

Electricity Act, 2003 and the emerging regulatory challenges

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International Journal of Regulation and Governance 4(1): 51-70

Abstract

The Electricity Act, 2003 promises to bring about competition and choice in the electricity industry in India. However, since the Electricity Act, 2003 does not mandate any particular market design, there is considerable risk of state electricity regulatory commissions implementing different market structures in their respective states as per their own priorities and preferences. Such action is fraught with dangers and can severely limit consumer choice. A common market design evolved through a process of consensus among policy-makers and regulators can obviate such risks to a great extent.

Regulators must articulate clear and unambiguous principles that they would adopt. A well-defined regulatory work plan would be essential to ensure that the complex and interrelated tasks are addressed in a cohesive manner. Considerable emphasis should be placed on information dissemination. Regulators also need to be vigilant on the risk of over-regulation while implementing the Electricity Act, 2003.

Lack of institutional capacity in the regulatory bodies to address these challenges is a cause for concern. Efforts should be made to attract desired talent through suitable compensation structures, training inputs, etc. A separate central training institute focusing on regulatory matters would greatly benefit the regulators and their staff.

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Background

The Electricity Act, 2003 has been in force in India for almost a year since its notification on 10 June 2003. The Act brings about several changes to the manner in which the electricity industry in the country has been traditionally structured. The 'cost-plus' pricing framework applicable for setting tariffs of the electricity monopolies in the past is to give way to a more competitive framework. Wherever feasible, competition is intended as a means to ensure that adequate supply is available for consumers at competitive prices. Key changes brought about by the Act include

- mandatory open access to transmission networks for licensees
- open access to networks mandatory for consumers in phases as determined by regulatory commissions in various states
- delicensing of generation
- permission for captive generation freely along with immediate open access to networks
- recognition of trading as a distinct licensed activity
- organizational separation of transmission and system operations from generation and distribution/supply functions mandatory. Transmission operators prohibited from trading
- parallel networks permitted in distribution of electricity.

The focus of all the above changes is on promotion of competition in every possible manner in the electricity industry in the country. The superiority of competition over monopoly is well established in economic theory. A competitive firm is a price-taker while the monopolist is a price-maker. The competitive firm takes the market price as given and adjusts its output until its marginal cost equals price, because in theory a competitive firm is so small in the market that it sells all it wants at the market price. However for a monopolist, the price will move down with incremental production and the monopolist has the incentive to raise prices by restricting output to maximize profits. This can greatly be obviated to a large extent if market power is reduced and the monopolist is subjected to competition.

However, ushering competition in infrastructure industries, particularly in electricity, is a difficult task that demands commitment, wisdom, and hard work on the part of the agents of change. There are several prerequisites for effecting competition in infrastructure industries, including multiplicity of buyers and sellers, liquid marketplaces, and the capability of users and suppliers, to respond to demand and supply conditions. By these

measures only parts of the electricity industry – generation and retail supply – are amenable to competition. However, implementing competition even in these segments will call for a review of the business models in the other parts of the value chain as well. Competition in generation, for example, depends heavily on the organization of the transmission business and on system operations, which may continue to operate in a regulated framework.

Several institutions have important roles to play in the transformation of the electricity industry, including the government, utilities, and the regulatory bodies. Among them, the role of the regulators is by far the most important. This paper highlights some of the challenges that the regulatory institutions face for effectively implementing the new regime envisaged in the Act, and the capacity-building requirements in the regulatory bodies for effectively meeting the challenges. In the concluding part of this paper, we discuss the risk of over-regulation and its impact on competition in the electricity industry.

Need for a common market design: essential lessons from the US

Competitive power markets offer considerable potential for savings for consumers through lower charges. The Department of Energy in the US has estimated that a move towards competitive power markets has saved consumers as much as 13 billion dollars (60 billion rupees, approximately) a year (FERC 2003). In the opinion of the FERC (Federal Electricity Regulatory Commission), *'It (competitive markets) has stimulated innovation in generation and transmission technologies. It has freed customers from being forced to pay for the "stranded costs" of unwise investments. This competitive market framework came about as a result of national legislation and a series of Commission initiatives in both the wholesale gas and electric industries. In particular, these actions were intended to provide all wholesale power sellers with equal access to the transmission grid.'*

The Electricity Act, 2003 lays down the basic requirements of unbundling the vertically integrated utility structure, separation of transmission and system operations from other parts of the industry, and also an enabling framework for trading of power. However beyond these basic elements dealing with introduction of open access and competition, the Act does not provide any specific guidance on market design, leaving this in the policy and regulatory domain. Experience in various countries has

demonstrated beyond doubt that inadequacies in market design and improper sequencing can expose market participants and stakeholders to enormous uncertainties and risks.

