

# Cooperative and Competitive Federalism to Further Reforms: The Case of the Power Sector

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## 1. Introduction

Distinguished guests, I am delighted to be here at the Hindu Centre for Politics and Public Policy which has carved out a unique niche for itself in producing high quality research on the burning public policy issues of the day. The need for such institutions in informing and guiding deliberation in the democratic policy-making process cannot be understated.

Today I want to talk about the challenges of reform in large federal polities such as India. This question assumes importance, and has particular salience, against the backdrop of the historic Goods and Services Tax (GST), which despite the transitional challenges, is an extraordinary political achievement of reforms in a large and complex federal political structure such as India's. Bringing together the centre, 29 states, and 7 Union Territories—pooling their sovereignty—is unprecedented. In fact, if one were to step back and see this against the resurgence of nativism and isolationism internationally—whether in the US, UK, or Europe—the GST is a stark and salutary trend-defier.

But what can we learn from the GST experience for other sectors? Power offers an interesting case study. While it is a subject on the concurrent list, and while many decisions are taken by the state governments—for example, on power tariffs—there are important and rich interactions between the centre and the states—fiscally and politically. These interactions make the power sector an eminent candidate for harnessing cooperative and competitive federalism to further reforms in this sector. Why that is so and how it can be done will be the subject of this talk.

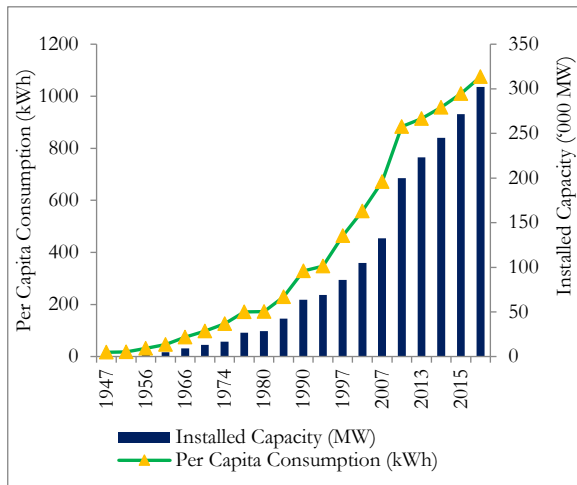
## 2. Background

Especially in the last few years, India has made great strides in boosting the physical infrastructure for power, comprising increases in generation and transmission capacity (Figures 1 and 2), which in turn have led to enormous improvements in people's access to power. Access to electricity has improved over time (Figure 3). Out of 18452 unelectrified villages in April 2015, 14857 have been electrified (80.5 %). Power for all under the SAUBHAGYA scheme is a vital initiative to provide the basic amenity—of affordable and uninterrupted access to energy—to all Indian citizens. Since the industrial revolution, we have learnt that making Life less “dark” and less hot-and-cold are an integral part of escaping the Hobbesian state of Life being nasty, brutish and short. Over the past few years, India's rank on the quality of power supplied (published as part of the Global

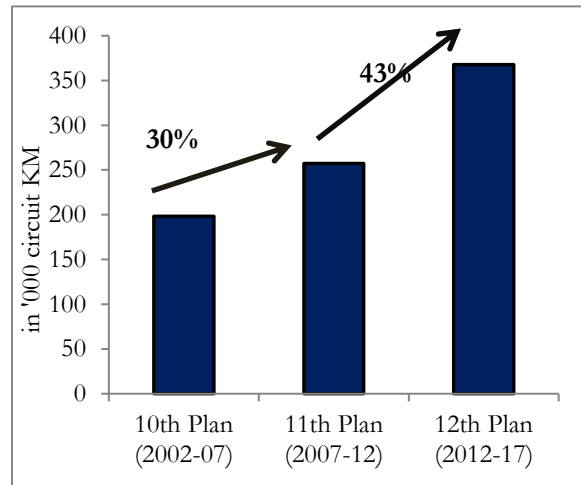
Competitiveness Index by the World Economic Forum) has improved significantly (Figure 4).

Energy shortages including peak power shortages have also declined (Figure 5).

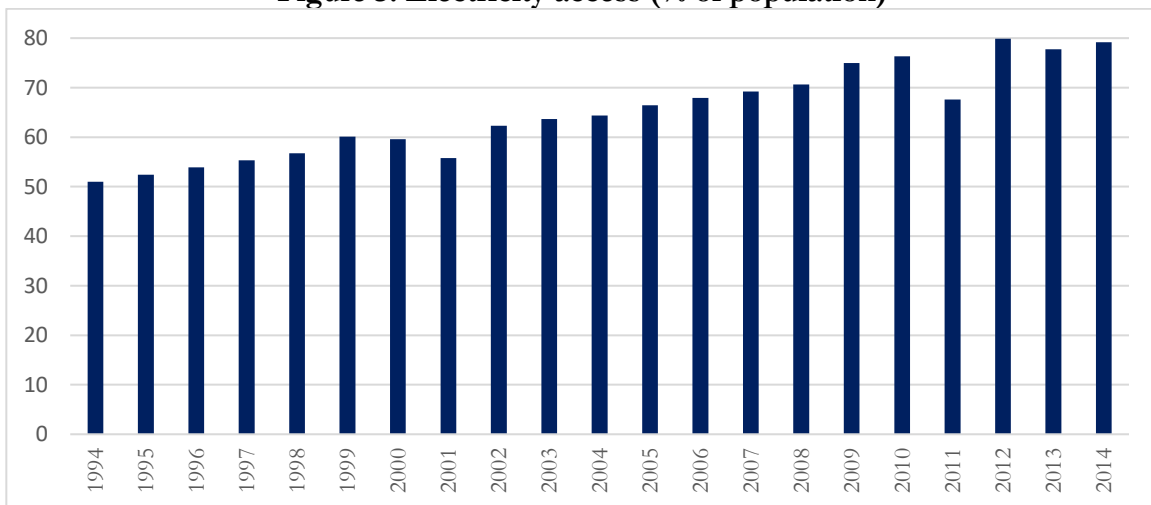
**Figure 1: Installed capacity and per capita Consumption**



