Power Supply in Developing Countries:
Will Reform Work?

Proceedings of a Roundtable
Co-sponsored by the World Bank and Electricité de France

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Preface

Reviews of multilateral lending experience in developing country power sectors, combined with the emergence of innovative structural and managerial arrangements in power sectors worldwide, have stimulated efforts among multilateral agencies and other concerned institutions and companies to identify new directions for the reform and development of electric power sectors. Within the World Bank, this exercise has recently generated a major policy paper, The World Bank's Role in the Electric Power Sector, and the accompanying technical paper by John Besant-Jones, entitled Reforming the Policies for Electric Power in Developing Countries. The Bank's presentations at the Roundtable were drawn from a draft version of the latter paper.

Comments and analyses on these papers by Pierre Lederer and Laurent Ferrari of Electricité de France initiated a dialogue between the two organizations that resulted in the agreement to co-sponsor a Roundtable to bring together a range of perspectives on the new thinking and on the opportunities and constraints of implementing reforms. Under the umbrella question, "Will reform work?" the discussion sought to identify and anticipate issues in translating the new reform themes into practical options for developing countries. The final version of the technical paper will take account of the Roundtable discussions.

At the Roundtable, presentations for the World Bank were given by John Besant-Jones and Luis Gutierrez of the Industry and Energy Department (IEN). The presenters for Electricité de France were Pierre Lederer and François Velten. Participants included Bank staff and representatives of power utilities, development banks, associations, and consulting firms from a wide range of developing and industrialized countries. Facilitation of the Roundtable sessions was provided by Fleishman-Hillard, Inc.

The Roundtable represents an innovation in the way that the World Bank puts its ideas out for review, and it calls for an equally innovative treatment of the proceedings. This paper therefore follows a modified proceedings format, preserving the range and flavor of opinions expressed while reordering the discussion into organizational themes. The text was compiled by Siddhartha Mitter (writing for Electricité de France) and Lori Hylan (writing for the Industry and Energy Department) from recorded transcripts. Supplementary material has been added in boxes, as needed. The paper is arranged around the five paired sets of propositions and discussion themes and the single wrap-up discussion theme that the co-sponsors selected for the Roundtable. Each session contains
in boxed form the opening presentations made by representatives of the Bank and EdF on each of the propositions and discussion themes.

Based on the success of this Roundtable, the Industry and Energy Department and Electricité de France hope that the model will be replicated in other parts of the world to facilitate an open exchange of ideas. It is also hoped that this paper will be useful for policy makers, utility managers, and other interested parties in the power sectors of developing and industrialized countries alike.
Executive Summary

Current debates on power sector policy for developing countries place emphasis on the institutional framework that governs the development of the sector, defines the roles of participants, and sets the management rules that they must follow. Both the historical legacy of power sector policy-making and the emergence of organizational experiments in different parts of the world have led to interest in redefining and possibly diminishing the role of government in the power sector; introducing sound commercial principles, and where appropriate, competition, into various elements of the sector; attracting foreign and private investors; and re-thinking the principles of sector regulation and the administrative arrangements for making them work.

Underlying these debates are questions that remain largely unresolved, concerning the possibilities of applying and generalizing to developing country power sectors certain recent advances in economic theory. Many of the new ideas for sector reform draw on contestable market theory, arguing that the focus on electric power as a natural monopoly may have been overstated. Although certain components of electric power supply (e.g., transmission) do continue to exhibit natural monopoly characteristics, others may be better suited for competitive arrangements than has been previously thought.

In response, strong arguments remain in favor of maintaining the emphasis on economies of scale and scope, particularly in developing countries. When a power sector is vertically de-integrated and/or opened up to competitive generation and distribution arrangements, increased transaction costs may offset the possible efficiency gains.

To evaluate these contending perspectives in a manner that is pragmatic and immediately useful to developing countries, it is necessary to reconsider the historical record of sector difficulties since the 1970s; to evaluate new structural models that have recently emerged in certain—mainly industrialized—countries; and most of all to analyze the opportunities and constraints that correspond to different patterns of reform in specific country environments. These issues of evaluation and implementation formed the basis of the Roundtable. Specifically, the discussion addressed five reform issues with the following propositions and discussion themes:
Proposition

1. Governments of developing countries should rethink their roles to improve the performance of their power sectors.

2. State-owned power utilities should be commercialized and made accountable to the standards of capital markets.

3. Competition should be introduced into the power sector in order to improve sector performance.

4. Regulation of the power market in developing countries should be incentive-based and applied transparently by an independent agency.

5. Developing countries should use private sector investment, technology, and expertise to develop and reform their power sectors.

Discussion Theme

Will governments of developing countries be able to achieve their objectives for power sectors by using their policy-making and regulatory powers, without relying on their powers of ownership?

How can social and economic concerns about the supply and use of electricity be made compatible with commercial pressures?

Does market size influence the scope for competition in bulk power supply and, hence, the justification for breaking up vertically-integrated power suppliers?

Are sensitive issues such as pricing realistically amenable to incentive-based regulation by an independent agency in developing countries?

Will governments, state-owned power companies, and private entrepreneurs—both domestic and foreign—be willing to cooperate in achieving the long-term national objectives for the power sector?

Defining the Role of Government

It is appropriate that governments should rethink their roles in power supply; it is also appropriate to consider the policy-making, regulatory, and ownership functions separately, provided their links are clarified. Nevertheless, public or private ownership alone is an insufficient basis for predicting the success or failure of power sector reforms. It is therefore necessary to turn to new ideas in commercialization and regulation that for the most part do not discriminate between public and private ownership.

This said, each country situation will present challenges in policy selection and implementation. First off, governments, private sector participants, and multilateral agencies may not share a common set of sector policy goals. Even under the optimistic hypothesis that a decisive diagnosis of sector needs is feasible, it will be difficult to achieve a consensus on policy choice unless all parties exercise some spirit of compromise. For external participants, it will be important to adapt the principles of intervention to the particular features of the local political economy, while still preserving the spirit of these principles—an exercise which will require skill and sensitivity.
Furthermore, the implementation of new power sector reforms may be hampered or disabled by deficiencies in administrative capacity: the more complex the reform, the greater the capacity that is required to interpret, explain, and administer it. There is no substitute for human capital development, and there are convincing arguments for renewed emphasis on capacity building (e.g. training) in future multilateral interventions. This said, the development of capital markets and of mechanisms of transparency and public information, may also help alleviate rigidities in policy choice and implementation.

Commercializing Utilities

Commercialization—a series of measures that lead a state-owned enterprise to conform to corporate standards of management and operations, including efficiency in pricing—is an appropriate goal for sector reforms. The implementation sequence of these reforms, however, must be made compatible with the sequence of overall adjustment reforms in the national economy—all the more so where the consumer tariff has been kept artificially low. For reasons of social welfare as well as reasons of political viability, arguments persist in favor of both gradual and one-step reform procedures. Country characteristics must play the largest part in making this choice, although general guidelines are available to assist in managing reform, particularly in the crucial area of securing consumer consent and support.

The links between tariff reform and inflation are of special concern in devising realistic procedures and schedules of reform implementation. First and foremost, tariffs cannot be effectively adjusted in an environment that is already beset by high inflation. Secondly, tariff reform itself may present inflationary dangers; however, these must be compared with the inflationary costs of non-reform, especially those embedded in subsidies to the sector at large and to specific heavy users of electricity.

After implementing the first set of commercial reforms, the challenge remains to devise schemes of pricing and of network development that will bring affordable and reliable electricity services to all who need them. In reformed power sectors, targeted subsidies should conform to clear ends and means that avoid the mistakes of the past, where subsidies tended to (a) be charged to non-user groups and (b) benefit groups other than those initially targeted. Rural electrification, which is not appropriate for consideration as a “commercial” activity, may be subject to different policy guidelines.

Introducing Competition to the Sector

Debate over the role that competition may play in the development of the power sector tends to obscure the fact that competition may occur in very different ways. These range from competitive bidding for ancillary services to the introduction of competition in core services, either through competitive bidding for generation under regulatory supervision or through open access to the grid, which allows for competition in generation and final supply.

Introducing competitive procedures in ancillary service contracting or franchising is largely uncontroversial. The transition to a competitive power supply system as such, however, is a matter of controversy for several reasons. First, this notion pits against one
another competing bodies of contemporary economic research. Advocates of a
competitive system suggest that economies of scale and scope do not accrue in power
supply to the extent that was once believed; instead, contestable market theory suggests
that the natural monopoly component of electric power supply may reside solely at the
levels of transmission and local distribution. This perspective has gained ground in
recent years, but it has also generated significant objections. Thus, any efficiency gains
from introducing competitive supply will have to be measured against new transaction
costs, more complex regulation, and possible inefficiency in investment (on the premise
that markets are myopic) that are associated with a move away from internal transactions
within a vertically integrated supplier. Furthermore, the power sector may exhibit special
characteristics in comparison not only to non-network industries, but also to other
network industries; therefore it is not clear to what extent advances in other industries,
such as telecommunications, apply to the power sector.

A second set of cautions associated with the move to a competitive supply
structure has to do with the paucity of examples of such a system. Where examples exist
they tend to be recent and to occur in industrialized countries. In developing countries
where the private sector is often weak and where market procedures are often
undeveloped, there may be cause for considerable prudence before, for example, moving
to competitive bulk markets. Clearly, more information about salient developing-country
cases of competitive reform, e.g. Chile, would assist in clarifying the debate.

In between these levels of competition, there exist several intermediate areas
where competitive procedures might boost system efficiency. One such area is in
organizing competitive bidding for the financing and construction of additional capacity.

Which intermediate solution is appropriate, if any, will depend on local
caracteristics. The local private sector, the history of foreign investment, and indeed the
culture of the local power system, will tend to encourage or deter such an evolution.
Furthermore, system characteristics, such as the technological mix used in generation or
the degree of interconnection, are also likely to affect the possibilities for competition.

Selecting the Regulatory Framework

Recent research in regulatory theory has made strong arguments for a move away
from traditional regulatory systems (cost-plus, rate-of-return) to systems of incentive
regulation which, it is suggested, are better able to contain waste and promote economic
efficiency in the sector. Indeed, it appears uncontested that there is some scope for
introducing incentive regulation to certain aspects of power supply in industrialized
countries. In many developing countries, however, the scope for incentive regulation
may for now be limited. One concern is the possibility that incentive regulation would
not result in efficient investment decisions. Therefore, in an environment of highly
imperfect market signals, undeveloped capital markets, and low administrative capacity,
it may be preferable to focus on commercialization of the state-owned power supplier(s).

Similarly, discussion of an independent regulatory agency, although it reflects a
widely shared concern about promoting sector autonomy and efficiency, may not be a
high priority in many developing countries because their governments cannot provide a
credible and durable prospect of allowing such an agency to function as intended.
Countries should develop clear and workable regulatory procedures, but only in conjunction with other measures, such as commercialization and the development of an enabling environment for investment, that most directly serve the near-term needs of the sector.

**Attracting Private Sector Participation**

History shows that private investment is important and desirable in developing the sector. Today once again, the needs for investment are great, with a wide range of innovative investment options suitable for different investors: foreign utilities or other foreign suppliers or contractors, or domestic industrialists.

Given the freedom to choose investments and move capital around the world, investors have many choices. Developing countries must attract investors to their power sectors by offering conditions that are internationally competitive. Most important, of course, is the national macro-economic environment. The economy need not be perfectly healthy—indeed, it rarely is—but extreme instability will be a powerful deterrent. Generally, the more stable the economic environment, (a) the greater the attraction that it offers to investors and (b) the lower the rate of return that investors will seek in the near- and medium-term.

The terms of private or foreign involvement will vary with the enabling environment that the host country and sector can offer. The central component of an enabling environment is a clear set of rules among participants, with clearly delineated roles. However, there is no optimal regulatory framework in which to enshrine these rules and roles, the specifics of which will have to vary with the conditions of the local market and political economy.

The development of clear and open procedures for investment will be of value not only to investors; indeed, it will serve the public interest by producing deals that feature an equitable distribution of risk. The private partner should be protected from having to shoulder risks that are beyond its reasonable control, but prevented from discharging all the risks of the venture onto the public partner. The more open the procedures governing investment, the less likely it seems that inequitable risk structures would be accepted.

In short, reforms will require both the necessary domestic commitment and a good measure of flexibility and pragmatism on the part of outside partners. However, the emphasis on attracting foreign investment should not detract from mobilizing the domestic private sector, which should in the long term play a leading role in sector development—an area which merits further study.

**Reform Guidelines**

There was agreement at the Roundtable on the urgency of the basic needs of the sector: dramatically increased financing from private and foreign sources, and better operating efficiency.

To achieve these goals, a first-order set of policies seems necessary and generally uncontroversial. This set includes commercializing state-owned utilities; de-politicizing utilities’ management; transparently regulating the power market; and introducing
competition to selected procurement and management services. Furthermore, a number of interventions aimed at bolstering administrative capacity, enhancing human resources, and developing capital markets will have tangible benefits for power sector reform and development. In particular, these and other measures can serve to attract the private and foreign capital that is necessary for sector development.

Proceeding beyond this first set of policies with restructuring and incentive-based approaches to controlling markets may be appropriate for certain countries, but only in the most pragmatic manner. Two broad cautions apply. First, not all sophisticated measures that tend to introduce competition or innovative regulation schemes have been sufficiently tested, especially in developing economies. Second, the more innovative or sophisticated the policy, the more complicated the implementation problems that will accompany it. To clarify these issues, it is important to improve our understanding of power sector reforms underway in the developing world, and to widely disseminate new information.

There was a consensus that above all, reforms should be tailored to specific country situations. A taxonomy of country types based on either institutional framework or macroeconomic environment could provide a useful tool for outlining a realistic reform program, but the details of the program should also take account of any characteristics not reflected in the country typology. Such implementation "details" as sequencing and timing of the reform program, for example, should reflect the level of domestic political commitment to the program.

The discussions give the impression that the scope for cooperation among public, private, and international participants in power sector development is greater than is often expected. So long as (1) policies are introduced on the basis of general understanding and consent; (2) efforts are made to open the policy-making process to previously unheard groups, and to the understanding of the public; and (3) the parties involved consciously seek to tailor reforms to a sensitive understanding of local economic and political conditions, there will be considerable opportunity to foster a cooperative and successful process of reform and development.
Opening Remarks

Richard Stern, Director
Industry and Energy Department
The World Bank

First, I'd like to welcome everybody who has come here today. This group has wide experience geographically both on the financial side and the production and regulatory side, and I think this will provide us a very valuable opportunity to exchange views. We look forward to discussing any differences in technical and professional opinions that may emerge during these discussions.

We would like to thank Electricité de France for their help in planning and financing this Roundtable. We value very much EdF's contribution to the preparation of our recent policy papers, and we look forward to those debates continuing. I would also like to welcome Rhonda West, who will be the facilitator for this Roundtable, and her colleagues from Fleishman Hillard. This is somewhat an innovation for us, since we in the Bank have tended to follow the traditional format of having learned gurus give lectures to others. We hope that this will be a genuine exchange and we look forward to Rhonda making sure that happens.

The challenge that faces most developing countries in expanding and streamlining their power sectors is enormous. Even with significant improvements in energy efficiency, these countries must mobilize around US$100 billion a year just to meet modest rates of growth. Many of the World Bank's clients are facing severe budget constraints; most of their funds are already earmarked for priority programs in education, health, and other social services. The World Bank and other official lenders (multilateral banks, bilateral donors, export credit agencies) cannot realistically provide more than about ten percent of the US$100 billion needed. The rest will have to come from private savings, both domestic and foreign. Some might find this US$100 billion figure daunting, but most of the developing world is actually characterized by high domestic saving rates. In addition, the implied subsidy in power tariffs that are 4-5 cents per kilowatt hour below the average in industrialized countries accounts for US$100 billion every year.

Mobilizing these funds will require major changes in the way the sector is organized and regulated, and major changes in tariff policies as well. The World Bank recently issued a policy paper that lays down the policy guidelines for Bank participation
in the power sector. This is the result of a long dialogue inside and outside the Bank in which many of you participated. We now have to begin to translate these guidelines into effective development programs for our clients. Lessons of experience tell us that we have to be country specific. We cannot apply the same prescriptions to every country. Above all, there is a need for us to be humble and to learn from others. The paper by John Besant-Jones, *Reforming the Policies for Electric Power in Developing Countries*, begins to paint some of the specific actions that we can follow in implementing these guidelines. It is a draft, however, and we look forward to hearing from all of you and reflecting your comments in the paper.

Finally, in the Bank we increasingly have felt that we are embarking on the second or third stage of market reforms with the transfer of global experience and the dissemination of best practices both inside and outside the Bank. With this in mind, the Bank’s reorganization in January was designed to strengthen the central departments so that we could (a) transfer these lessons of global experience more effectively to our clients; (b) develop prescriptions; and (c) help our colleagues in the country departments apply the prescriptions. We see this Roundtable as one of the first major initiatives to try to gather those lessons and support our colleagues in the country departments, many of whom are here today. We look forward to a very productive and exciting couple of days.

Marc Boillot, Vice President
*Electricité de France International North America, Inc.*

It is a pleasure to see so many representatives of countries, companies, the World Bank, and other development banks participating in the discussions of the next two days.

We have this opportunity because of a process of cooperation which began when the World Bank requested comments on a draft of its policy paper, *The World Bank’s Role in the Electric Power Sector*. The questions we will address during the next two days, however, have much broader implications than the role of the World Bank. We will also examine the roles of foreign-owned companies and the private sector; of regulatory structures and agencies; and of state and public stewardship.

The electric power sector is now understood to be critical to the economic, environmental, and social health of the global community. It is because of this larger context in which we work today that it is important we engage in a dialogue with each other; Electricité de France has long supported such a discussion, and we are extremely grateful to the World Bank for providing such an opportunity.

It is both unlikely and unnecessary that everyone agree on everything we say to one another during the next two days. On the contrary, this is a forum in which we should all feel invited to put forth our different points of view.

