Financial Sustainability of Power Distribution Companies (DISCOMs): Challenges and Solutions

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1. Introduction

Overview of DISCOMs in India

DISCOMs refers to "**Distribution Company**". It is responsible for the power distribution to consumers, it functions like a middleman, buys electricity from the producers, and then sells it to the consumers. The electricity distribution sector is crucial in ensuring the country's energy security. In India, most DISCOMs are state-owned which supply around 80 % of power, there are some private players as well in this sector. Despite its importance, this sector is suffering from financial and operational challenges hindering its sustainability. This article analyses the current situation of DISCOMs with an overview of its economic health in which it suffers from issues like AT&C Losses, lack of adequate investments, and metering issues followed by Non-cost reflective tariffs, regulatory challenges, infrastructure deficiencies, Revenue, Planning, and Pricing Challenge. Government in response to all these challenges has installed many initiatives such as the **Ujwal DISCOM assurance yojana (UDAY)**, **Financial Restructuring Plans**, Recent Reforms, and Legislative Changes. All these reforms are being implemented to pull DISCOMs up from the financial losses. This article will lead to the potential solutions to improve the economic sustainability of power distribution companies. A strategic approach is needed to navigate towards the secure future.

2. The current state of DISCOMs

I. Overview of Financial Health

In the fiscal year 2022–23, state-owned, public electricity distribution companies had collectively accumulated losses approximately of Rs. 6.8 lakh crores[1]. Since 2015–16, losses have been increasing at an average annual rate of 10%[2]. If this trend continues, consumer tariffs are projected to rise by 20% annually over the next decade; even with significant efficiency improvements in the next five years, tariffs would still need to double merely to recover past losses, making such increases economically unviable It also contributes to liabilities undertaken to finance DISCOM operations. In March 2023, Tamil Nadu DISCOM reported losses of over Rs. 1.6 lakh crores and DISCOMs in Uttar Pradesh and Rajasthan reported losses of over Rs. 90,000 crores each[3].

[1] Vipra, Tanvi. "What is Fuelling Power Sector Losses?" *Prsindia.org*, 10 May 2024

[2] Electricity Distribution Companies: Understanding Present Challenges and Shaping Future Opportunities.*National Institute of Public Finance and Policy New Delhi*, Ann Josey Shantanu Dixit Manasi Jog Sreekumar Nhalur.

[3] National Institute of Public Finance and Policy New Delhi.

DISCOMs have seen four major financial bailout packages since 2001 and a scheme was contingent on many conditions for improvement in the operational performance of DISCOMs. The last financial restructuring package Ujwal DISCOM Assurance Yojana (UDAY) was to facilitate the takeover by the state governments of the mounting liabilities of DISCOMs from commercial banks and other lending institutions. Despite the scheme, the loss build-up has been substantial. There are significant government support provided to ensure the financial viability and efficient operations of DISCOMs every year.

a. Revenue Subsidies

It is provided to ensure that certain consumer segments, mainly agricultural consumers and domestic consumers, can obtain power free of cost or at concessional rates. The support amounted to Rs. 1.66 lakh crore for all state-owned DISCOMs in 2022-2023. It amounts to about 18% of the revenue required by the DISCOMs. The support is as high as 40 to 50 percent of DISCOM expenses in Karnataka and Madhya Pradesh.

b. Grants or Equity Infusion

This focuses on the timely and necessary capital investments, the majority proportion are central sector grants under electrification and network strengthening schemes, such as **Deen Dayal Upadhyaya Gram Jyoti Yojana**[4], **Integrated Power Development Scheme**[5] and **Revamped Distribution Sector Scheme (RDSS)**[6]. Under this grant a total of 1.4 lakh crores was provided to DISCOMs in 2022-23 by central and state agencies.

