1.2.3 Outstanding Dues

These systemic shortcomings ultimately result in a high level of debt and payments owed to generation companies (gencos). The overdue amount to gencos stood at ₹67,917 crore in March 2021.[7] See exhibit 6 for a state-wise breakup.

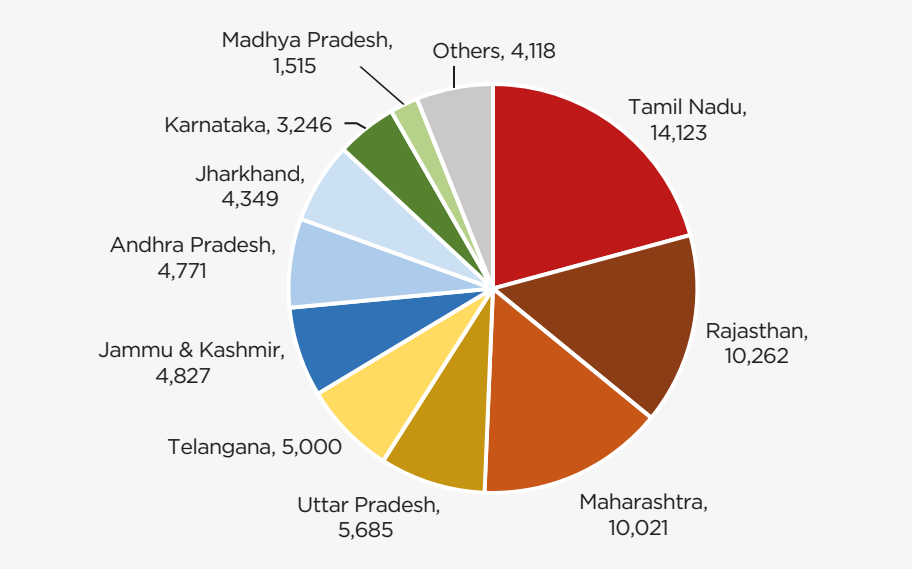


Exhibit 6: *State-wise Overdue to Gencos (In ₹ cr)*
(Source: PRAAPTI)

1.2.4 Role of Taxes

Multiple taxes and duties are levied on coal which is responsible for more than half of the electricity generated in the country. The taxes include royalty on basic price (14 percent), Goods and Services Tax (GST 5 percent) and GST Compensation cess (₹400 per tonne), among others. The transportation of coal is also expensive as railway freight charges are used to cross-subsidise passenger transport. Given that discoms have little control over bulk supply tariff and are engaged in long-term PPAs with generating companies, these taxes get transferred via tariffs to end consumers.[8]

The states charge electricity duty based on consumption. This may differ from state to state and can go up to 20 percent in some cases. It may be noted that while coal is under GST, the end product, electricity, is not. This prevents utilities from accessing the input tax credit mechanism, leading to a cascading effect where the taxes that are levied on utilities are added to the cost of power. This results in higher tariffs for end users. Currently, consumers in the states of Maharashtra, West Bengal, and Madhya Pradesh pay the highest electricity tariffs in the country.[9] It is estimated that under GST, per unit cost of power can reduce by 17 paisa across the power value chain on account of availability of input tax credit.[10]

The utilities, including discoms, are also required to pay corporate tax, which has a direct implication on power tariffs for consumers. Last year, the corporate tax rate was lowered to 15 percent. New companies that will begin generating electricity from March 2023 onwards can benefit from this lower tax rate.[11]

1.2.5 Impact of Covid-19

The ongoing Covid-19 pandemic has further distressed discoms. The sharp downturn in demand from high-paying C&I customers during the lockdown negatively impacted the discoms' finances. The decline in sales to C&I consumers is likely to increase the subsidy dependence of discoms to one trillion rupees in 2020–21 due to the rising revenue gap.[12]

The pandemic accelerated the discoms' outstanding dues to ₹ 1.39 lakh crore as of October 2020, breaching the pre-UDAY peak of ₹ 1.3 lakh crore in 2015. Dues to generators increased 34.4 percent year-on-year to more than one trillion rupees as of October 2020.[13]

A discom sector liquidity infusion scheme of ₹90,000 crore was announced in May 2020 by the central government. Later, the limit was enhanced further. This liquidity infusion has helped the discoms with immediate debt repayments and with payments to generation companies.[14]

With these loans, the gross debt level for state-owned discoms may reach as high as ₹6 lakh crore in FY 2022. Such high levels of debt may not be sustainable and a significant improvement in operational efficiencies as well as a reduction in the gap between the tariff and cost of supply are imperative to improve the discoms' financial situation.[15]