Electric power utilities from industrialized nations bring expertise in the power sector. We have helped build and maintain the infrastructures necessary to support some of the world’s most complex and demanding economies. And many of us have extensive experience in providing assistance to the electric power sector of developing countries, with improving rates of success.
Delegates from member developing nations bring a profound knowledge of the capabilities of their countries and power sectors, the needs of their people and industries, and the means for opening doors to whatever necessary and just reform can improve conditions in their countries. Most also bring some degree of engineering, business, managerial, or political experience to the table.

And the World Bank is one of the most influential international financing institutions. As a repository of development funds from governments of various political and cultural inclinations, the World Bank has far-reaching impacts on a myriad of electric power projects around the world. It is in a unique position to sort through these projects for lessons that can be applied globally and that can succeed, if carefully adapted to the unique conditions of each member country.

As the global community continues developing, it will be of increasing importance that opportunities for dialogues such as this continue to be presented.
Background Documents

The following background documents were provided to participants by the World Bank and Electricité de France:


Copies of these documents may be obtained by contacting either the World Bank or Electricité de France, as indicated (*The World Bank’s Role in the Electric Power Sector* is available at the World Bank Bookstore for $6.95; for copies by mail, call 202/473-2941). Brief summaries of the documents follow.
Summary and Conclusions from
*The World Bank’s Role in the Electric Power Sector*

The power sector in most developing countries consists of a single national electric utility operating as a public monopoly. This structure is in part based on the view that electricity is a strategic and publicly provided good, and that people have a right to power at low prices. Over the past 30 years this public monopoly approach has facilitated expansion of power supplies, captured technical economies of scale, and in the early years made effective use of scarce managerial and technical skills.

Bank lending has largely supported the state-owned monopoly power utilities with the principal objective of helping provide the basic infrastructure required by the directly productive sectors (see OMS 3.72, published in 1978). The main components of the Bank’s power lending strategy have been to (a) develop sector institutions; (b) mobilize local resources for expansion through appropriate power pricing and utility financial management; (c) improve sector planning by emphasizing least-cost investment; and (d) help governments organize foreign exchange cofinancing, albeit with repayments publicly guaranteed. During the 1980s, the Bank’s lending strategy aimed to improve economic efficiency and financial sustainability in the sector by encouraging least-cost planning, marginal-cost pricing, international accounting standards and practices, rates of return on revalued assets sufficient to provide a reasonable level of self-financing, and international competitive bidding. The Bank also tightened its policies on environmental and resettlement standards and implementation arrangements. These changes were reflected in the power sector support strategy paper in 1983 and the power sector Operations Directive of 1987.

The World Bank’s lending for the power sector in developing countries through FY91 was about $40 billion (about $75 billion in 1990 prices) or about 15 percent of total Bank lending. In spite of the impressive expansion of power systems in developing countries, and despite the Bank’s persistent dialogue with borrowers, overall technical, institutional, and financial performance of power utilities in most developing countries has deteriorated. There are several examples of efficient power sectors and many successful individual projects; but a review of World Bank lending for electric power confirms a declining trend in the sector’s pricing, financial, technical, and institutional performance, mainly due to governmental failure to address the sector’s fundamental structural problems.

Over the period 1979-88, average real power tariffs in developing countries declined from 5.2 cents to 3.8 cents/kWh, quality of service deteriorated, technical and nontechnical losses and fuel consumption continued to be high, and poor maintenance of plants persisted. Inadequate metering, billing, and collection were the result of insufficiently commercial operations and lack of enforcement. While institution building (training of power utility staff, modernization) has continued to progress, conflicts between the government’s role as owner and its role as operator of utilities have affected sector performance. Opaque command and control management of the sector, poorly defined objectives, government interference in daily affairs, and a lack of financial autonomy have affected productive efficiency and institutional performance.
Financial performance, as measured by indicators such as the rate of return on revalued assets, self-financing ratios, and the level of overdue accounts, has also declined. On average, rates of return have fallen from levels averaging about 9 percent before the mid-1970s to less than 5 percent in 1991. Self-financing ratios on average were only 12 percent of investment requirements in 1991, against targets of between 20 to 60 percent; and the actual number of days receivable increased from 77 days during 1966-73 to 108 days in the 1970s to 112 days in the 1980s. The overall average of accounts receivable by 1991 was 96 days compared with the general Bank target of 60 days. Developing countries’ deteriorating macroeconomic situation and the debt overhang of the 1980s exacerbated these financial problems and worsened debt service coverage.

In the 1990s, the continuing macroeconomic difficulties of many developing countries will severely reduce the availability of public resources to fund planned power sector investment programs. Furthermore, the changing global environment of the 1990s and the competition for access to financial resources underscore the need for the efficient utilization of power sector resources.

Under these circumstances, neither the developing countries nor the Bank can continue with a “business as usual” approach to managing the power sector. In the absence of new approaches to restructure and evaluate sector management on the basis of commercial principles with enterprises distanced from excessive government day-to-day management and with clear strategies aimed at generating confidence for new entrants to invest in the sector, it is unlikely that the required power sector investment can be mobilized in the 1990s.

A number of developing countries in all parts of the world are already changing the way they do business in the power sector. Examples include Malaysia, Philippines, and Korea in Asia; Argentina, Chile, and Mexico in Latin America; Turkey and Eastern European countries; and Cote d’Ivoire, Guinea, Ghana, and Malawi in Africa. Given the large capital requirements and ingrained sector inefficiencies, there is an urgent need for the Bank to encourage and support these evolving business methods and commercial structures.

Many governments have also attempted to use the power sector and other publicly provided infrastructure services to address issues of social equity. Experience has shown that such policies are costly and ineffective ways of dealing with these issues. Subsidized power has further softened budget constraints on power utilities and the resulting large deficits have usually been financed from regressive general taxes. The power shortages that inevitably result from the inability to finance expansion to meet the increases in demand mean that some form of rationing is required, and just as inevitably, power supply to the poor is usually the first to be rationed. Clearly, there are much more effective means for addressing social equity issues overall than through power sector subsidies.

Guiding principles for Bank support of power sector restructuring programs are given below. Given the range of regional and country situations, however, these principles will need to be translated into specific action programs at the individual country level and be part of the Bank’s agreed country assistance strategy.
Transparent Regulation

A requirement for all power sector loans will be an explicit country movement toward the establishment of a legal framework and regulatory processes satisfactory to the Bank. To this end, in conjunction with other economy-wide initiatives, the Bank will require countries to set up transparent regulatory processes that are clearly independent of power suppliers and that avoid government interference in day-to-day power company operations (regardless of whether the company is privately or publicly owned). The regulatory framework should establish a sound basis for open discussion of power sector economic, financial, environmental, and service policies.

Importation of Services

In some of the least developed countries, the Bank will assist in financing importation of power services to improve efficiency.

Commercialization and Corporatization

The Bank will aggressively pursue the commercialization and corporatization of, and private sector participation in, developing country power sectors.

Commitment Lending

Bank lending for electric power will focus on countries with a clear commitment to improving sector performance in line with the above previous principles.

Private Investment

In order to encourage private investment in the power sector, the Bank will use some of its financial resources to support programs that will facilitate the involvement of private investors.
Electricité de France’s Comments on the July 1992 Draft of
*The World Bank’s Role in the Electric Power Sector*

This report addresses the issue of the change needed in the electric power sector in developing countries. In most of these countries, the organization and regulation of electric utilities are characterized by an integrated public monopoly. They are regulated by governments for investments, rates (in terms of both levels and structure), and financing, which is most often public.

The report’s conclusion that the overall performance of the government-owned electric power sector has declined is mainly attributed to the insinuation of politics into utility management and to the conflict that occurs because the State is both owner and operator. This results in numerous problems with regulation.

Proposed solutions include requiring the development of a thorough set of regulations that leave no room for misunderstandings, converting utilities into commercial businesses, importing consulting services, introducing private capital, and using new foreign sources of financing.

We fully agree with this analysis that calls for changes. Yet, the manner in which the proposals are formulated—rather than the proposals themselves—leads us to make the following comments:

a. As indicated in the report, the proposals provide a general framework. Tailoring them to each country, in determining to what extent they should be implemented, should be the subject of a careful analysis conducted on a case-by-case basis. What works for one country does not necessarily work for another.

It would be optimum if this need for an analysis specific to each country were raised to the rank of recommendations in the final report. The suggested measures should be considered as a set of individual options rather than an overall ultimatum.

For the last several years, the Economic Analysis Department of Electricité de France has developed extensive experience in the organization and regulation of electric power utilities. The Department is prepared to share its experience with the Bank as part of a long-term cooperative project.

b. The main goal identified in this report is to erect as impermeable a barrier as possible between political establishment and utility management to avoid repeating mistakes.

This goal should be approved without reservation. However, the process for reaching it is not addressed in this report. Real problems must be analyzed and subsequently dealt with if the measures are to allow this goal to be reached.

c. Electric power is different from most other commodities in that it cannot be entirely governed by market forces. Even if a competitive market existed for power generation, competition would have to be regulated in order to ensure supply. Energy policy would therefore also be taken into account. Furthermore, transmission and distribution, which are network activities, remain natural monopolies at this point, and must be regulated.
Hence as is true in any business, it is not realistic to believe that competition can dictate politics. In fact, the political establishment retains the ability to limit or distort competition in the electric power sector.

Electric power utilities in the United States and England, mentioned in the report for the new types of competition they are developing, are indeed proof that regulation continues to be necessary for any business that holds a captive market share. Such regulation is more complex and more cumbersome than in an integrated monopoly.

The experience of developed countries with market economies, with their sophisticated agencies, the possibility of controlling the regulator, etc., should also be valid for developing countries.

A parallel observation may be made:

- The introduction of regulatory agencies that are independent from governments will take over regulatory control. This requires institutional maturity and a balance of power which is not necessarily the prerogative of developing countries. This is the problem of “governance” rightly mentioned in the report.

In general, a more detailed analysis should be conducted of the problems in implementing the proposed “open,” “transparent,” and “non-integrated” solutions. These should be evaluated, just as the benefits of the integrated solutions which, although not quite as trendy, have been proven themselves in the western world.

d. The electric power sector is highly capital-intensive and requires substantial investments to meet demand. Therefore, careful and integrated planning is necessary in order to avoid the overinvestment and high operating costs that would surely result from excessive deregulation.

This is particularly true for countries with few resources, where there should be a requirement to optimize medium- and long-term investments. Is there any guarantee that the introduction of private capital and competition would bring about this result?

In addition, certain aspects of the electric power sector do not fit the conventional market economic models. For example, this is true for investments in the distribution sector.

e. Consulting services should be appropriate for local conditions. The need for foreign operator involvement increases as the capabilities of local management decreases. Under difficult circumstances, it could be assumed that consulting services would become so inefficient that the foreign operator would have to replace the local electric utility management—at least for a time.

These services must be based on an analysis of the existing situation and can be fully effective only if the local utility has real autonomy and sufficient decision-making power.

In conclusion:

- We basically agree with the analysis.
- The solutions must be explored, beyond just a theoretical framework, and only after meticulous evaluation has been conducted.
• There is a general bias for trendy solutions that have yet to prove themselves even in the context of more developed countries.
• There is reason to regret that the notion of “public service” is not given sufficient attention in the document.
• Electricité de France is prepared to assist in this endeavor.
Abstract of
Reforming the Policies for Electric Power in Developing Countries
John Besant-Jones, Principal Energy Economist
Industry and Energy Department
The World Bank

The paper presents a framework for designing the policy reforms to improve power sector performance in developing countries. The findings of the paper show that the reform priorities should be to (a) improve the efficiency of electricity supply, (b) improve the efficiency of electricity usage, (c) control the environmental impacts of power supply activities, and (d) mobilize the necessary capital for sector expansion.

The paper focuses on government’s role in managing the power market. It analyzes the many facets of power sector reform, and it evaluates the numerous institutional and technical options for improving the structure of power supply and regulating the sector. Because few of the options are universally applicable to the wide variety of conditions among developing countries, the paper also discusses how governments can select the options for their countries that best meet these priorities.

Worldwide dissatisfaction among governments and electricity users with the poor performance of protected electricity monopolies is creating pressure for changes in the industry structure and in the approach to controlling the sector. This pressure is being reinforced in developing countries by the shortage of financial capital to expand power supply at the rate needed for economic and social development, and by rising concerns about the harmful environmental and social impacts of expansion.

Faced with these problems as well as pressures for overall economic reform, governments must consider changing the basic organization of their power sectors and the relationships among themselves, power suppliers, and power users, such as in the process for making key decisions about pricing and investments. They should treat electricity supply as a commercial activity in its pricing, planning and management; expose the non-monopolistic components of electricity supply to competitive pressures; and meet their economic and social objectives without holding down electricity prices and imposing anti-commercial influences on sector operations and investments.

Governments should thus adopt the following policies and establish them by law to strengthen their commitment and authority to implement them: structure the power supply industry to facilitate competition and arm’s length regulation; allow private investors, operators and contractors to sell electricity and provide support services to the industry; separate their functions of ownership, policy making and regulation by institutional means; base their policies for ownership of power supply facilities on the grounds of efficiency; ensure that electricity pricing incorporates commercial practices—including demand management—and covers economic costs; oblige state-owned power suppliers to operate to commercial and environmental standards, with due autonomy and accountability for their managers; compensate power suppliers for the costs of providing non-commercial services at government’s behest; and reform the regulations for
commerce, financial services, and complementary markets—such as those for fuels, and electrical plant and appliances.

The paper concludes by reviewing the practical considerations for reforming power sectors, for which it draws on experience in countries that have recently undertaken radical sector reforms. It outlines the issues and options for designing and implementing a regulatory framework and establishing an efficient industry structure—which are separate but linked tasks—for a range of country conditions, and for introducing competition and private participation to the sector.
Discussion Overview by Electricité de France

Pierre Lederer, Deputy Head
General Economic Studies Department
Economic Strategy & Forecasting Division

Electricité de France has conveyed comments on both the Power Sector Policy Paper and the Technical Paper to the World Bank. In our comments—available in full from our offices—we indicated that EdF agrees with an analysis that calls for policy changes, as well as with the main goal of erecting as impermeable a barrier as possible between the political establishment and utility management.

The principal measures that the policy paper advocates are implementation of transparent regulation, commercialization of utilities, importing services, and the involvement of private sector investors.

However, the report also shows a bias towards trendy solutions characterized by the de-integration of the power sector and the introduction of competition. But these solutions have yet to prove their efficacy even in industrialized countries. Indeed, although experiments and innovations continue in industrialized countries, other decisions have limited the changes; thus, in both the United States and the European Community, recent decisions have rejected the access of final users to the networks.

The Roundtable will consider the different ways of implementing the measures proposed by the Policy Paper and discussed in the Technical Paper. But in our view, two crucial general questions should be kept in mind throughout the discussions. First, should we aim to eventually obtain full competition and de-integration of power sectors? And second, should we agree that innovative changes implemented in industrialized countries will be valid for developing countries as well?

From this perspective, there is a need to focus on the issues of sector structure and regulation that form the core of our discussions.

- Structure and organization of the electric supply industry. Transaction costs economics and the historical experience of Western utilities combine to improve our understanding of the reasons why electric utilities tend to integrate vertically. Can we deny that there will be efficiency losses from vertical de-integration, or assume that markets will necessarily generate an efficient set of complete contracts, in an industry like ours, where cost minimizing requires investments in highly immobile, relation-specific capital? And given the example of the industrial concentration that has occurred despite competition in equipment and machinery markets in industrialized countries, can we realistically expect de-integration in the power sector to achieve its stated purposes?

- Concerning regulation, and the types and mixes of regulation of competition that may be envisioned in the sector.
  - On the principles of regulation. In search of ways to promote efficiency in electricity, a number of regulators and academics have turned their attention to incentive regulation approaches and criticized the traditional cost-plus regulatory contract. Unfortunately, the problem is not simple and approximate ideas about it
are numerous. We must discuss the real or assumed merits and feasibility of this approach, and examine the lessons of practical experiments.

- On the regulation of competition. There is a current move to introduce competition to the power sector largely on the grounds that it is purportedly too difficult for governments to properly regulate monopolies. We may, however, have to challenge the idea that competition streamlines regulation. Therefore, we must carefully balance the efficiency properties of competition and the growing complexities of its regulation. The balance is likely, further, to differ between industrialized and developing countries; we must examine the way in which it does so.

- On electricity-to-electricity competition. The most important goal of restructuring must be improving sector efficiency. It is useful, then to distinguish three types of efficiency: (a) short-term operating efficiency (central dispatch); (b) long-term investment efficiency, in that capital intensity and the long life and specialized nature of assets require long-term use and coordination; and (c) pricing efficiency—prices should properly reflect the costs of use of electricity in order to influence good consumer behavior. We will have to check whether the different candidate forms of competition in this regulated industry pass these efficiency tests. Some forms, such as competitive bidding for generation, are likely to meet broad efficiency criteria. Others, however, such as third party access to the networks, are less likely to do so.

With these points in mind, we hope that the discussions will help us better understand which lessons developing countries can draw from the debates in industrialized countries, and identify the ways and means of promoting efficiency in the power sector.
Defining Government’s Role in the Power Sector

Proposition: Governments of developing countries should rethink their roles to improve the performance of their power sectors.

Discussion theme: Will governments of developing countries be able to achieve their objectives for power sectors by using their policy-making and regulatory powers, without relying on their powers of ownership?

Scope of Discussion

Session One revealed broad agreement among participants concerning the primary premise of the round-table discussion, namely the perceived need for innovative reform in developing country power sectors. Participants addressed (a) the needs of the sector; (b) the dynamics of reform policy choice; and (c) the conditions of effective policy implementation. Despite the consensus that new reform approaches are required, and should incorporate insights drawn from recent power sector experiments worldwide, the selection and dynamics of reform proved contentious. Indeed, some of the disagreements suggested that a consensus has not yet been reached on diagnosing “what went wrong” in developing country power sectors in the past twenty years.
IEN's Comments on Proposition 1:

- Most countries cannot afford to keep the status quo of poorly performing (technically and financially) power suppliers, especially under pressure for general economic reform and protection of the environment.

- Governments have traditionally exercised power over state-owned power utilities by means of command and control to achieve non-commercial objectives by holding down tariffs, bloating labor forces, and protecting domestic suppliers of fuels, plant, and equipment.

