



25 AUG, 2024

True cost of power disruptions

Daily Express (KK), Malaysia



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YOU and I are both well familiar with blackouts and constant electricity power disruptions. Much more than causing inconveniences, they also disrupt our daily lives, businesses, investments and thus the overall productivity of our economy.

For many of us in Sabah and Labuan, these power outages have become almost an accepted norm, a part of life we've grown accustomed to—being grudgingly so. But should we? Should we accept these disruptions as our reality, or should we strive for a much better quality of electricity supplies?

Understanding SAIDI

Map of SAIDI performance in Sabah (as of June 2024)

In technical terms, disruptions of electricity power supply are measured in what is known as SAIDI, or System Average Interruption Duration Index. Simply put, SAIDI measures the average outage duration for each customer served for the duration of one year.

Thus, the higher the SAIDI, the longer we're left in the dark. So, if I say, the district of Ranau has a SAIDI of 853 minutes, it means that in a year the people of Ranau are experiencing 853 minutes or 14 hours of no electricity power supply in a year.

Or if I say in the district of Kuala Penyu, the SAIDI is only 49 minutes or less than one hour of disruption in a year this means it is very good. Better still if I say the SAIDI in the Kota Kinabalu Industrial Park (KKIP) is only a single digit, which means the disruption is less than 10 minutes in a year which is way below the national average.

I feel the need to continuously raise public awareness about SAIDI because, despite its significance, many are still unaware of what it really means or why it matters.

SAIDI isn't just a number on a report. It reflects our daily experiences with electricity in Sabah. And if there are more people know this or better still if SAIDI becomes part of a vocabulary in our daily conversation then the appreciation of a significant reduction in SAIDI from more than 1,000 minutes in 2012 to only about 200 minutes now will become apparent and SESB as the utility company will no longer be the target of ridicule.

Indeed, whenever the lights go out, SAIDI is ticking upwards. Every hour we wait for the power to come back, SAIDI is counting. And these numbers matter because they tell the exact condition of the state of our electricity power supply ecosystem.

Tariff and SAIDI: The Unseen Connection

Now, when we talk about SAIDI, we must engage in a conversation about our tariff as well and or the cost of sales of our electricity supplies.

Why? Because the two are deeply interconnected. When the Sabah Electricity Board (SEB) or the Lembaga Letrik Sabah (LLS) was privatized in 1998 the tariff was 24 Sen/Kwhr.

After 26 years of privatization, the base tariff only went up by 10sen to 34.52 sen per kilowatt hour (Sen/Kwhr). The tariff was only reviewed twice; that is once 2012 and the last review in 2014.

According to the privatization agreement, by 2009, the tariff was supposed to be at 38 Sen. In other words, within 11 years of privatization, the tariff should have increased by 11 Sen, but after 26 years the tariff has increased by only 10 Sen.

One doesn't need to tell us that the cost of everything has gone up since then. To make it worse for SESB the total cost of electricity supply per unit, that is the cost of generation plus the cost of transmission and the cost of distribution is 43 Sen.

Imagine how SESB could sustain operations by charging consumers only at 34 Sen per unit electricity when the total cost is 43 Sen? This situation is definitely unsustainable. How did SESB survive you might ask? Well SESB survived simply because the federal government subsidizes the 10 Sen losses year in and year out.

It goes without saying that over the years, global fuel prices have fluctuated dramatically, but our tariff has remained the same. This static tariff no longer suffices to cover the rising costs associated with maintaining and upgrading our infrastructure.

Despite these financial constraints, we have managed to make some progress. As I said SAIDI has improved from a staggering 1,000 minutes in 2012 to a mere 220 minutes in 2024 which is a significant reduction.

However, let's be honest, 220 minutes or about 4 hours without power in a year is still far too long. It's a start, but it's not where we need to be.

Our target is by 2030 the SAIDI should be reduced to only 100. In other words, within the next 5 years or so we must make drastic improvements in our electricity infrastructure such as more Main Distribution Substation or Pencawang Pembahagian Utama (PPU) and a significant upgrading of the existing All Aluminium Cable (AAC) to Aerial Bundle Cable (ABC). Why? because such infrastructure contributes to our SAIDI.

