



RENEWABLES FIRST

Pakistan's Power Market Insights

A lightbulb icon in a teal color, positioned between the words 'P' and 'wer' in the title. The bulb is simple, with a rounded top and a base with three horizontal lines representing the screw threads.

Dec 2024

Introduction

Our power market insights highlight important trends shaping Pakistan's power sector. This document focuses on long-term changes, such as the effects of fuel cost variations and shifts in the energy mix. The goal is to help businesses and consumers understand how the power sector is evolving.

Key Highlights



In Dec 24, cumulative electricity generation stood at 7.8 TWh, marking an increase of 2% year-on-year (YoY) basis.



Generation from renewable energy sources (i.e. solar, wind, and bagasse) saw an increase of 40% in Dec 24 on a YoY basis, mainly driven by higher generation from wind energy (262 GWh).



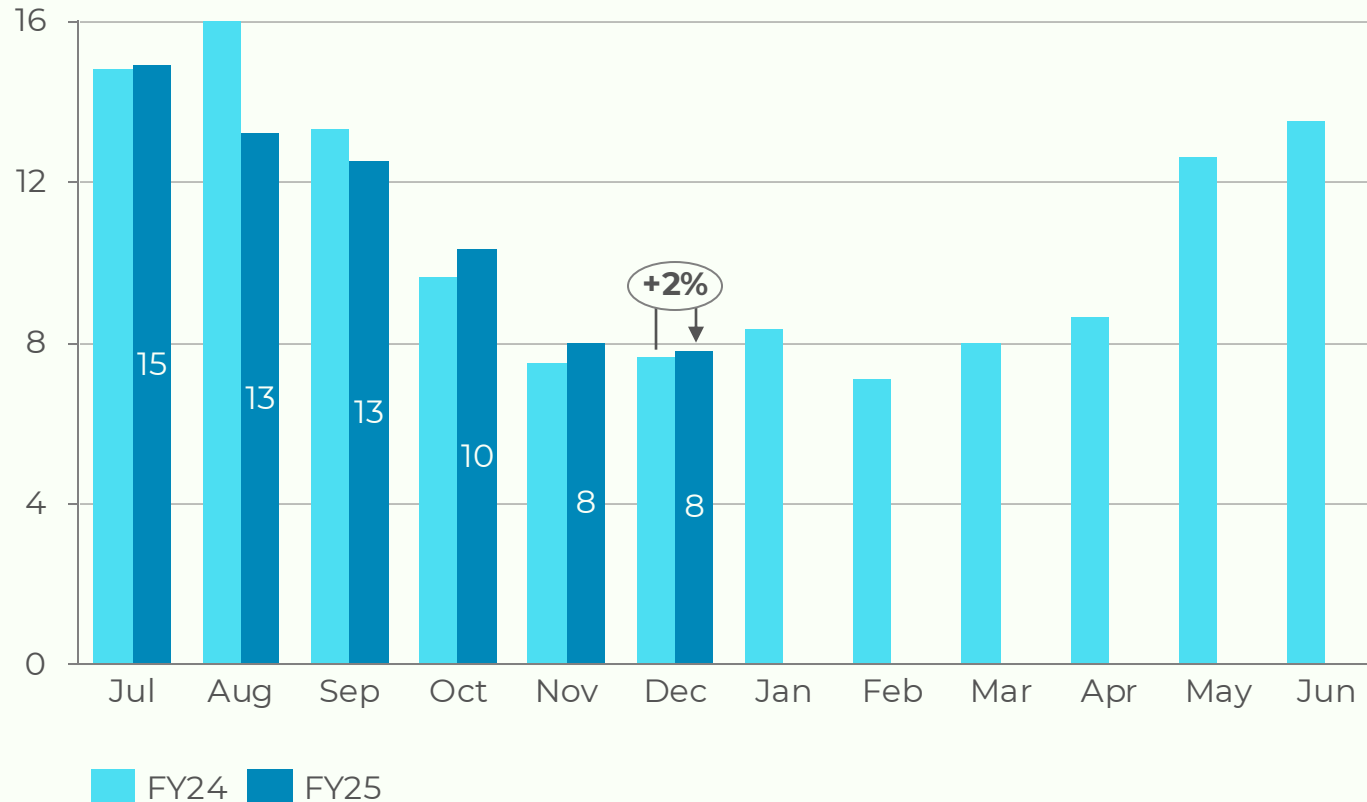
In the first six months of FY25 (Fiscal Year), Partial Load Adjustment Charges (PLAC) accumulated to 22.5 billion(B).