c. Annual Loss Takeover

Most of the states have agreed to power sector reforms under which the borrowing limit is relaxed under the **Fiscal Responsibility and Budget Management (FRBM) scheme**. As part of the power sector reforms and while participating in the Centrally Sponsored RDSS scheme, some state governments have agreed to take over the losses incurred each year by DISCOMs. An aggregate of Rs. 23,000 crores of annual losses were taken over across DISCOMs in 2021-22, as reported in the 12th Annual Integrated Rating and Ranking of DISCOMs[7]. This nearly doubled in a year to Rs. 43,600 crores by 2022-23. The bulk of the takeover was in Tamil Nadu, Uttar Pradesh, Rajasthan, Bihar, Telangana and Andhra Pradesh where cumulative loss quantum is significant. The aggregate annual loss of state-owned DISCOMs are comparable to

[4] Deen Dayal Upadhyaya Gram Jyoti Yojana." *National Portal of India*, 31 May 2016.
[5] "About IPDS." *Integrated Power Development Scheme(IPDS)"*
[6] "Overview | Government of India." *Ministry of Power"*
[7] Press Release: Press Information Bureau." *Press Release: Press Information Bureau*, 11 March 2024

68% of the aggregate revenue deficit of state budget 2022-2023. There is a huge variation in the extent of losses across states. If the state government takes over annual losses, the impact on state finances would be significant.

3. Key Challenges Facing DISCOMs

The recent trends have resulted in a new set of financial issues for DISCOMs. One of them is the fact that consumers accounting for about 40% of DISCOM sales, have the technology option, legal eligibility, supporting framework, and economic incentive to reduce their dependence on DISCOMs and source power from non-DISCOM sources[8].

a. The technology option

Renewable energy that comes from natural sources is modular, scalable, and low-cost. Unlike coal, it does not require large investments, has shorter gestation periods, and has no fuel risk. Most of the cost is for capital works in a competitive, technology-intensive industry, which makes it inflation-resilient.

b. The economic incentive

Commercial and Industrial (C&I) consumers pay about Rs. 8 per unit of energy supplied. Even after paying various applicable charges and duties, third-party consumers and captive users save 5% and 35%, respectively, in comparison with the DISCOM tariff [9].

c. The eligibility

Only consumers with demand greater than 1 MW were eligible for supply via third-party contracts or captive investments. The Green Energy Open Access Rules were notified, reducing the eligibility limit to 100 kW for third-party Renewable Energy contracts. All consumers became eligible to set up RE captive plants and use the DISCOM network.

d. The support framework

To ensure reliable supply, DISCOMs provide crucial services, especially the provision of network services, standby power, and banking (where surplus renewable energy is injected by consumers at one time and at the same time, the equivalent energy is drawn from the DISCOM). Without such services, consumers would not have a choice of supply from alternative sources. Often it is observed that DISCOM provide such services on concessional rates and do not recover the full costs of such services.

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[8] Indian Electricity Distribution Companies Amidst Churn: Understanding Present Challenges and Shaping Future Opportunities. *Prayas*, Ann Josey, Shantanu Dixit, Sreekumar Nhalur, and Manasi Jog, 12 Feb 2024.

[9] National Institute of Public Finance and Policy New Delhi.

For consumers, the ability to choose their supplier offers a range of benefits, enabling active engagement in the market and the discovery of competitive prices. For DISCOMs, these developments introduce a trifecta of challenges that may adversely impact their financial standing in the medium term:

1. **Revenue challenge**

   Now that DISCOM consumers accounting for about 40% of sales can choose alternative suppliers in most states, there is the danger of significant revenue attrition from segments that pay at or more than the cost of supply and that pay promptly. Charges such as cross-subsidy surcharge, which are designed to compensate for this loss of revenue, are inadequate; moreover, they apply only to third-party open access contracts. The revenue attrition could be substantial with captive consumers, who are exempt from these charges. Many sector commentators have written about the challenge due to the loss of cross-subsidy revenue. The industrial consumers are being charged closer to the cost of supply, thus reducing cross-subsidy revenue. To compensate for the revenue loss, the state government subsidy has been increased.

2. **Planning challenge**

   Demands from consumers having multiple supply options are uncertain due to the variable nature of renewables and the durations of such contracts, which could be a day, a season, or a year. This creates challenges for DISCOMs in scheduling and dispatch, as well as in long-term power procurement planning. For DISCOMs that always planned to meet the demand of the entire state, ensuring power availability for its consumers while meeting the reliability requirements of migrating consumers imposes additional costs and risks of overbuilding.