- Supply quality of electricity has been hampered because these government actions led to:
  - Inefficient operation of supply facilities under inappropriate regulatory practices
  - Shortage of capital for sector expansion under restricted access to foreign exchange (poor country creditworthiness) and to domestic savings (misguided tariff policies and failure to develop local capital markets)

- The traditional financial sources used by governments to expand power supply capacity will not be adequate for the planned growth in power supply capacity.

- Since overall economic development is associated with an economic and reliable supply of electricity, it is critical that governments find better approaches to managing and financing their power sectors in order to enhance the prospects for economic development.

- Because the power sector is one of the most significant and institutionally developed sectors of the economy, and since it has the potential to be financially self-supporting, it is an appropriate area in which to begin reforms to improve the general economic efficiency of a country’s infrastructure.

- Governments therefore must decide on the best institutional means for separating their ownership responsibility for state-owned utilities from their responsibility for formulating policies to develop their power markets and for regulating the power market.

- Faced with these problems, as well as pressures for overall economic reform, governments must consider changing the relationships among themselves, power suppliers, and power users, such as in the process for making key decisions about pricing and investments in the sector.

- Governments’ priorities for the sector are thus as follows:
  - To treat electricity supply as a commercial activity in its pricing, planning, and management.
  - To expose the non-monopolistic components of electricity supply to competitive pressures.
  - To meet their economic and social objectives without holding down electricity prices and imposing anti-commercial influences on sector operations and investments.

- Governments must demonstrate strong political leadership and commitment to bring about changes to the institutions and regulation of their power sector.
Defining Government’s Role in the Power Sector

EdF’s Comments on Proposition 1:
Promoting the efficiency of the power sectors in developing countries does require that governments proceed to define or redefine their role and the objectives assigned to their electricity supply industry.

Acting as governments, they are involved in regulation and policy-making which involves macroeconomics and social concerns. Conversely, acting as an industry, the power sector is involved in commercial and industrial operations on a microeconomic basis.

In order to rethink this administrative-industrial relation, each government will have to take into account the level of performance and the specific needs for future expansion of its own power sector.

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Sector Needs

Roundtable participants strove to identify those power sector needs that apply most generally across the developing world. The discussion stressed two broad problems that have come to disable the power sector in many countries: the shortage of investment capital, and chronic system inefficiencies.

The shortage of investment capital in the power sector reflects the current scarcity of development funds for capital-intensive, long-term projects. Participants noted that this scarcity applies even to the World Bank, where funding for power projects in Latin America, for instance, has diminished over 1980-1990 by two-thirds. More generally, the World Bank estimates at 100bn dollars the annual new investment that power sectors require under reasonable efficiency conditions; at present rates multilateral agencies are unlikely to provide more than 10% of this amount in the foreseeable future. Therefore, any power sector reform program must seek to mobilize investment capital—from both domestic and foreign savings.

Secondly, developing country power sectors need a renewed emphasis on efficiency. However, the discussion revealed that “efficiency” can have contending meanings. In the near and medium term, efficiency denotes the optimal use of capital available to the sector, and is by consensus considered essential. Defining long-run efficiency, however, proved more contentious. In particular, some felt that the current idea of long-term sector efficiency does not sufficiently incorporate development goals in the form of increased coverage and the availability of affordable power supply to an expanding share of the population.

The Roundtable discussed whether the goals of efficiency and capital mobilization could be optimally served by a single, identifiable, policy sequence. It was agreed that the two goals were linked in at least in the simple sense that less wasteful systems are likely to attract more competitive investment offers. In cases of particularly rapid market expansion (e.g. China), investment may tend to disregard inefficiencies. More generally however, the challenge is to design policy interventions that will address both objectives.
IEN's Comments on Discussion Theme 1:

- The policy objectives for power sector reform in developing countries should be:
  - To improve efficiency of electricity supply.
  - To increase efficiency of electricity use.
  - To control environmental impacts of supply.
  - To mobilize necessary capital for sector expansion.
- Governments should strive to achieve these objectives for power sectors by means of policy formulation and regulation, rather than by the traditional exercise of central command and control mechanisms through the state's ownership rights, and to separate the execution of these functions by institutional means.
- Governments should adopt the following policies and establish them by law to strengthen their commitment and authority to implement them:
  - Structure the power supply industry to facilitate competition and arm's length regulation.
  - Allow private investors, operators, and contractors to sell electricity and provide support services to the industry.
  - Base their policies for ownership of supply facilities on the grounds of efficiency.
  - Ensure that electricity pricing incorporates commercial practices—including demand management—and covers economic costs.
  - Oblige state-owned power suppliers to operate to commercial and environmental standards, with due autonomy and accountability for their managers.
  - Compensate power suppliers for the costs of providing non-commercial services at government's behest.
  - Reform the regulations for commerce, financial services, and such complementary markets as fuels and electrical plant and appliances.
- Under these policies, governments' role in the power sector is:
  - To set objectives and lay down overall policies for the sector.
  - To establish the legislative and regulatory frameworks that protect the interests of stakeholders and the public.
  - To find effective incentive mechanisms for meeting the objectives for the sector, whatever the pattern of ownership.
- The required regulatory frameworks for decentralized control involve new concepts and practices that must be refined with experience to suit each country's conditions. It has to be recognized that this process poses uncertainties, and thus risks. Countries should learn from the cumulative global experience with new approaches.
- Each government must find the framework that works best for its country. Another country's successful framework can be used as a model, but the details must be specifically adapted to the conditions of a country.

As a first cut, several suggested that the issue is not simply one of public versus private ownership. Indeed, examples of effective public and ineffective private ownership, sometimes considered counter-intuitive, indicate that both public and private arrangements can perform well, when policies have shaped a conducive commercial and
Defining Government's Role in the Power Sector

EdF's Comments on Discussion Theme 1:
Where the power sector is publicly owned, the government has the choice to remain the owner or to privatize the sector. Advantages and drawbacks of both solutions can be characterized as follows.

Public ownership facilitates the convergence of interests between the government and the managers of the utility. But conversely, the government may find it difficult to ensure efficiency in the power sector. Furthermore, due to the confusion of its different roles, efficiency may well not be its primary goal.

With private ownership, managers are under the pressure of shareholders to improve financial efficiency in order to produce the expected dividends or increase value of the assets. Furthermore, a private professional operator will ask for stable rules of the game and this could help to discipline the government. But, on the other hand, there can be contradictions of interests between the shareholders and the essential public goals. And those contradictions may be difficult to overcome. Of course, generally speaking, when serious problems arise in this regard, the government will have the last word in the end.

Nevertheless, in developing countries the power of negotiation and influence may be in favor of powerful private interests when they are opposed to a weak government.

In summary, public ownership is not a must, private ownership may be instrumental to efficiency, but there is a delicate balance to be found on a case by case basis. Anyway the problem in developing countries is perhaps more to obtain the economies of scale in the expansion of the power sectors.

regulatory environment. Thus, implicitly or explicitly, participants for the most part underscored the current emphasis on commercialization and developing new approaches to regulation.

In this way, the discussion generally endorsed the notion, implicit in the proposition, that the ownership, regulatory and policy-making functions in the power sector may be separated in the process of sector policy "re-thinking." Discussion of specific policies, under the rubrics commercialization, de-integration, competition, regulatory reform, and privatization, foreshadowed the more complete debates of the following Sessions. Session One, however, raised a number of important issues concerning the willingness of governments to move to this new thinking, and their ability to implement whatever innovative policies emerge.

Policy Choice

As several speakers made clear, domestic commitment to reform is essential before outside partners will agree to intervene. It is therefore crucial that sector goals be discussed, agreed, and understood at the national level. Participants concurred, however, that in the power sector as in any other, choosing policies is a political act. Given in particular that developing country power supply networks are incomplete, and usually serve a minority of the national population, which interest groups are involved in policy choice will directly affect policy content. Generally then, developing countries should
attempt to include new, previously unheard voices into what has often become a highly rarefied decision-making arena.

Typically, power sector policy is determined by a combination of the national government, multilateral or external funding agencies, and a variety of local interests. Discussion stressed that achieving a common view of sector goals among them, prior to policy-making, remains in many countries a challenge. Differences of perspective on the goals of sector policy may stem from several reasons:

- Governments may be co-opted by large industry. In part, this result might reflect a preoccupation with the preservation of rental havens, particularly in countries where the public and private sectors are not clearly demarcated. In part, however, governments may seek to protect large industry from factor cost shocks because of the export value of the commodities that these industries produce. Participants shared experiences in Southern African countries such as Zambia and Zimbabwe that appeared to confirm this diagnosis. In response, it was pointed out that such a government strategy might be based on an over-estimation of the opportunity costs of industrial rate reform as compared to the costs of maintaining the electricity subsidy.

- Governments may be concerned with the economic linkages of sector reform, and therefore reluctant to engage in sector adjustment, particularly where reform entails drastic tariff increases. Thus, although an analysis of the sector alone might elicit a consensus on the necessity to raise rates, governments may be reluctant to effect such policies because of the possible inflationary effects. Again, this observation gave rise to some debate concerning the evaluation of costs to the macro-economy of different tariff arrangements, and in particular concerning the hidden inflationary effects of maintaining an electric power distribution subsidy.

- Governments may wish to use energy and infrastructure development as an instrument of macroeconomic policy. Thus, discussion noted that the past century is replete with examples of large-scale public investment to counteract unfavorable macroeconomic cycles: energy and infrastructure are classical sectors for such investment. Indeed, industrialized countries have continued to make use of such options.

- Finally, governments may simply wish to retain electric power as a rationed item, governed more by political considerations than by the dictates of economic planning. So long as electric power is not generally available in the country, it may be seen as rationed, and the dynamics of patronage and influence may outweigh economic logic, or indeed long-term development goals, in affecting policy choice.

In addition to these considerations, discussion noted that policy preferences often differ even within the government, between individuals or agencies; and further that where the sector includes significant private participation, the private interest may also diverge from government and/or multilateral agency views.

To address these problems, speakers suggested that the political process should help to resolve conflicts over policy choice in one of at least two ways. First, governments should encourage the participation of many groups or voices in policy selection. Some of the problems of policy choice stem from the insufficient
incorporation of the groups that are most concerned by power sector development: e.g. existing consumers, but also the majority that typically do not yet have access to electric power. Sector policy will be more credible, then, where the political environment is more open, in terms either of participatory mechanisms or of the free flow of information. In these cases, policy-makers can use the political process to reconcile interests rather than to polarize them.

In addition, characteristics of the domestic financial market will also affect the policy debate, although not to as great an extent in the developing world as in industrialized countries. Where the capital market is reasonably developed, and the power sector held accountable to it, it will send signals that will influence prescriptions for reform measures.

**Policy Implementation**

In addition to concerns about policy choice for the sector, participants questioned the ability of governments to implement whatever new policies they select. Speakers depicted the environment of policy implementation in two ways. First, policy implementation takes place against a backdrop of administrative capacity and public information that is country-specific. In many countries, administrative capacity is insufficient for implementing complex reforms. Second, power sector reform often occurs in the context of other major economic changes, such as across-the-board stabilization and adjustment programs, or more specifically limited public sector reform. Discussion focused on how to overcome obstacles to policy implementation in such a complex and changing environment.

With respect to administrative capacity, different reform strategies will elicit different demands of administrations that are often insufficiently staffed with the proper qualifications. Generally, the more complex the reform, the stronger will be the administrative capacity that is required to implement and sustain it, where administrative capacity is understood to include both a notion of clear, enforceable institutional norms and a measure of skills or human capital. Participants from developing countries emphatically stressed that externally-driven reform programs under-estimate the capacity requirements of effective reform. Particularly, they drew attention to:

- The difficulties of enforcing complex new rules where the judicial system is relatively weak.
- The paucity of highly trained policy-makers in most developing country bureaucracies.
- The similar paucity of highly-trained local public utility managers.

Developing country representatives and other participants called for increased participation by multilateral agencies and foreign partners at the capacity-building level of sector reform. Such participation might take the form of financial "leverage" for institution-building, or, more specifically, increased investment in areas such as training and human resource development. In reply, however, Bank staff members in attendance reiterated the important caution that domestic political commitment must precede donor involvement. Nevertheless, developing country participants repeated on a number of
occasions throughout the Roundtable their concern that innovative reforms are difficult to implement with weak administrative capacity.

In response to these concerns, it was suggested on the one hand that capacity to help change policies may, in extreme cases, be best imported from the outside, at least for a period; on the other hand, that other characteristics of the public and political sphere might present ways to offset these difficulties.

One such area is the development of consumer acceptance, understanding, and consent, which emerged from the discussion as crucial to effective reform. Where the rationale for reform is not made clear to all concerned segments of the population, administrative capacity alone is unlikely to carry reforms through, particularly when they involve difficult measures such as “shock” tariff increases. On the other hand, the emergence of popular consent can serve as a powerful impetus for implementing reform.

Furthermore, the sequencing of reform measures requires shrewd management. Governments should avoid antagonizing several social groups at the same time; conversely, public reform managers may seek ways to sequence reform measures so as to maintain pro-reform coalitions at all times while spreading the political cost as broadly as possible.

Finally, in some countries, capital markets may be able to help see innovative reforms through, by reacting to progress at different stages of implementation. Developing these capital markets, then, will reinforce policy-making over the long term.

A second area of reform implementation that proved of concern to some participants was the linkage between power sector reform and other reforms in the economy. Speakers pointed out that the power sector crisis cannot be taken entirely in isolation from other problems in the economy; and that absent appropriate reforms elsewhere in the economy, the prospects for effective power sector reform were diminished. Because the power sector is so central to the economy, its reform is linked to macro-economic adjustment as well as to reforms elsewhere in the public sector. Speakers anticipated the discussion of reform in inflationary environments, presented here under Session Two. In addition, they highlighted the need to sequence elements of power sector reform in a manner adapted to other changes underway in the economy, notably in cases of transition from central planning to market orientation.

Conclusions

In sum, Session One addressed the proposition and discussion theme by bringing out the following central points:

- As stated in Proposition One, it is appropriate that governments should rethink their roles in power supply; it is also appropriate to consider their policy-making, regulatory, and ownership functions separately.

- Public or private ownership alone is insufficient to predict the success or failure of a power sector reform program. It is therefore appropriate to turn to new ideas in commercialization and in regulation.
Defining Government's Role in the Power Sector

- Domestic political commitment to reform is crucial for external intervention, and requires clear notions of the needs of the sector and the goals of sector policy.

- Achieving a consensus among the reformers concerning sector policy choice will be difficult unless all parties exercise some spirit of compromise.

- The implementation of new power sector reforms may be hampered or disabled by deficiencies in administrative capacity, or by poor coordination with other reform policies in the macro-economy or in the public sector.

- Generally, the development of capital markets and that of mechanisms of transparency and public information, are likely to alleviate other rigidities in policy choice and implementation.

In short, participants generally agreed with the premises of Session One, but in a number of ways urged caution in policy design and implementation, and sensitivity to local constraints, stressing that achieving agreement on goals is difficult enough, and effectively implementing policies is more difficult still.
2

Commercializing State-Owned Power Utilities

Proposition: State-owned power utilities should be commercialized and made accountable to the standards of capital markets.

Discussion theme: How can social and economic concerns about the supply and use of electricity be made compatible with commercial priorities?

Scope of Discussion

During Session Two, participants examined the premise that reform of power utilities should emphasize the development of commercial business and investment practices, and that utilities should be made accountable to capital markets. They found these principles of reform largely acceptable, and debate about rural electrification elicited the conclusion that governments should try to achieve non-commercial objectives without prejudice to these principles. Regarding implementation concerns, however, they noted that the political and social dynamics of reform are delicate, particularly when tariff increases are necessary.
IEN's Comments on Proposition 2:

- Commercialization of state-owned power utilities helps governments achieve the main objectives for power sectors because it:
  - Gives utility management autonomy to improve efficiency.
  - Helps government hold management accountable for performance.
  - Reduces strain on public credit.
  - Prepares utilities to obtain financing from capital markets rather than public funds, thereby allowing capital markets to impose discipline on management.
  - Improves utility’s creditworthiness for power purchase agreements with private producers.
  - Removes undue bias in favor of state-owned suppliers in competition with private suppliers.
  - Prepares the utility for privatization, if intended.
  - Demonstrates government’s commitment to reform.

- A commercialized state-owned power enterprise:
  - Ceases to operate like a government department
  - Adopts best commercial practices for management and operations.
  - Retains legal status as a state enterprise.
  - Develops a corporate style of management, especially corporate objectives and goals.
  - Has autonomy for its board and management.
  - Adopts accrual accounting and international accounting standards.
  - Maintains management information systems.
  - Competes with the private sector on equal terms.
  - Loses anti-competitive subsidies.
  - Adopts commercial salaries and employment conditions.
  - Takes full responsibility for staffing and procurement.

The Premise of Commercialization

It rapidly emerged from the discussion that roundtable participants agreed on the premise of commercialization. In general, the idea that power utilities ought to move toward commercial standards in management practices, financial discipline, and especially in pricing was generally accepted. Indeed, it was pointed out that state-owned utilities can operate at high standards of efficiency and management performance when they are governed by effective commercial principles. Both historical and present examples in the power sector, as well as cases from other industries (such as telecommunications or airlines), underscore this point.

In the current reform environment, however, participants urged that it is important to tailor the implementation of commercialization to country requirements, particularly
EdF's Comments on Proposition 2:

On this proposition, we have two positive answers and necessary conditions to underline.

1. Whatever the diversity of power sectors, the central principle is that governments recognize electric supply as an industry, whereas a government acts as an administration. In consequence, the power sector should indeed be commercialized. This will in turn both require and enable each party to redefine its role and objectives as an administration or as an industry.

2. Financing the power sector on the national or international capital market is an essential policy objective: it is a condition for developing real autonomy for the utility, and it is beneficial to the domestic economy as a whole. To this end, the power sector should indeed be made accountable to the standards of capital markets.

Nevertheless in order to finance utility development, the capital market will have to be convinced that the utility is a good risk. In other words, the capital market will have to be shown that the regulator does promote efficiency of the power sector and will enable the utility to recover its costs through the tariffs, including a fair return on capital.

