

Pakistan's Power Sector – A Barrier to Economic Growth



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Reaping the benefits of technological development is rightly dependent on the availability of cheap and uninterrupted power. No economy in the world can grow without a dependable power supply. Name any human activity—whether personal, commercial, social, industrial, agricultural, healthcare, or educational—and it is reliant on power. There could be many factors holding back our economic progress, yet the foremost are the power shortages, both in terms of supply and high cost.

Pakistan currently has a total power generation capacity of 43,000 MW through the following sources:

Type	Generation MW	Percentage Share	Generation Rate Rs. Per Unit
Thermal	25,200	58.6	Average 20
Hydel	11,000	26.5	Average 04
Nuclear	3,800	8.9	Average 13
Renewable	3,000	6.8	Average 06

On the other hand, our demand is approximately 35,000 MW in summer and around 28,000 MW in winter. Sector-wise, the approximate consumption and power unit rates are as follows:

Category	Consumption	Unit Rate / Consumption Basis
Household	40%	Rs.4/- to Rs.49/-
Industrial	26%	Rs.32/-to Rs.38/-
Commercial	18%	Rs.39/-to Rs.46/-
Agricultural	16%	SCARP / Small Canal Area –average Rs.40/- And for tubewells Rs.30/-

Apparently, there is no scarcity of power, yet loadshedding in different areas is evident due to the ill-maintained, outdated distribution and transmission system, which is either not equipped to handle the load or prone to frequent breakdowns, causing interrupted supply at a high cost.

An interesting comparison among Pakistan, India, Bangladesh, and Afghanistan, focusing only on the household unit rate, revealed the highest rate in Pakistan.

Countries	Rate per Unit	Dollar Parity	Dollar Rates	Per Capita Income
Pakistan	Rs.48.84	Rs.278	$ 0.175	$ 1600
India	Ind -Rs.7.35	Ind Rs.84	$ 0.097	$ 2400
Bangladesh	Taka – 7.2	Taka 120	$ 0.060	$ 2530
Afghanistan	Af 8.50	Af 68	$ 0.125	$ 1200

Historical Brief

In the early years after independence, hydropower was the main source of generating power, which stood at just around 60 MW, mostly from the Warsak Dam. The First Five-Year Plan (1955–1960) focused on increasing power generation. WAPDA was formed in 1958 to oversee water and power development. By 1965, we were generating 1,245 MW, and generation continued to increase, reaching 4,500 MW by 1970 and 9,120 MW by 1990. However, due to continuous trade and industrial growth, the generation was not sufficient to meet the demand, which had then surpassed 12,000 MW. Despite this, the demand for power continued to rise.

Period	Generating Capacity (MW)	Demand (Peak) (MW)	Shortfall (MW)
1990	8,100	12,400	4,300
1995	10,300	15,600	5,300
1999	13,400	18,500	5,100

The out-of-reach demand necessitated independent power production through the IPP policy in 1994, when the private sector was allowed to invest in the power sector. By this time, the power supply and demand gap had persisted at 5,000 MW. Since then, the power sector has remained under pressure, continuing to face challenges such as loadshedding and high costs. In 1997, the government established the National Electric Power Regulatory Authority (NEPRA) to regulate the power sector and introduced the Renewable Energy Policy in 2006 to enable individual consumers to install reliable and uninterrupted cheap power systems with the option to sell back excess power to electric companies. The government also initiated several solar and wind projects to ease the power supply and demand gap, which had reached 7,000 MW by 2010. Many power projects were launched under the China-Pakistan Economic Corridor (CPEC) in 2015.

Although, as of 2024, the power generation capacity exceeds the demand, loadshedding remains frequent in many areas, mainly due to theft, transmission, and distribution inefficiencies, which continue to widen the gap. The power sector, which required the most attention and should have been prioritized, remained a victim of procrastination despite the established regulatory framework. Huge capacity payments create the impression of excess energy availability, yet loadshedding continues in certain areas. The Chairman of the National Transmission and Dispatch Company (NTDC) recently commented, "We are already paying an exorbitant cost for approving expensive projects through backdoors in the past. This has landed us in a major capacity trap, with the government paying exponential costs in the form of capacity payments, and consumers getting electricity at prohibitive prices." This statement vividly explains the pattern of flawed energy policies. We may hope for improvement, as the government is undertaking various reforms, such as the establishment of the Power Division and the introduction of the Competitive Trading Bilateral Contract Market. Hopefully, within the next 2-3 years, the shortfall will be covered, particularly due to the Renewable Energy Policy.

Independent Power Producers (IPPs)

Pakistan has always faced a shortage of power supplies compared to demand, which has consistently suppressed industrial growth. In 1985, the government began encouraging the private sector to invest in power generation, leading to the establishment of the first IPP plant, the Habibullah Coastal Power Plant, in 1992. The government formally introduced the IPP policy in 1994, offering attractive terms to the private sector.

Currently, 58 IPPs with a generating capacity of 17,000 MW, primarily from thermal sources, are operational. However, this additional power generation has brought about several challenges, contributing to the high cost of electricity for consumers. Some of these issues include:

- Capacity payments to pay for unutilized capacity.
- Delays in payments due to the weak financial condition of the exchequer, leading to a massive circular debt, which has reached Rs. 2.8 trillion.
- Dollar-related payments.
- High fuel costs.
- High subsidies to protect consumers.
- Poor investment in the sector due to complicated regulations and red tape.