3. **Pricing challenge**

   Consumers can choose alternate supply sources only if DISCOMs provide services for wheeling energy through their network, banking services for surplus renewable energy (RE), and standby power in case the consumer's supplier fails to provide power. The DISCOMs' business model and tariff structures do not price these services in a way that fairly compensates DISCOMs. In Karnataka, the state with one of the largest number of third-party green contracts and captive users, banking services were charged at Rs. 0.06 per unit of energy used in 2020 when the cost of banking was estimated to be 10 times high, closer to Rs. 0.6 per unit. Many other states also have highly concessional frameworks for Renewable Energy banking.

4. The role of cross-subsidy revenue and state government subsidies

For DISCOMs operating on a cost-plus basis, tariffs are set considering the average supply cost and the cross-subsidy support needed to make electricity affordable for certain consumer categories. Agricultural and Residential consumers pay less than the cost of supply, a shortfall offset by the higher tariffs paid by Commercial and Industrial (C&I) consumers. However, because DISCOMs' costs have increased, and more consumers have switched to competitively priced supply sources, the scope for cross-subsidization has diminished. Almost all regulators are now setting tariffs for industrial consumers closer to the actual, average cost of supply. 63% of DISCOM sales in ten states revealed that in 2020–21, cross-subsidy revenue constituted less than 10% of the total revenue needed by DISCOMs in seven of these states. In fact, in these states, state government subsidies constitute the majority of subsidy support. Traditionally, consumer tariffs and state government subsidies for agricultural consumers together recovered about 50% of the cost of supply in most states, implying significant cross-subsidy support[10]. However, recent trends in states such as Madhya Pradesh, Rajasthan, and Bihar show that regulators are setting tariffs at more than 80% of the cost of supply, thereby significantly reducing the need for cross-subsidy revenue and requiring a commensurate increase in state government subsidy to maintain free or low-tariff supply for agriculture. Several residential consumer segments are now contributing to cross-subsidization in Maharashtra. For example, the average cost of supply for the Maharashtra state DISCOM is about Rs. 8.45 per unit, and residential consumers using over 100 units pay between Rs. 12 and Rs. 17 per unit of power. Such reductions in cross-subsidy requirements will increase the government subsidy to overcome these challenges, DISCOMs have been discouraging third-party contracts and captive consumption through various operational, regulatory, and procedural barriers. The emergence of Green Energy Open Access Rules in 2022, technological advancements, and the increasing economic viability of storage technologies make sales migration both imminent and inevitable.

[10] DISCOM-Finance-Article_Prayas_120224

5. Global Insights: Lessons for India to Tackle Rising DISCOM Losses.

I. Encourage Privatization

The United Kindom's electricity sector has been transformed through privatization, it has also enhanced efficiency and service delivery[11]. India should also pursue a phased approach to privatizing DISCOMs including **pilot programs** in specific regions where private players are invited to operate alongside existing state-owned companies under a **mixed model framework**. This strategy could lead to better operational efficiency, improved customer service, and a reduction in the financial burdens currently placed on state-run DISCOMs.

II. Resolve the issue of legacy contracts and closure of inefficient plants.

Remedial measures sould be followed such as mentioned below

1) Close inefficient, highly polluting, end-of-life coal plants surplus to need. This will result in huge savings from fixed charge payments for such assets and will also reduce pollution and carbon footprints. It would also reduce the coal requirement from such plants and improve the load factor of the remaining more efficient thermal power plants.
2) Stop entering new PPAs with costly new subsidised thermal plants which are on the drawing board or where financial closure has not been achieved.
3) Write off stranded assets. DISCOMs are burdened with paying fixed charges for stranded capacity while the generators are protected. It is a festering issue for DISCOMs, and they could go bankrupt if they must keep paying power for capacity which is stranded.
4) A plan to either write-off or close such stranded capacity needs to be put in place through a consultation that can help DISCOMs ease their financial burden.

