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Proceedings of the NIAS Workshop to discuss

Power Distribution Sector Reforms in India - Role of Regulators and the Private Sector

National Institute of Advanced Studies
Bengaluru, India

NIAS Workshop Report

NIAS/NSE/EECP/U/WR/20/2022

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Cover photo: (Front cover) Substation in a village in the Ballari district of Karnataka.
(Back cover) India's first ultra-supercritical (USC) 660 MW coal-fired unit at Khargone, Madhya Pradesh, with an efficiency of 41.5% and station heat rate of 2,070kcal/kWh. Courtesy: NTPC

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Abbreviations

Acronym	Full Form
ACS	Average Cost of Supply
AMR	Automatic Meter Reading
ARR	Average Revenue Realized
ASAI	Average Service Availability Index
AT&C Losses	Aggregate Technical and Commercial Losses
CAG	Comptroller and Auditor General of India
CAPEX	Capital Expenditure
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CESC	Calcutta Electric Supply Corporation
CPSU	Central Public Sector Undertakings
DF	Distribution Franchisee
DISCOM	Electricity Distribution Company
DNO	Distribution Network Operator
DSO	Distribution System Operator
FOR	Forum of Regulators
GENCO	Electricity Generation Company
GIS	Geographic Information System
G-Sec	Government Security
IOT	Internet-of-Things
KERC	Karnataka Electricity Regulatory Commission
MBED	Market-Based Economic Despatch
MERC	Maharashtra Electricity Regulatory Commission
OPEX	Operational Expenditure
PPA	Power Purchase Agreement
PPP	Public Private Partnership
RDSS	Revamped Distribution Sector Scheme
RERC	Rajasthan Electricity Regulatory Commission

ROE	Return on Equity
RPO	Renewable Purchase Obligation
RWA	Resident Welfare Association
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
Saubhagya	Pradhan Mantri Sahaj Bijli Har Ghar Yojana
SCADA	Supervisory Control and Data Acquisition
SCED	Security Constrained Economic Dispatch
TERC	Tripura Electricity Regulatory Commission
TPDDL	Tata Power Delhi Distribution Limited
TRANSCO	Electricity Transmission Company
UDAY	Ujwal DISCOM Assurance Yojana
Y-o-Y	Year-over-year
VRE	Variable Renewable Energy

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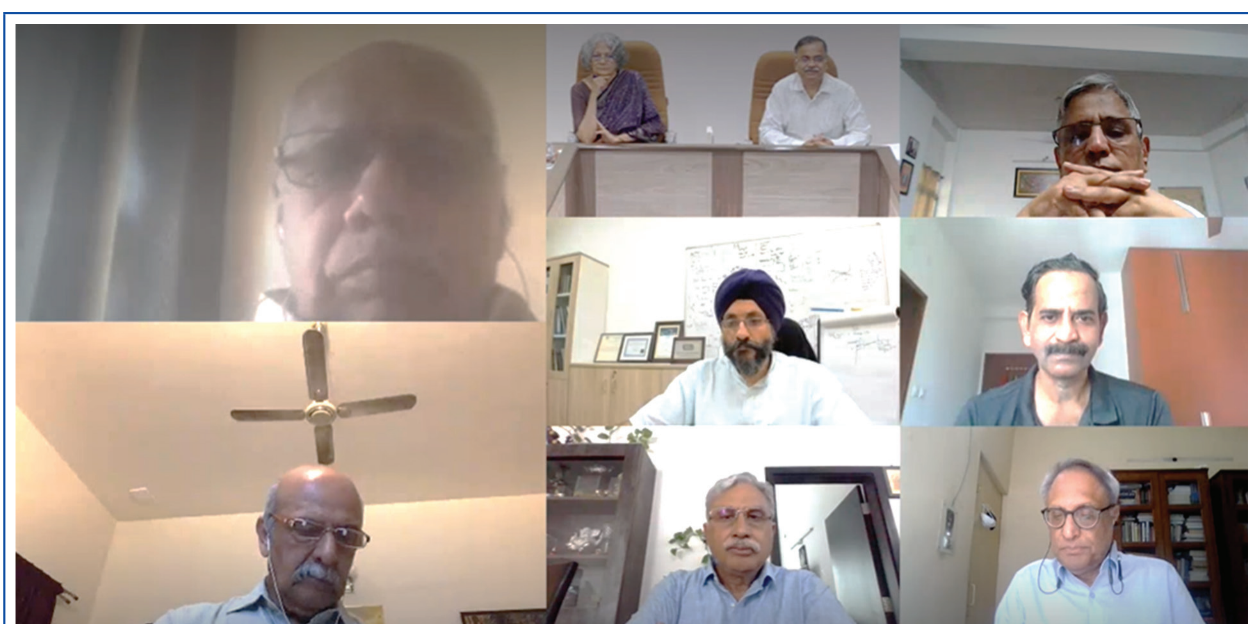
Introduction

A one-day stakeholder workshop on Regulatory Reforms and Privatization in electricity distribution was organized by NIAS Bengaluru on 9th April 2022. The participating stakeholders spanned the entire spectrum of stakeholders - regulators – both serving and past, utilities – both government and private, consultants, academics and consumer representatives.

The purpose of the workshop was to elicit ideas from the ground on how to revitalize electricity regulation and identify privatization models to meet emerging challenges. Most State-owned DISCOMs in the country are in a parlous state, having collectively accumulated losses of Rs.5.22 lakh crores even after three major handouts from the taxpayer over the past 20 years. Structural reforms introduced in the form of unbundling and corporatization of vertically integrated utilities and independent regulation and the new governance paradigm designed to depoliticize decision-making in the sector have spectacularly failed. The workshop sought views from stakeholders on the course corrections and the way forward by addressing *inter alia* the following key questions:

- Electricity Act 2003, drafted in the wake of serious power crisis needs major amendments to ensure a smoother transition in view of the surplus generation capacity today. CERC and SERCs with over two decades of experience in regulation can play a key role in perspective planning for the power sector in consultation with the government since the cost of power procurement constitutes 70% – 80% of the total cost of DISCOMs. What should be the institutional contours



Glimpses from the Inaugural Session

of a consultative mechanism to involve the regulators in perspective planning for the power sector, considering the interest of consumers to have affordable and reliable power?

- Specifically, what role can regulators play in moving from long-term power purchase agreements (PPAs) to a competitive environment for real-time and short-term power procurement in future contracts for conventional and renewable power? Given that 72.3% of power generated by utilities in India comes from the coal-fired Thermal Power Plants (TPPs)and the importance of energy costs in the cost of electricity generation, what role (if any) can CERC play in regulating pass-through coal prices.

- Do the regulators have any proactive role to play in improving the performance of Government-owned DISCOMs whose dues to the GENCOs (conventional and renewable) are creating a financial crisis for the power sector?

- Given the renewed push towards privatization of the power distribution sector, what role can the regulator play to proactively ensure a safe landing for the consumers, in particular, the rate payers?

- Is privatization of DISCOMs with a large share of agricultural consumption possible? If so, under what structure (100% privatization or PPP or Distribution Franchisee) and policy guidelines? What are the potential gains and pitfalls of privatizing loss-making DISCOMs? How can the Regulators play a role in ensuring a smooth transition?

- How can the Forum of Regulators (FOR) ensure that its policy inputs are duly incorporated when the Central and State Governments are framing policies/Laws/rules/guidelines for the sector to avoid repeated bailouts at the cost of the taxpayer?

- Regulatory independence and to some extent, even autonomy, despite the many protections accorded in the statute, have remained illusory. How to address this issue? Does it call for amendments to the selection committee, selection criteria and measures to insulate them from political interference? Does it call for lateral entry from industry to bring some fresh perspectives to problem solving?

Session I

The context for the workshop was set by Prof. R. Srikanth, Head of Energy, Environment and Climate Change Program and Dean, School of Natural Sciences and Engineering, NIAS, who gave an overview of the Distribution sector in India. He pointed out how, as of March 31, 2020, State-owned DISCOMs have accumulated losses of Rs.5.22 lakh crores as against the profit of Rs.15, 453 crores made by the privately-owned DISCOMs during the same period; on a much smaller albeit, largely urban customer base. The State-owned DISCOMs are increasing their losses Y-o-Y while the private DISCOMs are increasing their profits Y-o-Y (Figure 1).

Frequent capital infusion in the past two decades, in the form of various schemes has failed to rescue the DISCOMs from the brink of insolvency. For instance, 'Ujwal DISCOM Assurance Yojana' (UDAY), a scheme introduced in 2015 with the lofty objective of reducing aggregate technical and commercial (AT&C) losses of State-owned DISCOMs to 15% by 2018-19 and reducing gap between average cost of supply (ACS) and average revenue realized (ARR) to zero by 2018-19. However, as of 2019-20, the AT&C losses of State-owned DISCOMs remained at 21.73% compared to 8% for the privately-owned DISCOMs (Figure 2). Besides, UDAY had infused Rs.2.32 lakh crores into the DISCOMs and still, the ACS-ARR gap for the State-owned DISCOMs stayed at 35 paise per unit as of 2019-20 (Figure 3).

