

Deconstructing Circular Debt

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KEY MESSAGES

1. Continuous buildup of the circular debt, which stands at an all-time high of 5.2% of GDP, poses a threat for the country's energy security and consumer welfare.
2. The average cost of producing a unit of electricity is Rs. 21 while less than Rs. 14 is recovered in cost. This implies Rs. 7 goes in circular debt for each unit produced.
3. The cost-based tariff model provides a cover for the inefficiencies of the state-owned DISCOs as well as the distortions created by the power purchase agreements.
4. So far, no significant initiative has been taken to undermine circular debt by transitioning towards a greener energy mix as envisaged in PTI's manifesto.
5. Pakistan's power sector distortions cost the economy \$18 bn or 6.5 percent of GDP in 2015.
6. The recent increase in electricity tariff for end-consumers is yet another wake-up call that the country's power sector is in need of urgent reforms.
7. The power sector reforms must go beyond liberalizing energy prices to address several aspects such as losses, technical and operational inefficiencies, poor power infrastructure, centralized power market and the mounting circular debt.

INTRODUCTION

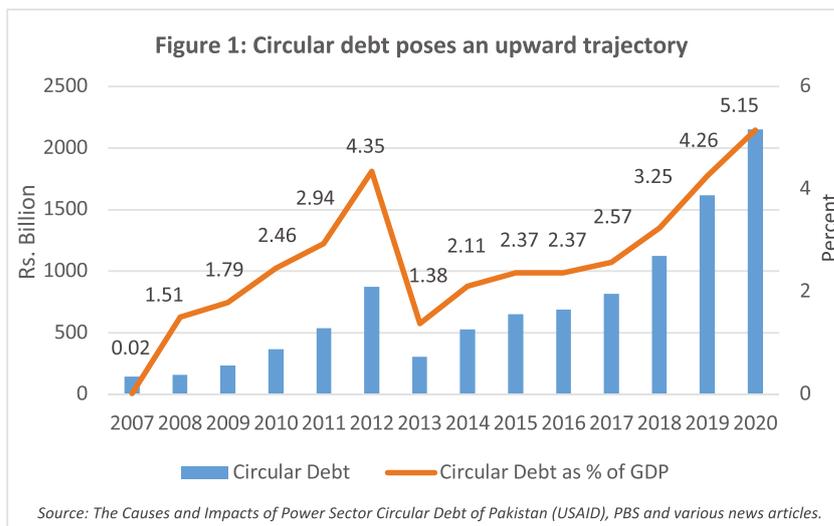
In a well-functioning system of electricity supply, distribution and consumption, there should not be any long-term liabilities. Systematic losses should be minimal, tariffs should be harmonized and payments should be made timely. However, when losses are high and some customers do not or cannot pay total cost of electricity, it leads to revenue shortfall for distribution companies which leads to a shortfall in the payment to producers creating circular debt. Pakistan saw first major episode of circular debt in 2007 which has only grown since then, hovering at 5.2% of GDP currently.

The incumbent PTI government promised in its manifesto that it would "solve the circular debt issue by reducing transmission and distribution losses, and implementing a plan to harness country's natural resources towards a greener energy mix." In this backdrop, this report briefly analyzes the trend of circular debt, examines underlying factors, reviews progress on power sector reforms and proposes some policy suggestions to contain circular debt.

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CIRCULAR DEBT: TREND ANALYSIS

Pakistan's circular debt has witnessed an increasing trend over the last 14 years (see Figure 1). Despite a one-time bulk payment of Rs. 480 bn in 2013, the situation did not improve as envisaged. By the end of FY20, circular debt stood at Rs. 2.15 tn or 5.2 percent of GDP. As of November 2020, the power sector payables have reached an all-time high of Rs. 2.3 tn² (see Figure 7) which is 5.5 percent³ of GDP. It is further expected to increase to Rs. 2.8 tn⁴ by the end of FY21 and Rs. 4.9 tn⁵ by FY25. It is pertinent to note that since 2018, circular debt grew by a staggering 91 percent which raises questions regarding factors that continue to fuel power sector's payables. These factors have been discussed in the following section.

