The Real Challenge in Power Sector Restructuring: Instilling Public Control through "TAP"

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1. Introduction

Since 1991, the power (i.e. electricity) sector in India has been undergoing a series of changes in its legal framework, institutional structures, policies, and procedures, collectively called 'reforms' or 'restructuring'. These changes typically consist of three components, namely (i) un-bundling and privatisation of state owned integrated utilities, (ii) creation of independent regulatory commissions with wide ranging powers and (iii) move towards bulk competition. These changes, because they are comprehensive and fundamental, have serious economic, social, political, and environmental implications, affecting directly or indirectly various sections of society. This naturally has given rise to a fierce debate and even political as well as judicial actions. The debate is largely polarized between two sets of groups, viz., pro-reform and anti-reform groups, even though different reform models (with varying levels of privatisation and competition) are being proposed. Many of those who are opposing the reform are calling it a 'sell-off', while many of the supporters of reforms tend to view the reform as a panacea for the ills that currently beset the power sector.

Our analysis suggests that the root cause of the power sector crises is the "lack of public control" on the three critical governing processes in the sector, viz., policy and decision-making, execution of the decisions made, and regulation of this execution. This lack of public control arises from inadequacy and breakdown of mechanisms for ensuring transparency, accountability and public participation (TAP). This results in irrational decisions, and lax implementation and regulation leading to grotesque inefficiencies such as large (~ 40%) transmission and distribution losses (including theft of power), unsustainable burden of high cost independent power producers (IPPs) and highly skewed tariff structure. Unfortunately, this fundamental malady, -"lack of public control"-, underlying the power sector crisis continues to remain neglected. This paper attempts to highlight this missing aspect in the debate on power sector reforms and argues that, in order to resolve the crises in the sector; the reform efforts should be focused on addressing this fundamental malady[1]. In absence of such an approach, there is a danger that the reform efforts may lead to different types of inefficiencies such as lop-sided distribution licenses, and imperfect market conditions.

[1] Many other important aspects and public benefits such as universal access to electricity and environmental impacts are also ignored in the current debate on reforms. But, the primary objective of the paper is to highlight the missing aspect of "lack of public control".

The next section of the paper highlights three major examples of irrational decisions and performance failure plaguing the sector. The third section demonstrates how these irrationalities could develop and persist for a long period due to the "lack of public control". The last two sections comment on the mainstream perspective and points out its failure to focus on instilling the public control.

2. Irrational Decisions and Performance Failure

This section discusses three examples of irrational decisions as well as laxity and inefficiency in implementation and regulation. The three examples are: tariff policy for irrigation pump sets (IPS), the process of introducing independent power producers (IPP) in the sector, and failure to utilize the opportunities for introducing non-conventional sources of energy. The objective is to illustrate the nature, scope, and scale of the grotesque inefficiencies that are introduced in the sector due to the core failure mentioned above, viz. "lack of public control".

