

# IPP's Challenges and Way Forward

## WAY FORWARD

**Forensic Audit:** Referring to the report on the Power Sector by the Committee for Power Sector Audit, Circular Debt and Future Road Map submitted by Muhammad Ali in March 2020, the government must conduct a forensic audit of all IPP plants by independent auditors to assess their setup costs, equity value, net dependable capacity at the time their commercial operation date and then subsequent annual NDCs, fuel efficiency, fuel procurements, profit, and return on equity etc. and take legal action through NEPRA.

**Renegotiate IPP agreements:** As per the recommendation in the Power Sector audit report by Muhammad Ali, the government should renegotiate power purchase agreements with IPPs. This involves converting dollar indexation to local currency indexation and extending debt-repayment periods to curb the escalating capacity component in power purchase prices.

**CTBCM Market:** Establish a power exchange to eliminate the government as the sole buyer and introduce a more potent multi-seller and multi-buyer market. Implement the Competitive Trading Bilateral Contract Market (CTBCM) and wheeling policy at international rates immediately.

- Wheeling power is essential for enabling wholesale competition; without it, the creation of a market remains theoretical. However, the proposed wheeling charges of Rs27.23/kWh by XWDISCOs are deemed incompatible with the competitive environment promised by CTBCM. The resolution of issues related to Stranded Cost and Cross Subsidy is crucial for determining wheeling charges.

**Restructure distribution companies (DISCOs).** To facilitate the expansion of the wholesale electricity market, we propose the gradual privatization of the state-owned power distribution network. Distribution companies should primarily focus on their core line business, while the potential for establishing small franchises for supply and distribution can be considered in the future.

- The UK's restructuring model can be applied to revive the electricity supply chain. The sweeping restructuring of the British electric power sector that took effect in April 1990 involved several different changes—vertical de-integration of generation, transmission, and distribution; horizontal de-concentration of the power generation stage; a power pool to coordinate transactions between generators and customers; entry into generation and new local supply arrangements; and privatization of all entities but one in the industry.
- Similarly, K-electric should also be unbundled into separate generation and distribution companies. Generation company should be in contract with CPPA-G and supply based on merit order. The exclusive rights to distribution currently held by K-electric should also be terminated and the coverage area under K-electric be divided into smaller distribution franchises to foster competition.

**Government Should Reduce taxes on Power Tariffs:** The government should reduce taxes on electricity tariffs for industrial consumers and bring them at par with regional tariffs. Removing GST could bring down industrial tariff by Rs 6.9/KWh. Announce the suspension of the Rs 7.13 tariff increase for all consumers. Set a new industrial tariff at 9 cents per unit.

**Remove Transmission Constraints:** There is insufficient transmission capacity to transmit the entire 100% installed capacity, leading to power interruptions. The State of Industry Report 2021 reveals that the National Transmission and Dispatch Company (NTDC) deviates from the Economic Merit Order (EMO) due to system constraints. In the wholesale market, these congestion and constraints pose significant financial implications for market participants. Addressing these issues ensures a more stable and economically efficient power transmission system.

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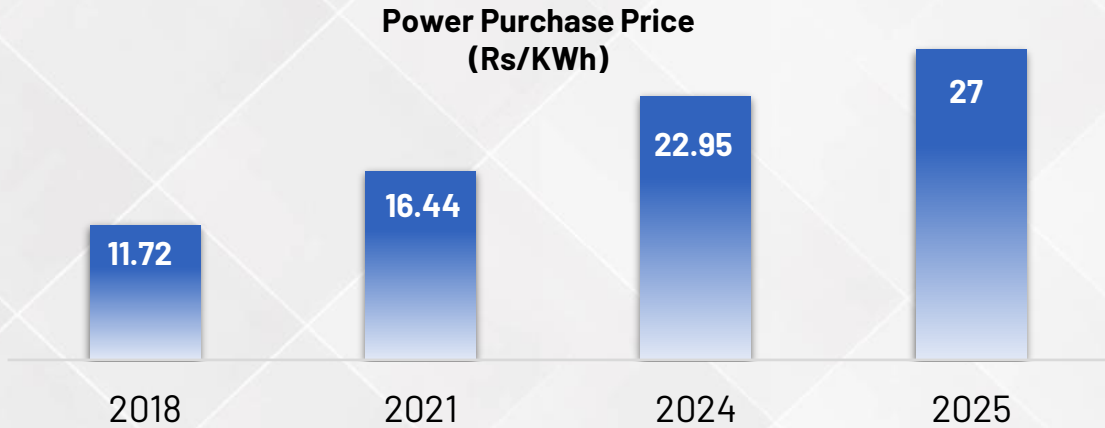
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## 1. Introduction

The government has estimated an increase of 18 percent in power purchase price from Rs 22.95/KWh in FY24 to Rs 27/KWh in FY25. Since FY 2018 power purchase price has increased by 30 percent from Rs 11.72/KWh to Rs 27/KWh respectively.