Prof. Srikanth pointed out how the average cost of power procurement for all DISCOMs

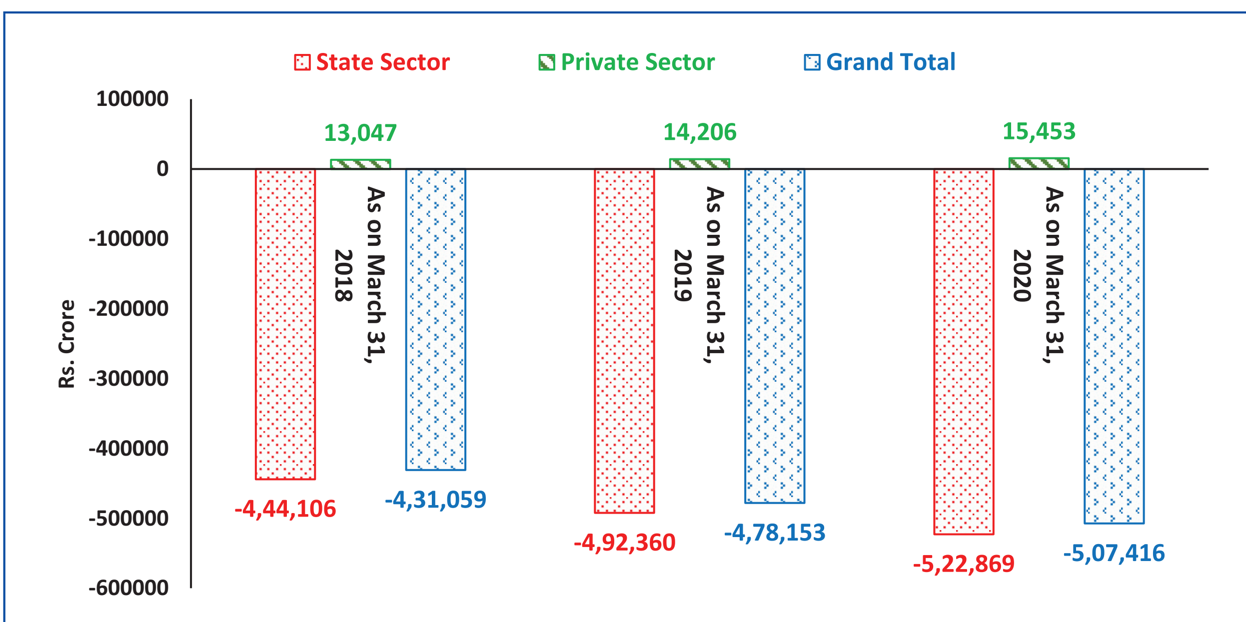


Figure 1. Accumulated Profit / (Loss) of State-owned and Privately-owned DISCOMs

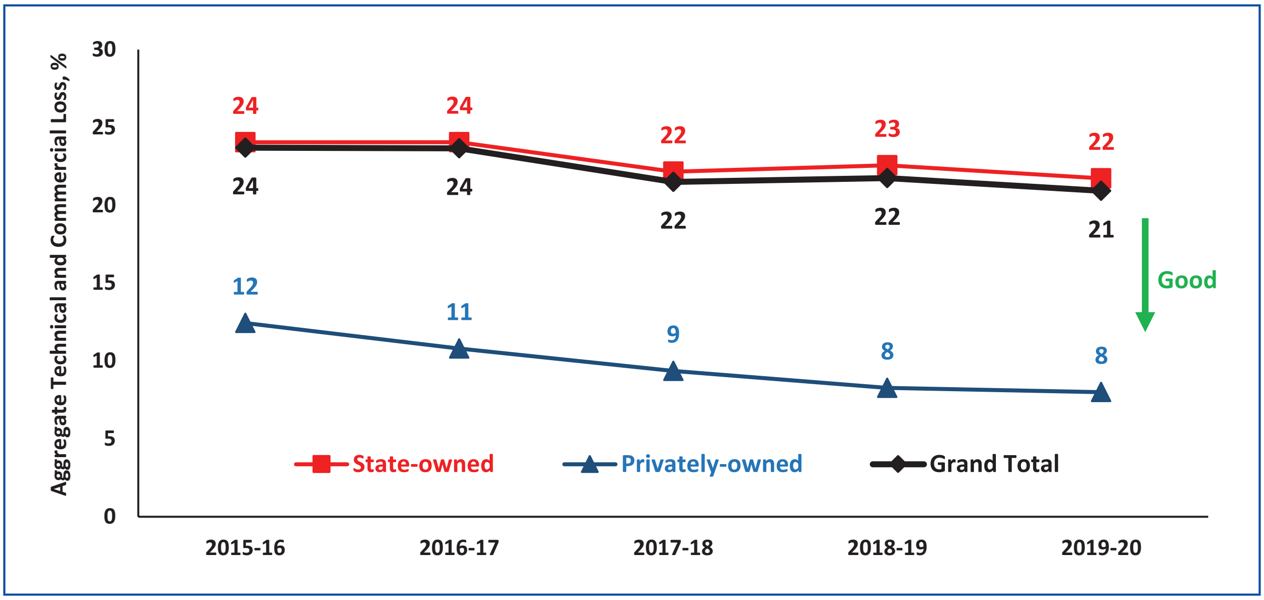


Figure 2. AT&C Losses in State-owned and Privately-owned DISCOMs in India

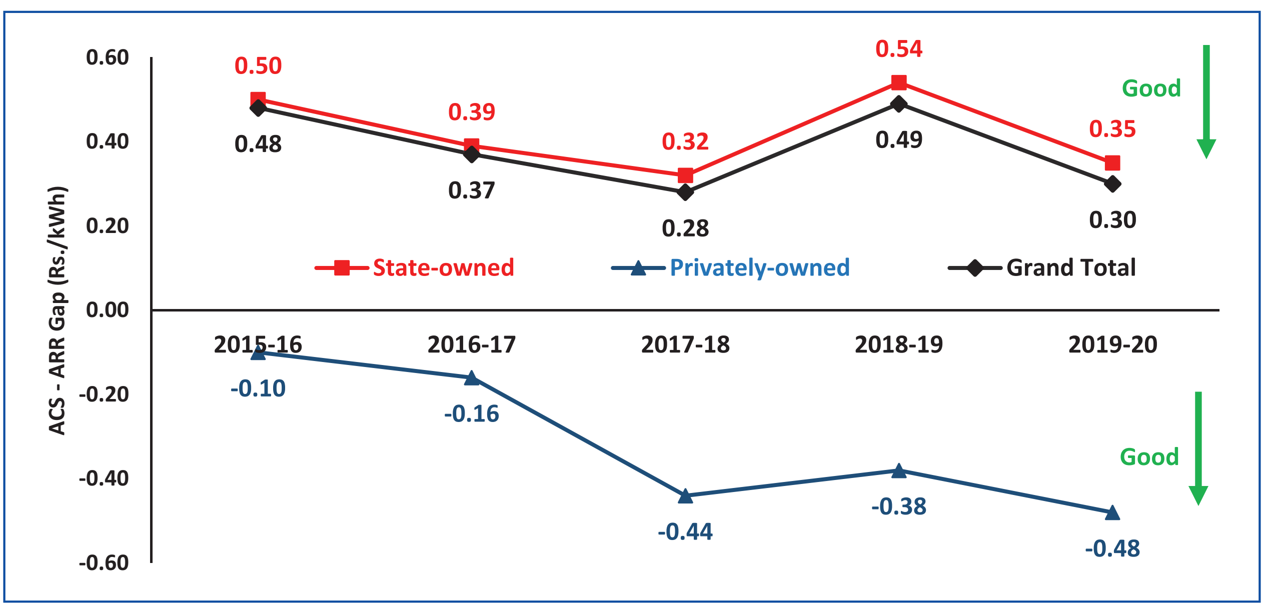
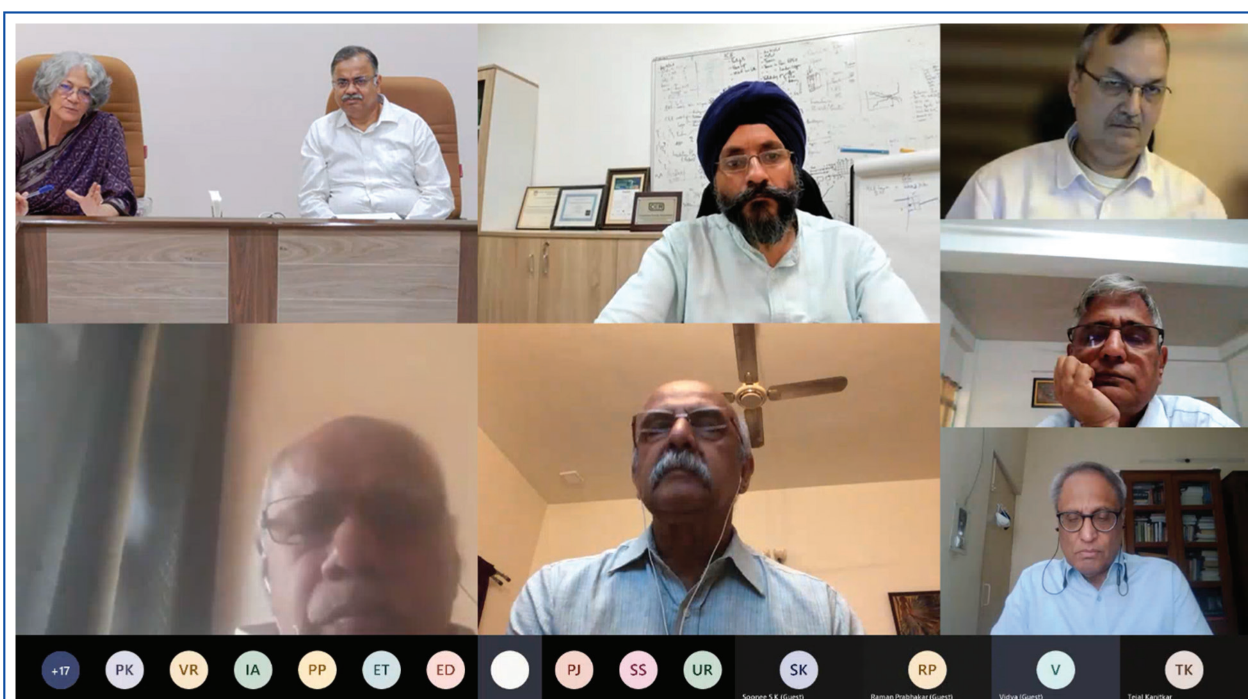