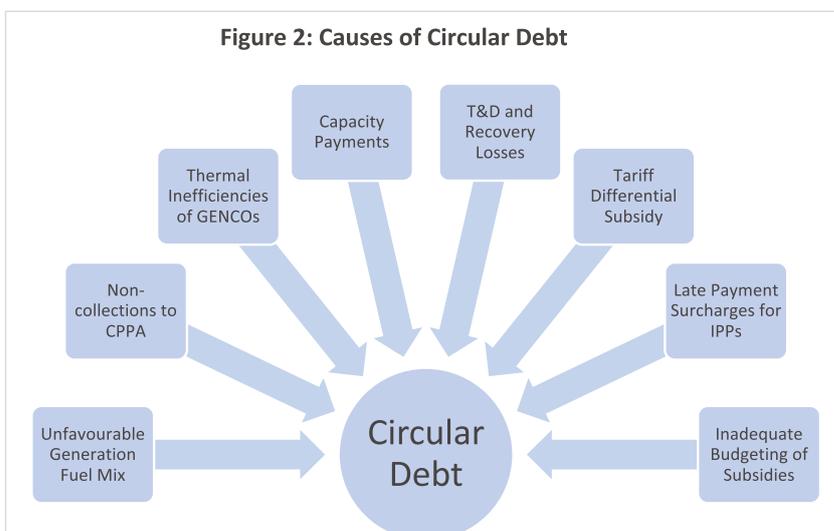


CAUSES OF CIRCULAR DEBT

Several factors have been responsible for the rising circular debt (see Figure 2). Some of these have been briefly discussed as under:

i) Tariff Differential Subsidy: Tariff Differential Subsidy is a subsidy that is provided to Distribution Companies (DISCOs) in order to cover the difference between the National Electric Power Regulatory Authority (NEPRA) approved tariff schedules and the uniform tariff schedule notified by the Ministry of Water and Power (MoWP).

It was government's tariff differential subsidy that caused the debt buildup which was accompanied by other factors such as high international oil prices and rupee depreciation. Subsequently, the end-consumer tariffs were insufficient to cover the production cost of electricity, causing a fall in the revenues of power generating companies (GENCOs) and DISCOs. The liquidity crunch spread up the supply chain affecting Independent Power Producers (IPPs) also. The delayed payment or non-payment of subsidies by the government compelled the DISCOs and IPPs to reach out to the commercial banks



2 Govt set to raise power tariff in January: SAPM. The Express Tribune. Retrieved: <https://tribune.com.pk/story/2280212/govt-set-to-raise-power-tariff-in-january-sapm>

3 Author's estimate based on the data from SBP.

4 Power price hike. Dawn. Retrieved: <https://www.dawn.com/news/1603039>

5 Sherani, S. (2021). Pakistan's Power Sector Circular Debt - Causes, Consequences, Remedies. An Issues Paper. Macro Economic Insights (Pvt) Ltd, Islamabad.

for liquidity which further aggravated the crisis.

It is pertinent to note that the power tariffs set by NEPRA are on cost plus regulatory return basis. Such a cost-based model provides a cover for the inefficiencies of the state-owned DISCOs as well as the distortions created by the power purchase agreements. The cost-based tariff structure coupled with the government's decision to subsidize the power sector has increased the un-competitiveness of GENCOs and DISCOs who then transfer the cost of their inefficiencies onto the consumer in the form of increases in end-consumer tariff.

