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Managing Pakistan's RLNG Exposure: Declining Dispatch, Rising Financial Risk

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EXECUTIVE SUMMARY

The RLNG challenge for Pakistan has evolved from a generation issue into a broader financial and fiscal risk. While RLNG generation is decreasing because of subdued demand from the grid, increasing tariffs, and fast growth of solar, the power sector is still vulnerable to long-term contracts, fixed capacity obligations, and external price shocks. RLNG still accounts for around 21 percent of total generation and 31.56 percent of thermal generation, while Pakistan remains committed to approximately 6.75 MTPA of contracted LNG supply. LNG import payments of US$3.52 billion, RLNG-linked capacity payments of 8.1 percent, and estimated tariff impacts ranging from PKR -0.29 to PKR 1.61 per kWh illustrate that declining dispatch does not automatically reduce financial exposure. This Policy Viewpoint, therefore, recommends a risk-management approach focusing on enhanced monitoring, least-cost dispatch, greater contractual flexibility, and the transparent disclosure of tariff, circular-debt and fiscal risks associated with RLNG.

RLNG Exposure Dashboard
Lower dispatch, but financial and fiscal risk remains

Risk Signal	Value / Message
Contracted LNG supply	6.75 MTPA — long-term import commitment
RLNG in generation	21% total generation; 31.56% thermal exposure
Fixed liability	8.1% of capacity payments linked to RLNG
Tariff/fiscal risk	PKR -0.29-1.61/kWh stress impact; unrecovered costs shift to circular debt

Risk chain: LNG shock → higher system cost → FCA/QTA or circular debt → fiscal stress

Note: Indicators use different denominators: total generation, thermal generation, total capacity payments, DISCO sales and SBP import payments.

1. Introduction

RLNG was introduced in response to the energy shortages of the mid-2010s to curtail load-shedding, promote efficient combined-cycle gas turbine (CCGT) plants, and make up for domestic gas shortfalls (NEPRA, 2014). However, slower demand growth, rising electricity tariffs, and rapid solar adoption have reduced grid dependence, making imported-fuel-based generation increasingly less attractive. As a result, RLNG plants are now being dispatched at lower than previously anticipated levels but still bound by long-term financial obligations (CPPA-G, 2025). In FY2024–25, Pakistan imported LNG worth US$3.52 billion, equivalent to about 23.5 percent of petroleum-group import payments and 6 percent of total imports. RLNG generated 27,970 GWh, or 20.7 percent of national electricity generation, and accounted for 31.6 percent of thermal generation.

Yet Pakistan remains committed to approximately 6.75 MTPA of long-term LNG supply, while RLNG-linked plants continue to account for 8.1 percent of total capacity payments. This leads to a structural mismatch: less dispatch may reduce fuel consumption, but it does not eliminate contractual, capacity payment, exchange rate or cost recovery commitments. This Policy Viewpoint is based on a single critical question: How can Pakistan mitigate the risk of RLNG-related tariff, circular debt and fiscal risk given that RLNG-based generation is receding, while long-term LNG supply contracts, RLNG-linked power purchase agreements, and capacity-payment obligations continue?

2. RLNG Exposure: From Supply Risk to Cost and Fiscal Vulnerability

Pakistan's RLNG exposure operates through multiple but distinct channels.