2.1 Tariff Policy for Irrigation Pump Sets (IPS)

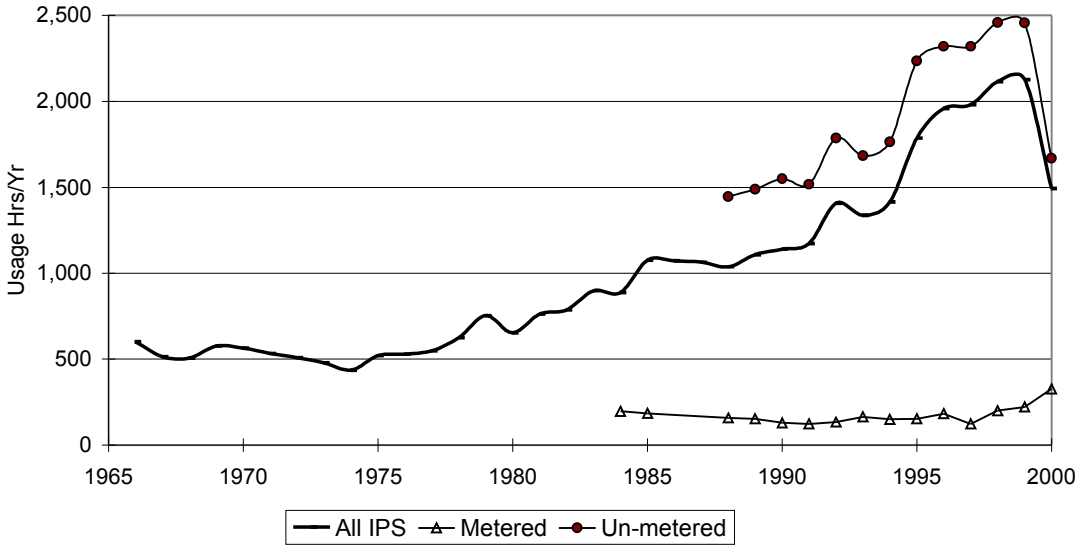
The irrigation pump sets (IPS) tariff policy is one of the most controversial and politicized issues in the Indian power sector. Since the late 1970s, many state utilities started charging agricultural consumers on the basis of connected load rather than that of actual consumption[2]. To support this decision, arguments were made that the metering of these pumps involves high costs and these costs are untenable in view of the low levels of consumption of electricity by these consumers, apart from other arguments. (REC 1985 as quoted in Shah Tushar 1993). But this shift to flat (fixed) tariff procedure gradually snowballed into one of the biggest problems in the Indian power sector. In the initial period, the flat rate or 'horse-power- (HP)-based tariff' was equivalent to the average consumption of this class as a whole and there was no cross subsidy. But, over the last two decades, the tariff charged to these consumers has rapidly declined in real terms resulting in substantial (in the range of 20 to 30% of the total revenues) cross-subsidy from other consumers. Apart from this issue of large cross-subsidy, this policy of flat tariff has also resulted in complete lack of accountability for the state electricity boards (SEBs) and power ministry. Since the actual consumption of most agricultural consumers was not metered, SEBs used to estimate energy consumption of these agricultural consumers as the product of connected load and average hours of operation for this class of consumers. The methodology of estimating these hours of operation was non-transparent. Figure 1 shows the increasing 'hours of usage of pumps' as claimed by Maharashtra State Electricity Board (MSEB).

In several states, the assumed consumption norm for agricultural consumers, in kWh / kW /year (or hours / year) was much higher than even that for the industrial consumers. Researchers have been pointing out that the figures for consumption of agricultural consumers were highly inflated, with a large portion of technical losses or transmission and

[2] In some states, farmers also have the option of choosing between the metered or flat rate tariff. But practically, most consumers are unaware of this, and all new consumers opt for flat rate tariff.

distribution (T & D) losses as well as power theft being clubbed and hidden under the head of the IPS consumption (Reddy and Sumithra, 1997). The recent evidence from states such as Orissa, Andhra Pradesh (AP) and Maharashtra has indicated that these observations were indeed true. As seen in Figure 1, in the year 1999-2000, during the first tariff revision process before the Maharashtra Electricity Regulatory Commission (MERC), it was revealed that the actual agricultural consumption norm (for un-metered pumps) was 1,600 hours and not 2,350 hours as claimed by MSEB. This revelation was made when MSEB was forced to make public the results of the sample survey that measured consumption of dedicated agricultural feeders.[3] Table 1 shows such increase in T & D losses (including theft) after bringing down the estimate of agricultural consumption to realistic levels. In Maharashtra, the cost of the losses hidden under the agricultural consumption amount to over US$ 300 million per year (~12% of utility revenue). With the system demand growing at 5-6% per year, this amount is sufficient for equity investment for meeting the need of additional generation capacity every year.

