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# **Discussion Paper on Competitive Bidding in the Indian power sector: Past, Present and the Future**

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# **Contents**

1. Executive Summary	3-4
2. Overview of the Competitive Bidding process	5-12
2(a) Competitive bidding process in international markets	
2(b) Rationale behind the introduction of competitive bidding in India	
2(c) Transition from MoU to Competitive Bidding in India	
2(d) Review of tariff-based competitive bidding till now	
3. Overview of the capacity contracted through competitive bidding	13-23
3(a) Analysis of tariffs discovered through cost plus vs. competitive bidding	
3(b) Case Studies: Ultra Mega Power Projects (UMPPs)	
4. Sanctity of Contract post competitive bidding; Re-visiting PPAs	24-25
5. Future of competitive bidding: Policy and Regulatory interventions required	26-29
6. Annexures	30-34
7. About IPPAI	35-36
8. Disclaimer	37



## **Executive Summary**

Competition is increasingly understood to enhance production, efficiency, and consumer welfare in almost all sectors of economies across the world. Policymakers also seem to embrace competition as a process by which the most productive firms win. Competition in any sector is generally associated with the following:

- Lower prices for consumers with better choices
- Increased number of suppliers
- Improved efficiency
- Innovation

Power has long been considered an important public service, a strategic resource in a country's development, and a natural monopoly. Throughout the world, the power sector has been controlled, and usually owned, by the state. This assumption was challenged by the advent of the aggressively free-market governments in Chile, and later in the United Kingdom (UK). Chile and the UK started opening up their power sectors to competition in the late 1980s.

The English and Welsh experiment in unbundling, followed by privatising and introducing competition in retail sector suggests that it is possible to consider power sector as potentially competitive industry rather than natural monopoly.

Over the past few years in India, industries such as telecommunications, pharmaceuticals, and automobiles, have had to adapt to competitive market discipline—and consumers have benefited in terms of choice, price, and product satisfaction. There is an exception to that: Indian power sector.

The power sector in India has witnessed major policy, structural changes and regulatory initiatives during the period of economic reforms as it was widely recognized that reliable and uninterrupted power supply is one of the basic necessities for the growth of industries.

Unbundling of the sector, de-licensing and legal initiatives to bring in competition have been initiated. The most important initiatives to bring in competition were letting private players in generation of electricity and provision of 'open access' to generating companies to the transmission grids and to the end users of choosing their supplier. The changes that these initiatives have brought about are quite significant, but have not necessarily been in the direction intended. India continues to be a power-deficit economy and the core problems of wastages, lack of efficiency and competition still remain to be addressed successfully.

In the transition from traditional regulated monopoly electricity supply industry to modern deregulated electricity supply industry, competition is more effective than regulation in promoting private sector participation through massive investments and efficiency in electricity supply industry has increased sharply. But there are many structural and policy issues in the sector which hinder competition.

Competitive bidding not only helps discover the price of a product or a service in a transparent and non-discretionary manner, but it can also help keep a check on prices. Yet the current reality in India's power sector is that attempts have been made more than once to bypass the time-honoured principle of competitive bidding.



The efforts to reduce tariffs through competition (competitive bidding) have not bore fruitful results. Despite a belief that competitive bidding method is the fair price of discovery, there have been concerns that bids of generators are made under inaccurate assessment of future costs, project execution and operations, tariffs determined through the competitive bidding route may be aggressive, pose risk to financial viability of projects, or undermine execution of the project.

Private investment in generation under the market-driven competitive bidding scenario did well in the 11th Five-Year Plan (2007–12), and the initial rounds of bidding coincided with a booming economy and a stock-market bubble in which private companies responded in large numbers. Therefore the competitive bidding rounds resulted in extremely low tariffs being quoted by the private sector and illustrated a very high value for money resulting from the competitive route as opposed to the negotiated route. (In some cases, companies bid too aggressively and are now locked into long-term power purchase agreements [PPAs] that they will be unable to execute owing to a spike in fuel costs, because their hedging arrangements have unraveled as a result of regulatory changes in Indonesia and Australia. This issue remains unresolved, but it raises doubts about whether some of the triumphs of the 11th Five-Year Plan's best deals in terms of lowest bids for multiyear power purchases can in fact ever materialize fully over the 25-year life of the PPA.)

The theory that competitive bidding is the best mechanism for allocating contracts under the theory they lead to objective price discovery has been belied by the Indian experience. This has led to large backlog of dysfunctional bids particularly in the power sector where electricity generation contracts were bid on the basis of the lowest quoted tariff. Most projects have become unviable and are stuck in litigation between level regulators who insist that the terms of the original contract be adhered to and private developers who are invoking the force majeure clause to change the contract in view of circumstances beyond their control. More recent attempts to renegotiate the agreements over the Tata ultra mega power plant (UMPP) and Adani plant at Mundra, Gujarat, give rise to the belief that renegotiations threaten the very principle of competitive bidding.

While the inception of competitive bidding regime has marked reduced costs across countries and businesses, the fact is that it is still not well understood in the Indian context. The country is still in the process of understanding free market dynamics and it would take its own time in evolution and appreciable participation. Before the next wave of power sector reforms can be launched, India must internalize the lessons of the past few years. While undergoing a transition, from a controlled environment to a competitive, market driven regime, it has to provide affordable, reliable and quality power at reasonable prices to various segments of consumers in the economy.

Through this position paper, Independent Power Producers Association of India (IPPAI) aims to provide broad overview of the competitive bidding process till now and at the same time closely looks into the weakness/shortcomings of the bidding process. In addition, this paper also proposes the way forward for competitive bidding in India and hence safeguarding the interests of the consumers.

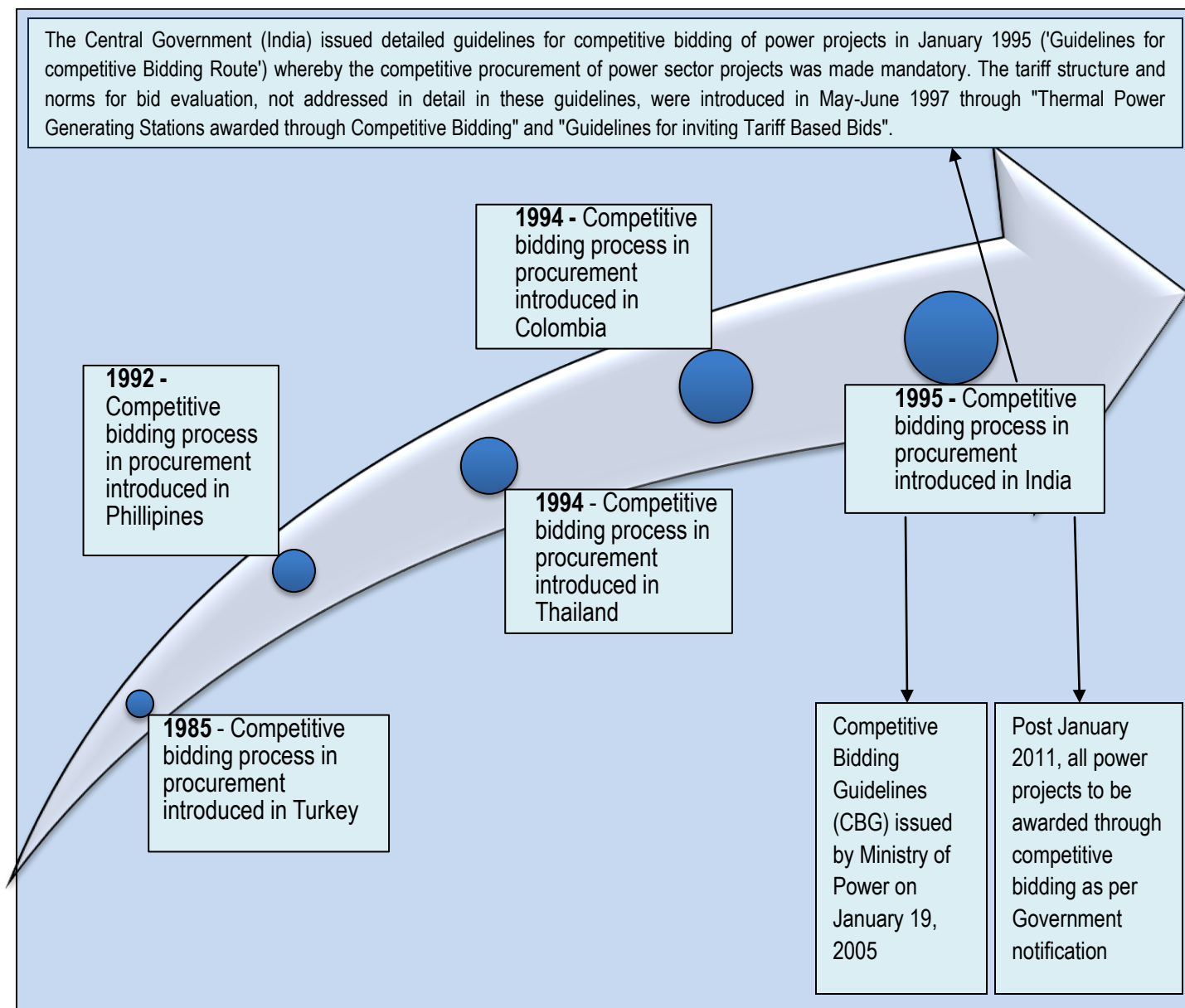
This study essentially relies on information and data that is publicly available through sources such as websites of the regulatory commissions, Central Electricity Authority (CEA), utilities, project developers' websites, red herring prospectus from the exchange board (SEBI) and media reports.



## Overview of the Competitive Bidding process

### 2(a) Competitive bidding process in international markets

Competitive bidding for electricity generation projects has been in existence in world over, including the developing countries phenomenon. This is on account of difficulties in the negotiated route the competitive bidding for procurement of generation of power services was made mandatory. The other countries which procure/ try to procure generation using the competitive bidding route include Philippines, Thailand, Turkey, Columbia and China. Brazil has been very active in procuring transmission services through the Build-Own-Operate route. Most of the developed countries relied on cost or rate based regulation until competition was infused into electricity markets.



