

Report No. 26

THE RESTRUCTURING OF THE POWER SECTOR

Centre for Policy Dialogue

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The Centre for Policy Dialogue (CPD), established in 1993, is an innovative initiative to promote an ongoing process of dialogue between the principal partners in the decision making and implementing process. The dialogues are designed to address important policy issues and to seek constructive solutions to these problems. The Centre has already organised a series of such major dialogues at local, regional and national levels. These dialogues have brought together ministers, opposition front benchers, MPs, business leaders, NGOs, donors, professionals and other functional groups in civil society within a non-confrontational environment to promote focused discussions. The expectation of the CPD is to create a national policy consciousness where members of civil society will be made aware of critical policy issues affecting their lives and will come together in support of particular policy agendas which they feel are conducive to the well being of the country. The CPD has also organised a number of South Asian bilateral and regional dialogues as well as some international dialogues.

*In support of the dialogue process the Centre is engaged in research programmes which are both serviced by and are intended to serve as inputs for particular dialogues organised by the Centre throughout the year. Some of the major research programmes of CPD include **The Independent Review of Bangladesh's Development (IRBD), Governance and Development, Population and Sustainable Development, Trade Policy Analysis and Multilateral Trading System and Leadership Programme for the Youth**. The CPD also carries out periodic public perception surveys on policy issues and developmental concerns.*

*As part of CPD's publication activities, a CPD Dialogue Report series is brought out in order to widely disseminate the summary of the discussions organised by the Centre. The present report contains the highlights of the dialogue held at the Centre on January 31, 2000 on the theme of **The Restructuring of the Power Sector**.*

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Dialogue on **The Restructuring of the Power Sector**

i) The Dialogue

In preparation of the *Independent Review of Bangladesh's Development* (IRBD) 2000, the Centre for Policy Dialogue (CPD) organised a series of preparatory dialogues to elicit inputs from professionals, experts and stakeholders on various issues to be covered by the IRBD. As part of this programme a dialogue on *The Restructuring of the Power Sector* was held on January 31, 2000 where a background paper entitled, "*Power Sector Restructuring: Bangladesh Scenario*" was presented by Nuruddin Mahmud Kamal, former Chairman of Bangladesh Power Development Board (BPDB). The dialogue was attended by a number of distinguished policymakers, experts and economists (list of participants is annexed). Professor Rehman Sobhan, Chairman of CPD moderated the dialogue.

The present report provides a resume of keynote presentation and a summary of the discussion that followed the presentation.

ii) Resume of the Keynote Presentation

The Past Ten Years: Suspension of Concessional Loans for the Power Sector

The keynote presentation on the *Restructuring of the Power Sector* by Mr. Nuruddin M. Kamal aimed at facilitating discussion on important issues regarding the power sector. Mr. Kamal started his discussion referring to the suspension of concessional loans from donors during the last ten years to finance investment in the power sector. He explained that this has been primarily due to sustained inefficiency and system loss in the sector. The level of inefficiency aggravated to such levels, that by 1988/89 system loss was as high as 42 percent of the total power production. There was a popular perception to the effect that power was a utility which was provided free of charge. In order to bring about a change in this state of affairs major donors insisted on structural adjustments and reforms for commercialising the sector.

Past and Present: Putting the Cards on the Table

Since the late 1940s small power generating units operated by private companies, which were few in numbers, were the main producers of power. There were no major power generating units, no transmission lines and the total generating capacity was 21 MW. By

contrast, Bangladesh now has an installed capacity of 3633 MW with BPDB providing 3301 MW, independent power producers (IPPs) providing 302 MW and rural power companies producing 60 MW. There is also some captive capacity with certain industries which amount to between 360 and 400 MW. On the whole, the country presently has an installed capacity of approximately 4000 MW of electricity generation. However, the effective capacity is much lower than this figure.

The highest level of effective electricity generation in Bangladesh is about 2650 MW. This is primarily because the generating units and the technology used are of old vintage. There are cases of operative generating units which would be considered 'junk' in the developed countries. However, Bangladesh is left with no other option but to run such inefficient units.