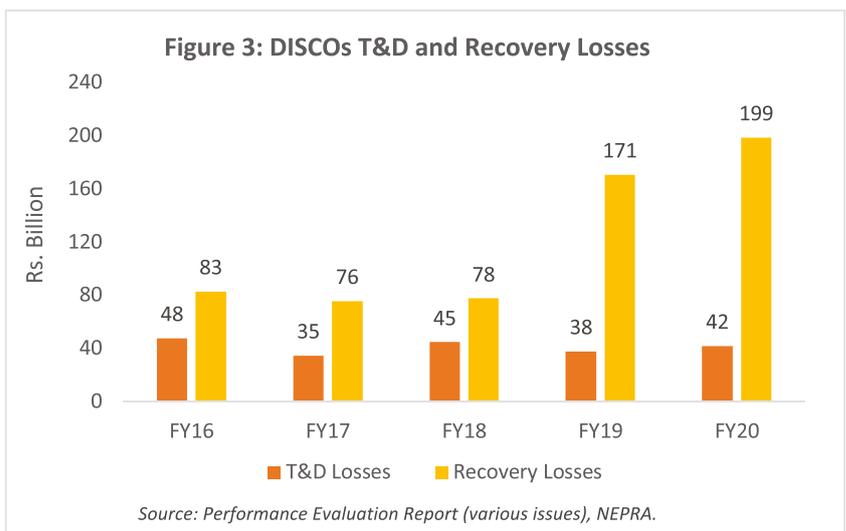
ii) Transmission & Distribution Losses: Substandard power infrastructure has resulted in Transmission & Distribution (T&D) losses for the DISCOs. Although these losses are inevitable, they continue to breach NEPRA's set threshold. As evident from the figure 3, the T&D losses continue to remain in double digits. Resultantly, financial health of DISCOs as well as the power industry remains weak. It is pertinent to mention that Pakistan has an adequate generation capacity of 37,402 MW⁶, which by far exceeds its current demand, but the substandard transmission system is capable of distributing only 26,000 MW⁷.

iii) Recovery Losses: Non-collection of bills and dues from private consumers and government termed as 'Recovery Losses' is another major cause of rising circular debt. Figure 3 reveals the recovery losses by DISCOs over the last five years. Despite continuous regulatory directions from NEPRA to DISCOs, recovery losses have continued to surge. It is pertinent to note that the average recovery ratio for the DISCOs was 87.71 percent in FY18 and 90.25 percent in FY19 which decreased to 88.77 percent in FY20.⁸

The recovery losses have been driven by high electricity tariffs for end-consumers which has reduced the affordability of electricity and has increased the consumption cost. Consequently, many consumers are compelled to evade the payment of bills (thus reducing the revenues of DISCOs) and resort to illicit means of acquiring electricity (thus leading to electricity theft).

iv. Capacity Payments: The capacity payments which are essentially the fixed cost of power producers have largely been adding to the circular debt. These are the charges that must be paid to the generators even if the electricity is not produced. Capacity payments are a consequence of Take or Pay⁹ contract regime that is prevalent in our power sector. This was introduced an incentive to encourage

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⁶ How can Pakistan resolve its power sector woes? The Express Tribune. Retrieved: <https://tribune.com.pk/article/97282/how-can-pakistan-resolve-its-power-sector-woes>

⁷ Pakistan Economic Survey 2019-20, Ministry of Finance.

⁸ State of Industry Report 2018, 2019 and 2020. NEPRA.

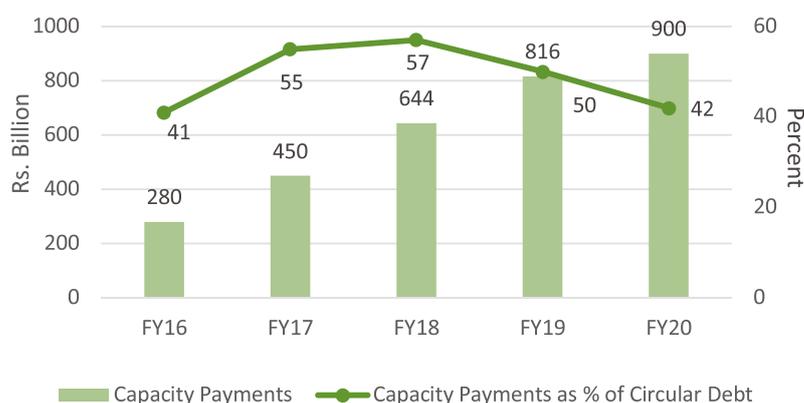
⁹ A take-or-pay clause is essentially an agreement whereby the buyer agrees to either: (1) take, and pay the contract price for, a minimum contract quantity of commodity each year or (2) pay the applicable contract price for such quantity if it is not taken during the applicable year.

investment. These payments have witnessed a surge over the years, currently standing at Rs.900 bn or 42 percent of circular debt (see Figure 4). These are further expected to reach Rs. 1.5 tn ¹⁰ in the next two years. It is pertinent to mention that the consumers are charged in the bills for these capacity payments. Notwithstanding, these payments continue to buildup. There are various reasons as to why these payments are not decreasing. One of them being the low recovery ratio - which is the ratio between the realized amount and the billed amount. This ratio has decreased from 90.25 percent to 88.77 percent in FY20. This implies that 11.2 percent of the consumers have not paid their dues including their share of capacity charges. Regardless, the burden of capacity payments is borne primarily by the consumers who are often a victim of revenue-based load-shedding ¹¹ which reduces their welfare.

