



POWERING ECONOMIC SECURITY

Afia Malik

Global shocks are no longer rare; they have now become a frequent aspect of the international landscape. In recent years, two major shocks (the Russia-Ukraine war and the Iran-Israel-US conflict) have highlighted vulnerabilities in the global energy system, particularly for Pakistan, which is heavily reliant on energy imports (41% in FY2025). These events led to soaring fuel prices and disrupted fuel supply chains.

Economic security is increasingly defined by a country's ability to ensure a stable and affordable supply of oil, gas, and electricity when global markets turn against it. But in Pakistan, the oil, gas, and electricity sectors are each fighting a different version of the same battle. For Pakistan, global energy crises translate into higher import bills, inflationary pressures, fiscal strain, balance-of-payments challenges, reduced industrial competitiveness, and a further weakening of the already fragile growth path.

In today's world, energy resilience has become a defining factor for economic security amid not just geopolitical uncertainty but also climate change and technological disruption.

OIL: PERPETUAL IMPORT DEPENDENCY

Pakistan meets approximately half (52% in FY2025) of its petroleum product needs and about 20% of its crude oil requirements domestically, relying on imports for the remainder. This structural dependence makes the country's import bill vulnerable to fluctuations in global crude and petroleum product prices and freight rates.

The deeper problem is refining capacity. Pakistan has five refineries with a combined annual capacity of 20.22 million tons; utilization has remained below 60% in recent years because the plants are low-complexity "hydro-skimming" units that overproduce furnace oil, a fuel with shrinking domestic demand. As a result, Pakistan imports roughly 70% of its petrol and 29% of its diesel (in FY2025), the two main consumed products, primarily from Gulf producers. A 2023 Refining Policy aimed at modernization, upgrading to Euro-V standards, and cutting furnace oil output

has moved slowly.

This refining weakness became visible during the Iran-Israel-US conflict. When the Strait of Hormuz came under threat, Pakistan's refineries pushed utilization up to nearly 80-100%, sourcing crude from alternate routes, Fujairah and Yanbu, and temporarily restricting furnace oil exports. However, it was just a stopgap that cushioned the shock as it underlined how little flexibility the system normally has.

Beyond that, governments in many countries use strategic crude reserves to protect their economies from supply disruptions and market fluctuations during crises. Pakistan has yet to develop such storage, which could protect against international oil market instability and geopolitical concerns.

GAS: FROM GLUT TO CRISIS

Pakistan's energy vulnerability has been starkly exposed through the gas sector during the recent crisis. It was a story of oversupply: LNG demand fell from 9.9 million TOE in FY2021 to 7.1 million TOE in FY2025. The decline was caused by distributed solar power reducing grid electricity demand and lower industrial gas demand due to high tariffs, worsened by an off-the-grid levy on captive power plants.

Without sufficient storage capacity to accommodate the surplus, the government was forced to divert unused gas into subsidized domestic networks at a loss, or to shut local gas wells entirely to prevent damage from oversupplying pipelines. In December 2025, the government was negotiating with Qatar to offload around 177 unwanted LNG shipments over the next five years.

Then the war reached Qatar; the Ras Laffan export facility declared force majeure. The shipments that had previously ranged from 8 to 12 cargoes per month collapsed to just 2 in March. Pakistan's power sector, which relied on more than 50% (in FY2025) on LNG, lost access to about 5,000 megawatts of generation capacity almost overnight. This caused a power shortage of 2500 to 4500 MW during peak hours in April 2026.

When the war disrupted Hormuz, the contracts that were once in surplus became a shortage crisis, as 90% of Pakistan's LNG comes from Qatar via this route - a textbook case of concentrated supplier risk.

Moreover, Pakistan's response to the energy shortage has highlighted another institutional weakness: Pakistan's limited bargaining power in global energy markets. Since the Russia-Ukraine war, Pakistan has been effectively shut out of the LNG spot market, relying heavily on inflexible long-term contracts with Qatar. When Pakistan sought emergency cargoes in the spot market, it faced steep premiums; one purchase was made in April at \$18.40/MMBtu, another in June at around \$19.10/MMBtu, and in July, Pakistan LNG Ltd purchased a cargo for \$20.70/MMBtu, the highest since 2022. At these prices, LNG-based power generation costs can soar to above Rs50/kWh, up from Rs20/kWh in February-2026.