Figure 3. ACS-ARR gap (on tariff subsidy received basis) in State-owned and Privately-owned DISCOMs in India

has increased from Rs.4.21/kWh in 2017-18 to Rs.4.73/kW as of 2019-20. Power purchase costs now account for nearly 80% of the total expenditure of most DISCOMs, leaving little room for maneuver, especially because tariffs could not be hiked in the same proportion to reflect these costs.

While inadequate billing and collection efficiencies account for poor operational performance of the DISCOMs, most DISCOMs are hamstrung by non-payment of electricity dues by the respective state government departments. Most State governments have also failed to fully pay the subsidies announced by them to certain consumer categories, leaving the DISCOMs cash-strapped for working capital. This has a cascading effect on the electricity generation (GENCOs) and transmission companies (TRANSCOs) as the overdue amount of DISCOMs exceed Rs.96,700 Crore, out of which approximately 20% is owed to the variable renewable energy (VRE) generators (largely from the private sector), as of April 2022. Further, Government of India (GOI) has decided to pump in more than Rs.3 lakh crore of taxpayers' money under the 'Revamped Distribution Sector Scheme' (RDSS) for turning around the DISCOMs. This is unsustainable and points to serious 'managerial deficiencies' in the DISCOMs which are the cash register for the industry.

Dr. Pramod Deo, former Chairperson of CERC and MERC began the workshop with his trenchant remarks on the myth of regulatory independence. Financial autonomy of regulatory agencies, enshrined in Electricity Act 2003, has remained a myth with the CAG insisting that regulatory fees should be deposited in the Public Accounts. This leaves the regulator at the mercy of the government even to perform its core functions mandated by the law. Besides, the Centre is issuing policy directives every now and



Glimpses from Session I

then to CERC, encroaching into its remit. Besides, even the power to recruit staff at market salaries has been taken away with the regulator having to seek government approvals for hiring staff. Dr. Deo also pointed out how political interference in regulatory appointments has been rife. Appointing retired civil servants is not conducive to regulatory transparency. He confirmed that governments wanting to subsidize agriculture are not prompt in paying the subsidies to DISCOMs. He also pointed out that residential consumers in Maharashtra are already paying more than the costs incurred to supply them and hence they cannot be burdened with tariff increases. He admitted that electricity is a political issue and the solution, including privatization will have to come through a political consensus.

Mr. Radhakrishna, Chairperson of Tripura Electricity Regulatory Commission expressed the view that DISCOM reforms have taken the DISCOMs to pre-1995 levels rather than improving the situation. He also believes commercial losses should not be factored into tariff computation. If the utility is inefficient, paying consumers cannot be asked to subsidize the inefficiency. He also gave examples of how private utilities like Torrent or Tata Power have managed to bring down technical and commercial losses. He said that Tripura has not raised retail tariffs for the last seven years and he hopes to bring down the cost of power purchase.

Mr. Raj Pratap Singh, Chairperson of Uttar Pradesh Electricity Regulatory Commission confirmed that DISCOM finances are a cause for worry especially because dues to GENCOs have been mounting day by day and leading to litigation. Power supply is affected because GENCOs are not paid and they, in turn, are unable to pay their suppliers. He believes all stakeholders are responsible for the current state of affairs. First, government actions were over-focused on the supply-side, prompted by the earlier power-deficit situation and was justified then. While the electricity supply situation is comfortable now, the post-tax return on equity (ROE) of CPSUs remains unchanged at 15.5% even for new projects coming up now. This affects theviability of DISCOMs which end up paying these high returns. Second, the top-down planning approach and delicensing of generation has led to substantial surplus capacity which has also created stressed/stranded assets. Central Public Sector Undertakings (CPSUs) have captured the policy-making processes since background papers originate from CPSUs which influence government policy in the power sector. Third, power tariff is regulated, but the input costs – railway tariff as well as coal prices are not regulated and are passed through to the power tariffs. Fourth, a one-size-fits-all RPO policy without assessing the renewable potential of states has also resulted in backing down of conventional power in states which have long-term PPAs with conventional power developers, paying fixed costs for electrons not dispatched.

Mr. Singh does not believe privatization is a panacea if the DISCOM continues to be a monopoly. DISCOM reforms like UDAY provided liquidity but failed to address the solvency issues of the DISCOMs. The fiscal capacity of states to subsidize power is low, leading to steeper cross-subsidies. He also said, as a regulator, he is confused about whether electricity is to be treated as an economic or political good, because of mixed signals from the government. There is a serious governance crisis in DISCOMs. Schemes like 'Saubhagya' which have extended lines to remote areas have also increased the line losses. High stranded costs are due to unrealistic demand projections by the CEA. Regulators must also take the blame for the current situation in the sector.

To make the sector viable, affordability of power is critical in a developing country like India with vast disparities in income. Power purchase costs must be reduced by amending our Electricity Act, Tariff Policy etc. The high returns offered must be pared down to G-Sec rates. Section 62 projects must be done away with and in future, all power procurement should be through the competitive bidding route. Net zero will require the country to use all available resources including biomass and Small Modular Reactors producing nuclear power. RPO should be dovetailed to state capacity rather than through uniform fiat across states. He is of the firm view that carriage and content should be separated, and consumers should be given choice. The issue of legacy PPAs should addressed urgently. Doing away with inter-state transmission charges for renewables is unnecessarily burdening the ratepayer. Any concessions given to renewable generators should come from the general budget, not from the ratepayer. Forum of Regulators has become a one-way channel for communication where the government makes rules and communicates it to the regulators rather than take inputs from them.

Prof. Anoop Singh of IIT Kanpur pointed out that power sector reforms will have to be tailor-made to suit the challenges on the ground rather than dictate a one-size-fits-all approach. Different states have different resource endowments and flexibility is needed in the regulatory framework. The political character of electricity must be acknowledged in setting targets for the sector. Prof. Singh said that escalation in power purchase cost since 2004-05 has led to the increase in the average cost of supply which has burdened the end-consumers (Figure 4). He also pointed out the growing commercial loss of the DISCOMs including the subsidies since 2007-08 (Figure 5).