These are necessary elements of a policy aimed at improving regulation, which must go together with commercialization of the state-owned utilities. Once again, we find that no single element of the reforms aimed at improving efficiency in the power sector can work by itself.

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when power sector reforms occur in conjunction with a broad set of fiscal and monetary adjustments. Thus, the pace of commercialization may vary with the complexity of linked reforms. Thus in Poland, where commercialization has been underway since 1990, reformers chose to proceed with commercialization of the transmission company before addressing the distribution functions. A participant familiar with the sector argued that in this case, hindsight justified the reformers' cautious behavior, as full commercialization would have been a bad decision at a time when the economy was not yet a "real market environment."

Concerning the discipline that accountability to capital markets ought to impose on commercialized utilities, there was again little opposition in principle. Participants sought, however, to interpret what some saw as the troubling historical record of the 1970s, when utilities in Latin America and other areas borrowed freely on the international capital markets and used the credits to construct mammoth power plants that have turned out to be economically burdensome. One view held that this evidence demonstrated that capital markets cannot necessarily be relied on to provide adequate signals and investment incentives; the plethora of investment finance at the time may have diluted evaluation standards. In response, however, participants were reminded that in the past, utilities borrowed under the protection of government guarantees, which obviated the need for lenders to carefully evaluate the investment. In other words, these utilities were not subject to capital market accountability in the more thorough way that current reform proposals envision.

The aspect of commercialization that elicited by far the most discussion, however, was the question of tariff reform, and most specifically the political and management dimensions of substantial tariff increases.
IEN's Comments on Discussion Theme 2:

- As a matter of principle, governments should seek means to achieve their non-commercial objectives—e.g., to help low-income groups—in ways that do not seriously conflict with the main commercial objectives for the power sector.

- In practice, the commercialization of power supply would generally help social objectives because it would:
  - Release government funds for social expenditure.
  - Eliminate cross-subsidies in power pricing that favor the wealthiest groups in society.
  - Strengthen the capacity of power utilities to extend service to new localities—typically occupied by the lower-income groups.
  - Make utility managements more responsive to public concerns about the environmental and social impacts of expanding their power systems.
  - Encourage utility managements to improve their relationship with customers, including finding constructive approaches to resolving disputes and other problems, as sound business practice.

- However, full commercialization of power supply would involve substantial increases in electricity tariffs in most developing countries. Governments would face acute public opposition to these increases, particularly where the public views electricity as a public good, or where the public experiences poor supply quality.

- Governments should publicly demonstrate their strong commitment to improving the performance of power suppliers and pressuring them to keep supply costs down.

- Conflicts between commercial and non-commercial objectives should be managed in the following ways:
  - Subsidies should be transparent to show their full cost to the parties that benefit from them and to those that finance them.
  - Governments should not require utilities to finance subsidies to groups of power users from sales revenues.
  - However, a low "life-line" tariff rate could be charged for a limited amount of residential use of electricity to help low-income users in cases where tariffs generally have to exceed marginal costs for commercial reasons.

- Particularly where a utility needs tariff levels to achieve commercial standards in its financial performance that are higher than would suffice to cover its marginal costs, it should adopt a pricing system that gives users some control over their electricity costs by managing their demand.

- The appropriate pricing system is a function of the utility's ability to handle complexity in tariffs, users' responsiveness to pricing signals, and the regulator's capacity to resolve difficulties arising from application of the system.
EdF's Comments on Discussion Theme 2:

Among economic and social concerns, we find generally:

- The three efficiencies: short term operating efficiency, long term investment efficiency and pricing efficiency;
- Macro-economic concerns: balance of payments, inflation, security of supply, national energy policy, of course, but also employment;
- Other concerns that relate to rural electrification, social pricing, etc.

The efficiency concerns are spontaneously compatible with commercial priorities. Other macro-economic or social concerns can only be made compatible with commercial priorities through a reduction of crossed subsidies and public subsidies hidden in electricity prices. In other words, utilities should be compensated for any non-commercial constraint that government imposes. Moreover, tariff regulation should not be distorted in order to reduce inflation or to favor specific groups of consumers.

Getting Prices Right

Principles of Pricing

Implicit in participant agreement on the premise of commercialization was the observation that in most countries, reform would necessarily include a process of tariff readjustment, presumably to a new standard based on economic supply costs. In a few countries evoked during the discussion, tariffs are actually higher than economic costs: this is the case in particular in West Africa. In most countries, however, the reverse problem applies, and makes tariff reform a politically complicated issue. Participants presented a legacy of under-pricing that characteristically applies to many countries, including those that are emerging from centrally planned socialist systems (e.g., the republics of Eastern Europe and the former Soviet Union).

Management of Tariff Reform

There was implicit agreement that commercialization would entail adjusting (usually raising) tariffs in most developing countries. There was considerable discussion and heated debate, however, about the costs and benefits of such adjustments, as well as how the adjustment process should take place.

In this context, the Roundtable engaged in an interesting discussion of the tariff arrangement that has emerged from recent sector reforms in China (see box, p. 34). For some, the new Chinese system that differentiates between ‘old’ and ‘new’ kilowatt hours is an appropriate way of introducing economic supply costs into consumer pricing. Although the distinction appeared contrived to some, others defended it, arguing that kilowatt hours correspond to real energy use that consumers can identify and gauge in their daily lives; thus, the pricing arrangement does send consumers signals about the real costs of power use. Regardless of the economic merits of the new system, it was pointed out that the arrangement represents at the very least a triumph of political economy, in
The Current Situation in China’s Power Sector

The power system in China consists of about a dozen major (1 GW or more) independent power grids, each with special characteristics. The system also consists of a mixture of facilities, including both state-of-the-art large generating plants alongside a large number of obsolete and uneconomical small units.

From 1980 to 1992, GDP growth in China averaged over 9% per year, and power generation increased by two and one-half times, an average of 7.8% per year. Even though 100 GW of generating capacity was added during this period, and even with major new improvements in energy efficiency, the capacity of the system will need to almost double again by the year 2000 in order to keep up with the 8-9% p.a. forecast growth in GDP.

Reform in China’s power sector since 1980 has occurred in waves, rather than through a systematic, step-by-step process. The period 1985-87 was marked by the introduction and rapid development of the “dual-track” system for pricing, resource mobilization and allocation of output in the power sector. The two main elements are:

a. **Dual-track producer prices.** As applied until 1993, the “new plant new price” policy provided for one system of relatively low prices that were applied to “in-plan” output of existing plants and output of new capacity developed with funds allocated under the central state plan; and another system of higher prices that were negotiated on a project-by-project basis for new plants developed with other funds, to enable them to fully service their debt. (Traditional project approvals are still required for these “out-of-plan” investments.) Higher prices could also be charged by existing plants for output above quota levels specified in the state plan.

b. **Dual-track consumer prices.** The system of “in-plan” consumer prices, still formulated with inadequate provisions for the investment costs of power supply, is applied to in-plan quota allocations, but “out-of-plan” consumer prices, calculated by local governments and applied to much of the new industrial demand, have been established at levels typically about twice that of in-plan prices. The central issue for consumers—the quota level that sets the ceiling for low-price supply—is set by local Economic Commissions.

(Further price reform for 1993 lifts the requirement that output from new facilities financed with Central Government-controlled investment funds be priced at in-plan prices. In the future, output from all new plants will be priced at levels that fully cover debt repayment obligations.)

Given the incentive of higher prices and the rapid growth in incremental supply and demand stemming from fast growth in the economy at this time, the out-of-plan portion of the sector grew rapidly during 1986-87. A major drawback to this development, however, is that the power industry’s pricing, management, and ownership systems became increasingly complex and less transparent.

that it has introduced economic logic in a pragmatic way to a system long characterized by power subsidies.

**Tariff Reform and Inflation.** The complex links between tariff reform and inflation emerged from the discussion as a prominent management concern, shared by participants from developing countries and by Bank regional staff members. The discussion considered the possibility that tariff reform might catalyze inflation, as well as the difficulties of tariff reform in an already inflationary environment.
With respect to the inflationary dangers of tariff reform, it was submitted that several Southern African countries that feature subsidized tariffs have been reluctant to implement substantial reforms for fear of possible inflationary consequences. This reluctance was particularly strong as the tariff increases were to occur in tandem with economic reforms that required substantial devaluation of the currency. In addition, governments feared that the increases would adversely affect the international competitiveness of major power users in their countries, at a time when export competitiveness was a major priority. All in all, the concern about the complexities of managing macroeconomic reform in a fragile environment appeared to justify caution in the implementation of tariff reform.

These observations sparked a lively discussion, from which strong arguments emerged suggesting that the risks of tariff increases must be evaluated in comparison with the costs of maintaining the subsidies that support low tariffs. Several comments suggested that elements of inflation might be traced to increases in monetary supply that are required to finance subsidies. In the same vein, it was noted that continuing subsidies to state-run enterprises may be far more inflationary than raising electricity tariffs to economic levels; indeed, inasmuch as tariff adjustment may bring about some inflation, it does so only once, whereas deficit financing to cover subsidies is a continuous process that brings inflation into the economy every year.

Whatever the causal links between tariff adjustments and inflation, there was broad agreement that it is very difficult to increase and maintain the real level of tariffs in an environment that already features high inflation levels. Several examples presented in the discussion underscored the strength of this obstacle to effective commercialization. In Zambia, for example, a recent attempt to raise the country’s unrealistically low power tariffs by 500% was in large measure counteracted by the an inflation rate of over 200% per year. Similarly in Poland, where government eliminated power sector subsidies in 1988, inflation of around 200% annually made effective tariff increases next to impossible. Further observations from other participants corroborated these comments.

The discussions elicited two competing visions of the role that major power users (e.g., heavy industry) should play in the process of tariff evaluation, revision, and change. On the one hand, a Bank participant pointed out that experience in Southern Africa at least, and most likely elsewhere, showed major power users actively lobbying for the maintenance of tariff subsidies on the grounds that these users contribute to much of the country’s export revenue. Others disagreed, however, noting that there is no substitute for economic pricing policies. Indeed, participants learned that in Zambia reformers plan to begin the tariff reform process with large industrial customers. The legacy of neglect and the atmosphere of inflation and exchange rate depreciation in Zambia have combined to make tariff analysis and the construction of reforms particularly difficult. While a general tariff study is underway, the government plans to hitch industrial power supply rates to the U.S. dollar, thus depriving industrialists of an exchange rate subsidy that has afforded them power supply at exceptionally low real cost.

Consumer Acceptance and the Protection of Social Welfare. Social and political issues also affect the pace of adjustment. One participant felt that the inflation issue dictates highly pragmatic reform behavior, since increases in power prices will
have a significant influence on such indicators as the consumer price index, with associated risks for the more vulnerable groups. There was therefore a case for slowing down efforts to achieve full commercial pricing in the power sector, in countries where there is a real risk that a rapid escalation of power prices will jeopardize political support for the structural adjustment program, or the competitiveness of industries that are key to the success of these programs. In support of this view, a participant presented the case of Armenia, where there is currently a heavy cross-subsidy from industry to residential consumers. In order to bring prices up to economic levels, the electricity tariff would have to increase by about 500% for residential consumers. This could devastate the living standards of a very large portion of the population very quickly, and thus jeopardize the reform process as well. Concern for the speed of adjustment should not distract from the point that reforms are designed for the long haul, and may require patience, and the preservation of protective features such as ‘life-line’ rates, even though these would likely mean continuing subsidies within income classes, as well as from industry to residential consumers.

In response, it was suggested that the ‘pragmatic’ approach has clear limits and disadvantages that should also be borne in mind. Most notably, a transitional approach should never lose sight of the fiscal reasons for reform. When utilities are asked to continue to sell power under cost, they encourage consumers to use more electricity, which may in turn affect resource imports and the balance of payments. In short, an overly cautious approach runs the risk of delaying real reform. An additional merit of one-step reform, as one participant suggested, is that it protects government credibility. A transitional process requires follow-through which engages the credibility of the reform process, whereas one-step reform demonstrates government resolve.

Although this debate remained unresolved, ultimately devolving to the specifics of country cases, participants offered two perspectives on incorporating customer needs into the calculus of reform implementation. One summed up by observing that the transition process has to be devised in a very politically-minded manner, always recalling that there must be some kind of social safety net. The other argued that what we should see reform in the context of the social compact. A prerequisite of successful reform may be consumer understanding and acceptance: reformers need to explain the rationale for tariff increases, and demonstrate that in return, consumers will experience tangible benefits, such as improved service. In short, sensitive management can contribute greatly to easing the reform transition. Generalization, however, remains difficult; one participant noted that “we don’t know whether transitions that are slow or transitions that are ‘big bang’ make more sense; we don’t have enough evidence yet.”

**Social Pricing and Cross-subsidization**

In designing a reform program, developing countries will need to make choices about the longer-term price structure in their power sectors. The discussion theme encouraged participants to evaluate whether socio-economic concerns could be made compatible with commercialization of the utilities. Indeed, one participant suggested that the blend of objectives would be difficult to achieve, since they often conflict with one another. That said, the discussion explored the ways in which social objectives could be
made compatible with commercial priorities, and in particular the role of cross-subsidization in reformed power sectors.

In the United States examples abound of private utilities that are regulated in such a way as to promote social objectives; for example, some states have life-line rates to ensure that poor people will be able to get utility services at highly discounted rates. Presenting this example a speaker noted that in the developing world as in the United States, a certain level of cross-subsidization between classes of utility users would be inevitable.

Although others agreed that this was true, some were concerned that in the developing world, where electric power is rationed rather than universally available, aggregate sector subsidies tend to distribute wealth from non-users to users of electricity through a variety of mechanisms, such as the use of export taxes on agricultural products to finance power supply. Where this is true, the subsidization pattern also reflects the asymmetry of political clout between non-users and users. Furthermore, it was generally pointed out that within the sector, subsidies today often benefit relatively high-income users, and not poor users as originally intended.

In response, the discussion brought out several elements that may contribute to a rethinking of links between electricity pricing principles and the achievement of social goals. One suggestion was to challenge the idea that interfering with electricity tariffs would help to achieve social goals, given a global legacy of subsidies that have failed to reach their intended beneficiaries. This view elicited the response that tariffs that only benefit the poor may be rare, but they are in fact quite easy to design. By way of illustration, a speaker observed that, at least in the case of a commercialized monopoly supplier, it is possible to devise a scheme of social pricing that involves cross-subsidies between groups of power users, without requiring net subsidies to the sector. Finally, poor users may be more effectively targeted when the subsidy is applied at the connection level, rather than in the first-block tariff.

The possibility of retaining subsidies in some form sparked a lively debate on whether they ought to be made transparent (e.g., detailed on the consumer’s bill). The merit of such an arrangement would be to inform the general public of what a subsidy might be costing them. It was even proposed that the utility might detail its supply costs on the invoice, identifying those entities that have supplied subsidies. Although such a plan would have the merit of deflecting complaints about shrinking subsidies from the utility to the subsidy source, it was argued in response that politicians would scramble to take the credit for the subsidy. The advocate of this sort of transparency answered that politicians would not want to take credit for subsidies, because then they would have to carry the responsibility for coming up with the money.

Rural Electrification and Level of Service

Rural electrification was introduced as an issue for commercialization, in terms of how commercialization would make utilities better able to supply the rural poor. An initial response indicated that rural electrification should be considered as a separate issue from those under discussion in the roundtable. Indeed, the World Bank currently believes that rural electrification cannot be viewed a commercial service, and that it thus falls into
a category of activities for which utilities should receive targeted assistance from governments. (The results of the Bank’s review of its policies on rural electrification issues are forthcoming).

This said, the topic of rural electrification did elicit additional comments. One speaker proposed that electrification is only one possible answer to what is better seen as a problem of rural energy. The costs of rural electrification are high, and when informed of these costs, recipients might prefer to receive the corresponding value as a cash payment, for use in addressing more urgent welfare issues. Adopting such a view, however, would require breaking with the deep-seated perception that electricity is a factor of development—a perception that had both advocates and critics in the discussion.

To reconcile these views, several speakers proposed that rural electrification, and sector development more generally, might be reconceptualized in terms of levels of service. In other words, different users have different needs, and it may be possible to “rethink the supply side” so as to fulfill these needs while making savings. Consumers might select a level of service, with tariff incentives to encourage economic behavior. There may exist other devices for reducing the cost of network extension to rural and other areas. One is to systematically adopt a bidding process in which the contract would be awarded to the company or contractor that can supply electricity with the least subsidy.

**Conclusions**

In sum, Session Two addressed the proposition and discussion theme by bringing out the following central points:

- There is wide agreement that the premise of commercialization is an appropriate one, and that reforms should be designed with this goal in mind.
- The sequence of reform implementation must be compatible with overall adjustment reforms in the national economy.
- The inflationary dangers of tariff reform are not negligible, but must be evaluated in comparison with the costs of non-reform, in particular those embedded in subsidies to the sector and to heavy industry.
- Tariffs cannot give effective price signals in an environment that is already highly inflationary.
- For reasons of social welfare as well as reasons of political viability, arguments persist in favor of both gradual and one-step reform procedures. Country characteristics are likely to play the largest part, although general methods may be devised to assist in managing reform, particularly in the crucial area of obtaining consumer trust and support.
- In reformed power sectors, targeted subsidies may persist but require re-thinking and innovations to avoid repeating the mistakes of the past.
- Rural electrification may require re-thinking and innovation as well. It may not be appropriately considered as a commercial service, however.
Introducing Competition to the Power Sector

Proposition: Competition should be introduced into the power sector in order to improve sector performance.

Discussion theme: Do market size and other sector characteristics influence the scope and type of competition in bulk power supply? Can it justify the breaking up of vertically-integrated power suppliers?