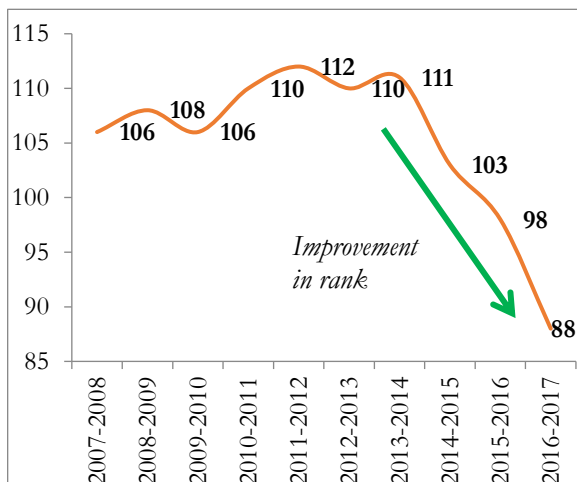
**Figure 2: Transmission line length**



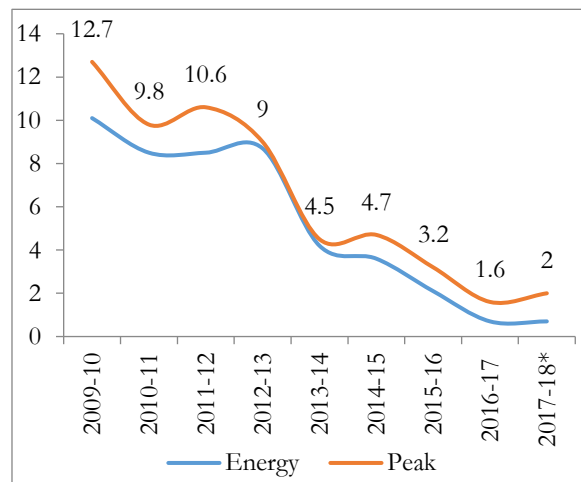
**Figure 3: Electricity access (% of population)**



**Figure 4: Quality of electricity supply**



**Figure 5: Energy & peak power deficit (%)**



Source: Ministry of Power, Central Electricity Authority (CEA), World Economic Forum & World Development Indicators.

More recently, the government under the Ujwal DISCOM Assurance Yojana (UDAY) scheme also launched a major initiative to address the perennial problem of financial losses in the electricity distribution companies—the discoms. It is too early to say whether there have been substantial financial improvements over and above those resulting from the fact of replacing high interest bank financing with much lower interest government bonds (the initial numbers show that 65 percent of the cost savings in UDAY are going to come from reduction in interest costs); and it is also too early to say whether the real reforms—in metering, in increasing tariffs—which are the real guarantor of durable success have been effectively implemented.

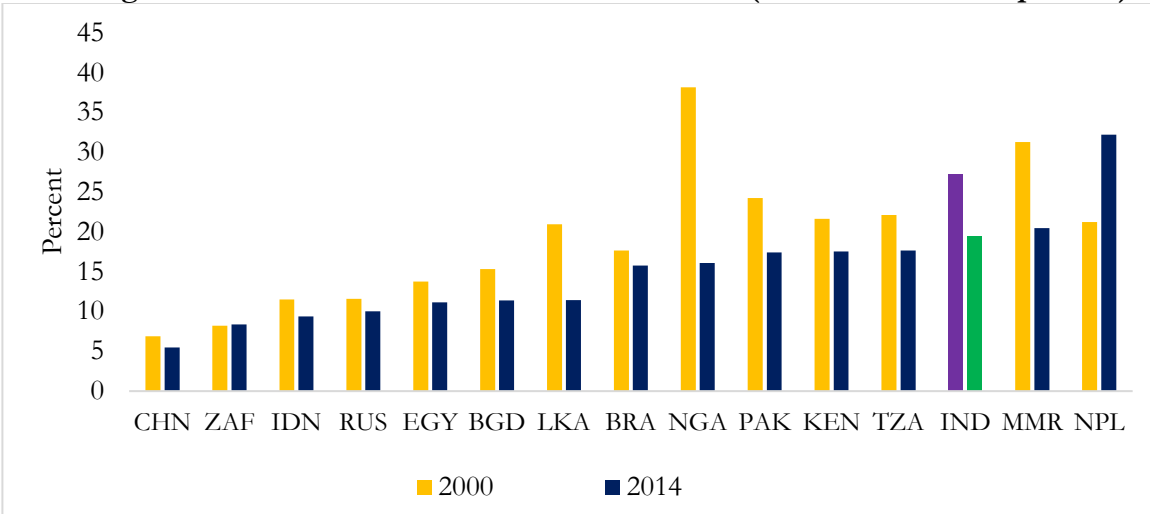
What we can say is that, despite commendable ongoing efforts, the sector faces substantial challenges going forward which make it worthy of serious analysis.

### **3. Challenges: Macro Perspective**

There are many challenges facing the power sector today which I will list soon. But they can be summarized simply: *ensuring durable financial viability of the entire sector*. In other words, as much emphasis has to be paid to financial as to physical issues, to reforming policies (to increase competition and choice) as to initiating schemes, and to correcting prices/costs as to increasing quantities. Viability has to be achieved for the power generating companies stuck with stranded assets in the aftermath of the GDP growth boom of the mid-2000s and now facing competition from the renewables sector where technology is resulting in dramatically lower costs and prices. Viability—or a modicum of it—has also to be achieved for the discoms many of which have seen a recurrence of the age-old problem of financial losses.

The sector continues to experience high transmission and distribution (T&D) losses (Figure 6 provides a cross-country comparison). Moreover, Aggregate Technical and Commercial (AT&C) losses are around 22 percent for 2015-16 which means that out of every 5 units of electricity produced 1 unit of electricity “leaks” or is not paid for. But it is difficult to precisely distinguish losses arising from pure “inefficiencies” on the part of distribution companies and those from political/social decisions to support poorer agents such as farmers and poor households.

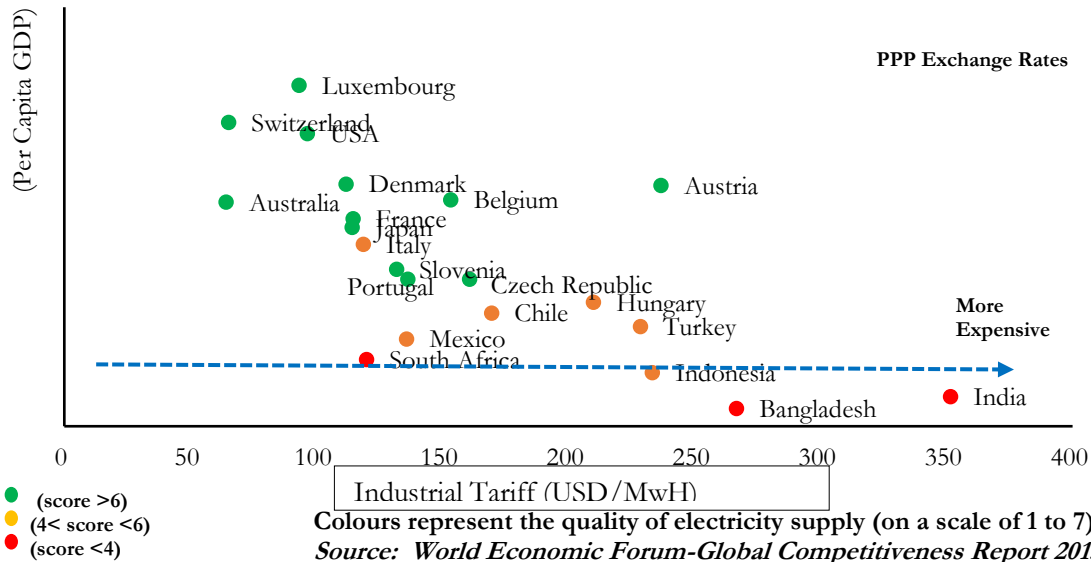
**Figure 6: Transmission and Distribution Losses (International<sup>2</sup> Comparison)**



Source: WDI

Inefficiencies and helping the poor in turn necessitate cross-subsidization—charging much higher tariffs for industrial and commercial users—to salvage some of the lost financial viability. In turn, competitiveness of industry declines, undermining the Make in India initiative. Indian industries continue to suffer the poor quality as well as higher electricity prices (not only relative to other consumer groups viz. agriculture and households but also internationally). Figure 7 below shows how India fares internationally in this regard. Back of the envelope calculations suggest that some energy-intensive industries—textiles and chemicals—pay 25 percent more on average across states to produce an unit of their output, owing to elevated industrial tariffs.

