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The continuing woes of power distribution companies in India and what can be done about it? (Part-I)

The state of affairs

Power distribution companies (DISCOs or DiSCOMs) play an important role in promoting energy efficiency (EE), mainly due to the fact that they have detailed information regarding their clients' consumption patterns. However, under the traditional regulatory framework, DISCOMs have disincentives to promote EE, due to the fact that a reduction in sales also means a reduction in their revenues and profits. Most regulatory policies encouraging EE have some embedded payment schemes that allow financing EE programs. Under the traditional regulatory framework, DISCOMs have disincentives to promote EE, since a reduction in energy sales reduces their revenue and profits. In addition, there are other financial concerns related to recovering EE programs' direct costs and to having the opportunity of sharing earnings that motivate the optimal implementation of EE programs.

The challenges clouding the sector are manifold, so big that energy efficiency seems to be at the bottom of the list, - and involve the whole value chain. They can be divided into three categories, operational and managerial, regulatory and political, and technological. Cost optimization continues to be difficult to achieve due to factors such as legacy PPAs and poor investment in distribution infrastructure. At the revenue realization end, underinvestment and line losses, as well as challenges related to billing, metering, and collection, stand out. These elements are aggregated under the larger structural challenges including governance and regulation. They emphasize the need to revamp the underlying sectoral and organizational functioning. According to estimates from a NitiAayog Report, the gross debt of discoms across India will rise to INR 6 lakh crores by March 2022, primarily due to loans availed under the liquidity infusion scheme announced in May 2020. This is nearly 50 per cent higher than the debt levels at the commencement of Ujwal Discoms Assurance Yojana (UDAY) scheme. Further, the discoms' expected net

losses are projected to be in the tune of INR 90,000 crores in FY 2021. Their financial distress has reverberated across the value chain and hit generation companies particularly hard. Recently, the Power Ministry has urged banks to exercise caution while giving loans to state power distribution utilities to avoid putting the financial system at risk. This is the first time that the Centre has warned banks, expressing concern about the financial position of distribution companies and potential adverse impact on the banking system.

Recently, the Government of India propelled an innovative scheme to mend the distribution structure of the discoms with the chief intent of refining their financial health. Under this scheme, the discoms will be offered financial assistance provided they meet certain criteria laid by the government. The total outlay for the scheme is around INR 3.03 lakh crore, spread over five years. The objective of the scheme is to bring down commercial losses in the range of 12-15 per cent and also reduce the difference between the average cost of supply (ACS) and average revenue realised (ARR) to zero by 2024-25. However, more can be done to address the issues faced by discoms.

Operational performance and energy efficiency

Fundamental to DISCOMs' profitability are the activities of metering, billing, and collection. On the whole, continuous improvement in billing and collection efficiency has gradually helped in reducing AT&C losses across the country. The overall AT&C loss has come down to 22 per cent. However, when compared at the global level, losses are still high, and much is to be done. Even within the country, there is a sharp difference in performance between states.

Different regulatory policies have been developed towards providing incentives and eliminating disincentives so that DISCOMs foster EE. One of them is the so-called decoupling mechanism. This mechanism breaks the link

REASONS FOR DISCOM WOES

Technical and Commercial losses of India's Discoms (~20%) are around **2.5 times** that of world average (~7.5%)

For every one unit (kWh) of electricity sold, Discoms do not recover thirty-two paise

Regulatory assets are deferred tariff hikes and sit as a time bomb on discom balance sheets

WHAT'S GOING ON?

TANGEDCO alone owes about **20%** of all-India outstanding dues to generators

"the power sector is a leaking bucket, with holes deliberately crafted and the leaks carefully collected as economic rents..."

Deepak Parekh Committee, 2001

In 8 months period from June 2021 to February 2022, discom dues to generators increased from 620 billion to **1,009 billion** (~1.6 times increase)