Initiatives Since the Mid-1990s

From the early 1990s the power situation in Bangladesh started to deteriorate as supply began to fail to keep up with increasing demand. By the middle of the 1990s system loss shot up and frequency of load shedding increased considerably. The *National Energy Policy* (NEP), announced in 1995, provides the general guidelines for the power sector. However, the NEP failed to give any detailed and precise direction in matters relating to private sector investment in power production. The *Private Power Policy* was initiated in October 1996 to make up for NEP's inadequacy. Immediately afterwards, the Bangladesh Power Development Board (BPDB) and the Power Cell initiated transparent bidding processes for investment in the power sector from private entrepreneurs. The subsequent competition created in the sector resulted in procurement at prices which fell dramatically compared to the previous ones. Comparison with relevant projects in neighbouring countries (e.g. the Hub project in Pakistan) is indicative of such competitive prices.

The government decided to implement the projects in three stages:

- Stage-I - the Fast Track Projects with the Barge Mounted power plants (300 MW).
- Stage-II - Land Based Projects at Haripur and Meghnaghat (about 800 MW).
- Stage-III - Land Based Western Region Integrated Projects (350 MW).

The fast track project started immediately.

Decreasing Flow of Public Funds for the Power Sector

One major problem faced by the power sector in the past was that it required large investments for development. However, over the past ten years, except for the Shahzi Bazaar Project, there has been no allocation from the government for this sector.

A comparison of public sector allocation of funds for the power sector since 1973 shows that between the First Five Year Plan period and the Second Five Year Plan public sector funds allocated to the power sector decreased from about 84 per cent of the total allocation to the power, oil, gas, natural resources and other renewable energy technologies sectors to about 70 per cent. At present, 75 per cent of the public funds for power and energy sectors are allocated to this sector. This decreasing trend of public sector allocation is one of the major factors constraining the development of the power sector at present. This also demonstrates a lack of government support to the sector.

In 1995 this lack of government support and funds forced the policy makers to look for investment from the private entrepreneurs in the area of power generation. Consequently, power generation received more attention than transmission and distribution.

Trends in Electricity Generation

System load at present is only about 62 percent. This was mainly due to the IPPs and this may further increase to 73 percent. The difference between the day and night peak load is another contributing factor. Generally, there is almost a 450-500 MW of difference between these two peaks. For example, on 26 January 2000, the difference was more than 500 MW. The day peak load was 2333 MW whereas the night peak was 1717 MW.

Mr. Kamal described the present situation of electricity generation as somewhat encouraging in view of the recent improvements in the sector. Between 1995 to 1999 energy generation has been gradually increasing from 10,806 million kilo watt-hours (kWh) of energy to around 15,500 million kWh. The relative increase during this period was also good, as the growth over the previous year has consistently remained close to 9 percent since 1995.

The Fourth and the Fifth Five-Year Plans

It was envisaged during the Fourth Five Year Plan that an additional generation capacity of 1000 MW would be installed by the end of the plan period. However, despite new additions, due to lack of serious efforts in exploring alternative sources of investment, non-

completion of scheduled rehabilitation of some power stations as well as retirement of old units, a net addition of only 300 MW could be made at the end of the Fourth Five Year Plan. Thus, the Fifth Five Year Plan started with a shortage of about 700 MW of generation capacity. 1996-97 was the most difficult period for the power sector.

The projection of maximum demand in the Fifth Five Year Plan is 4050 MW. A generation capability of 5739 MW including a reserve margin of 1688 MW (i.e. 42 percent of the demand) would be required to match that demand.

The per capita energy use in Bangladesh was 110 kWh in 1999, compared to 25084 kWh in Norway and 8000 kWh in the USA. Making a distinction between the users, Mr. Kamal noted that the use of energy at the household level and in industries was almost equal. Whilst households use 41 percent of energy generated, industries use 42 percent.