1.3 DISTRIBUTION SECTOR REFORMS

1.3.1 The Journey So Far

During the '90s, many developing countries across the world started reforming their power sectors. In India, states such as Odisha, Andhra Pradesh, and Rajasthan took the lead in passing legislation to reform the power sector. This comprised a set of four structural reforms: the creation of an independent regulator; unbundling of vertically integrated utilities; increasing private sector participation; and encouraging competition.[16]

Under the Indian Constitution, electricity is mentioned in the Concurrent List. Both Parliament and state legislatures can frame laws on electricity. In case of a conflict between the two, the law promulgated by the state legislature will be void to the extent it contravenes Parliamentary legislation. The responsibility for the distribution of power to rural and urban consumers rests with states.[17]

At the national level, EA 2003,[18] was instrumental in India's power sector turning the corner. It enabled the sector to be more open and competitive through: the unbundling of the SEBs; introduction of competition through open access; multi-year tariff frameworks; distribution franchisees; delicensing thermal generation while establishing RPOs; setting up regulatory bodies, CERCs and SERCs, and an appellate tribunal for dispute resolution; and calling for universal electricity access.

India's power sector has been slowly marching towards competition and liberalisation over the past two decades. The journey of the electricity sector has seen a series of attempts to introduce competition through market reform and periodic support through major schemes and infrastructure improvement (Exhibit 7). At the macro level, the Centre's role has been crucial in providing policy direction, front-loaded infrastructure investments, and financial support.