Figure 1: Claimed Usage of Agricultural Pumps in Maharashtra



The average consumption norm for all IPS shows a steep increase after 1990, propelled by the claimed increase in consumption norm of un-metered IPS, which camouflaged excessive T&D losses and theft. This was exposed during the public hearings at the time of tariff revision before the regulatory commission in year 2000. During this process, the utility accepted that the real consumption norm of un-metered pumps was around 1600 and not 2350 hr/yr. as claimed earlier. This implied a reduction in IPS consumption by nearly 35% (i.e. 5000 million units) and corresponding increase in the T&D losses. At average cost of supply, this was around 12% of utility revenue.
The metered pumps have low consumption norm because they are largely in drought prone area and some of these are non-functional.

[3] MSEB was forced to make public the results of these surveys when Prayas pointed out in a submission to the MERC the existence of a systematic survey as well as substantial discrepancy and over-estimation in MSEB's claimed agricultural consumption

Table 1: Under Reporting of Transmission and Distribution (T & D) Losses (as % of Energy Supply)

	Previous Claim	*Current Estimate*
Orissa	22 %	~ 45%
AP	18 %	~ 35 %
Maharashtra	17 %	~ 32%

Notes:
1. T & D loss includes technical as well as commercial loss (theft) in transmission and distribution.
2. Previous Claim - Claimed T & D loss level before establishment of regulatory commission
   Current Estimate - A more realistic loss level based on preliminary studies which is accepted by the SEB during / after establishment of regulatory commissions.

Considering the magnitude of these losses, it is clear that losses would not have risen to such a level without the knowledge of the SEB and the ministry. For decades, little attempt was made to put in place a system of proper measurement of losses. Even the existing systems were allowed to decay and the outcome was kept hidden. This was because both the SEBs as well as the power ministries found this as an easy way of hiding these losses in the name of IPS consumption. The SEBs benefited from this as they could hide their inefficiency and, at the same time, claim that the IPS subsidy is very large which is often projected as the main reason for their poor financial health. The individuals in key positions within the ministries (apart from making personal gains from this huge theft) benefited by nurturing political constituencies in the name of providing highly subsidized power to rural farmers[4]. In Maharashtra, the current agricultural tariff (after removing the overestimation of consumption) is only about 30% of the average cost of supply.

Though some farmers greatly benefited in the form of highly subsidized power supply, in the process, many other sections and aspects were severely adversely affected. For example, due to the financial crunch resulting from the theft and excessive losses, investments suffered, leading to deterioration in quality of power supply as well as non-fulfillment of the objectives of grid expansion and increasing population's access to electricity. Further, the industrial sector also suffered due to high tariff (that supported agricultural cross-subsidy). In the long term even farmers suffered due to poor quality and unreliable supply. Another detrimental aspect of this process was the highly skewed subsidy distribution. For example, our study in 1996 demonstrated that, only 3% of the farmers in Maharashtra could corner nearly 20% of the claimed agricultural subsidy, while nearly 80% farmers - who do not have a pump - did not benefit from this subsidy at all. (Sant and Dixit 1996)

[4] In fact, in the recent times, some additional categories such as single bulb households and power loom owners have also been added to this category of un-metered and subsidised supply.

2.2 The 'Independent Power Producers' (IPP) Process

The process of allowing entry to independent power producers (IPPs) in the Indian Power sector was initiated in 1991 as part of the 'bold' reforms in the power sector. This process is another example of how rationality and proper decision-making was given a go by in the management of the sector. In order to overcome the capital crisis and the resultant limitations on the capacity addition, the Government of India (GoI) decided to allow private power producers. In order to speed up the process of their entry, in the initial period, the SEBs were allowed to negotiate directly with the project promoters and enter into long-term power purchase agreements (PPAs). While committing the state's ratepayers to these legally-binding contractual obligations, even basic precautions were not exercised and even the bare essential procedures were not adhered to (such as competitive bidding and perspective planning for deciding the size, location, fuel, and other features of generating plants). This was justified in the name of expediency and the urgent need for capacity addition. This opening up of the sector saw cutthroat competition among SEBs to sign contracts with these IPPs. During the three years' period when such non-competitive contracts were allowed, SEBs signed 243 contracts (MoUs) for the capacity addition of over 90,000 MW (more than the national installed capacity at that time), amounting to contracts of nearly 90 MW per working day[5]. There were instances when, in one night, over forty such contracts were signed in just one state. In some cases, such as Maharashtra, even the demand forecast was inflated overnight by as much as 2,000 MW, in order to accommodate a particular IPP project. Many of these contracts—signed in complete secrecy and without proper planning or analysis of factors such as demand growth, revenue availability, and tariff impacts—were highly controversial. These contracts with IPPs are now resulting in very high cost of power. For example, in the case of Dabhol project in Maharashtra, the recent report of the government appointed committee estimated over-charging of US $ 200 million per year (i.e. over 15% of the contracted tariff). The same committee also demonstrated that if the project was to go ahead as planned then the government would have to support the utility from its budget, sacrificing a large part of the developmental investments. (GoM 2001). Many states are now finding it difficult to come out of such costly contracts and there is little choice but to substantially increase the tariff for consumers.