In principle, the need for international competitive bidding in infrastructure projects is generally accepted. The World Bank, in a Public Policy for the Private Sector Note of December 1998, acknowledged that “bidding seems to have reduced PPA prices by 25 percent on average”, and recommended “discouraging the widespread practice of non-competitive procurement of goods”. “Provided that sufficient interest can be attracted from bidders, governments, and utilities can obtain better terms for the host country under competitive bidding for proposals from IPPs than under noncompetitive negotiated deals”, add World Bank power economists Robert Bacon and John Besant-Jones.

Walid Musallam, a consultant and former IFC official, points out that competitive bidding also reduces the risk of political resistance against projects. “The transparency of the process by which a project concession is awarded also is a strong determinant of the level of political risk faced by the sponsors. In general, competitively bid concessions face low levels of political risk and command better financing terms in the marketplace”, Musallam noted in March 1998. And in a contributing paper for the World Commission on Dams, Michael Wiehen, chair of Transparency International, Germany (and a former country director of the World Bank), stated:

*“Among the standard rules on procurement which should be covered by the national jurisprudence are the following: open, public competition must be the rule and actual practice for all procurement decisions above a relatively low value threshold; any exceptions should be possible only in truly exceptional circumstances (e.g., natural disasters).”*

There is also general agreement on the importance of international competitive bidding for public works projects in Uganda. “The most perverse corruption is in the procurement of goods and services”, the Uganda Debt Network commented in May 2001. “A high proportion of grand corruption cases result from procurement”, the Ministry of Finance, Planning and Economic Development confirmed in its latest Poverty Reduction Strategy Paper Progress Report. As a consequence, the Ministry announced that “open tendering will be required, except for projects under a specific limit or in the specified circumstances”.

In spite of such announcements, Power Purchase Agreements are regularly based on exclusive bilateral negotiations rather than competitive bidding. In Indonesia, 26 out of 27 independent power projects were not based on competitive bidding. “In the good old days, there was little of that nonsense about competitive bidding”, the Asian Wall Street Journal commented on July 28, 1999. “You simply hooked up with a Suharto relative or friend and, in a typical arrangement, offered to ‘lend’ them 15 percent equity, repayable only when the electricity started to flow.”

In their Project Appraisal Document for the Bujagali dam, the World Bank and IFC claim that because “developers normally want an exclusive right to a site before they commit substantial resources in project development”, hydropower projects are “generally unsuitable for a competitive process based on the price of electricity”. One of the main arguments for promoting private sector power projects has been that competition reduces prices. If competition is indeed not possible in the bidding for private hydropower projects, this is an important argument against promoting private hydropower.

A reassessment of the performance of the infrastructure sector in many countries led to the belief that market forces and competition can improve the production and delivery of infrastructure services without affecting the economies of scale. Certain pragmatic and non ideology-related factors also hastened the process of introducing commercialisation and privatization of infrastructure services in many countries.

Many countries looked for additional resources for financing the infrastructure services because of the large investment required; the government’s inability to supply infrastructure services efficiently and in a commercially sound manner was



recognized; providing efficient and cost-effective infrastructure services became necessary for countries if they were to compete globally; and technological breakthrough altered the traditional concept of managing infrastructure services through monopolies, and it became possible to unbundle services and to introduce competition.

Despite the obvious advantages, some private developers argue that competitive bidding may not always be appropriate for infrastructure projects. There are three main cases commonly raised by investors. First, some argue that organizing a competitive bidding procedure takes time and when projects are needed urgently, direct negotiations will be faster. While it is true that competitive bidding processes are relatively complex, the contention that negotiated procedures will always be faster is debatable.

Examples abound of negotiations that drag on for very long periods. Besides, hastily negotiated deals may pay insufficient attention to key issues, which may emerge to haunt one or both parties later on. Second, there may be concern that investors will not take on the often high development costs associated with preparing competitive bids for projects in smaller or more risky markets without assurance or recovering their expenses through the award of the contract. This concern is often said to be particularly true in the case of water supply concessions, where the underground nature of the assets makes due diligence difficult and costly.

One response to this concern, as in the case of Buenos Aires, is to undertake a thorough evaluation of the market and underlying assets by an independent consultant before bidding is opened, making this information available to all firms who participate in the bidding process. Limiting the number of prequalified bidders to three or four also increases each candidate's chance of winning and thus their willingness to incur preparatory costs.

Finally, an announced policy of reimbursing all or part of the development costs incurred in the preparation of the best non-qualified bid(s) could help attract bidders. Third, there may also be concern that private sponsors will not take the initiative to develop unsolicited proposals for private infrastructure projects if there is a risk that their labors and intellectual property will not be rewarded through the awarding of the contract. There may be a number of responses to this concern.

In the Philippines, for example, a strong framework in support of competitive bidding still allows unsolicited proposals to be accepted through direct negotiation in some circumstances, including a requirement that comparative bids be solicited and, if a comparative bid is received at a lower price, the original proponent has the option of matching the price of the comparative bid and receiving the contract. It may also be possible to provide direct incentives for firms to offer unsolicited project ideas that are later adopted, without necessarily forgoing the benefits of a competitive process; after all, the firm most capable of generating innovative ideas will not always be the one that is best able to implement those ideas at least cost. A consensus is emerging internationally in favor of competitive bidding.

Exceptions should normally be limited (e.g., very small contracts and emergency situations). If it is decided to carry on with negotiated procedures, safeguards can be used to limit the risks inherent in this strategy. Among the most important are the adoption of transparent procedures and the use of external benchmarks, which provide some assurance that the conditions being offered are reasonably advantageous.



## 2(b) Rationale behind the introduction of competitive bidding in India

Various economic theories establish that competition is beneficial for the economy as it restricts the market power of single firms. For consumers, increased competition implies more choice, lower prices (higher consumer welfare), improved quality, and increased access to products. Producers benefit through their profit maximizing behavior as markets adjust to supply and demand according to scarcity relations leading to allocative efficiency. Newer firms and increased competition provides incentives for decreasing costs and enhancing innovation (dynamic efficiency). Theoretically, these benefits are measured using consumer surplus, producer surplus, and the resulting total welfare.

### **Consumer Interest**

Competition gives consumers the opportunity to choose between suppliers, compels competitors to improve efficiency and may bring down prices. Price is the signal that helps to balance demand and supply and stimulate new capacity creation. If price is not freely determined in response to supply and demand, distortions are likely in the structures of production, consumption and markets.

Competition requires multiple suppliers and many consumers. If only one supplier provides a product or service, whether because of government sanctioned monopoly or for reasons of 'natural monopoly', there can be no competition. Similarly, if there were to be only one buyer, he would be able to dominate the suppliers for supply and on price.

### **Better Price discovery**

The cost-plus negotiated method of project development during 1991-2005, with tariffs determined on the basis of capital costs, meant that private parties had no real incentives to be efficient. It was not surprising, therefore, that a majority of developers proposed investments that translated into tariffs well above the benchmarks existing in the public sector. Moreover, the pass-through in tariffs of foreign currency risks added to the risk perception on the part of state governments.





## **2(c) Transition from MoU to Competitive Bidding in India**

### **First Phase: 1991-2003**

It is important to note that the 1991 power sector reform sought only to add generation capacity and bring more power into the sector, despite the unsatisfactory underlying performance of the sector as a whole. From the states' viewpoint, the critical problem that needed to be addressed was the peak deficit that led to power shortages and rationing. These government orders at the start of the reform, some of which were later enacted in Parliament to become the Electricity Laws (Amendment) Act of 1991, radically revised prevailing legislation by permitting private entities to establish, operate, and maintain generating power plants of virtually any size and to enter into long-term power purchase agreements (PPAs) with SEBs who remained in charge of distributing power to end users.

Memorandum of Understanding (MoU) based contracts of the 1990s were the first major policy change that strived to attract private sector investment in generation. By mid-1995, there were about 189 offers to increase capacity by more than 75 GW, involving a total investment of more than US \$100 billion. Of these, 95 projects for a total installed capacity of 48,137 MW had reached the stage of MoUs or letters of intent (LOIs) with state governments. To help these projects reach financial closure, the central government introduced another set of carrots by granting fast track status to eight of the most promising projects and agreeing to offer them sovereign counter-guarantees. For all the excitement with which it was launched, the reform program turned out to be a dud overall: against a target of more than 40,000 MW in the 8th Five-Year Plan period (1992–97), fewer than 17,000 MW were added.