Even before the onset of the pandemic, overcapacity (lower capacity utilization) has been an issue in Pakistan's electricity market. Slow economic growth prior to Covid-19 meant that power demand (electricity consumption) was lower than the generation capacity (see Figure 5), while the latter has been lower than the installed capacity (see Figure 6). Consequently, the excess capacity stored in power generators of IPPs is what the government is liable to pay for under the head of capacity payments. With a stagnant demand

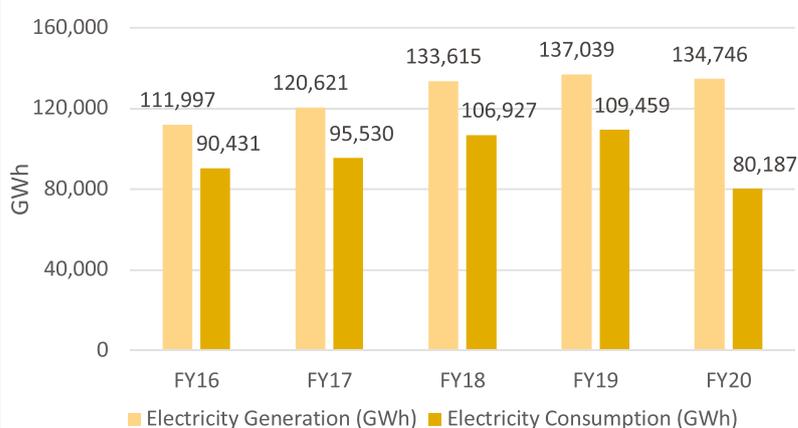
on account of Covid-19, Pakistan's installed capacity of electricity is expected to increase to 41,335 MW ¹², which will result in higher capacity payments due to lower plant utilization and therefore a further increase in power tariff. It should be noted that the cost of producing a unit of electricity is Rs. 21 on average, while less than Rs. 14 is recovered in cost. This implies Rs. 7 goes in circular

Figure 4: Capacity payments continue to surge



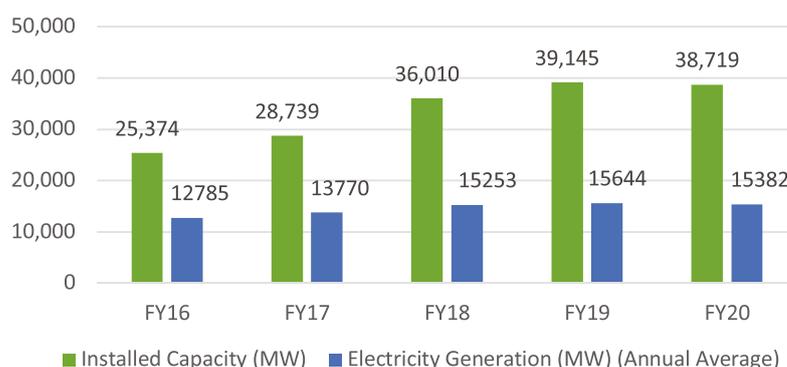
Source: Capacity payments projected at Rs.1.5 tn, Express Tribune and Capacity payments nearing trillion rupees, Business Recorder.

Figure 5: Electricity Generation vis-a-vis Consumption



Source: NEPRA and Economic Survey of Pakistan, Ministry of Finance.

Figure 6: Installed Capacity vis-a-vis Generation



¹⁰ Capacity payments projected at Rs1.5tr. The Express Tribune. Retrieved:

<https://tribune.com.pk/story/2251162/capacity-payments-projected-rs1-5tr>

¹¹ Revenue-based load shedding is a phenomenon practiced by the DISCOs in which load shedding is done in areas that generate low revenues for these companies.