Another fallout of this irrational rush for IPP projects has been complete neglect of the badly needed improvements in performance on the distribution side and in the fuel supply problems. With most of the key managerial resources being devoted to chasing IPP projects (by giving more and more concessions and facilities), little attention was paid to reducing the T & D losses and theft.

[5] MoUs, i.e., Memorandums of Understanding are preliminary contracts, establishing the intent of setting up of the project by both parties, i.e., the SEBs and the private promoters. These are not strictly legally binding contracts but ensure for the parties some kind of "first preference" for project development. Though a number of such MoUs are signed, it is likely that only a handful of these will actually materialise. But considering the magnitude of these contracts, it is likely that, in many states, for years to come, only the projects initiated through this route will come online.

2.3 Failure to Boost the Non-Conventional Sources of Energy

The policies and actions in the arena of non-conventional energy sources also demonstrate widespread irrationality and inefficiency. There are many examples of inappropriate use of budgets and programs designed to promote energy efficiency and renewable energy. Without going in much detail, only three examples are narrated below.

In 1994-95, due to increasing international debate and pressure from NGOs for increasing investments in efficiency measures such as demand-side management (DSM) and renewable energy (RE), the World Bank gave a loan worth of half a million US $ to the Maharashtra SEB for undertaking a DSM study. This was part of a larger loan for expansion of a coal-based power plant and associated transmission lines. The SEB managed to carry out a study through a consultant of various DSM options and their cost-effectiveness from. This report was submitted to the SEB in 1995. No action related to DSM or RE measures suggested in this report has been taken in the five years after the study, but in 1995 itself the study was misused by SEB. The study contained a section on estimation of load shape of agricultural consumption. The sample used for this estimation was based on the data supplied by the SEB. This sample was highly biased in representing high consumption feeders. The SEB promptly used the consumption norm (hrs. /yr.) derived in the study for further inflating the agricultural consumption figures (refer Figure 1).

The second example is related to the utilization of budget for rural renewable energy projects. In order to spend the budgeted amount, year after year, the concerned agencies have carried out studies for "identifying the potential for RE sources in a taluka (administrative unit)" without concrete steps for implementation of the recommendations of these studies. This exercise has gone on year after year.

In the case of policy for promotion of wind power, the misuse of concessions is even severe. The policy allowed several concessions such as accelerated depreciation (100% depreciation in the first year) and low interest loans. This allowed windfall profits to promoters without any link to the performance of the plants. This defeated the basic purpose of the subsidies.

3. Inadequacy and Failure of TAP Mechanisms and Processes

The above three sub-sections provided examples of irrational decision-making, inefficiency in implementation, and ineffective regulation. Unfortunately, this irrationality and inefficiency has spread widely in the sector and has become almost a contagion that has gone out of control. This uncontrolled spread has led to adverse impacts on environmental sustainability, long term economic viability of the sector, as well as on social equity. For example, due to lacuna in the IPS tariff policy, on one hand, financial viability of the SEBs is threatened, limiting possibilities of expanding access and, on the other hand, the subsidy distribution became highly skewed with only a handful of farmers cornering a large portion of the subsidy.

