



Ramu 2 Hydropower Project Update
Kumul Consolidated Holdings

Presentation to National Research
Institute Chairman's Seminar Series

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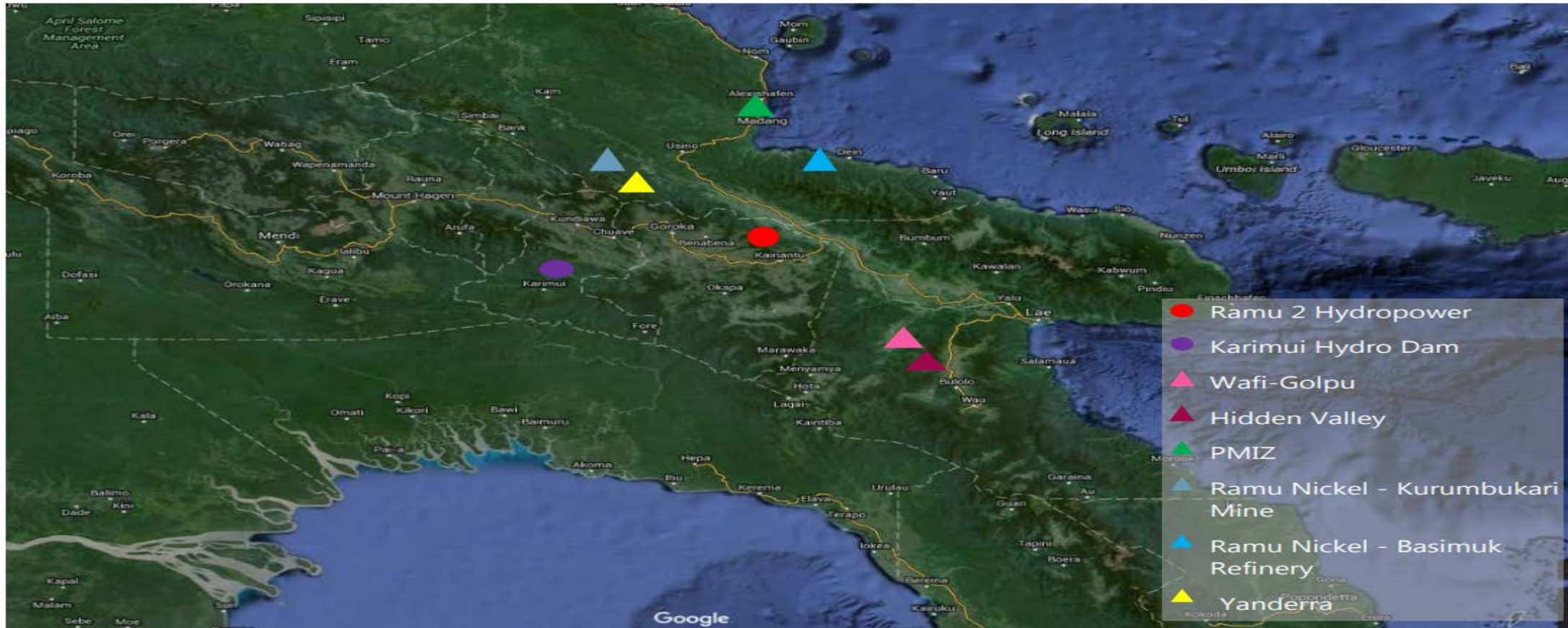
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Background

1. Ramu 2 is an augmentation of the existing Yonki Ramu 1 hydropower system. The total Project cost is US\$940.0m (~K3, 200.0m). The nameplate generation capacity for Ramu 2 is 180MW.
2. Ramu 2 is a significant nation-building project and key enabler to support the Governments long term development aspirations and future industrial development.
3. The expected economic life of 50+ years, the Ramu 2 hydropower assets will underpin the energy security on the Ramu grid and the planned connectivity from Sepik to the Ramu grid s and the Southern Region in line with the Connect PNG vision.
4. The Ramu 2 project supports the Government's aim to increase the use of clean renewable energy in the national energy mix and demonstrates PNG's commitment to international climate change conventions (e.g. Paris Accord).
5. Since its conception, Ramu 2 is designed to be a natural supply source of power for key mining and industrial developments on the Ramu grid.
6. This is a unique opportunity for mining developments in the area to generate broad based socio-economic benefits for PNG and demonstrate their commitment to Environmental, Social and Governance (ESG) operating principle's.

