



# Improving the Crippled Power Sector of Pakistan

Engr. Khawaja Niaz Ahmad

## HIGHLIGHTS

Pakistan's power sector suffers from extended load shedding, unaffordable tariffs, outdated infrastructure, and inefficiencies, hindering economic growth and exacerbating poverty.

The country's reliance on imported fuels, outdated power plants, and lack of investment in renewables contribute to high energy costs and energy insecurity.

Revitalization efforts require modernizing infrastructure, diversifying energy sources, implementing fair tariffs, and promoting public-private partnerships for a sustainable and efficient power sector.



## Introduction

Pakistan's power sector has faced long-standing challenges that have had a detrimental impact on both the economy and the lives of ordinary citizens. Extended load shedding, unaffordable tariffs, outdated infrastructure, and systemic inefficiencies have all contributed to the sector's instability. The result is frequent power outages that disrupt daily activities, limit industrial productivity, and deter investment, making it a critical obstacle to sustainable economic growth. Moreover, rising energy costs have placed a heavy financial burden on households and businesses, exacerbating poverty and inequality in the country.

The energy crisis in Pakistan is multi-faceted, stemming from a combination of factors such as dependence on costly imported fuels, outdated power plants, mismanagement, inadequate grid systems, and a lack of investment in renewable energy sources. Additionally, the lack of proper regulation and corruption within the sector further complicates the situation, hindering efforts to streamline operations and ensure fairness. These persistent issues not only stifle economic growth but also hamper efforts to achieve energy security, which is essential for fostering industrial development and improving the quality of life for citizens.

This policy brief outlines several critical strategies aimed at revitalizing Pakistan's power sector and addressing the deep-rooted challenges that have plagued it for decades. The proposed strategies are designed to ensure a reliable, affordable, and sustainable energy supply, while reducing the financial and operational inefficiencies that have historically burdened the sector.

A primary step in revitalizing the power sector is to modernize and expand the existing infrastructure. Many of Pakistan's power plants are outdated and inefficient, consuming excessive fuel and contributing to higher costs. Upgrading these facilities with more efficient technology, improving transmission and distribution systems, and reducing line losses will increase operational efficiency and reliability. Moreover, expanding the grid to rural and underserved areas will ensure equitable access to electricity, which is essential for inclusive economic growth.

Pakistan must move away from its over-reliance on imported oil and gas, which contribute to volatile energy costs and foreign exchange shortages. A shift toward renewable energy sources such as solar, wind, and hydropower should be prioritized. With vast untapped potential in these areas, investments in renewable energy infrastructure can help Pakistan diversify its energy mix, reduce dependence on fossil fuels, and promote environmental sustainability. Policy initiatives should focus on providing incentives for private sector participation in the renewable energy market and streamlining regulatory processes to attract investment.

Incorporating energy-efficient technologies across all sectors, including industry, residential, and commercial, will play a crucial role in reducing energy consumption and lowering costs. Promoting energy conservation through public awareness campaigns and incentivizing energy-efficient appliances and building designs can help curb demand. Additionally, Pakistan can leverage smart grids and digital technologies to monitor and manage energy consumption more effectively, improving the overall efficiency of the sector.

To address the issue of unaffordable tariffs, the government must adopt a fair and transparent tariff structure that balances cost recovery with affordability. The existing subsidies and tariffs are often inefficient, leading to financial losses for the power sector and contributing to the growing circular debt. A gradual reform of the pricing system, coupled with targeted support for low-income households, will ensure that tariffs are reasonable for consumers while improving the financial health of power companies. Moreover, improving collection efficiency by addressing issues of theft and improving billing systems will reduce revenue losses.