Prof. Anoop Singh also presented the theoretical backdrop to regulation to emphasize the fact that one or the other stakeholder group will try to capture the regulator. The politicization of the governance of DISCOMs is also at the root of the problem. The governance of private

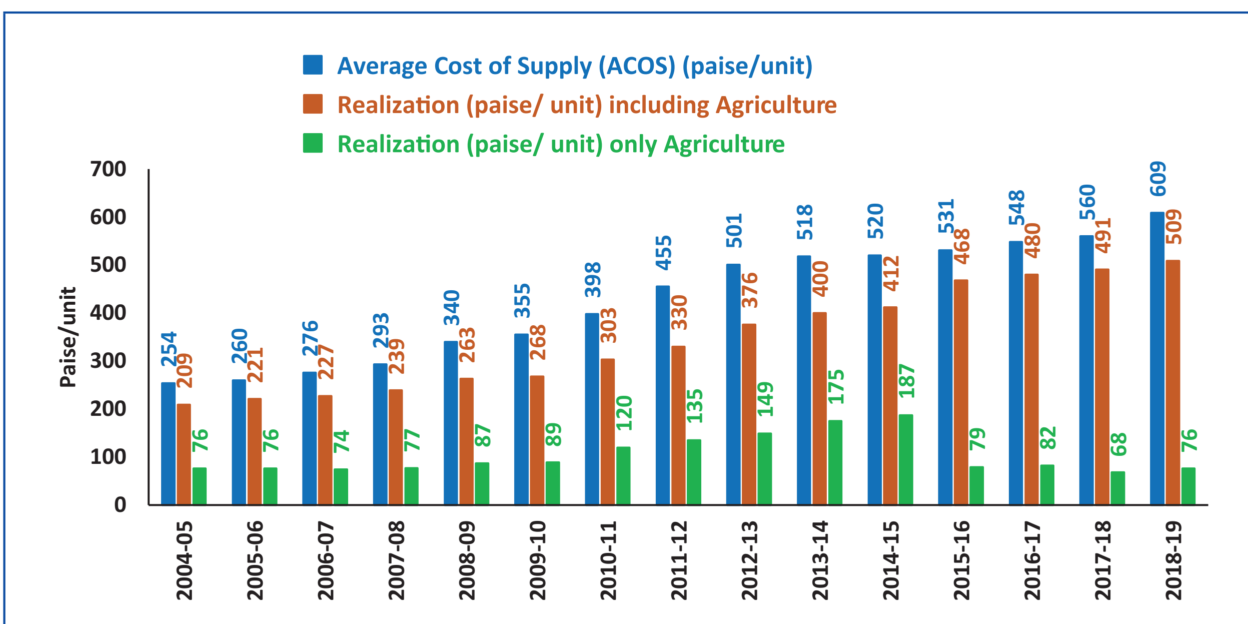


Figure 4: Average Cost of Supply vs Average Realization (Paise/unit)

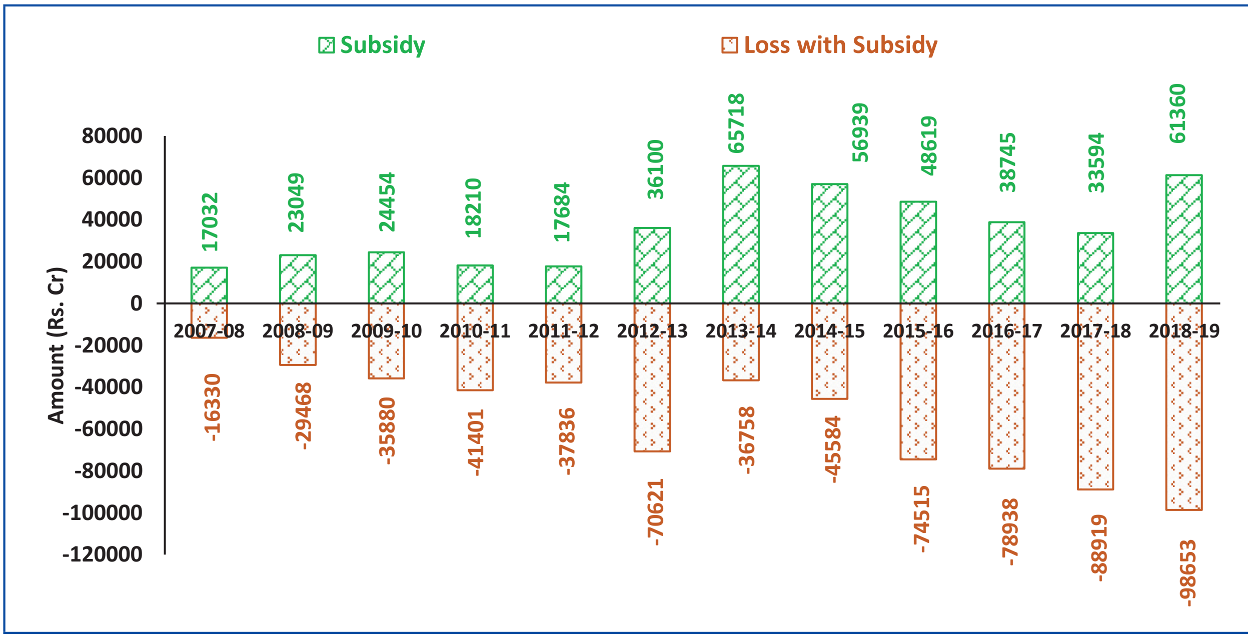


Figure 5: Financial losses and Subsidies (Rs. Crores)

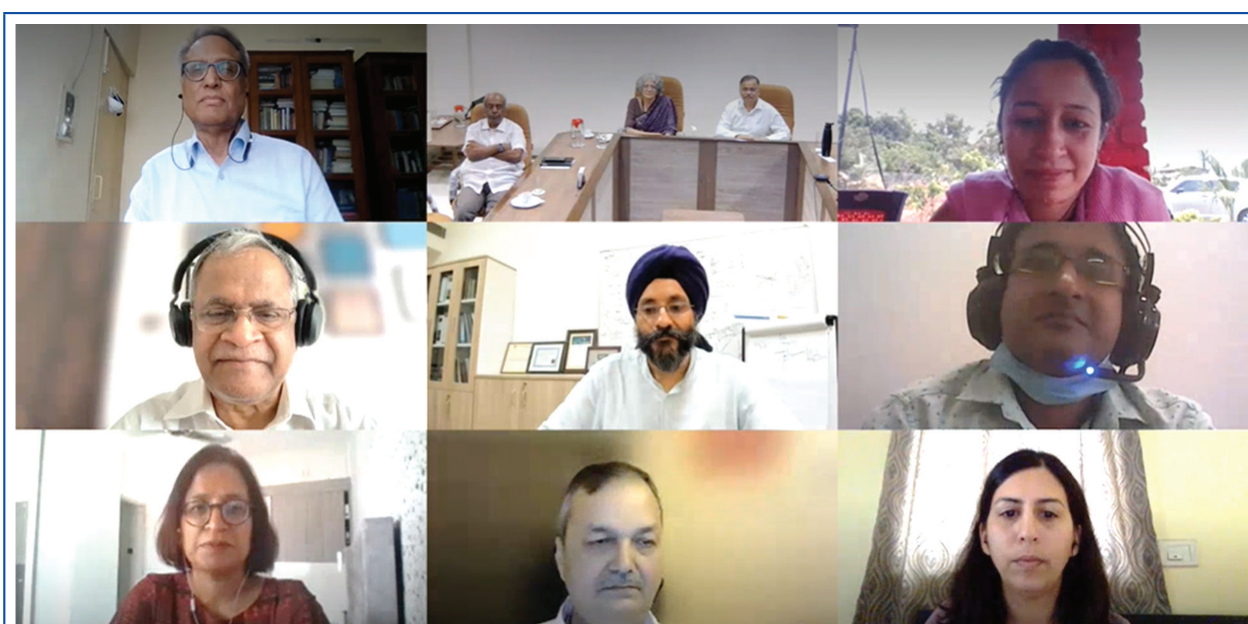
DISCOMs is conducive to the application of commercial principles while those of government DISCOMs are not. Regulators are no longer independent because the purse strings are now controlled by the government. Regulatory transparency has also been declining. Capacity of the regulatory commissions leaves a lot to be desired. The existing staff are overburdened, and the sanctioned posts are grossly inadequate to deal with the work they must deal with. Across DISCOMs, tariff filings are being outsourced to consultants. Similarly, consultants are drafting tariff orders on behalf of regulators although this is the bread-and-butter task of regulators. He also confirmed the view that CPSUs have captured policymaking and the post-tax ROE given to them is very high (15.5%). Employees and consumers have been left out of the regulatory governance framework. As for privatization through distribution franchisees (DFs), regulators are in the dark as to the data required to set benchmarks. Retail competition will require not only separation of carriage from content, but also clarity on legacy PPAs, assignment of technical and commercial losses etc.

Mr. Daljit Singh a power sector expert, currently with Centre for Social and Economic Progress (CSEP), New Delhi, began his presentation with the caveat that electricity is essentially a political issue and as such, solutions will have to come at the political level. State-owned DISCOMs and independent regulation make a strange pair, he said. Since the government is presumed to serve the public interest, government ownership precludes external regulation, he explained. That is why in the US, municipal utilities are not regulated. However, in India, DISCOMs have two masters – government which owns them and the regulator, both representing the public interest. Financial incentives which the regulator offers are not effective when the government owns the DISCOMs and gives it orders. DISCOMs are accountable to their governments, not so much to the regulators. The benefit of the current regulatory paradigm is to bring some degree of transparency in the sector. Economic regulation as an institution is designed for private DISCOMs since it is an incentive-compatible framework. TPDDL (formerly NDPL) reduced the AT&C losses from 53% to 7% because the incentives were right. Such incentive structures are absent for State-owned DISCOMs.

