Consortium for Development Policy Research

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# Power Shortages in Pakistan: Causes and Solutions

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## About the project

**Funded by:** Adam Smith International

**Key Counterpart:** DFID

**Impact**
The findings were used in a nationwide awareness campaign that highlighted the issues related to power shortages and aimed at encouraging energy conservation on the consumer end. These campaigns were visible on television and radio.

This policy brief is based on the report "Energy in Pakistan: Chronic Shortages, Concrete Solutions", written by Dr. Hanid Mukhtar, Dr. Rashid Aziz, and Mr. Shahid Sattar. It is written by Fatima Habib (CDPR).

## In brief

- Interruptions in electric supply has hurt Pakistan's economy, which is compounded by growing unemployment due to the slowdown of the manufacturing sector, and led to political instability.
- Growing urbanization and mismanagement of citizens' energy needs has led to the demand for electricity outpacing its supply.
- High industrial tariffs have rendered Pakistani exports uncompetitive.

International Growth Centre

## Pakistan's energy crisis and its consequences

Electricity, as a source of energy, is an essential input in the production process. It is impossible to achieve sustainable, high economic growth without a high quality, uninterrupted power supply. Pakistan is a case study on the consequences of energy shortages, which have contributed to the country's sluggish GDP growth, industrial stagnation, slow employment generation, a large, negative impact on the federal budget and distress for the everyday household consumer. [1]

As Pakistan is rapidly becoming an urban-majority population, demand for electricity is increasing and traditional fuel sources are consumed less. But demand has far outpaced supply, especially in rural areas where power outages occur more frequently. Weak governance, energy sector mismanagement and lacking investment electricity generation capacity have caused electricity supply to fall 32% short of demand.

While energy sector reforms to privatise state-owned distribution companies are underway, they have occurred at far too slow a pace to bridge the gap between electricity supply and demand and end ongoing blackouts. These blackouts continue to have negative consequences on Pakistan's economy, social sector and stability.

### Slower economic growth

A study by Pasha et al. (2013) found that power outages cost 7% of Pakistan's GDP and have lowered its economic growth rate by approximately 2%.

Underlying this are the overloaded, antiquated and inefficient transmissions and distribution (T&D) systems and power losses en route to consumers, forcing industries to install expensive, relatively inefficient but dependable in-house capacity due to intermittent supply from the electrical grid.

Power shortages have also made the manufacturing sector less capable of creating jobs, which has contributed significantly to Pakistan's increasing unemployment.

Meanwhile, industrial consumers face power tariffs that are much higher than those of neighbouring countries, making Pakistan's exports uncompetitive in global markets.

Higher electricity prices have led to inflation, increasing the cost of living for consumers and households across the country.

### Risk to stability

In the last decade, frequent power outages have instigated many law and order problems in Pakistan and inspired large protests. However, a slight improvement in the situation over the last two years has reduced the frequency of these protests.

But continued outages damage the legitimacy and capacity of the state, which makes it harder to counter the influence of insurgent groups. Thus, resolving the power crisis is not just important for the economy, but for political stability.

## Causes of the energy crisis

For the purpose of this analysis, various factors resulting in power shortages are broadly grouped as demand and supply-based. Chinese FDI is more advantageous for Pakistan than investment from other sources for three reasons:

### *Demand side*

### Growing household demand

Household electricity consumption has grown at an average annual rate of 10% over the last 42 years. During this time, the government also actively pursued a policy of rapid electrification of rural areas. As a result, the share of households in total electricity consumption increased from 12% in 1971-72 to 47% in 2000-01. Meanwhile, the share of industry in electricity consumption dropped from 54% to 30% in the same period. These factors combined to create rapid growth in the number of consumers and consumption of electricity per user, thus increasing household demand for electricity (figure 1).

Changing electricity demand also resulted in the industrial tariff – for some categories and slabs – becoming unsustainable, especially in a regime where subsidies from the budget are being phased out and all the load of cross subsidisation[2] is being covered by higher tariffs for industrial and commercial consumers.

### Inefficient Consumption

The period from 2000-07 witnessed a credit-driven consumption boom, increasing the use of electrical appliances across Pakistan. With this escalation, inefficient household consumption added to the power crisis. An Asian Development Bank (2008) analysis reports that the prevalence of inefficient electrical appliances implies that more than one-quarter of electricity used by households is wasted. [3]

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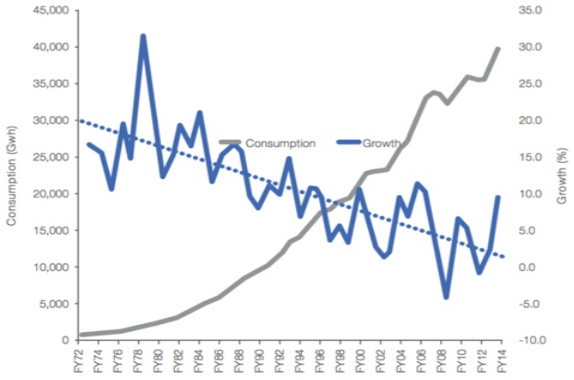
[1] Asif, M. Energy Crisis in Pakistan: origins, challenges and Sustainable solutions, Oxford University Press: Karachi. 2011.
[2] A practice of charging higher prices to one group of consumers to subsidise lower prices for another group.
[3] Alahdad, Z. (2011) "Turning Energy Around," in Pakistan Beyond the Crisis State, ed. Maleeha Lodhi, Columbia University Press, New York.