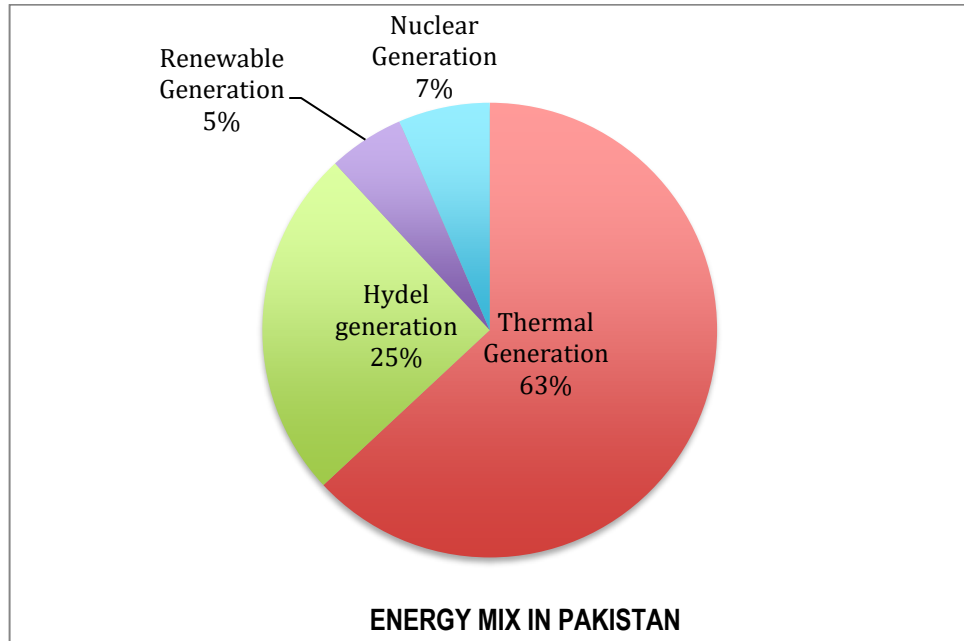
Pakistan's power sector needs stronger governance to address inefficiencies and corruption. Strengthening regulatory frameworks and promoting transparency in energy procurement, distribution, and billing practices will build consumer trust and attract investment. Additionally, encouraging public-private partnerships (PPPs) in the energy sector will enable the private sector to play a more significant role in developing and managing energy infrastructure, leading to better service delivery and innovation.

Pakistan can also benefit from regional energy cooperation with neighboring countries, such as Iran, Afghanistan, and India, to access cheaper electricity and share resources. Multilateral energy trade agreements and investments in cross-border electricity transmission lines can enhance regional energy security, reduce costs, and promote collaborative infrastructure projects.

## **Energy Mix Diversification**

Since the 1970s, Pakistan's energy mix has been imbalanced, with an over-reliance on thermal-based electricity generation. This reliance has caused high electricity tariffs for all consumers, driven by the increasing cost of fossil fuels. Thermal-based generation has played a central role in the rise of electricity costs. To address this, the government must prioritize the exploration and development of renewable energy sources, such as solar, wind, and hydropower.

A diversified energy mix will reduce dependency on imported fossil fuels and help stabilize tariffs. Renewable energy generation is not only more cost-effective in the long term but also offers savings in foreign exchange reserves as it diminishes the need for fuel imports. A shift toward renewable energy can reduce overall generation costs, which currently account for 70-75% of the total tariff. Moreover, this transition will improve Pakistan's energy security and help meet international climate commitments.



Source: National Electric Power Regulatory Authority (NEPRA) Annual Report, 2021.

## Investment in Infrastructure

Pakistan's power infrastructure is severely underdeveloped, unable to effectively transmit electricity from generation stations to end-users. Overloaded grid stations, transformers, transmission lines, and distribution feeders lead to significant power losses. The aging infrastructure not only limits the efficient delivery of electricity but also increases operational costs.

The government must prioritize investments in infrastructure, focusing on augmenting transformers, rehabilitating transmission lines, and upgrading outdated and inefficient power generation units. Without addressing these fundamental issues, Pakistan's power sector will continue to struggle with inefficiencies and losses. Proper infrastructure investment will enhance transmission capacity, reduce power losses, and improve reliability across the grid.

### 1. Regulatory Reforms

The role of the National Electric Power Regulatory Authority (NEPRA) needs strengthening to ensure it effectively regulates power distribution companies (DISCOs). Despite being the regulatory body, NEPRA has not succeeded in resolving common issues faced by consumers, such as incorrect billing and prolonged outages.

Regulatory reforms should focus on improving NEPRA's oversight capabilities, ensuring that DISCOs are held accountable for service delivery and customer satisfaction. Enhanced regulatory measures will lead to better performance of distribution companies, benefiting consumers and restoring public confidence in the power sector.

## **2. Cross-Border Energy Trade**

Pakistan has an untapped opportunity for cross-border energy trade with neighboring countries. By establishing energy trade agreements, Pakistan could access surplus energy during peak demand periods, alleviating pressure on the domestic grid.

Exploring energy trade partnerships with countries like India, Iran, and China can help Pakistan meet its short-term energy needs while it develops its own capacity. Cross-border energy trade will not only address immediate demand but also offer cost-effective solutions during periods of energy shortages.