Figure 1: Rise in Power Purchase Price over the years

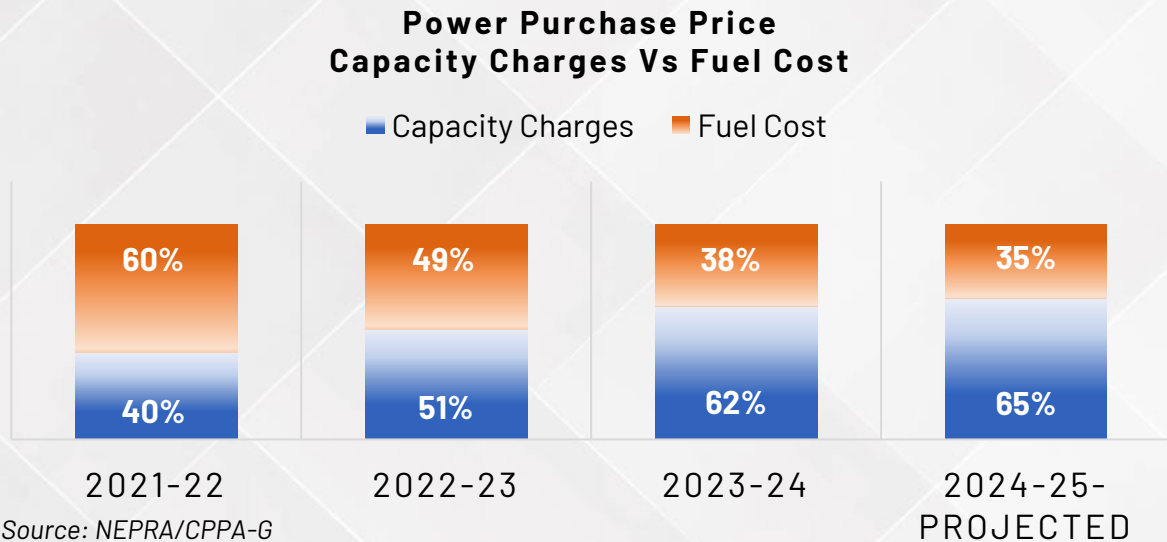


Source: NEPRA

### 1.1. Components of Power Purchase Price

There are two major components of the power purchase price. The capacity charges and the fuel cost. In recent years capacity charges have remained a major contributor to power purchase prices. However, in FY22 the capacity charges contribution was 40 percent, which increased to 62 percent in FY 24 and is projected to increase to 65 percent in FY 25.