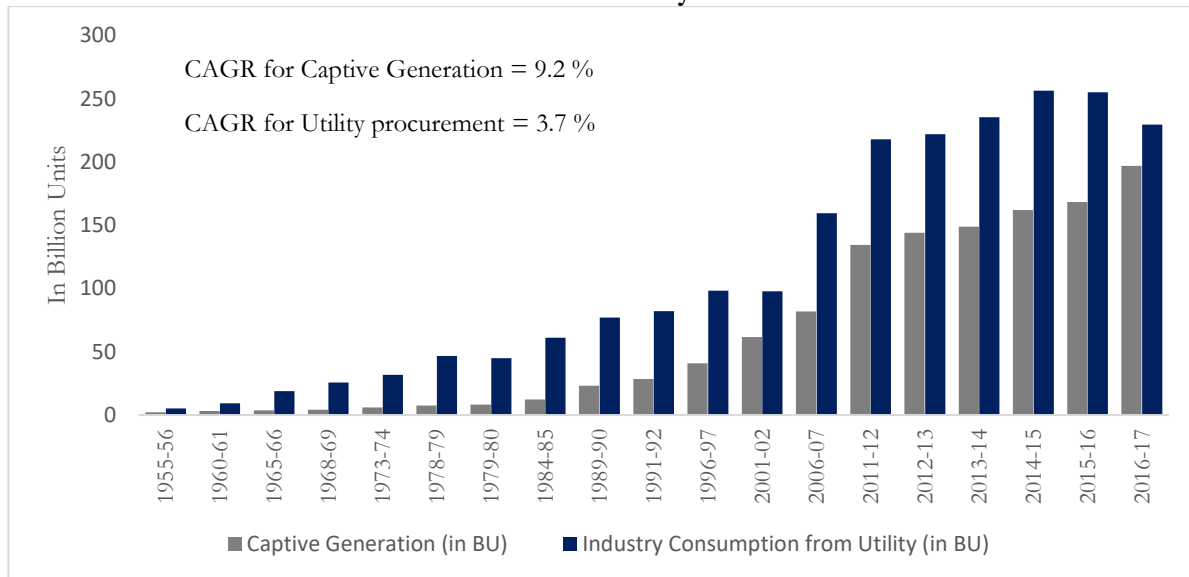
**Figure 7: International comparison of electricity prices and its quality supplied to Industry**



<sup>2</sup> In left to right order the name of the countries are— China, South Africa, Indonesia, Russia, Egypt, Bangladesh, Sri Lanka, Brazil, Nigeria, Pakistan, Kenya, Tanzania, India, Myanmar and Nepal.

High prices of electricity along with variable quality have led towards creation of captive power generation with consequences for costs. Figure 8 shows that the growth of captive generation since 2006-07 has been 9.2 percent vs 3.7 percent for electricity procured by industry from the utilities.

**Figure 8: Acceleration in growth of Captive generation by Industry vis a vis procurement from utility**



But even if financial viability and its collateral damage must now occupy center stage, the question arises as to the role of the centre and the attendant scope and need for cooperative federalism. After all, many of the issues in electricity are regulated by the states. The simple answer is that the centre, as it has repeatedly discovered, is deeply implicated in the financial viability of the states. The power generators have borrowed heavily from the public sector banks (PSBs). Credit Suisse estimates that up to Rs 2.4 lakh crore of power generator debt that is under stress is owed to PSBs. It is the central government that is having to pay for the attendant problems in the PSBs.

Similarly, the financial viability of the discoms also affects the centre directly and indirectly. The discoms too had borrowed from the PSBs. In order to avoid a swelling of NPAs, their debts were taken over by state governments. In turn, state government finances affect macro-economic stability of the country. And state government bonds are seen to be implicitly guaranteed by the centre. The centre clearly has a critical role in ensuring the financial viability of the sector which is the only manner in which the sector can fulfill its key aim of providing energy to all Indians.

Perhaps most importantly, the centre has an enormous stake in ensuring that there is one market for power within India which currently does not exist. If the GST has created one market, one tax, we

must strive towards one market for power too. Power cannot be the cause of a Balkanized economic India.

#### 4. Challenges: Specific issues

In increasing order of difficulty, the following is a list of the challenges facing the power sector today.

- Bringing transparency and simplicity: “One Market One Price”
- Addressing stress in power generation, including the challenge from renewables
- Reforming the fundamental structure of power sector to increase competition and choice: “One India One Power Market”; and
- Restoring long term financial viability by making people pay for power but equitably.

##### A. Bringing transparency and simplicity: One Market One Price

Figure 9 reproduces part of the 2016 tariff schedule for an Indian state. There are around 90 tariffs visible that vary by user, sector and magnitude. In most markets we think of having one price. Here we have multiple prices and in a manner that evokes the “Truth is Stranger than Fiction” dictum: separate tariffs for poultry and rabbit farms, for pisciculture, etc. Even the most riotous of imaginations cannot make up such distinct categories or make such fine distinctions. But such multiplicity is a recipe for confusion, rent-seeking and various forms of distortions.

