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# How Sabah Electricity compares to TNB, SEB and PLN

Daily Express (KK), Malaysia



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When I first started writing in this column, I stated that Electricity is more than just a service, in fact it is the heart of the economy. Prolonged shutdown and outages kill the economy in the way that the heart does to the human body. Hence electricity supply is the backbone of development, productivity, and public well-being.

In regions like Sarawak, Sabah, Peninsular Malaysia and Indonesia major utility companies such as Malaysia's Tenaga Nasional Berhad (TNB), Sarawak Energy Berhad (SEB), and Indonesia's Perusahaan Listrik Negara (PLN) manages power generation, its infrastructure and customer satisfaction related to energy supply.

But how does Sabah Electricity Sdn bhd. (Sabah Electricity) compare with these regional players? And what lessons can be drawn from their success? In this article, I will try to highlight how these regional utility companies compare in terms of generation, energy mix, customer base, reliability, reserve margin and most importantly what lessons Sabah Electricity can draw from them.

### TNB: Malaysia's powerhouse in the peninsula

Tenaga Nasional Berhad (TNB) a listed company in the Kuala Lumpur Stock Exchange (KLSE) is a large electricity utility in Malaysia and plays a dominant role in power generation, transmission, and distribution in Peninsular Malaysia. As of December 2023, TNB owned 53 percent generation share in the domestic generation market, with the remainder supplied by Independent Power Producers (IPPs). This degree of self-generation allows TNB to have greater control over cost structures, power generation quality, and long-term energy planning.

In September 2024, TNB's total gross generation capacity stood at 21,370 MW. The energy mix shows a company actively shifting toward cleaner and renewable energy:

- 21 pc from renewables
- 37 pc from other fossil fuels (mainly natural gas)
- 42 pc still relies on coal, though efforts are being made to reduce this over time

Serving 10.2 million retail customers, TNB is well-regarded for its service reliability, boasting a low System Average Interruption Duration Index (SAIDI) of 46.1 minutes per customer per year which is far below global averages for developing countries.

TNB has also been investing heavily in smart grid infrastructure, digitalization, and renewable integration, positioning itself as a modern and forward-thinking utility company.

### Sarawak Energy Berhad (SEB)

On the other hand, we have the once listed Sarawak Energy Berhad (SEB). SEB is wholly owned by the Sarawak government which is rare and unique in the Malaysian energy landscape. Unlike Peninsular Malaysia or Sabah, Sarawak does not rely on IPPs for power generation. Instead, SEB owned 100 pc of its electricity generation capacity, which gives it unmatched control over its supply chain and energy management.

As of 2024, SEB had 5,745 MW of installed generation capacity, thanks to the massive investments in hydropower, namely:

- Bakun Dam (2,400 MW)
- Murum Dam (944 MW)
- Batang Ai Dam (108 MW)

To further augment their hydropower generation capacity, the under construction Baleh Dam (1,285 MW), is expected to be commissioned by 2028.

SEB supplies electricity to about 790,000 customers, and thanks to its stable grid and ample supply, it recorded an impressive SAIDI of around 75 minutes per customer per year in the year 2022. What sets SEB apart is its ability to plan long-term energy strategies without relying on IPPs.

This independence gives the utility more flexibility to prioritize sustainability, affordability, and reliability. In contrast to Sabah Electricity, we are still struggling to hit the minimum 55 pc generation. Sarawak on the other hand is already treating power generation as a commodity and have already been selling to Kalimantan Indonesia, Brunei, soon to us in Sabah and Singapore.

### Perusahaan Listrik Negara (PLN)

Not far from here, we have PLN, Indonesia's largest utility, with a total installed power capacity of 101 GW in 2024. Out of that, PLN directly managed 75 GW by the holding company, while the rest are generated by its subsidiaries. With a monumental 92.88 million registered customers PLN's SAIDI was 320.24 minutes per person per

year, highlighting its power reliability challenges.

Still, considering its enormous scope, PLN is actively pursuing decentralized energy strategies, renewables, and grid upgrades. The size and complexity of PLN's system may be a cautionary tale for utilities operating in smaller regions like ours in comparison.

### Sabah Electricity

In contrast to the other three utility companies, Sabah Electricity, finds itself in a different precarious situation. In terms of power generation, in comparison to SEB or TNB, as of 2022, we directly owned less than 20 pc of power generation, while the other 80 pc are owned by IPPs.

This heavy reliance on IPP limits our ability to effectively control pricing, reserve margin and affect our planning for long-term energy resilience and power security. Worse still, our generation share is on the decline, particularly when more of our diesel-powered generation are decommissioned over time and hence Sabah Electricity will become more and more dependent on IPPs.

From an energy stability point of view, such a situation is unhealthy and unsustainable in our effort to achieve energy sovereignty and power supply stability goals.

During the period of 2023 and early 2024, Sabah Electricity was confronted with a serious capacity shortage where operating reserve margin dropped dangerously to as low as 0 pc to 5 pc on most days and on certain occasions dropping to negative reserve margin.

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As a result, load shedding becomes unavoidable causing blackouts on a daily basis in several areas. Now, although some progress has been made where the reserve margin has increased to around 12.3 pc this is still far below the industry norm of 25-30 pc. Without sufficient reserves, even minor disruptions can cascade into major outages.

By 2024, Sabah Electricity was serving 696,711 customers, and while the SAIDI has improved to around 203 minutes, this figure remains significantly higher than in Sarawak or Peninsular Malaysia.

Among the top causes of outages in Sabah are:

- Animal interference
- Cable faults
- Vegetation overgrowth
- Lightning
- Overloaded systems, ageing infrastructure, illegal connections

Sabah's terrain and scattered population also pose logistical challenges in maintaining and upgrading infrastructure, further exacerbating the problem.

### Where do we go from here?

The data speaks clearly. While TNB and SEB are moving toward energy security, sustainable generation, and grid resilience, Sabah Electricity is still struggling with fundamental structural issues.

If Sabah is to achieve stable, reliable, and affordable electricity for all, several critical shifts must occur:

- Increase self-generation to at least 50-60 pc
- Invest in renewable energy projects to reduce fossil dependence and improve sustainability
- Strengthen grid infrastructure to reduce SAIDI and improve customer confidence
- Secure a reserve margin of 25 pc or more to provide a safety buffer for peak demand and emergencies

The success of TNB and SEB shows that with long-term planning, political will, and strategic investment, transformation is possible even for Sabah Electricity. one strategic way forward for Sabah Electricity is to increase our generation share either directly or through the setting up of subsidiary companies.

We are already doing this through the setting up of at least three new subsidiaries. In addition to that, ECoS have approved in principle for Sabah Electricity to own and set up a 500 MW Run of River Hydropower station using the same water intake with the existing power station.



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METRIC	TNB (PENINSULAR)	SEB (SABAWAK)	PLN (INDONESIA)	SABAH ELECTRICITY (SABAH)
SELF-GENERATION (%)	33%	100%	9% (HOLDING LEVEL)	20% (AND DECLINING)
GENERATION CAPACITY	21,379 MW	5,745 MW	101 GW	MUCH SMALLER - 290 MW (AS)
RETAIL CUSTOMERS	10.2 MILLION	790,000	52.88 MILLION	694,701
SALES (RM/MT/YEAR)	46.1	75	320.2	203
IPPL INVOLVEMENT	MODERATE	NONE	VERY HIGH	VERY HIGH

*Figures presented are based on available data at the time of writing and may differ from the most recent updates.*