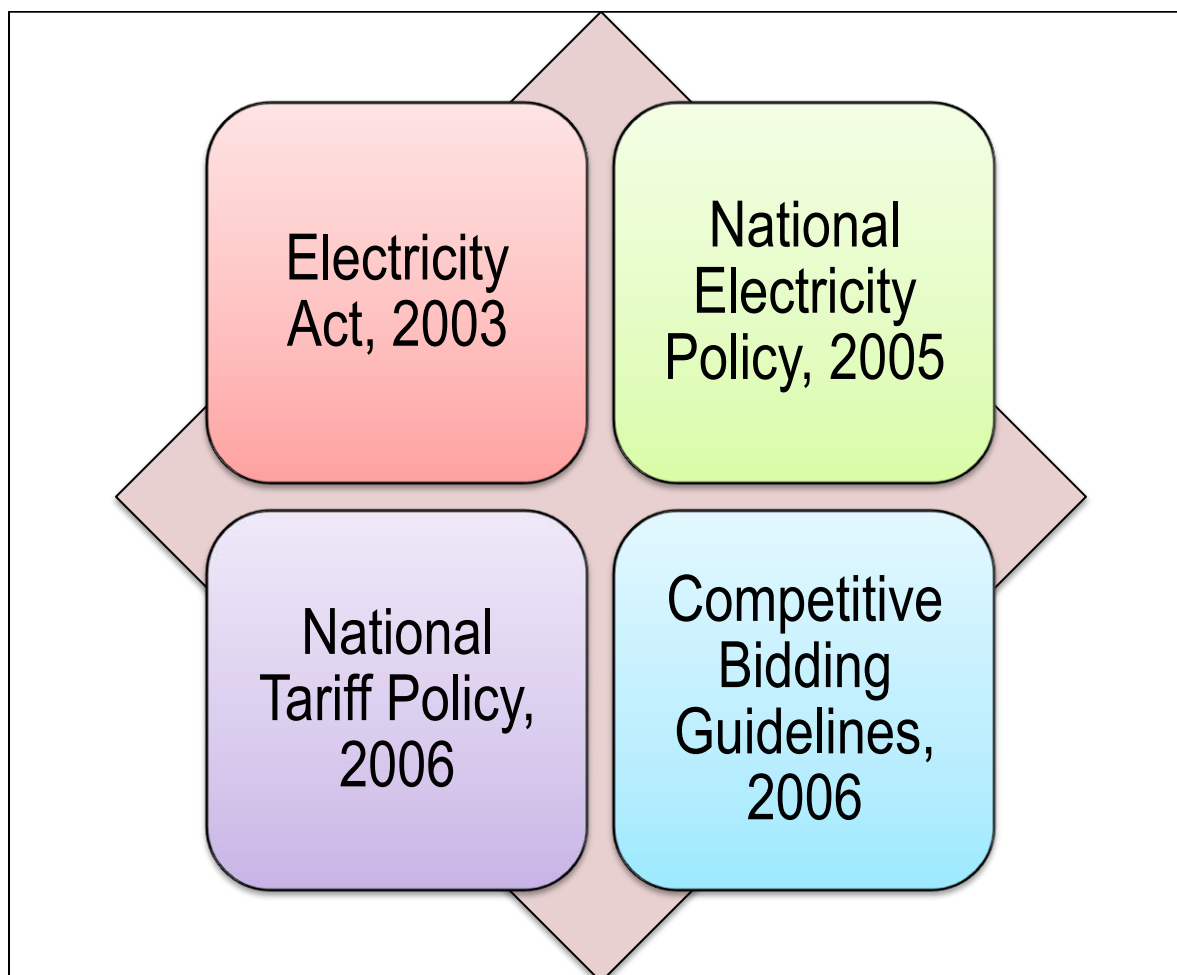
Lack of transparency in signing the MoU, failure to plan capacity addition in a comprehensive manner and absence of competition in selection process were some of the primary governance failures that undermined any usefulness of the IPP policy.

### **Phase 2: 2003-2011**

The central government issued tariff-based competitive bidding guidelines in 2005 for procurement of power by distribution licensees (state utilities, also referred to as distribution companies). This issuance was done under Section 63 of the act to create competition in generation and to reduce overall power procurement cost by distribution companies. Distribution companies had previously purchased power under contracts on a case-by-case basis with IPPs, assuring the IPPs of a 16 percent return on equity. Thereafter, the competitive bidding guidelines were applicable for long-term procurement (seven years and above) and medium-term procurement (one to seven years) of base-load, peak-load, and seasonal power requirements.



## 2(d) Review of tariff-based competitive bidding till now



The Electricity Act, 2003 (further referred to as EA, 2003) stresses on increasing the role of competition in the Indian power sector. The section 62 of the Act mentions that the determination of tariff for the supply of electricity by a generating company to a distribution company is under the jurisdiction of the Electricity Regulatory Commission. However, section 63 (Determination of tariff by bidding process) states that: "Notwithstanding anything contained in section 62, the Appropriate Commission shall adopt the tariff if such tariff has been determined through transparent process of bidding in accordance with the guidelines issued by the Central Government." Following EA, 2003's mandate, the Ministry of Power (MoP) first issued the Competitive Bidding Guidelines (CBG) on January 19, 2005. The guidelines aimed at achieving the following objectives:

- promote competition in procurement of power by distribution licensees;
- facilitate transparency and fairness in such procurement;



- reduce the information asymmetries for various bidders and encourage competition;
- expedite the process of materialization of projects; and
- provide flexibility to suppliers in managing internal operations, while ensuring the availability of power at predictable rates and thus protecting consumer interests.

#### Tariff Based Competitive Bidding (TBCB): Post Competitive Bidding Guidelines 2005

Three sections of the Electricity Act of 2003 provide for tariff regulation and determination across different segments of the industry. Sections 61 and 62 of the act provide for those aspects for generation, transmission, wheeling, and retail sale of electricity by the “Appropriate Commission.” Section 63 of the act states that “notwithstanding anything contained in Section 62, the Appropriate Commission shall adopt the tariff if such tariff has been determined through transparent process of bidding in accordance with the guidelines issued by the Central Government.”

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Two routes are available for competitive procurement of power by distribution licensees—Case I (Location non-specific project and Case II (Location specific projects).

(1) Overview of the capacity contracted through competitive bidding since 2005:

Case I	Case II	UMPPs	Total
26520 MW	10340 MW	16000 MW*	52860 MW

**Table 1:** Capacity contracted through competitive bidding since 2005

**Source:** Prayas report (2011), IPPAI analysis

**Note:** \* - PPAs for Tilaiya UMPP have been terminated



(2) State-wise capacity contracted through Case 1 and Case 2 bidding route since 2005:

State	Capacity contracted through Case I & Case-II bidding route (in MW)			
	Case I	Case II	UMPPs	Total
Andhra Pradesh	2400			2400
Bihar	600			600
Chhattisgarh		1320		1320
Gujarat	6800			6800
Haryana	1724	1320		3044
Maharashtra	4900			4900
Madhya Pradesh	1841			1841
Kerala	450			450
Punjab		3300		3300
Rajasthan	2300			2300
Uttar Pradesh	2175	4400		6575
Tamil Nadu	3330			
Gujarat (UMPP)			4000	4000
Andhra Pradesh (UMPP)			4000	4000
Madhya Pradesh (UMPP)			4000	4000
Jharkhand (UMPP)			4000*	4000
<b>Total</b>	<b>26520</b>	<b>10340</b>	<b>16000</b>	<b>52860</b>

**Table 2:** State-wise capacity contracted through competitive bidding since 2005

**Source:** Prayas report (2011), IPPAI analysis

**Note:** \* - PPAs for Tilaiya UMPP (Jharkhand) have been terminated



## **Overview of the capacity contracted through competitive bidding**

### **3(a) Analysis of tariffs discovered through cost plus vs. competitive bidding**

Under the National Tariff Policy of 2005, a five-year exemption was provided for public sector projects to contract with distribution utilities without going through a competitively bid process pursuant to Section 63 of the Electricity Act of 2003. In effect, the tariff of public sector projects continued to be negotiated and determined by appropriate commissions under Section 62 of the act on a cost-plus basis. In September 2010, when this five-year exemption came up for review, the CERC issued statutory advice to the central government not to defer the deadline. In effect, this advice initiated a transition of the public sector to also take part in competitive tariff-based bidding beginning January 6, 2011.

#### **Post CERC findings**

Before making its recommendation, the CERC carried out a detailed exercise of comparing tariffs realized on competitively bid projects, with an assumed construction of an equivalent plant contracted as a memorandum of understanding (MoU) plant (with tariffs determined through the negotiated route by the appropriate commission). On the basis of this comparison with public sector projects, which were still using the MOU route under their five-year exemptions, the CERC reiterated its advice to the central government to transition all public sector projects to a competitive basis of procurement under case 1 or case 2. This approach would effectively remove any regulatory determination of tariffs for projects for which developers signed PPAs after January 5, 2011. However there has been an exception. **(See box below)**

CERC accepted 14 projects, which had participated in Case I and Case II tenders from 2005. Tariffs under competitive bidding have been found to be lower than cost plus mechanism. Several reports including the statutory advice of the CERC regarding timeframe for tariff based competitive bidding bring out this fact.

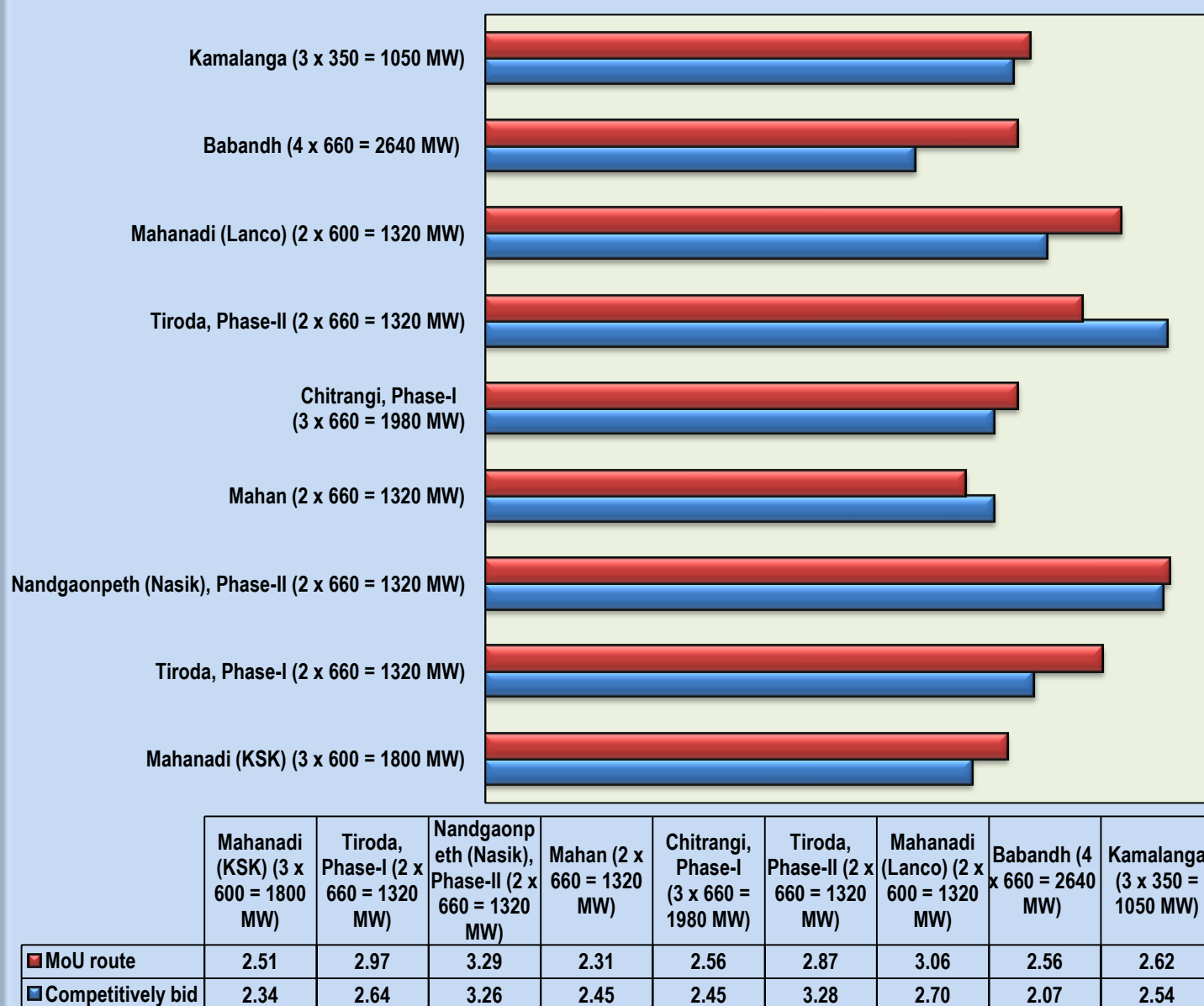
Towards the end of the paper, there are Annexures. Annexure-I gives the lists the projects with tariffs discovered through the cost-plus methodology that have been considered for comparison. (Projects compared in the graphs have also been added to Annexure-I.

