

TRANSFORMING THE POWER SECTOR

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Since the establishment of the Water and Power Development Authority (WAPDA) in 1958, the entire investment in the generation, transmission, and distribution of electricity was made by the public sector through this agency, which effectively created its monopoly in the country. The bulk of the country is still served by former departments of WAPDA, but now independent bodies National Transmission and Despatch Company (NTDC), Central Power Purchasing Agency (CPPA), distribution companies, etc, which extend from north to south excluding Karachi that is served by KE. The World Bank, United States Agency for International Development (USAID), Asian Development Bank (ADB), and other international donor agencies provided financial and technical assistance to Pakistan in the shape of millions of dollars for infrastructure development projects in the 80's, which later continued during the 90's as well.

An autonomous body named Private Power Cell was formed in the Ministry of Water and Power in 1989 to address the private sector participation in the power sector – later renamed as Private Power Infrastructure Board (PPIB) in 1994 – to provide a one-

window facility for all new power generation investments requiring government regulatory

approvals, fuel, and power purchase guarantees, and project development facilities. Privatization was also started on the recommendation of the World Bank.

The power sector is divided into three segments; generation, distribution, and transmission. Each segment has its own significance and complements the other, thus, forming a chain. One segment's inefficiencies bring the other two down automatically. An inefficient distribution company (DISCO) has the capacity to single-handedly drain a large part of efficiency gains of the other segments. Successive governments have tried their best in improving the overall system yet no government could bring the required change in the power system because of multiple reasons.

Prices of electricity in Pakistan are one of the highest in the region and are considered a major source of high inflation in the country. Although, the government is subsidizing electricity rates for various categories of customers (residential and industrial), yet both government and electricity customers are not satisfied. Circular debt is a combination of various factors, ranging from private power producers' capacity payments to the transmission line losses to an inefficient DISCO system. Despite continuous increases in electricity rates to manage the circular debt,

there is no sign of its curtailment. This suggests that there are some leakages within the system due to which an increase in electricity prices is not the only solution.

Circular debt is increasing month after month. In the coming months, it is estimated that it will further escalate. Breakdown of circular debt shows that a large chunk is coming from the state-owned enterprises. Receivables of one state-owned enterprise are payable to another state-owned enterprise that too within the energy sector, thus, it should be zero at a certain level on a consolidated basis. The government borrows funds to financially support its enterprises and after rotating money from one enterprise to another, the government's cost of borrowing also increases, which also becomes part of circular debt. Therefore, it is better to just write off the receivables/ payables of state-owned enterprises on a cut-off date and thereafter, make a system where it must not be accumulated. As a matter of fact, circular debt is a natural phenomenon in the power sector, which occurs due to timing differences between receipts and payments to various companies/stakeholders within the ecosystem. Therefore, circular debt will also remain there, but it should be within an acceptable level, which is to be determined by independent power sector experts.

Despite all this, government officials largely blame private power producers and their

capacity payments for mounting circular debt, besides criticizing the high return on equity (ROE) of investors, thus, the entire focus is on the reduction in profits of the investors. ROE is actually just one component of the circular debt, some of the other components are high cost of fuel, transmission and gas pipeline losses, inefficient DISCOS, and short or virtually no recovery at all from the end consumers.

It is an established fact that distribution companies in Pakistan are not efficient. Distribution companies (DISCOs) lag behind the established global benchmarks on losses and collection of bills. DISCOs have three challenges which compound their losses; i) technical, ii) under-collection of bills and iii) delta (a gap between the cost of electricity and sale price i.e. revenue). Delta is dependent on the energy mix and level of subsidies given by the government to various categories of customers. Pakistan has ten DISCOs and there is a need to do a scientific analysis of their data. Mapping each feeder within a DISCO based on various parameters (green being the best and red being the worst) would help implement an effective plan.