To limit such possibilities, a common view of market design is essential. Changes in the electricity industry market structure in the US over the past decade provide useful pointers on the matter. The evolution of the industry in this period can be traced to the following milestones.

- 1992 EP Act (Energy Policy Act) required utilities to provide transmission service to generators.
- 1996 FERC Order 888 and 889 required all utilities to open transmission grid to generators and *functionally* unbundle their operations.
- 1999 FERC Order 2000 established criteria and requirement for utilities to file regarding participation in RTOs (Regional Transmission Organizations), as functional unbundling was clearly inadequate for promoting non-discriminatory transmission access and wholesale markets.
- 2002 Standard Market Design to standardize market rules for competitive wholesale electricity marketplace and transmission open access.

The reasons for the series of changes over time were several. Joskow (2003a) believes that restructuring and competition initiatives got off on the wrong foot partly, because the nature and magnitude of the technical and institutional challenges associated with successfully introducing competitive wholesale and retail markets were underestimated. Several factors – including lack of storability of electricity, low-price elasticity in the short run, dynamic nature of the flows of electricity, network congestion, frequent and unanticipated changes in demand, and presence of a rather rigid legacy arrangements – all make competition in electricity rather difficult. Unless a common set of principles and rules are applied for all transactions, competition would be severely hampered by ‘seams’ in the market rules. This was the genesis of the SMD (Standard Market Design) in the US. The FERC views SMD as a standard set of principles and rules that are vital to promote electricity markets and competition, reduce inefficiencies and attract efficient operators, and also enable demand response on part of consumers (FERC 2002). Although the specifics of the SMD framework continues

to be debated, the need for a well-defined template for market design and development is now universally acknowledged.

There are several similarities between the situations in the US and in India. Both have federal administrative structures in common where regulators in states have independent but complementary jurisdictions with the national regulator. The electricity grids in both countries operate over several interconnected regions. The market rules must be fundamentally compatible across the states/regions, and should also be technically sound if efficiencies of coordinated system are to be harnessed. Currently, in India (as in the US where SMD is attempting to fix the problems), 'seams' exist between markets across states and regions where physical power flow occurs across a line, but where the rules and procedures for pricing, measuring, tracking, recording and settling that power, and its associated markets are different on each side of that line.

Basic architecture for competitive electricity markets in India

The basic architecture for a transition to competitive electricity markets had already been developed in theory and applied in practice in several countries. It involves several key components described below (Joskow 2003b).

- Vertical separation of competitive segments (e.g. generation, marketing and retail supply) from regulated segments (distribution, transmission, system operations) either structurally or functionally.
- Horizontal integration of transmission and network operations to encompass 'natural' wholesale markets and the designation of a single independent system operator to manage the operation the network, to schedule generation to meet demand, and to maintain the physical parameters of the network (frequency, voltage, stability).
- The creation of wholesale spot energy and operating reserve market institutions to support requirements for real-time balancing, and to facilitate economical trading opportunities among suppliers and between buyers and sellers.
- Creation of institutions to facilitate access to the transmission network by buyers and sellers to facilitate economical production and exchange, including mechanisms efficiently to allocate scarce transmission capacity.

- Horizontal restructuring, forward supply commitments, and/or behavioural rules to mitigate regional and localized market power in wholesale markets.
- Unbundling retail tariffs to separate retail power supplies and associated support services to be supplied competitively from distribution and transmission services that would continue to be provided by regulated monopolies.
- Requiring eligible retail consumers to purchase their power supplies from competing retail suppliers, which in turn buy their power in wholesale markets, or own generating facilities to support their retail supply commitments.

Within this overall framework, variants are applied in individual jurisdictions depending on the legacy organization of the grid assets, the legal framework applicable, political priorities, and the institutional capacity in the entities involved. The solutions and the specific framework adopted depend heavily on local conditions. Development of the framework is also an evolutionary process that generally starts with basic arrangements envisaged in law and policy, and progressively graduates to more complex and sophisticated frameworks. In India, the provisions of the Act contained in Table 1 broadly define the basic market construct.