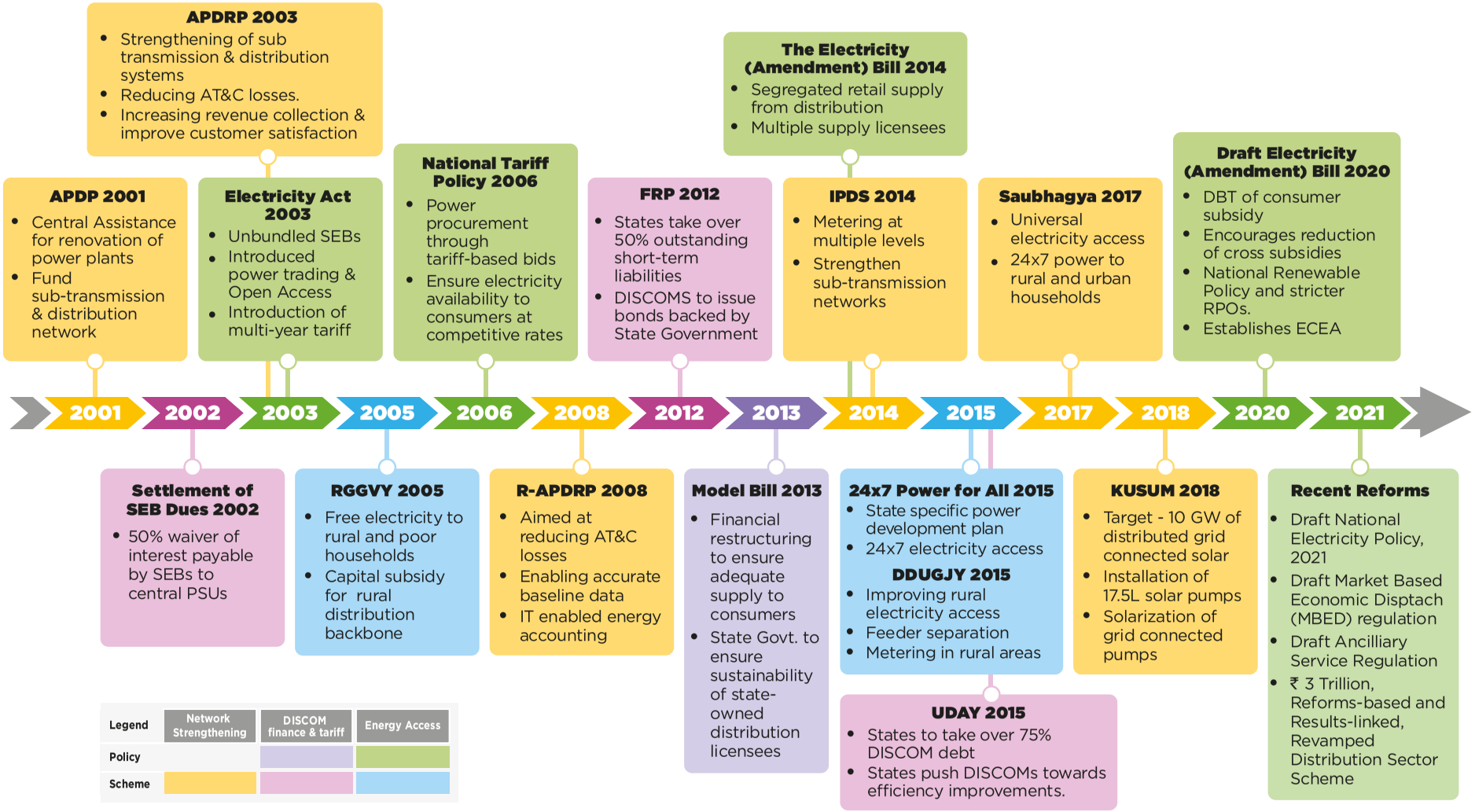


Exhibit 7: *Journey of Distribution Sector Reform in India*

The Electricity Act also mandated the central government to formulate and review the National Electricity Policy and Tariff Policy in consultation with the state governments and the Central Electricity Authority (CEA). The National Electricity Policy, 2005, laid out, among others, the goal of universal electricity access in the following five years and planned to pursue rural electrification aggressively.[19] This momentum was carried forward by the launch of the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) in 2005 (more recently the Deen Dayal Upadhyaya Gram Jyoti Yojana–DDUGJY). The following year, the National Tariff Policy (NTP), 2006, set out its objective to make reliable electricity available to consumers at competitive tariff to drive down capital costs, improve operational efficiency, and enhance the quality of service. It sought to improve transparency and reduce the perception of regulatory risks.[20]

1.3.2 Central Government Schemes

The central government has come out with several schemes that have focused on improving the transmission and distribution infrastructure, as well as enhancing operational efficiency.

DDUGJY focuses on feeder separation (rural households and agricultural) and strengthening of sub-transmission and distribution infrastructure in rural areas. It is meant to provide round-the-clock power to rural households and adequate power to agricultural consumers. The grant under this scheme could be as high as 90 percent of the project cost for 'Special Category' states and 75 percent for others. The discoms can also get an additional grant if they are able to meet certain conditions, including the timely completion of the scheme, reduction in AT&C losses as per a specified trajectory, and upfront release of revenue subsidy by the state governments based on metered consumption.[21]

While DDUGJY focuses on rural areas, IPDS has an urban orientation. The scheme seeks to strengthen the sub-transmission and distribution network in the urban areas; metering of distribution transformers, feeders, and consumers; and IT enablement of the distribution sector. Discoms can get an additional grant under IPDS too, based on similar conditions as in DDUGJY.[22]

Launched in 2015, UDAY aims at providing a permanent resolution of the discoms' issues by bringing about an operational and financial turnaround. Under the scheme, states are supposed to take over 75 percent of the discoms' debt, thereby reducing their interest cost, and partly future losses as well.[23]

So far, the scheme has helped the cash-strapped discoms in reducing their debts and the total AT&C loss. However, it has not been able to address challenges around cross-subsidy and power-procurement costs.

As per the conditions of UDAY, by 2018–19, state governments were supposed to reduce the AT&C loss to 15 percent and the ACS-ARR gap to zero,[24] through operational improvements such as compulsory smart metering of large customers, upgradation of distribution infrastructure, and implementing energy-efficiency measures. Unfortunately, notwithstanding a slight dip from 23.96 percent in 2015–16 to 22.03 percent in 2018–19,

the AT&C loss figure now stands at 24.54 percent.[vi] The ACS–ARR gap, which was ₹ 0.54/kWh in 2015–16, rose to ₹ 0.72/kWh in 2018–19.[vii]

The massive Saubhagya scheme mostly succeeded in expediting electricity access across off-grid pockets. However, it could not address challenges around tariff realisation with these new groups of consumers which ultimately impacted the discoms' finances in some states.

In the 2021-22 Budget, the Centre has announced another new scheme to promote the viability of discoms. 'A revamped, reforms-based result-linked power distribution sector scheme will be launched with an outlay of ₹ 3,05,984 crore over five years. The scheme will provide assistance to discoms for infrastructure creation, including pre-paid smart metering and feeder separation, upgradation of systems, etc., tied to financial improvements.'[25]

One of the reasons for the schemes' poor performance is the joint funding by the Centre and state governments and/or discoms, where a delay in disbursement by either of the two could put the project on hold. Yet some states (such as Haryana, Maharashtra and Kerala) have managed to leverage these schemes and achieve a degree of sustained turnaround (Exhibit 8).