Location of Ramu 2 (and major mining loads)



1. Ramu 2 is strategically positioned with respect to major mining locations.

1. It provides a natural source of supply for willing mining off-takers

Ramu 2 Project Site Overview



1. 50+ hectares of customary land
2. 30+ kilometers of new access roads
3. 34 impacted ILGs

Project is aligned to key Development Goals and Policy

1) PNG Constitution

- ❖ Integral Human Development
- ❖ Equality and participation
- ❖ National sovereignty and self-reliance.
- ❖ Natural resources and environment
- ❖ Papua New Guineas ways

2) PNG Vision 2050

- ❖ Increase access to electricity to 100% of the population.
- ❖ Provide 100% power generation from renewable energy sources.
- ❖ All 89 districts must have at least one major impact project.

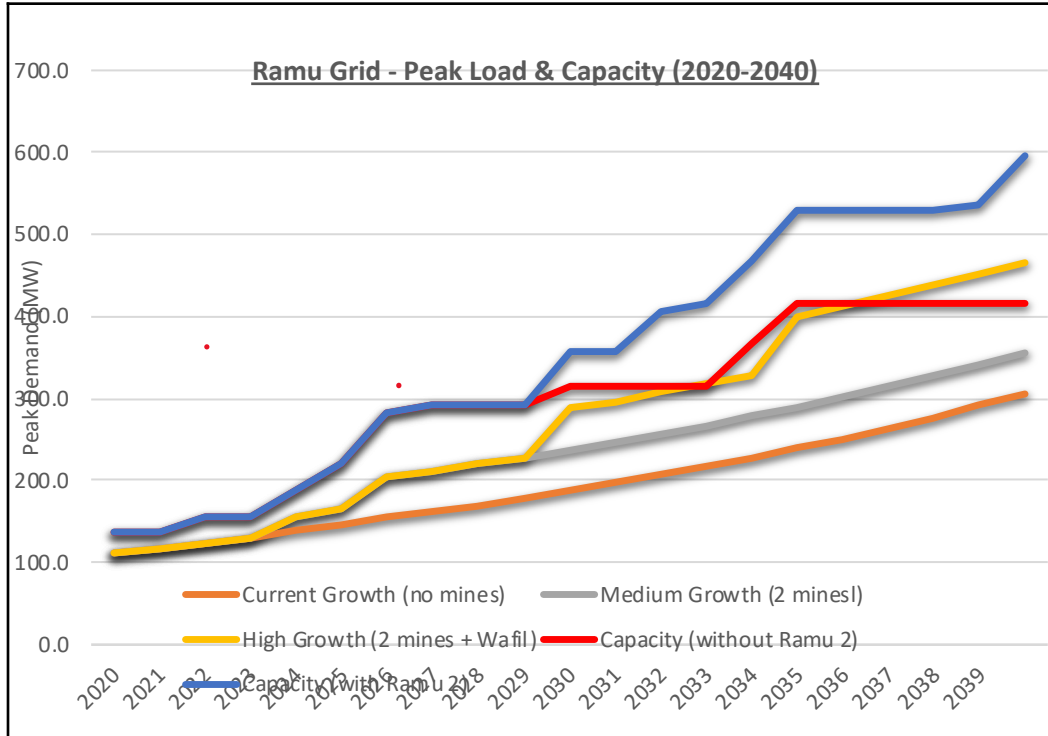
3) PNG Development Strategic Plan 2010-2030

- ❖ Increase access to electricity from current 13% to 70%.
- ❖ Build a national grid to support the development of economic corridors and industries;
- ❖ Increase PNG's renewable energy capacity
- ❖ Increase hydropower capacity to 1020MW and other renewables to 500MW by 2030.
- ❖ Private sector involvement through public private partnerships (PPP) to source capital to build large scale power generation and transmission infrastructure.

Overview of Project Socio-economic Benefits

- ❖ Direct foreign investment in excess of K3.0b and tax revenue in the order of K2.0b over the 25-year term
- ❖ Job creation for up to 1,000+ during construction and training and employment of local people for the construction and operating phases prescribed in Project Agreement.
- ❖ SME development for impacted communities through local content provisions in the Project Agreement
- ❖ Social infrastructure, such as schools and aid posts to be gifted to impacted communities
- ❖ Equitable shareholding arrangements with landowners, Provincial Govts and National Govt
- ❖ Joint ownership of multi-billion-kina hydro generation asset with Provincial Governments and landowners post PPA term
- ❖ Provide mining and industrial complexes in the region with clean, cheaper and reliable renewable hydropower
- ❖ A significant and long-term positive cash flow for PPL to reinvest in grid expansion and household electrification
- ❖ US\$300m+ worth of new high-capacity transmission infrastructure and 30+ km of new access roads for public use
- ❖ Indirect multiplier impacts associated with the investment inflows during both the construction and operating phases
- ❖ A credible source of renewable energy credit revenue for the State through voluntary trading markets.
- ❖ Can provide Forex inflows through PGK component of contract payments

Power Demand and Supply Outlook



The graph shows the following demand scenarios.