## **3. Energy Conservation & Efficiency**

Energy conservation and efficiency are critical components of reducing electricity demand. Public awareness campaigns should be launched to educate consumers—domestic, commercial, and industrial—on the importance of energy-saving practices and the adoption of energy-efficient technologies. Simple changes, such as using energy-efficient appliances and reducing wastage, can significantly lower electricity consumption. The well-known principle, “One unit saved is two units generated,” highlights the cost-effectiveness of conservation. By promoting energy efficiency, Pakistan can reduce the burden on its power generation infrastructure and lower the overall demand for electricity. This will not only conserve energy but also reduce the need for additional infrastructure investment, saving billions of rupees in the long run.

## **4. Capacity Building**

The Distribution Companies (DISCOs) in Pakistan have consistently failed to deliver satisfactory services to their consumers. Poor customer service, substandard management, and lack of technical expertise have eroded public trust. The competency levels of both frontline managers and top-tier leadership are concerning, resulting in a failure to address consumer grievances effectively. Capacity-building programs must be initiated to improve the skills and competencies of DISCO employees. Ensuring that the right people are placed in the right positions through merit-based hiring and banning political interference will improve performance and service delivery. In a commercial organization, consumers are king, but in Pakistan's power sector, the reverse appears to be true. Strengthening human resources in DISCOs is essential to restoring public trust and improving operational efficiency.

## **5. Short- and Long-Term Planning**

Engineering and technological advancements have long been neglected in Pakistan's power sector. While modern utilities worldwide continuously incorporate new technologies and practices, Pakistan lags behind. A significant portion of the budget should be allocated toward reforms and innovation in the power sector. Unfortunately, insufficient investment in the past has led to basic issues, such as the inability of DISCOs to issue accurate electricity bills.

The government must focus on both short- and long-term solutions. In the short term, immediate steps should be taken to address everyday consumer complaints, including supply continuity, meter connections, and pole replacements. These small improvements will offer much-needed relief to the public and help restore trust in the system. For long-term sustainability, the government must focus on renewable energy development, infrastructure upgrades, and regulatory reform. Comprehensive planning, coupled with strategic investments, will ensure that the power sector can meet the growing demands of Pakistan's 240 million people.

## **Conclusion**

Pakistan's power sector stands at a critical juncture, grappling with a wide range of challenges that have hindered its ability to provide reliable and affordable electricity to its population. The path to reform is complex and requires a comprehensive, multifaceted approach to address both the systemic issues and the evolving energy needs of the country. Key strategies for meaningful reform must include the diversification of the energy mix, which would reduce Pakistan's dependence on imported

fossil fuels and promote the use of renewable resources such as solar, wind, and hydropower. Investment in modernizing the country's aging infrastructure is equally essential to improving efficiency and minimizing transmission losses, while regulatory reforms must create a more transparent, accountable, and competitive environment for both public and private stakeholders.

In addition, cross-border energy trade offers an opportunity to enhance Pakistan's energy security, providing access to more affordable and reliable power through regional partnerships. Public-private partnerships (PPPs) can bring in the much-needed investment and expertise to revitalize the power sector, ensuring better service delivery and innovation. Moreover, promoting energy conservation and efficiency through public awareness and incentives will help reduce demand and curtail unnecessary waste, alleviating some of the pressure on the national grid. Building the capacity of Distribution Companies (DISCOs) is another critical component, as these entities must be equipped with the technical skills and managerial capabilities to improve service delivery, reduce system losses, and ensure equitable distribution of electricity.

By adopting and implementing these reforms, Pakistan has the potential not only to meet its current electricity demand but also to build a power sector that is capable of supporting the country's long-term growth and development. A more reliable and affordable power supply is essential for industrial expansion, economic stability, and the overall well-being of citizens. However, the journey to recovery is not a quick one. It will require sustained commitment from all levels of government, private sector stakeholders, and civil society, as well as significant investments in infrastructure and human capital. With consistent, strategic efforts, Pakistan can overcome the longstanding challenges that have crippled its power sector for decades. The road to reform may be lengthy, but the rewards will be substantial, resulting in a power sector that is not only sustainable but also a catalyst for broader economic and social progress.

### **Author's Profile:**

**Engr. Khawaja Niaz Ahmad**

Director MEPCO (Multan Electric Power Company Limited)

Presently working on deputation with Power Planning and Monitoring Company (PPMC), WAPDA House, Lahore

Cell: 03008780232

Email: [khawajaniiaz@hotmail.com](mailto:khawajaniiaz@hotmail.com)

### **Disclaimer**

The CARBS Policy Lab is an initiative of the Chaudhry Abdul Rehman Business School (CARBS), designed to contribute to informed policymaking through the publication of policy papers and working papers. These papers reflect the independent work and perspectives of their authors. While CARBS supports the dissemination of research and analysis, it does not assume responsibility for the accuracy of the facts, or the interpretations presented by the authors.