#### **Fact Box**

NTPC, the country's largest generator, had inked PPAs with distribution firms for around 37,000 MW of new generation capacity between October 1, 2010 and January 5, 2011 — the cut-off date for a mandatory shift to a tariff-based competitive bidding regime. It was alleged that the haste shown by NTPC in signing power purchase agreements (PPAs), in the wake of an impending shift to a tariff-based bidding regime from January 2011 was a clear “abuse of its dominant position” in the power sector.



### Case I bids from 2007-2010, tariffs in INR/kWh



**Figure 1:** Comparison of Levelized Tariff as calculated under Cost plus methodology with Levelized Tariff as discovered under Competitive bidding

**Source:** CERC Study

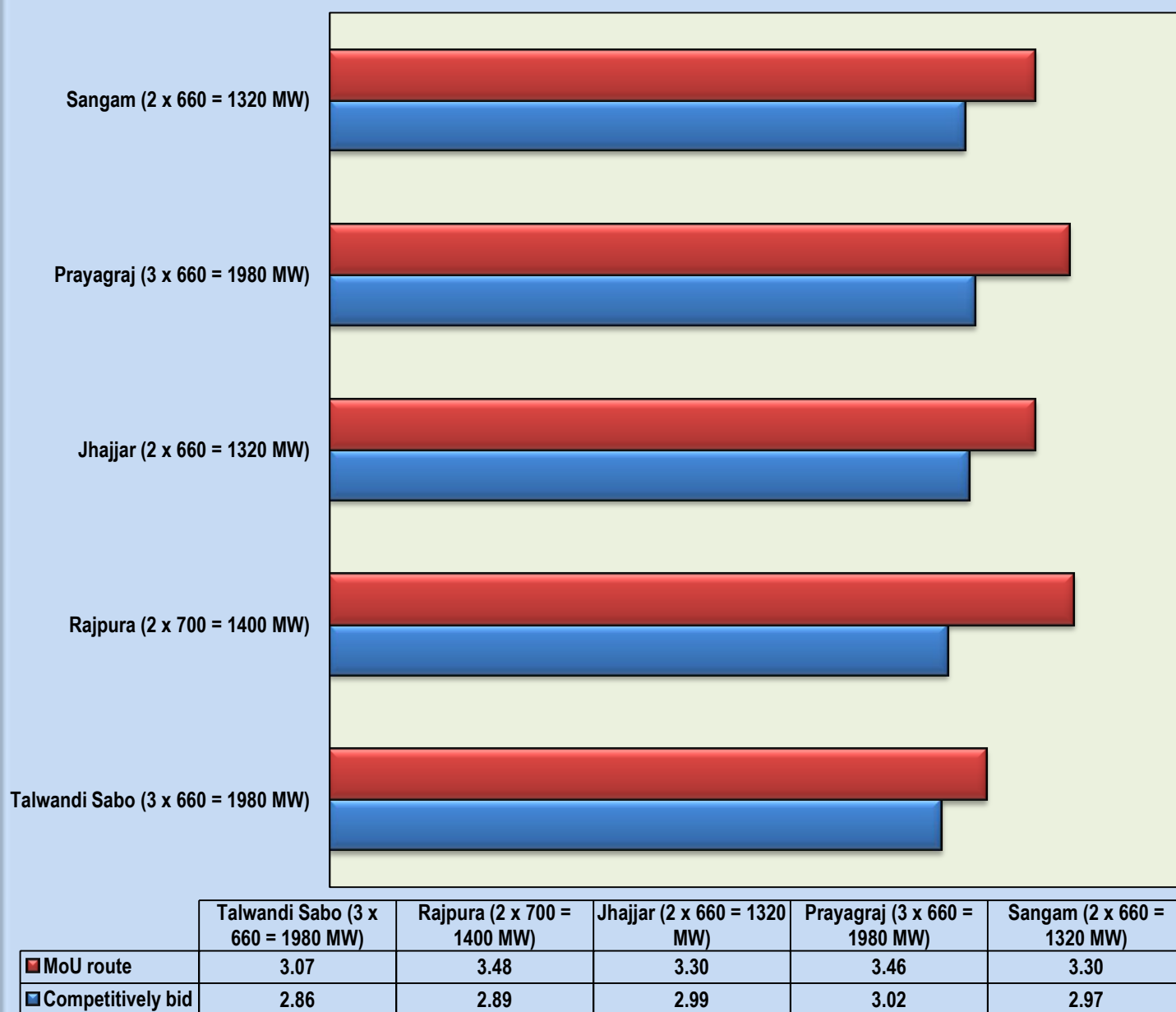
**Note:** MoU = memorandum of understanding

#### Fact Box

While CERC study shows that tariffs based on competitive bidding are lower in comparison to cost plus (although not all projects), several projects highlighted above have run into trouble post competitive bidding (nature of problems vary in different projects). Nearly all projects have been affected due to non-availability of coal (linkage) as well as delayed environment & forest clearances for coal blocks (e.g. Tiroda, Mahan).

This fact states that competitive bidding was feasible only if uncertainties on various factors were taken care of.

### Case II bids from 2007-2010, tariffs in INR/kWh



**Figure 2:** Comparison of Levelized Tariff as calculated under Cost plus methodology with Levelized Tariff as discovered under Competitive bidding

**Source:** CERC Study

**Note:** MoU = memorandum of understanding

#### Fact Box

While CERC study shows that tariffs based on competitive bidding are lower in comparison to cost plus (although not all projects), several projects highlighted above have run into trouble post competitive bidding (nature of problems vary in different projects). Nearly all projects have been affected due to non-availability of coal (linkage) (e.g. Rajpura & Talwandi Sabo) as well as delayed environment & forest clearances for coal blocks.

This fact states that competitive bidding was feasible only if uncertainties on various factors were taken care of.

### **Brief analysis of bids under Case I & Case II:**

- Since the introduction of tariff-based bidding guidelines, procurement of 23190 MW of power has been concluded through the case I approach. Gujarat and Maharashtra are the leading states, having procured 6,800 MW and 4,900 MW of power, respectively, during 2007–10.
- Comparable case I project quotes appear to be significantly more expensive than case II project quotes (Tiroda phases I and II are differently priced, for the very same project, under case II and case I, respectively). This outcome is not surprising, because case I projects leave all risks of obtaining consents and clearances, including exposure to fuel-related uncertainties, to the bidder. This higher risk is reflected in a higher price quoted by the bidders.
- The tariffs discovered through the Case 2 range between INR 2.80/unit and INR 3/unit. The only two exceptions are the tariff discovered for the Bhaiyathan projects at 81 paise/unit and the tariff discovered for the Anpara 'C' project at INR 1.56/unit (projects given at Annexure-I). This difference can be attributed to different strategies used and peculiar aspects of these projects.
- In most cases of coal-linked projects (that is, case II projects), when the procurer has the obligation to supply domestic coal, the linkage provided by Coal India Limited (CIL) or its subsidiaries is only for 70 percent of the requirements of the plant. The shortage faced by developers owing to less production by Coal India during that period coupled with costly imports have resulted in rise in case II bid prices.
- Another critical factor in Case 2 projects is underlying assumptions for bid evaluation and computation of levelized tariff. Assumptions while evaluating the bids, such as landed coal price and gross calorific value, have an impact on discovered levelized tariff. For instance, assuming landed coal prices that are low, could lead to artificially low tariffs that may not reflect the reality.

As discussed above, the Competitive Bidding framework has resulted in considerably low tariff in comparison to the cost plus tariff determination, which is beneficial for the consumers in terms of low cost power.

**However, over the past five years the scenario has changed drastically due to the development of issues like acute coal shortage, legal/regulatory changes in coal exporting countries and changes in environment and forest laws in India. All these developments have necessitated a relook in the bidding mechanisms.**





## Fuel risks—domestic and imported coal related uncertainties: 2007-2012

Standard bidding documents (SBDs) conditions require that in case of plant based on domestic coal, bidder should have fuel tied up for total installed capacity for the term of the PPA. While this condition was possible pre-2009, the developments in the last 5 years have led to change in conditions that no longer permit the developers to have this certainty on the availability of the domestic coal.

Coal India Limited (CIL)'s inability to meet commitment of domestic coal supply under Fuel Supply Agreement (FSA). Draft FSA for new plants assure only 50% of annual contracted quantity (ACQ) i.e. penalty is applicable only if less than 50% quantity of ACQ is delivered and that too mere 10% of base price. Due to demand supply gap of coal in India, the 50% of ACQ includes imported coal (Blended). If consumer opts for surrender of imported coal component, ACQ in FSA will be reduced by 50%, thus only 25% linkage is guaranteed.

