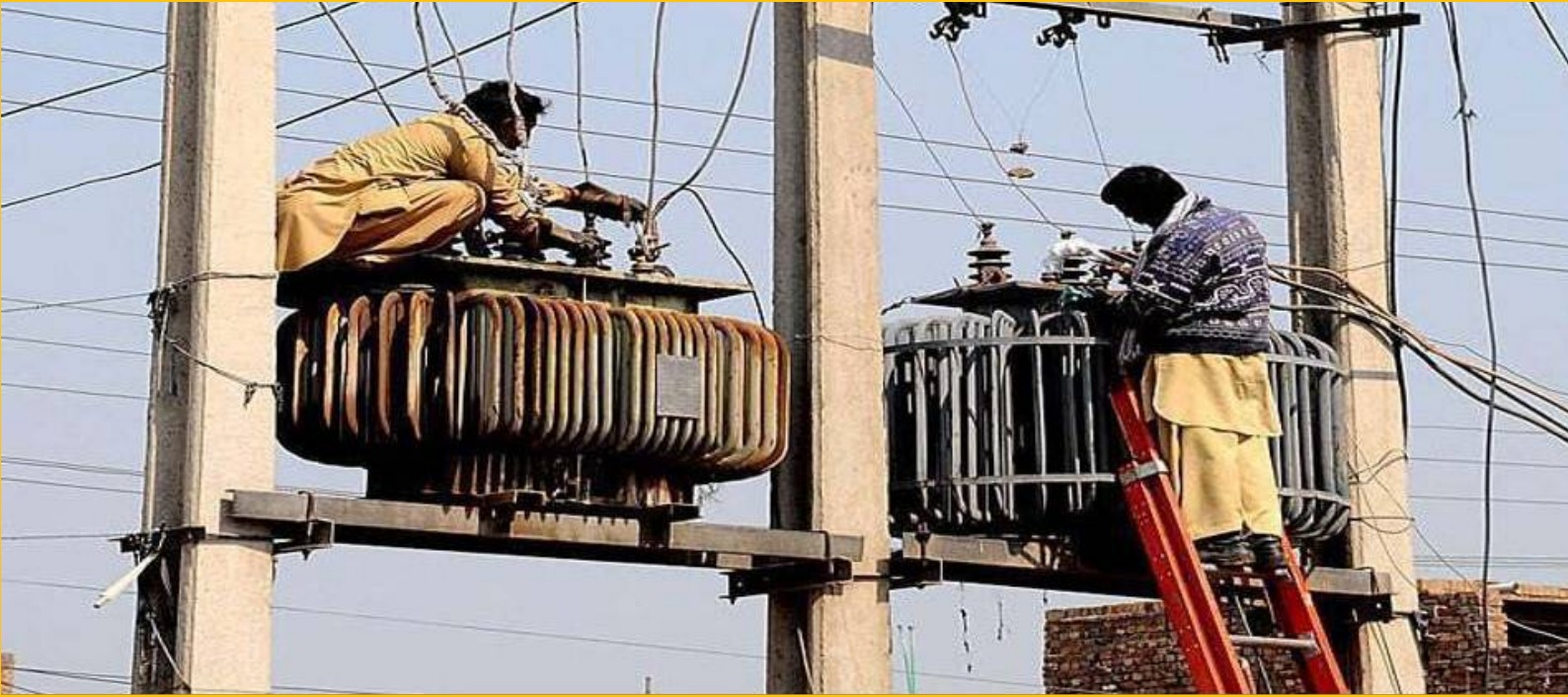


Pakistan's Power Sector Woes: A Beginning with no end

Shahid Sattar and Saad Umar



The woes of Pakistan's power sector and associated negatives such as impact on GDP, high tariffs, long and frequent load shedding and poor governance are not unknown. To address these requires careful unfolding of the layers of mismanagement that continue to plague the sector's supply chain.

To begin with, it is important to enquire how it fares in terms of pricing, market development, generation and transmission compared to other economies.

Electricity Market Development

As is, electricity should be treated as a commodity where its production and trading are conceptually separated from the operation of the power system. On the other hand, Pakistan has a single buyer model that purchases electricity from GENCOs and supplies to DISCOs. This means that the monopoly status of electric utilities does not incentivize efficiency and instead encourages them to pass on the cost of their resultant inefficiencies to consumers in the form of heightened tariffs. If Pakistan's supply of electricity becomes the object of market discipline rather than monopoly regulation of government policy, the economy and end consumer will have much to benefit from competitive markets. This, however, will not be a straightforward process requiring interplay of several factors.