Scope of Discussion

The discussions of the Round Table for Session Three considered a wide range of concerns about competition and the separation of core functions ("de-integration") in the power sector. Participants (a) debated the merits and possible drawbacks of different forms of competition in theory and practice; and (b) considered the applicability of competitive models to developing countries with given market and system characteristics.
IEN's Comments on Proposition 3:

- Competition is a key element of the new approaches to sustain an economic and reliable supply of electricity.
  - It makes utilities accountable for their performance.
  - It attracts private investment and management.
  - It is technically feasible in the presence of scale economies in the electricity market, according to the premise of contestability.
- The premise of contestability is that a monopolist will be better regulated by the threat of rival suppliers entering the market than by institutional protection from competitive entry. The policy implication is that entry to the market should be permitted in order to restrain a monopolist. Hence, legal barriers to entry should be removed.
- However, the segments of the power market that are opened to competition still must be subject to regulatory oversight to prevent anti-competitive practices.
- Essential policy for supporting competition is thus to allow entry to competitive segments of the power market (e.g., bulk supply to the system or just to large users), and regulated access to transmission and distribution monopolies by competing suppliers.
- Different levels of competition can exist in power supply:
  - Break up vertically-integrated monopolies to create competition in generation and retailing.
  - License wholesale suppliers under competitive bidding.
  - Franchise non-core activities under competitive bidding.
  - Promote intermodal competition to make end-use markets contestable.
- Conditions for entry have to be created by regulating pricing and access; regulators should use pricing to simulate the effects of market competition by:
  - Letting market-determined prices prevail in the competitive segments of the power market, subject to preventing anti-competitive pricing (e.g., “hit and run” competition).
  - Restraining utilities that supply both competitive segments and non-competitive segments of the power market from exploiting their monopolies in the latter to compete unfairly in the former.
  - Enabling users in the competitive segments to choose the least-cost means of meeting their demand by unbundling service charges.

Competition in Theory and Practice

The role that competition may play in the development and management of the power sector is a controversial issue for sector reform, partly because debate over this role tends to obscure the fact that competition may occur in various ways. The advocacy of different levels of competition corresponds to different perspectives, based on economic theory, about the presence of natural monopoly characteristics in the sector. Indeed, discussions at the Roundtable implicitly or explicitly brought up several different conceptions and understandings of competition.
EdF's Comments on Proposition 3:
The primary goals of reform in developing country power sectors should be promoting their efficiency and enabling them to finance their expansion on the national and international capital markets.

From this point of view, competition should not be seen as an end per se, but rather as one of the possible ways to achieve these goals. The problem resides in determining the right mix of regulation and competition; we know that it is more difficult to introduce competition in the power sector than in other industries.

We also know that competition does not streamline regulation but makes it on the contrary more complex and burdensome. The power sector contains natural monopoly segments (the networks) and others which are not, or may not be natural monopoly segments (generation). Introducing competition creates a “half-free, half-slave” sector. This requires the comprehensive regulation of electricity, because of the numerous technical and economic interactions between the regulated segments of the industry and those subject to competition.

The telecommunications industry in the United States, which has the most advanced experience in this regard, shows that this new regulation will be more complex and difficult than the regulation of the integrated monopoly itself. In the power sector itself, let us take the new UK electricity system as an example of full competition. Because of metering and transaction costs, we know that captive users will in any case represent the most part of demand. Regulation must then ensure that distributors buy their energy at least cost. In so doing, it will have to confront self-dealing issues, because distributors own shares of the independent producers. It will also have to deal with cross-subsidies between the franchised and the free market. In this situation, producers have incentives to cross-subsidize that did not exist under the integrated monopoly.

Therefore, the first thing to do may be to seriously try to improve the regulation of the monopoly. It is certainly a difficult question, but it is the key question.

If we do not succeed along this path, then the introduction of some form of competition can be envisaged, provided that it is not detrimental to power sector efficiency. From this point of view, the experience of industrialized countries shows that competition at generation level for the construction and operation of new capacity can be envisaged, and may help to improve the efficiency of the incumbent monopoly. This form of competition is, in essence, compatible with long-term coordination of investment choices, which is critical to efficiency in the power sector. Furthermore, it may be instrumental in attracting foreign capital and operators. Finally, it does not require restructuring the sector, with all the difficulties that would entail.

On the other hand, the mandatory access of final users to the electricity grid would threaten the long term investment efficiency of the power sector, because the market is myopic. Again, it would create incentives for operators to cross-subsidize consumers on the free market to the detriment of the franchise customers, thus requiring complex regulation. It would also require solving the difficult question of access pricing. Third party access to the grid is today clearly an insufficiently tested form of competition in the industrialized countries.

The introduction of competition in the power sector should furthermore take into account the specific conditions that prevail in developing countries: its smooth functioning will be more difficult in the absence of strong market institutions.

Electricité de France
IEN's Comments on Discussion Theme 3:

- Limited experience with competition—most of it in developed countries with well-developed power markets.
  - Competition among numerous generators to serve distributors and large users in Norway, Finland, the Netherlands, and England and Wales.
  - Competition among independent power producers to supply integrated utilities and large users, and by both types of suppliers to use third party access to obtain custom outside their local areas in U.S.
  - Only Chile among developing countries has extensive experience with these types of competition.
- Other factors, while correlated with market size, are equally if not more important for the success of competition:
  - Organizational structure of power supply, particularly accessibility to transmission facilities by competing generators, retailers, and users.
  - Market sophistication, which reflects the willingness and ability of investors and suppliers to exploit profitable business opportunities.
  - Business climate for investment, which requires governments to create the appropriate incentives for state-owned utilities to act commercially and for private investors to participate.
- This experience indicates that market size is not the main determinant of the scope for competition. In developing countries it should depend on country characteristics.
  - In the least developed power markets, feasibility of competition is limited to competitive bidding for franchises under performance contracts.
  - In the most developed power markets, scope for competition covers all the identified forms. However, the U.K. model based on spot pricing is likely to be too risky for developing countries.
  - In other power markets, competition is feasible through competitive bidding and contestability.
- The available economies of scale are still sought by:
  - Keeping transmission and distribution as monopolies.
  - Using competition in the bidding process (numerous bidders) for a contract to generate power (one or few generators that capture scale economies).
- Establishing a separate transmission company, which generators are prevented from owning, offers the most durable arrangement for promoting competition in bulk power supply. It would relieve the regulator of the difficulties with instituting third party access to the transmission facilities of an integrated supplier.
- However, it might involve dismantling a monopoly, which could also involve risks.
  - Disruption of the quality of power supply, because of inexperience with arm's length trading in this sector. Careful planning, with the help of foreign experts, is essential for managing this risk.
  - An unattractive combination of short-term gains in efficiency and consumer choice with long-term losses through reduction in investment and uneconomic technology choices under cashflow compression. Appropriate government regulation of the power market is needed (e.g., price capping).
**EdF's Comments on Discussion Theme 3:**

It does not make sense to think of introducing competition in small power systems, typically sized under some thousands of MW, as is the case of numerous developing country power sectors.

Concerning the break-up of power sectors, it is true that vertical integration of generation, transmission and distribution, de jure or de facto through long-term contracts, is sometimes challenged today—even though it is still dominant in the industrialized world. The challenges owe in part to the old hostility of American antitrust policy toward vertical integration, which is based on suspected foreclosure and restriction to competition, when competition is conceptualized as repeated anonymous spot market transactions between individual buyers and sellers. Nevertheless antitrust policy has evolved tremendously in this regard during the last decade. Today, there is broad recognition that vertical integration and complex vertical contracts are often necessary to minimize costs.

Furthermore, we should be aware of modern transaction costs theory which focuses on the costs associated with writing, monitoring and enforcing complete contracts, and on the problems that incomplete contracts engender for harmonizing the conflicting incentives of buyers and sellers to achieve cost-minimizing outcomes as economic conditions change over time.

Modern economic theory tells us that competition is more difficult to introduce in network infrastructures than in other industries, and more difficult in electricity than in other networks. It is odd that the World Bank derives no consequence from this, and treats electricity as any other commodity.

To conclude, as a large utility involved in many developing countries and in restructuring of electricity in the former socialist countries, it is our opinion that the only form of competition which can reasonably be introduced in the power sectors of these countries is competition at generation level, organized by the incumbent utility and supervised by the regulator. Once again, this form of competition does not require restructuring of the power sector, helps attract foreign capital and operators and may, in this way, promote efficiency.

Marginally, the key idea beyond our discussions about privatization and competition may be to open the power sectors of developing countries to foreign operators, expertise and capital.

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The simplest form of competition in the power sector is contracting on a competitive basis for ancillary services in areas such as pole and wire fabrication, servicing, vehicle maintenance, catering, and so forth. These bidding practices, common in many countries, elicit general support as ways to reduce waste and improve efficiency, at least at the level of procurement.

The prospect of introducing competition into the core functions of power supply, on the other hand, is controversial because it is the subject of heated debate in economic theory and because there is limited experience with making it work. Here again, different levels of competition can be envisioned.

- First, competition may occur for the generation of power. Private firms may compete for the construction and operation of new generation capacity; in addition, firms may compete for operations franchises for the use of existing capacity. In these ways, a national grid will in theory have the opportunity to select among possible suppliers (and thus to choose the least expensive sources of power over time).
Second, competition may occur in a more comprehensive fashion, featuring many generators competing for bulk or large-customer supply through third-party access to the grid.

Arguments in favor of introducing competition in one of these forms, instead of retaining vertically integrated monopolies or quasi-monopolies, draw on debates in contemporary economic theory as well as on contending analyses of the historical record and of experiments currently underway.

The most prominent examples of power sectors that have been restructured with the introduction of competitive practices as a priority, are in the United Kingdom (with vertical de-integration of the utility and competition in generation and supply) and Chile. Elsewhere, long-standing sector structures present historical examples of different arrangements, from vertically integrated monopolies in many industrialized and developing countries, to systems where integration is regionally confined, as in the United States (with competitive bidding for generation, organized by the utility, under regulatory supervision), and systems where a national bulk power producer supplies a number of independent local distribution companies. Finally, the introduction of specific competitive practices such as third party access (TPA) to transmission grids has been the subject of recent, extensive policy discussion in the United States and the European Community.

In the Roundtable discussion, the advocates of more competitive, less integrated systems centered their arguments on contestable market theory, suggesting that utilities will be more responsive to market signals (the threat of their competitors) than they have been so far to institutional regulations. In response, it was argued that contestable market theory may not apply to the power sector as readily as the advocates suggest, because (a) the power sector is characterized by particularly large sunk costs, and (b) power sector monopolies may not be as slow to react to traditional signals as their critics purport. For these reasons, then, some participants argued that contestable market theory did not provide sufficient or appropriate grounds for introducing competition to power sectors.

Participants more partial to existing models of vertically integrated monopolistic suppliers (what some called the “industrial model”) also invoked contemporary economic research to support their arguments. They suggested that new work in organization and agency theory highlights the increases in transaction costs that are bound to accompany competition and de-integration. They cautioned that de-integration would jeopardize the achievement of the economies of scale and scope that have long characterized the sector. One participant noted the opposing trend toward greater global concentration among manufacturers of electrical plant and equipment.

Advocates of less integrated systems countered, however, that the economies of scale and scope purported to prevail in the sector could still be achieved, especially where competition was in bidding for the rights to develop capacity. Although natural monopoly characteristics exist in transmission and local distribution, this perspective argues that all other facets of power supply are susceptible to competition.

In short, the discussion left undetermined the extent to which complex competitive reform models were appropriate to the power sector. It suggested, however, that the decision must involve among other things a comparison of the purported benefits
of increased reliance on market signals associated with competition, with the purported benefits of organizational efficiency associated with vertical integration.

To evaluate these options and prescribe policies in specific situations, Roundtable participants discussed the global historical record of power sectors, and more pointedly, the relevant experiments currently underway in different parts of the world. On a general level, it was proposed that large, public monopolies have only a weak or average record of performance and innovation. In this view, monopolies tend to be technology-driven rather than adequately responsive to market and consumer needs; they pass on the costs of investment and research mistakes to the consumer. This view did not, however, secure general agreement: indeed, representatives of public monopolies suggested that these utilities can be quite capable of being efficient and responding to consumer and market signals.

Concerning the lessons of sector history, participants heard the argument that the “failure” of power sectors in the 1970s and 1980s was not a failure of the monopoly model per se, but rather a failure of politics and regulation in, for instance, mediating external shocks or protecting utility decision-making autonomy. Opponents of monopolies countered, however, that competition would resolve precisely this issue. Although no conclusions were reached on the matter, several participants suggested that the inherent merits of economies of scale that accrue in the sector have yet to be disproved.

Discussion of current experience focused primarily on Britain, with some reference to the United States and Chile, as well as to the current debates in the European Community, where efforts are underway to coordinate the power systems under a common set of rules.

Participants disagreed about the extent to which the new British system is truly competitive: some suggested that it retained a great deal of de facto vertical integration, others that its “duopoly” structure in generation represented little change from the earlier, vertically-integrated monopoly arrangement. In any case, the cautions were raised that (a) the British model is likely to be too complex for most developing countries to envision in the foreseeable future, and (b) it is too early to judge its overall performance. These cautions were all the stronger when it came to third party access to retail markets, a topic under discussion in the United States and in the European Community, but considered outside the scope of reform in most developing countries.

The case of Chile, where sector structural reform predated that of Britain, received less discussion than some participants had hoped for. An argument was made that sector privatization and de-integration in Chile has been beneficial to all classes of society; it was tempered by the observation that here again, competition was in many ways imperfect. More generally, participants expressed the desire for further and more detailed information on the case.

**Competition and System and Market Characteristics**

The theoretical literature that deals with competition in the power sector draws primarily on material from industrialized countries; furthermore, there are to date few
examples of competitive power supply in developing countries. It is therefore appropriate to ask whether the market and system characteristics that make competitive arrangements opportune are also associated with industrialized countries. Several participant observations addressed this question, making reference both to market and system characteristics (which make competitive reform more or less appropriate) and to administrative and human-resource characteristics (which make implementation more or less difficult).

The scope for competitive reform, understood as reform that seeks to introduce competition to some of the core functions of electric power supply, is likely to vary with certain market characteristics. It was suggested that competitive arrangements make better sense in industrialized than in developing countries because industrialized countries feature market institutions, low population growth, an emphasis in public debate on energy efficiency over system expansion, and an associated plateau in consumer electric usage (e.g. appliance saturation). These are not the concerns of developing countries, where the priority is to expand power supply to support economic growth and social welfare, purposes which some argued would be best served by traditional integrated structures, although these could be assorted with competitive bidding for the construction of new capacity, thereby attracting foreign and private capital.

Secondly, the scope for competition may also vary with system characteristics, including (a) the technological mix used in generation (competitive generation is more practicable the less the system relies on a dominant nuclear or hydro source), and (b) the degree of interconnection, with competitive reform being more practicable where load centers are interconnected.

In sum, the claim was made, and echoed by several participants, that "size matters." In addition, participants voiced concerns about implementation issues that reflected concerns brought up throughout the Roundtable. Generally speaking, they cautioned that competitive reforms should be considered prudently not only because they are highly innovative and, to many, insufficiently tested, but also because they are likely to engage human resources and skills that for many countries are very scarce.

In practical terms, it was emphasized during the discussion that the World Bank power sector paper should not be caricatured: rather than advocating "British-style" solutions for developing countries, it recommends prudence and suggests, instead, that the practical scope for core-function competition in most developing countries is at this time rather limited, whilst non-core services ought to be made as competitive as possible. Most participants concurred with this judgment, adding that among core services, the generation end is better suited in the abstract for competitive arrangements in the near-term. Some added that strong arguments persist in favor of maintaining the vertically integrated model into the future, combining it with the appropriate regulatory framework, rather than seeking to introduce more complex forms of competition.
Conclusions

Session Three addressed the proposition and discussion theme by bringing out the following central points:

- Size of both market and system is an important factor in determining whether competition would be feasible. Such factors as technological mix used for generation and degree of interconnection are also important.

- While bidding and procurement practices could be made more competitive in developing countries, large-scale competition in generation is currently not feasible in these countries.

- It is too early to determine, based on experience in a few industrialized countries and Chile, how well competition works in the power sector.

- The introduction of competition to power generation should be approached with great caution. The possible efficiency gains from competitive supply must be balanced with the increased transaction costs and more complex regulation that the reform entails.
Choosing the Right Regulatory Framework

Proposition: Regulation of the power market in developing countries should be incentive-based and applied transparently by an independent agency.

Discussion theme: Are sensitive issues such as pricing realistically amenable to incentive-based regulation by an independent regulatory agency in developing countries?

Scope of Discussion

The discussion in Session Four loosely followed the framework presented by the World Bank and Electricité de France in that comments were divided among incentive-based regulation, transparency in the regulatory process, and independent agencies. There was wide agreement among participants on many of the topics covered, although not necessarily with the proposition. Several comments also addressed practical application of regulatory reform in developing countries.
IEN’s Comments on Proposition 4:

Incentive-based:
- Incentive approach is simpler and more flexible than cost-plus regulation, and it can be at least as effective, because it gives suppliers better incentives to behave as if subject to competition (ROR-type regulation does not).
- Incentives would promote innovation, cost containment, and service tailored to the needs of power users; it would apply pressure to remove cross subsidies.
- Allows regulator to reward a utility for good performance and penalize it for poor performance.

Transparently applied:
- In order to attract private investment (investors must be able to see that regulations are not applied arbitrarily).
- To support the public interest in controlling the environmental and social impacts of power system development.
- So that parties to contracts have confidence in the fairness and predictability of the contract application.
- Allows investors to see their risks clearly and make provisions to manage them.

Independent agency:
- Independence refers to having the autonomy to carry out regulatory duties, provided that such duties conform to government policies.
  - It demonstrates government commitment to a strong regulatory process.
  - It is suited to a transparent regulatory process.
- This arrangement is better than the other organizational options (in the presence of appropriate checks and balances) for achieving regulatory objectives because:
  - A department of a government ministry offers administrative convenience but risks the worst combination of political manipulation and technical incompetence in most developing countries.
  - An independent regulatory tribunal (U.S. model) is generally too cumbersome for developing countries.
  - Industry self-regulation risks unfettered monopolistic exploitation in the absence of institutional checks in developing countries.