Figure 2: Contribution of Fuel Cost & Capacity Charges in Power Purchase Price

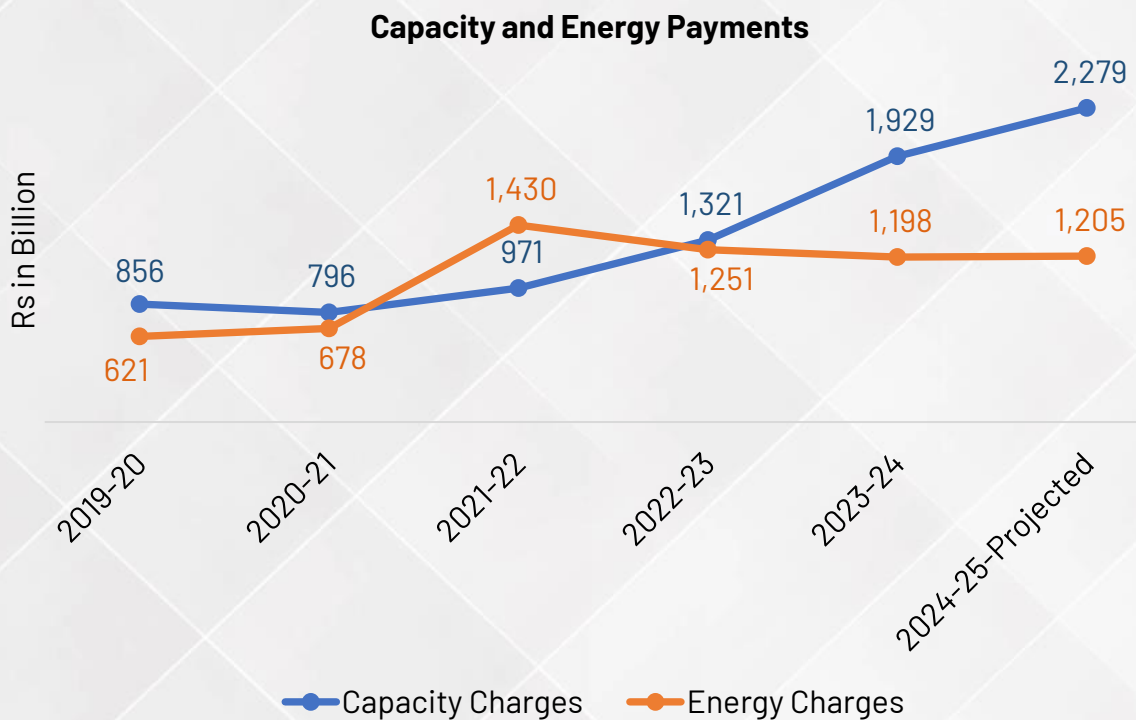


Source: NEPRA/CPA-G

## 2. Capacity and Energy Payments

In absolute terms, the total cost of electricity has increased by 22 percent from Rs 2,572 billion in FY 23 to Rs 3,127 billion in FY 24 respectively. The government has estimated a further increase of electricity cost by 11 percent in FY 25 to reach Rs3,484 billion. It is interesting to note that the increase in capacity charges has outpaced the increase in total electricity cost. The capacity charges has increased by 46 percent from FY 23 to FY 24, whereas the total increase is around 22 percent. However, fuel cost has declined by 4 percent from FY 23 to FY 24. For FY 25, the government has projected an increase in capacity charges by 18 percent and fuel cost by 1 percent respectively. Growth in the capacity component would start to tap off once IPP old agreements expire in the next 10 years.

Figure 3: Capacity & Energy Charges Trend (Rs in billion)



Source: NEPRA/CPPA-G



### 3. Installed Capacity Outlook

#### 3.1. Source-wise IPPs current and Planned

As per the Private Power and Infrastructure Board, around 100 projects have been completed having a combined installed capacity of 24,958 MW. The contribution of Gas/RLNG and RFO projects is around 56 percent of the total install capacity of IPPs. Coal projects including imported and local both contributed 29 percent of the IPP install capacity. Around 7,459 MW is planned for the next 10 years under IPP agreements. Hydel, Solar and Thar coal projects would be contributing the most in the planned install capacity.

Energy Source	Completed Projects		Upcoming Projects	
	No. of Projects	Total Installed Capacity (MW)	No. of Projects	Planned Installed Capacity (MW)
Residual Furnace Oil (RFO)	15	3,993	-	-
Gas/RLNG	19	9,867.50	1 (Low BTU Gas)	20
Hydel	4	1,053	13	5,456.03
Imported Coal	3	3,960	1	300
Thar Coal	5	3,300	1	1,320
Bagasse	8	259.10	1	32
Solar PV	10	680	5	231.79
Wind	36	1,845.47	2	100
<b>Total</b>	<b>100</b>	<b>24,958.07</b>	<b>23</b>	<b>7,459.82</b>

Source: Private Power & Infrastructure Board (PPIB) (Updated as on February 20, 2024)

#### 3.2. Retiring IPPs by 2034

In the next 10 years around 18 IPPs Power Purchase Agreements are set to expire. These IPPs are mostly based on imported fuels. Moreover, furnace oil-based GENCOs tend to retire in the next 10 years, which may reduce our burden on imported fuels.

			Retirement Year (FY)											
Power Station	Installed Capacity MW	Fuel Type	24	25	26	27	28	29	30	31	33	34	Rationale	
Jamshoro-I UI	250	RFO						✓					GENCOs Retirement	
Jamshoro-II U4	200	RFO						✓						
Muzaffargarh-I U1	210	RFO										✓		
Muzaffargarh-I U2	210	RFO										✓		
Muzaffargarh-I U3	210	RFO										✓		
Muzaffargarh-II U4	320	RFO										✓		
Guddu-II U	620	Gas										✓		
KAPCo	1300	RLNG				✓							Network Constraints	
Liberty	235	Gas					✓						PPA Expiry	
HUBCO	1,292	RFO				✓								
Kohinoor	131	RFO				✓								
AES Lalpir	362	RFO						✓						
AES Pakgen	365	RFO						✓						
FKPCL	157	RLNG								✓				
Saba	136	RFO							✓					
Uch	586	Gas								✓				
Rousch	450	RLNG									✓			
Altern Energy Ltd	31	RLNG							✓					
AGL	163	RFO										✓		
BQPS1-U1	210	RLNG	✓											
BQPS1-U2	210	RLNG	✓											
BQPS1-U5	210	RLNG			✓									
BQPS1-U6	210	RLNG									✓			
GAEL	136	RFO		✓										
TPL	126	RFO		✓										