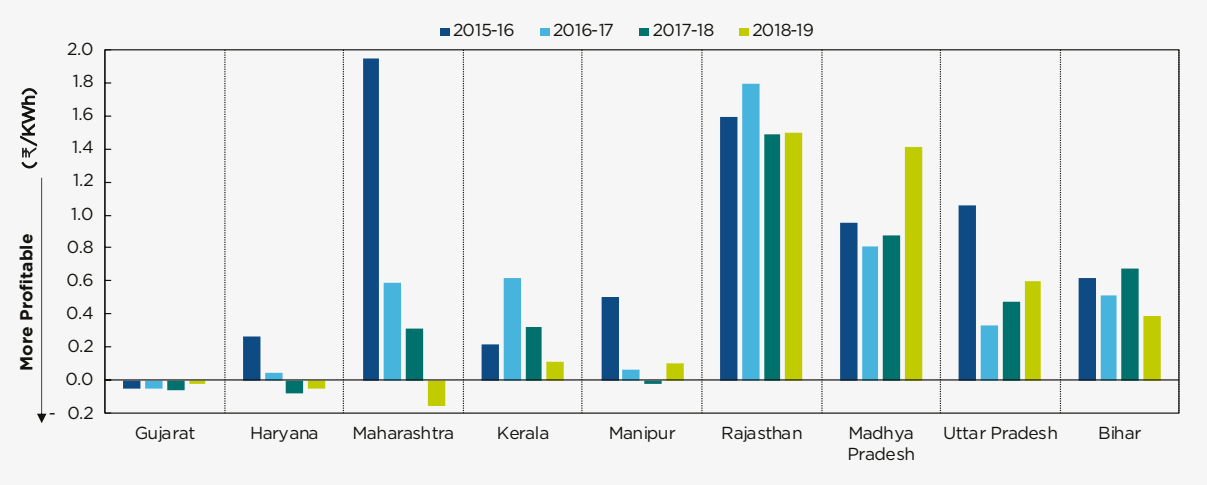


Exhibit 8: *ACS–ARR Gap performance of selected states during UDAY period (Source: PFC. See Appendix 2 for details)*

The relatively successful states have also coupled these schemes with state-level technology, business models and administrative initiatives tailored to meet their specific needs. Many have initiated state-level schemes, especially with specific capex grants for grid strengthening, connections, solarisation of agricultural feeders, feeder separation, etc.

Geography and consumer mix also affect the success of discom reforms. A geographically big state such as Rajasthan, with a highly rural population, struggles with ensuring better

vi Data for 2015-16 and 2018-19 from PFC. Current data from UDAY portal.

vii This is the ACS-ARR gap calculated on a tariff subsidy received basis, adjusted for regulatory income and UDAY grant, and calculated on Gross Input Energy Basis. Source: PFC reports.

performance by its discoms. Hilly states, particularly in the north-east, have also had a challenging journey with respect to the reform of their discoms. Limited state and discom capacities, including budget and poor macro-economic conditions, also act as major barriers. With respect to transmission and distribution (T&D) infrastructure deployment, the central schemes have only been marginally successful in reducing transmission losses. But the loss level has remained considerably high, especially due to poor billing. Arunachal Pradesh, for example, struggles with an AT&C loss of 56 percent and a billing efficiency of 45 percent.[26]

While schemes can provide some financial respite or enhance the infrastructure, sustained improvement of discoms' profitability continues to be elusive for the country as a whole, as illustrated in Exhibit 9. Any scheme attempting to resolve challenges across all the states must be respectful of the multiplicity of these difficulties.