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Incentive-Based Regulation

Session four evinced little direct discussion of incentive-based regulation following the presentations from the World Bank and Electricité de France, aside from the comment that the U.S. supply industry supports it, but customers in the U.S. tend to resist it (mainly on the basis that it can be used to make them pay for programs that benefit others, such as environmental programs). There was also a comment on the implementation of complex pricing: it carries higher administrative costs in the short run,
IEN's Comments on Proposition 4 (cont.):

- An independent agency has the autonomy needed to give the regulatory process credibility and durability:
  - It would have the legal status to perform its duties free from political or commercial influences.
  - It would be given the authority to set parameters for and monitor the implementation of contracts.
  - Its rulings would not require government approval, and they could only be appealed to the judiciary or some other impartial source.
  - It would be led by people appointed according to legislated procedures.
  - It would be funded independently of regulated entities and government budgets, through such means as a surcharge on users' electricity bills.
  - It would have control of its own budget and personnel.
  - It would not be impeded by civil service conditions in its internal administration.
  - It would not be in the business of supplying power.

but the long-term benefits of influencing behavior on both the supply and demand sides may be worth this higher cost.

Transparency and Openness

The session featured a discussion about openness and transparency in regulation. One participant asserted that the regulatory process should be opened up to as many constituencies as possible. He cited an example from British Columbia (Canada), where there was a serious conflict between the public monopoly and consumers and interest groups. The resolution in this case came when representatives of each group were put in a room together with a facilitator and told that they could not leave until they made some decisions. The speaker considered this to be a good start.

There was some ensuing discussion about the difference between openness and transparency. One participant offered the U.S. system of regulation as an example of transparency: every single contract, tariff, or rate can be viewed by the public, and every rate, term, or condition in those contracts can be challenged in front of the agencies or in the courts. However, it was implicitly agreed by participants that this was rather an example of openness; that is, openness refers to the accessibility of the regulatory process to consumers, investors, environmentalists, industry, and other interest groups. Another speaker, reading from The World Bank's Role in the Electric Power Sector, defined transparency as "(1) a clear set of rules, known in advance; (2) rules actually in force; (3) mechanisms to ensure application of the rules; (4) conflicts resolved through binding decisions of an independent judicial body or through arbitration; (5) known procedures for amending the rules when they no longer serve their purpose, and (6) a framework of regulatory incentives (including the possibility of price capping) to support competition and induce efficiency."
Power Supply in Developing Countries: Will Reform Work?

IEN's Comments on Discussion Theme 4:

- Incentive-based regulation typically puts limits on prices by one of the following:
  - Indexation of tariffs to specific input costs (e.g., fuel).
  - Price index less "X" on regulated services.
  - Price capping for markets that should be competitive.
  - Yardstick competition for monopolistic functions—typically power distribution.
- To develop a workable incentive based system, governments need to accept that it can lead to price increases in a tight market as well as discounting in a weak market. Conflicts with cost-based regulation.
- In the power sector, the basic issue is how to balance the risk of regulatory failure against the risk of market failure (the abuse of users' interests by a monopolist).
- A regulatory system that looks first best in terms of welfare economics may not be the most suitable when country-specific institutional factors are considered. Regulatory failure can arise from:
  - Utilities using undue influence over information used by regulators to capture excessive economic rents.
  - A regulator abusing flexibility and discretion in exercising its powers to expropriate sector-specific investments.
  - A government using its executive powers to prevent credible and durable implementation of sound policies.
  - Powerful groups of power users using their influence to obtain electricity on unduly favorable terms.
- The core issue is how to manage the trade-off between flexibility in applying regulations under actual market conditions, and limiting discretionary scope for manipulating the regulatory system.
  - Achieving a balance depends on which course risks more economic inefficiency under the prevailing institutional checks and balances.
  - Flexibility is more important under rapid technological change, such as with telecoms, whereas commitment is more important under high social needs, such as with water supply. The power sector lies somewhere in the middle.

A few participants felt that openness was most important; they were speaking from the point of view of the domestic environment. Others emphasized transparency; they were mainly looking at how foreign private investors would view the market.

Importance of the Independent Regulatory Body

Participants concurred that there is no such thing as a truly independent regulator. One wondered if independent regulatory bodies make sense at all in developing countries. Reiterating the call for an open regulatory process, he suggested that regulatory boards in developing countries should be made explicitly political bodies. There was some disagreement on this point; other participants felt that the regulatory body should be
IEN's Comments on Discussion Theme 4 (cont.):

- Incentive-based regulation of the power sector applied by an independent regulatory agency is:
  - Appropriate for countries that intend to exploit technological innovation by means of competition and private investment, and whose political and judicial systems have the capacity to limit the risks of regulatory failure.
  - Inappropriate in countries with weak political and judicial commitments to transparent and fair regulation, and which do not intend to open their power sectors to competition and private investment. These countries should focus on contractual approaches to improving sector performance.
  - A possibility in countries that do not fall into either of these categories. Their governments should commit to developing the institutional capacity and credibility to make the incentive approach work.

removed from politics, mainly because they were concerned about capture. Indeed, capture was a significant concern of many participants: one pointed out that a regulator can be captured by any number of different agents, including government, utilities, and interest groups. Another outlined a scheme for avoiding capture by government; namely, nominating the regulator for a period that is different from that of the government, so that the government cannot instantly oust the regulator upon gaining power. Others felt that we should just admit that there will be capture, and examine whether this will really hamper regulation. One person emphasized that the risk of capture by a utility is especially keen when the utility is a state-owned monopoly, adding that an arm’s length relationship between government and regulator was not possible as long as the government owned the utility. He offered as a solution corporatization and commercialization of the sector, to give the regulator some distance from the government.

Towards the end of the session, the World Bank presenter reiterated that when the Bank refers to an ‘independent’ regulatory agency, it does not mean an agency that is independent of government and beyond government control. The agency should simply have autonomy to perform its duties, and the autonomy to give the process credibility and durability. Some consensus emerged that perhaps the wording in the technical paper should be changed, then, from independent to autonomous.

Practical Application Issues

During the discussion participants raised a number of issues that mostly focused on the practicalities in developing countries. A few general comments about application led to some more specific issues that were of concern to individual participants. One speaker, noting many comments about the institutional structures in the developed countries, wondered if it was really possible to deposit these models in the developing world. Another participant echoed this concern, asking whether the U.S. system of regulation would work in the developing world. He suggested that it would depend on many things. The U.S. system requires a large pool of highly technical talent (often in
EdF’s Comments on Proposition and Discussion Theme 4:

To make our choice of regulatory arrangements in the sector, we must first state what the scope of sector regulation should be, and what concrete problems are at stake. The two main building-blocks of regulation are ensuring the efficiency of generation investment choices, and sound pricing principles. These are long-term issues: investment choices account for two-thirds of the consumer kWh cost, and sound pricing principles help properly orient the decentralized choices of customers. Management and operating efficiency is a short- and medium-term issue.

The long-term issues, which are most important, do not entail any major asymmetry of information between the regulator and the firm: indeed, a group of professionals from both sides can share the basic information needed and make the right decisions. This is not true, of course, for the short-term issues, which form the main scope for incentive regulation.

Because incentive regulation is popular at this time, the basic problems of regulation are often hidden. The long-term issues of sound investment choices and pricing principles are not a problem of incentive regulation.

Concerning incentive regulation in particular:

* It is not correct to say that cost-plus regulation provides no incentive for cost minimization. Because of regulatory lag, prices tend to stay fixed even while costs are changing; regulatory lag partly decouples prices from costs and permits utilities to increase profits by reducing costs. Furthermore, the prudence test can serve in practice to punish utilities for particularly bad outcomes.

* Conversely, just as pure cost-plus does not exist in practice, neither does pure price-cap, as we know from the history of distribution franchises in industrialized countries. Over time, pure price-cap would lead the utility to either excessive profits or bankruptcy. In practice, the cap is subject to periodic revisions that are based on observed costs.

* This amounts to institutionalizing a carefully structured system of regulatory lag—similar to what we have in France in the form of the performance contract between Electricité de France and the State.

* “In search of innovative techniques for incentive regulation the theoretical literature has nonetheless not produced a neat set of cookbook rules that can be readily applied with available empirical information to develop optimal incentives for electric utilities. Nothing as useful as “base prices on marginal costs” has been discovered. We strongly suspect that this reflects the inherent difficulty of the problem more than the immaturity of the literature. Practical rules are even less likely to emerge from more general work that allows for additional, realistic sources of uncertainty, that considers incentives for efficient investment decisions as well as efficient operation decisions, and that does justice to the dynamics of real regulatory relationships.” July 14, 1993 (P. Joskow and R. Schmalensee, “Incentive Regulation for Electric Utilities,” 1986).

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Choosing the Right Regulatory Framework

EdF's Comments on Proposition and Discussion Theme 4 (cont.):

- As a practical matter, regulations should establish incentives which are not likely to have a significant effect on the regulated firm's systematic risk, so that the cost of capital will not change dramatically. They should also place credible bounds ex ante on rewards and penalties, recognizing that enormous rewards or penalties are unsustainable.

These considerations suggest that regulations should not move sharply away from cost-plus toward fixed-price arrangements, since the latter carry a substantial risk of unacceptable outcomes. We do not advocate extending incentive regulation beyond operating and maintenance costs.

Concerning the independent regulatory agency:

Government intervention should be permitted only if its purpose is to implement a sound regulatory framework and to monitor utility efficiency. The idea of the independent regulatory agency is to introduce a buffer between governments and utilities. This may be a good idea, but in any case it is insufficient.

In any country, a real regulatory body involves, de facto, the ministries of industry, finance, environment and labor. This de facto body may hold contradictory views, but these relate to real problems and most of them should be considered.

The real challenge is designing institutions and procedures for coordinating these different views, so as to make efficient decisions. Taken alone, the Anglo-Saxon concept of the independent agency does not answer the question. Indeed, it may even make it more complex, depending on the country and its institutions.

Electricity and economic theory:

Arguments about institutional design and regulation for the power sector draw on several approaches from contemporary economic theory.

- A market-oriented approach (Baumol, Demsetz, Littlechild) relies on marketplace contestible competition to control prices and ensure efficient service. When markets are perfectly contestable (i.e., when entry and exit are costless), the threat of entry will force break-even prices. At this point, regulation becomes aimless; in the real world however, contestability is limited by sunk costs and the absence of second-hand markets for capital goods. Where competition is impossible due to natural monopolies, regulation by means such as the bidding process or price caps can mimic market forces.

- Agency theory (Lafont and Tirole) stresses the asymmetry of information between the regulator and the firm. The regulator proposes a contract in order to have the firm reveal its private information. Under certain strong assumptions, these contracts can generalize the notions of price cap and cost-plus; but it is easier to imagine than to implement a full menu of linear contracts between the regulator and the firm.

- Transaction costs economics (Coase, Williamson, Joskow) notes that institutional choices—and the resulting contractual arrangements in the sector—are driven by the need to minimize transaction costs over the long term. It views regulation contracts as incomplete contracts, where the utility is guaranteed a fair rate of return and the regulator retains the residual rights of control. Specific institutions shape incentives and also enable a dialogue between the utility and the state on long-term or strategic issues.

Electricité de France
Different Approaches to Regulation: Lessons from the Telecommunications Sector

Brian Levy, of the World Bank's Policy Research Department, Finance & Private Sector Development Division, responded to the proposition that utilities should be regulated by an independent agency by presenting the results of research into different approaches to regulation. The research focused on the telecommunications industry, but the results are considered generally applicable. There were five countries included in the study: Chile, Jamaica, Argentina, the U.K., and the Philippines.

The first thing that the researchers did was distinguish between the classic economic goals and the institutional and political economy goals of a regulatory system. The former include promoting efficiency, flexibility, and competition where plausible. The latter focus on creating an environment that restrains such arbitrary, unexpected, and undesired actions as capture of the regulatory system by a utility, administrative expropriation, or direct expropriation of assets by the government responsible for the regulatory system. The research showed that these goals—commitment on the one hand, and flexibility on the other—can come into conflict with one another. How a country resolves that conflict depends on the specific institutional environment of the country. Some countries have the institutional background that makes it possible to get very substantial efficiency and flexibility, while having the commitment that is needed for the system to be workable and for private investment to be forthcoming. Other countries, in order to establish the kind of commitment that induces the private sector to participate, may have to accept some compromise with the efficiency goal.

The researchers identified four distinct institutional approaches to regulation, each of which fits one or another kind of country setting most effectively:

- "Process regulation," or the notion of the independent regulatory agency. This can be a highly efficient system, but paradoxically it requires very strong underlying institutions. Examples include the British system of rpi - x, where a regulator has the discretion to adjust x; and the US. system, which involves independent regulatory commissions. The research indicates that this kind of system is workable only where the regulatory agency is embedded in a broader system of checks and balances that restrains either capture or arbitrary action.

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Others agreed that it does all depend following Brian Levy's presentation (see box, above). There was wide agreement that a regulatory system that is incentive-based, transparent, and independent is not practical in many developing countries. One participant spoke for many when he observed that there is no universal regulatory approach; we have to find the approach that best suits a country's conditions, government, and resources.

Some suggestions emerged about the form the regulatory body might take, and the power that it might have. One participant noted that there could be a body whose sole responsibility was regulating electric power, or there could be one board that handled several kinds of utilities; the latter model might offer better protection from capture. Another contended that the regulator must have access to investment decisions in order to have real power, since money and power are linked; this is only practical from the point of view of a developing country. He also added that developing countries require support
Approaches to Regulation (cont.)

- Regulation based on highly specific substantive rules that are embedded in the license provided to an operator or in legislation. (Countries differ as to which are more credible and more plausible as a workable system.) Chile provided the best example of this type of framework. The Chilean system is one of very precise benchmark regulations (it is obvious, upon reading, that it was written by Ph.D. economists who were interested in capital asset pricing models and marginal cost pricing, and what an optimal regulatory system looks like). It is very specific and leaves little room for discretionary action on the part of the regulator. Such a system relies on (a) a set of institutions, most importantly a judiciary, that can resolve conflicts; and (b) an administrative apparatus. Both the former and the latter must be able to understand, if not at the level of a Ph.D. economist, the basic logic of capital asset pricing models (rate of return, marginal cost pricing, etc.); must be prepared and understand the need for technological change; and must understand what efficient regulation looks like. This regulatory model requires a strong institutional framework, but it's not an independent regulatory agency or open ended regulation.

- Cost-plus rate-of-return regulation for countries where it is possible to enforce rules, but where there is a lack of capacity to manage highly complex regulatory arrangements. The researchers found an example of this type of environment in Jamaica, where it is clear that the contracts are binding, and where, on the basis of a highly precise contract, a substantial private investment took place. However, the contract could not be written the way that Chilean contracts are written, because that type of contract would not simply be feasible to enforce in Jamaica's institutional environment. Cost-plus rate-of-return regulation is second best in terms of efficiency, but given this particular setting it was the best that could be done in terms of providing commitment.

- International guarantees against political risk for those countries where the domestic institutions simply do not provide a basis for credibly committing to any set of rules, however imprecisely. Such guarantees essentially substitute for a regulatory process within the country.

In essence, the research suggests that to focus on the regulatory agency and its independence is in some sense to focus on a second order issue. The first order issue is what are the mechanisms for constraining regulatory discretion. Under some circumstances, and under some conditions, an independent regulatory agency can achieve that. Under other conditions, it will fail to do that.

for regulatory reform from multilateral institutions. This would provide the "leverage" that developing countries need to initiate reforms.

In reply, one speaker objected to the idea that multilateral institutions could substitute for domestic political commitment. He stated that domestic political commitment is key and permits no shortcuts. However, it was noted that even where there is political will, there may be a lack of capacity to respond to any form of regulation. He suggested that some countries' non-compliance with Bank conditions (de facto regulation in many countries) is evidence of this inability to respond.

Finally, a speaker suggested that the regulator need not be the principal focus, given the urgency of sector investment requirements. Instead, investors want (a) government commitment; (b) a contract that does not force them to take either a market risk or a fuel risk, since they already have to handle political risk and country risk; and (c)
a conflict resolution mechanism. He felt that a regulatory agency would not in itself create an enabling environment for private investment. This point is explored in more detail in Session Five.

**Conclusions**

Session Four addressed the proposition and discussion theme by bringing out the following central points:

- The regulatory process must be made more transparent and open to scrutiny by interested parties (utilities, consumers, environmental groups, etc.).
- Incentive regulation may not result in efficient investment decisions under developing country conditions.
- Incentive regulation should not be introduced in countries that do not have the institutional framework to provide checks and balances on both the regulator and the regulated parties.
- There is not and should not be such a thing as an independent regulator; however, if a separate regulatory agency is established, it should have some autonomy to perform its duties.
- Research into regulation of the telecommunications sector indicates that it is impossible to prescribe of a single regulatory framework for all countries. Rather, regulatory arrangements should be tailored to the institutional capacity of individual countries.
Attracting Private Sector Participation to the Power Sector

Proposition: Developing countries should use private sector investment, technology, and expertise to develop and reform their power sectors.

Discussion theme: Will governments, state-owned power companies, and private entrepreneurs—both domestic and foreign—be willing to cooperate in achieving the long-term national objectives for the power sector?

Scope of Discussion

Session Five elicited broad agreement among the participants on the proposition that the private sector, both domestic and foreign, be called upon in the process of reform and development of developing country power sectors. In the ensuing discussion, participants sought to clarify (a) the sources and types of investment that the sector currently requires; (b) the conditions which attract investment that is mutually beneficial to the national power sector and to the private partner; and (c) the prospects for continued or renewed cooperation in the sector between public and private or foreign participants.
IEN's Comments on Proposition 5:

- Private sector participation could help countries meet the following objectives:
  - Access new sources of finance for the sector.
  - Develop local capital markets.
  - Improve sector operating and investment efficiency.
  - Increase supply capacity.

- It is debatable whether state-ownership of companies with substantial market power, such as power suppliers, detracts from efficient performance. Two points about industry structure are, however, generally accepted:
  - Competition in the market is the most effective means of promoting efficiency, where it is feasible.
  - Where this condition prevails, there is little justification for state ownership.

- Even where the existence of substantial market power prevents free competition, private ownership is advocated if it is not possible to give the managers of state-owned enterprises adequate incentives to strive for efficiency.

- However, private participation will not automatically induce competitive behavior in an industry such as electricity supply that has strong inclinations toward cooperation and collusion. Good regulation and anti-trust enforcement are required to support competition.