Mr. Daljit Singh was of the view that privatization of DISCOMs is better than the DF model and it should begin in those areas where the performance of the state-owned DISCOMs is the worst. And it is important to take the employees along in this process. Also, it is important to avoid concentration of ownership when privatizing DISCOMs and exercise greater vigilance if the private owners have interest in upstream generation also. Mr. Singh also pointed out how power purchase costs are spiraling out of control because of the focus on the need to meet short-term demand rather than conduct long-term resource planning for optimal mix. Focusing on the short-term seduced by low solar costs results in high system costs in the long run. Managing long-term uncertainty and risk should be integral to long-term resource planning for which the capabilities of regulatory and DISCOM staff will have to be strengthened. Regulators must be entrusted with this responsibility, according to Mr. Singh. An optimal mix must have both long-term and short-term contracts as well as marginal purchases from the real-time market rather than rely substantially on spot markets.

Questions and Answers (Q&A) Session

In the Q&A session following the presentations by experts, many interesting questions came up. Ms. Vidya Goggi, Governing Council Member of Bangalore Apartments Federation (BAF) spoke on behalf of the consumers. She wanted to know why consumers are not getting uninterrupted power supply. Mr. Raj Pratap Singh responded saying that the advent of VRE has skewed the supply situation, making it unpredictable and the consumer can get compensation for unreliable supply as per regulations. Another participant asked if we need more institutions to deal with



Glimpse from the Q&A Session

emerging problems of grid instability to which Mr. Daljit Singh replied that the Distribution Network Operator (DNO) will probably become the distribution system operator (DSO).

Another participant wanted to know if private utilities could keep power procurement costs down better than their state-owned counterparts. Most panelists and speakers believe they could. For instance, in the State-owned DISCOMs of Uttar Pradesh, related party transactions led to high power purchase costs whereas private players have been able to keep procurement costs down, even surrendering high-cost NTPC contracts. When asked whether privatization will lead to 'cherry picking', Mr. Daljit Singh answered that it might and hence the wholesale market should be fixed first before resorting to separation of carriage and content. International experience in retail competition has been a mixed experience. Privatization should aim at carving out distribution areas that have a mix of both urban and rural consumers. However, there was no agreement among the speakers on whether separation of carriage and content is warranted in India's power sector at this moment.

Session II

The next session had four speakers, two from private DISCOMs, one from a consultancy organization and another, a veteran regulator. Mr. Tarun Katiyar, of Tata Power, which is India's largest integrated Power Company, spoke of the performance of the DISCOMs which were taken over by his parent company – Mumbai, Delhi, Ajmer (as DF), Orissa DISCOMs taken over during COVID-19 pandemic. He pointed out that in Delhi, loss levels have come down from 53% to 7% while transformer failures are negligible as shown in the following table. This, despite Tata Power having absorbed most of the employees of the erstwhile state-owned DISCOMs. Latest technology was applied in all areas of DISCOM operations such as automation, SCADA, smart billing, etc., which helped improve efficiencies (Figure 6).

Similarly, as shown in the following table, TPDDL has also demonstrated improvements in several customer-focused areas in Odisha, though their performance in the initial takeover period of the State-owned DISCOMs in Odisha was hampered by the COVID-19 pandemic. According to Mr. Katiyar, the absence of cost-reflective tariffs and the overhang of regulatory assets are the biggest challenges to the private operator. Total regulatory assets are in the range of Rs.15,000 - 20,000 crores for all three DISCOMs in Delhi. Private DISCOMs would like to see firm timelines for liquidation of regulatory assets. Mr. Katiyar said his company found that there were deviations from the 'request for proposal' (RFP) in the vesting orders issued to the private DISCOMs. If the vesting orders conflict with extant regulations, the latter should be amended to ensure the success of the privatization initiatives. Clarity with respect to exclusivity especially in the context of the discourse on separation of carriage from content would be useful.

Performance of Tata Power Delhi Distribution Limited (TPDDL)

Timeline	AT&C Losses	ASAI Availability Index	Transformer Failure Rate	Street Light Functionality
July 2002	53.10%	70%	11%	40%
March 2022	7%	99.99%	0.78%	99.5%

Select Examples of the performance of Tata Power in Odisha

Timeline	Tata Power Central Odisha Distribution Limited			Tata Power Southern Odisha Distribution Limited		
	AT&C Losses	SAIDI	SAIFI	AT&C Losses	SAIDI	SAIFI
During takeover	29.7%	290 hours (FY21)	415 numbers (FY21)	46.4% (Jan 21)	175.06 hours	254 numbers
FY22 (provisional)	25.9%	143 hours	370 numbers	36%	166.97 hours	242.7 numbers