**Figure 9: Example of Complex Tariff Schedule**

Consumer Category	Energy Charge (Rs /Unit)	Consumer Category	Energy Charge (Rs /Unit)	Consumer Category	Energy Charge (Rs /Unit)
<b>LT-EDOMESTIC (Telescopic)</b>		<b>LT-V:AGRICULTURE **</b>		<b>SEASONAL INDUSTRIES (off season Tariff)</b>	
<b>LT I(A):Upto 50 Units/Month</b>	1.45	<b>LT-V(A):AGRICULTURE WITH DSM</b>		11 kV	7.25
<b>LT I(B):&gt;50 and upto 100 Units/Month</b>		Corporate Farmers & IT Assesses	2.50	33 kV	6.59
First 50 Units	1.45	Wet Land Farmers (Holdings >2.5 acre)	0.50	132 kV & Above	6.33
51-100 Units	2.60	Dry Land Farmers (Connections > 3 nos.)	0.50	<b>TIME OF DAY TARIFFS (6 PM to 10 PM)</b>	
<b>LT I(C):&gt;100 and upto 200 Units/Month</b>		Wet Land Farmers (Holdings ≤ 2.5 acre)	0.00	11 kV	7.07
First 50	2.60	Dry Land Farmers (Connections ≤ 3 nos.)	0.00	33 kV	6.62
51-100	2.60	<b>LT-V(B):AGRICULTURE WITHOUT DSM</b>		132 kV & Above	6.20
		<b>MEASURES</b>			
101-150	3.60	Corporate Farmers & IT Assesses	3.50	<b>HT-IV: FERRO ALLOY UNITS</b>	
151-200	3.60	Wet Land Farmers (Holdings >2.5 acre)	1.00	11 kV	5.68
<b>LT I(D):Above 20 0 Units/Month</b>		Dry Land Farmers (Connections > 3 nos.)	1.00	33 kV	5.23
First 50	2.60	Wet Land Farmers (Holdings ≤ 2.5 acre)	0.50	132 kV & Above	4.81
51-100	3.25	Dry Land Farmers (Connections ≤ 3 nos.)	0.50	<b>HT-IE:OTHERS</b>	
101-150	4.88	<b>LT-V(C):OTHERS</b>		11 kV	7.25
151-200	5.63	Salt farming units upto 15HP	3.70	33 kV	6.59
201-250	6.70	Rural Horticulture Nurseries upto 15HP	3.70	132 kV & Above	6.33
251-300	7.22	<b>LT-VES:TREET LIGHTING AND PWS</b>		<b>TIME OF DAY TARIFFS (6 PM to 10 PM)</b>	
301-400	7.75	<b>LT-VII(A):STREET LIGHTING</b>		11 kV	8.30
401-500	8.27	Panchayats	5.64	33 kV	7.64
Above 500	8.80	Municipalities	6.16	132 kV & Above	7.38
<b>LT-II:NON DOMESTIC/COMMERCIAL</b>		Municipal Corporations	6.69	<b>HT-IE:AIRPORTS,BUS STATIONS AND RAILWAY</b>	
<b>LT II(A):Upto 50 Units/Month</b>	5.40	<b>LT-VII(B):PWS SCHEMES</b>		11 kV	6.91
<b>LT II(B):Above 50 Units/Month</b>		Panchayats	4.59	33 kV	6.31
First 50	6.63	Municipalities	5.64	132 kV & Above	6.01
51-100	7.38	Municipal Corporations	6.16	<b>TIME OF DAY TARIFFS (6 PM to 10 PM)</b>	
101-300	8.54	<b>LT-VI(C):NTR Sujala Padhakam</b>	4.00	11 kV	7.96
301-500	9.06	<b>LT-VII:GENERAL</b>		33 kV	7.36
Above 500	9.59	<b>LT-VII(A):GENERAL PURPOSE</b>	6.86	132 kV & Above	7.06
<b>LT III(C):ADVERTISEMENT HOARDINGS</b>	11.58	<b>LT-VII(B):RELIGIOUS PLACES (CL ≤ 2 KW)</b>	4.70	<b>HT-IV: Govt., LIFT IRRIGATION, AGRICULTURE</b>	
<b>LT-III:INDUSTRY</b>		<b>LT-VII(C):TEMPORARY SUPPLY</b>	9.90	Govt. Lift Irrigation & Agriculture	5.64
Industry (General)	6.38	<b>HT-IE:INDUSTRY GENERAL</b>		Composite Water Supply Schemes	4.61
Seasonal Industries (off season)	7.09			<b>HT-V:RAILWAY TRACTION</b>	6.68
Pisciculture/Prawn culture	4.63			<b>HT-VI:TOWNSHIPS AND RESIDENTIAL COLONIES</b>	5.96
Sugarcane crushing	4.63	11 kV	6.02	<b>HT-VII:GREEN POWER</b>	11.32
Poultry farms	5.63	33 kV	5.57	<b>HT-VIII:TEMPORARY</b>	
Mushroom & Rabbit Farms	5.63	132 kV & Above	5.15	<b>RURAL ELECTRIC CO-OPERATIVES</b>	
Floriculture in Green House	5.63	<b>INDUSTRIAL COLONIES</b>		Kuppam	0.24
<b>LT-IV:COTTAGE INDUSTRIES &amp; OTHERS</b>		11 kV	5.96	Anakapally	1.38
a) Cottage Industries upto 10 HP	3.75	33 kV	5.96	Chipurupally	0.22
b) Agro Based Activity upto 10 HP	3.75	132 kV & Above	5.96		

What type of confusions may arise from complex tariff schedules? A recent Survey conducted by the World Bank in Rajasthan provides some examples.

*Noticing changes in electricity prices:* Price awareness amongst residential consumers of electricity appears to be low in India. A recent World Bank survey in Rajasthan collected data on whether households noticed a change in price of electricity over a 12-month recall period (during this period, the tariff schedule was known to be revised only once in the month of September 2016). The proportion of households that reported to have noticed a change in price over the 12-month period was just 37 percent in urban areas and even low at about 25 percent for rural areas (in Alwar and Jaipur). Furthermore, of the households that did notice a change in the prices of electricity, only 1.5 percent correctly reported the month of price change to be September 2016.

*Awareness of different charges and discounts available in the tariff schedule:* The following table shows household's understanding of various prices and incentives available in the tariff schedules:

**Table 1: Household awareness of aspects of power tariffs**

Household awareness of		Alwar		Jaipur	
		Rural	Urban	Rural	Urban
<b>Application of fixed charges in the bill</b>	Not aware	20%	18%	11%	9%
	Yes aware	46%	61%	67%	64%
	Don't Know/ Can't say	33%	21%	22%	28%
<b>Slab-wise rates of electricity</b>	Yes aware	25%	47%	51%	62%
<b>Discounts available for BPL card ownership</b>	Yes aware	32%	36%	60%	64%
<b>Discounts available for rural areas</b>	Yes aware	31%	49%	48%	66%
<b>Discounts available for solar panels/heaters</b>	Yes aware	7%	33%	12%	29%
<b>Discounts available for installing pre-paid meters</b>	Yes aware	4%	21%	5%	20%
<b>Discounts available for paying bill before due date</b>	Yes aware	7%	16%	6%	24%

*Source: World Bank.*



The table indicates that most of the complex charges and incentives introduced by the regulators and the discoms are not perceptible to the final user. These non-salient and complex tariff policies can therefore prevent consumers from responding to price signals. As shown in Chetty, Looney and Kroft (2009)<sup>3</sup>, consumption bundles under non-salient prices can lead to welfare losses – which in India’s power sector can be corrected by creating a simpler and intuitive tariff schedule.

**B. Addressing stress in power generation, including the challenge from renewables**

In the power sector, a number of significant developments are affecting the short and medium-term outlook. As shown in Figure 10, the price of renewables has been declining significantly. This is a positive long run development for India and the global effort to combat climate change. But it will pose a number of short-term challenges.