There were several mechanisms and processes in the pre-reform structure of the power sector to avoid build-up of such irrationality and inefficiency. Figure 2 depicts the

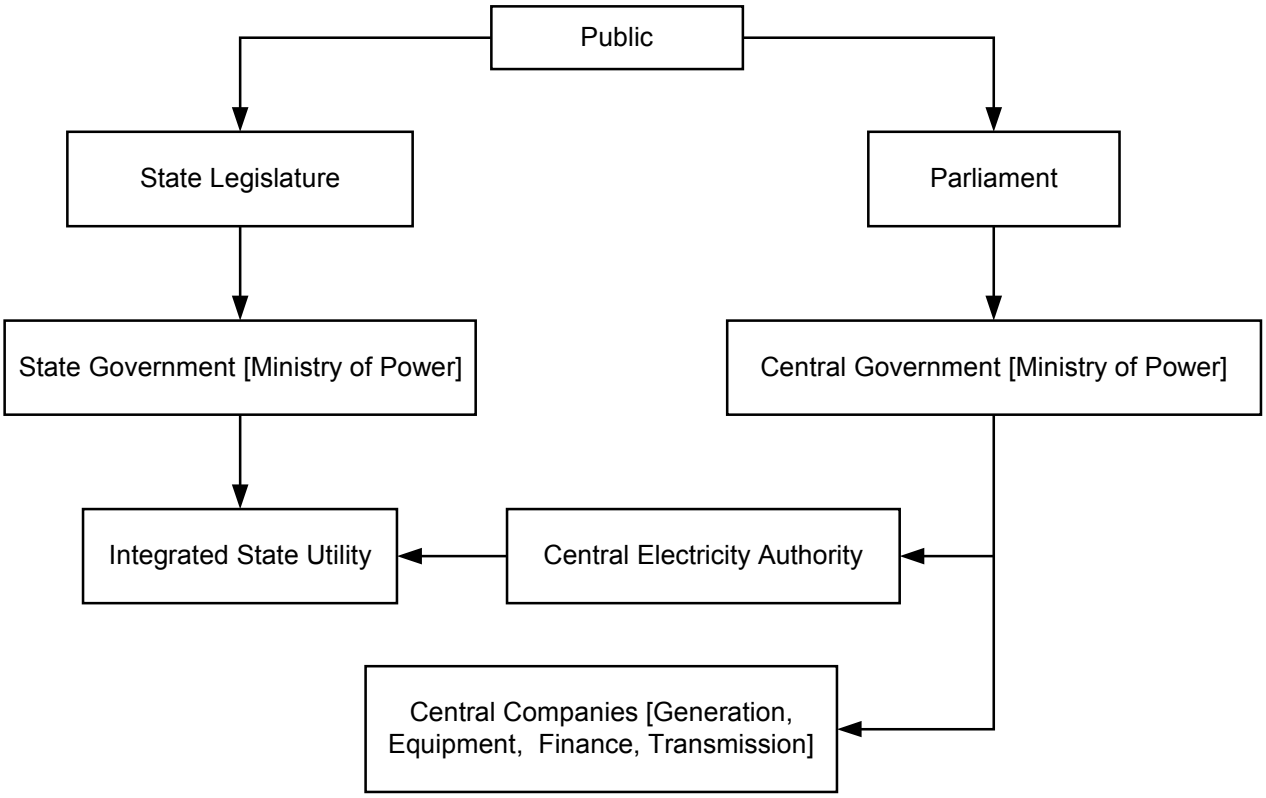
institutional structure of the Indian power sector. In the pre-reform structure, it was expected that the public will have control over the affairs of the sector through a chain of institutions, viz., state legislature / parliament, power ministries, and the utilities under the control of these ministries. It was expected that the utilities would be accountable to the ministries, which, in turn, will be accountable to the elected representatives. These elected representatives were expected to ensure rational policies and efficient performance in the public interest, as they were expected to be accountable to the public through democratic processes such as elections to the legislatures at the state level and the Parliament. Apart from this in-direct accountability mechanism, there were other mechanisms such as Consultative Councils (CC) to ensure transparency and participation in the functioning of the sector. Consultative Council, an advisory body, appointed by the state government, consisted of representatives from unions, industry, agriculture, and commerce. The functions of the CC include advising the SEB on major questions of policy and major schemes and to review progress and the work of SEBs.