It needs to be mentioned that while the provisions of the Act provide the broad construct, additional clarity would be necessary for the application of the provisions. On several important aspects, the Act is either silent or is ambiguous in its language. For example, while the role of regulators would presumably include development of wholesale markets, the treatment of variation in wholesale market costs for distribution licensees is not clarified in the Act. Section 62 (4) of the Act dealing with tariff amendment specifies that '*No tariff or part of any tariff may ordinarily be amended, more frequently than once in any financial year, except in respect of any charges expressly permitted under the terms of any fuel surcharge formula as may be specified*'. This provision deals with fuel cost variation in procurement of power through a two-part tariff structure (featuring separate fixed and variable costs). However this provision could also be interpreted to mean that wholesale market cost variations would not be permitted as pass-through in retail tariffs. This potentially exposes the Indian power sector to a California-type situation where the wholesale prices were subject to price competition, while retail prices were

Table 1 Market construct of Electricity Act, 2003

Market design concepts	Minimum prerequisites	Relevant provisions of the Act defining prerequisites
Wholesale competition	<ul style="list-style-type: none"> ■ Open access to transmission network ■ Power procurement through trading in conjunction with bilateral contracting ■ Surrogate regulations, technical codes, commercial contracts, metering, billing, and settlement arrangements 	10(1), 10(2), 38, 39, 40, 42(2,3), 42(4)
Retail competition	<ul style="list-style-type: none"> ■ Open access to transmission as well as distribution networks ■ Flow-through of wholesale costs in retail tariffs 	9(1), 9(2), 10(1), 10(2), 38, 39, 40, 42(2,3), 42(4), 62 (4)
Operationalizing non-discrimination in network access	<ul style="list-style-type: none"> ■ Transparent information disclosure rules ■ Fair allocation and tradability of transmission rights ■ Prevent gaming and safeguard abuse of dominant position 	Definitions (47) 38(2), 39(2), 40(c), 42(3)
Competitive neutrality (abuse of dominant position)	<ul style="list-style-type: none"> ■ Independent system operation (requires segregation of transmission and system operation functions) and neutrality of RLDC/SLDC from market participants ■ Defined rules of corporate governance ■ Separate policy on abuse of dominant market position 	38(2), 39(2), 40(c), 42(3), 60, 134
Efficiency ^a	<ul style="list-style-type: none"> ■ Operationalizing economic despatch and integrated operations of the grid ■ Capacity procurement progressively through tariff bidding, covering both long- and short-term purchases ■ Tradability of PPA (power purchase agreement) and short-term power purchase contracts ■ Competition in trading and generation ■ Tradability of transmission rights ■ Optimal location of generation and transmission facilities ■ Time differentiated and cost-responsive wholesale and retail tariffs 	Preamble 29, 33, 61, 63, 79(2), 86(2), 134(5)
Power markets	<ul style="list-style-type: none"> ■ Development of power markets by regulators taking into consideration the prevailing policy framework 	66, 79, 86

RLDC – regional load despatch centre; SLDC – state load despatch centre

^a Efficiency here is referred from a market construct point of view. It does not allude to performance improvement potential for licensees.

capped, contributing to market failure.¹ Such infirmities must be addressed adequately.

Issues related to development of competitive markets are inherently complex and pose severe implementation challenges. Experience in various countries has invariably demonstrated that the devil lies in the details of implementation. While the power markets are expected to produce just and reasonable prices and offer choices to users, such markets are not likely to develop without a strong policy framework and adequate co-ordination between the various entities involved (Hogan 2001). The federal structure and differing jurisdictions of the central and state governments and commissions pose a formidable challenge in fostering integrated grid operations in the country and allowing the power flows to be consistent with the underlying economics. A robust policy framework as envisaged in Sections 3–5 of the Act would provide the essential link between the operations of the central and state regulators. The policy framework has to promote the objectives set out in the Act, and address the issues involved within the overall mandate of the Act and other applicable legislations.

Policy and regulatory framework

The Electricity Act, 2003 stands for two basic elements of freedom: freedom to purchase and freedom to sell. A laudable feature of the Act is that it has not limited any possibility artificially by being judgemental on what is economically feasible and what is not. This, in effect, would result in competitive pressures being exerted on the incumbents to become efficient or face financial consequences. The entire set of provisions related to delicensing of generation, open access, parallel distribution networks, elimination of cross-subsidy surcharges, dedicated transmission lines, definition of captive generating station are designed to allow the freedom to purchase and sell.