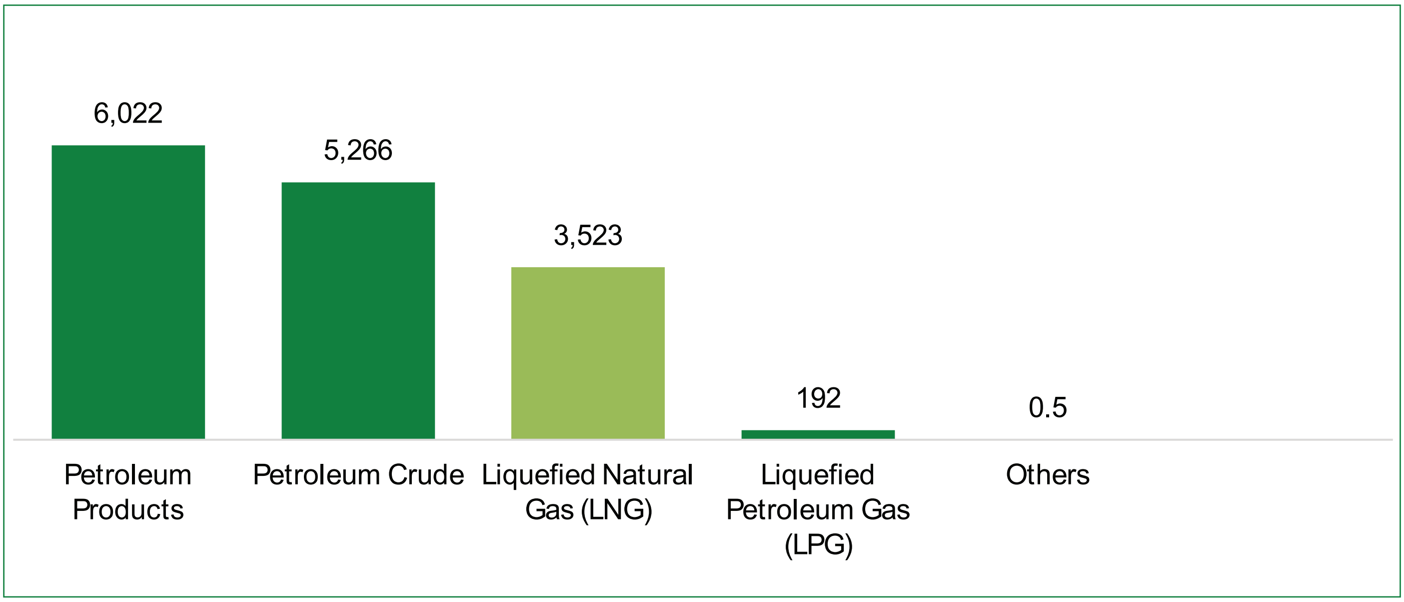
i. **Supply exposure:** It arises from reliance on imported LNG and concentrated external suppliers.
ii. **Generation exposure:** It reflects the role of RLNG in total electricity generation and, more importantly, within the thermal generation segment that may require replacement during a supply disruption.
iii. **Financial exposure:** It arises from long-term LNG supply contracts, RLNG-linked power purchase agreements, capacity payments, fuel-price volatility, and exchange-rate movements.
iv. **Tariff and fiscal exposure:** It arises when the increased system costs are either transferred to the consumers via FCA/QTA or are piled up in the form of circular debt and pressure on the government budget.

2.1 Import Concentration and External Supply Exposure

Pakistan's exposure to RLNG starts with import concentration. Unlike indigenous gas or hydropower, RLNG-based power generation requires uninterrupted seaborne supply, principally from Gulf States. Pakistan's long-term contracts (almost all of which are sourced from Qatar) of around 6.75 MTPA of LNG, pose concentrated supply risk (State Bank of Pakistan, 2021; IEEFA, 2025). This concentration creates a multi-layered external exposure.

i. Supplier concentration limits Pakistan's flexibility when LNG demand weakens or when domestic power-sector dispatch shifts away from RLNG.
ii. Route concentration exposes LNG cargoes to disruptions in Gulf shipping lanes, including the Strait of Hormuz.
iii. Price indexation to international fuel prices transmits global oil and LNG price volatility directly into Pakistan's import bill.
iv. Higher LNG payments place pressure on the current account and exchange rate, particularly when export earnings and foreign exchange reserves remain constrained.