Coming to the accountability mechanism of elections, over the years, the politicians have developed ways to focus the electoral battles on the "partisan" and "emotive" issues (such as dynastic rule and religious issues). In addition, they also utilized caste and other divisions in the Indian society as well as money and muscle power as tools in the electoral battles. In the process substantive economic and social issues were ignored.

Further, huge population in the states, the large size of the state-apparatuses, the enormous scope of activities undertaken by the state, and, finally, all these coupled with the lack of adequate and proper channels for information flowing toward electorate has helped the elected representatives to escape the responsibilities of the policies and programs they table and approve in the legislatures.

Once this very important mechanism of accountability was made ineffective, it became very easy to sabotage other mechanisms. For example, the Consultative Councils (CCs) were made ineffective by the ministries by treating these as avenues for political rehabilitation of party workers and other favored persons. Even though the law mandates that CCs should be consulted on important issues of policy, in the case of state of Maharashtra, the CC was not even formed when the first IPP contract—which was also one of the largest and most controversial contracts in the history of Indian power sector—was being signed.

Figure 2: Institutional Structure of Indian Power Sector



The non-mandatory or discretionary nature of the provisions in the statue for ensuring transparency and public participation also played key role in allowing the sector to become non-accountable. For example, the statues require the Central Electricity Authority (CEA) to invite and consider objections from public before giving sanction to any major power generation project. But, the procedures for information sharing and inviting and considering objections were not clearly laid down. The public notices inviting objections appeared in different newspapers at different locations, making it virtually impossible for the common public to participate in the process. Moreover, public had to rely on a very limited information about projects, which often did not include key information such as the power purchase agreement (PPA), detailed techno-economic analysis indicating the likely cost of power from the project, impact of the project on consumers tariffs, and demand-supply situation. Furthermore, the statues didn't require the CEA to publish all the objections received and the reasons for accepting or rejecting the objections. As a result, even this prime mechanism for ensuring transparency was reduced to a ritual.

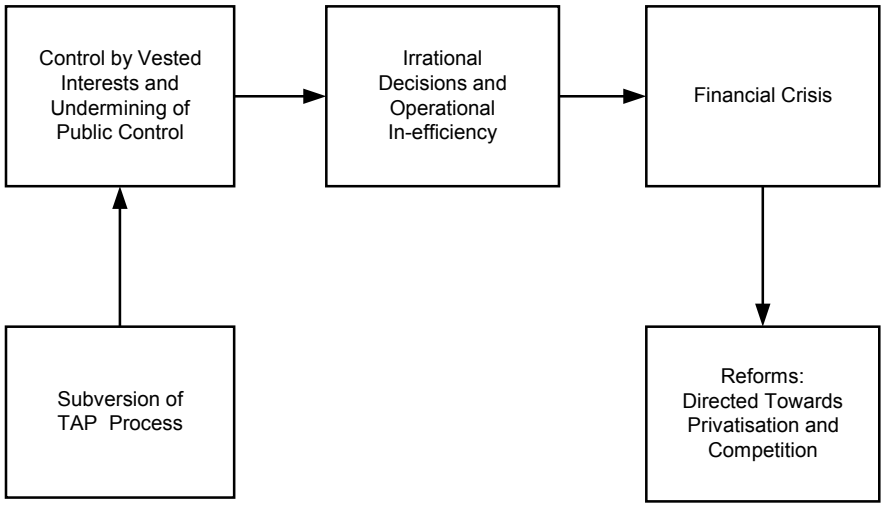
Thus, severing of the link for indirect accountability between the public and the sector (through elections and elected representatives) as well as the lack of adequate and mandatory processes and mechanisms to ensure transparency and direct public participation allowed subversion and high-jacking of the sector by a coalition of economic as well as political vested interests. These vested interests viewed the sector as a tool to further their political and economic priorities. For example, politicians found the promise of highly subsidized (or

at times free) un-metered electricity to rural farmers as an easy route to ensure political benefits, whereas the SEB management saw this as an escape route to hide large-scale T & D loss and power theft.