XII plan envisages addition of 76.5 GW coal based capacity requiring approximately 344 million tonne (MT) of coal. Based on the current rate of production by the CIL (at the rate of 20 MTPA), ~100 million tonne would be available from the CIL for the XII plan period. Similarly, approximately 80 million tonne would be available from the captive coal blocks. Thus, the total deficit by end of XII plan period is likely to be 226 million tonne. There was no condition in the SBDs or in the PPA that takes care of such issues caused due to shortage of coal from the linkages.

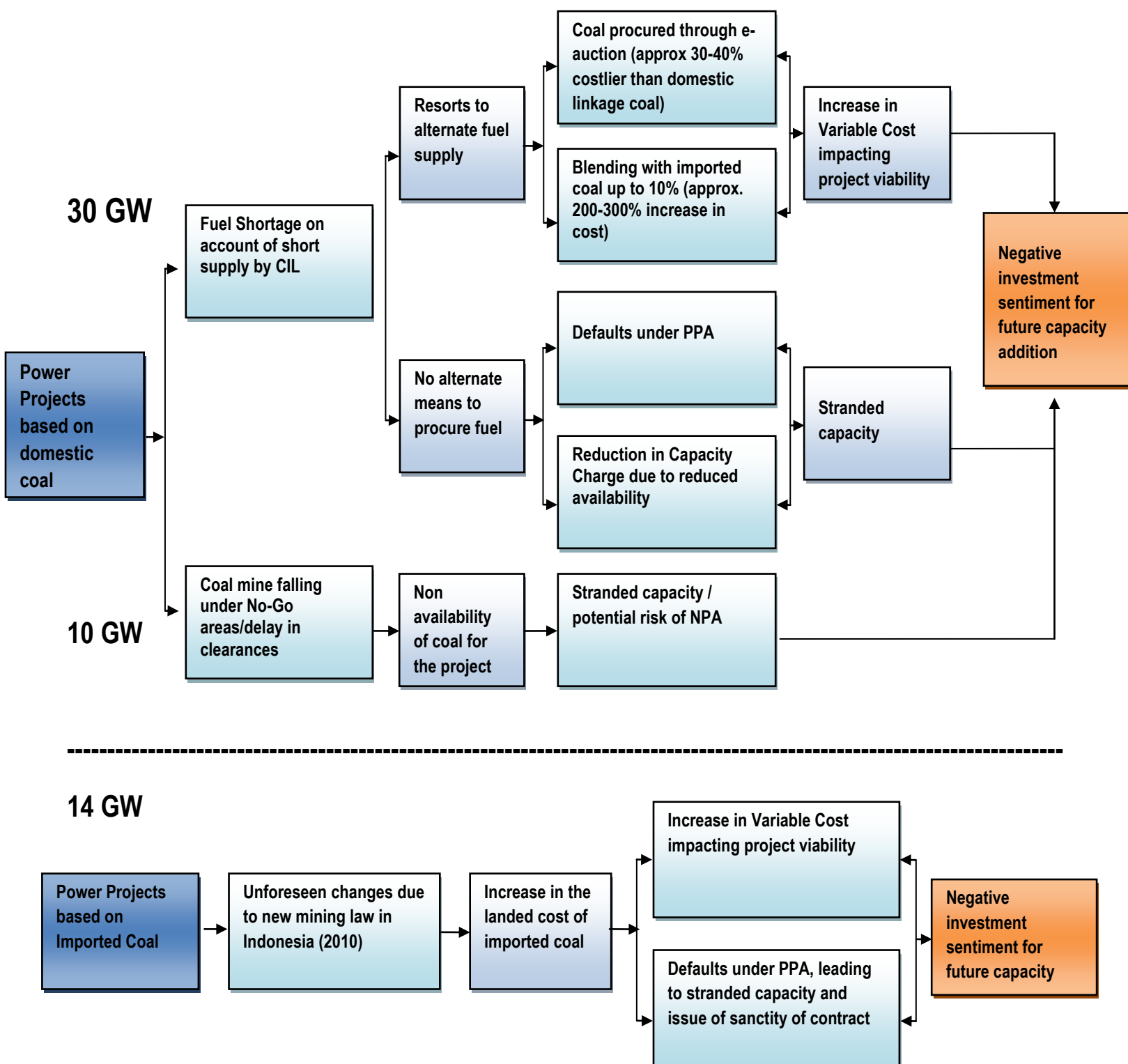
At the time when Case 2 projects were awarded, 90% of the Annual Contracted Quantity (ACQ) was assured by the CIL, however, in the current scenario draft FSA for new plants assure only 50% of annual contracted quantity (ACQ) i.e. penalty is applicable only if less than 50% quantity of ACQ is delivered and that too mere 10% of base price. Contrary to this, the CERC regulations permit recovery of fixed charge only at 85% availability level. Thus, there appears to be a clear discord between the FSA and the regulatory framework of the power sector. The quoted tariffs at such low ACQ assurance are unsustainable.

It is difficult to visualize a situation where a developer is able to commit a plant availability of 85% as mandated by the CERC regulations, without corresponding firm allocation of coal under FSA. FSA below 85% ACQ is completely untenable. While acknowledging the fact that the Case 2 projects are largely protected from the major shift in the risk profile, however changes on account of emerging uncontrollable factors need to be incorporated to prevent defaults.

Bidders who have chosen to rely on imported coal (to avoid interacting with CIL) are also facing massive difficulties. These difficulties are due to unexpected regulatory changes in Indonesia and Australia that have unravelled the bidders' hedging strategies and sharply raised the cost of imported coal, while the bidders also remain locked into 25-year PPAs.

Below figure (Figure-3) reveal how the vicious cycle began post 2009-10. Shortage of domestic coal (CIL's failure to sign fuel supply agreements (FSAs) with developers and regulatory changes in Indonesia and Australia led to several projects being mothballed and a phase of uncertainty on future capacity addition (wrt. to competitive bidding)





**Figure-3:** Fuel Dynamics Impacting Viability of Projects (~54 GW)

### 3(b) Case Studies: Ultra Mega Power Projects (UMPPs)

Ultra mega power projects (UMPPs) were one of the first major steps taken by the Government of India in a bid to fulfill its ambitious aim of "Power for All" by the end of the XI Plan. UMPPs are 4000 MW power projects which were to be set up in 14 locations as identified by the Government of India. Only four of these have been awarded till 2015 - the last being Tilaiya UMPP awarded to Reliance Power in February of 2009. (Detailed status given at Annexure-II)

#### Fact Box

1. At INR 1.19/unit, power generated from the Sasan UMPP in Madhya Pradesh is perhaps one of the cheapest in the country. Yet, Reliance Power has recently asked state-owned Power Finance Corporation to buy it for "breach of representation" - the de-allocation of the Chhatrasal coal block, which was linked to the project.
2. The company has already given up the Tilaiya UMPP because of the slow pace of land acquisition by the Jharkhand government and has not made progress on the Krishnapatnam UMPP in Tamil Nadu.
3. Tata Power's UMPP at Mundra in Gujarat, based on imported coal is in financial trouble for selling power at INR 2.26/unit.

A host of critical obstacles have now threatened to not just jeopardize current but future projects also. Some of them are listed below:

- (a) **Coal shortages:** A spectre of acute coal shortages looms large on the power sector. Several power generating companies have expressed their inability to honour the UMPP contracts. The tariff-based competitive bidding does not keep them insulated from increase in fuel prices, which have shot up due to the acute scarcity of coal. About 80% of these plants were likely to default on account of shortfall in domestic coal availability. Changes in regulations in coal exporting countries especially Australia and Indonesia made the prospects of importing coal unviable.
- (b) **Funding constraints:** Lack of transparency and untimely execution of the proposed projects have made the funding institutions averse to extend loans to new players in the sector.
- (c) **Environmental concerns:** Clearance for the Orissa coal blocks has been languishing for an environmental clearance with the environment ministry for the last 4 years. Such regulatory hurdle for captive coal blocks has made even the prospects of timely execution for pit head projects (ones with captive resources) bleak.
- (d) **Loss making SEBs:** Although Indian companies have shown interest in the bidding for UMPP projects, the response from overseas investors has been lukewarm. This is because the financial health of state electricity boards (SEBs) has not improved much. With most of them running on huge transmission and distribution losses, the payment security for the foreign partners will not be very high. **Going forward, signing of new PPAs will depend on the ability of discoms to enter into long-term commitments**, which means generating companies will then be exposed to volatile prices in the short-term market.



### **Case Study-1: Mundra TPP (Adani Power) & Mundra UMPP (Tata Power)**

In the Indian context, competitive bidding becomes more difficult due to the uncertainties of fuel linkages, of transmission, of consumers payment defaults, of the difference between the levelised tariff and the first year tariff that actually has to be paid, etc. The fact that some of the projects (including UMPPs) have actually come back to the Central Electricity Regulatory Commission (CERC) with a very clear issue of not being able to comply with the conditions in their competitively bid project, it clearly shows that we are back to Section 62 (cost plus) of the Electricity Act 2003 from section 63 (competitive bidding).

Most notable projects are the 4,620-MW power project developed by the Adani Group and the 4,000-MW UMPP developed by the Tata Group, both at Mundra, Gujarat. Tariff-based competitive bids had been structured such that both capacity and energy (mostly fuel) charges could be determined by the bidders, with an option to keep a portion of these open to escalation for which the formulae were provided by CERC using a diverse basket of domestic and international indices.

This was done with a view that those bidders who could control input costs could keep these charges as non-escalable components, while those that could not be controlled would be kept as escalable components. At the time of bidding, the values of escalation calculated based on the formulae prescribed by CERC could be used to evaluate the bids, while for actual payment, the escalable component would be determined on the same formulae and applied in the year for which the tariff would be determined.

Based on this, the bids could be evaluated on the evaluation parameter of “levelised tariff”, which is equivalent to time-weighted average of tariffs till the life of the project. All this sounded transparent, fair and prudent. But the success stories of imported coal-based projects awarded through these tariff-based competitive bids soon began to turn sour. Several of the successful bids were based on the assumption that coal sources in foreign countries would be under the control of the bidders as they could acquire coal mines and keep costs checked.

