ENABLING SOLAR SELF-GENERATION IN PAPUA NEW GUINEA

Potentials and next steps

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IFC | International Finance Corporation
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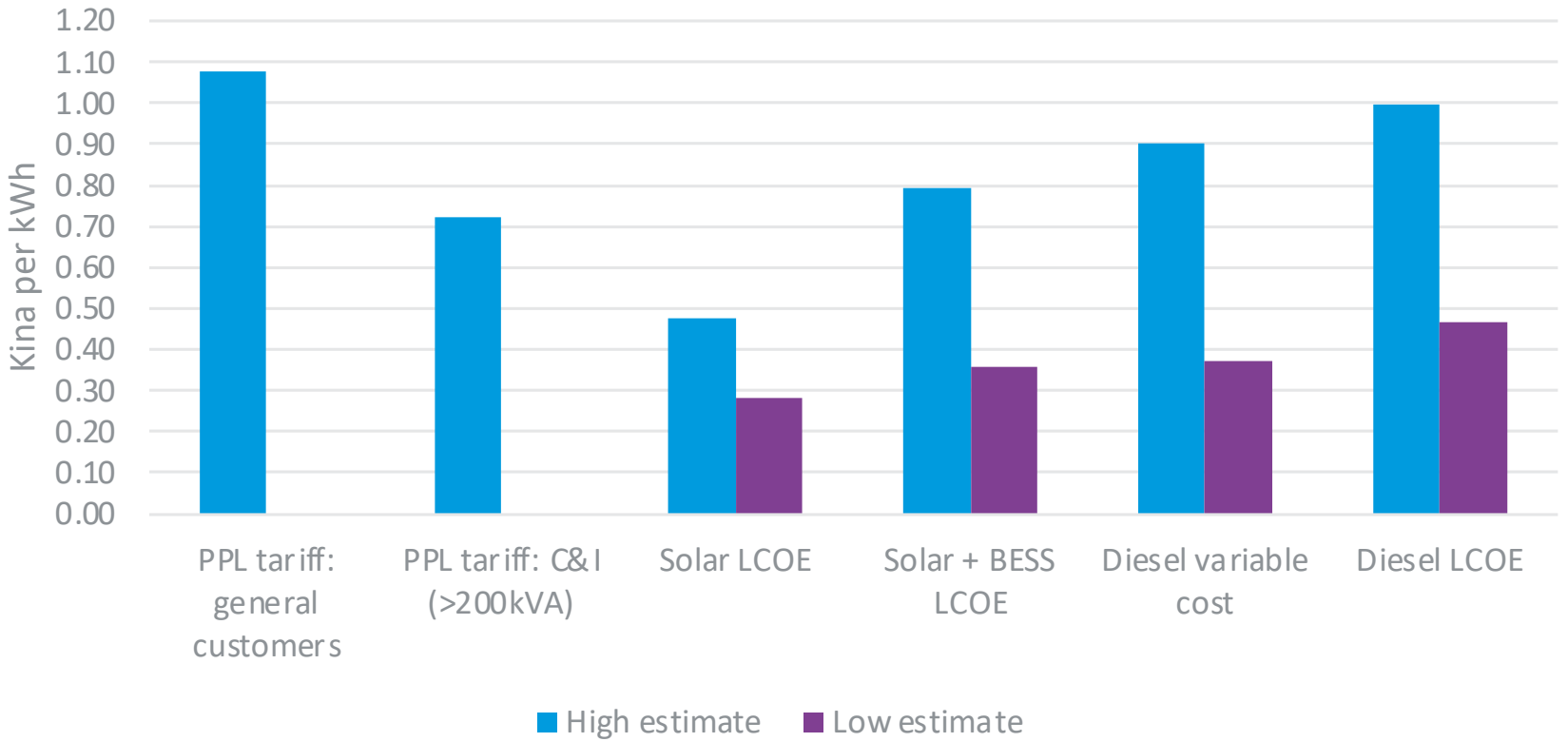
Benefits of self-generation for Papua New Guinea

- Lead to investment in electricity generation without relying on investment from PPL, independent power producers, or foreign investors
- Generate electricity for consumers at lower cost than electricity from PPL
- Improve electricity reliability for consumers, and consequently, domestic output and economic growth
- Increase electrification and electricity usage, thus contributing to the 70 percent electrification target by 2030, set out in PNG's Strategic Development Plans
- Reduce PNG's carbon emissions.