Pakistan's case differs from countries that built strategic stockpiles during low prices to cushion against shocks and avoid economic pain. Lacking the storage infrastructure and resources to convert its LNG surplus into a usable buffer, Pakistan tried to divert it in December 2025, only to end up at a disadvantage for the same commodity weeks later.

Setting aside the global shock, gas fundamentals are deteriorating on their own. Domestic gas production came in at 2,890 MMCFD in FY2025 from 3597 MMCFD in FY2020, as mature gas fields continue to deplete faster than discoveries can replace them. While pursuing import-based supply security, Pakistan allowed domestic production to erode, curtailing local fields to make room for take-or-pay LNG, which hurt exploration and production (E&P) companies' revenues (e.g., OGDC's PKR 43bn net revenue loss in FY2025) and discouraged drilling investment, besides damaging local oil and gas reservoirs. For many years, E&P companies faced distorted price signals and payment delays, leading to a rise in receivables.

Reforms aimed at allowing third-party access were intended to revive the E&P industry by enabling producers to sell directly to private buyers (35% of

new gas discoveries) instead of through the financially troubled state utilities - SSGCL and SSGC. However, the implementation of these reforms has been slow, and increasing off-grid levies are threatening the economics of third-party gas sales.

Each ton of domestic production capacity lost due to underinvestment undermines Pakistan's resilience. This loss not only affects current output but also diminishes future production capacity, which may take years to restore.

ELECTRICITY: A GENERATION MIX THAT IS FRAGILE

Generation capacity has improved, but the mix (diversification) that looks resilient on paper has proven to be operationally hollow the moment a single node in the supply chain fails. The installed capacity mix includes hydro (28%), local coal (8%), imported coal (11%), domestic gas (6%), RLNG (22%), nuclear (9%), oil (3%), bagasse (1%), and a rapidly growing wind (4%) and solar (8%) base.

When a crisis hit, weaknesses became exposed. Hydro depended on seasonal factors and irrigation demand, not available all the time; local coal ticked up modestly; imported coal was already expensive due to massive capacity payments; domestic gas was limited by declining local production; nuclear did provide support, and wind power surged but from too small a base to close the gap; while LNG-fired generation collapsed.

In other words, technical diversification offered limited support when one major fuel source, heavily relied upon during peak hours, was suddenly discontinued. A portfolio that depends significantly on one supplier and one transit route is not meaningfully diversified, no matter how many different fuels appear on the generation mix chart.

Further adding to the pain are transmission bottlenecks, caused by aging infrastructure and limited transformation capacity despite the expensive addition of the HVDC Matiari-Lahore line, which hinders the flow of electricity from the South (where it is produced) to the North (where

there is demand), stranding thousands of megawatts.

SOLAR: AN UNPLANNED SHOCK ABSORBER

A silver lining in Pakistan's 2026 experience is that grassroots, largely unplanned, solar adoption has softened the blow. Due to high tariffs and an unreliable electricity grid, Pakistani households, factories, businesses, and farmers turned to rooftop solar. Net-metered solar capacity surged from 190 MW in FY2020 to nearly 7,000 MW by June 2026, driven by a 140% increase in grid electricity tariffs and a 60% to 70% drop in the prices of imported solar panels.

The panel imports and behind-the-meter solar numbers are even more striking. Pakistan's cumulative solar panel imports had reached 54 GW by March 2026. Field surveys suggest 34 GW of capacity was already installed by 2025, including 19 GW in behind-the-meter systems. Grid electricity demand dropped by nearly 10% from FY2022 to FY2025.

This unplanned buffer proved vital when the conflict in Iran put Pakistan's LNG supply at risk. Though adopted for personal cost savings, it helped Pakistan avoid prolonged nationwide blackouts that its dependence on LNG might have caused. However, the grid could not utilize this alternative fully. Solar benefits are limited to daytime, while peak demand typically occurs in the evening. The grid's inflexibility limits its ability to use renewables to respond to fluctuating demand, particularly during peak evening hours.

