Energy Crisis in Pakistan

Pakistan, now a days, faing numerous challenges i-e adverse economic condition, political instability, unemployment, inflation and etc. Energy crisis is one of them and major challenge, which badly impacts on Social, industrial and domestic lifes in Pakistan.

1- How the energy sector of Pakistan operate?

The power sector of Pakistan can be divided into three sectors i.e GENCOS, NTDC and DISCOS

1. GENCOS:

Gencos means Generation Companies That generate the power from different resources including thermal, Nuclear, Solar, wind, and hydra. Total installed power generation capacity is 46,035 MW as of 31 januvary 2024. which includes 23,311 MW Thermal, 10,635 MW hydroelectric, 1838 MW wind, 832 MW Solar, 249MW bagasse and 3,620 MW nuclear.

2. NTDC:

The Step after generation is the transmission. National transmission Dispatch Company transmits power to the Country excluding Karachi and some Surrounding regions. NTDC is a national grid for this Step. 1

3. DISCO'S

The distribution of power in the country is performed by the region-wise DISCO's under the license by NEPRA, these companies are the responsible for the maintenance of the system.

2. The decision making bodies

- The Ministry of water and power retains an overall supervisory and policy making role in the power sector
- PEPCO regulates the GENCOS, DISCOS and the NTDC
- WAPDA'S role is now limited to developing the hydropower
- The PPIB acts as a facilitator to promote private sector participants and can issue sovereign guarantees on behalf of GoP
- NEPRA is responsible for providing licenses to the private sector companies

The role of banks in the energy sector:

It provides loan to oil and gas importers, producers, transporters, electricity generators and to the State of Pakistan regarding energy projects.

Problems with energy sectors:

One of the serve crises faced by the country is the energy crisis where the state faces not only the inadequate amount of

circular debt
electricity bills. However, transmission losses, and transmission constrain are also huge challenges for the sector of power.

1. Loadshedding:

The energy sector of Pakistan is facing severe loadshedding

- In the summary 2023, the short fall was well above the 7000MW
- Loadshedding in the urban centers varies from 4-5 hrs a day while in rulay areas 10-12 hrs a day.
- In summer 2022, the shortfall was more than 10,000MW, while loadshedding in the urban center was around 8 hrs a day. In rulay areas around 16-18 hrs a day
- From 2007 to 2016, the shortfall varies from 5000 MW to 8000MW
- The loadshedding in the urban areas is from 2006 to 2016 was around 8 hrs a day. In rulay areas more than 18 hrs a day.

2. Expensive electricity generation is the major problem As the electricity generate the most expensive electricity in Asia and 3rd most expensive electricity generated ~~by~~ in the world
- Domestic unit charges varies from 24 to 65 PKr.
- The price of per unit decided on the basis of SLABS being introduced by NEPRA Below 100 unit (1-100) the cost is almost

28 PKRs including all tax and ~~Unit~~ and other charges.

- From 100-300 units SLAB price is 44PKR.
- From 300-600 the minimum price per unit is 72 PKR
- In Commercial (market, industry, agriculture) it varies from 48 to 90+ PKR per unit
- The price got almost more than three time in the last two years.

3. Transmission Losses:

The total loss in the transmission and distribution system is aprox. 33% out of which in transmission it is 17%. The transmission lines of Pakistan is outdated, majority of them has got expired either before 2000 or 2010. Resultantly, the line loss (cost) in Pakistan is highest in Asia, which is 17%. The line cost in China is 3%, approximately 9% in india, and Bangladesh, around 12% in Afghanistan. This mean out of 100MW being produced and 17MW being lost in lines, the cost of it to be afforded by the State and Consumer. Secondly, there are numerous problems in distribution system that result in 16% loss in electricity sector.

4. Electricity piracy

Power theft is pervasive throughout ~~emerging~~ emerging markets, but Pakistan ranks among the

worst in Asia. The common pattern of electricity theft is Kundi System, tampered the meter reading etc. This electricity theft in urban centers, Karachi is the top most city. while there is no city where electricity theft is not reported. In urban centers, it is mostly done by industrialist and builders. While in rulay areas it is by agriculturalist who used to their. Moreover, there are areas in Pakistan, specially the ex-tribal areas, there is no concept of electricity bills. Pending of bills on the government departments, free and subsidies as electricity in certain departments is also a issue.

5- Transmission Constrain

According to economic survey of Pakistan (2021-22), the installed electricity generation capacity reached 41,557MW in 2022. The maximum total demand coming from residential and industrial estates stand at nearly 31,000MW, whereas the transmission and distribution capacity is stalled at approximately 22,000MW The major reason of loadshedding and expensive electricity is transmission constrain. Pakis can produce electricity more than its demand, but transmission lines cannot supply electricity more than 22000.

6- Circular Debt:

Pakistan's energy sector circular debt has jumped to Rs 5.185 trillion as of

November 2023, of which Stage of power Sector Stood at Rs 2,703 billion. Circular debt occurs when one entity facing problems in its cash inflows holds back payment to its Supplys and Creditors. Thus, problems in the cash inflow of one entity cascade down to other segment of the payement-chain. In Pakistan, the energy Sector has faced this issue for several years.