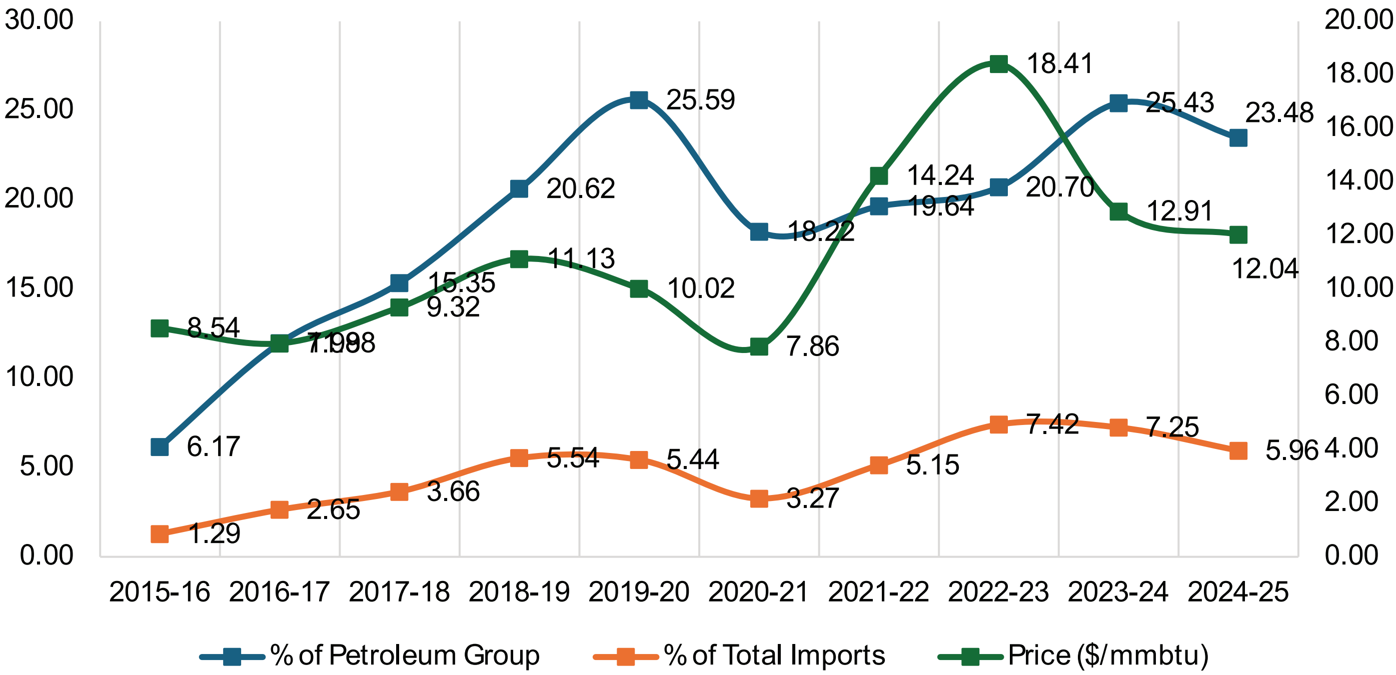
Figure 1: Share of LNG in Petroleum Import Payments (US $Millions; FY2024-25)



Source: State Bank of Pakistan, Import Payments by Commodities and Groups, 2025

LNG is still a notable element of Pakistan's petroleum import bills. As international LNG prices surged, Pakistan faced greater fiscal and balance-of-payments pressures while maintaining fuel supplies to the power and industrial sectors.

