

Mention the full qs statement for proper evaluation. Without that these are just notes and cannot be awarded marks

Energy Crisis in Pakistan

Pakistan, now a days, facing 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 lives in Pakistan.

1- How the energy sectors 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 hydro. Total installed power generation capacity is 46,635 MW as of 31 January 2021, which includes 28,311 MW thermal, 10,635 MW hydroelectric, 1,838 MW wind, 882 MW solar, 249 MW bagasse and 3,620 MW nuclear.

2. NTDC:

Use full form

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.

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 GENCO'S, DISCO'S 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 severe crises faced by the country is the energy crisis where the state faces not only the inadequate amount of

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

Use paragraph, not points

1. Loadshedding:

The energy sector of Pakistan is facing severe loadshedding

• In the summer 2023, the short fall was well above the 7000MW

• Loadshedding in the urban centers varies from 1-5 hrs a day while in rural 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 rural 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 from 2006 to 2016 was around 8 hrs a day. In rural 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 44 PKR.

From 300-600 the minimum price per unit is 72 PKR.

In Commercial (market, industry, agriculture) it varies from 48 to 96 PKR per unit.

The price got almost more than three times in the last two years.

3. Transmission Losses:

The total loss in the transmission and distribution system is approx. 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 in Pakistan is highest in Asia, which is 17%. The line loss in China is 3%, approximately 9% in India, and Bangladesh, around 12% in Afghanistan. This means out of 100 MW being produced and 17 MW being lost in lines, the cost of it to be affected by the state and consumer. Secondly, there are numerous problems in distribution system that result in 16% loss in electricity sector.

Add source against your references/facts

4. Electricity piracy

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

worst in Asia. The common pattern of electricity theft is Korcha 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 rural areas it is by agriculturist who used to theft. Moreover, there are areas in Pakistan, specially the ex-tribal areas, there is no concept of electricity bills. Pendency of bills on the government departments, free and subsidies on electricity in certain departments is also a issue.

5- Transmission Constraint

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

6- Circular Debt:

Pakistan's energy sector circular debt has jumped to Rs 5.75 trillion as of

November 2023, of which State 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 suppliers and creditors. Thus, problems in the cash inflow of one entity cascade down to other segment of the payment-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
12000MW electricity unit are installed
Capacity of dissets, more than 7000MW of
LNG, around 6500MW of coal. Diesels is most
Expensive. LNG is the second most and 3rd the
coal. Almost all the HC being consumed for

for production of electricity are imposed. All the diesel, 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 devalued 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. [EBSF] and major reasons for expensive electricity is the capacity payment made to IPPs. In summer, the demand is on the peaks as in July 2023 it was around 281000 MW while in winter it reduces 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 maximum demand. In summer the state has to purchase the maximum demand while in winter it reduces. The state has to purchase this much electricity.

The minimum. But 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 IPPs has being paid in PKR unfortunately, 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 renegotiated. 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 would be increased in Pakistan, more than 60% of electricity is produced by fuel. Thirdly, make rupee devalue. The devaluation of PKR resulted in further in the prices of electricity.

Reviewy section = 80%

Implication:

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

The price of the product is decided on the basis of the purchase of raw material, transmission cost, labor cost and the price of electricity. On one hand state has not been 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, resultingly decline in exports especially in textile, leather, sports products etc. Industry is the worst 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 digwells. Majority of those tubewells are powered by electricity. The more the loadshedding, the more the setback 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, it is not competitive in international market.

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

4. Inflation on domestic life:

Due to the rise of the buying of luxury middle class & being accounted by the electricity bill because there has been an exponential increase in per unit price of electricity. This has negatively impacted the balance of payments budget of every household. Rapidly increasing inflation affected the domestic life.

Solutions:

1. Renegotiate the agreements of IPPS.

The agreement signed in 1976, 1981, 1994, 2002 and 2005 should have been negotiated long time ago, but unfortunately decades long delay was made by the successive governments. Until 2010, when these agreements were renegotiated no one capacity payments, local IPPS would pay off in Pkr. It was a positive development but it has solve the problems mentioned by IOT. As majority of IPPS being installed in 2011 and 2014 which cannot be renegotiated till 2020.

2. install local and Cheaper electricity projects

Energy policy 2030, focuses on indigenization of electricity generation. 15000 MW of electricity would be produce from hydel project, in which diamet basha dam would add. 4500 MW by 2029, Dasu would add 4300 MW by 2027, Muhmand dam 800 MW by 2025. Karot has already started generation of 730 MW, Sulhi Kinari would 883 MW etc. Secondly increasing focus on electricity from local coal of Thaq, 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 zero percent of dependency on foreign 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 broadest network NTDC (National transmission dispatch need to be changed. Line loss and the electricity would greatly reduced.

This is a lengthy discourse for a 20 marks answer

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 cost (all price per unit).

Short conclusion

Improve the references and the paper presentation part.....