**Figure 10: Fall in solar electricity prices in auctions**

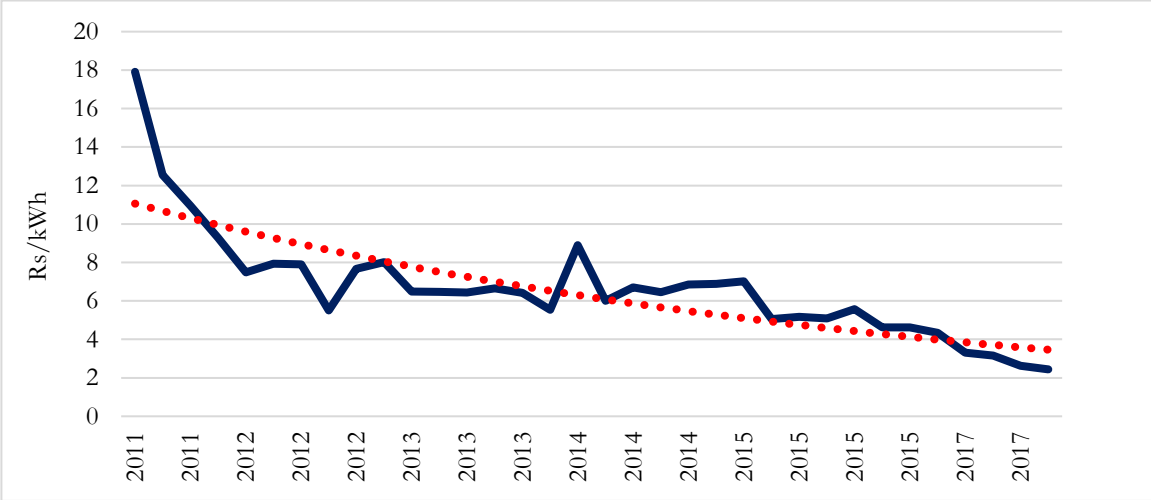


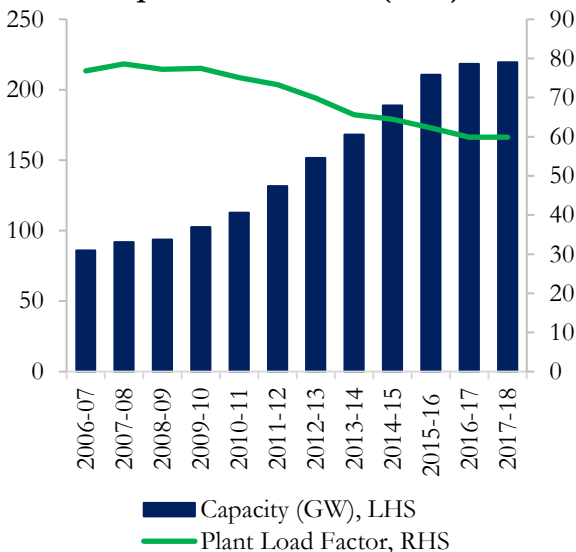
Figure 11 shows the increase in power generation capacity (mostly in the private sector and that too mostly in the form of long-term purchase power agreements (PPAs) between generators and discoms). Renewables becoming cheaper is only going to exacerbate the situation made already worse because of discoms remaining under financial stress and the excess capacity created during the mid-2000s’ boom. At present, there is reduced demand for private sector thermal power. As a result, plant load factors have declined steadily, currently averaging around 60 percent (Figure 11).

This implies that in the current distribution of plant capacity a number of plants are operating at well below viable levels of capacity utilization. If a rough benchmark of 60 percent and above is deemed viable, then Figure 13 shows that nearly 50 percent of current capacity is unviable. Reflecting this,

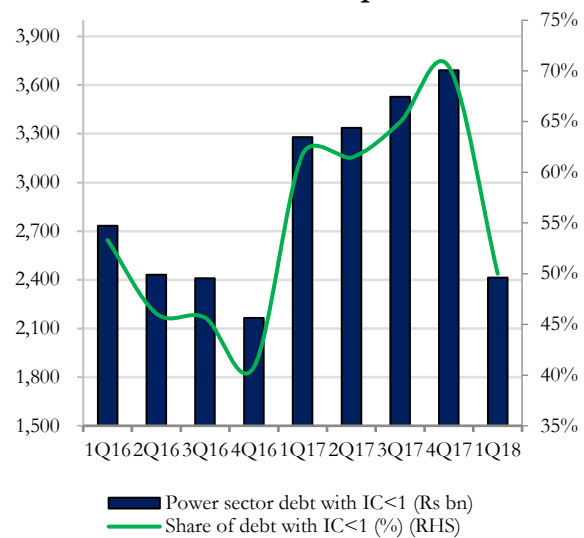
<sup>3</sup>[https://are.berkeley.edu/SGDC/Chetty\\_Looney\\_Kroft\\_AER\\_2010.pdf](https://are.berkeley.edu/SGDC/Chetty_Looney_Kroft_AER_2010.pdf)

Credit Suisse estimates that the ratio of companies in the power sector with an interest-coverage ratio of less than 1, referring to the ability to generate enough earnings to cover interest payments (a ratio of 2 is necessary for an investment grade rating) is still high at 50 percent, with an associated vulnerable debt of over Rs. 2.4 lakh crores (Figure 12).

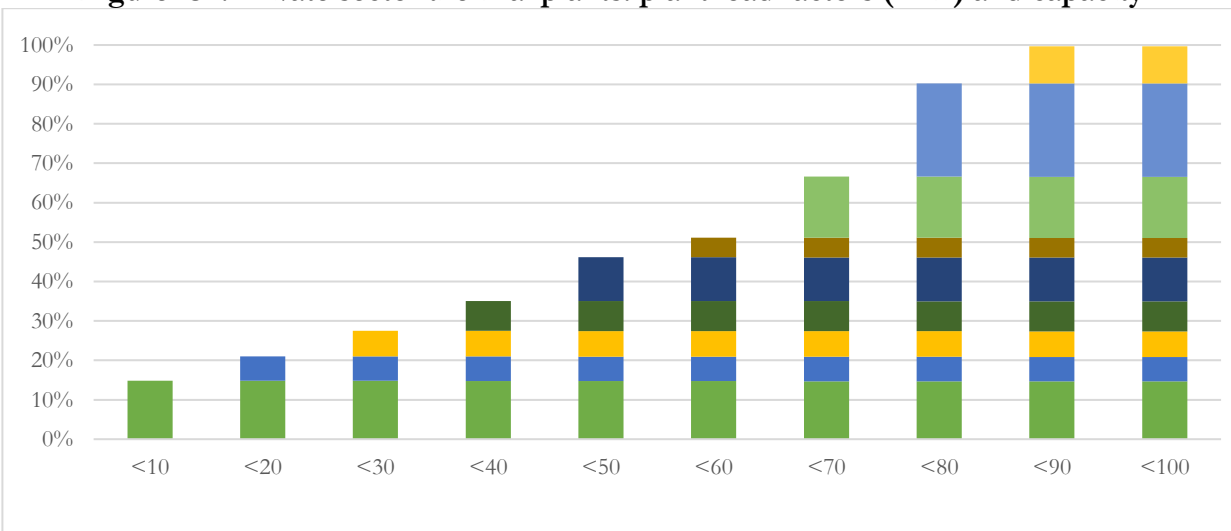
**Figure 11: Thermal generation capacity & plant load factors (PLF)**



**Figure 12: Share of debt with IC<1 and total stressed debt in power sector**



**Figure 13\*: Private sector thermal plants: plant load factors (PLF) and capacity**



\*Cumulative PLF on x-axis and % of total capacity on y-axis.