¹² Pakistan's installed power capacity soars. The Express Tribune. Retrieved:

<https://tribune.com.pk/story/2242155/2-pakistans-installed-power-capacity-soars>

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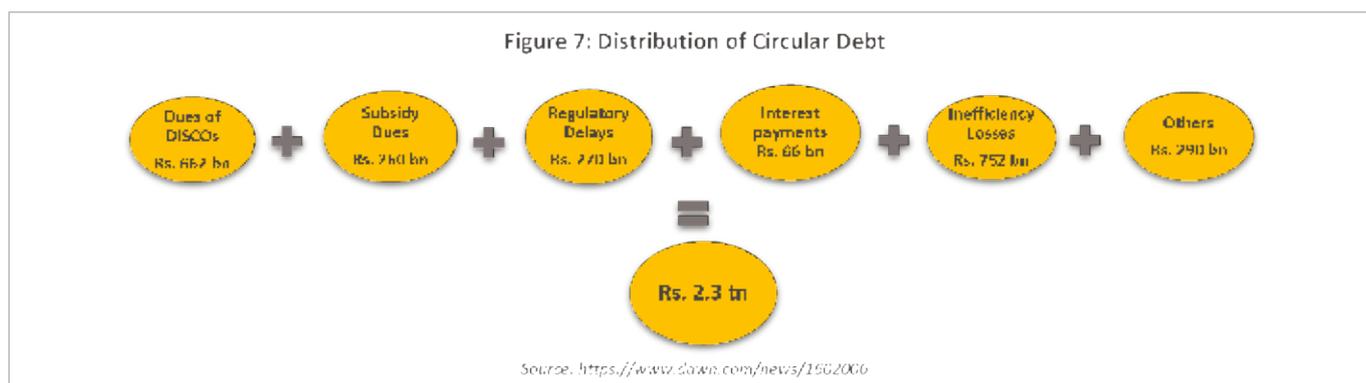
debt for each unit of electricity produced.¹³ Therefore increase in generation capacity will further fuel the circular debt.

v. **Governance Issues:** Delays in tariff determination, its notification and lags in fuel price adjustment have also contributed to circular debt.¹⁴ As per a study by PIDE¹⁵, IPPs get paid for the electricity they have not even generated owing to the ‘Take or Pay’ agreements resulting in high generation cost. The flawed governance structure has therefore been one of the prime factors behind accentuation of circular debt.

POWER SECTOR REFORMS

The history of power sector reforms dates to 1992 following a period of severe power outages. Since 2005, only one DISCO has been privatized which is K-Electric, a vertically integrated power company. Due to financial and political instability, power sector’s reforms have been a victim of major disruptions. As per the World Bank’s report¹⁶ in 2015, Pakistan’s power sector distortions cost the economy \$18 bn or 6.5 percent of GDP. The situation has not changed much since then. This is evident from a recent paper issued by Macro Economic Insights¹⁷ according to which, government’s budgetary support to the power sector has reached Rs. 3.2 tn.

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13 Pakistan’s Power Policies—Ensuring Access and Affordability webinar. Prime News.

14 Detailed discussion on this can be found in PRIME Analytical Report (2016), ‘Circular Debt: State Incentives or Market Rules’, Issue 7, Vol 1. Available at: <https://primeinstitute.org/circular-debt-2016/>

15 Malik, A. (2020). Circular Debt- an Unfortunate Misnomer. PIDE Working Papers. No. 2020:20

16 Zhang, Fan. 2019. In the Dark: How Much Do Power Sector Distortions Cost South Asia?.

South Asia Development Forum; Washington, DC: World Bank. © World Bank.

<https://openknowledge.worldbank.org/handle/10986/30923>

17 Sherani, S. (2021). Pakistan’s Power Sector Circular Debt. An Issues Paper. Macro Economic Insights (Pvt) Ltd, Islamabad.