Reasons of expensive electricity in Pakistan:

1. Pakistan generates more than 60% electricity through HC
   17000 Mw electricity unit are installed
   capacity of dissels, more than 7000 MW of
   LNG, around 6500 MW of Coal. Diessels is most
   Expensive. LNG is the second most and 3rd the
   Coal. Almost all the HC being consumed for

for production of electricity are imported. All the diesels, LNG, Petrol and majority of coal is being imported. The price of HC jumped up in international market after the war in Ukraine and sanctions on Russia. All the HC has been purchased in Dollars while rupee has been devalueed against dollar. If 1 billion dollar oil is imported had a cost of 178 billion PKR, today it was more than 275 billion PKR

2. Expensive agreements with IPPs:

IPP produces electricity from HC. These ipp were installed in 1994, 2005, 2011 and 2014. The more the increase in demand, The more the IPPs got installed. [FBS] and major reasons for expensive electricity is the capacity payement made to IPPs. In summer, the demand is on the peaks as in July 2023 it was around 28,000 MW while in winter it reduce by more than 50%. as in January 2023 it was less than 14000 MW. The agreement with IPP is being signed on the basis of maximu demand in summer the state has to purchase the maximum demand while in winter it decies The state has to purchase this much electricity

The minimum Bill if the State does not purchase, the required volume of electricity yet again it has to pay the price. Unprecedented increase in the Capacity payment which is currently
All the IPPs payment are being paid in dollar. As for the external IPPs has to pay in dollar but the local owned IPP's has being paid in PKR unfathomedly, we have paid the local IPP's in dollar That results into decline in the dollar reserves.

3. The conditionalities of IMF:

In Oct 2022, the Agreement with IMF renegotiate. In March 2023, it renegotiated again. IMF conditions the provision of loan with the increase in per unit price of electricity. To do that subsidies should be waived off Secondly, The fuel price should be increased in Pakistan, more than Cor. of electricity is produced by fuels. Thirdly, make rupee devalue. The devaluation of PKR resulted in further in the prices of electricity

Recovery factor = 30%.

Implications:

1. Industry is one of the major and most hit:

The price of the product is decided on the basis of the purchase of raw material, transmission cost, labour rates and the price of electricity. on one hand state has not be able to ensure the non-stop supply of electricity. on the other hand generation cost of electricity has been increased three times that has resulted in higher production cost of industrial product. Therefore, the products of Pakistan not been able to compete in international market those which are produced in Bangladesh and India, resultantly decline in exports especially in textile, leather, sports products etc. industry is the most hit. More than 20 industries closed in Pakistan since last 3 years. Multiple factors are responsible, unprecedented rise in electricity is the major reason.

2. Setback for the agriculture:

More than 30% of Agriculture of Pakistan is based on tubewell and dugwells. Majority of those tubewells are powered by electricity. The more the loadshedding, the more the set back of agriculture. The cost of the agriculture products rise with the increase in the price of electricity.

3. increase balance of payment crisis:

As the product of Pakistan got expensive resultantly

There are decrease in export and increase in imports Resultantly increasing pressure on current account. To improve the current account the Government has to acquire loan from IMF and other sources.

4. Implication on domestic life:

Due from the fact of the burning of every middle class is being consumed by the electricity bill because there has been unprecedent increase in per unit price of electricity. This has negatively impacted disturbed the balance domestic budget of every house hold. Repeated load-shedding effected the domestic life

Solutions:

1. Renegotiate the agreements of IPPs:

The agreement signed in 1976, 1994, 2002 and 2005 should have been negotiated long time ago, but unfortunately decades long delay was made by the successive governments until 2020, when these agreements were negotiated no more Capacity payments, local IPPs would pay off in PKR. It was a positive development but it has solve the problems moderately by law as majority of IPPs being installed in 2015 and 2019 which cannot be negotiated till 2030

2- install local and cheaper electricity projects

Energy policy 2013, focuses on indigenization of electricity generation. 15000 MW of electricity would be produce from hydel project, in which diamer basha dam would add. 4500 MW by 2029, Dasu would add 4300 MW by 2027, Mohmand dam 800 MW by 2025. Karot has already stabled generation of 730 MW, Suki Kinari would 884 MW etc. Secondly increasing focus on electricity from local coal of Thar, one project of 1320 MW, and 4 project of 330 MW each has already completed. Thirdly, 4500 MW would by wind turbines and 3000 MW from Solar System. The object of Pakistan is to achieve 2000 percent of dependency on for electricity generation by 2030.

3. Revamp/update the transmission lines

Though, it is an expensive phenomenon but the country is in the need of changing the outdated transmission lines. The local transmissi and the broader network NTDC (National transmission dispatch need to be changed. The loss and the electricity would greatly reduced.

The writ of the State must be improved in order to stop electricity theft and to get the bill in time. Furthermore, the state must ensure that no department will get free electricity.

Privatization of electricity system, state should play the role of regulator.

Conclusion:

Above mention steps will be taken, not only loadshedding would be over with that, would help to decrease the over all price per unit.