Source: CEA and Credit-Suisse.

It is fair to say that the world sees the future in renewables due to many valid reasons. It is a decisive strike against climate change. Technological improvements in this area have been equally striking. There is a Moore’s Law counterpart to Solar PV costs known as Swanson’s law which states that Solar PV module cost falls by 20 percent for every doubling in its capacity. These improvements

have been reflected in the dramatic decline in the price of photo-voltaic cells and in battery storage costs.

However, India has abundant coal and political economy of exiting from it will be very complicated. Therefore, the issue of adoption of renewables in India is a tricky one (for details, see the Darbari Seth Memorial Lecture<sup>4</sup> delivered in TERI, New Delhi on August 17, 2017).

### ***C. Reforming the fundamental structure of power sector to increase competition and choice: One Country, One Market***

The power sector has undergone significant change at generation, distribution, and transmission levels. The Electricity Act of 2003 was a landmark piece of legislation that envisaged more competition and choice, including via open access. Moreover, there are efforts afoot to increase competition at the retail level. Amendments to the Electricity Act, 2003 envisage opening up the retail electricity sector to multiple players including that from the private sector to introduce competition at the last mile of the value chain.

But it is worth understanding all the restrictions to choice that characterize the power sector at present.

The most egregious restriction, in our view, is that India is still not one market for power but multiple, fragmented markets. The evolution in the power market design has not kept pace with the transmission and generation capacity addition. The tenure and structure of contracts available to the generators still stays very limited. This alone is grounds for central government intervention. Figure 14 shows the cross-subsidy charges imposed by the various states on purchases of power from the power exchanges (which in principle is supplied by generators from all and other Indian states).

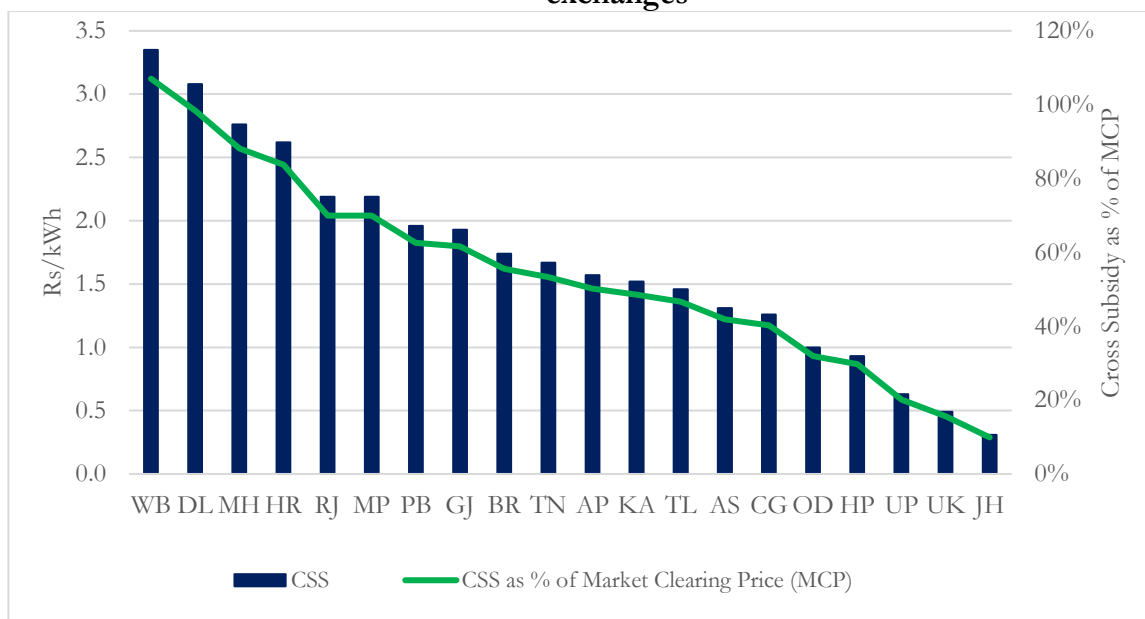
The rates are high—often exceeding the basic tariff charged to industry. The reason they exist is simple: it is a form of protectionism practiced by the states to sustain the basic tariff structure and cross-subsidization. If firms or others were allowed to purchase from other states/from open market, the discoms will find it difficult to sustain the high tariffs imposed on industry which itself results from the compulsion to charge lower rates for power in agriculture and households. Allowing purchases from the exchange would have a large effect on the revenue of the discoms already suffering from a weak consumer base.

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<sup>4</sup> [http://www.teriin.org/files/coal\\_renewables\\_lecture\\_aug2017.pdf](http://www.teriin.org/files/coal_renewables_lecture_aug2017.pdf)

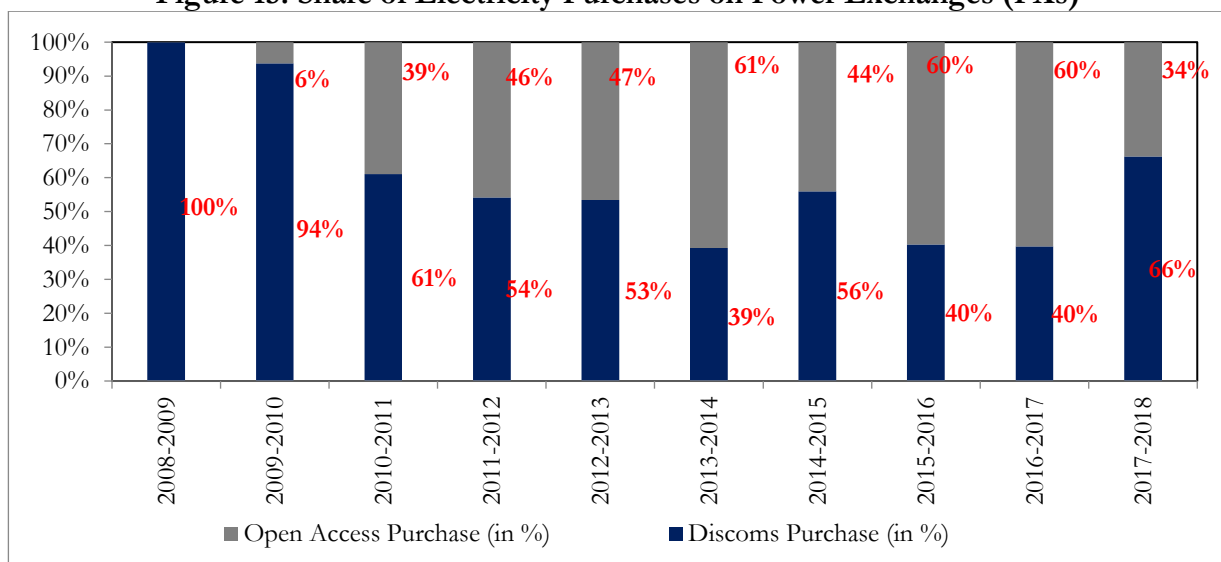
Similarly, there is lack of choice in the wholesale markets. Until recently, much of the purchase of power in the exchanges emanated from industrial users. Recently, however, the share of discoms in purchases from the power exchanges has been increasing while that from industrial users has been declining (figure 15). The reasons are twofold: faced with their own financial problems, discoms are choosing to buy cheaper power from the exchanges (which is linked to the cost of renewables) than from their suppliers under existing PPAs. In some cases, they are even renegeing on their PPAs (which are typically of long duration and high cost relative to the spot market).