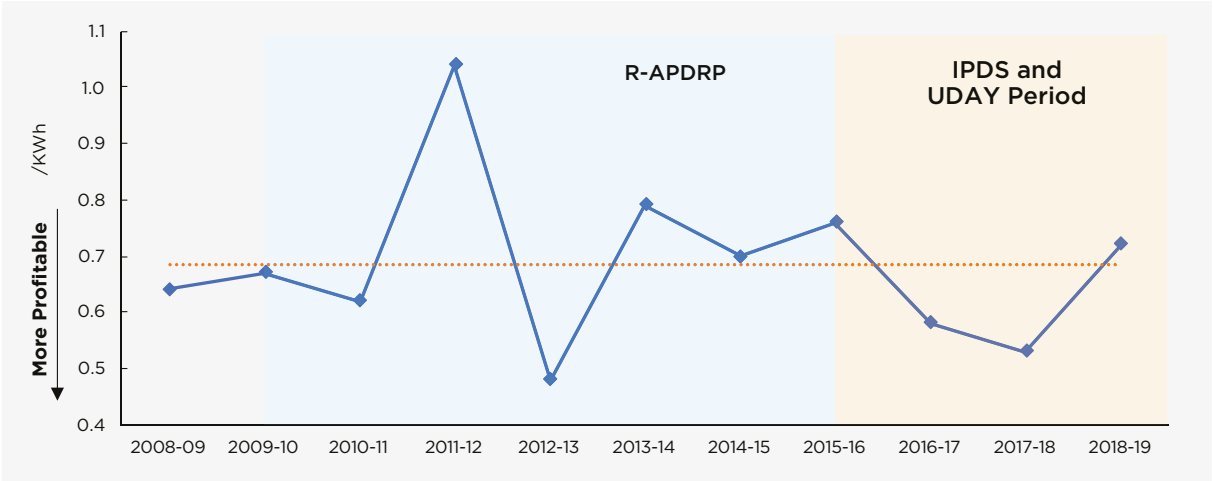


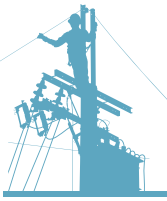
Exhibit 9: *India's ACS-ARR Gap journey*
(Source: PFC. See Appendix 2 for details)

Apart from these schemes, the Central Government has also sought to promote discom reform through efforts such as the Annual Integrated Ratings of State Power Distribution Utilities. The recently released ninth annual rating assesses discoms on the criteria of operational and reform parameters, external (regulatory and government support) parameters and financial parameters. In this rating, the discoms of Gujarat, Haryana, Punjab and Maharashtra have achieved the highest grades.[27]

1.3.3 Private Participation and Competition in Distribution

The partial success of the Electricity Act is that overall the sector has largely been vertically unbundled, with a high degree of competition and private participation achieved in generation. Forty-seven percent of the generation is being privately done as of March 2021.[28]

Privatisation of discoms has often been seen as a way to improve overall sector efficiency. International experience suggests that privatisation alone is not a panacea for improving discom performance.[29] In India, too, experience with privatisation has been variable. In areas such as Delhi, Surat, Ahmedabad, Kolkata and Mumbai, private licensees are running



discoms relatively efficiently. In many areas, distribution franchisees have helped bring down distribution losses significantly. But there have been challenges as well. In Odisha, four discoms were first privatised in 1999. However, the private companies were not able to improve the distribution system or reduce the losses of the sector as per expectations. Ultimately, one of the private companies abandoned the attempt, and the state regulator revoked the licences of the other three.[30] India has also seen multiple cancellations of franchisee contracts in states such as Maharashtra, Madhya Pradesh, Uttar Pradesh, Rajasthan and Jharkhand[31] (see sections 2.1.2 and 2.1.3).

Channelling private investment in distribution remains a challenge. There is a perception of loss—loss of jobs of discom employees, loss of the welfarist nature of state-owned discoms that sustain the residential and agriculture sectors on subsidised tariff, loss of the ability to serve the poor and the vulnerable, and loss of jurisdictional authority for states where the Centre proceeds with this decision without adequate state buy-in. These have come to light most recently in the wake of the announcement of privatisation of all Union Territories' discoms as well as that of some states including Uttar Pradesh. In the case of the latter, protests by employees of Purvanchal Vidyut Vitran Nigam Ltd (PVVNL) against its privatisation were fuelled primarily by the fear of potential job losses.[32]

At the core of the challenge to privatisation is the question of its promise of success. The transformation of Delhi Vidyut Board (DVB), for example, by unbundling and sale of majority stakes to Tata Power and BSES, is often cited as a model of successful privatisation. Importantly though, consumer mix in Delhi is relatively homogenous—with a marginal agricultural sector and a largely middle-class residential sector with a high demand for efficiency.[33] The transition of Delhi's discoms was supported by government subsidy, and all DVB employees were transferred to the new companies with benefits, thereby offering job security. However, this landscape is not representative of the rest of the country. The Union Territories might be exceptions, given their small, concentrated geographies and direct jurisdiction by the Centre.