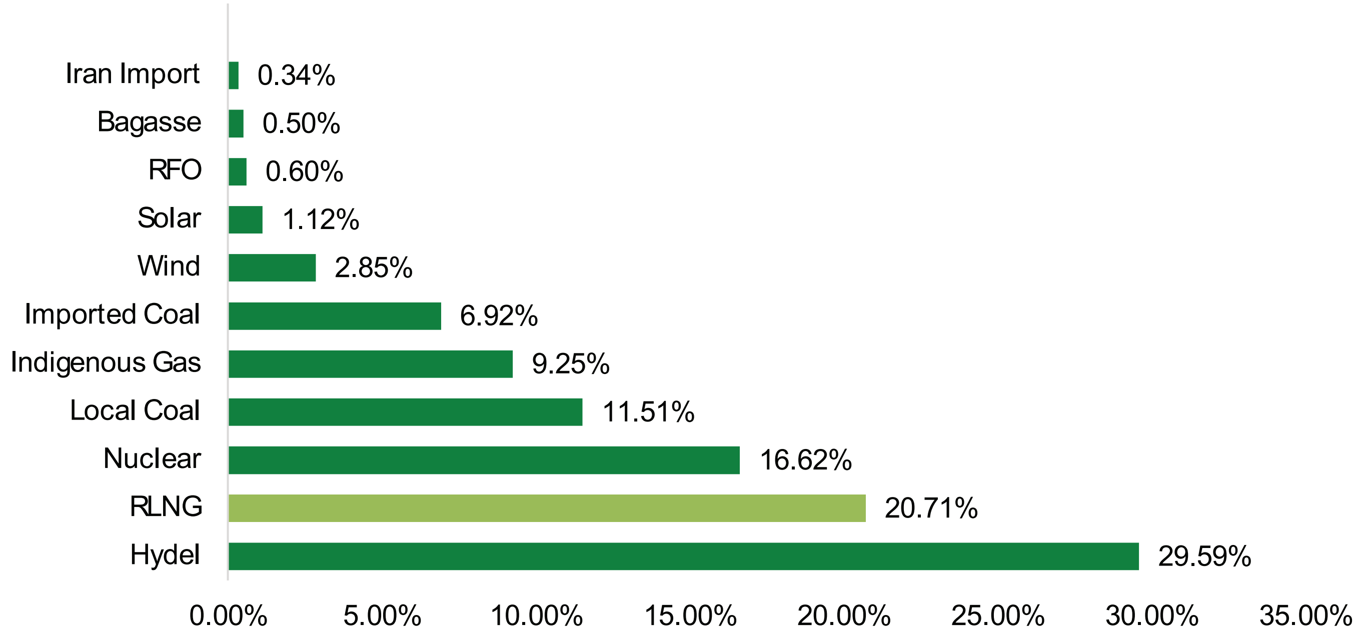
Figure 2: Pakistan's LNG Import Dependence: Share in Petroleum Imports, Total Imports, and International LNG Prices



Source: State Bank of Pakistan (2026)

2.2 RLNG in the Generation Mix: Total Share versus Thermal Exposure

Figure 3: Share of Electricity Generation by Source in Pakistan (FY2025)



Source: National Electric Power Regulatory Authority (NEPRA), State of Industry Report 2025.

Pakistan generated approximately 135,079 GWh of electricity in FY2024–25, of which thermal sources accounted for 88,623 GWh (65.61 %). RLNG accounted for 21 percent of total generation and 31.56 percent of thermal generation (NEPRA, 2025).

Table 1: Estimated RLNG Generation Requiring Replacement under LNG Disruption Scenarios

LNG Supply Shock	Generation Exposure (%)
20% LNG reduction	6.32
50% LNG reduction	15.78
100% LNG reduction	31.56

Source: Author's own calculations.

Note: Estimates refer to RLNG's share in thermal generation, not total electricity generation. The eventual supply impact would depend on substitute fuel availability, plant readiness, transmission constraints, and dispatch requirements.

2.3 Contractual Rigidity and Capacity-Payment Exposure

The first major LNG Sales and Purchase Agreement (SPA) was concluded in February 2016 between Pakistan State Oil (PSO) and Qatar Gas (now Qatar Energy) for the supply of 3.75 million tons per annum (MTPA) of LNG for the term of 15 years to cover Pakistan's increasing energy deficit (PSO & Qatar Gas, 2016). The contract was linked to crude oil prices at a factor of approximately 13.37% for the sale of LNG, considered competitive at the time of signing. But over time, it became expensive relative to some regional LNG contracts that were reportedly priced at lower Brent-linked slopes and allowed greater flexibility in cargo scheduling and offtake (Gas Outlook, 2025).