Such subversion and hijacking of the sector attained new scales when the sector was thrown open to private sector participation. This coalition of vested interests viewed this new initiative as an even easier route to further their selfish goals. The IPP policy allowed contracts negotiated in secrecy that were 'legally' binding on utilities and hence on consumers. The consumers will be forced to purchase high-cost electricity for as long as twenty to thirty years. The net present value (NPV) of even single such contract often turns out to be equivalent to the annual revenue of the utility. The Dabhol IPP promoted by Enron Corporation is an extreme example of this phenomenon. When this contract was signed in 1996 the annual revenue of the utility was just around US $ 2.3 billion, whereas the Dabhol contract involved annual payment of US $ 1.3 billion, i.e. an NPV of US $ 12 billion at 8 % discount rate. Thus, the IPP process effectively allowed vested interests to expand control over even the future revenue streams of the utility. Probably, this can explain the rush for signing new contracts with IPPs with complete disregard for even elementary norms of power planning.

This chain of developments, starting from the lack of 'public control' due to subversion and high-jacking of the inadequate and indirect TAP mechanisms and processes, leading to the tightening of the control of the coalition of political and economic vested interests, then resulting in irrational decisions and operational inefficiency could be depicted in the form of a figure (refer Figure 3). This could be termed as the diagnosis of the power sector crisis from the 'public-control' standpoint.

Figure 3: Diagnosis of the Power Sector Crisis Through "Public Control" Standpoint



4. Financial Crisis: The Core of Mainstream Rationale for Reforms

For the mainstream institutions, including multilateral and bilateral aid agencies (such as the World Bank and DfID of UK), government agencies, media, and academicians, the financial crisis faced by the power utilities is the prime concern. The severity of the financial crisis faced by the utilities cannot be denied. Neither could the mainstream diagnosis be denied, which proposes that the financial crisis is rooted in the high levels of inefficiency in distribution and distorted tariff policies. But the mainstream institutions often fail to understand or tend to ignore the next stage of diagnosis, which is the very root-cause of this inefficiency and irrationality, viz., the lack of public control over power sector. These institutions often believe and propagate that the real solution to overcome the financial crisis and to improve the overall efficiency is to change the ownership of the sector utilities from government to private sector and to allow more competition in the sector.

The current debate in the context of competition is mainly focused on how and to what extent the sector can shift to bulk competition[6]. Retail competition is not even seriously debated. This is not surprising considering various impediments to implementation of the retail competition. Properly functioning retail market would require high quality metering and other related services, which are impossible to realize in the next couple of decades in the country, considering the present state of affairs in the power sector. For example, even in the relatively better managed state like Maharashtra, around 50% of bills issued to metered consumers (i.e. domestic, industrial, and commercial consumers) are based on either average reading or minimum consumption slab. In other words, these do not reflect the actual consumption by the consumers. Similarly, over 2.2 million agricultural consumers in the state are not even metered. The substation-level metering is also in dilapidated condition as many substation-level meters are also not functioning. The situation in some other states is even more unsuitable from retail competition. The consumer bills are prepared manually in several states or the utilities do not have even proper asset registers that keep track of utility assets! All these factors make it virtually impossible to have a properly functioning retail competition (for small domestic or commercial consumers) in the next couple of decades.

Absence of retail competition imply that the utilities will continue to contract and decide on behalf of consumers requiring regulatory oversight and hence the effective TAP measures to prevent regulatory sabotage by utilities and other vested interests are absolutely essential and crucial. This need to prevent regulatory sabotage is well recognized even in the mainstream / WB model of reforms.