#RFPowerMarketInsights

Winter package struggles to power up demand

Month-wise electricity generation in FY24 vs. FY25

(TWh)

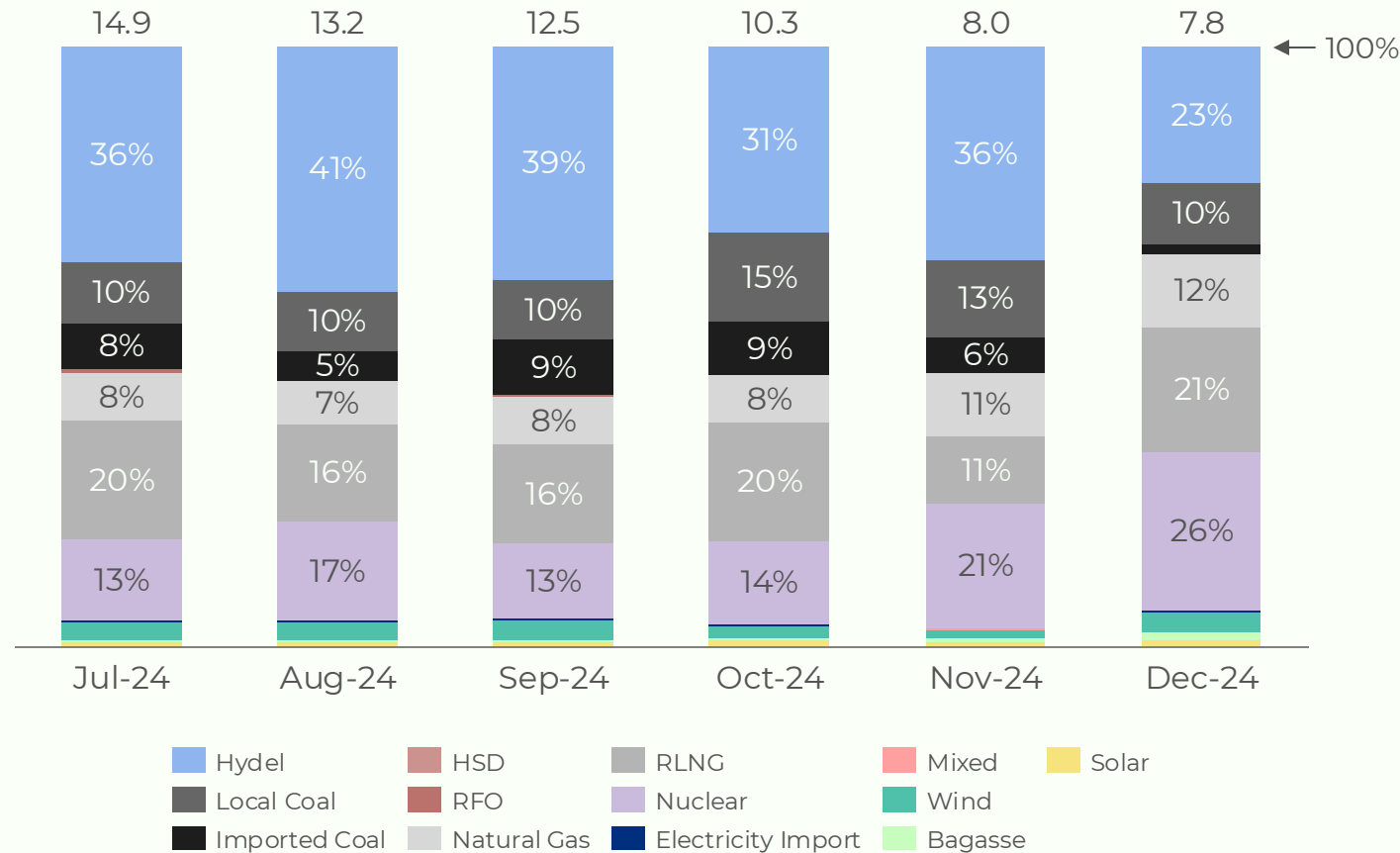


- To enhance electricity consumption and use surplus generation capacity, the **"Winter Demand Initiative"** was introduced from Dec 24 to Feb 25. This program offers incremental electricity usage at a marginal cost of **PKR 26.07 per unit**.
- Historically, similar initiatives have successfully stimulated demand growth. For instance, the "Use More, Pay Less" package, implemented from Nov 19 to Feb 20, led to a cumulative growth of 16%.
- In Dec 24, the first month of the winter package, demand experienced a modest 2% increase compared to the reference projection. Despite the inclusion of net metering consumers in the package, it has yet to drive a significant rise in demand across various consumer categories.