The Administrative Structure for Power Supply

The administrative structure for generation, transmission and distribution was under one umbrella, i.e., under the BPDB till the late 1970s. In 1978, the Rural Electrification Board (REB) was created and it took a chunk of the distribution responsibilities from the BPDB, since it was vested with the responsibility of distributing electricity in the rural areas of the country. By 1990 the idea of unbundling the BPDB was mooted and distribution was proposed to be separated from generation and transmission. In 1991 the Dhaka Electric Supply Authority (DESA) was created. Making a comparison in the system loss before and after the creation of DESA, Nuruddin Kamal informed that creation of DESA had not contributed much towards improvement of the system loss situation.

Mr. Kamal further added that about 53 percent of the total production of electricity is served to Dhaka city (by DESA); 18 percent is distributed in the rural areas (by REB) whilst the rest is distributed directly by the BPDB.

Demand Projections and Requirements to Meet the Demand

Referring to the demand-supply situation in the power sector, Nuruddin Kamal mentioned about a study done in 1995 which made a projection about power demand up to 2015. The demand projection showed that in the year 2000, maximum demand for electricity would be about 3150 MW; in 2005 it would be 4500 MW, the demand in 2010 would be

6700 MW and in the terminal year of projection (i.e. in 2015) the demand would be 9900 MW. In terms of energy generation, this would mean that demand would rise from a level of 16,500 kWh in the year 2000 to 52,000 kWh in the year 2015.

The investment required for this purpose was estimated to be around US\$ 6.6 billion by the first half of the planned period (i.e. by 2005). Up to 1999, a little less than US\$ 1 billion of investment has been made by the private power producers. That is expected to create an additional generation capacity of 1100 to 1150 MW by 2002.

iii) Discussion

With a view to organising the discussion on the presentation made by Mr. Kamal in a structured fashion, Professor Rehman Sobhan proposed that the discussion could proceed by addressing two distinct dimensions raised in the paper.

- The first involved the demand and supply dimensions of the issue and the investment required by the power sector within that context.
- The second involved the management aspects of the sector which would include issues of system loss, measures to upgrade the quality of management and ways to improve the capacity utilisation within the system.

The subsequent discussion addressed the two dimensions consequentially.

Taking advantage of the presence of Mr. Quamrul Islam Siddiqui, the incumbent Chairman of BPDB, Professor Sobhan requested him to provide an update on the latest developments in the demand and supply situation of electricity.

Power Capacity & Maintenance

Mr. Siddiqui started by specifying that presently BPDB has a firm capacity of 3400 MW, but it has an operative capacity of only 2500-2700 MW. He also mentioned that BPDB has made a projection of the demand up to the year 2007. He observed that compared to last year the situation in the power sector has somewhat improved. However, due to maintenance problems the current operational capacity was in fact around 2300 to 2600 MW at present.

Since maintenance is a continuous event, it is important to be regular, he mentioned. Over the past several years, there was an absence of proper maintenance. This was primarily for two reasons:

- Paucity of funds, and
- Organisational and institutional problems which constrained completion of maintenance works on schedule.

Professor Sobhan enquired as to why the problems of maintenance has gone up, and was curious to know whether there had been any historical reason for the situation which has emerged today. In responding to Professor Sobhan, Mr. Siddiqui hammered on organisational and institutional problems existent in the sector. He blamed dependence on foreign consultants for the purpose of maintenance as one of the key factors leading to the current situation. If over the past few decades technology transfers in terms of handing over technical know-how to the Bangladeshi engineers were made in a proper way Bangladesh would now need only taka one crore for procurement instead of paying taka ten crore to the foreign consultants, he emphasised. The managers of the production units have no decision-making powers in this regard, and BPDB has no effective authority to take decisions in matters of operating a generation unit. Since BPDB lacks operational independence, the organisation can not function efficiently, he added. Citing examples of India, Malaysia and Thailand where power authorities have been vested with institutional independence. Mr. Siddiqui insisted that BPDB should be run on commercial principles, and for it to run successfully it had to be given operational freedom.