Coverage area and the number of customers under each DISCO have increased over time. On the contrary neither financial nor human resources have increased proportionally. They have rather rather decreased. Therefore, dividing a DISCO would help manage the

network much better. Sooner or later, these DISCOs will either be privatized or the operations of these DISCOs will be outsourced. In that situation, it is recommended to split the DISCOs into smaller parts to supervise the operators more effectively. Stock or inventory count is one of the few measures, which are taken in organizing any company efficiently. Presently, no systematic method is in place to measure or estimate the current level of inventory, how many transformers are there, length of cables, number of poles, generators, etc. With this situation; stock in hand might be overstated; thus, all the analyses could be misleading. There is, hence, a need to engage reputable technical firms for a detailed assessment of stock in-hand.

With an ever-increasing trend of captive rooftop solar power solution and net metering options, DISCOs are finding new ways and means to block such options. The private sector is pushing for the wheeling arrangement, which requires the support and approval of NTDC and DISCOs. DISCOs are against wheeling because they view it as a potential threat to their own existence. DISCOs have requested PKR 5/Unit as capacity or wheeling charges from the companies which are interested in doing the wheeling or intend to use their system. Power companies might accept high level of charges if they get an assurance of continuity in the policy and

pricing. The problem is how and when DISCO will change the wheeling charges and whether the government could abruptly terminate the wheeling arrangement altogether. On one side, all provincial governments are solarizing their schools, hospitals, buildings while on the other DISCOs are discouraging the private sector to install CAPTIVE power. Moreover, on the other side, the government is of the view that it has excess capacity and has to pay huge capacity payments to the private power producers therefore, it cannot afford good pay customers to be out of its system while on the other they are heavily investing in CAPTIVE solar. This gives mixed signals to the investors and confuses the entire sector.

Various plans are presently under consideration by the policymakers for bringing improvements in the power sector. That includes development and approval of Indicative Generation Capacity Expansion Plan (IGCEP), implementation of Competitive Trading Bilateral Contracts Market (CTBCM), and the privatization of DISCOs. While looking at the features of each of these plans, it is quite obvious from the below that these are not fully synchronized:

Under Competitive Trading Bilateral Contracts Market (CTBCM), there would be a competitive regime with multiple sellers and multiple buyers. Whereas IGCEP will determine the capacity and technology (wind, solar hydro, coal etc.) to be injected in the

system country-wide. The exclusivity of DISCOs will end in 2022 and, thereafter, private sector could also enter into the distribution sector after getting a distribution license from NEPRA. The above three are self-contradictory. If anyone can sell power to anyone in the market, then what is the purpose of CTBCM. Whereas if multiple sellers can select multiple buyers (means it would be a business-to-business arrangement) then how come IGCEP will determine the capacity to be injected into the system. Instead of moving ahead with these plans, there is a need to have a detailed evaluation of all these policies otherwise, the entire sector will get stuck badly.

As per the Grid Code, NTDC was given the task to prepare an integrated generation plan on an annual basis. Somehow, NTDC only lately submitted the generation plan a couple of times to NEPRA for their review and approval after a delay of almost 15 years. The structure of the power sector has changed massively in the last 15 years. Various present-day autonomous state-owned entities were part of NTDC when the grid code was approved thus it was logical to assign the development of a generation plan to NTDC at that time. But now, it doesn't make sense. Now, NTDC is preparing Pakistan's first IGCEP and once it is approved then on the basis of the approved generation plan; NTDC will prepare a 'Transmission System Expansion Plan'. Either Planning Commission or Ministry of Power

should prepare IGCEP and NTDC should focus on transmission plan only. NTDC is not supposed to (a) determine the cost of a generating unit; (b) make determination of demand and supply forecast; and (c) devise a strategy for either utilizing indigenous resources or relying on imported fuels. Instead, it should only focus on developing a technical and financial plan on how to evacuate power from a power project and what would be the cost of a transmission line thus NEPRA, Ministry of Power, PPPIB, AEDB, and all provincial agencies could take a comprehensive decision of procuring power from any particular project or a cluster of projects and take a view on how to utilize the available resources resultantly bringing down the cost of electricity.