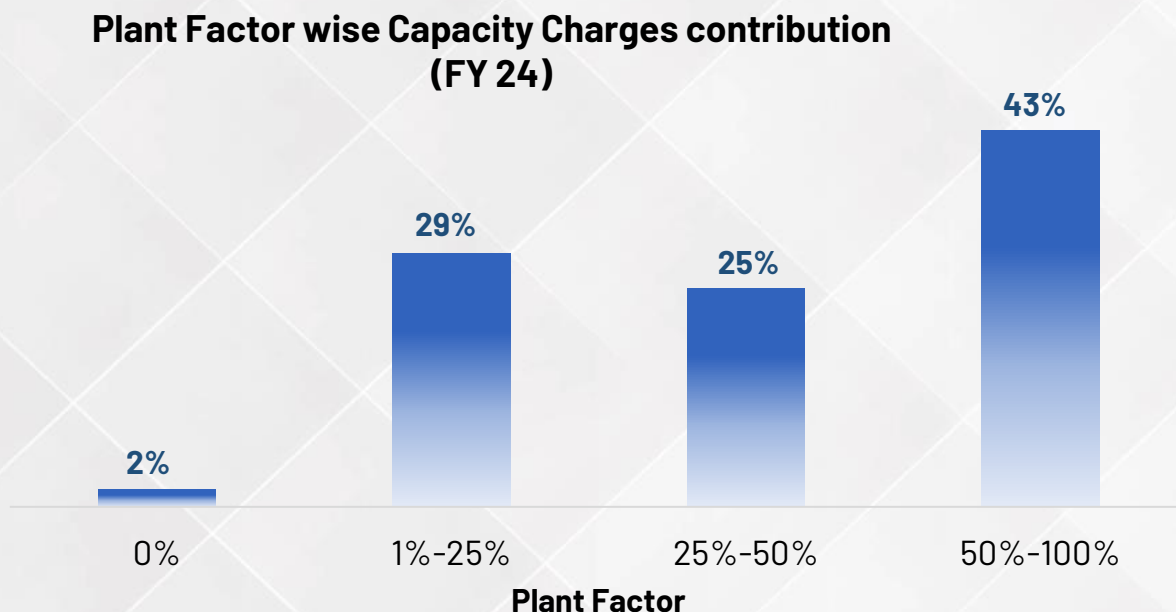
Source: ICGEP NTDC

#### 4. Circular Debt & Plant Wise Capacity Charges Contribution

The circular debt of the country's energy sector has reached Rs5.422 trillion, capacity payments to IPPs have jumped to Rs 1.9 trillion, while the payable amount of Chinese power producers under China Pakistan Economic Corridor (CPEC) is hovering around Rs 511 billion. Principal circular debt of the petroleum sector stands at Rs 2300 billion, while for the power sector, it has accumulated to Rs 2400 billion. With interest, the circular debt of the petroleum sector is Rs 3.022 trillion, which takes the total to Rs 5.422 trillion.

The plant factor, also known as the capacity factor, calculates the difference between the amount of electricity a power plant actually produces over a certain time period and the maximum amount it could create if it ran continuously at its rated capacity during that same time. As per NEPRA's quarterly adjustment notifications FY 24 for capacity payments, the power plant-wise analysis revealed that capacity payments for plants having less than 25 percent plant factor contributes 29 percent to the total capacity charges, and plant factor (25-50%) contributes to 25 percent respectively. Therefore, due to IPP "Take or Pay" agreements capacity charges are being paid to those power plants which do not operate even on 50 percent of their actual output.

Figure 4: Plant Factor-wise Capacity Charges Contribution (FY24)



Source: NEPRA Quarterly Adjustment Notifications

#### 5. Conclusion

IPPs reforms discussed in this brief would help encourage domestic investments and would enhance industrial production, thereby boosting much-needed exports. Tariff rationalization would create industrial competitiveness, generate employment and induce long term economic growth. This is certainly not all that is needed—far from it. Nonetheless, the measures highlighted here can make a significant impact toward resolving Pakistan's immense energy shortages.