However, while the structural provisions of the Act are based on conceptually sound premises, the instruments of implementation do not (rightly) feature in the Act. The durability of the Act is expected to transcend implementation approaches which

¹ Subsequent studies indicate that consumers in California are more responsive to pecuniary and non-pecuniary incentives for altering consumption patterns than commonly believed (which was the rationale for the imposition of price caps) (Reiss and White 2003).

would evolve over time, responding to emerging requirements. The role of determining the specific direction to be given to the reform process within the overall framework of the Act primarily lies with the central government (and to a lesser extent the state governments) as the policy-maker, and with regulatory bodies such as the CERC (Central Electricity Regulatory Commission) and the SERCs (state electricity regulatory commissions).

Section 3 of the Act requires that '*The Central government shall, from time to time, prepare the national electricity policy and tariff policy in consultation with the state governments and the authority for development of the power system based on optimal utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy.*' On a cursory reading, it would appear that the scope of such a policy is restricted to development and optimal utilization of generation sources. However the section is referred to in other parts of the Act, including Section 66, which requires the appropriate commission to be guided by the National Electricity Policy and Tariff Policy for market development. In the absence of specificity in the law on market design, it is imperative that the policy framework must define and articulate the principles and philosophies for market design. It must provide a transition road map to reduce the present heterogeneity in philosophies, principles, and regulatory treatments across different states in India, while insisting that appropriate commissions use these philosophies as guiding principles to develop their market rules. It may be mentioned here that the purpose of defining a common set of philosophies would neither rob the flexibility and independence nor dilute the mandate of the CERC and SERCs derived from the statute. On the other hand, the purpose of a policy framework – particularly on market design – would be to address consistency at the following levels.

- Time consistency is the philosophy to be consistent across time
- Consistency across regulatory jurisdictions / similar market participants
- Overall consistency with reform objectives

Although an overall policy framework is urgently needed particularly for evolving a common philosophy of market design and market rules; for various reasons such a framework is yet to emerge. This situation must be remedied at the earliest. The

regulatory commissions have made initial moves on setting the direction to regulatory practices in the new regime. The CERC has circulated several discussion papers and draft regulations on open access, transmission pricing and power trading, culminating in the recent regulations on these aspects. Several SERCs have also circulated draft regulations on matters related to supply code, consumer complaint procedures, office of ombudsman, etc. It is likely that many of the SERCs will finalize some of these in the coming months. However, the question is: are the core issues being addressed and addressed adequately? Or are we still scratching the surface and losing precious time?

Let us look into the issues of open access, transmission pricing, and trading. Apart from the CERC, there has hardly been any move by the state commissions (barring isolated instances). Yet it is the role of the state commissions that will be the most important one because the last mile connectivity lies in the jurisdiction of the state commissions. Further, the best of approaches at the inter-state level can be negated by either lack of will in the states or through restrictive practices adopted at the state level. It needs to be recalled that most of the problems and difficulties in the Indian power system is not at the inter-state level but in the states. It also needs to be mentioned that though the inter-state orders till date have addressed the relatively simpler issues, yet the more complex aspects are still pending (Table 2).

Thus it is apparent that the state commissions, which have not made any moves on the emerging issues as yet, will face a formidable task in tackling the issues in a cohesive manner. The need of the hour is for regulators to accord the highest priority to these emerging issues, individually and as a group. Unless this is done, there is a strong likelihood that events will overtake the regulators, affecting their credibility and impairing market development.

Establishing regulatory principles and action plans

To address the complex emerging requirements, the regulatory bodies need to draw up concrete action plans keeping in mind the overall objectives sought to be attained and the most efficient way to attain these objectives. A piecemeal approach could easily result in over-regulation that could seriously impair the development of the power markets. At the same time, lack of essential regulation could also result in abuse of market power and