Nuclear power dominated the energy mix in Dec 24

Energy source-wise generation share in the first half (1H) - FY25

(TWh)



- In Nov 24, Karachi Nuclear Power Plant Units 2 and 3 experienced forced outages. Increased generation from these units in Dec 24 added a higher nuclear share in the energy mix.
- In Dec 24, nuclear power plants generated 2.0 TWh, an increase from 1.6 TWh in Nov 24. This growth in nuclear generation helped lower the overall generation cost.

Increased hydel share and falling fuel prices led to negative fuel price adjustments

Fuel price adjustments in 1H - FY25

(PKR / kWh)



* Provisional number

- Hydropower contributed 23% (1.7 TWh) to electricity generation in Dec 24, surpassing the forecasted 21% share and contributing to lower generation costs.
- Nuclear energy fuel cost was also reduced in Dec 24, with an actual fuel cost of PKR 1.69 per kWh, compared to the reference cost of PKR 1.85 per kWh.
- RLNG fuel costs were lower than anticipated, with the actual cost at PKR 22.73 per kWh, compared to the projected cost of PKR 26.31 per kWh.

Seasonal power generation variation led to higher T&T losses in Nov 24

Transmission & Transformation (T&T) losses in 1H - FY25



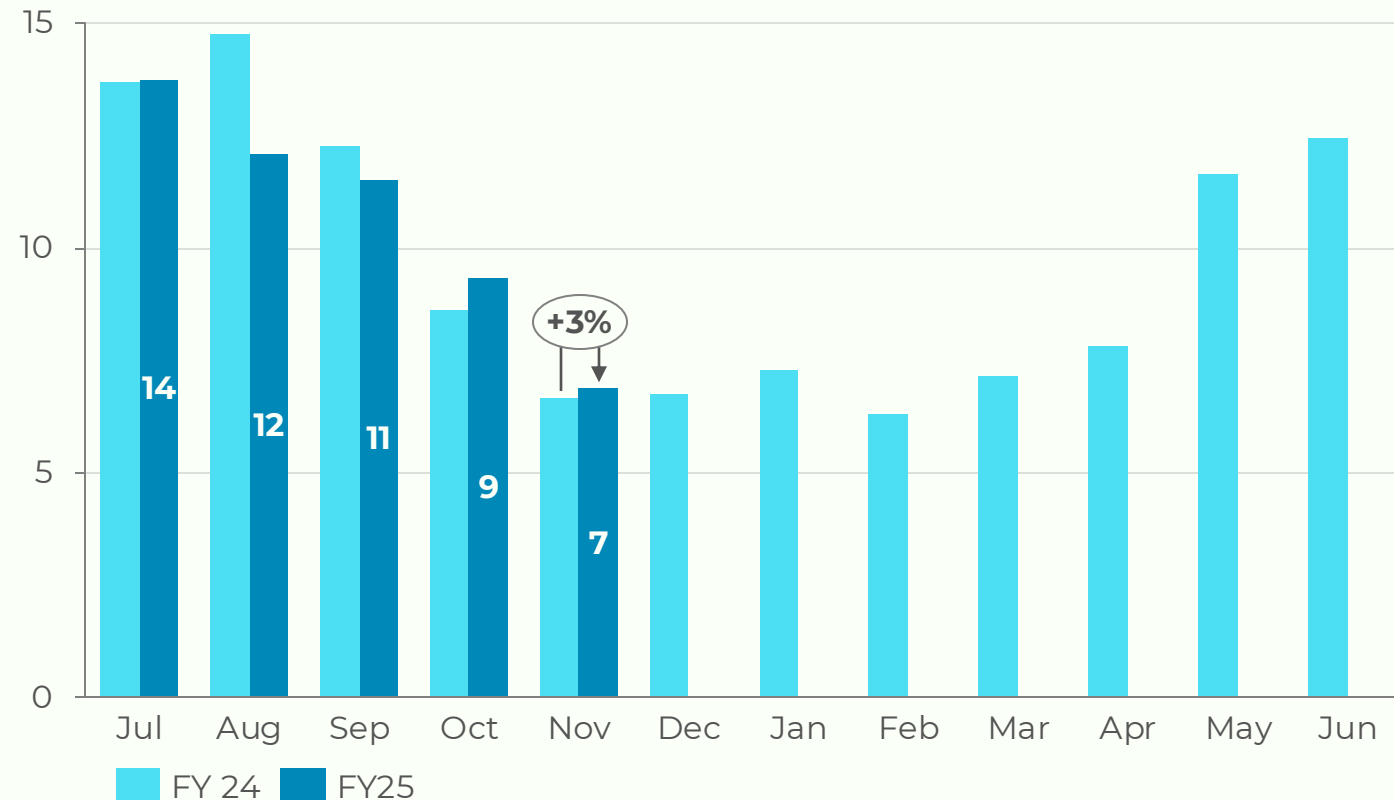
Note: For Dec 24, NEPRA has yet to report the T&T losses.