III. Public Private Partnership (PPP)

One of the most notable lessons comes from the public-private partnership (PPP) model that has shown significant success in Australia. A popular procurement strategy for governments, especially in the development of major economic infrastructure, PPP models has enhanced energy distribution and infrastructure investment. In India, specifically in Delhi and Odisha. **Tata Power's partnership in Delhi reduced losses from 53% to under 7% through efficient management and investment in**

[11] Steinfort, Lavinia. "The living legacy of privatisation in the United Kingdom Energy transition country struggle." *Transnational Institute*, 12 October 2023

infrastructure[12] enabling the combination of public oversight with private efficiency, allowing for better resource allocation, improved technology deployment, and enhanced operational practices.

Another example is seen in Nigeria, where the approval of funds for **DISCOM meters** illustrates the engagement between governmental and private entities to improve infrastructure[13]. India could benefit from expanding the PPP model to include more DISCOMs, with clear performance benchmarks and accountability measures to ensure effectiveness.

IV. Investment in technology and Smart Metering

The integration of advanced technology, such as smart metering, has proven to be a critical element in reducing DISCOM losses globally. For instance, smart meters provide real-time data on energy consumption, which can lead to accurate billing, better load management, and improved customer service[14]. Enhancing digital infrastructure allows DISCOMs to address issues like theft and inefficiencies more effectively. In India, adopting a **broader rollout of smart metering**, as seen in **pilot programs in Madhya Pradesh**, could yield significant revenue improvements and efficiency gains.

V. Strengthening Governance and Accountability Structures.

China's approach to maintaining financial discipline through **stringent regulatory frameworks** has proven effective in managing its state-owned DISCOMs. Indian government should focus on enhancing **regulatory oversight** and enforcing **compliance standards** for DISCOMs including **regular audits** and **publishing performance reports to the public.** Increased transparency and accountability could drive operational improvements and efficiency, thus reducing technical and financial losses at DISCOMs.

VI. Increase competition

To improve the performance of the distribution sector, increased private competition should be promoted. The Government of India could mandate discoms with high losses to either **privatise operations** or allow the entry of suitably qualified / capitalised private distribution entities willing to invest in upgrading infrastructure. Increased competition

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[12] Power Capital: Delhi discoms script a success story through 20 years of privatisation." *POWERLINE*, Ganesh Srinivasan Chief Executive Officer, Tata Power Delhi Distribution Limited, 01 09 2022

[13] Latief, Yusuf. "NERC in Nigeria issues $13.7m for DISCOM meters." *Smart Energy International*, 25 June 2024

[14] How can smart metering offset the impact of COVID-19 for DISCOMs in India?" *ICF*, Akshay Sharma, 25 11 2020

would inspire generators, distributors, and electricity supply companies to develop technologies to increase efficiency, lower costs, and increase the reliability of supply. Privatisation alone won't fix the problem. However, selling some discom areas could provide the capital infusion needed to help alleviate hemorrhaging cash deficits and repay otherwise out-of-control off-state balance sheet debt.

VII. Regulatory Reforms and Independent Oversight.

Strong regulatory frameworks are vital for ensuring the financial health of DISCOMs. Countries like Brazil have implemented regulations that support independent oversight of public utilities, promoting accountability and transparency[15]. India could enhance the autonomy of its Electricity Regulatory Commissions to ensure better governance of DISCOMs such as by **reducing political influence, facilitating privatization initiatives** will be beneficial and **Implementation of strict regulations regarding subsidy distribution can prevent financial losses associated with unpaid dues by reaching more balanced agreements with private stakeholders and social utility**[16]. This could alleviate the financial burden on DISCOMs while ensuring consumers receive reliable services.

VIII. Promote Renewable Energy Integration

The commitment of Denmark to integrating renewable energy efficiently into its grid has proved beneficiary for energy costs and sustainability[17]. India has also started a clear emphasis by the government on promoting clean energy. The **PM Surya Ghar Muft Bijli Yojana**, launched by Prime Minister Narendra Modi in February 2024, is a step in this direction. This initiative has significant potential to boost solar energy adoption across urban and rural areas in the country. The scheme provides a subsidy covering 60 percent of the cost for solar units with up to 2 kW of capacity and 40 percent for the additional cost of systems with 2-3 kW of capacity. The subsidy has been capped at 3 kW capacity. The scheme has received a positive response in a short span of time and while the current focus on residential solar units is highly impactful, introducing similar subsidies for commercial, industrial, and agricultural consumers would accelerate clean energy adoption. Special incentives for small businesses and farmers could drive greater participation and productivity. An investments in smart grid technologies and energy