Government to revive stalled power sector reforms

The incumbent PTI government is in the process of reviving power sector reforms and decelerating the pace of circular debt which represents quasi-fiscal risk. In this regard, certain initiatives have been undertaken as outlined in the Table below:

Table 1: Power Sector Reforms under PTI Government

| INITIATIVE | REMARK |
|--|---|
| 1. The PTI-led government has formed a Competitive Trading Bilateral Contract Model (CTBCM) ¹⁸ in order to facilitate competitive tariff setting. The model is expected to come into force in the next 18 months. | There is a general perception around the competitive trading bilateral contract model being a facade that may not necessarily promote competition as it does not address affordability and availability of power. Nonetheless, all eyes remain set on the progress of this measure in the hopes that it would actually reduce the end-consumer tariffs. |
| 2. A holistic plan has been devised to decentralize the power sector. In this regard, a province-led Public-Private Partnership model ¹⁹ has been proposed under which the assets and 100 percent equity ownership of all nine DISCOs will be transferred to the respective provincial governments starting with Punjab for Re1 notional payment. | The stipulated timeframe for the culmination of the reform is said to be 'within 3 years' ²⁰ . In the light of Pakistan's reform history, this timeframe seems overambitious for achievement of a holistic reform. Moreover, Sindh and Balochistan may resist this decision due to high losses of respective DISCOs. |
| 3. Recently, government has announced a 15 percent increase in electricity tariff applicable to all consumers which translates into Rs. 1.95 per unit ²¹ as a means to tackle the circular debt. | The increase in end-consumer tariff might decelerate the pace of increase in circular debt however, it is not a long-term and viable solution to power sector's ailments. |
| 4. In order to curb capacity payments, government is negotiating with the sponsors of upcoming generation projects of 10,000 MW for staggering their timelines to provide "breathing space for consumption and payments" as well as changing the terms of existing power-purchase agreements. ²² | These are steps in the right direction, if successful, it would significantly reduce the burden of capacity payments and end-consumer tariff. This negotiation is expected to reduce the burden on national exchequer by saving Rs. 856 bn ²³ over the next twenty years. |
| 5. The government has decided to transfer K- Electric's majority shares to Shanghai Electric under the China-Pakistan Economic Corridor (CPEC). ²⁴ | On a positive note, K-Electric has withdrawn the principle of reciprocity from its TORs to resolve the financial disputes it had with the government entities. ²⁵ Once the local arbitration resolves the issue surrounding the receivables and payables, the process to sell K-Electric to Shanghai Electric Power will be completed. |

¹⁸ Power sector reforms to save Rs300b. The Express Tribune. Retrieved:

<https://tribune.com.pk/story/2273316/power-sector-reforms-to-save-rs300b>

¹⁹ Plan to decentralise power sector. Dawn. Retrieved: <https://www.dawn.com/news/1585720>

²⁰ Ibid.

²¹ Power sector awaits reform. The News. Retrieved:

<https://www.thenews.com.pk/tns/detail/782458-power-sector-awaits-reform>

²² Power price hike. Dawn. Retrieved: <https://www.dawn.com/news/1603039>

²³ Govt estimates IPP talks could save Rs856bn over next decade. Dawn. Retrieved:

<https://www.dawn.com/news/1581527>

²⁴ Major restructuring package for power sector planned. Dawn. Retrieved: <https://www.dawn.com/news/1585314>

²⁵ K-Electric surrenders principle of reciprocity, int'l arbitration. The News. Retrieved:

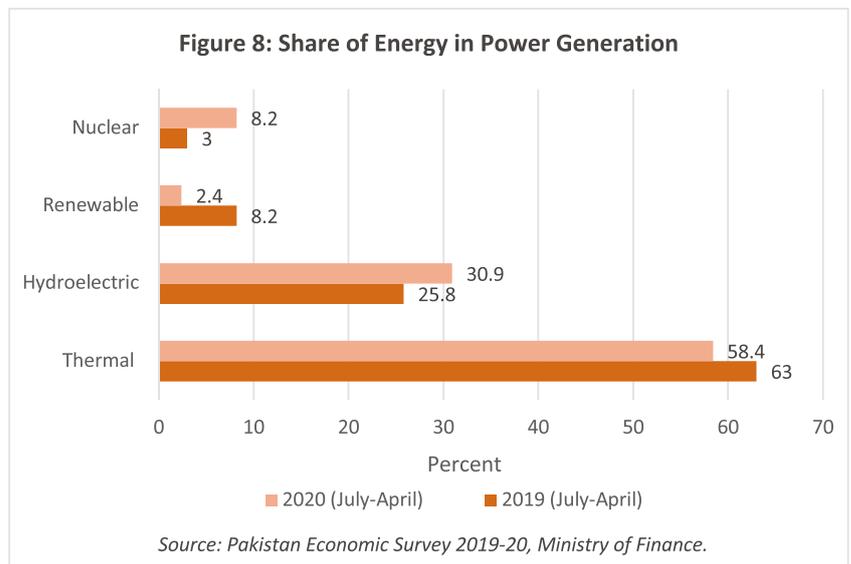
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of fact, the share of renewable energy has decreased from 8.2 percent to 2.4 percent during the period under review (see Figure 8).