To guarantee additional LNG supplies, Qatar Petroleum, now QatarEnergy, announced a long-term agreement with Pakistan State Oil in 2021 for the supply of up to 3 MTPA of LNG to Pakistan for ten years, covering deliveries from 2022 to 2031.

The arrangement was publicly reported as being linked to Brent at a lower slope than the 2016 contract, improving the pricing terms relative to the earlier agreement (Embassy of the State of Qatar in Islamabad, 2021). Together, these agreements account for approximately 6.75 MTPA of Pakistan's LNG imports under long-term contractual arrangements. RLNG also brings Pakistan's external account under stress, as rising costs of LNG imports add to current account and exchange rate pressures. Capacity payment liabilities continue to be incurred by RLNG-based power plants (8.1%)[1] even when they are being under-utilized. When these costs are not fully recovered through tariffs, they accumulate as circular debt and fiscal pressure.

Table 2: Channels of RLNG-Related Financial Exposure in Pakistan's Power Sector

Exposure Type	Meaning	Why It Matters
Fuel cost exposure	RLNG prices rise with global LNG/oil price and exchange rate	Raises EPP and FCA pressure
Supply contract exposure	Long-term LNG contracts may include firm offtake obligations	Limits flexibility when domestic demand weakens
PPA/capacity exposure	Capacity payments continue even if plants are underutilized	Creates fixed cost burden
Circular debt exposure	Costs not recovered through tariffs accumulate in payables	Creates fiscal risk later

Note: These channels represent financial exposure and should not be interpreted as RLNG's share in generation.

Policy message

The RLNG conundrum for Pakistan is now not just about the use of fuel. It is now about fixed financial commitments when dispatch declines. As a result, future LNG contracting or RLNG-linked power procurement should entail flexibility clauses, seasonal offtake options, resale/deferral and better risk-sharing. Without that flexibility, a lower RLNG generation will lead to fuel savings but will not reduce capacity-payment pressure, tariff adjustment and circular debt risk.

2.4 Replacement Cost Exposure under Disruption Scenarios

Following Joskow (2006) and Gratwick & Eberhard (2008), the total system cost (TSC) can be expressed as:

$$TSC = \sum_i EPP_i \times Q_i + \sum_j CPP_j$$

In the event of an RLNG supply disruption, the change in total system cost can be expressed as:

$$\Delta TSC = (EPP_s - EPP_{RLNG}) \times Q_{rep} + CPP_{idle}$$

where EPPs is the energy purchase price of the substitute fuel, EPP_{RLNG} is the energy purchase price of RLNG, Q_{rep} is the amount of RLNG generation replaced, and CPP_{idle} represents capacity cost.

1. NEPRA, 2025

Table 3: Estimated System Cost Exposure under Alternative RLNG Substitution Scenarios

Replacement of RLNG	RLNG Units Lost (GWh)	Total Cost Impact (PKR bn) using Coal	Total Cost Impact (PKR bn) using RFO	Total Cost Impact (PKR bn) using Coal–RFO Mix
25%	6,992.49	103.09	148.89	125.99
50%	13,984.97	59.40	151.00	105.20
100%	27,969.94	(27.98)	155.22	63.62

Source: Author's calculations based on NEPRA State of Industry Report 2025 and NEPRA generation cost/EPP data.

Note: Negative values indicate estimated cost savings where the energy purchase price of the substitute fuel is lower than RLNG. These are stress-test estimates and do not imply that full substitution is technically or operationally feasible.