- 1) Current growth: Based on average growth rate of 5% based on historical trend and current electrification rate.
- 2) Medium growth: Current growth plus Ramu Nickel and Kainantu
- 3) High growth: Medium growth plus Wafi-Golpu mine

The graph shows the following supply scenarios.

- 1) Power generation capacity without Ramu 2:
- 2) Current and planned generation capacity without Ramu 2.
- 3) Power generation capacity with Ramu 2: Current and planned generation projects plus Ramu 2 coming onstream in 2030

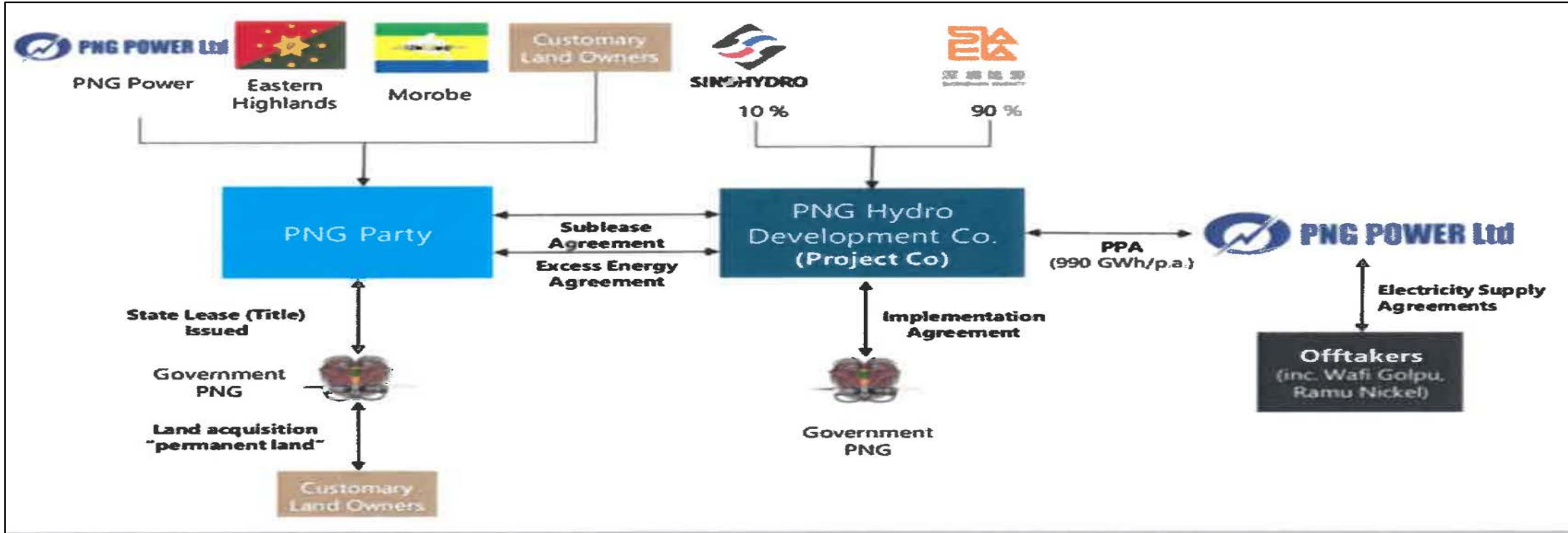
Analysis:

- ❖ The analysis shows that in order to meet the mining and industrial loads, investment in large scale power projects is required to ensure adequate supply and reserve margin on the grid to meet demand.
- ❖ In turn, this ensures a sustainable means of financing large scale projects for the future through PPP models.
- ❖ Ramu 2 indeed, will be a flagship PPP based energy project in the Asia Pacific region

Project Commercial Structure (1)