The new mining law by Indonesian government in 2010 provided for global benchmarking for coal exports from Indonesia since the cost-plus transfers of coal was depriving the government there of royalty, which was ad valorem (linked to prices), and income taxes as these coal companies had barely any taxable income on account of cost-plus pricing. It may be noted that, during that period, coal prices in the international markets were at an all-time high and costs were much lower. Since the Indian power companies now had to buy coal from Indonesia, even from their own associate companies, at a global price, while their assumptions of procurement were at cost-plus, naturally these projects began to look unviable.

With both projects incurring substantive losses, both sets of promoters petitioned the Central Electricity Regulatory Commission (CERC) on the issue. Cutting through the thicket of ideological debates on the appropriateness, or otherwise, of tinkering post-facto with bid parameters, CERC took the bold step of accepting the fundamental premise of the two developers that their case for compensation had prima facie merit and chose not to be bound by the purity of bid processes.

**While these two projects have often been talked about in the same breath, there are some basic differences between the two.**

The Adani Power Project consists of two purchase commitments - one contracted for with Gujarat and based on domestic coal, and the second contracted for with Haryana, based on domestic and imported coal. In both cases, the fuel was to be



procured by the developer. The source was identified as domestic in the case of Gujarat while it was identified as a mix of domestic and imported coal in the case of Haryana. While the power purchase agreements (PPAs) for both the Gujarat and Haryana bid processes provided flexibility to bidders to de-risk their proposal with appropriate indexation, the bidder chose not to take advantage of the provision and provided a fixed tariff without indexation (for fuel, inflation et al). After the PPAs, the developer chose to contract with its own trading arm for the supply of imported coal. With changes in the law in Indonesia adversely affecting the price of imported coal, the bidder sought compensation for change in the "landed energy price" in the fixed energy charge to the "actual landed energy price" now applicable in the market.

Of the total capacity of 4620 MW, the compensatory tariff order is for PPA of 1000 MW with Gujarat Utilities (Phase III) and 1424 MW with Haryana Utilities (Phase IV). Adani Power quoted a levelised tariff of INR 2.35/kWh for Gujarat Utilities and INR 2.94/kWh for Haryana utilities. This tariff had two/three components for Gujarat/Haryana utilities as shown below:

Levelised tariff for Adani Mundra project (INR/kWh)		
Tariff Components	Gujarat utilities	Haryana utilities
Capacity Charge	1.00	1.00
Energy Charge	1.35	1.35
Transmission Charge	NA	0.60
<b>Total</b>	<b>2.35</b>	<b>2.95</b>

**Table 3:** Break-up of components in levelised tariff for Mundra project

**Source:** CERC order, IPPAI analysis

As can be seen from above, that variable charge (referred to as energy charge) contributed to 60-70% of the tariff component.

The primary variables for variable cost of imported coal projects are 1) imported landed cost of coal per tonne and 2) exchange rate dollar value of rupee.

In the case of the Tata Power project, it was clearly based on imported coal, sourced from an entity in Indonesia in which it had a stake. Having bid 57 per cent indexation at a free-on-board (FOB) level, it took a nuanced view and sought compensation for change in the FOB price of coal for only the 43 per cent "non-indexed" portion.

Post 2007, with fluctuations in exchange rate (rupee vs. dollar) coupled with increase in price of coal sourced from exporting countries & non-availability of domestic coal, various projects (including those discussed above) based on tariff-based competitive bidding (TBCB) began to look unviable.



The table below gives a brief outline on the recommendations given by a CERC committee:

Period	Mundra TPP (Adani Power)	Mundra UMPP (Tata Power)
CoD to 31 <sup>st</sup> March 2013	PPA with Gujarat discom: INR 420 Crore (in case of non-availability of coal)  PPA with Haryana discoms: INR 409 Crore	INR 329 Crore
FY 2013-14	Gujarat PPA: INR 0.86/kWh Haryana PPA: INR 0.55/kWh	0.53/kWh
Extent of compensation	Applicable to FoB cost, ocean freight, port charges, insurance	Applicable only to FoB cost of coal
PPA: Power Purchase Agreements; CoD: Date of Commercial Operation; FoB: Free on Board		

**Table 4:** Compensation structure outlined by CERC Committee

**Source:** News articles, IPPAI analysis

## **Case Study-2:** Krishnapatnam and Tilaiya UMPPs (R-Power)

### **Krishnapatnam UMPP:**

Reliance Power (R-Power) had won the Krishnapatnam Ultra Mega Power Project (UMPP) under tariff-based competitive bidding, quoting a levelised tariff of INR 2.33/unit to supply power to eleven procurers from four states - Andhra Pradesh, Tamil Nadu, Karnataka and Maharashtra. R-Power had acquired three coal mines in Indonesia and imports coal from the country to feed its power plant at Krishnapatnam. A modification to the Indonesian law in 2012 mandated all parties to sell coal at market prices. Earlier, Indonesian coal mines had the freedom to bilaterally come to an agreement with buyers on coal prices.

The developer has stopped work at site, citing new regulation of coal pricing in Indonesia. The procurers have issued termination notice. The matter is sub-judice.

### **Tilaiya UMPP:**

Recently, Jharkhand Integrated Power, a wholly owned subsidiary of Reliance Power, has terminated the Power Purchase Agreement (PPA) of its 3,960 MW Tilaiya Ultra Mega Power Project (UMPP) in district Hazaribagh, Jharkhand.



The firm had, in August 2009, won rights to set up a 3,960 MW power plant at Hazaribagh in Jharkhand after bidding a levelised tariff of INR 1.77/unit but couldn't start work on the project as the state government had not provided the required land even after more than five years.

J IPL, a special purpose vehicle created for implementing the project, had signed PPA with 18 power off-takers in 10 states for 25 years. The project was based on captive coal blocks for which coal was to be sourced from Kerendari BC coal mine block.

The total land requirement for the project was over 17,000 acre. According to the statement, there has been a delay of over 5 years in land acquisition by the state government for the power plant, captive coal blocks and related infrastructure.

The PPA required procurers to hand over land and other clearances by February 2010. However, the required land is yet to be made available. Even the forest land in the power station area, for which the Stage-II Forest Clearance was accorded by central government way back in November 2010, has not been handed over to J IPL till now.

As regards the coal block, the land acquisition process is yet to get initiated, for which the application was submitted way back in February 2009.

Overall, case studies as done above provide practical and useful case material for India going forward using private capital as a bedrock for infrastructure development, providing confidence to developers and investors and dealing with the attendant issues of bid sanctity, public-private partnership renegotiation, and life-cycle viability of infra assets and, most importantly, balancing conflicting demands. Below we discuss how re-negotiation of contracts post bidding sets a bad precedent and therefore put a question mark on the **efficiency of competitive bidding** in the Indian power sector.





## **Sanctity of Contract post competitive bidding; Re-visiting PPAs**

Infrastructural contracts between the government and the private sector are much like a double sided sword from the view point of the government. On its one side lies the need to attain efficient output from the private concessionaire by keeping the inherent monopolistic tendencies of such contracts at bay while on the other side lays the necessity to prevent frustration/termination of contracts as that would lead to greater hardships to the public.

In recent times, there have been many examples of private companies in infrastructure sector wanting to renegotiate their contracts with public enterprises on the ground that projects are becoming unviable due to unforeseen developments.

Historically, when power projects were assigned on MoU basis, power purchase agreements (PPAs) included a clause allowing 'pass-through' of increase in fuel cost. This led to an automatic hike in tariff whenever fuel prices increased.

The new concept of assigning projects under 'Competitive Bidding (CB)' route generated hopes. Under it, a promoter who bids lowest 'fixed tariff' for supply over a given time horizon, say, 15 years, gets the project. SEB/discoms and consumers are thus shielded against any increase in fuel price.

The shield was intended to be 'impregnable' as commitment to supply at 'fixed tariff' during the stipulated period is duly incorporated in the PPA, a legal document binding on the signatories.

If this shield is demolished through a flagrant deviation from very fundamentals of PPA — duly sanctioned by the very authorities who are expected to defend its sanctity — consumers will be left completely high and dry.

The argument that 'compensatory tariff' will be adjusted when fuel cost declines does not inspire confidence. Will the Indonesian government undo what it did in 2010? Or will Government of India reduce coal prices to bring fuel cost in sync with tariff that promoters bid for!

Even so, there are umpteen instances to demonstrate that when fuel costs increase, the Government loses no time in authorising an increase in the price of the end product. When the former declines, little effort is made to reduce the latter.

The hike is being justified also on ground — 'or else projects will be rendered un-viable leading to no power'. So, the only option is to allow the required increase to make generation viable! This is tantamount to blackmailing millions of consumers.

If such actions are permitted, it will not only undermine the sanctity of contracts (while making a mockery of 'CB' policy) but also impose permanent misery on those for whom it professes to care most.

Such demand for renegotiations of contracts raises some fundamental questions:

1. Bidders who are edged out could take the government bodies to court saying the incentives were not extended to them and they were unfairly edged out.
2. The sanctity of the contract is violated and many more project developers can demand similar renegotiations. (which has happened, in all fairness)
3. How does one distinguish between projects that are unviable because of a genuine unforeseen development and projects that are unviable because the bidders bid at predatory prices merely to edge out competition.





What Needs to be Done	Why It Needs to be Done	What are the Challenges?
(1) One Time Tariff Hike	<ul style="list-style-type: none"> <li>Tariff hikes critical to avoid contagion – risk of loan defaults, worsening of power deficit etc</li> <li>Higher tariffs for existing Case I/II PPAs may still be cheaper than tariffs discovered in a fresh bid process</li> </ul>	<ul style="list-style-type: none"> <li>Why should Discoms pay for poor fuel risk assessment by IPPs</li> <li>How to identify which projects need bailout – even sound projects would want a tariff hike</li> <li>Opposition from losing bidders in a project</li> <li>Would tantamount to favoring the private sector – politically sensitive</li> </ul>
(2) Comprehensive Tariff Policy	<ul style="list-style-type: none"> <li>Existing tariff policies, although sound, have not accounted for uncertainties such as short supply by Coal India or changes in international regulations</li> <li>An “all-weather” tariff policy critical to attract long term investor interest in power generation</li> </ul>	

**Table 5:** Challenges in moving from competitively bid tariff to regulated tariff (tariff adjustment)

The following indicative list includes features/clauses that can be incorporated in contracts to reduce the need for renegotiations, streamline the process and discourage frivolous renegotiations:

(a) Financial criteria such as tariffs or premium payments for selection of bidder in a competitive process should be applied once initial selection has been made based on technical expertise, reputation and past experience.