- Many of the benefits that are attributed to privatization arise from the policy environment that fosters privatization and the associated regulatory reform.
  - In particular, a clear benefit of privatization is that a single, well-defined objective of profit maximization, with related accountability, replaces the variety of objectives usually imposed on state-owned enterprises.

- The question of ownership should thus be viewed in terms of the effectiveness of incentives for power suppliers, and of the mechanisms to apply them.

- Governments must do three basic things before inviting private participation in power supply:
  - Establish which objectives [(a) additional investment, (b) additional supply capacity, (c) increased efficiency] have priority.
  - Define the forms.
  - Contracting out [achieves (c)]
  - Dedicated generation (BOOT schemes) [achieves (a), (b), and (c)]
  - Independent power generation (cogeneration, etc.) [achieves (a), (b), and (c)]
  - Divestiture [achieves (a) and possibly (c), depending on regulation]
  - Create a suitable business environment.
  - Legal protection of property rights of investors
  - Arm's length regulation of the power sector by government
  - Prevention of anti-competitive practices by dominant power suppliers
  - Legislated rights to entry and exit from the power market by private suppliers
  - Freedom to import goods, fuel, and services
  - A stable macroeconomic environment (ideally, low inflation, sound taxation policies, access to foreign exchange, fiscal prudence)
### IEN's Comments on Discussion Theme 5:

- **The objectives of private entrepreneurs differ from those of government.**
  - **Aims of project developer:** (a) minimize operating costs; (b) maximize revenues; (c) maintain positive cash flow; (d) operate in a stable legal environment; (e) enjoy the right to use project assets in whatever way will maximize profit; (f) transfer project risks to the host government.
  - **Aims of government/utility:** (a) ensure project assets are properly maintained to provide good quality service; (b) control revenues to prevent excessive charging—especially compared with alternative publicly financed capacity; (c) pay only according to results—no output, no pay; (d) require project companies to comply with all present and future laws and government policies; (e) require project assets to be used in whatever way will maximize the economic benefit to the host country; (f) transfer project risks to the project developer.

- **The incorporation of private power supply into a public power system introduces some specific issues for system planning and operation:**
  - How to ensure that power utilities and private producers have the incentive to trade power economically.
  - How to price a utility’s bulk power purchases from private producers in a way that gives these producers an incentive to develop capacity that can supply power at a lower resource cost than the utility’s own cost of meeting the demand on its system.
  - How to manage an orderly process for developing system capacity.

- **The key to obtaining cooperation among governments, state-owned power companies, and private entrepreneurs for resolving these issues is to have credible and durable regulation of the power sector, which treats all parties equally without respect to ownership. Independence and transparency under appropriate institutional checks and balances are important regulatory features for this purpose.**

- **The policy issues for sector regulation depend on the form of private participation to be promoted.**
  - Investment selection is an issue with dedicated generation, independent generation, and divestiture.
  - Power purchase/sale terms are an issue with dedicated generation, independent generation, divestiture, and possibly contracting out.
  - Ownership is an issue with dedicated generation and divestiture.
  - Sector structure is an issue with dedicated generation, divestiture, and possibly independent generation.
  - Bidding procedures are an issue with contracting out, dedicated generation, and possibly independent generation.

- **Cooperation may take some time to develop, because of the opposition of groups that would lose under sector reforms, and because of reluctance by private investors to run the risks of discrimination by governments, regulators, and state-owned utilities.**

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**IEN's Comments on Discussion Theme 5 (cont.):**

- Government's implementation strategy should therefore include the following elements:
  - Ways to compensate or reassure losers in reforms to the power sector.
  - A build-up in trust between private entrepreneurs and the other parties by seeking modest levels of private participation initially.
  - Mobilization of public support for the reform process by involving the main interest groups in the planning stage.
  - Initial steps to establish government's commitment to reform to overcome political risks, allowing the sector structure and regulations to evolve controllably in subsequent stages.
  - Employing foreign and local expertise to help manage the reform program.

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**Sources of Investment and Types of Investment Activity**

As the roundtable discussions had reiterated a number of times, a central need of developing country power sectors is an increase in sector investment in order to meet long-term development goals. The limited amount of capital available from public and multilateral sources dictates a renewed focus on the mobilization of private savings, both domestic and international. There was no disagreement among roundtable participants about this basic proposition. Indeed, it was recalled that historically, power sectors have developed everywhere with the help of considerable private input. Participants from developing countries emphasized this historical record and stressed that there is at present no reluctance in principle to involve private entrepreneurs in the process of sector development.

This said, it remains to be clarified what specific private interventions are desired and can prove mutually beneficial to the investor and to the sector. In particular, it was noted that investment alone is insufficient in the absence of the renewed capacity to define the terms of sector development, and that private sector entities, foreign in particular, might in certain cases be called upon to assist in this capacity-building exercise.

**Private Capital: Domestic or Foreign?**

In response to the diverse needs of developing country power sectors, a variety of private partners are available, both domestically and internationally. The roundtable discussion stressed the role of foreign investors, however, to what some perceived as the detriment of the domestic private sector. It was noted that foreign utilities present several advantages, generally speaking, as investment partners in developing countries:

- First, foreign investors are often best able to intervene in a sector which is heavily capital- and skills-intensive. In many countries, the narrowness of the private sector prevents domestic entrepreneurs from taking the lead in power sector projects.
- Second, large foreign investment can create positive linkages between projects that in turn, contribute to a more rapid development of the sector. A recent example is in
EdF's Comments on Proposition and Discussion Theme 5:

As this Roundtable has made clear, the complexity of developing country power sectors must be managed keeping in mind that there is no single, simple solution. Instead of seeking to define a goal common to all countries, we should work toward the desirable evolutions that can be reached through the skillful use of a wide range of policy innovations. Rather than listing all of the possible tools for change, we would like to focus on the favorable results that can stem from investment by capable foreign utilities.

Foreign utilities can invest in developing country power sectors in a variety of ways that reflect different priorities and degrees of commitment on the part of the host country and the foreign partner (see box, p. 65). The prerequisite for foreign involvement is rules of the game that are sufficiently stable to enable the partner to work efficiently on an industrial basis. Meanwhile, specific regulatory reform will be developed with country particularities in mind, and in time, an appropriate solution will emerge. In this process, it makes sense to work not only with foreign utilities, but with experts from ministries and regulatory bodies as well.

In some cases, the preferred option should be global intervention by a foreign utility that can bring results at every level of electricity supply, from greater efficiency in generation to improved customer management. In certain developing countries, the management difficulties of the power sector are numerous and interdependent. Such problems as a high ratio of unpaid bills, poor condition of distribution networks, sub-standard availability of power plants, and energy inefficiency, may all occur at the same time. When this is the case, the foreign operator cannot guarantee efficient results if it works on only one link of the chain. Electricité de France’s experience in this field shows that the foreign operator is generally pushed to intervene throughout the chain, so as to improve operations in a coordinated fashion. This type of work is more readily accomplished in a vertically integrated utility.

Different methods of intervention can be tailored to suit economic imperatives and host country preferences. They draw on the experience of capable operators to impart the flexibility that developing countries need to develop their power sectors, all at a time when internationalization of the electric power industry is taking shape.

In addition to the evolution of political institutions and regulation, it is this type of foreign partnership that can most appropriately help developing countries to upgrade their power sectors—instead of experimenting with unfettered competition, of which no convincing example exists today even in the industrialized countries.

Beyond the terms privatization, competition, commercialization, and so forth, the challenge is to devise innovative solutions that are effective for developing countries on a case by case basis.

Côte d’Ivoire, where a French-led consortium involving Electricité de France and the civil engineering firm Bouygues operates the national electric system under a long-term contract from the Ivoirian government. This involvement has recently helped to catalyze the Foxtrot offshore natural gas project, in which the same French investors are joined by a range of foreign and domestic partners, including the Ivoirian government. Eighty percent of the natural gas produced will serve in electric power generation, with the aim of substituting for imports and reducing the electric power cost and thus, eventually, the tariff.

Although the discussions of the roundtable focused on the types, conditions, and environment for foreign investment, participants cautioned that increasing reliance on the
domestic private sector is important for the long-term development of a power system because it cannot subsist on foreign investment alone. Several notes of caution emerged from the discussion.

• First, it was noted that foreign investors are not necessarily aligned with national government development goals; rather, they are primarily concerned with effecting investments that meet attractive criteria as to risk, return, and time-frame. Indeed, representatives from Europe freely admitted that industrialized country utilities are turning towards investment opportunities in developing countries because they are searching for growing markets. Although this does not imply that foreign partners will necessarily be insensitive to national development goals, it does suggest that foreign investment projects may be constructed in ways that generate more or fewer linkages with the domestic economy. One example of positive linkages was in the area of training. A case was cited in which a foreign investor, serving as the lead in a BOOT scheme, found that the best way to fulfill the “Operate” segment of the project was to invest in training local managers and engineers to occupy senior positions. The cost of training remained considerably less than it would have cost to recruit and maintain expatriates in these positions. In this case, business logic and the domestic priority of capacity building were jointly fulfilled.

• In a second caution, echoed several times during the discussion, participants were urged to remember that the legacy of foreign technical assistance in the sector has been largely unsatisfactory. Thus old-style technical assistance can no longer substitute for either domestic private involvement or new forms of foreign involvement.

• Finally, it was pointed out that projects in the generation area, in certain countries and under certain technological options, are expected to include up to 60% local costs. In this respect and more generally, there is a need to reinforce domestic technical capabilities and local complementarities in future power sector development initiatives.

Types of Intervention

In response to these challenges and opportunities, foreign investors—which need not be exclusively utilities—have evolved a range of new interventions that they propose as generic “products” to developing country power sectors. In increasing order of commitment, these “products” include technical/consultancy services, twinning arrangements, performance management contracts, operations concession arrangements, and outright purchase. Each of these arrangements brings with it a series of advantages and disadvantages that might gain salience, depending on the needs of the sector and the perspectives of the host country government.

Participants representing both vertically integrated (France) and de-integrated (Britain) foreign utilities were quick to point out that each type of utility can serve as a viable partner in developing country settings. Representatives of integrated utilities stressed that management problems in public utilities are often linked across the service functions of generation, transmission and distribution; and that foreign partners operating as integrated utilities would be best qualified to assist in resolving these problems. Representatives from de-integrated networks suggested in response that many
Options for Independent Participation in Power Sector Management

New approaches can help electric utilities in developing countries improve their operations. One set of options calls for outside utilities to serve as management consultants, become plant operators under contract or take over all of the assets of an electric utility through privatization.

**Option 1: Management Consulting Assistance**

The partner conducts a management audit and develops recommendations on how to improve the operations of the local electric utility. In this case, the partner is generally not involved in or held responsible for the implementation of these recommendations.

**Option 2: Twinning Arrangement**

The partner provides on-site, day-to-day support to the local electric utility through the multi-year detailing of in-country experts. One objective is to ensure the best possible transfer of know-how from one twin utility to another. The partner provides real-time advice on a daily basis; none of its personnel, however, fills any executive position or is involved in the utility’s decisions regarding new power plant selection or changes in plant operating procedures.

**Option 3: Performance Management Contract**

The local utility delegates part or all of its operations to an outside party hired under a long-term contract. The contractor installs its own staff in key management positions, makes decisions, and ensures the quality of customer service. The electric utility still owns the power facilities, controls investment decisions, and remains accountable for financial results. The performance management contract stipulates the improvement objectives to be achieved. The compensation of the outside management contractor is tied to the performance obtained.

**Option 4: Operations Contracting**

Local authorities concede to an outside party the use of the assets of the existing electric utility. The concessionaire is responsible for providing electricity customer service and operating and maintaining the utility’s plants under the terms of a contract signed with the local authority that oversees the utility. The contract stipulates minimum levels of service and sets standards for the quality of power produced and delivered. Again, compensation is tied to results. However, the concessionaire compensates the local authority for the use of its utility assets.

**Option 5: Full Privatization**

The local government transfers both electric utility assets and operating rights to a private outside party or a new semi-public organization which takes over plant operations and becomes responsible for financing all future investments.

management problems, in fact, are *discrete* and can best be solved in tandem with specialists of particular system functions.

Taken together, these portions of the discussion suggest that private investment, particularly from foreign sources, could be mobilized for developing country power sectors in a range of combinations under a variety of institutional arrangements. The terms of specific interventions could then be framed so as to build linkages to the domestic economy, particularly in the sphere of capacity-building, and should reflect the historical lessons of technical partnerships that were wasteful or unsuccessful.
Beyond these general concerns, however, actual investment will depend on a number of concrete conditions pertaining to the economic and regulatory environment and to the structure of risks and returns.

**Conditions for Mutually Beneficial Investment**

Roundtable discussions focused on identifying the conditions under which a national power system will be able to attract effective and competitive foreign private investment. It was recognized that the structure of risks and returns to investment depends not only on the specific terms attached to each proposal, but also, from the standpoint of the investor, on a number of features of the investment environment: the macroeconomic setting, the structure of rules and roles, and the governing legal framework.

**The Enabling Environment**

Participants disagreed to some extent over the importance of a stable macroeconomic environment in attracting investment. On the one hand it was observed that developing country macroeconomic crises extend far beyond the power sector; indeed, they form the overall justification for the range of current reform and development efforts, so that they should be seen in large part as generic to the sector scenarios that current reform efforts envision. In response to this position, however, it was argued from several perspectives that the current world investment climate offers capital a wide range of opportunities: in this atmosphere of international investment capital mobility, developing countries that exhibit particularly chronic conditions of macroeconomic instability cannot reasonably expect to attract foreign investment.

Taken alone, however, the macroeconomic environment cannot be a sure predictor of the possibility or viability of investment; rather, participants identified particular problems which confront the investor, and particular responses to these problems. From the investor standpoint, the two greatest dangers are uncertainty and complexity; it emerged from the discussion that the settings that best attract investment will be those, other things being equal, that best resolve these problems through the development of a set of appropriate, clear, transparent and enforced rules governing general and specific sector investment activities.

There was general agreement that, in the words of one participant, investment rules should be “crisp:” they require clear definitions, credibility, predictability and enforceability. An investment program also requires clearly delineated decision-making roles. Where participants disagreed, however, was on the degree to which the rules should be formally codified by law, contract or otherwise; and on the role that different regulatory frameworks, with their respective enforcing agencies, might play in granting the rules added credibility.

The discussion did not give rise to a consensus as to the role that a specific designated regulatory body might play in shaping the enabling environment; much less that of an autonomous agency as envisioned in the discussions of Session Four. Rather, participants limited themselves to suggesting that where such a regulatory framework existed and was effective, it could only assist in defining the enabling environment, and
thus it would be desirable, with all other things remaining equal. Nevertheless, a number of assorted caveats and exceptional cases emerged that, taken together, suggest that for most participants, the explicit regulatory framework remained a low-priority element of the enabling environment for investment.

- First, the rules that best answer the main concerns of foreign investors may not require a complex regulatory framework in the host country. If, as one view put it, the principal requirements of investors are clarity of rules and predictability of results, or if, as another view put it, investors seek first and foremost government commitment and assured payback, the satisfaction of these requirements may stem from the characteristics of the government-business relationship and from the establishment of clear contracts, rather than more complex regulation.

- Indeed, local market characteristics may obviate the need for very much regulation at all. A frequently mentioned example was recent and current sector expansion in China, where the rapid pace of market growth has attracted a wealth of foreign investment in the absence of clearly determined rules of the game, largely because investors consider that they will be protected by the country’s need for their investment.

- Examples such as China were recognized, however, as being more exceptional than typical. Where market expansion is not phenomenal, evidence persists that a clear regulatory framework is likely to assist in attracting the investment capital for which developing country power sectors compete.

- Finally, a caution was issued that in some markets, a heavy regulatory framework, while apparently beneficial in that it makes clear the rules of the games and the system for enforcing them, may actually be so cumbersome as to deter new investment. Working within such a system may generate such high transaction costs that an investor might prefer incurring the risks associated with partial or incomplete rules.

In short, the discussions of the enabling environment failed to provide a set of non-specific guidelines or criteria that might predict the possibility or the viability of investment. Generally speaking, and all other things being equal, a stable macroeconomic environment is beneficial to attracting scarce and highly mobile investment capital. While clear rules are required no matter what, the formal structure that sets and governs these rules may vary greatly. The clearest notional distinction in this respect lies between rapidly growing markets and other settings. In rapidly growing markets, the need for complex rules may be blunted by the inherent attractions of the market, and indeed certain rules structures may discourage investment; elsewhere, all other things equal, a clear regulatory framework will likely contribute to enabling foreign, or for that matter domestic, private investment. What most characterizes the regulatory framework, however, is that it must give rise to rules that are clear; rather than engendering “orthodox” rules with specific pre-determined content.
Risks and Returns

Even if it is difficult to propose general statements on the enabling environment for mutually beneficial investment, it is possible to make some general claims as to the factors that will condition the terms of specific investment decisions in specific environments, concerning most particularly the risks that investors will bear and the corresponding returns that they will seek.

Participants noted that the distribution of risk in a power sector investment requires a careful balance. On the one hand it was pointed out that the private investor cannot be expected to bear excessive risk, and that the risk should be carefully apportioned so as to limit the investor to those components that it can reasonably shoulder, such as performance criteria, construction deadlines, etc. On the other hand, it was noted that investors are rent-seekers as well, and thus are likely to encourage the construction of a risk structure in which the public partner bears the greatest risks, but the private investor reaps the greatest returns. It was suggested that avoiding such arrangements while at the same time affording the private investor reasonable and appropriate protection represented a challenge for future investment agreements in developing country power sectors.

Associated with this bargaining process is a debate as to what constitute acceptable rates of return in these investment situations. Participants brought up that certain developing countries, particularly in Africa, face such a paucity of available investment capital that they have been forced to concede extremely high rates of return on equity (25% is not unusual) in order to attract willing foreign partners. A debate occurred as to whether this was an acceptable situation. To temper the point, it was observed that because power projects frequently involve “soft” credits as well as investment, a high rate of return to a single investor does not reflect a similarly high rate of return to all external funding of the project. Nevertheless, it was generally brought up that investment capital will tend to require higher rates of return where political or economic factors have led to a paucity of investor interest. In addition, investors may under such conditions seek more permissive terms concerning profit repatriation than they would otherwise be prepared to accept.