Table 2 Coverage of recent CERC orders consequent to the Electricity Act, 2003

Order on	Addresses	Does not address
Trading (CERC 2004a)	<ul style="list-style-type: none"> ■ Licensing issues ■ Procedural aspects of scheduling and despatch ■ Basic staffing requirements 	<ul style="list-style-type: none"> ■ Market power mitigation mechanisms ■ Development of power markets/exchanges ■ Definition of conditions warranting regulatory intervention ■ Need for separate licensing for intra-state transactions
Open access (CERC 2003)	<ul style="list-style-type: none"> ■ Jurisdiction issues 	<ul style="list-style-type: none"> ■ Elimination of market power of incumbents ■ Jurisdiction issues not translated into necessary action on transmission pricing of inter-state transactions ■ Definition of market
Transmission (CERC 2004b)	<ul style="list-style-type: none"> ■ Transmission hierarchy of access ■ Basic pricing mechanism (current pricing arrangements continued) 	<ul style="list-style-type: none"> ■ Trading of transmission rights ■ More advanced pricing arrangements that would address 'pancaking' ■ Effective expansion of the transmission system

CERC – Central Electricity Regulatory Commission

response by regulators on an ad hoc basis, thus increasing the risks for the market participants. To execute their role effectively, regulators must establish, at the outset, the principles of regulation that they would adopt and initiate consequent actions. The Act is explicit on some of these principles (and the consequent regulatory roles) including

- enhancement of the financial viability of the electricity sector,
- facilitation of competition through non-discriminatory access and neutrality of system operators,
- incentivization of superior performance,
- certainty on pricing and linkage to underlying economics,
- tariff rationalization and progressive removal of cross-subsidy, and
- protection of consumer interest.

However, there are several other principles that are important to implement competitive power markets that are either implicit or are inadequately addressed in the Act. Such aspects include

- encouragement of data discovery and disclosure of data that influences power market operations,
- promotion of adequate investments to facilitate competitive power markets (particularly in transmission and system operation),
- mechanisms for independent process and data verification,
- adequate framework for dispute resolution, and
- limiting regulation to essential elements only and progressive deregulation of the sector.

Irrespective of whether the Act addresses the above adequately or not, these principles need to be established and translated into instruments of market development and regulation. As this paper has pointed out, policy would have an important role to bring about a cohesive framework for market development that is applied across the country. Beyond this, it would be the responsibility of the regulatory bodies to implement the framework. The key institutional initiatives that would be necessary on the part of the regulators would include

- development of a strategic framework for regulation;
- development of an overall regulatory work plan;
- framing of regulations and other regulatory instruments;
- implementation of regulations; and
- review of performance and information dissemination.

Development of a strategic framework for regulation

It will be important to define the medium-term *strategic implementation framework* on all issues at the outset rather than addressing the various issues in isolation. This will help establish a structured regulatory agenda and provide a greater degree of certainty to all sector participants. The Act recognizes the role of regulators in policy formulation in certain places (e.g. rural electrification and local distribution). The regulators are also required to be guided by certain policies like the National Tariff Policy to be framed by the Government of India. However it is inconceivable that the coverage of policies will be adequate for all actions required on the part of the regulators, and working out the implementation requirements will squarely be in the

regulatory domain. The Act also leaves certain decisions (like the phasing of open access) to the judgement of the regulators. The strategic framework and implementation policies on such matters would need to be formulated by the regulators in line with the principles established upfront. Particular areas where flexibility is required in the regulatory agenda due to uncertainty on future developments can also be identified. The development of power markets would be an important part of the strategic framework.

Development of an implementation road map

The overall regulatory strategy should ideally translate into an *implementation road map*. This will provide the critical element of regulatory certainty that is desired by all stakeholders and is essential to reduce regulatory risks. It will be useful for each of the regulatory bodies to publish a 'statement of regulatory intent' to ensure that the regulatory objectives, principles, and action intended are well understood by all the key stakeholders. The overall statement of regulatory intent should become the basis of more detailed annual plans; development and publication of which should be a mandatory requirement.

Development of regulations and other regulatory instruments

The strategic and regulatory objectives would need to be translated into specific *regulatory instruments*. Regulations framed by the Commissions, along with the licences are the key regulatory instruments. Considerable application would be necessary to ensure that such regulatory instruments are robust and effective, yet without being intrusive into the operational issues of sector participants.

Tariff determination for regulated segments of the power sector is one of the key functions of regulatory commissions in India. The structure of the tariffs and their linkage to underlying economics would be the key determinants of efficient market functioning. The Act permits continuation of existing tariffs principles for a year after notification (i.e., till 9 June 2004), beyond which new tariff regulations would need to be framed.