Furthermore, privatisation becomes more difficult when the discom's service area is more rural. Given the tariff differential and difficulty of billing, collection, and, in some cases, metering, the cost of servicing rural and agricultural consumers becomes commercially challenging. When the business of wires and supply can be segregated in some form from the business of billing and collection, some degree of private capital can be attracted through models such as the franchisees. But for full-scale privatisation, the consumer mix and geography will ultimately be factors in achieving commercial viability.

Thus, the political economy of electricity with its multiplicity of stakeholders and interests, the drastic difference in demand, needs, and ability to pay off rural and urban consumers, as well as the imperative of state welfare are what make distribution privatisation so challenging.

The central government has recently declared its intent to delicense power distribution and promote competition among discoms.[34] Multiple firms can compete to supply power through the same grid infrastructure, and consumers can choose the supplier who provides them the best quality-cost combination. This reform can be challenging to get right and should be accompanied by careful market design.

The need for a low-carbon and climate-resilient future, makes it crucial for the Indian electricity distribution sector to achieve operational efficiency, profitability, and a readiness for emerging and future demand as well as technological changes. With lessons from the past two decades of reforms, insights from international best practices, combined with continued government commitment to transform the power sector, discoms can embark on their path to profitability.

2 Structural Reforms

The institutional architecture of the distribution sector is critical for the viability of electricity market. Structural reforms in this sector include the vertical unbundling of the power sector actors, introducing privatisation models for discoms, and promoting horizontal unbundling of the power market.

2.1 OWNERSHIP MODELS

Globally, 70 percent of distribution utilities are publicly owned. The remaining 30 percent of the privately owned companies are located primarily in middle and high-income countries.[35] The vast majority of consumers in India continues to be served by state-owned utilities.

Private participation in distribution has been limited to few urban centres and townships across the country. Private participation in the distribution sector has been dominated by two models—licensee model and franchisee model—as summarised in Table 2.

Table 2: Two prominent models of private participation in electricity distribution in India

Distribution Franchisee Model	Distribution Licensee Model
Private party has no ownership over the distribution grid assets.	Private party holds equity and is part or complete owner of the distribution grid assets.
Private party manages billing and revenue collection mainly.	Private party manages the distribution of power along with billing and revenue collection services.
Example – Torrent Power, Bhiwandi, MH	Example – TATA Power, New Delhi

2.1.1 State Ownership

Most discoms in India are state-owned, with private utilities serving only 10 percent of the consumers in the country.[36]

A World Bank study found that most utility boards remain state-dominated and lack sufficient decision-making authority.[37] However, some state-owned discoms have witnessed a successful turnaround due to purposeful restructuring and empowered governance that have improved long-term decision-making. A key attribute of these discoms is improved public administration, with strong leadership and steady tenures. The World Bank study found that discoms with greater autonomy and higher quality corporate governance are more profitable.[38] The performance of discoms is also determined by the proactive role of regulators in providing timely tariff updates for maintaining the financial sustainability of the sector.

Box 1: Where have public discoms worked in the world?[39, 40]

A review of global cases of successful public ownership of electricity distribution shows that public discoms rooted in community participation/ownership and financial and regulatory independence have shown some success.

The independence of regulatory bodies is crucial to the financial health of utilities since they have the power to set (cost-reflective) tariffs. Independence and certainty in regulation also help allay any concerns that potential investors may have. This has been seen in the success experienced by the power sectors of Latin American countries such as Costa Rica and Uruguay, whose sectors are primarily state-owned but they foster private sector participation successfully as well.

Interestingly, a trend towards municipalisation or remunicipalisation is being seen in some countries such as the USA and Germany. In Germany, for example, after a spate of privatisation of municipal utilities in the 1990s, communities chose not to renew their contracts with private utilities. They instead chose to renationalise municipal utilities (Stadtwerke), showcasing faith in the public sector to address market deficiencies.

2.1.2 Distribution Franchisee Model

The distribution franchisee (DF) model allows state-owned discoms to use private parties to perform specific functions, without the transfer of ownership. The attractiveness of this model lies in the potential for a rapid reduction in technical and commercial losses and adoption of better operational and management practices. Additionally, given the absence of obligation for direct asset ownership, it also becomes easier to attract private investment, compared to the licensee model.

Bhiwandi in Maharashtra is a shining example of the success of this model, given the sustained improvement in performance on all fronts over its baseline. The fact that Bhiwandi is an urban setting attracted bids from multiple private parties. Torrent Power eventually won the bid. The success of this franchisee further encouraged the Maharashtra State Electricity Distribution Company Limited (MSEDCL) to replicate this model in