In line with points raised by Mr. Siddiqui, Mr. Kamal mentioned that one of the major factors which gave rise to maintenance problems was the lack of reserve margins. Since 1995, the sector has experienced a negative reserve. In absence of reserve margins it was not possible to shut down a plant, not even to undertake the maintenance activities. Until this reserve margin is increased one should not expect improvement in the maintenance front. Indeed, this lack of reserve margin justified the authorities' decision to prioritise generation of power over its transmission and distribution so that the reserve situation could improve, he remarked. He also added that rehabilitation programs often take years to complete. Citing the example of the 60 MW Khulna Power Plant which remained idle for about 7 years for the purpose of rehabilitation, he noted that such programs not only make the existing problems more complex but also add to the cost of the projects.

Joining the discussion at this point Mr. Azimuddin Ahmed, former Secretary, commented that the rehabilitation argument put forward by Nuruddin Kamal was partially correct. What really created BPDB's problems is related to the transmission and distribution

of electricity, he asserted. As regards the issue of rehabilitation, two aspects should be considered: one is regular maintenance, and the other is up-gradation of the downgraded power plants. During 1995 the level of such downgraded capacity reached a level of 760 MW. Up-gradation of these capacities required foreign involvement. Apart from downgraded production plants there are downgraded transmission system as well. In addition to these problems, BPDB is beset with the problem of a large overdue, which is to the tune of \$415 million. The World Bank and the ADB has been insisting on bringing it down to one-third. Mr. Ahmed was of the view that generation, transmission and distribution of electricity should be separated to improve the situation.

Electricity Bills and Corruption

Professor Sobhan enquired whether BPDB would have adequate cash flow had it been given the operational capacity to collect bills. In reply Mr. Siddiqui said that despite having some billing capacity BPDB has inadequate cash flow because of the system loss on the one hand and the amount receivables on the other. The system loss at present is on average 22 percent. However, the amount of receivables was very large – for example, only one organisation, DESA, owed BPDB about Tk. 25 billion at the end of 1999. He identified notorious trade unionism and political influence within the institutional structures of BPDB as the most important reason for the deteriorating situation in the sector. He elaborated on the strict policy which BPDB is at present pursuing to correct the situation.

Replying to the query of Professor Sobhan as to the identity of those who are not really paying the bills, Mr. Siddiqui stated that it is partly the government institutions (about 10 percent) and mainly the industries (the remaining 90 per cent) which are the main defaulters. Corruption of certain sections of BPDB employees play an important role in this regard, he pointed out. To improve the situation, certain steps could be taken up using modern technology which are able to safeguard all types of corruption like under-billing, under-collection and illegal connection, since it allows direct monitoring of electricity supply and consumption at the subscriber level, he added.

Professor A.K.M.A. Quader of BUET appealed for a change in the psychology of the government in terms of investing in the power sector. He suggested that large power consumers belonging to the household as well as in the industrial category in particular areas should be identified and monitored to find out whether they are paying the actual bills. Dr.

Golam Mohiuddin, Professor, BUET appreciated the recent effort in Chittagong to give on-the-spot legal connections to consumers on payment of the fees as per the BPDB rules. He observed that small consumers are at times forced to take illegal connections because getting legal connections sometimes involves much hassle and harassment. Initiatives like that in Chittagong might be taken up in other parts of the country and would lead to significant improvement, he opined.

Elaborating on the recent initiatives taken by the BPDB, Mr. Siddiqui informed that there are 300 electricity supply units (ESUs) in the country. BPDB has decided to organise a consumer service committee in each of these ESUs. This committee is comprised of local elected representatives, elites, chamber and NGO representatives and social leaders. This committee would look into matters such as getting new connections, over-billing etc. This is a participatory model which it is hoped, will give good results. He also explained the technical aspects of introducing feeder-meter computerisation which would not only improve the efficiency of distribution but also lead to strengthened accountability. Professor Mohiuddin of BUET in supporting Mr. Siddiqui's views however pointed out that system loss and illegal consumption of electricity could not be remedied without removing corruption in the administration. Mr. Russell J de Lucia of Delwar and Associates, USA stressed the significance of this culture of corruption and called for proper leadership to improve the scenario.