Transmission pricing is an important aspect that exemplifies the emerging challenges. In the past, all regulatory commissions in India had adopted 'postage stamp' tariff principles, resulting in socialization of costs. This has sufficed till date since open

access was neither mandated by law nor was it widely prevalent. These principles will certainly need a re-look and new regulations will have to be framed. This will be a challenging task for most regulators, as current institutional capabilities often fall short of the demands placed by complex tariff methodologies. Even the CERC, which suffers from relatively lesser institutional capability issues, prefers to continue with the existing 'postage stamp' tariff principles to limit complexity in pricing and avoid jurisdiction issues. As a consequence, the issue of pancaking transmission tariffs – arising out of regional organization of the grid and transfer of electricity across regulatory jurisdictions with tariff charges of individual jurisdictions being added up for deriving the overall tariff – has not been addressed. The reliance of the CERC on physical transmission rights also does not appear to have considered the complexities in implementing such rights in a regime that is likely to witness considerable trading activity. Experience in several countries, including the US, indicates that physical rights are difficult to implement unless the energy flows are well defined and transmission constraints are few.

The recent report of the Task Force on Investment and Reforms constituted by the Government of India (Ministry of Power 2004) has made several recommendations on transmission pricing, including introduction of connection (entry and exit) charges, zonal transmission pricing, information disclosure, and other related issues. However the National Tariff Policy (which was to be based on the Task Force report) is yet to be issued, and the implementation of the policy will depend on the manner in which regulations are framed by the CERC and the SERCs.

Implementation of regulations

Often it happens that the intended users do not adequately follow the various guidelines framed. The complex and intense regulatory agenda could result in inadequate monitoring of the guidelines by the regulators. To make implementation of the guidelines effective, the regulators need to put in place *monitoring processes* that incorporate

- periodic review of performance and compliance specifically against the guidelines issued;
- feedback to the licensees and generators on the findings of the commission;
- review of the guidelines to streamline or strengthen them.

The above process is very important for a focused and effective regulation of the sector. It needs to be mentioned that these comprehensive reviews of performance against the guidelines should be over and above any routine monthly reviews that the commission may undertake.

Review of performance and dissemination of information

An important component of succeeding in building acceptability of reforms is *effective communication and information dissemination*. While communication and effective public relations cannot simplify measures per se that are inherently difficult and often apparently harsh for certain groups of consumers, it can however reduce uncertainty and create an environment of trust and confidence. In such an environment, the stakeholders appreciate the causes for harsh measures such as the need to raise tariffs and thus offer less resistance.

As the sector moves towards broader reforms, it would be necessary for the regulatory bodies to develop strong and structured information dissemination and communications programme with the following objectives.

- Increasing awareness and knowledge of the initiatives taken and progress achieved within the reforms programme among the politicians, civil servants, media and other stakeholders.
- Disseminating information to provide the stakeholders on the performance of the sector (particularly the utilities).
- Increasing commitment and buy-in from employees of utilities and other key external and internal stakeholders of the regulators in terms of their awareness and acceptance of the reforms process, and bridging the gap between organizational and individual needs.

The instruments of information dissemination could typically include

- annual performance reports of the sector;
- comparison of actual performance with plans (including the annual plans framed by the regulators);
- review reports published on a need basis;
- regular data reporting systems (typically through dedicated regulatory websites).

Capacity building

Implementing the regulatory agenda would require strong institutional capabilities in the regulatory bodies, including creation of systems and processes and knowledge capital. The need for a competent staff for accomplishing the tasks ahead also cannot be understated. Several states have only recently established the offices of independent sector regulators. The development of regulatory capabilities across the country has also not been uniform. While, on the other hand, certain regulators have adequate funding and staff and had the support of multilateral agencies, there are several others that do not have the basic infrastructure and staffing as yet. The quality of personnel (including the commission members) is far from uniform. This gives rise to severe doubts about the capabilities of these organizations to meet the emerging challenges.

To obviate these problems there is a need to

- ensure minimum level of staffing through policies;
- centrally develop model regulations and guidelines for adoption by all state regulators; this will not only improve consistency and reduce costs, but also enable the states that are lagging behind others in regulatory development;
- ensure adequate funding of the regulatory bodies;
- develop staffing norms and compensation structures to attract the desired talent;
- provide adequate training inputs to the commission and its staff.

The need for effective and sustained training initiatives cannot be overstated. Training remains by far the single most important issue to be dealt in organizational development. It is also essential for attracting and retaining the best talent. In view of the complexities involved in implementation of the new framework, it is essential to develop standard training courses for regulatory bodies from across the country. The following aspects would need to be considered for the training.