- During winter, reduced hydropower generation turns the central and northern regions into net load zones, while the southern region remains the only generation surplus area. This shift contributes to higher T&T losses.
- In summer, increased hydropower generation transforms the northern region into a net generation zone. Both the southern and northern regions then experience generation surpluses, leading to reduced T&T losses.
- In Nov 24, NTDC's T&T losses reached 2.95%, exceeding the permissible limit and surpassing the 2.65% losses reported in Nov 23.

DISCOs procured 53 TWh of electricity in 5M - FY25, recording a 4.6% drop YoY

Units procured by DISCOs in FY24 vs. FY25

(TWh)



- Slower growth in electricity sales indicates further under-utilization of the existing surplus generation capacity.
- To address this, targeted industrial packages could help boost demand by attracting energy-intensive sectors such as data centers, manufacturing, and EV charging infrastructure.

- Unusual high temperatures in Nov 24 resulted in increased procurement by DISCOs compared to the same period last year.
- However, the 4.6% YoY decline in electricity demand over the first five months of FY25 underscores the need to explore strategies for stimulating demand growth.

System load variation drives PLAC to PKR 22.5B in 1H-FY25

Part load adjustment charges (PLAC) in 1HFY25

(Billion)



- Part Load Adjustment Charges (PLAC) arise when power plants operate below their full load capacity, this reduces plants' efficiency and results in increasing their generation costs. Power plants claim PLAC which is then passed on to consumers via monthly fuel price adjustments.

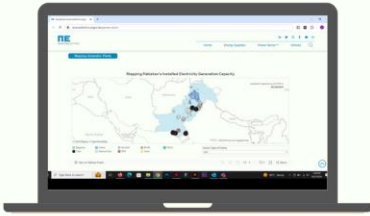
- Seasonal variations also have an impact on PLAC. In summer, electricity is primarily generated by must-run hydel plants, reducing thermal plant loading and increasing PLAC. In contrast during winter, reduced hydropower leads to greater reliance on thermal plants, decreasing their PLAC.

- PLAC has sharply increased in recent years, from PKR 18.7 B in FY20 to PKR 55.6 B in FY24, highlighting the growing underutilization of thermal generation capacity.

- With efforts to increase power demand and the effective use of Time-of-Use (TOU) tariffs, PLAC charges can be managed more effectively.

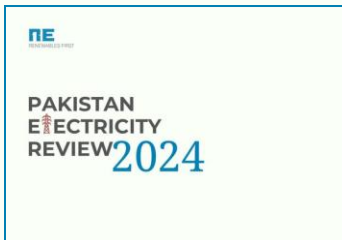
For more power sector-related insights, visit:

[Pakistan Energy and Climate Insights Dashboard](#)



PECI, an initiative of Renewables First, is an innovative platform that consolidates fragmented energy data from various agencies, supporting informed decision-making across Pakistan's energy sector. By centralizing critical energy and climate data, PEGI improves accessibility and clarifies environmental impacts and emissions for stakeholder RF's collaboration with Herald Analytics led to the development of the PEGI Dashboard, which drives insights and offers robust analytics for energy data.

[Pakistan Electricity Review 2024](#)



The Pakistan Electricity Review 2024 report aims to improve technical accessibility and awareness of critical aspects of power generation, transmission, and consumption. Focusing on the Fiscal Year 2022-23 (FY23), this thorough analysis also explores key aspects such as K-Electric (KE), Circular Debt, and China-Pakistan Economic Corridor (CPEC) projects. The report utilizes publicly available data for the power sector, with NEPRA's State of Industry Report (SIR) and Energy Yearbook serving as primary data sources.

Renewables First (RF) is a think tank for energy and environment. Our work addresses critical energy and natural resource issues with the aim to make energy and climate transitions just and inclusive.



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