5. Investor-Centered TAP in the World Bank Model of Reforms in India

As such, the mainstream position seems to accept that resolving the power sector crisis in India would require transparency and "sabotage-proof" regulation for reaping the

[6] Though it is outside the scope of this paper, it is essential to point out that several impediments exist even for effective implementation of the bulk competition in developing countries like India. These include the shortage situation and increasing marginal costs of generation. Further, with several IPP contracts already negotiated and legally binding, in many states, no procurement of capacity would be necessary for a decade or so.

claimed benefits of privatization. However, there is a marked difference between the mainstream or the World Bank (WB) perspective and the 'public-control' perspective on this issue.

In the WB perspective, increased transparency and independent as well as "sabotage-proof" regulation are required for protecting private players from the state's intervention, which is an important precondition for attracting large scale private investment. In other words, clarity in rules and independence of the regulatory institutions is said to be essential to increase "investor comfort". This is necessary for large-scale private investments, without which competition will be ineffective.

This thinking is reflected in the design of the reform model by the WB. In terms of independence of the regulators, the reform model has several improvements over the pre-reform structure. For example, the reform laws provide for selection of regulators through a separate selection committee and also prescribe a fixed term for the regulators. In the backdrop of the practice—adopted by the governments and ministers—of using appointments and transfers as a tool for bringing in favored candidates in key positions, this is a marked improvement towards ensuring independence of the regulatory institutions. Similarly, the new reform laws mandate that the decisions of the regulators should be supported by reasons recorded in writing and should be available to all. This will certainly increase the transparency and accountability in decision-making. But, many other provisions relating to participation and transparency are either missing or are left to the discretion of the regulators. For example, though the Orissa reform Act requires the regulatory commission to complete tariff revision process within 90 days, the Act allows appeals against the decisions of the regulatory commission only on the basis of procedural lacuna and not on account of substantive issues. Further, key aspects of transparency and procedures such as public hearings and disclosure of key information regarding projects and utilities (such as PPAs, demand forecast assumptions, and tariff projections) can be curtailed by regulators[7]. When the discretionary nature of these mechanisms is pointed out by critics, it is argued that, over the years, case law and precedents will develop, which will make public hearings and disclosure of key information mandatory. But, here we need to remember that Indian power sector has a history of not adhering to even those provisions and norms which are incorporated in the status (Mehta 2000). On this background, it would be naïve and highly risky, especially when the sector is being privatized, to depend on the case laws and precedents for ensuring TAP.

The said investor focus is evident from the lack of importance attached to the capability building of civil society organizations which is essential for effective public participation or even to ensure transparency. Though the regulatory structure in India is modeled on the US structure, the institutions for facilitating public intervention (such as the Office of the Public Advocate) are absent. Similarly, little efforts are made to institutionalize the process of consumer education or to ensure participation of weaker sections or non-consumers.

[7] For a more detailed discussion on such discretionary aspects of TAP please refer to Dixit, Sant, Wagle 1998.

6. Conclusions

One of the most important lessons of the history of power sector in India is that unless there are adequate, effective, and mandatory provisions for ensuring transparency, direct accountability to people, and meaningful public participation (TAP); the regulatory mechanisms and institutions will be sabotaged by vested interests to further their own personal and political gains. The impact of such sabotage in the privatized power sector will be much more and highly adversarial for the long-term public interest. Thus, the key challenges during the process of reforms are to evolve and ensure implementation of effective TAP through various legal and operational provisions and concerted efforts towards capability building of civil society groups in order to ensure effective vigilance on the sector. Unfortunately, the present efforts for reforms are primarily directed towards privatization and ensuring fairness of the reformed sector for the investors, without giving adequate importance to TAP.

There are several other major issues of public benefits such as those related to environmental sustainability, social equity, and long term economic viability. In order to avoid or limit adverse impacts of reforms on these issues of public benefits, implementation of effective TAP provisions would be the necessary pre-condition. Further, it is essential to develop appropriate responses at the theoretical, policy, and program levels to effectively address these various public interest considerations mentioned above.

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