It is pertinent to mention that so far, no significant initiative has been taken to undermine circular debt by transitioning towards a greener energy mix as envisaged in PTI's manifesto. Thermal electricity still holds the largest share in power generation, standing at 58.4 percent. As a matter

CONCLUSION

Pakistan's circular debt is not merely affecting the liquidity of the investors in the power supply chain but is also increasing the cost of electricity for the end-consumer. Continuous buildup of the circular debt, which stands at an all-time high of 5.2% of GDP, poses a threat for the country's energy security and consumer welfare. Consequently, the incidences of electricity theft and non-payment of bills have been increasing, translating to high recovery losses. Despite surplus power generation capacity, poor transmission infrastructure has resulted not only in hefty transmission and distribution losses but also in power outages. The load-shedding is resulting in

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under-utilization of 'Take or Pay' power plants owing to which the per unit cost of electricity as well as the capacity payments are increasing. These factors coupled with governance issues and unfavorable generation fuel mix is adding to power sector's circular debt which

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currently stands at Rs. 2.3 tn and is expected to increase to Rs. 4.9 tn by FY25. The recent increase in electricity tariff for end-consumers is yet another wake-up call that the country's power sector is in need of urgent reforms. Although the federal government is making efforts to reduce capacity payment liabilities and is planning to introduce a long overdue competitive market regime, the way out of power sector's ailments is a holistic policy approach. This approach must go beyond liberalizing energy prices to address several aspects of the power sector distortions such as losses, technical and operational inefficiencies, poor power infrastructure, centralized power market and the mounting circular debt.

RECOMMENDATIONS

For the government to successfully resolve the issue of circular debt and undertake power sector reforms, there are a few policy options that may facilitate the process:

- **Upgrade Power Infrastructure:** Government should invest and facilitate private and foreign companies to invest in improving the transmission and distribution network of power sector. Without upgrading the infrastructure, the transmission and distribution losses – one of major causes of circular debt- cannot be minimized.
- **Improve Governance:** Without effective governance, no reform ever materializes. Since effective governance is imperative to curb power theft and recovery losses, it is high-time that the power sector reforms make improvements in governance a top priority by strengthening the transparency, autonomy and technical expertise of NEPRA and ensuring effective coordination between different players in the supply chain.
- **Continue Negotiations with Power Producers:** Given the existing 'Take or Pay' contractual structure, it is not easy for the government to reverse the contract unilaterally. Therefore, an alternative is to continue negotiations with the new and existing power producers. Some of these negotiations are already under process and are a step in the right direction.
- **Switch to Renewable Energy:** A switch of focus towards smaller, modular renewable energy additions can help reduce the risk of overcapacity whilst avoiding an increase in capacity payments.
- **Re-evaluate Power Subsidies:** It is high-time that the government re-evaluates the power subsidies and replaces the cross-subsidies with performance-based or targeted subsidies which will not only reduce the burden of circular debt but would also provide relief to the national exchequer. If the government wants to provide relief to the low-income consumers then a better option is to directly provide subsidies to the consumers rather than providing it to the IPPs.
- **Prioritize Use of Efficient Plants:** In order to reduce production cost and end-consumer tariffs, it is pertinent that the cost-effective production units are utilized first. Specifically, LNG-based power plants should be given a priority over furnace oil- or diesel-based power plants since it has a lower per unit cost.
- **Replace Cost-based Tariff with Bid-based Model:** The existing cost-based tariff model is a demand suppressing model based on an incremental block tariff which increases with consumption. This model needs to be restructured, preferably by replacing it with a bid-based model where the tariffs are determined through bids by sellers and buyers. However, a pre-requisite for this is a transition towards a competitive power market.
- **Minimize Recovery Losses:** This can be achieved not only through improved governance but also through improved technical efficiency via for instance, use of prepaid meters.