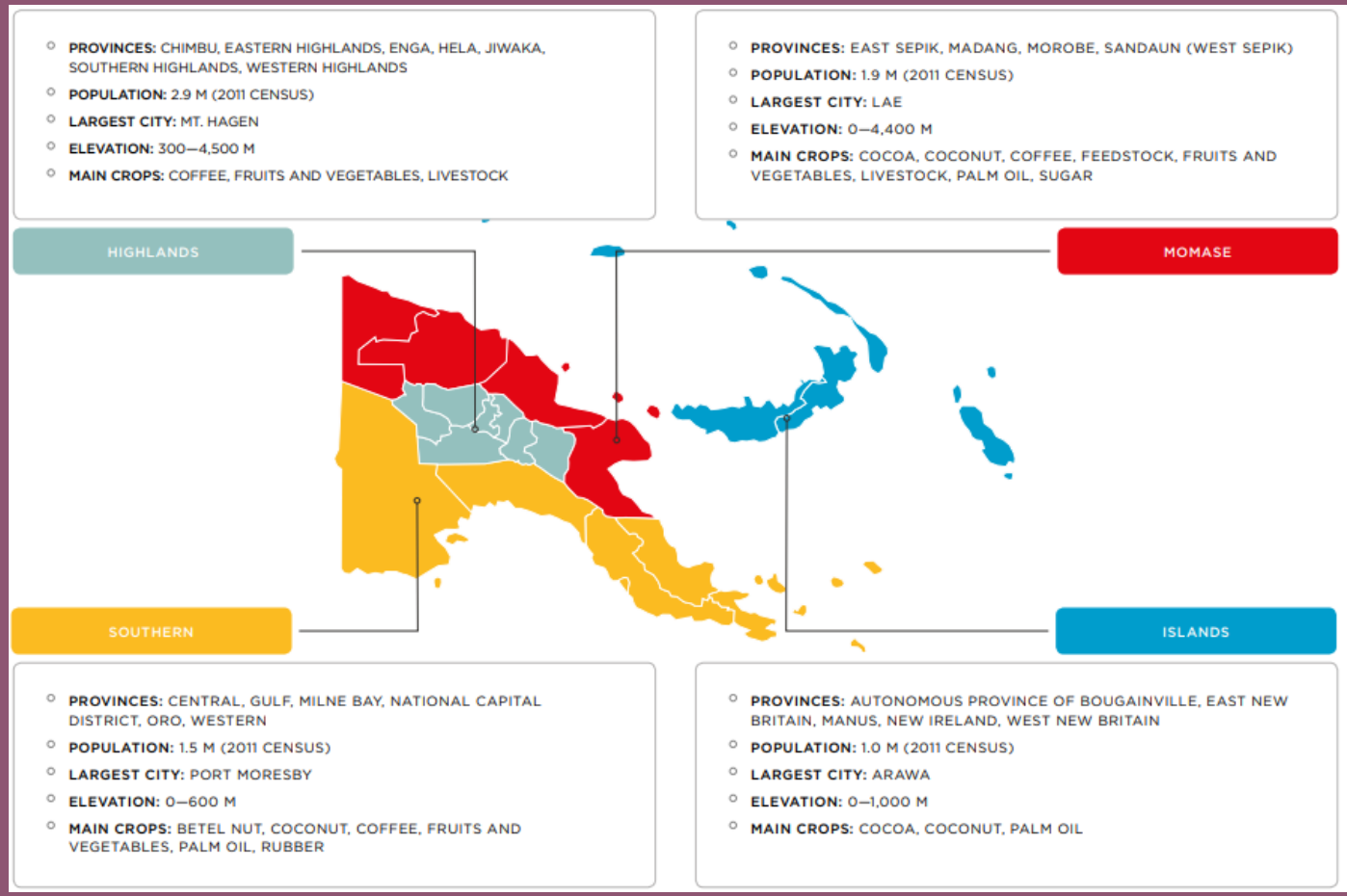
3 blocs under negotiation
- Muruk (subject to appraisal)
- Elk/Antelope (6.5 tcf 2C - 5.2 tcf 1C)
- P'nyang (3.5 tcf 2C - 1.1 tcf 1C)

https://www.ogj.com/general-interest/article/14092903/png-stops-pnyang-gas-agreement-negotiations-with-exxonmobil

Finance opportunities

Finance opportunity: Agriculture

20 % Total GDP
- 47.6 % Palm oil
- 16 % Coffee
- 7.2 % Cocoa



https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2019/09/Landscaping-New-Opportunities-for-Digital-Agriculture-in-Papua-New-Guinea.pdf

Factors taking into consideration in the development plan

Technical factors

Limited availability of high quality of products, logistical problems with distribution, and lack of training in maintenance.

Economic factors

Economic barriers involved cultural conceptions of savings or money.Many ordinary people in other developing countries will invest in PNG and talk about fuel savings, payback, and even discount rates, but in PNG people are completely unfamiliar with them. People have no concept of the future.
In many tribes, no word for ‘next week’.
Lack of capital, Financial illiteracy and lack of financing

Factors taking into consideration in the development plan

Social Factors

Theft, sabotage, jealousy and vandalism, and low consumer awareness.
Local rural homes are not built well because they have sack-sag roofs, making it difficult to properly mount any RE unit
PNG is not a very individualistic society. It is very communal, and people spend most of their days outside, meaning a fixed RE system doesn't make sense. A rural house is essentially used only for sleeping.

Political factors

The political barriers revolves around institutional problems with energy program managers, management switched three times in 1 year, and an inability to collect feedback and learn from past failures.
The wantok system of patronage : which means 'one language' : everyone believing they are a relative to everyone else, which are leaders or politicians, or a "big man", someone who is wealthy, pay for things directly or give them money'. Who may provide electricity or energy services to their constituents or clan members for free. Project managers appeared not to learn from or incorporate feedback from similar schemes or past failures in PNG

Conclusion

In conclusion words alone won't change a thing, we need to conquer our problems with actions

THANK YOU!