Table 3 provides the price impact for a substitution of 25, 50, and 100 percent of RLNG-based generation by coal, furnace oil and a combination of coal and RFO. The results show that furnace oil is consistently the most expensive substitute, raising costs by PKR 149–155 billion across the disruption scenarios. Coal appears less costly and even shows a small saving under complete replacement, but this is only a fuel-cost comparison and does not mean coal can practically replace all RLNG generation.

Table 4: Technical and Economic Feasibility of Alternative Fuel Substitution

Substitute Fuel	Technical Feasibility	Cost Implication	Main Constraint	Policy Interpretation
Imported coal	Possible where coal plants are available	May appear cheaper than RLNG in narrow EPP terms	Port logistics, plant availability, import dependence, environmental cost	Useful only when available and least-cost in dispatch
Furnace oil	Technically available in some plants	Raises generation cost sharply	High fuel cost, inventory, emissions, tariff impact	Emergency fallback, not structural solution
Domestic gas	Limited	Depends on allocation and depletion	Shortage of domestic gas	Cannot be relied upon at scale
Hydel/nuclear	Low variable cost	Cost-reducing if available	Seasonality, outages, system constraints	Best substitute where available
Solar/wind	Low marginal cost	Reduces fuel exposure	Intermittency, storage, grid integration	Medium-term risk-reduction option

Note: Substitution feasibility refers to short-term system response, not permanent replacement of RLNG-linked contractual or capacity-payment obligations.

Policy message

The use of RLNG substitution should be considered as a stress-management option and not a cost-saving measure. Under certain situations, coal could bring down costs. However, its usage is restricted due to logistics problems, non-availability of plants, dependence on imports etc. On the other hand, the substitution of furnace oil sharply increases system costs and tariff pressure.

2.5 Tariff Pass-Through, Circular Debt, and Fiscal Risk

Consumer tariffs are broadly based on the cost of purchasing power, capacity payments, transmission and distribution charges, line losses, and relevant adjustments such as FCA and QTA under the tariff regime of NEPRA[3]. Consequently, any increase in RLNG fuel cost, replacement fuel cost, or persistent capacity payment obligations eventually raise the overall cost of electricity supplied to consumers.

$$\text{Tariff Impact (PKR/kWh)} = \frac{\text{Additional System Cost (PKR million)}}{\text{Electricity Sales (GWh)}}$$

Table 5: Estimated Consumer Tariff Impact under RLNG Disruption Scenarios

Replacement of RLNG	Coal	RFO	Mix
25%	1.07	1.55	1.31
50%	0.62	1.57	1.09
100%	-0.29	1.61	0.66

Source: Author's calculations based on Table 4 system cost exposure and total DISCO sales reported in NEPRA State of Industry Report 2025.

Note: Tariff impact is calculated using total DISCO sales of approximately 96,218.10 GWh (NEPRA SOI, 2025). Negative values indicate cost savings under full substitution by lower-cost fuels.

These findings can be explained by two alternative adjustment processes. In the first case, a full cost pass-through to consumers would raise electricity tariffs. Table 5 shows that the largest impact occurs under furnace-oil replacement, where tariffs could rise by around PKR 1.5–1.6 per unit. If the additional cost is not passed on through FCA or QTA; it is likely to accumulate in the power sector as circular debt or require fiscal support. In the second case, where tariff adjustments are administratively restricted, the additional system costs are not passed on to consumers. Instead, costs build up within the power sector as circular debt or absorbed by the government through fiscal subsidies, causing more stress on the government's finances. In such cases, RLNG-related costs are not eliminated; they are merely shifted from consumers to the public sector. Moreover, the impact of a LNG disruption would not be limited to the power sector. Pakistan's imported LNG is also made available to industrial consumers, captive power plants, fertilizer manufacturers, and commercial users via the gas network.