Electricity, being an indispensable element of production, has a snowball effect, especially with rising rates, which negatively impact economic growth. To alleviate this burden, the government has taken various steps, such as revising agreements, introducing competitive bidding, improving the efficiency of distribution and transmission, increasing generating capacity through renewable energies, and closely monitoring capacity payments.



Hydropower

Pakistan has vast potential to generate energy through hydropower, the cheapest mode of power generation. However, we are currently generating only 11,000 MW (26%) through 32 hydel power plants, at a unit cost of just up to Rs. 5 per unit, while the hydropower potential is estimated at 60,000 MW through the construction of industrial-sized dams that harness water from glaciers. The country has historically demonstrated the capability to build large dams, such as the Tarbela Dam, which was completed in 1967 with a capacity of 4,888 MW. By 1977, Pakistan had 12 dams with a total power-generating capacity of 6,500 MW. However, since then, only an additional 4,500 MW has been added, bringing the total to 11,000 MW over the past 46 years. Given Pakistan's location in the world's top mountain ranges, it should have prioritized the construction of more dams, which would not only generate electricity for industries, households, and businesses but also serve as a lifeline for agriculture, the source of food. Both agriculture and industry are in dire need of power and water.

Currently, seven more dams are under construction, with a total expected generation capacity of 12,700 MW, and 88 dams (both small and large) are at the planning stage, with a potential capacity of 30,200 MW.

Pakistan, blessed with some of the tallest mountain peaks in the world, should build a massive chain of dams capable of providing both cheap, high-quality food and the necessary hydropower. Unfortunately, the situation is the opposite, as the water from melting glaciers flows directly into the sea, with an estimated annual loss of $20 billion, as reported by the ARSA Chairman in 2016. This also contributes to flood situations, causing damage to lives, livestock, and property. The government must seriously address this issue.

Tariff Structure

If we examine a typical household electric bill, the highest rate is Rs. 49 per unit (de jure), but the actual amount paid by the consumer comes to Rs. 65 per unit (de facto). The government has found it convenient to extract maximum revenue from consumers by loading the bills with various taxes, levies, adjustments, charges, surcharges, and peak/off-peak rates. This has become a financial burden on most citizens. To alleviate this, there is an urgent need to reduce this burden by charging only for the electricity consumed, maximizing the utilization of daylight through lifestyle changes, shifting to renewable energies, reforming the transmission and distribution system, addressing issues with IPPs, and revising tariffs at set intervals.



DISCOs

Initially, WAPDA was responsible for both power development and distribution throughout the country, except in Karachi, where KESC was responsible. In the 1990s, WAPDA was divided into various distribution companies, administered by the National Electric Power Regulatory Authority (NEPRA) to manage the distribution network more efficiently. However, little improvement was observed, as challenges within the public sector persisted. In 2005, KESC was privatized and became Karachi Electric (KE), which showed improvements in reducing transmission losses and enhancing revenue collection. Some private investments were also made in a few DISCOs, but there were negligible improvements, as most investors were financial institutions that kept the status quo.

With continued deterioration of the old transmission and distribution infrastructure, corruption, theft, and high operational costs, electricity has become increasingly out of reach for the common man. As a result, the government has no option but to plan the privatization of all DISCOs. On the other hand, KE, under its Vision 2030 Program, plans to induct 1,280 MW through renewable energy, with the first phase offering 640 MW at a record low price of Rs. 8.90 per unit. KE has also committed to doubling its power-producing capacity for Karachi at affordable rates. Under the Indicative Generation Capacity Expansion Plan 2022–2031, KE has prepared a Consolidated Transmission and Distribution Program, costing $2 billion.

Conclusion

Cheap and uninterrupted supply of electricity plays a significant role in the prosperity and development of any economy. However, our power sector has failed to meet expectations, proving ineffective in fulfilling its responsibilities. Two main factors have contributed to this situation and continue to aggravate the misery of the people. First, faulty policies and procedures have left the power sector at the mercy of short-term planning. This delay in the construction of dams, the cheapest mode of generating power, has led to a reliance on Independent Power Producers (IPPs), which are the most expensive source of electricity. To address this, we must accelerate the pace of dam construction and adopt policies that encourage the use of solar power systems. Second, corruption and nepotism have deeply penetrated our public sector enterprises, becoming the recipe for disaster. It can be confidently asserted that the challenges faced by the power sector are largely a result of these two destructive forces.

A ray of hope has recently emerged, with solar power systems gaining popularity at the individual level for household and commercial needs. The government has also started utilizing solar systems in offices and public buildings. Hopefully, within two years, this shift toward renewable energy will provide some relief and ease the challenges facing the power sector.

About the Author: *The writer is a senior Chartered Management Accountant having Fellow membership of ICMA. He retired as General Manager Finance from the Karachi Port Trust (KPT) where he served for around 22 years in different positions. He was also a member of the Karachi Dock Labour Board for 7 years. After doing his MBA from IBA Karachi, he started his initial career with Citibank and then served in Awami Autos (now Pak Suzuki).*