The outdated transmission network, obsolete distribution grid, limited flexibility due to a lack of storage capacity, and tariff design are major obstacles to Pakistan's energy transition and future energy security amid global shocks, making reliance on LNG unavoidable.

Today, the grid has become complex, and its role is changing. It has become a smart and interactive network that manages electricity coming from different sources - rooftop solar panels, battery storage, wind and solar farms, and electric vehicles.

But Pakistan is still stuck in the past, defying change.

CIRCULAR DEBT: A FINANCIAL FAULT LINE

The sector is facing financial problems that keep getting worse. In April 2026, the combined sector circular debt (CD) was at Rs. 5.2 trillion, with gas contributing Rs. 3.4 trillion and power Rs. 1.8 trillion. Despite injecting over Rs. 1.2 trillion (commercial bank loans) last fiscal year to clear liabilities, the power sector CD continues to rise and misses the IMF-mandated target of Rs 1.614 trillion. Structural issues like capacity payments to IPPs (estimated annual cost of Rs 1.9 trillion in CY2026), unpaid dues (e.g., from K-Electric - about Rs 200 billion), and massive system losses in DISCOs mean the debt continues to accumulate. As demand slows due to distributed solar, DISCOs sell fewer units while facing the same fixed costs, widening the financial gap and often resulting in higher tariffs for non-solar grid consumers.

In the gas sector, the issue is self-reinforcing: imported LNG, priced in dollars and much costlier than domestic gas, is channeled into low-paying residential and commercial networks during times of high demand and oversupply. Utilities recover only a fraction of actual costs; losses from theft and aging infrastructure exacerbate the shortfall, leading to a growing debt pile, whether there's too much gas or too little.

THE COMMON THREAD

In Pakistan's energy sector, oil, gas, and electricity systems rely on reactive improvisation rather than proactive planning. Refineries increase production only during supply crises. Their outdated designs limit them to lighter Gulf crude blends, making it difficult to diversify into alternatives like Russian Urals crude.

The situation is complicated by significant dependence on a single LNG supplier and a critical choke point that can quickly transform surplus to shortage. More than 7 million individual solar installations offer some resilience, but the outdated

outdated grid struggles to integrate this solar energy effectively to utilize its benefits more broadly.

Pakistan's ongoing crises illustrate the consequences of weak institutions, fragmented governance, and inconsistent policies. Sometimes, the issue is not the absence of sound policies, but the inability to implement them effectively.

WHAT RESILIENCE REQUIRES

Diversification of suppliers and transport routes, extending beyond just fuel types.

Procurement flexibility, as rigid long-term LNG contracts that resulted in oversupply became problematic during the crisis.

Accelerating energy transition as a comprehensive package that includes battery storage, smart grids, and, above all, developing technology locally to enhance energy security more effectively.

Transport electrification, but again with indigenized technology and a robust electricity strategy for reliable, affordable, and clean electricity while maintaining grid stability.

Addressing the circular debt crisis through governance, pricing reforms, and technology adoption rather than taking more loans to clear it and putting the burden on already stressed consumers.

However, achieving these goals requires stronger institutions - the rules, incentives, and governance arrangements that enable organizations to plan, invest, coordinate, and respond. Resilient grids,

markets, and energy security are not created by technology alone. They require arrangements that reduce policy uncertainty, align incentives, enforce contracts, make informed decisions, enable long-term investment and adaptive governance, and operate independently of political patronage. Establishing robust institutional structures is complicated, as it involves shifting power from temporary political control to market-based mechanisms, which some may be hesitant to relinquish.

A country that underinvests in diversification, refining, storage, and grid modernization will ultimately face repercussions in the form of price shocks, negotiations with the IMF, currency pressures, supply shortfalls, and shrinking economic growth. Pakistan must choose the other path.

Afia Malik is a Former Senior Research Economist at the Pakistan Institute of Development Economics (PIDE), Islamabad