**Figure 14: CSS\* + AS\*\* imposed by states for purchasing electricity from power exchanges**



\*Cross Subsidy Surcharge.\*\* Additional Surcharge

**Figure 15: Share of Electricity Purchases on Power Exchanges (PXs)**



#### ***D. Restoring long term financial viability by making people pay for power but equitably***

Of course, at the heart of the financial viability issues in the power sector—for decades—has been the inability of state governments to make people pay market prices for power. In the past, there used to be a chicken-and-egg problem: consumers, even if willing to pay for power, wanted reliable power and in the absence, were unwilling to pay for it; the inability then to charge for power led to low or zero tariffs for a vast bulk of the population and high tariffs for industry which hurt the competitiveness of Indian manufacturing.

Under the UDAY scheme, state governments are required to raise and rationalize tariffs and to put in place the metering system that would allow for transition to a system in which consumers pay for power.

### **5. Solutions**

How can these challenges be tackled?

#### ***A. Transparency***

First of all tariff schedules need to be drastically simplified. The Ministry of Power has made a commendable effort in starting this process of getting regulators together to convey this message. This is relatively easy but extremely important. State regulators must be instructed—and state governments must come on board—that there should be no more than, say, 5 rates in every tariff schedule. We are discovering even in the context of implementation of the GST that unnecessary complexity is costly.

But there are more areas where transparency must be improved. For example, the magnitude of subsidies received by the renewables sector—from the centre and states, by direct and indirect means, on and off-balance sheet—is a black box. Unless we estimate these, it is very difficult to make considered assessments about the costs and benefits of coal and renewables, and hence on the broader policy approach to these sectors.

Despite best efforts under UDAY, it is still quite difficult to derive information on tariff increases by the states/discoms. The lags in the financial data published by the discoms are about 3 years. To address this issue the accounting practices and reporting requirements of discoms need to be rationalized to equip policy making with more timely and reliable inputs.

The Ministry of Power has taken several steps to make data on different indicators of the power sector available to the public. With the increasing penetration of renewables, load dispatchers need to publicly share the transmission line utilization data, how often they are congested, and what direction power is flowing. Proliferation of apps and websites notwithstanding, perhaps there is a need to consolidate the data in one master website, available in easily usable formats.

### ***B. Stresses and coal versus renewables***

As discoms realize that there are cheaper, alternative sources of power than that can be availed as per their current PPAs with generators, there will be a growing rush to renegotiate tariffs downwards. Nascent signs are evident already as states like Uttar Pradesh and Rajasthan have announced that they will renege on their existing contracts. The Hon'ble Supreme Court's recent rulings that contracts are sacrosanct will further complicate matters. Quite apart from the fact that India does not quite have a workable framework for contract renegotiations, future workouts should be done in a manner so as not to render more capacity unviable and more debt to be unsustainable.

Stressed assets in power sector need urgent attention. But there is also a need for a fundamental relook at PPP contracts. These are by their nature incomplete contracts. While preserving sanctity of contract is important, it is unreasonable to expect discoms—or any other government agency—to buy power at Rs 5-6 per kWh when the price of alternative power is a fraction of that. There must be a mechanism to inject some reasonable pragmatism into this. After all, there is considerable international evidence showing that PPP projects do get renegotiated.

The difficulty is the lack of clear and workable processes for renegotiating contracts. Rather than adopting a stance that rules out renegotiations, designing negotiating mechanisms with *ex-ante* triggers and clear guidelines on how they will be settled might be necessary. To this end, and in line with the recent Kelkar Committee's recommendations, there is a need to examine this issue in all its new dimensions.

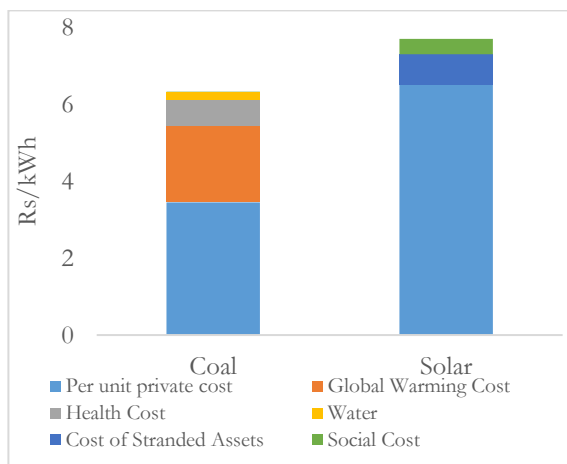
Consider next the challenge from renewables. Based on a study commissioned by the Ministry of Power, if renewables capacity rises sharply over time to reach 175 GW by 2022, the median Plant Load Factors (PLFs) in thermal generation may decline from 63 percent to about 50 percent by 2022. This is the challenge that the emergence of cheap renewable sources of power poses in that it

could lead to significant surge in stranded assets in the power sector with adverse consequences for the banking system and the government's finances.

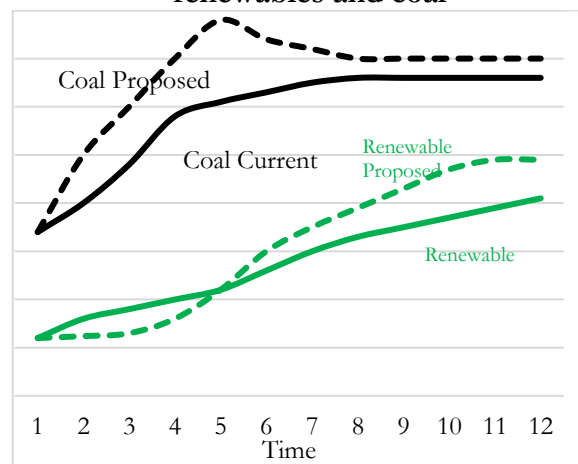
The Economic Survey, 2016-17, Volume 2 estimates that the cost of stranded assets in power alone is Rs. 0.7-0.8 per kWh (Figure 16). These would rise if the social costs are included. There are considerable uncertainties about the social costs of renewables and power, but two judgments can be made in increasing order of confidence. First, for India, today and at least for some time to come, the social costs of renewables are likely to exceed that of thermal power. Second, today and at least for some time, it is highly unlikely for the converse to be true.