1. The Government approved for Ramu 2 to be delivered through a PPP investment model
2. Based on an international tender process, the NEC in 2016 appointed, a Chinese Consortium, comprising Shenzhen Energy Ltd and Sinohydro Corp Ltd (**Project Co**) as the private sector partners to develop Ramu 2.
3. The Government approved PPP structure is a Build Own Operate Transfer (**BOOT**) model, where the Project Co finances, builds, owns, and operates the hydropower plant. The Project Co sells the contracted volume of power to PPL at an agreed tariff for a term of 25 years. The contracted capacity is ~50% of rated capacity.
4. The Government in turn negotiate and signs long-term power supply contracts with a major mining customer to on sell the power at a margin price, in order to generate the required cash flow to underwrite the investment.
5. The Govt on the back of the signed power supply contract(s) with the mine(s) will issue a Sovereign guarantee to guarantee against Sovereign risks and guarantee debt financing for the Project construction.
6. At the end of the 25-year term, Project Co will transfer the asset at no cost, debt free and in good condition to the State.
7. During the term of the Project, excess power over and above the contracted volume can be purchased by PPL at significantly lower prices and sold to general customers on the grid hence driving power prices down in the long term in line with least cost power targets.

Project Commercial Structure (2)



The PNG Party refers to the SPV to be established to hold the State, Provincial Governments and landowner interests in the Project and to which the Project Co will transfer the assets to at the end of the PPA/BOOT term. The PNG Party shareholding structure has approved by the NEC (NEC Decision No.11/2019) is as follows;

- State (through KCH) – 60%
- Eastern Highlands Province – 10%
- Morobe Province – 10%
- Landowner Umbrella Company – 10%

Status of Conditions Precedents

- The signed PPA is conditional on a several Conditions Precedents (CP) that need to be fully satisfied by the parties in order for the Project to reach financial close and actual works to commence.
- The PNG Government is required to satisfy several CPs through various responsible State agencies. KCH as the implementing agency is responsible for coordinating with the various State agencies to ensure the Government CPs are satisfied.
- In summary, the Government CPs include,
 - 1) issuance of the Environmental Permit by CEPA.
 - 2) permanent acquisition of land for the Project from the Department of Lands and Physical Planning;
 - 3) registration of all impacted ILGs on both the Eastern Highlands and Morobe sections of the Project;
 - 4) signing of power off-take agreements with mines on the Ramu 2 grid;
 - 5) the issuance of a State Guarantee to guarantee the Project financing.

Next Steps

1. At a total cost of USD940 billion (~PGK3,200 million), the Project is one of the Government's largest impact Projects delivered this year and will provide much needed boost to the PNG economy. In terms of socio-economic impact, the Project benefits include.
2. All key State agencies are aligned to implementing Ramu 2. In addition, the host Provincial Governments of Eastern Highlands and Morobe are fully supportive of Ramu 2 going ahead.
3. A Memorandum of Understanding (MoU) was signed by the respective Governors of EHP and Morobe, Hon. Simon Sia and Hon. Luther Wenge, on behalf of the respective Provincial Governments.
4. KCH has been working diligently with the responsible State agencies over the last 18 months to complete the work required to satisfy the Government CPs and get the Project to Financial Close.
5. Based on progress to date, the Government CPs are on track to be completed within the year. The Project will then secure the investment for the Project, mobilize and commence early civil works on the Project soon after.
6. The scheduled construction time for Ramu 2 is ~6 years.

Relevant Case study (Large scale PPP)

Mt Eriama Water treatment plant – Port Moresby

- ❖ 21 year BOOT (Concession)
- ❖ Eda Ranu established as PNG Government transferee
- ❖ Augmented Port Moresby water treatment plant capacity for demand growth
- ❖ Firm demand in Port Moresby to underwrite cash flow
- ❖ Asset transferred to PNG state owned enterprises for ongoing operations

Research references

Irrespective of the country—ranging from areas where a grid barely exists, forcing mines to secure their own generation, to those with large, integrated grid systems—there is great potential for the mining industry to be used as an “anchor customer” to unlock energy resources for the sustainable development of the power sector.

While the economic and business case for power–mining integration is strong, the report shows that this opportunity has largely been undeveloped. In some countries, integration could help connect many customers to mini-grids or national grids. In others, it has a facilitating role to support the power sector through greater mobilization of revenues from energy sales.

The report also points to the challenges that must be overcome in this new and—in a developing country context—relatively uncharted area. But these are not insurmountable, and many countries that have integrated mining demand successfully in their power sectors offer proof that this untapped potential can be harnessed for national development.

The above is an excerpt from World Bank Report, Power of the Mine: A Transformative Opportunity for Sub-Saharan Africa, a good source of case study references to the proposed power to mine integration model.



End of presentation