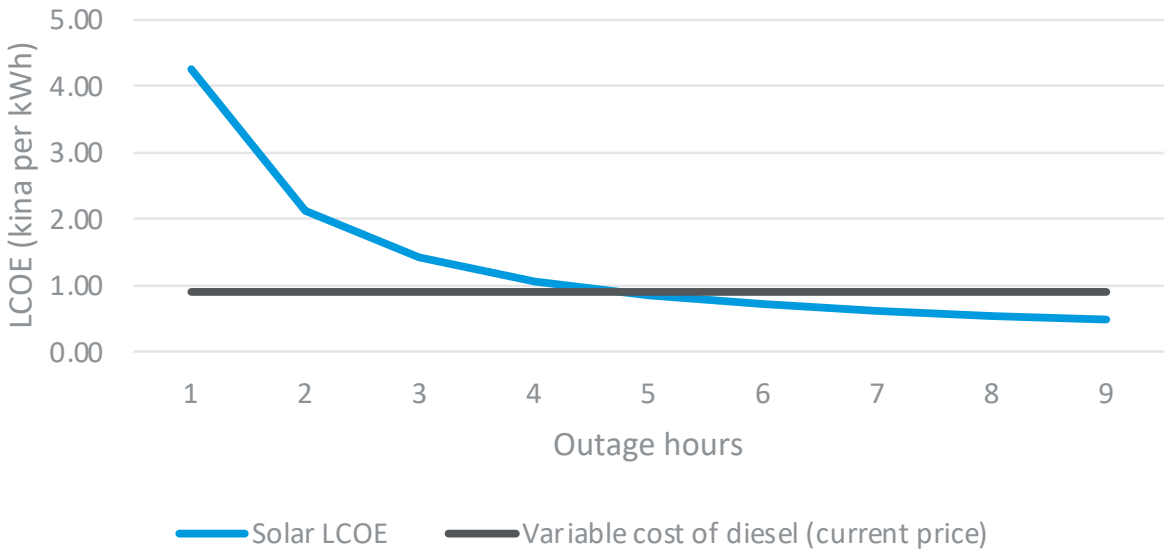
Self-generation enables secure supply and cheaper electricity



Source: Castalia (2024)

Scenario analysis: How do benefits differ?