On the coal and renewables issue, our sense is that a plausible strategy going forward must be to accelerate the use of coal and thermal within the next 10 years (Figure 17) after which renewables become truly viable. At that point, thermal power can be phased down to provide base load power. So, in the short run, the aim must be to increase plant load factors in thermal plants to between 75-80% so that they are viable.

**Figure 16: Social cost comparisons**



**Figure 17: Suggested future path for renewables and coal**



A corollary of the above is to perhaps reduce subsidies for renewables. This is because it seems odd for the government to subsidize renewables on the one hand and then also pick up the tab for the stranded assets in power and reduced coal consumption that result: the financial impact for the government arises from having to recapitalize the public sector banks that have lent to power companies and to the reduced profitability of the coal industry.

### ***C. Competition and Choice***

It is a travesty that India is not a single market for power. We need to increase choices for all stakeholders in the power sector. However, increased choices for consumers and hence competition at the retail end is essential, but this must be supported by competition upstream as well.

#### Increasing choices for Industry and Power Exchanges (PXs)

First and foremost, we must rationalize, and even aim to eliminate, the cross-subsidy surcharge to promote open access and choice. The cross-subsidy surcharge sustains competitive populism or uncompetitive federalism. As one country, having one market in power is existentially necessary, but it would also help to avoid such uncompetitive federalism. The threat of losing industrial consumers under an open access regime will also incentivize discoms to ramp up efficiency.

We must also provide industry and the power exchanges the authority to negotiate contracts which suit their needs and are of longer duration than the Day Ahead Market (DAM).

#### Increasing choices for discoms

It is increasingly untenable—in a world of rapidly declining costs—to insist that discoms negotiate very long term PPAs. They must be helped and encouraged to enter into more flexible PPAs of shorter durations so they have the flexibility and room to do viable financial planning

If industry buys more of its power on the exchanges and turns to the discoms only to satisfy unmet needs that does impose uncertainty on discoms. Therefore, they must be allowed to charge a reasonable risk premium to the industry for the uncertainty they face in their demand management, but also ensuring that discoms have an incentive to optimize their portfolio and not pass on their inefficiencies to industrial consumers.

Finally, electricity should be brought under the ambit of GST. This would allow the embedded taxes on manufacturing to be reduced which would help the sector's competitiveness.



#### ***D. Paying for Power and Direct Benefit Transfers (DBT)***

The Achilles heel of the Indian power sector and the perennially parlous state of the discoms is, of course, the inability to charge for power from all segments of society. But there is some potential great news here with long run implications. The good news is that since the cost of power—thanks in part to the renewables revolution—is declining precipitously it must be less difficult to charge users for power. The experience of the telecoms sector is instructive. India solved the problem of phone connectivity in large part due to a technological revolution that both decreased costs of communications dramatically and at the same time rendered redundant monopolistic and centralized ways of delivering telecommunications services.

In power, the cost reduction is happening, although the same impetus toward decentralized provision is still not present. Politically too, it must be easier to charge people Rs. 1 per kWh than Rs. 4 per kWh. Of course, the transitional challenges of creating viable power generation must be addressed but reasonable prices for consumers along with financial viability of the discom sector is perhaps less elusive.

At the same time, direct benefits transfer (DBT) in lieu of the power subsidy offers hope. The exact architecture of this DBT needs to be worked in consultation with stakeholders after pilots are conducted and the appropriate lessons drawn.

Our sense is also that there is much greater scope for making tariffs more progressive even within consumer categories. For example, in the Economic Survey 2015-16, Volume I, Chapter 11<sup>5</sup>, we found that the ratio of highest to lowest tariffs for consumers is lower in India (Table 2) than in other emerging market categories. There is also some evidence that poorest households—for various reasons—spend more of their budget on electricity than richer households.

**Table 2: Progressivity of Tariff (International Comparison)**

<b>Country Name</b>	<b>Ratio (Highest category to Lowest category Tariff)</b>	<b>ABR (for 30 units in US Cent/kWh)</b>
Bangladesh	1.9	4.5
Representative Indian State	1.2	4.8
Sri Lanka	4.2	4.2
Korea	5.3	7.1
Vietnam	1.7	7.0
Brazil	2.9	6.4

*Source: Economic Survey 2015-16, chapter 11.*

<sup>5</sup> <http://indiabudget.nic.in/budget2016-2017/es2015-16/echapvol1-11.pdf>

### *E. Strengthening Regulatory Capacity*

Last but not the least, tackling these challenges will require regulators in each state to be ahead of the curve, not only in terms of being aware of the issues that plague the sector—which they already are to a significant extent— but also in terms of the technical expertise needed to diagnose and solve problems. Regulators in a few states have already seen value in state-of-the-art technical analysis to study some of the challenges highlighted above and this experience can move to other states in the spirit of cooperative, or perhaps competitive, federalism, sooner rather than later. The quality of regulation supported by improvements in institutional capacity will be critical.

## **6. Conclusion: Cooperative and Competitive Federalism as a Technology for Reform**

Considerable progress has been made in providing greater energy access to Indian households and to increasing power generation and transmission capacity. Considerable challenges lie ahead which require a unifying vision of reform: ensuring durable financial viability of the entire sector. This will entail a series of inter-related actions: increasing transparency and simplicity; addressing the financial stress in power generation, making India one market for power, expanding choice for all agents, and harnessing the energy technology revolution to make people pay for power, but equitably.

But in democratic politics, the HOW of policy change is an equally important question. As discussed earlier, even though many of the issues in power fall within the scope of state government policy and regulation, there is both a stake for and ability of the centre to pursue reform in a cooperative federalism framework; in some cases, there is need to prevent uncompetitive federalism

The Centre can deploy both sticks and carrots as it did under the UDAY initiative to nudge states into reform. By insisting on one market (“stick”), it can nudge states away from competitive populism; by providing a forum for regulators, it can build capacity and opportunities for mutual learning; by providing a political forum it can foster policies in the collective interest (for example, bringing electricity into the scope of the GST); by highlighting and rewarding best practices, it can incentivize competitive reform.

What the centre did for the GST in creating the GST Council can be done for the power sector. For example, the Prime Minister envisaged the *raison d’être* of Niti Aayog—in contrast to that of its

predecessor, the Planning Commission—as a forum for fostering cooperative and competitive federalism.

Indeed, Niti Aayog can be and become to all development issues in which the centre and the states have an important stake—power, direct benefit transfers, e-NAM, water sharing etc.—what the GST Council is now to domestic indirect taxes.

In the virulent spread of cooperative and competitive federalism, with the experience of the GST as the harbinger, lies India's future.

My sincerest thanks to all of you for your time, patience, and attention.