Competitive markets in the power sector can include i) wholesale that creates more competition for the generating companies where prices are determined by the interplay of supply and demand, and (ii) retail, to cater for small consumers that cannot choose to buy from the wholesale market.

Such competitive electricity markets are not alien to economies like Turkey and Bangladesh, and Pakistan may have important lessons to learn from these experiences. In the country's defense, however, some well-intentioned decisions have been made to this end such as ECC's decision to transform its single-buyer market model to competitive trading bilateral contracts market (CTBCM) where NEPRA and CPPA-G are working closely to establish CTBCM in their own

capacities. However, CTBCM has severe limitations as the generation side is already completely tied up in long-term generation contracts and therefore distribution competition can only be termed as an irrelevant exercise as there are no free suppliers in the foreseeable future. One way of freeing some generation for competition is urgent re-negotiation of all PPAs of existing IPPs to guarantee 50% of capacity, and balance to be traded or sold directly on B2B basis either through wheeling or from a power exchange.

Wheeling, a process whereby efficiencies are maximized by moving least-cost power to where it is needed, is the first step in achieving competitive markets. If wheeling is an option, a utility can determine if it is cheaper to build a new electric generation facility or buy power from another service area. Wheeling can achieve many benefits like open access to all market participants on a non-discriminatory B2B basis, attracting investment, and evolving the wholesale market and eliminating sovereign guarantees. To be financially viable, however, wheeling charges must be determined by the economic principle of marginal cost rather than incorporating all the inefficiencies of theft, stranded cost, non-collection and improper cross-subsidies which endanger the development of competitive markets. Currently, the existing charges for wheeling in Pakistan are Rs.1.35 to Rs.1.50 per kwh which the CPPA wants to increase to Rs.8.3/kwh by incorporating the aforesaid inefficiencies. The proposal by CPPA of adding irrational and unjustified costs in wheeling charges (including BPCs) will obstruct the formation of free and competitive markets - increasing employment, GDP and exports for Pakistan - especially when the power sector is close to achieving breakthrough of signing MoUs with IPPs to start operating on Take and Pay basis (i.e. without capacity payments) and various other concessions to lower generation costs and the establishment of a competitive market is one of the preconditions of the MoUs.

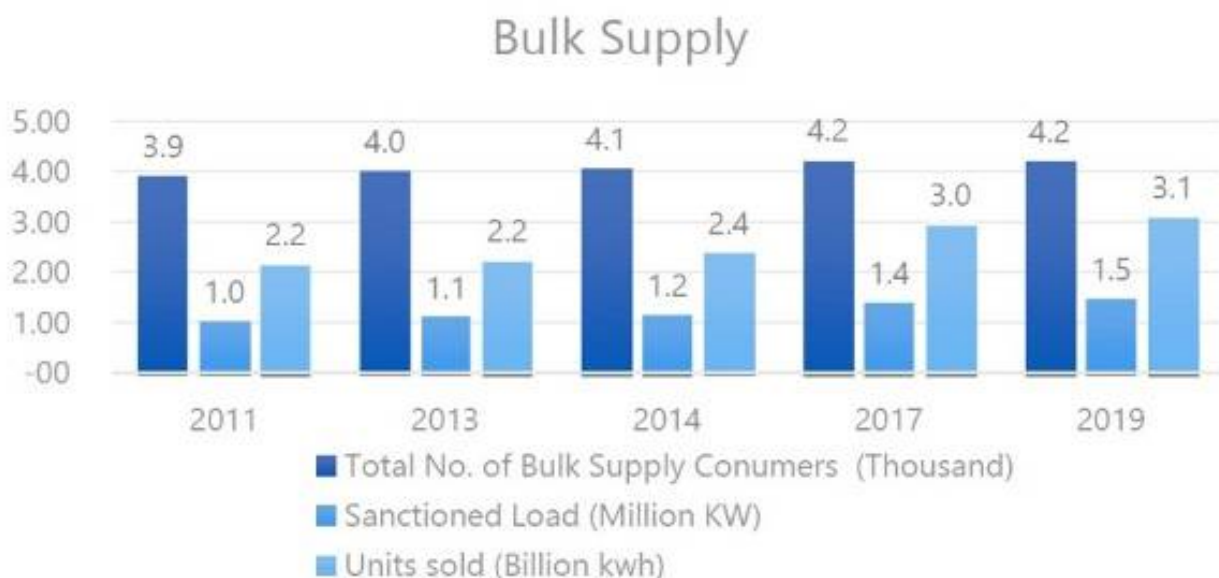


Figure shows that Bulk Supply Consumers have grown by 8% in Pakistan; while consumption has increased from 2.16 billion kWh to 3.09 billion kWh (43% increase). If bilateral contracts become financially unviable owing to excess (above legitimate) wheeling charges to BPCs, the development of competition will be threatened in the long term and export-oriented industries will become non-competitive. Moreover, it will have significant financial impact if costs are recovered from BPCs by DISCOs on Cost of Service which includes irrelevant business costs which are not part of the wire business.