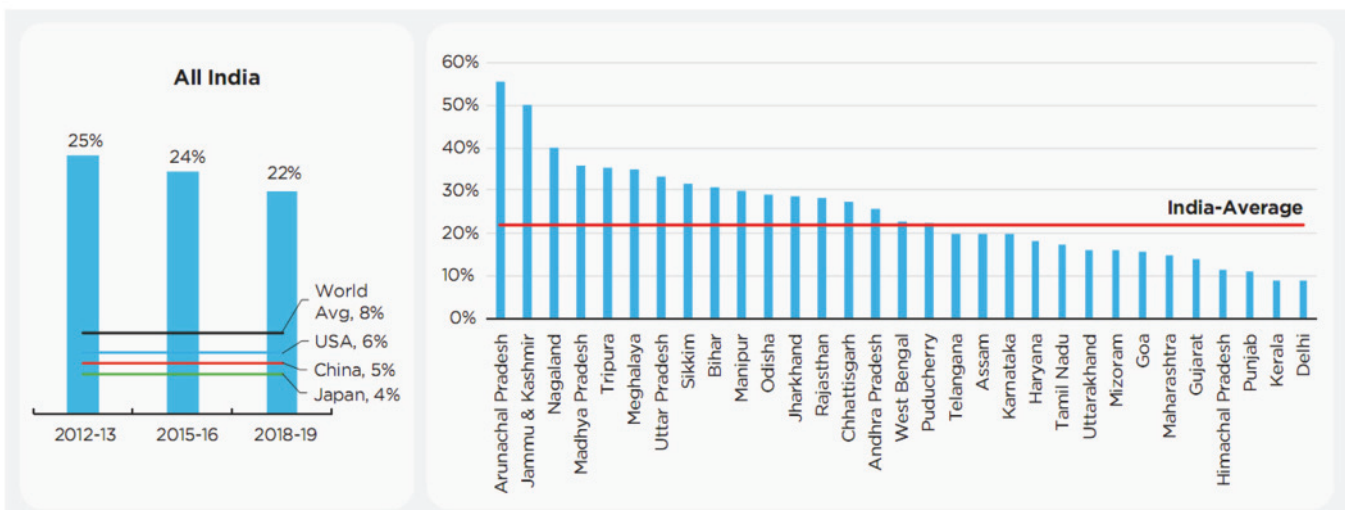


the retail electricity tariff. This mechanism has been implemented in California, where the Californian power distribution companies consider EE their first alternative to satisfying long-term demand, before increasing their capacity. In California, a performance-based incentive system has been implemented jointly to the revenues decoupling mechanism, which has been the key for the good results observed. This is because the decoupling mechanism alone is not enough, since under such system DISCOMs may not have incentives to reduce their sales. There are also other regulatory systems that foster EE, like the tradable certificates mechanism, whose adequate implementation depends, among other things, on having a certificates market that is liquid and acceptable to all market players. Most regulatory policies encouraging EE (e.g., decoupling mechanism, performance-based incentive system, and tradable certificates mechanism) have some embedded payment schemes that allow financing EE programs.

between utilities' revenues and the amount of energy that DISCOMs sell by setting the utilities' revenues for a specified term in accordance with expected costs and reasonable returns to investors. As such, if utility's sales are reduced for any reason, including energy efficiency, its revenue requirement would be ensured, no less no more, by tuning

What is deterring energy efficiency

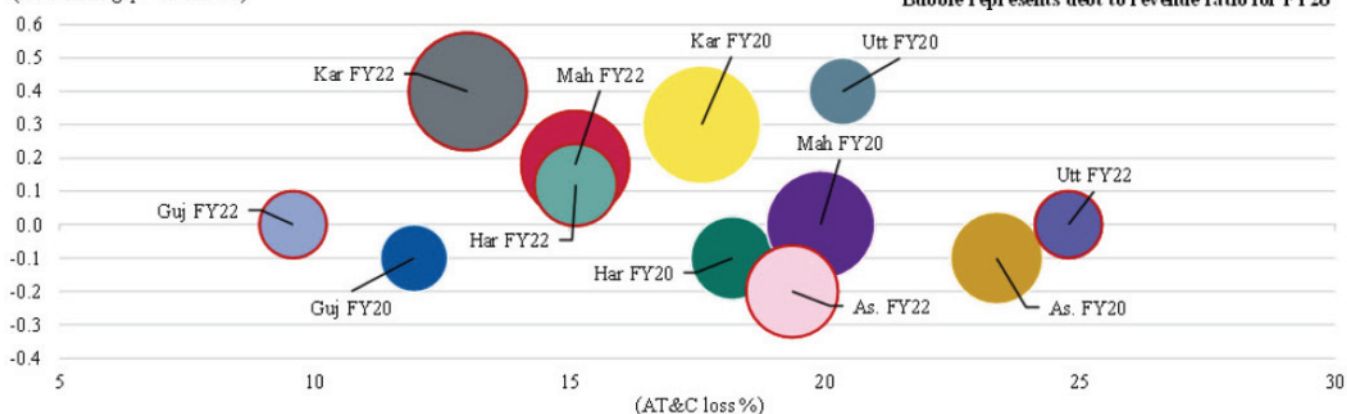
Margin and revenue obviously. In 2018-19, distribution utilities incurred a total expenditure of Rs.7,12,610 crores against a total revenue of Rs.6,63,093 crores (this is on a subsidy-booked basis with UDAY grants included, see Table). At about a loss of 6% to cost, the motive will be to