[15] The core issues for regulators in India are inadequate autonomy and lack of parliamentary accountability." *CUTS C - CIER*, Vijay L Kelkar, Pradeep S Mehta, 25 April 2022

[16] Unpacking India's Electricity Subsidies." *2020 International Institute for Sustainable Development | IISD*, Prateek Aggarwal Anjali Viswamohanan Danwant Narayanaswamy Shruti Sharma, December 2020

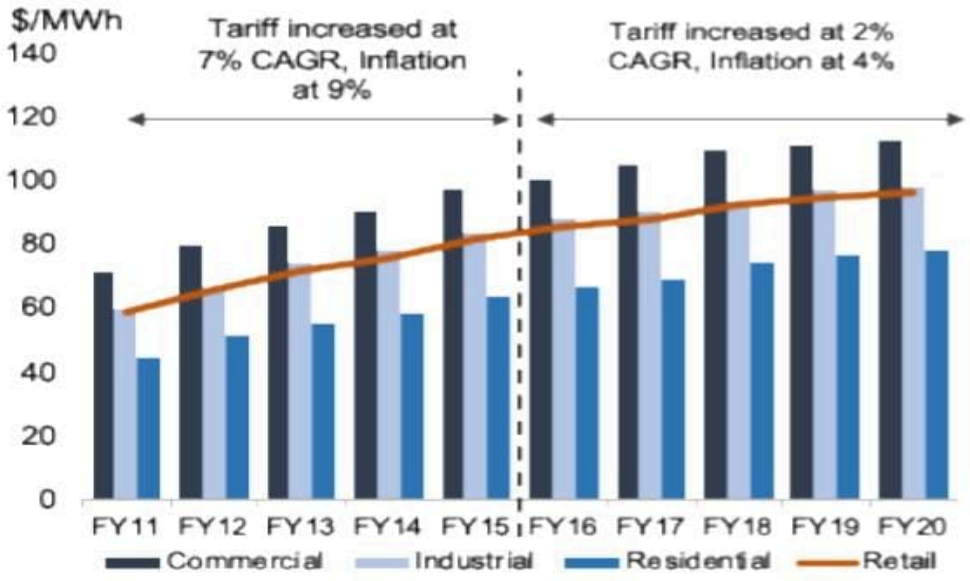
[17] Clean and renewable energy | Denmark leads the way.

storage systems are essential. Strengthening India's power grid to handle distributed energy sources will improve reliability and efficiency.

IX. Tariff Reforms

Germany's dynamic tariff system incentivizes energy savings and reflects real-time market conditions. In India **The Electricity Act of 2003 mentions** that tariffs should reflect costs. However, due to several factors such as including strong political vote-buying pressure for low tariffs, perceptions of discoms' inefficiencies, and disagreements on the accuracy of subsidy claims regulators have in general failed to allow prices to rise in line with inflation in total power supply costs over time.

National Average Retail Tariff and Consumer Price Inflation in India :FY2011-FY2020



Source: IEEFA

The above figure illustrates that tariffs have increased at rates lower than the inflation rate. States must **timely revise tariffs,** as several states have not increased their tariffs at all in the last few years.

6. Conclusion

For several years now, electricity distribution companies (DISCOMs) in India has faced serious financial losses, mostly state-owned. Between 2017-18 and 2022-23, losses accumulated. The economic health of DISCOMs in India is complex. In 2021-22, DISCOM witnessed a substantial reduction in losses, primarily because states released 1.54 lakh rupees[18] in subsidies to clear pending dues. The challenges in the power distribution sector and the need to successfully navigate the energy transition remain, ongoing technological advancements and solar rooftops can be a game-changer if developed strategically. An effective collaboration with government and private entities can solve many challenges, and a shift towards clean energy sources might offer a bright future. India can pave the way if it is systematically and strategically counters the challenge, it can develop a financially stable DISCOM ecosystem, ensuring reliable electricity access for all citizens including the low-income group while supporting the nation's economic growth.

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