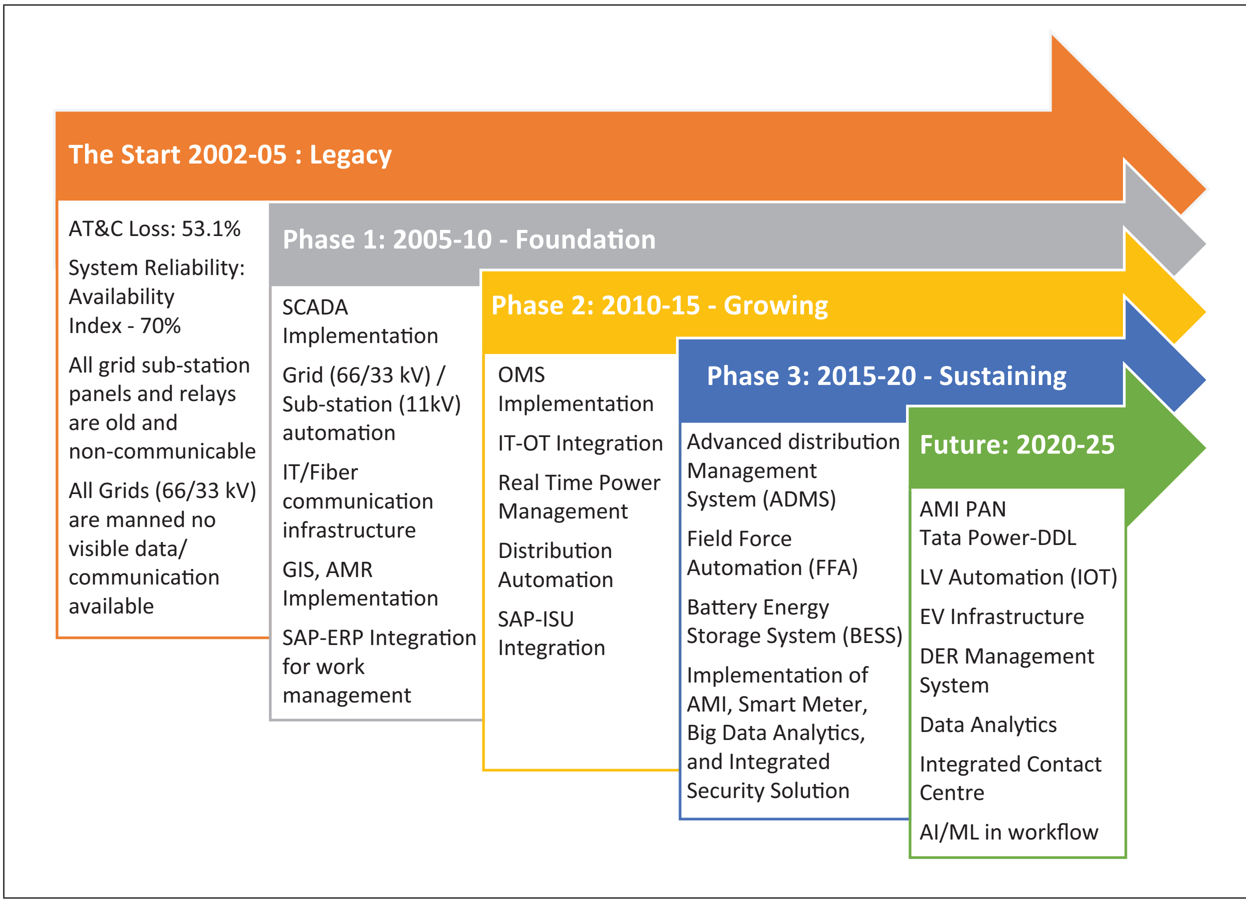


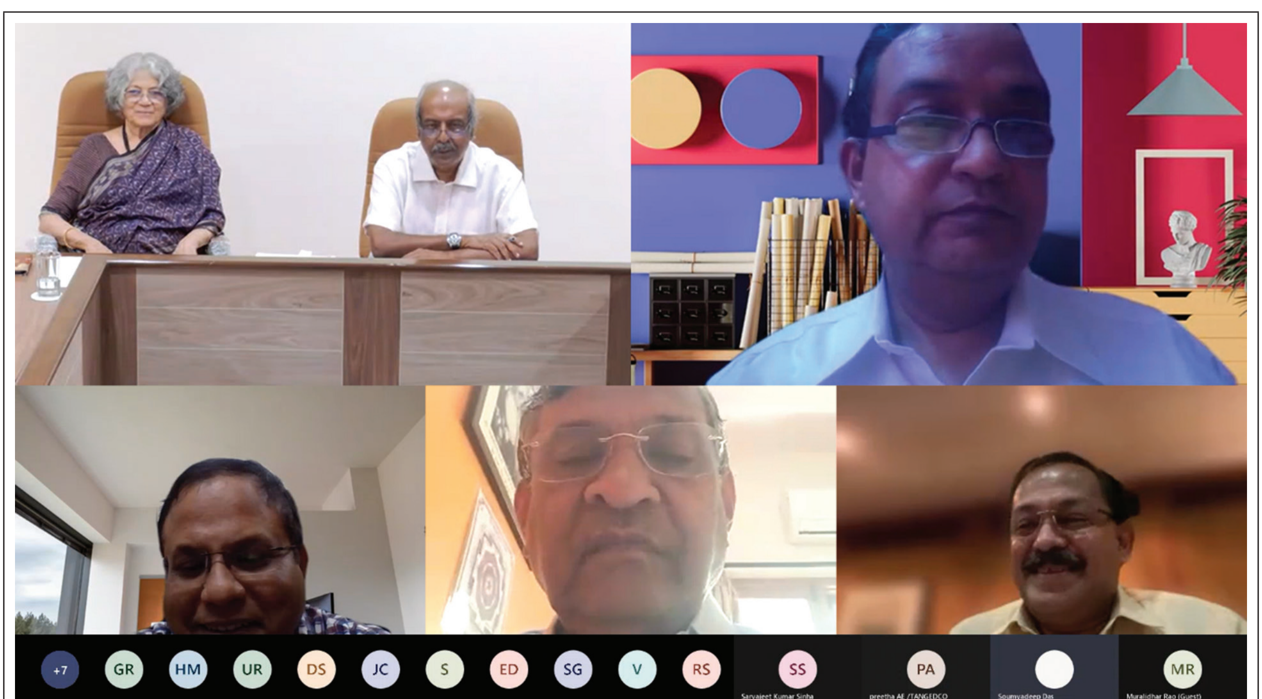
Figure 6: Transformative Journey and Future Action Plans of TPDDL

Mr. Debasish Banerjee, MD of CESC Limited, stated that 70 to 80% of DISCOM costs are going towards power purchase costs. Fuel costs and transport costs must be regulated to make variable costs affordable. He also said that a graded and calibrated approach is required for energy transition. Net-billing rather than net-metering should be the approach to encourage rooftop solar panels so that the benefits from renewable energy are passed on to the masses rather than benefiting only the classes. CESC focuses on improving operational efficiency, productivity and customer experience through adoption of technology such as automation and the extensive use of bots and IOTs and sensors and data analytics on real-time basis. This has enabled them to improve operational efficiencies in their license areas as well as DF areas.

Mr. Balwant Joshi, MD of Idam Infrastructure Advisory began with the need to ensure that there is no conflict of interest when appointing the technical member of regulatory commissions. As for appointment of regulatory staff, there is no longer any need to get staff from regulated utilities on deputation, because enough qualified professionals are available from the market. He drew attention to Section 121 of EA 2003 which empowers the regulators to exercise oversight over the sector. This section, he said should be invoked to recover the regulatory assets through tariff increases now rather than pass them on to future generations.

Feeder franchisee, though interesting, has not taken off. DF is successful in some jurisdictions. Mr. Joshi said that the 6th Proviso to Section 14 should be scrapped since it requires the second licensee to have its own network infrastructure. Like telecom portability, there should be portability between distribution licensees. He also believes that there is no impediment in the existing law to separate carriage from content. He added that merely talking about reducing cross-subsidies should be substituted by regulatory intervention to achieve it. Tariff reforms should aim at incorporating battery energy or pumped storage costs into the market through peak-pricing policies. Dynamic time of the day tariff will enable battery storage at the consumer end. As the share of renewable power in the basket increases, there is a need to compensate for reactive power, he said. Competitive procurement of power: Long-term PPAs have been coming up for renegotiation or supplementary tariffs etc. In the last 25 years, we have gained a lot of experience in power procurement contracting and hence it is possible to move from competition for the market to competition in the market. There is no need to have long-term PPAs; five-year PPAs should be the way forward and financing is now possible for short-term PPAs. The share of capacity market should be increased with greater share for renewable power.

In addition, Mr. Joshi, said that the share of exchanges in short-term market will go up only if we increase renewable capacity considerably along with pumped storage and batteries. The existing regulatory framework is sufficient to deal with SCED and MBED problems. Financial derivatives can be introduced only after jurisdictional issues between central and state regulators, but perhaps, the moment is not ripe for this. Significant capital costs have been added in both generation and transmission, but this is not scrutinized by the regulator. Transmission costs alone have increased to Rs.0.70/kWh, and all this is reflected in the tariff. Regulators and CEA must coordinate on power planning with



Glimpse from the Session II

due importance given to the role of the market, and until then, costs scrutinized diligently. Responding to a question, Mr. Joshi remarked that capacity should be created within regulatory commissions to review CAPEX proposals for both generation and transmission.

Mr. V. Hiremath who served two regulatory commissions, firstly as a Member of the Karnataka Electricity Regulatory Commission (KERC) and later as Chairperson of the Rajasthan Electricity Regulatory Commission (RERC), emphatically denied that there was any political interference in his functioning as the Chairperson of RERC. Since the government is answerable to the public and the consumers, governments should have a say in regulatory functioning, in the form of advice. However, many regulators in the country do not exercise the independence accorded to them by the statute. Shortening the duration of PPAs will frontload tariffs and hence needs reconsideration. He said that tariffs were revised steeply in Rajasthan during his stewardship, but there was no opposition to it. Nearly 80% of litigation in courts are because generators are not being paid. Mr. Hiremath said his advice to the State Government of Rajasthan to waive all clearances for land acquisition for power generation projects was accepted because of which, many solar projects came up in the state.

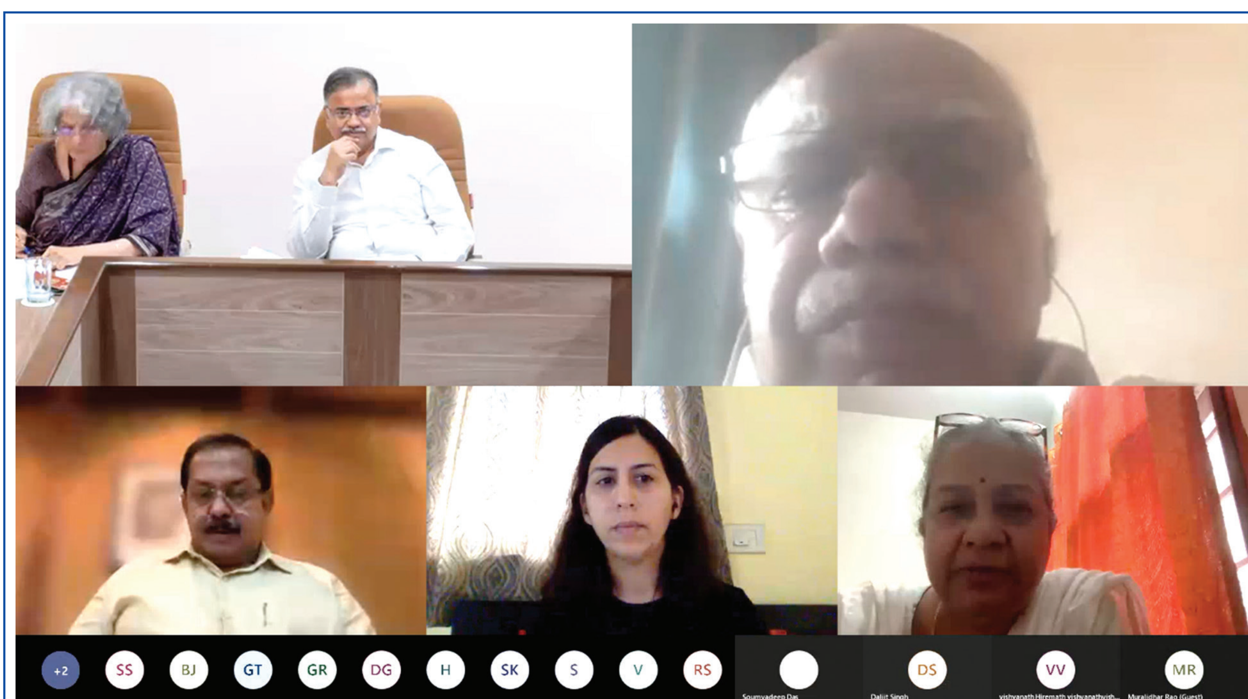
Session III

The last session was a panel discussion with experts from across the spectrum – consultant, consumer representative, and private DISCOM and government representative.