Prospects for Cooperation

Given that investment decisions take place in ways that are highly case-specific and thus difficult to generalize from, is it possible to make judgments, as the discussion theme invited participants to do, concerning the possibility and likelihood of cooperation between public and private, foreign and domestic participants in the power sector? In fact, the tone of the discussion in response to this question was generally optimistic. Participants suggested that the opportunities for cooperation exist, and that the willingness of partners to cooperate has often been underestimated. They offered several guidelines or points of view to assist in promoting such cooperation in effective and innovative ways.

- Both the need and the willingness exist for effective cooperative arrangements in developing country power sector projects. Participants from developing countries
stressed that governments and public utilities were more likely to cooperate than has perhaps been assumed, in part because the needs of the sector are glaring, and in part because the current economic thinking has impressed upon decision-makers in developing countries the importance of private sector involvement in reform and development.

• It was also suggested that there are multiple opportunities for mutually beneficial investment in many parts of the world, and that the behavior of outward-looking utilities from industrialized countries demonstrates that they have observed these opportunities and are already moving to seize them.

• In an atmosphere where participants are willing to cooperate, the terms of investment arrangements will depend mainly on case- and setting-specific negotiations. In the context of projects that occur under the umbrella of multilateral funding schemes, however, participants made several suggestions for enhancing the prospects for cooperation and smoothing the decision-making process:
  - First, the partners should designate a clear “orchestra conductor” that will centralize the decisions, rank the priority of allocations, and coordinate the procedures of partnership.
  - Second, partners should remain aware of the necessity to keep the process moving. As one participant explained, investors are often prepared to make substantive concessions rather than run the risk of increased transaction costs from overly slow decision-making and implementation processes.
  - Finally, where multilateral funding is crucial, a participant stressed that the funding agencies should recall that flexible arrangements often perform well even when they stray somewhat from the agency’s decision-making guidelines. When in doubt as to whether to endorse a new or flexible arrangement, these agencies might be well advised to “err on the side of permissiveness.”

Conclusions

In sum, Session Five addressed the proposition and discussion theme by bringing out the following central points:

• There is general agreement on the terms of Proposition Five, namely that private investment is desirable and important to developing country power sectors. The needs for investment are great, and from the investor standpoint afford a wide range of opportunities.

• There exist a wide range of innovative options for foreign or private investment, suitable when the investor is a foreign utility (integrated or function-specific) or a foreign or domestic industrialist from outside the power sector.

• All other things being equal, a stable macroeconomic environment enhances the likelihood of competitive investment and lowers the rate of return that investors will seek.

• The central component of the enabling environment for investment is the existence of a clear set of rules for participants, with clearly delineated roles. However, there is no generally optimal regulatory framework in which to enshrine these rules and roles, the
exact content of which may fluctuate with the characteristics of the local market and political economy.

- A central component in the construction of particular private or foreign interventions is an appropriate distribution of risk in which the private partner is protected from shouldering risks that are beyond its reasonable control, but prevented from discharging all risks onto the public partner.

- The prospects for cooperation between public and private, domestic and foreign partners are generally quite good; they can be further enhanced by the development of clear procedures in collective decision-making and clear evaluation criteria.
Guidelines for Workable Reform

Discussion theme: From the discussion of the propositions, is it possible to propose a set of guidelines or parameters for reform in the power sectors of developing countries?

Scope of Discussion

Discussion in this final session reviewed major points that had been raised over the past two days as participants sought to find areas of consensus and disagreement. Speakers summarized their and others’ points of view and offered suggestions, guidelines, and cautions to consider when designing a reform program. There was also general agreement among participants that the Roundtable was beneficial and successful in both format and content.
IEN's Comments on Discussion Theme 6:

- Reform strategies for power sectors should generally be:
  - Focused on policy objectives.
  - Comprehensive in scope.
  - Planned to fit country's specific situation.
  - Feasible in technical, financial, and political terms.
  - Backed by full government commitment.
- To suit the specific conditions—political, institutional, and economic—of the power sector in a particular country, a reform strategy should be designed pragmatically within these guidelines.
- Because a wide range of conditions exists among developing countries, the appropriate scope and strategy for implementing reforms to their power sectors covers a wide spectrum.
  - At one extreme, the reform strategy suited to the least developed countries focuses on commercialization of the dominant power supplier, with a few other changes that might include franchising the management of the supplier to an independent (foreign) contractor.
  - At the other extreme, the reform strategy suited to the most advanced developing countries exploits fully the scope for competition and private sector participation, establishes an independent regulatory system, and possibly undertakes a major restructuring of the power supply industry.
- It is useful to consider the range of reform strategies in terms of a taxonomy of country types (see country taxonomy, p. 73).

Design and Sequence of Reforms

Defining Reform Objectives

There was some disagreement right from the start about the principal objectives of reform in the power sector; participants cited efficiency (specifically making smaller utilities more efficient), investment, and development as the major policy priorities. One participant reminded the Roundtable that electricity supply is a development factor in less developed countries, and not just a commodity. There was no resolution about which objective is most important; it is perhaps sufficient to say that each of them is valid as a main objective.

Participants also returned to the question of whether introducing competition to the sector should be an objective for reform. It was reiterated that size does matter; some felt that competition would not be suitable and therefore should not be advocated for smaller countries. Others felt that it should be given a chance, even though it has not yet been extensively tested, and asked: if competition is good and increases efficiency in most other sectors, why should power be an exception? One speaker felt that the burden of proof should be on those who say that competition will not lead to efficiency gains, and that introducing competition is indeed an appropriate goal. Those in the middle
<table>
<thead>
<tr>
<th>Country and Sector Economic and Institutional Characteristics</th>
<th>Country Situation 1</th>
<th>Country Situation 2</th>
<th>Country Situation 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very weak with small and inefficient power sector that is operated as a government department.</td>
<td>Technically competent state-owned power utility, that operates under board of directors; limited private sector.</td>
<td>Well developed power sector; active private sector; nascent capital market; significant institutional capability.</td>
<td></td>
</tr>
<tr>
<td>Main Reform Objectives</td>
<td>Restore reliable electricity service; reduce supply costs.</td>
<td>Improve supply efficiency; also address end-use efficiency, mobilize alternative sources of finance, and control environmental impacts.</td>
<td>Improve supply efficiency and end-use efficiency; mobilize alternative sources of finance; control environmental impacts.</td>
</tr>
<tr>
<td>Reform Strategy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry Structural Reform</td>
<td>Keep vertically integrated monopoly.</td>
<td>Keep present structure but allow private supply of bulk power to utilities and large users.</td>
<td>Exploit fully the scope for competition by separating generation, transmission, and distribution functions.</td>
</tr>
<tr>
<td>Private Sector Participation</td>
<td>Virtually none; possibly franchise management to a private (foreign) utility.</td>
<td>Cogeneration, BOOT schemes, franchised distribution, purchase or lease of utility facilities, contracting of non-core utility services.</td>
<td>Full range of options, up to full or predominant private ownership.</td>
</tr>
<tr>
<td>Regulatory Approach</td>
<td>No independent regulatory agency; government department manages a performance contract with utility or legal contract with a franchisee; tariffs administered under contract to recover financial costs, structured according to economic costs.</td>
<td>Commercialize utilities; set up independent regulatory agency; ROIR regulation; simple forms of non-linear pricing for large users to support demand management and financial objectives.</td>
<td>Promote market control through competition and complement by incentive regulation administered by an independent regulatory agency; adopt commercially-oriented pricing.</td>
</tr>
<tr>
<td>Power System Planning</td>
<td>Centralized by utility with government approval of plans.</td>
<td>Mainly centralized planning by dominant power supplier, approved by the regulatory agency with some discretion to private investors.</td>
<td>Decentralized in competitive segments, under overall indicative planning managed by the regulatory agency.</td>
</tr>
<tr>
<td>Development Financing</td>
<td>Entirely publicly-guaranteed financing.</td>
<td>Largely publicly-guaranteed financing with some limited-recourse private financing.</td>
<td>Substantial private risk capital to complement publicly-guaranteed financing.</td>
</tr>
<tr>
<td>Policy Reform Priorities</td>
<td>Commercialize utility; develop sound commercial legislation.</td>
<td>Enact sector legislation to lay down main sector policies (corporatize utilities, establish independent regulatory agencies, establish rights of private participants, specify tariff policy, and form rules that govern the operational and financial relationships between utilities and private power suppliers.</td>
<td>In addition to the reforms described under the other two country situations, create sector legislation and planning for major structural and regulatory reforms; prepare implementation strategy for reform program; reform legislation and regulations for the financial and commercial sectors; reform complementary markets (e.g., fuels, electricity equipment and appliances).</td>
</tr>
</tbody>
</table>

Source: Besant-Jones, *Reforming the Policies for Electric Power in Developing Countries.*
EdF's Comments on the Discussion Theme 6:

- There is a clear consensus on the need for implementing transparent regulation, commercialization of utilities, and involvement of private investors (whether they be private or public).
- A more balanced view emerged during the discussion about the delicacy of the concept of the independent regulatory agency, and about the scope of incentive regulation. The analysis made by Brian Levy seems to structure the discussion in a very constructive way.
- There are disagreements on competition and de-integration. In our view, the responsibility of the World Bank is very important, in view of the importance of the problems at stake. The Bank should not be satisfied with the philosophy of the issue paper and that of the policy paper, which propose a menu of solutions, because in the menu, there are some insufficiently tested forms of competition and of structure of the electricity supply industry, insufficiently tested in the developed countries, much less the developing countries. So there is really a need to at least make some more balanced comments on the fact that those forms of competition and those proposals for de-integration are insufficiently tested.
- We should not divert out attention from the needs to maintain long-term coordination in investments. This effort should have a priority over the efforts to implement incentive regulation, which should be limited to operations and maintenance.
- One of the key ideas to emerge during the discussion is the importance of openness in sector policy making. It is an open process that will bring about in each country a pragmatic and realistic understanding of general concepts such as privatization, regulation, and competition. Thus, we saw the idea emerge during the discussion of regulation that we should open the regulatory process so that different, and possibly conflicting, interests can be voiced.
- Competition at generation level could be a way to attract foreign capital and operators, without restructuring the sector, which is a painful and dangerous process.

Electricité de France

suggested that commercialization should be a first priority; competition should be at most a second-order objective.

Taking Local Conditions into Account

Nearly all speakers agreed that reform should take account of countries' specific situations, including the size of the country and its power system and market, its location, and its political economy. There was some discussion as to whether this would involve considering each country individually, or whether a country taxonomy (such as the one presented by IEN) would suffice. One participant suggested that a taxonomy could be employed to help design a reform program, but it should be region-specific (i.e., show the different country situations within a region) and arranged from a macroeconomic point of view. For example, World Bank staff in the East Asia region have divided those countries into three groups: the Tigers, the transforming socialist economies, and the island economies. The speaker argued that these macroeconomic taxonomies that are already in use in many of the regions could be much more useful in developing a set of reforms strategies than a simple 'country one, country two' setup.

In addition, the question arose whether a reform program that encompasses the entire power sector is really necessary. One participant suggested that this might be the
case in some of the smaller countries, but perhaps in larger countries significant progress could be achieved by focusing on one component of the sector (e.g., a single large and important power company). The reform program could be expanded if necessary and prudent; however, commercialization and organizational reform of that important power company could have positive effects on the whole system that might preclude the need for further reforms.

**Regulation**

Participants agreed that regulatory reform is necessary in developing countries and should be part of an overall reform process, but they also seemed to embrace a cautious approach to this type of reform. Most agreed that the process should be opened up to previously excluded interest groups, as well as made more transparent. Some felt that power sectors are already over-regulated, and that this regulation is too highly concentrated at the national level. One argued for decentralization of the regulatory process, which would contribute autonomy and transparency to the process; he felt that decisions would come about quite easily at the local level.

Several speakers cautioned that developing countries may not need new regulatory frameworks; in fact, investors, utilities, and customers may see them as just another roadblock. In the Philippines, for example, an Energy Regulatory Board was created to make regulation of the power sector more efficient and transparent. However, utilities have used the right to judicial review of ERB verdicts extensively, and the regulatory process is now in complete gridlock. Instead of streamlining regulation, the new system has made things worse.

**Implementation Issues**

**Sequencing and Timing of Reforms**

Some participants felt that a comprehensive reform program could run into practical difficulties, and that there is a need to break it down into smaller, more manageable “problem areas.” This, one speaker averred, would involve more work on sequence and timing of reforms; reform should be thought of as a process, not an event. It is not something that can be done in the course of a single project, no matter how extensive; reforms must be phased in over a period of time. This being said, others felt that there should be better coordination between donors and governments to take advantage of the political window of opportunity in some countries. Some speakers from developing countries felt that a step-by-step process may be reasonable, but it cannot take too long or country commitment will disappear.

Participants also expressed concern about cooperation among lenders, utilities, governments and consumers, suggesting that it was time to stop “passing the buck.” There must be room for compromise and sharing of costs, or the process will not move forward.

If there was concern about the reform agenda being too broad, there was also concern that the scope was not broad enough. One participant felt that reforms should be extended throughout the energy sector, and not be solely concentrated on power, since there are many spillover effects between subsectors.
Other Practical Considerations

One participant was troubled by the omission of two practical issues that he considered very important. The first was environment concerns. One of the biggest problems in the Philippines, for example, is the government's inability to handle objections by community groups and NGOs to siting of power plants. He asserted that we have to look at how to handle the environmental protests in selection of sites, selection of kinds of fuels, etc. from both the public and NGOs.

The second issue was unemployment. In the Asian countries, there is a large educated unemployed population, yet multilateral agencies often recommend that private investors lay off much of the labor force. Such a recommendation elicits tremendous political resistance. Instead, we must think through the implications of unemployment, because it has a chain effect on the rest of the economy.

Financing and Other Assistance

One speaker expressed the sentiment that creating an enabling environment for investment through regulation is not a first-order priority. It involves enacting legislation, strengthening institutional capacity, and creating regulatory processes and organizations, and it is therefore too complicated for developing countries to deal with at this time. Others seemed to agree, if only partially; some felt that increasing investment is extremely important, but complex regulatory reform is not necessary for this to occur. The real necessity is to get a credible commitment from the government which is sanctified by law in some form, and to have designed contracts that are enforceable and that take into account the risk averseness of the private investor. Still others averred that all that is needed for private capital to flow is government commitment to faster decision making.

There was some skepticism about the ability of the domestic capital markets to provide large amounts of financing for public works projects (including power projects) in the near term. There is enormous diversity in the social and economic conditions of these countries, participants maintained, and it seemed to some that many countries would not be able to apply the concepts that were discussed during the Roundtable in the near future.

One participant suggested that the role of multilateral development institutions, other than to facilitate reform for the creation of an enabling environment, should be to help developing country governments and utilities negotiate contracts with private investors; given that there is a problem of expertise in the developing countries in dealing with negotiations for capacity, BOOT schemes, and concession for power purchase agreements, there is currently too much room for opportunistic behavior by investors.

The discussion closed with remarks by several participants on the success of the Roundtable and the applicability of the discussions to their work. Many thanked the World Bank and Electricité de France for organizing the event, and voiced their hope that other such forums could be arranged around the world.
Appendix A: Agenda for the Roundtable

Roundtable Co-Sponsored by
THE WORLD BANK AND ELECTRICITÉ DE FRANCE INTERNATIONAL
on
POWER SUPPLY IN DEVELOPING COUNTRIES: WILL REFORM WORK?

AGENDA

Tuesday, April 27

9:00 Registration
9:30 Introduction Statement – Electricité de France/Marc Boillot
9:45 Rules of the Game for the Discussions – Roundtable Facilitator/Rhonda West
10:00 Refreshments
10:15 PROPOSITION #1: Governments of developing countries should rethink their roles to improve the performance of their power sectors.

Discussion theme: Will governments of developing countries be able to achieve their objective for power sectors by using their policy-making and regulatory powers, without relying on their powers of ownership?

Brief Presentation by the World Bank
Brief Presentation by Electricité de France
Discussion

12:00 Lunch and Presentation by Jean-François Rischard, Vice President, Finance and Private Sector Development, The World Bank

1:30 PROPOSITION #2: State-owned power utilities should be commercialized and made accountable to the standards of capital markets.

Discussion theme: How can social and economic concerns about the supply and use of electricity be made compatible with commercial pressures?

Brief Presentation by the World Bank
Brief Presentation by Electricité de France
Discussion

3:15 Refreshments

3:30 PROPOSITION #3: Competition should be introduced into the power sector in order to improve sector performance.

Discussion theme: Does market size influence the scope for competition in bulk power supply, and hence, the justification for breaking up vertically-integrated power suppliers?

Brief Presentation by the World Bank
Brief Presentation by Electricité de France
Discussion

5:15 End of the first day’s sessions
Wednesday, April 28

9:00 PROPOSITION #4: Regulation of the power market in developing countries should be incentive-based and applied transparently by an independent agency.

**Discussion theme:** Are sensitive issues such as pricing realistically amenable to incentive-based regulation by an independent regulatory agency in developing countries?

- Brief Presentation by the World Bank
- Brief Presentation by Electricité de France
- Discussion

10:45 Refreshments

11:00 PROPOSITION #5: Developing countries should use private sector investment, technology, and expertise to develop and reform their power sectors.

**Discussion theme:** Will governments, state-owned power companies, and private entrepreneurs—both domestic and foreign—be willing to cooperate in achieving the long-term national objectives for the power sector?

- Brief Presentation by the World Bank
- Brief Presentation by Electricité de France
- Discussion

2:15 WRAP-UP SESSION: Toward a general framework.

**Discussion theme:** From the discussion of the propositions, is it possible to propose a set of guidelines or parameters for reform in the power sectors of developing countries?

- Brief Presentation by the World Bank
- Brief Presentation by Electricité de France
- Discussion

3:45 Refreshments

4:00 Closing Remarks - Roundtable Facilitator/Rhonda West

4:15 Closing Remarks - Electricité de France/Marc Boillot

4:30 Closing Remarks - The World Bank/Trevor Byer

5:00 Cocktail Reception given by Electricité de France
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