National and state-wise AT&C losses for 2018-19

Tariff Hikes & Operating Efficiencies Critical to Turnaround Discoms

(ACS-ARR gap – INR/kWh)



Note: The red, blue and green outlines predict a possible improvement, stable and deterioration of ACS-ARR gap in FY22, respectively.
Source: PFC Report on Performance of State Power Utilities 2019-20, UDAY Portal, Ind-Ra

reduce cost. About 77 per cent of the cost was the cost of power alone. The other major heads of costs included employee costs (8 per cent) and interest costs (7 per cent). Of the revenue, about 74 per cent was from the sale of electricity, and 17 per cent from the booked tariff subsidy.

How to improve the situation?

TECHNICAL INTERVENTIONS

The very purpose of technical interventions is to reduce the technical loss up to the manageable level. Various measures for technical loss reduction are:

1. Augmentation/strengthening of overloaded 33/11kV substation.
2. Creation of new 33/11kV substations to reduce the length of 11kV feeder as well as overload of 33kV lines and 33/11kV transformers.

3. Re-configuration of feeder lines and distribution transformers in such a way as to reduce the length of LT lines.
4. Installation of smaller size energy efficient distribution transformer also helps in system less LT oriented.
5. Re-conductoring of overloaded and old feeders.
6. Installation of capacitors at all levels.
7. Computerised load flow studies for long-term strengthening of sub-transmission and distribution systems in a systematic manner.

The moot question, however, is in the face of huge losses, dues and payments will the DISCOMs have enough incentive to do these changes.

COMMERCIAL INTERVENTIONS

It was found that out of total losses of 40-50% in sub-

COSTS AND REVENUE OF DISTRIBUTION UTILITIES, IN RS. CRORE (2018-19, SOURCE: POWER FINANCE CORPORATION)

Cost Structure			Revenue Structure		
Head	Rs Crore	%	Head	Rs Crore	%
Cost of Power	551535	77%	Revenue from Operations	491985	74%
Employee Cost	56804	8%	Tariff subsidy Booked	110391	17%
Interest Cost	47632	7%	Regulatory Income	3872	1%
Depreciation	21887	3%	Revenue Grant UDAY	20570	3%
Other Costs	34752	5%	Others	36275	5%
Total	712610	100%	Total	663093	100%

transmission and Distribution system (ST&D), major portion (about 20-30%) constitutes commercial losses for which presently there is no accounting. This is primarily on account of absence of adequate metering arrangement at strategic locations. In fact, due to absence of meters, in most of the cases, there is no clue on the areas that are incurring maximum losses. This information is very vital to devise special corrective measures to alleviate the problem of high losses. Therefore, to contain this loss, following measures are considered:

- a. Provision of 100% temper proof and high precision metering of all category of consumers.
- b. Proper energy accounting and auditing at all levels so that energy received, energy billed and losses at various stages of transformation can be accurately accounted.
- c. Consumer mapping and indexing to bring all consumers on record maintaining status profile of indexed consumers by periodic survey.
- d. Creation of data base of consumers with past consumption pattern.

ADMINISTRATIVE INTERVENTIONS

Administrative interventions are required for improvement of billing, revenue collection efficiency, customer satisfactions etc. for which following actions can be considered:

1. Establishment of computerized billing centers minimum at circle level with WAN/Web connectivity upto at least subdivision level. Verification of consumer energy meters and replacement wherever defective.
2. Adoption of at least hand held logging units for meter reading
3. Provision of voluntary disclosure scheme of declaring connected load in each year for providing opportunity to consumers for declaring their increased load.
4. Strengthening of customer complaint redressal system through computerization.
5. Taking prompt action for disconnection and reconnection.
6. Reduction of outage rate and improvement of supply reliability with quality.
7. Introduction of effective Management Information System (MIS) to ensure effective flow of information at various levels for quick decision making purpose.
8. Adoption of DMS/SCADA system for collection of various information and generation of reports automatically.
9. Introduction of suitable incentive and disincentive schemes for motivating the employees to perform their duties.
10. Initiation of punitive actions to stop theft of energy

(To be continued in Part-2)

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