(b) Minimum viable tariff structure and schedule should be established to prevent extreme low bidding by parties who seek to win the contract and then renegotiate tariffs. Phased tariff revision scenarios and mechanism should be built into the contracts.

(c) Triggers for renegotiation should be laid down in the contract.

(d) Provisions for competitive re-bidding along with/in lieu of renegotiation should be built in to discourage parties from using renegotiations as a bilateral negotiations process for mutual benefits, within a short period of initial award of contract.



## **Future of competitive bidding: Policy and Regulatory interventions required**

Despite the initial success of tendering more than 40,000 MW of projects under either Case I or Case II, developments from the start of the XII Five-Year Plan in April 2012 have revealed significant structural and policy issues that need to be addressed for the sector to move to predominantly private led capacity additions. These issues not only decreased the enthusiasms of power sector players but also left many projects idle either because of lack of fuel, finance, land or clearances regarding environment and forests.

Power Ministry's proposed changes in bidding guidelines could increase developers' interest in ultra mega power plants (UMPPs) as they try to address the concerns of investors and lenders. Failure of earlier UMPPs was largely due to unwillingness of lenders to fund a 20,000-crore power project with 4,000 MW of capacity on a design, build, finance, operate and transfer model (DBFOT) where the asset ownership did not vest with the developer.

The amended guidelines propose the bidding of a separate fixed charge for each year over the life of a power purchase agreement as compared to the earlier guideline of a single fixed charge quote with annual escalation.

The draft norms also propose a segregation of operating and infrastructure assets into two separate special purpose vehicles (SPVs). The land for coal block as well as power plant would be housed under an infra SPV while the plant would be developed under an operating SPV.

Additionally, the proposed guidelines have made provision for developers/lenders risk mitigation with respect to fuel price variation, fixed charge quote, ownership of asset and land acquisition.

<b>Proposed changes in bidding norms (SBDs for Case-II/UMPPs)</b>	
<b>Current Norms</b>	<b>Changes proposed</b>
(i) Projects to be based on Design-Build-Finance-Operate-Transfer (DBFOT)	(i) Introduce Build-Own-Operate (BOO) model
(ii) Developers can exit project only if procurers default on certain commitments	(ii) Allow developers to exit project by selling stake at any time during plants' life
(iii) Station Heat Rate (SHR) is a criterion to qualify for bidding, but not a bidding criterion	(iii) SHR, a gauge of plant efficiency, to be made a bid criterion
(iv) Developers required to keep certain proportion of capacity as untied/open	(iv) No need for developers to keep open capacity
(v) Pass-through not allowed, forex risk borne by	(v) The guidelines provide for a better fuel cost pass-



developers	through as they envisage a full escalation on the base tariff based on the Central Electricity Regulatory Commission (CERC) norms.
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**Table 5:** Proposed changes in bidding norms (SBDs for Case-II/UMPPs)

### **Brief Analysis on new amended guidelines in Standard Bidding Documents (SBDs)**

- (a) The revised guidelines have partly addressed industry concerns on transfer of assets to state utilities after completion of the concession period. Guidelines prescribe reverting to the BOO model wherein plant ownership after concession period will continue to vest with the developer. **However, critical project elements — land for power station / captive coal block (if any) — will be owned by the Procurer/ distribution company (discom), which may pose a regulatory risk vis-à-vis renewal of lease.**
- (b) Responsibility of remaining land acquisition on the seller/bidder goes against the motive of 'Plug and Play' model for UMPPs as announced in the Union Budget 2015-16. If the acquisition of additional land is kept as seller's responsibility, then the cost of R&R will go up significantly. **Hence, it should be the responsibility of the procurer to make the whole land available and hand it over to the seller for the construction of the power plant.**
- (c) The provision to allow pass through of cost for land acquired post-bidding could expose discoms to the risk of higher tariff if land prices go up by more than 10% from the pre-bidding rates or the declared price. **Therefore, a transparent method of evaluation of such costs will be necessary.**
- (d) By the draft norms, the developer does not need to keep 15% of the capacity as free unlike in the current guidelines. This would further reduce the risk that developers would have had to factor in their bidding strategy. **IPPAI believes that this could also translate into lower tariff if the developers are allowed to enter into power purchase agreements (PPAs) for the entire 4,000 MW capacity.**
- (e) Removal of mandatory requirement of open capacity will be beneficial. **However, higher costs, in terms of procurement of land for coal production beyond five years, may result in higher cost of production.**
- (f) Proposed guidelines seem favourable to the developers **but may expose distribution companies (discoms) to risks that would have to be assessed by them and their respective states.**
- (g) **For Ultra Mega Power Projects (UMPPs) based on imported coal** with the provision for blending with domestic coal, the model documents allows procurers to ask (seller) for blending within 30 days and to switch back to 100% imported coal in 90 days. This provision may not work. Also, it should be the responsibility of the Procurer to procure and transport the domestic coal of the required GCV to the site. If this is not the case, then it should be classified upfront since the Procurer would need to factor in and incorporate additional facilities such as railway siding, wagon tippler, etc.



Environmental clearance would have to be accorded keeping in mind the blending provision as given in the guidelines for UMPPs based on imported coal.

In order to avoid mistakes of the past, following measures are recommended:

1. **Free and Fair Bidding Process**: Re-bidding negatively affects the investor confidence and raises questions on fairness of the bid process. It is suggested that if the tariff is determined by the process as laid down in the Competitive Bidding Guidelines 2005 and the regulators can find no flaw in the process, the same tariff should be adopted. Further, no tariff negotiations should be allowed after opening of financial bids.

Apart from this, action on policy front is required. Amendments to the National Tariff Policy (2006) have been mooted by the Ministry of Power, but the following highlights changes that need to be incorporated vis-a-vis competitive bidding.

2. **Competitive Bidding for Expansion Projects**: According to Para 5.1 of this proposed amendments to the National Tariff Policy (2006), all future requirement of power should be procured competitively by distribution licensees, except in cases of expansion of existing state-owned or privately owned projects. In our opinion, given the inefficiency in implementation, long delays and consequent high capital costs for cost plus projects, all expansions of state owned and privately owned plants should be via competitive bidding. Competitive bidding is more lucrative for expansion projects as it will have the advantage of lower costs than Greenfield projects which can be transferred as benefits to consumers.
3. **Pass through of coal costs for competitively bid projects on a case to case basis**: Para 6.1 of amendments to the National Tariff Policy (2006) talks of possible pass through of higher cost of imported/market based e-auction coal for making up shortages with respect to assured procurement via CIL. This is in consonance with the advisory issued by Ministry of Power in OM no. FU-12/2011-IPC (Vol.-III) dated 31.7.2013. Such a provision would negate benefits of competitive tariff discovered through bidding process and would prove to be a major setback in establishing robust efficient long term competitive power markets in India. In order to preserve the sanctity of contracts and the legitimacy of the bidding process, any relief, if provided must be strictly as per bidding guidelines or as per the PPA provisions. As per the 2005 bidding guidelines, the bidders were given complete flexibility to quote both escalable and non-escalable charges for fuel cost. Accordingly, the bidders had the complete flexibility to procure fuel at any cost and from any location at any point of time. Strictly speaking, the coal supplier does not assume any contractual obligation to supply domestic coal as per the grade and/or quantity mentioned in the Letter of Assurance (LoA). The LoA makes it very explicit that in case of shortages, coal would be imported to meet such shortfall and the price of such imports will have to be entirely borne by the generator. Thus, based on the LoAs, it becomes clear that there is no contractual assurance being given with regard to quality, quantity or price. There has been no change in this framework for fuel allocation and/or fuel supply contracts and hence all bidders participated in the bidding process with the full knowledge of these risks. By providing any relief that effectively alters risk



allocation for the winning bid, interest of neither the consumers nor competition is being served, as bidders who lost out at that time could now have been more competitive.

Other recommendations:

4. **Reforms in fuel (coal) sector:** The review highlights that developers' fuel supply strategy often plays a critical role in discovering competitive tariff. Transparent, rational and sustainable fuel policy is another important policy change required for effective competitive bidding in generation sector. Unless urgent steps are taken in this regard competition will remain restricted to a few players who can 'manage' the existing constraints, and hence would not be in the interest of consumers or economy at large.



## Annexure-I: Tariff Analysis under Case I and Case II biddings

Tariffs under competitive bidding have been found to be lower than cost plus mechanism. Several reports including the statutory advice of the CERC regarding timeframe for tariff based competitive bidding bring out this fact. Table 2.1 depicts the tariff under Case 1 bids.

**Table 4: Historical Tariff under Case 1 Bids**

Sl. No.	Project Details	Capacity (MW)	Tariff (INR/kWh)	Year	Host State	Coal Source
1.	Aryan Coal (Dec 06)	200	2.25	2006	Gujarat	Imported Coal
2.	Adani Power ( Dec 06)	1000	2.35	2006	Gujarat	Imported Coal
3.	Essar (Dec 06)	1000	2.40	2006	Gujarat	Imported Coal
4.	Adani Power (Nov 07)	1424	2.94	2007	Haryana	Domestic Coal
5.	PTC-GMR (Nov 07)	300	2.88	2007	Haryana	Domestic Coal
6.	Lanco (Nov 07)	600	2.34	2007	Madhya Pradesh	.....
7.	R-Power (Nov 07)	1241	2.45	2007	Madhya Pradesh	.....
8.	Essar (Nov 07)	300	2.66	2007	Madhya Pradesh	.....
9.	Adani Power (Feb 08)	1320	2.66	2008	Maharashtra	Domestic Coal
10.	Lanco (Feb 08)	680	2.70	2008	Maharashtra	Domestic Coal
11.	JSW Energy (Feb 08)	300	2.72	2008	Maharashtra	Domestic Coal
12.	GMR-EMCO (Sept 09)	200	2.88	2009	Maharashtra	Domestic Coal
13.	Indiabulls (Sept 09)	450	3.27	2009	Maharashtra	Domestic Coal
14.	Adani Power (Sept 09)	1200	3.29	2009	Maharashtra	Domestic Coal
15.	KSK Energy (Jan 10)	1010	2.34	2010	Gujarat	Domestic Coal
16.	Shapoorji Pallonji (Jan 10)	800	2.80	2010	Gujarat	....
17.	Essar (Jan 10)	1000	2.80	2010	Gujarat	Imported Coal
18.	Essar (Jan 10)	450	3.06	2010	Bihar	....