Figure 1: Household Electricity Consumption and its Growth

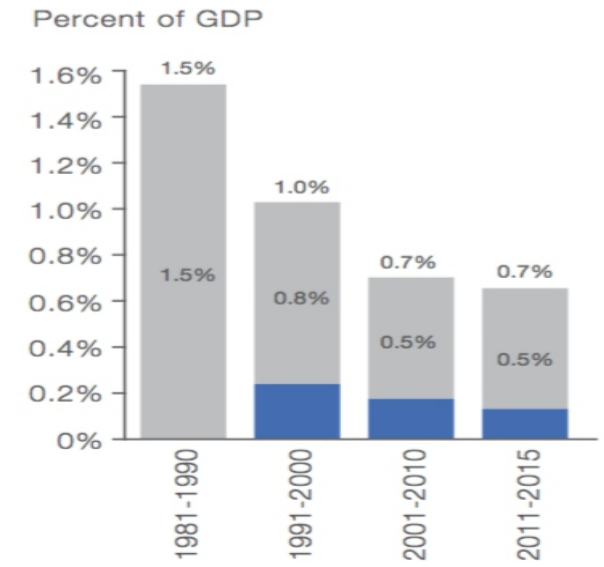



## *Supply side*

### Power generation

Despite the presence of a variety of natural resources, Pakistan faces a significant constraint in power generation. The level of investment in the sector has declined sharply – especially from 1995-2010 (figure 2), leading to slower than required expansion in installed capacity, and the deprivation of key investments to the sector to improve efficiency.

Figure 2: Investment in Energy Sector




### Financial Management

Power generation has struggled with the inability of Pakistan to pay for electricity that is produced. Power sector financial problems stem primarily from weak governance, mismanagement and inappropriate public policies that do not adjust the prices charged to consumers despite a significant increase in generation cost.

### Governance issues

Management-related issues include low levels of human resource capacity, corruption and rent seeking, and compromised regulatory capacity. While in Pakistan, T&D losses of electricity have declined marginally (from about 25% to 28% of total electricity generation in 1995 to 20% by 2015) [4]the pace and extent of improvement is less than what was achieved in many other developing countries. Continued high T&D losses have come at a major financial cost for both, utilities and the government.

### Weak accountability

Poor performance reflects lack of accountability among energy sector staff to improve performance and prevent electricity theft. Although the government has tried to introduce plans to monitor performance ensure improvements over time, there is no documented evidence of actual enforcement. These efforts are more likely to succeed when government actions are reinforced by corresponding actions by other stakeholders. For example, prompt actions by the police and courts to reduce losses and theft of electricity are signs of improved enforcement.

## *Solutions*

Tackling the power sector crisis requires a multifaceted response, where the government and the citizens need to contribute equally. Some of the reforms to resolve the problem include:

### Resolving investment and financial issues

- Increasing efficiency in the sector by pushing generation and new investment is important.
- Investors should start adopting market-based approaches (e.g. bidding on the price of power they produce, develop their own customer base) and not rely completely on government guarantees, a frequent one being the purchase of all the energy they produce.
- Consumers must recognise their obligation to pay in full and on time for the electricity they consume, and to accept that they will be disconnected if they default on payment obligations. Resisting disconnections only enhances the sector's financial problems.

### Improving power sector governance

- The government must stop intervening in the day-today affairs of the managers and

[4] NTCD (2015), "Power System Statistics 2014-2015," National Transmission and Distribution Company, Government of Pakistan.

provide them the necessary support to prosecute and penalise electricity Theft.
- The government and regulators need to agree to approvals for investments if investors seek improvements in utilities' performance.

**Reducing theft and losses**

- Investment is needed to upgrade and maintain the electric grid and adopt state-of the-art management systems for better surveillance of distribution companies' staff.
- Investment not only for the maintenance of existing equipment, but also for acquiring modern technology and systems is needed.
- Strengthening the legal framework for investigating, prosecuting and penalising theft and corruption is also critical.
- The police and judicial system must promptly investigate and prosecute all complaints about electricity theft.

**Promoting renewable energy**

- Renewable energy sources such as wind and solar are experiencing rapid growth. Promoting the development of renewable sources of electricity will diversify the bulk power supply in the country.
- Pakistan's legal framework gives freedom to energy producers in the choice of fuel they wish to utilise. Thus, investors can prepare and construct renewable energy projects. They must, however, comply with the standard approval requirements, which apply to all power generation projects.

**Energy conservation**

- Better energy conservation and more energy-efficient practices are viable initiatives that can save an estimated 17% of total electricity consumption.[5]

[5] OICCI (2012), A roadmap for energy efficiency and conservation in Pakistan, Overseas Investors Chamber of Commerce and Industry (OICCI), http://oicci.org/wp-content/uploads/2012/07/Road-Map-for-Energy-Efficiency-Conservation.pdf