Prof. Srikanth wanted to know how Tata Power dealt with three different models of privatization – totally private, PPP and DF models. Mr. Katiyar responded saying that the PPP model gives the government also a stake in the success of the reforms. Consumers also have higher expectations from a private DISCOM and that too immediately after privatization. In such situations, government handholding and administrative support is essential.

As for bid documents being in violation of the extant regulations, Mr. Katiyar said that in the case of Orissa, the Odisha Electricity Regulatory Commission (OERC) was in the driving seat during the process of privatization and as such, there was hope that the conflicts would be addressed to the satisfaction of the private DISCOM. Yet, there have been problems in this regard which are being addressed gradually.

As for privatization of areas with large rural agricultural consumers, Mr. Katiyar said the presence of agricultural consumers would not be a hindrance for attracting private capital.



Glimpse from the Session III

Ms. Rasika Athawale, an independent power sector professional and a panelist said that myths that private capital is bad must be busted. Without infusion of private capital, the sector cannot be turned around. While privatization might lead to an initial increase in tariffs, it will also improve efficiency in terms of loss reduction etc., in the medium term. While the privatization experience so far has been mixed, we must move on, learning from the failures. It is also a myth that small consumers will not benefit from privatization, she said.

Prof. R. Srikanth expressed the view that it is possible to bring down power purchase costs from thermal power plants by closely monitoring the calorific value of coal that is supplied since 'grade slippage' is endemic in supplies by Coal PSUs to the power sector. High ash and moisture contents of coal have a major impact on power plant performance and Operation & Maintenance costs. A Privately-owned DISCOM is more likely to question the GENCO regarding their energy charges that are also impacted by the differences in the quality parameters of the coal ordered and that which is supplied by the Coal PSUs ('grade slippage').

Prof. Usha Ramachandra, an expert participant in the workshop, wanted to know if corporatization of DISCOMs had made any difference to the professionalization and transparency in the way DISCOMs function. Dr. Pendse responded saying that although the entire value chain has been unbundled and corporatized, an apex holding company has been created with the Chairpersonship of the energy minister and as such, mere corporatization without de-politicization did not improve governance within DISCOMs. He stated that even private companies are reluctant to push the government when the subsidies announced by the government are not disbursed on time.

Mr. Katiyar stated that it was a challenge to change the corporate culture, including rent-seeking by employees. NDPL (now TPDDL) infused fresh blood in the form of 250 engineers and 50 change leaders whose task it was to re-engineer business processes. All staff went through mandatory training on quality of customer service and behavior training. Also, the company began to reach out to customers rather than waiting for customers to approach the company. The company reached out to RWAs and residents to explain their work processes to get their buy-in. TPDDL was also bolstered by the relentless support of Ms. Sheila Dixit, the then Chief Minister of Delhi.

Responding to the same question, Mr. Banerjee said CESC has been able to apply its domain knowledge in Bikaner, Bharatpur and Kota (DFs in Rajasthan) to improve billing and collection efficiencies. When giving out DF, the state utility and state government will have to work together towards loss reduction etc., in addition to necessary CAPEX and OPEX to ensure 24X7 power supply to consumers.

Dr. Pendse explained that DFs in Aurangabad, Nagpur and Jalgaon failed because the DFs in these places did not have deep enough pockets unlike the DF in Bhiwandi (Torrent Power). Mr. Banerjee added that domain knowledge and experience is very necessary to run regulated businesses successfully. He explained how vital consumer-orientation is and how technology is being utilized effectively by a private DISCOM like CESC to enhance service quality.

Prof. Srikanth enquired from the two private sector DISCOMs (CESC and TPDDL) which

Glimpse at the end of Session III

model would be suitable for extensive license areas including a high proportion of subsidized, agricultural consumers. They stated that a PPP model is suitable for large areas with a mix of consumers. Employee unions are very important stakeholders, and they must be taken on board in any model. To a question on how to deal with governments like Delhi announcing free power, Mr. Katiyar said that it is up to the regulator to ensure that performing DISCOMs are not punished through the creation of regulatory assets.

Mr. K. Jairaj (Former Addl. Chief Secretary to the Government of Karnataka) said there are key differences between public (State-owned) and private DISCOMs. First, there is no rent seeking in the private sector. Second, public DISCOMs are controlled by the Energy department of the respective States and as such suffer from a deficit of corporate governance. Regulatory capture needs to be urgently addressed, he said since it leads to the deficit that cripples DISCOMs. Each DISCOM is different and as such, a one-size-fits-all approach is not suitable. The absence of a consultative mechanism between regulatory commissions and planning and policy experts must be addressed. NIAS should perhaps recommend regulation of inputs like coal.

Prof. Srikanth wanted to know if there can be a deadline for payment of subsidy announced by government without which private sector companies may not be willing to take over loss-making State-owned DISCOMs. Dr. Pendse said that if the share of subsidy is very large as in Bihar or Tamil Nadu, then it becomes problematic. Dr. Pendse opined that, regulators will have to be made accountable and answerable. Civil society and academia should have the capacity to assess regulatory effectiveness. This would make the regulators more vigilant, he said.

Closing Session

Wrapping up, Prof. Sudha Mahalingam highlighted the key recommendations that emerged from the workshop. Emphasizing Prof. Anoop Singh's view that there cannot be a one-size-fits-all approach to DISCOM reforms, she pointed out that the reform model will have to be dovetailed to the specific needs of a jurisdiction. Outright privatization is feasible if the private investor can be assured a mix of consumers – industrial and commercial alongside agricultural – and if there is handholding by the government as it happened in the case of Delhi. Further, exclusivity of franchise for an extended period is essential to provide a modicum of comfort to the private sector licensee. Where privatization is not feasible, a capable DF with experience in the power sector may be inducted by State-owned DISCOMs to improve the efficiencies of their operation & maintenance as well as commercial functions. However, the Board of Directors of State-owned DISCOM employees must develop ways to hold the management and employees of the DISCOMs accountable for their performance and incentivize them to perform better. It is possible to devise suitable incentives, a task that must be taken up by the Regulator (if not the DISCOM Boards) with urgency.

As for spiraling power purchase costs, perhaps there is a case for reducing the tenor of PPAs as a prelude to moving towards a real-time market. Despite the adoption of 'competition for the market', aka Harold Demsetz[1], power purchase costs have been mounting substantially because input costs are not regulated. There is an urgent need to regulate both coal price and railway tariff to bring down power purchase costs. Another recommendation that emerged was that transmission costs need to be kept down through better planning, more effective regulatory scrutiny and/or competitive bids to construct inter-state and intra-state transmission lines.

Apart from independence, regulatory deficit is also a glaring issue, leaving plenty of room for improvement. Regulatory staff must be given market-based compensation to attract the best talent from the market. The regulatory selection process must be reviewed, and the selection committee may have to be different from what it is today. It is very unfortunate that the financial autonomy of the regulator has been taken away. Even if there are other protections, if the purse strings are controlled by the government, there can be no regulatory autonomy or independence. A petition from a regulator could perhaps bring relief.

The crucial recommendation that emerged from the workshop is that regulatory independence must be restored. Regulatory capture by CPSUs at the Centre and by governments at the State level has led to exponential increases in power purchase costs and pile up of regulatory assets respectively. Regulation being a relatively new institution in India, turf wars are inherent in the paradigm. Yet, it is upto the regulators themselves to claim their space within the legal and policy frameworks, even invoking judicial intervention where warranted.

Last but not the least, regulators must be held accountable by the Standing Committee on Energy in Parliament (and the equivalent committee in the State legislature) for their acts of commission, and more importantly for their acts of omission.

1 Demsetz, H. (1968). Why regulate utilities? Journal of Law and Economics. Vol. 11. No. 1. pp. 55-65.

Acknowledgements

The Energy Environment and Climate Change Program (EECP) of NIAS Bengaluru thanks all the speakers for their presentations and the delegates for their participation and meaningful deliberations in making the Workshop a grand success. We also acknowledge the contribution of the session Chairpersons and the panel discussants for their valuable inputs and frank discussions. We are particularly grateful to Shri. K. Jairaj for motivating us to organise this interactive Workshop and for helping us to involve key stakeholders from the private sector as well. We also acknowledge Kumar Saurabh's role in helping us to organise this Workshop. Finally, we thank Director, NIAS for inaugurating the Workshop and the Head (Administration), NIAS and his team for making the videoconferencing and other arrangements for the Workshop.

(From right to left)

Prof. R. Srikanth, Prof. Sudha Mahalingam, Shri. K. Jairaj, Dr. Rudrodip Majumdar, and Mr. Soumya Deep Das

Annexure 1

Workshop Objective and Agenda

Core Objective of the Workshop:

To develop concrete ideas for ensuring the effectiveness of the existing regulatory paradigm and improving the long-term financial viability of the sector while safeguarding consumer interest.