Scenario 1: Status quo



Scenario 2: Self-generation at all times

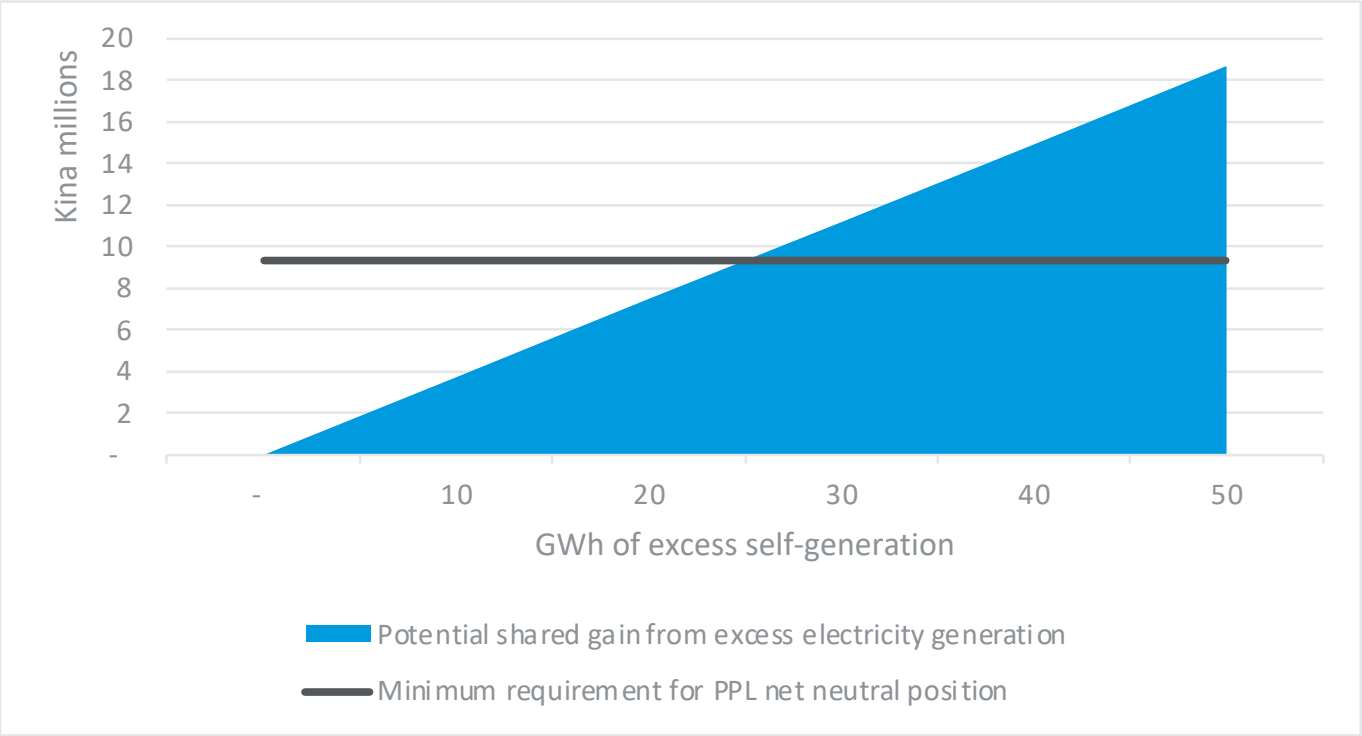
Scenario	High estimate (Kina/kWh)	Low estimate (Kina/kWh)	Savings for a 10,000 kWh/year consumer (low estimate)
Solar-only self-generation			
Compared to general customer tariffs	k 0.80	k 0.61	**k 2,290**
Compared to industrial tariffs	k 0.44	k 0.25	**k 940**
Compared to diesel self-generation	k 0.62	k 0.43	**k 1,610**
Solar-plus-battery self-generation			
Compared to general customer tariffs	k 0.72	k 0.29	**k 2,900**
Compared to industrial tariffs	k 0.36	Not financially viable	**k 3,600** *(high estimate)*
Compared to diesel self-generation (assuming existing generator)	k 0.54	k 0.11	**k 1,100**
Compared to diesel self-generation (assuming no generator)	k 0.63	K 0.20	**k 2,000**

Measure	Unit	Lae residential	Lae C&I	POM residential	POM C&I	Total
Roof area: total	km^2	2.5	1.7	6.0	2.7	**12.9**
Roof area: 5% uptake	km^2	0.1	0.1	0.3	0.1	**0.65**
Roof area 10% uptake	km^2	0.3	0.2	0.6	0.3	**1.29**
Capacity: 5% uptake	*MW*	6	4	15	7	**32**
Capacity: 10% uptake	*MW*	13	9	30	14	**65**
Annual generation potential: 5% uptake	*GWh*	18	12	44	20	**94**
Annual generation potential: 10% uptake	*GWh*	37	25	88	39	**188**

Source: Castalia (2024)

Scenario analysis: How do benefits differ?

Scenario 3: Self-generation plus sale to PPL



Source: Castalia (2024)

What can the Government do to unlock these benefits?

- Most consumers believe that it is illegal to generate their own electricity in a grid-connected area, other than for backup during outages

- PPL's 2002 'Retail License' contract with the Independent Consumer and Competition Commission gives PPL exclusivity over the sale of electricity to customers in grid connected areas.

- A legal opinion from Office of the State Solicitor has been sought to provide regulatory clarity on the legality of self-generation.

- Consensus required on technical requirements and offtake terms for sale of excess electricity to PPL.

THANK YOU