To put this in perspective, let's compare ourselves with our neighbours. In Sarawak, the SAIDI was just 77.9 minutes in 2022, and in Peninsular Malaysia, it was an even lower 46.01 minutes in 2023. These numbers highlight the obvious gap.

Why is it that other regions in Malaysia are experiencing far fewer power interruptions than we are in Sabah? The answer, in part, lies in the strength and modernization of their infrastructure—something we are sorely lacking in Sabah.

Maintaining the current tariff without adjusting for inflation and rising operational costs means our infrastructure is effectively depreciating over time. This includes critical components like the Transmission Main Intake (PMU) and the Main Distri-

SAIDI SESB (Distribution)
 Annotated SAIDI Performance as of 30th June 2024



tribution Substation (PPU). The longer we go without adequately funding their maintenance and upgrade, the more vulnerable they become to failures. This vulnerability is a significant contributor to the high SAIDI—or in layman's terms, the frequent blackouts we experience.

Key Initiatives to Address the Challenges and Improve SAIDI

To truly understand the challenges we face in improving SAIDI, we must first understand the flow of power from its generation to its final destination in our homes.

The process begins at the generation stage, where power is produced in power plants. From there, it flows through transmission lines, which are the high-voltage towers you see stretching across long distances. The power then moves into the distribution network, which involves lower-voltage power lines that deliver electricity to our homes, schools, and businesses as consumers.

One of the key strategic initiatives we're implementing to improve SAIDI is increasing our reserve margin in our generation capacity. A reserve margin of 30 percent is considered a reliable reserve margin that can ensure enough capacity to meet demand, even when unexpected issues arise. Even if we have a 40pc reserve margin, the spinning reserve can be aggressively promoted to attract investment.

Currently, SESB has successfully installed a 90 MW rental genset and an additional 100 MW of generation capacity at Melawa. These steps are crucial in stabilizing our electricity supply and reducing the risk of outages.

However, the need for more capacity is ongoing. The long transmission and distribution lines we rely on in Sabah contribute to system losses because they cover large areas with less distribution infrastructure in between.

For instance, in Ranau, which has the highest SAIDI count at 853 minutes, the vast area covered by the transmission and distribution lines means that even minor faults can result in significant power disruptions affecting a larger geographical area because the distance from the feeder of power supply to the electricity substation is much longer than 20 kilometres which is considered as the standard in Peninsula Malaysia. In the case of Ranau it is more than 130 Kilometers.

This is compounded by issues such as animal interference, cable faults, vegetation in the right-of-way zone, lightning, and aging or obsolete design—all of which are among the top five root causes of outages.

On the distribution side, reinforcing the grid backbone is critical. One major project in this regard is the Southern Link, a 275 kV interconnection from Megalong, Sipitang to Tawau, which will eventually link Sabah's grid with Sarawak's. This cross-border interconnection will not only improve reliability but also open up opportunities for more stable power exchange between the two states.

Additionally, one of the most significant challenges we face in improving our power supply reliability lies in our aging infrastructure. Our systems are old and overburdened, and we are increasingly reliant on outdated technology.

For instance, 52pc of our distribution medium voltage conductors—equivalent to 5,632 km—are bare conductors (AAC). These conductors are vulnerable to environmental conditions, and their continued use is a major contributor to our high SAIDI.

The solution is to replace these bare conductors with insulated conductors (ABC), which are much more resilient to the elements. But this is easier said than done.

The costs associated with such an upgrade are substantial, and without a revision of our tariff to reflect the true costs of maintaining and upgrading our infrastructure, we're stuck in a vicious cycle.

In conclusion, the issues of SAIDI, tariffs, and power disruptions are deeply intertwined. To reduce power outages, we need to invest in modernizing our infrastructure, and to do that, we need a tariff that reflects the true cost of providing reliable electricity.

Yes, we've made progress, but there's still a long way to go. It's time to have an honest conversation about what it will take to get there and the role that each of us must play in that journey.