**Source:** Company websites, news articles



*As depicted above, in most of the cases the tariffs have been below INR 3.00/unit.*

A similar analysis of Case 2 bids indicates relatively lower tariffs than Case 1 bids. One of the reasons for this has also been low risk in Case 2 project than Case 1 project, wherein most of the facilitation is provided by the procurer. Within Case 2 bids, while UMPPs bidding have witnessed lower tariffs, most of the other projects have witnessed prices in the range of Rs. 2 to 3/kWh. Table 2.2 depicts the tariffs discovered under various Case 2 bids.

**Table 5: Historical Tariff under Case 2 Bids**

Sl. No.	Description	Capacity (MW)	State	Coal Source	Final Bidder	Tariff (INR/kWh)
1.	Anpara C	1000	Uttar Pradesh	Linkage Coal	Lanco	2.088
2.	Sasan UMPP	4000	Madhya Pradesh	Captive Coal Block	R-Power	1.196
3.	Mundra UMPP	4000	Gujarat	Imported Coal	Tata-Power	2.264
4.	Krishnapatnam UMPP	4000	Andhra Pradesh	Imported Coal	R-Power	2.33
5.	Bhaiyathan TPP	1500	Chhattisgarh	Captive Coal Block	Indiabulls	0.81
6.	Jhajjar TPP	1320	Haryana	Linkage Coal	CLP	2.996
7.	Talwandi Sabo TPP	1980	Punjab	Linkage Coal	Sterlite	2.864
8.	Karchana TPP	1320	Uttar Pradesh	Linkage Coal	Jaiprakash	2.97
9.	Tilaiya UMPP	4000	Jharkhand	Captive Coal Block	R-Power	1.77
10.	Bara TPP	1980	Uttar Pradesh	Linkage Coal	Jaiprakash	3.02
11.	Nabha TPP	1320	Punjab	Linkage Coal	L&T	2.89

**Source:** Company websites, news articles



The levelised capacity charge for the twelve (12) Case 1 projects (about 10630 MW) has equivalent or embedded capital cost between INR 3.5-4.5 Crore/MW whereas capital cost of recent projects developed through the older i.e. cost plus route, is INR 4.5-5.9 Crore/MW which show the efficiency of tariff determined through bidding mechanism.

The analysis of variable charges (after being normalized to 2010-11 rates) shows that for most projects the variable cost over the 25 year PPA period falls between INR 1.5-3.50 per unit and is less than INR 2/unit for the first 15 years of the PPA. As against this the current variable charges of many of the cost plus projects in states such as Maharashtra, Tamil Nadu and Rajasthan are well above INR 2/unit for the year 2010 itself.





**Annexure-II: Status of Ultra Mega Power Projects (UMPPs)**

(As of September 2015)

Project	Developer	Fuel Source	Selected bid (INR/unit)	Project status
Coastal Gujarat Power Limited, Mundra UMPP, Gujarat (5×800 MW)	Tata Power	Imported coal (arranged by developer)	2.260	Project commissioned
Sasan Power Limited, Sasan UMPP, Madhya Pradesh (6×660 MW)	Reliance Power	Domestic coal mine allocated (Moher & Moher-Amlohri coal blocks)	1.196	Project commissioned
Coastal Andhra Power Ltd., Krishnapatnam UMPP, Andhra Pradesh (6×660 MW)	Reliance Power	Imported coal (arranged by developer)	2.336	Termination notice has been served to the developer <sup>1</sup>
Jharkhand Integrated Power Ltd., Tilaiya UMPP, Jharkhand (6×660 MW)	Reliance Power	Domestic coal mine allocated	1.77	R-Power has scrapped the PPA's citing undue delays in land acquisition <sup>2</sup>
Orissa Integrated Power Ltd., Odisha UMPP, Sundargarh District	Bidding yet to commence, has been stalled since 2013			
Chhattisgarh Surguja Power Ltd., Chhattisgarh UMPP, Surguja District in Chhattisgarh	Bidding yet to commence			
Coastal Tamil Nadu Power Ltd., Cheyyur UMPP, Tamil Nadu	Bidding yet to commence, has been stalled since 2013			
Coastal Maharashtra Power Ltd., Maharashtra UMPP	Bidding yet to commence			
Coastal Karnataka Power Ltd., Karnataka UMPP	Bidding yet to commence			



Tatiya Andhra Mega Power Ltd., Andhra Pradesh (2nd UMPP)	Bidding yet to commence
Sakhigopal Integrated Power Co. Ltd., Odisha Additional UMPP 1	Bidding yet to commence
Ghogarpalli Integrated Power Co. Ltd., Odisha Additional UMPP 2	Bidding yet to commence
Bihar Infrapower Limited, Bihar UMPP	Bidding yet to commence
Etah UMPP, Uttar Pradesh	Bidding yet to commence

**Table 6:** Status of Ultra Mega Power Projects (as of September 2015)

**Source:** Ministry of Power website, PFC, news articles

**Note:** 1 - Since June 2011, the developer has halted construction work at the project site, citing new regulations by the government of Indonesia that imposed a tax on the sale of coal, based on a benchmark price, irrespective of actual sale value. The procurers have served a termination notice on the developer, and the matter is in court.

2 - R-Power has scrapped the PPA for Tilaiya UMPP citing undue delays in land acquisition (only 20% of the required land was handed over to the company)



## **About IPPAI**

"The infinite pursuit of sustainable development using experience, expertise and engagement, for a more cohesive and better India, through the confluence of ideas and actions, steeped in innovation and in conformity with regulations and within the finite limits of our planet."

Independent Power Producers Association of India (IPPAI) was set up as a not-for-profit association shortly after the Government of India opened the power sector to private industry. Since its inception as an independent body, IPPAI's aim has been to provide a neutral platform for the examination of issues critical to the development of the power sector in India, to discuss energy policy and to focus on strategic, financial, legal, regulatory and technical issues in the power, oil, gas and allied sectors, with a prime focus on independent power producers.

As we initiate dialogues within the power sector incorporating environmental and socio-ecological concerns in our deliberations, we look at strategies which are more holistic and do not prescribe economic growth at the cost of the environment. Moving ahead, we are keen to bring a sustainable approach in our policies.

### **Examine**

As the oldest power producers association, we are able to take up pioneering positions on industry issues as they emerge and sensitize our members and key stakeholders regarding the same. Through our conferences we take a first-hand look at the issues that the industry grapples with and seek solutions to these in a collaborative manner.

IPPAI disseminates information on the complex issues of tax, regulatory processes and policy in the power, infrastructure and petroleum sectors, as they change from time to time. IPPAI keeps track of the latest policies and regulatory trends to ensure success in this volatile emerging market where policy changes and political uncertainty impinge on the success or failure of project development on a continuous basis.

### **Engage**

IPPAI's primary goal is to bring together all the important players to discuss generic issues and resolve problems that may retard the progress and development of projects in the Indian energy sector. IPPAI provides a cerebral platform and also an engaging interface between players in the energy sector, policymakers (central and state level), electricity boards, financial institutions, ministries, power developers, Indian and multinational companies, equipment suppliers, EPC contractors and consultants.

At the core of IPPAI initiatives are its industry-acclaimed conferences that focus on policy, strategic, financial, legal, regulatory and technical issues in the power, oil, gas and allied sectors. IPPAI's expertise and focused discussions ensure consistently relevant programmes with high-profile experts and erudite speakers who address issues of direct relevance to the energy needs of today.

IPPAI has worked closely with a range of stakeholders in the power sector to examine and resolve the issues that these players encounter. Some of the entities we have worked with are Tata Power, Suzlon, NTPC, Essar, National Grid of UK, Cogentrix USA, Westinghouse USA, PSEG Global, E&Y, GMR, Jindal, Jaiprakash Associates, BSES, Reliance Infra, DLF Power, Dabhol, Enron, MPSEB, CESC, BHP Billiton, Godavri Sugar Mills and Maersk Shipping.



**IPPAI** has been an integral part of the key decision-making in the Indian power sector since its inception in the following ways:

- (a) We have hosted several consultative workshops in India debating over the contents of the Electricity Act 2003 and its amendments.
- (b) **IPPAI** was closely involved with parliamentary standing committees prior to the finalization of the Electricity Act.
- (c) We have worked with the CEA in determining the 8th and the 9th Five Year Plans for the power sector.
- (d) We have strategized with various state governments on how to attract fresh investments into the power sector.
- (e) **IPPAI** was involved in showcasing India as an attractive investment destination in the power sector through participation in various ministerial missions abroad.

### **Empower**

Due to its unique neutral disposition within the sector, **IPPAI** is able to interact with regulators from a position of strength. Such interactions enable **IPPAI** to provide cutting-edge information on developments in the market and the emerging situation.

**IPPAI** initiatives yield a wealth of information on how to tackle issues pertaining to generation in the power sector. The recommendations that stem from these initiatives are forwarded to concerned policymakers for their consideration and necessary action. **IPPAI** events have proved invaluable to project developers, and have contributed substantially towards their better understanding of this nascent yet rapidly developing market.

**IPPAI**'s opinions and knowledge are sought by international think-tanks and media and featured on BBC, Reuters, CNN, Far Eastern Review, Wall Street Journal, The Economist, NDTV, ET Now and ZEE among others.



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IPPAI does not take responsibility to the accuracy of the facts, data, conclusion and/or opinions contained in this report. This discussion paper is meant for general guidance and no responsibility for loss arising to any person acting or refraining from acting as a result of any material contained in this discussion paper will be accepted by IPPAI. It is recommended that professional advice be taken based on the specific facts and circumstances.

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