Electricity Tariff Issues

Pakistan's electricity prices are significantly higher in the region, and in some cases, highest in the world. For instance, the electricity tariff in Pakistan is around 30 – 40 percent higher than countries like India, Malaysia, Turkey, and China. In our neighbouring country, India, power tariffs vary widely across the country - where every state/province has an independent power system, from regulator to financial ownership and liability.

In Pakistan, the issuance of distribution licensees under the existing regulatory regime means that each distribution company has its defined service territory and accordingly has a specific

cost of service for supply of electricity to its service territory. In other words, the entire country is divided into regional markets and each distribution company is responsible to meet the supply requirement of its own market / service territory. The cost of service means differential tariffs for each market or service territory.

It is worth noting that NEPRA is determining tariff on the base of cost of service, and allocating cross-subsidies despite having no expertise in this area. The regulator lacks the resources of seasoned economists and technical experts to determine the efficacy of economic impact of subsidy/cross-subsidy – it is fundamentally wrong to ask a regulator to set these cross-subsidies for end-consumers as it is without doubt the government's responsibility. The whole supply chain works to provide electricity to customers of the regional market(s) so all the prudent costs incurred are recovered from customers through tariffs. There are a total of nine distribution companies in Pakistan, excluding K-Electric. They are allowed to incur an average of 16% line losses (which is recoverable from consumers through monthly bills). In addition to this, they book another 12% line losses, including due to theft. Moreover, their recoveries remain low by up to 20% against the monthly bills. A large number of the consumers in far-flung areas are in the habit of not paying their bills despite many of them being more than capable.

Such a tariff and accountability mechanism is a matter of grave concern as there is no incentive for a DISCO to perform better, and underperformance is not penalized. A uniform tariff across the country means that the entire system is bearing the brunt of a few inefficient DISCOs. The equality between high- and under-performers is wrong at every level; rather incentivisation of underperformance is counterproductive. The natural outcome of such a self-imposed calamity can only be that the power sector system will be a severe drag on Pakistan's economic potential.

In FY2019, approximately Rs. 352 billion worth of electricity was lost in T&D. Of that, Rs. 300 billion is already part of the tariff. To allow such a significant portion of T&D losses to become part of consumer tariff is inexcusable, and if that isn't enough, more distress is caused by the breach of recovery targets by DISCOs (10%). In FY2019, a loss of Rs. 172 billion to this end was recorded (200% more than the previous year), creating bigger problems than T&D losses.

Pakistan's cost of power production is 26% higher for the industrial sector compared to other regional countries like Vietnam, Sri Lanka, Malaysia, Bangladesh, South Korea, Thailand and India, and it is 28% costlier for residential areas than the regional countries.

To add to their woes, inconsistent regulation between NEPRA (responsible for regulation of the power sector) and OGRA (responsible for the regulation of oil and gas sectors) sends confused signals to consumers and investors, and creates disharmony in pricing strategies between gas and electricity. Additionally, since both are sources of energy, the tariff on gas and electricity is \$6.5/MMBTU (Rs.10) and ₹9.0/kwh (Rs.15), creating opportunities for arbitrage in the system. Hence, the prices must be set in equilibrium at \$6.5/MMBTU for gas and ₹7.5/kwh for electricity as one of the measures in establishing an efficient system design.

Charging a higher tariff rate for electricity than gas generated electricity is in fact taxing the SME's as they don't have self-generation and as a result, cannot compete. The importance of a level-playing field can be estimated from the fact that 70-80 percent employment is in the SME sector and their growth results in the largest employment generation.

For residential customers, Pakistan's electricity tariff adopts an incremental block tariff (IBT) structure to protect lifeline (or extremely small) users. While over time tariffs have increased across all slabs in nominal terms, they have changed in real terms only at the highest levels of consumption. This means that the tariff structure has generally become more progressive, as higher levels of consumption have become more expensive.