Table 6: Tariff and Fiscal Adjustment Channels under RLNG Shocks

Adjustment Channel	Immediate Effect	Medium-Term Risk
Full pass-through	FCA/QTA rises, consumers pay higher tariffs	Inflation, industrial cost, and competitiveness loss
Partial pass-through	Some costs are passed to consumers, some are absorbed	Tariff pressure plus circular debt risk
No pass-through	Tariffs remain stable temporarily	Circular debt, delayed payments, fiscal burden

Policy message

Shocks caused by RLNG are not eliminated when tariffs are not adjusted; rather, they get transferred to circular debt or fiscal subsidies. Accordingly, tariff decisions must indicate, separately, the fuel-cost impact, capacity-payment impact, and unrecovered cost impact of RLNG exposure.

3. Consumer End Tariff=(CPP+EPP+T)/(1-λ)+DM+PYA+S, where CPP is capacity purchase price, EPP is energy purchase price, T is transmission cost, λ is Permissible Transmission & Distribution (T&D) Losses, DM is distribution margin, PYA is prior year adjustment and s is surcharge.

3. Conclusion & Policy Recommendations

Pakistan's reliance on RLNG for power generation has now become a larger financial and fiscal risk. While the contribution of RLNG to electricity generation is decreasing, the long-term LNG contracts, power purchase agreements linked with RLNG, obligations resulting from capacity payments, fuel price volatility and exchange rate fluctuations continue to pass risk on to tariffs, circular debt and public finances. Pakistan's reliance on RLNG should thus be understood as a broader energy security issue for the whole system, and not just a power sector one. The following recommendations set out a phased approach to reduce immediate disruption risk, improve contractual flexibility, and gradually lower structural dependence on imported-fuel generation.

Short Term: Up to 1 Year

Publish an RLNG exposure statement and dashboard: NEPRA and CPPA-G should publish a quarterly RLNG dashboard, in coordination with Power Division, Petroleum Division and Ministry of Finance; containing generation share, thermal exposure, fuel-cost exposure, capacity payment, FCA/QTA impact, unrecovered cost, circular debt and exchange rate impact.

Enforce merit-order dispatch and disclose deviations: The dispatch of RLNG and furnace oil plants should be ensured in a justified manner by CPPA-G and NPCC according to the reliability of the system, the constraints of transmission, and the peak-load requirements. Any departure from least-cost dispatch must be documented and reported to NEPRA.

Prepare an LNG disruption and fuel-substitution protocol: The Government of Pakistan must jointly prepare a protocol that includes cargo tracking, priority gas allocation, emergency procurement, short-term substitution rules, and plant-wise fuel readiness. Coordination must take place between Petroleum Division, Power Division, PSO, PLL, CPPA-G, NPCC and NEPRA.

Medium Term: 1 to 3 Years

Review LNG contracts and RLNG-linked PPAs for flexibility: The government should review existing LNG supply contracts and RLNG-linked power purchase agreements to identify options for cargo rescheduling, seasonal offtake adjustment, resale, deferral, and risk-sharing.

Align LNG procurement with power-sector demand: LNG procurement planning should be linked with power-sector dispatch forecasts, hydrology, solar penetration, seasonal demand, plant availability, and expected grid sales to reduce over-procurement and underutilization risk.

Develop a least-cost transition plan for RLNG exposure: Power Division, CPPA-G, and NPCC should prepare a plant-wise plan identifying where hydel, nuclear, local coal, domestic gas, renewables, storage, and transmission upgrades can reduce RLNG exposure without increasing system cost or reliability risk.

Long Term: More than 3 Years

Reduce structural dependence on imported fuel-based generation: Pakistan should gradually reduce imported-fuel dependence through least-cost domestic energy, renewables, and improved grid flexibility.

Reform capacity-payment risk allocation in future power procurement: The future electricity agreements must be designed in such a way that they reduce fixed cost obligations and improve flexibility to ensure that idle capacity does not add to the burden of circular debt.

Institutionalize integrated energy-sector fiscal-risk reporting: The Ministry of Finance, Power Division, Petroleum Division, NEPRA and CPPA-G may embed risks[4] from RLNG and wider power sector contracts into fiscal-risk reporting.

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