Donor Position

As far as mobilisation of funds is concerned, Mr. Siddiqui said that the government is determined to support the power sector. However, major donors have put in strict conditionalities for providing support to the development of the sector. Recently the World Bank and the Asian Development Bank, in an unprecedented move, decided to make a joint policy prescription for the power sector. Agreeing with the necessity of reforms in the power sector, Mr. Siddiqui emphasised on overcoming the present critical situation through immediate rehabilitation of the production units. Since no external finance is available in this regard, attempts are now being made to improve the situation with internal resources, he informed. He was hopeful that by March 2000 the operational capacity would stabilise at around 2800 MW. All efforts are being made to face the coming summer, he stated.

Mr. Siddiqui informed that generation of electricity is the prime concern of BPDB and large power projects such as the Haripur power plant and the Meghnaghat-I plant have been initiated to meet this challenge. Transmission lines are also being upgraded. However, he warned that BPDB has to be cautious about the unscrupulous moves by syndicate of donors to promote certain foreign private companies who has already become giants with large production capacity. Mentioning that the "Power Cell" has only been following the instructions set out by the donors, he cautioned that the government must remain watchful in this regard.

As regards government initiative, Mr. Siddiqui informed the dialogue participants that the government has decided to go for joint ventures with foreign private investors on the basis of a one-third to two third ownership ratio. He added that the Bheramara power plant project will add maximum possible value to the country's natural gas.

Stressing that the power business is good business, he maintained that the government must decide on setting up an institutional mechanism for financing investment in this sector. While power business is valued at Tk.2500 crore at present, he projected that it will exceed Tk.15,000 crore within ten years time. The entire country would be divided into 22 *Energy Accounting Zones* and to reduce human involvement, computerised technology will be put to use. He said that to take advantage of this growing market, the government has taken initiatives to get bilateral finances from other countries, and already Japan, Kuwait and Norway have shown their interest to fund and support such projects.

Mr. Siddiqui informed that the country's distribution system shall not be divided into large zones, as has been lobbied by certain foreign companies. Rather, BPDB plans to computerise the entire transmission and distribution system and thereby reduce system loss to about 15 percent. He explained that an attempt to improve the system loss by creating the Dhaka Electric Supply Company (DESCO) failed due to ineffective management and unscrupulous trade unionism.

Captive Power and Small Power Producers

Professor M. Nurul Islam of the Institute of Appropriate Technology, BUET brought in to discussion the issue of captive power and small power producers. He asked how would BPDB respond if such small producers would take the responsibility of small areas.

Appreciating the idea of using captive power and small producers to be integrated with the national grid, Mr. Siddiqui opined that problems might arise in terms of synchronising mechanism. If BPDB has to invest in synchronising the power received from small producers and captive sources to the national grid, then it is no longer profitable for BPDB to use the captive power. If someone comes up with a synchronised captive power, BPDB is ready to buy it, he affirmed. Professor Islam, however, clarified that the small producers can be considered as micro utilities, without any inter-link with the BPDB line. This could minimise the cost of getting electricity for the small consumers.

Power Distribution in Urban Area and Peak load Management

Professor Quader raised another important aspect related to power distribution. In the urban areas high-rise apartments purchase 49.9 kW units from the DESA. But when they buy their own standby units, they go for 300 kW units. BPDB, or for that matter DESA, should look into the matter to verify what is the actual level of electricity consumption by these groups of consumers, he opined.

About peak load management, the BPDB Chairman explained that BPDB has been taking conscious efforts in this area. The agricultural load has been shifted to the night hours for quite some time. BPDB has also been promoting energy saving lamps like compact fluorescent lights (CFL) to minimise electricity consumption. The Board also plans to offer a special tariff rate for night shift industrial activities.