Although Pakistan's tariff structure provides a low price to small users, poor households (HHs) are not the biggest beneficiaries of the electricity subsidy, a privilege instead enjoyed by the richest 20 percent of the population. The poorest HHs on the other hand, have become one of the main targets of the IBT structure and only receive approximately 10 percent of the subsidies paid by the government. This means that the electricity IBT remains a relatively inefficient method to protect poor HHs owing to ineffective lifeline tariffs, mismatch between tariff and poor HH consumption and such related factors.

However, given the fact that the structure was introduced at a time of power shortage and continues to linger on even when there is oversupply of power makes it all the more redundant. The IBT now must be replaced with regressive structure rather than progressive – lower tariffs

must be charged as per unit consumption increases. The two-pronged solution to this lower tariff for lifeline and lower category users is that i) tariff must be set on a cost-of-service basis for an efficient and reliable power sector, and ii) direct subsidy like BISP – an effective instrument – must be embedded to protect the poor HH consumers.

The government's idea of supporting consumers below the poverty line through cross-subsidization is also a non-starter. This is because industry and businesses are asked to pay tariffs above costs to finance the cross-subsidy. This higher cost of electricity increases the cost of manufacturing, adversely impacting business competitiveness. Compelled to seek cheaper alternatives, industries switch to renewable energy sources (solar generation) resulting in a decline in state revenue. And where that doesn't happen, poor implementation mechanisms result in the subsidy being enjoyed by the non-deserving still, while the poorest of the poor remain empty-handed.

Circular Debt

Power sector has been a significant constraint on growth in Pakistan in recent years – two capital burdens: circular debt at Rs. 2.4 trillion and capacity payment of more than Rs. 1.0 trillion in 2020 – crippled the power sector in the country. While on one hand, transmission and distribution (T&D) losses of up to 30% create inefficiencies and bottlenecks in the system, arrears mounting in circular debt to the magnitude of Rs. 2.4 trillion imply a perennially burdened national exchequer. The vicious cycle of circular debt - whereby distribution utilities struggling to collect revenues and meet regulatory targets for transmission and distribution losses default on their payments to generators, and the government periodically bails out the sector once losses accumulate to intolerable levels – has severe implications for the Pakistani economy.

Such a high amount cannot be recovered from tariff adjustment and more importantly trying to recover it from the current or future consumers is completely irrational. The government instead needs to come up with out-of-box solutions to pay-off the circular debt rather than recovering it through tariffs which will only amplify the problem. If left unaddressed, high inefficiencies of distribution companies like QESCO and PESCO, will continue to contribute to the ever-growing circular debt, estimated to reach Rs.4.0 trillion by 2025.

Revenue-based Load Shedding

When it comes to billing and revenue collection, DISCOs resort to ineffective solutions such as revenue-based load shedding i.e. they take the easy way out of suspending power supply to areas with high loss and collection – a situation not understandable in a country with excess power capacity. This hits compliant customers and industries the hardest with heightened tariffs. More importantly, not only is revenue-based load shedding constitutionally improper, it also ignores international conventions such as the Sustainable Development Goal (SDG) of universal access to power and our honorable supreme courts adjudication on the subject of collective punishment which results in revenue-based load shedding.

Given the country's chronic energy shortages – and the public's increasing scepticism of state-owned utility companies to deliver consistent and affordable electricity – it makes sense that more and more Pakistanis are adopting the use of solar technology to meet their energy needs. Pakistan's imports of solar panels were approximately Rs. 56 billion in fiscal year 2019. Imports of solar panels have risen from as little as \$1 million in 2004 to a peak of \$772 million in the fiscal year ending June 30, 2017. And while they have since dropped down to \$409 million in FY 2019, the country's imports of solar panels show a strong upward trajectory, growing at an average rate of 16% per year in US dollar terms (23% per year in Pakistani rupee terms) in the five years between 2014 and 2019. The stats should be alarming for the government since more and more compliant, high-end users – the very source of revenue generation – are moving away from the grid electricity by installing their own solar generation. The impact of government's (irrational) strategies to meet the power sector revenue requirements will misfire and the power sector is currently set to implode.

A small portion of these imports are for grid-scale projects but the proportion for domestic, commercial, and industrial users who are not necessarily connected to the grid is also quite significant. Whether this trend will continue and adopt a path of its own, only time will tell but one thing is for certain: if Pakistan does not address the inefficiencies in its power sector with the urgency with which it demands and assure sustained and affordable electricity, its consumers, investors and businesses/industries will be left with no option but to look for alternatives elsewhere.