Many forms of renewable energy are location-specific. Northern areas of Pakistan have a huge potential for the development of hydropower projects including development of small and medium sized dams and reservoirs. Presently several small-medium-sized hydropower projects are at various stages of development in Khyber Pakhtunkhwa Province and Azad Kashmir. However, one of the biggest challenges for a small, medium, or even a large hydropower project is the availability of transmission lines for the evacuation of power. It is technically a bit difficult to evacuate power from such a rugged mountainous terrain but solutions are

available. Moreover, land acquisition is a time-consuming exercise and requires a lot of effort. Land record in KP Province is not as organized as in other parts of the country hence, the provincial government must do some legislation in this respect.

It is a general presumption in Pakistan that utility-scale solar power plants can be installed anywhere in the country, which is not the case. Utility-scale solar power plants can only be installed after conducting a detailed solar assessment study whereas the capacity factor of a solar power plant can be different from location to location. In Pakistan, the southern region has higher solar irradiation than the northern region and further in the north, solar irradiation in KP province is even less than Punjab. Similarly, wind projects can only be installed in Baluchistan and Sindh but taking power from Baluchistan and Sindh to the load center in Punjab is too costly. However, Off-grid solar panels which are also called roof-top solar can be installed at any location depending on the need.

. The following can help address the power sector's current issues including reducing the circular debt and cost of electricity;

- The federal government has always given bailout packages to DISCOs despite their consistent operational and financial shortcomings. Restructuring of DISCOs can be a solution to ever-

increasing circular debt. Let the exclusivity of DISCOs expire in December 2022, and they may be split for better management.

- Allowing wheeling arrangement and opening up of the power market on a business-to-business (B2B) basis. If existing private power producers are allowed to sell their electricity to anyone in the market instead of selling to state-owned CPPA; private power producers will obviously not only reduce their tariffs but will also delink their tariffs from US dollars. This will also not shake the confidence of the investors as it would give everyone a fair and equal chance to operate;
- By allowing wheeling, on one side electricity prices will decrease (investors will reduce their returns as opposed to their current level of returns given by NEPRA) while on the other, the government would be out of its obligation of paying huge fixed capacity payments to the private power producers;
- A hydropower plant is probably the best solution to address circular debt and high cost of power generation. The tariff of a hydropower plant can be in double digits, which should not be viewed as a negative element as it would not be exposed to any foreign

exchange variations and other indexations;

- The focus should be on developing small-medium-sized hydropower projects, where Pakistan's business community could easily manage to contribute required equity while such projects could also attract local financial institutions.

In recent months, agreements with private power producers have been executed by the federal government, under which tariffs of private power producers were reduced. Some view it as having a negative impact on the investment climate. There was a time when investors considered various risks including economy, foreign exchange, interest rate movements, and change in tax laws before investing, but now there is also the risk of discontinuation of policies. Due to this, the overall risk of investing in Pakistan has increased and there is no mitigation against this new risk.

Furthermore, privatization of DISCOs is already too late now. Incoming investors will ask for exclusivity for at least 15-20 years to recover their investments but giving monopoly rights to a private party especially after the experience of KE would be a difficult decision to make. Therefore, it is better to split the DISCOs so that the O&M of smaller DISCOs can be outsourced for a term of 5 years (say) with an extension of another 5 years. This will attract a lot many parties otherwise, only a

couple of local companies or big foreign companies will be able to acquire the DISCOs.

Pakistan has a vast supply of renewable energy resources, which should be harnessed. As renewable energy is now the cheapest form of electricity generation in Pakistan, the government should reduce its reliance on the expensive imported fuel-based power plants (RLNG, coal, oil) in favor of cleaner, more accessible electricity for people and businesses.

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