On issues of autonomy the BPDB, Mr. Siddiqui vigorously supported autonomy of his organisation, and expressed the view that autonomy of the BPDB management is conceived to be the key to success as far as the power sector was concerned.

Decentralisation: A Possible Solution?

Mr. Kamal pointed out to BPDB's efforts regarding decentralisation of the distribution aspects of power supply which had been undertaken since 1996. BPDB has tried to contract out the distribution and billing activities to local bodies. There was a pilot scheme under which this idea was put to practice in four places. He thought that this program has already provided some positive results.

The incumbent Chairman however reported a mixed result in this regard. He reported particular cases where groups of corrupt employees formed cooperatives and have taken the distribution contract from BPDB. This had not resulted in any significant improvement in the revenue earning situation since those parties were only giving an eyewash by showing marginal improvements in collection. Recently BPDB has planned to decentralise its operations by setting up separate zones and by giving administrative responsibilities of transmission, distribution and billing to each of these zones.

Mr. Ahmed, however, expressed his apprehension in this regard by pointing out that the implications of such practices could be disastrous for such a system has the risk of making the consumers hostage in the hands of unscrupulous people.

Incentives for Engineers

Professor Quader drew attention of the BPDB authorities to be watchful about the remuneration package that the IPPs are offering to their engineers. BPDB might lose most of its qualified, experienced and efficient engineers if it failed to revise its incentive package. This has happened to BCIC when KAFCO was established. Taking note of his caution, the BPDB Chairman observed that the appropriate strategy for BPDB in this regard would be to adopt a corporate incentive structure.

Corporatising and Spreading Out

Mr. Kamal pointed out that for corporatising the BPDB, the organisation can be unbundled into a number of holding companies. This was possible within the existing legal structure. Mr. Russell de Lucia added that this would also enhance public-private collaboration in this sector.

Mr. Siddiqui informed the participants that the BPDB has in fact taken initiatives to float a number of companies. These companies would be able to go for immediate joint ventures with foreign enterprises such as ABB or those in India or Malaysia. It has already started solar power services and wind generator projects. Also, there are demand management efforts such as the one with CFL. He cited the example of another company which would look after transport matters in the BPDB. "These efforts would open new vistas in the near future," he expressed his hope.

Appreciating the contribution of the dialogue participants through their deliberations Professor Sobhan maintained that this in-house dialogue was rather meant to be a brainstorming session aimed at facilitating the preparation of the Independent Review of Bangladesh's Development (IRBD). The ideas and the concerns that were expressed would be taken up appropriately during subsequent in-depth analysis which would later be incorporated into the IRBD. Concluding the dialogue he affirmed that in the course of the preparation of the IRBD the expert opinion of the participants would be asked for if any such issues of concern arise.

List of Participants

(In alphabetical order)

Mr. Azimuddin Ahmed	Former Secretary, Ministry of Power and Energy
Mr. Rahmatul Bari	Member (Distribution), Bangladesh Power Development Board (BPDB)
Mr. Mir Raziuddin Harun	Director, Programme, BPDB
Mr. Ijaj Hossain	Associate Professor, Chemical Engineering Departments, BUET
Mr. Syed Makbul Hossain	Former Division Chief, Planning Commission
Mr. M. Nurul Islam	Director, Institute of Appropriate Technology, BUET
Mr. Mohammad Abdul Jalil	Director, System Planning, BPDB
Mr. Nuruddin Mahmud Kamal	Former Chairman, BPDB
Mr. Russell J de Lucia	Delwar & Associates, Cambridge, Massachusetts
Dr. Md. Golam Mohiuddin	Professor, Industrial Production and Engineering Department, BUET
Professor AKMA Quader	Head, Chemical Engineering Department, BUET
Mr. Quamrul Islam Siddiqui	Chairman, BPDB
Professor Rehman Sobhan	Chairman, Centre for Policy Dialogue