Time	Agenda
09.45 – 10.00 hrs	**Online Registration of Participants**
10.00 – 10.30 hrs	**Inauguration** • Welcome by Dr. Shailesh Nayak, Director NIAS Bengaluru • Opening Remarks by Prof. R. Srikanth, Head, Program on Energy, Environment & Climate Change, NIAS Bengaluru
10.30 – 12.30 hrs	**Session I**
Session Chairperson Sh. K Jairaj, Former Addl. Chief Secretary, Government of Karnataka	• Dr. Pramod Deo, Former Chairperson, Central Electricity Regulatory Commission • Sh. D. Radhakrishna, Chairperson, Tripura Electricity Regulatory Commission • Sh. Raj Pratap Singh, Chairperson, Uttar Pradesh Electricity Regulatory Commission • Prof. Anoop Singh, Indian Institute of Technology (IIT) Kanpur • Sh. Daljit Singh, Fellow CSEP, Delhi
12.30 – 13.00 hrs	**Q & A session** **Moderator:** Dr. Tejal Kanitkar, NIAS Bengaluru
13:00 – 14:00 hrs	**Lunch Break**
14:00 – 16:00 hrs	**Session II**
Session Chairperson Prof. Sudha Mahalingam, NIAS Bengaluru	• Sh. D. Banerjee, MD, CESC Limited • Sh. Tarun Katiyar, Chief BD, Tata Power • Sh. Balwant Joshi, MD, IDAM Infrastructure Advisory • Sh. Hiremath, Former Chairperson, Rajasthan Electricity Regulatory Commission
16.00 – 17.00 hrs	**Session III (Panel Discussion)**
Session Chairperson Prof. R. Srikanth, NIAS Bengaluru	• Sh. K. Jairaj, IAS (Retd.) • Sh. D. Banerjee, MD, CESC Limited • Sh. T. Katiyar, Chief BD, Tata Power • Dr. A. Pendse, Consumer Advocate • Ms. Rasika G. Athawale, Founder, India Energy Insights
17.00 – 17.30 hrs	**Summing up by Prof. Sudha Mahalingam**

Annexure 2

List of Participants

Sl. No.	Name	Affiliation
1	Dr. Shailesh Nayak	Director/ NIAS Bengaluru
2	Dr. Pramod Deo	Former Chairperson/ Central Electricity Regulatory Commission
3	Shri. K. Jairaj, IAS (Retd.)	Former Additional Chief Secretary/ Government of Karnataka
4	Shri. Raj Pratap Singh, IAS (Retd.)	Chairperson/ Uttar Pradesh Electricity Regulatory Commission
5	Shri. D. Radhakrishna	Chairperson/ Tripura Electricity Regulatory Commission
6	Shri. Vishwanath Hiremath	Former Chairperson/ Rajasthan Electricity Regulatory Commission
7	Prof. Anoop Singh	Professor/ Centre for Energy Regulation - IIT Kanpur
8	Shri. Debasish Banerjee	Managing Director/ CESC Limited
9	Shri. Tarun Katiyar	Chief Business Development (BD)/ Tata Power
10	Shri. Daljit Singh	Fellow/ CSEP Delhi
11	Shri. Balwant Joshi	Managing Director/ IDAM Infrastructure Advisory
12	Shri. R.N. Sen	Former Chairperson/ West Bengal Electricity Regulatory Commission
13	Shri S.K. Soonee	Former Advisor/ POSOCO
14	Shri Prasanth Regy	NITI Aayog
15	Prof. Usha Ramachandra	Independent Director/ APGPCL (Former Professor and Director, Centre for Energy Studies, Administrative Staff College of India)
16	Smt. Rasika G. Athawale	Founder/ India Energy Insights
17	Dr. Ashok Pendse	Consumer Advocate
18	Shri. H.L. Mukunda	Financial Advisor Retd./ KPTCL
19	Representatives from the Karnataka Electricity Distribution Companies	DISCOM Officials
20	Smt. Savithramma.C	Joint Director/ Power Company of Karnataka Limited (PCKL)
21	Smt. T.L Padmalatha	Joint Director/ PCKL
22	Shri. Sreenivasa Madenahally	Indian Administrative Fellow/ Karnataka State Planning Department, Government of Karnataka

Sl. No.	Name	Affiliation
23	Shri Girinathan	TANGEDCO
24	Dr. R. Kathiravan	TANGEDCO
25	Shri. Preetha	TANGEDCO
26	Shri C.J. Prabhu	KPTCL
27	Shri T. Ravi Kumar	CEO/ Trinity-NDT Bengaluru
28	Ms. Vidya Goggi	Governing Council Member, Bangalore Apartments Federation (BAF)
29	Shri. Muralidhar Rao	Praja RAAG
30	Shri. Deepak G. Gala	Hyderabad Karnataka Environment Awareness and Protection Organization, Karnataka
31	Shri. Muralidharan Y G	Karnataka Electricity Governance Network
32	Shri Uday Shankar Peyyeti	Vice President - Program management, PamTen Inc.
33	Arvind	IIT Kanpur
34	Jyoti Sharma	IIT Kanpur
35	Ashwini Swain	Centre for Policy Research/ Delhi
36	Nikhil Thejesh	IIT Bombay
37	Prof. V.S. Ramamurthy	Emeritus Professor/ NIAS Bengaluru
38	Dr. P.S. Goel	Visiting Professor/ NIAS Bengaluru
39	Prof. Sudha Mahalingam	Dr. Raja Ramanna Chair Professor /NIAS Bengaluru
40	Prof. R. Srikanth	Energy Environment and Climate Change Program (EECP)/ NIAS Bengaluru
41	Prof. A.V. Krishnan	EECP/ NIAS Bengaluru
42	Dr. Tejal Kanitkar	EECP/ NIAS Bengaluru
43	Dr. Rudrodip Majumdar	EECP/ NIAS Bengaluru
44	Sarvajeet Kumar Sinha	EECP/ NIAS Bengaluru
45	Soumya Deep Das	EECP/ NIAS Bengaluru
46	Juhi Chatterjee	EECP/ NIAS Bengaluru
47	Kumar Saurabh	EECP/ NIAS Bengaluru
48	Haritha Songola	EECP/NIAS Bengaluru

Document Control Sheet

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9	**Collaboration**	:	NA
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11 **Abstract:**

Independent regulation is at the core of the electricity reform legislation enacted in India as Electricity Act, 2003. It addressed the power distribution segment, which is the cash register for the entire sector, by transferring the reins of governance of the sector from government to regulatory agencies. Yet, nearly two decades later, government seems to have wrested back control, reducing the regulator to a mere accounting intermediary.

The accumulated losses of all State-owned DISCOMs at the end of 2020 have crossed Rs.5 lakh crore even after three rounds of reform between 2003 and 2019. In 2021, the Government of India has decided to pump in Rs.3 lakh crore more under the 'Revamped Distribution Sector Scheme' to turn around the DISCOMs. This approach is unsustainable and flags serious managerial deficiencies within the State-owned DISCOMs and the effectiveness of the regulatory mechanism in this sector.

One of the key reasons for the continuing losses of DISCOMs is the steep escalation in power purchase cost which accounts for 70-80% of the annual expenditure of the DISCOMs. The sharp hike in PPC that cannot be recovered from the ultimate consumers immediately has a cascading effect on generation and transmission companies, with overdue amounts of Rs.1 lakh crore from DISCOMs.

Further, due to the cash crunch, most DISCOMs cannot invest in upgrading the sub-distribution infrastructure. Therefore, it is evident that structural reforms introduced in the form of unbundling and corporatization of vertically integrated utilities and independent regulation and the new governance paradigm designed to depoliticize decision-making in the sector have spectacularly failed. In this context, the workshop sought views from stakeholders on the course corrections and the way forward by inter alia, addressing the following key questions:

- What role can regulators play in improving the performance of the State-owned DISCOMs?
- Is privatization of DISCOMs with a large share of agricultural consumption possible? If so, under what structure (100% privatization or PPP or Distribution Franchisee) and policy guidelines?
- What are the potential gains and pitfalls of privatizing loss-making DISCOMs? How can the Regulators play a role in ensuring a smooth transition?
- Regulatory independence and to some extent, even autonomy, despite the many protections accorded in the statute, have remained illusory. How to address this issue? Does it call for amendments to the selection committee, selection criteria and measures to insulate them from political interference?

The Energy, Environment and Climate Change Program in NIAS organized this Workshop on 9 April 2022 to enable experts and key stakeholders to deliberate on the above issues and suggest the way forward. This report presents the gist of each talk during the workshop and the panel discussions, culminating in concrete proposals to ensure the effectiveness of the independent regulatory paradigm and improve the long-term viability of the DISCOMs. The implementation of these proposals is critical to facilitate the ongoing energy transition while safeguarding public interest.

12	**Keywords**	:	DISCOMs; Electricity Regulation; Power Sector Reforms; Privatization of State Utilities.
13	**Security Classification**	:	Unrestricted

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