

## Papua new guinea grid-scale energy storage

PNG is ranked as the tenth most climate-vulnerable country. The country's 2020 Nationally Determined Contribution (NDC) has outlined projected climate impacts that Papua New Guinea is expected to experience in the coming years, recreated below:

PNG has experienced significant economic growth since the turn of the century, resulting in an 88.2% increase in emissions between 2000 and 2015.

Many LNG projects under construction throughout the world are having trouble securing SPAs. Experts from the Institute for Energy Economics and Financial Analysis believe that by the time the Papua LNG project comes online, the global natural gas market may be saturated which would lower anticipated pricing. Moreover, the International Energy Agency predicts a 55% decrease in gas demand by 2050. Because of this, the project, and natural gas buildout in Papua New Guinea as a whole, presents significant financial risks.

These risks are amplified by Papua New Guinea's current finances. While the country has the right to acquire 22.5% stake of Papua LNG upon the project's approval, Papua New Guinea's severe debt (estimated at USD \$51.2 billion) makes this challenging and risks reallocation away from social and economic spending to cover investment costs.

By 2030, PNG aims to increase renewables to 78% of the national energy mix. Papua New Guinea aims to transition its energy sector to carbon neutrality by:

Moreover, Papua New Guinea has outlined four main actions to achieve Sustainable Development Goal 13 (Take urgent action to combat climate change and its impacts):

The Government of Papua New Guinea also aims to increase electricity access to 70% of the population by 2030, a goal which will require connections of 100,000 households per year.

As of 2022, the Climate Change Development Authority of Papua New Guinea had identified 15 renewable energy projects in the pipeline totaling 427.275 MW, as well as 21 proposed projects totaling 45.15 MW. If all projects fully came to fruition at their projected installed capacities, these projects alone could provide 78% of the country's grid-connected electricity by the end of the decade. All projects in the pipeline (both in-development and simply proposed) are summarized in the table below:

According to the International Finance Corporation's Powering the Pacific report, PNG has vast untapped renewable energy potential. Estimates are as follows:



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Papua New Guinea assesses climate adaptation efforts by looking at the health, agricultural, transportation, and infrastructure indicators. Government leaders anticipate the following outcomes:1;3;

According to Global Energy Monitor's Global Oil and Gas Extraction Tracker (March 2024 release), Papua New Guinea has five discovered oil and gas extraction projects: the Pasca Oil and Gas Field, the Stanley Oil and Gas Field, the Kutubu Oil Project, the P'nyang Gas Field, and the Elk-Antelope Gas Field. Of those, only the Kutubu Oil Project is operational, and the Papua LNG project will extract from the Elk-Antelope Gas Field.1;10;11;

Papua LNG is only the second large-scale natural gas project in the country and, if completed, would rival Indonesia's gas exports. However, by the time the project is expected to come online, experts are projecting a glut in gas prices due to flooded markets. In essence, there is little revenue certainty for the project.1;4;

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Web: <https://www.sumthingtasty.co.za/contact-us/>

Email: [energystorage2000@gmail.com](mailto:energystorage2000@gmail.com)

WhatsApp: 8613816583346