- Training should be a combination of on-the-job and structured off-site training.
- A separate training institute focusing on regulatory issues should be established.
- The course content should be developed with professional expertise for the structured training courses to be delivered centrally.

- The institute should have a combination of a full-time resident faculty, part-time faculty, and special faculty drawn from expert bodies and professionals.
- The institute should publish courses on offer well in advance with the necessary information on the detailed course content, faculty expected to deliver the courses, and the cadre the training is intended for.
- Competent faculty drawn from national and international sources should deliver the initial courses. Thereafter the resident faculty of the institute should take up core courses based on the initial courses delivered by the experts. Special courses may continue to be delivered by experts.
- In the annual plan each regulatory body must specify the minimum number of hours its personnel (members and staff) would go through during the year.
- The year-end report should clearly include the actual training hours received by each of the personnel.
- Most, if not all, consultancy assignments should include clauses for transfer of technology and skills to commission personnel.

In the past, it has been the experience that there has been much reliance on external consultants due to lack of trained personnel in the commissions (although some regulators have made training an important prerequisite for granting consulting assignments). This aspect needs to be addressed and it needs to be ensured that core functions are carried out by the regulatory body itself, with external assistance sought only for specific one-off needs. The terms of employment of the commission and its staff should be attractive enough to invite personnel of the required calibre.

Capacity development in the regulatory bodies will inevitably be a long drawn exercise. Hence, it is essential to make a start as early as possible.

Avoiding the over-regulation trap

The evolution of the industry will bring in its fair share of surprises. For the regulatory bodies that are at the helm of implementing sector reforms, this will essentially mean a heightened risk perception since they would be exposed to criticism. Regulators, in general, are extremely sensitive to criticism on failure to protect public interest. The instinct in such circumstances

would be to regulate the sector entities to prevent adverse situations. This, in turn, could severely stymie sector operations and actually *increase* regulation instead of deregulating the sector.

It is essential to avoid this trap. To do this, the first need is for regulators to articulate a clear philosophy of regulation that they subscribe to. The regulatory approach, principles, and instruments for the same would need to be developed consistent with this regulatory philosophy, and whenever there is a need to develop fresh regulations or undertake an approach that appears to be increasing the intensity of regulation, the regulators should conduct necessary consistency checks before proceeding.

It must be mentioned here that the Act, for all its merits, does not always provide clear direction on the regulatory approach to be adopted. A case in point is on the regulation of trading, as illustrated in the following points.

- Sections 79 and 86 of the Act empowers the appropriate commission to impose trading margins, but does not provide any direction on the conditions under which such margins can be imposed.
- Section 62 of the Act permits the appropriate commission to fix caps on short-term contracts (less than one year duration) between generating companies and licensees only if there is a shortage of electricity. The conditions of application of this provision are not precisely defined in the Act. Regulators have tended to ignore this provision, treating all contracts between generating companies and distribution licensees as price-regulated contracts.
- It is unclear from the provisions of the Act to what extent the state commissions can require traders to furnish data regarding their cost of procurement while determining retail tariffs. Several regulators have indicated (informally) that they would use the provisions to investigate the portfolio costs of traders.
- The Act does not clarify whether the costs of purchases by distribution companies from traders would be allowed as a pass-through.
- Above all, the definition of ‘non-discriminatory’ open access, which is fundamental to development of trading, is not defined. This has resulted in regulators assigning pre-existing rights to incumbents. Current evidence from the US and other jurisdictions point at exactly opposite approaches to definition of open access.

Thus, while activities like power trading are a fundamentally unregulated activity, they could easily be shackled on account of various provisions of the Act to a point. This would occur where it is inefficient and limited in volumes to make any real contribution to the evolution of competitive power markets.

It can well be argued that defining such details should be a part of policy and regulatory framework and not the law. This would however require policy-makers and regulators to develop the sagacity and deep capabilities to address these challenges, else the entire premise of the Act on competition benefiting the consumer could fail badly. There cannot be any half measures in the introduction of competition in the electricity industry. To quote Joskow (2003c) in conclusion, ‘We must either move forward to bring the restructuring, regulatory and competition reform process to a successful conclusion or return to the past. We cannot stay stuck in the middle without creating much more serious long-term problems for electricity consumers and the economy.’

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