

(continued from last page)

(a) How does the rate of return required for projects in Bangladesh differ from that required in neighbouring countries; and, what can Bangladesh do to reduce the differential, if any?

(b) What measures are required to shorten the approval process and implementation lead times?

Hydrocarbon Exploration & Regulatory Structure - Bangladesh has proven reserves of hydrocarbons, particularly gas and coal. Gas exploration and development of existing gas fields have not kept pace with the increasing demand; as a result, the country faces severe shortages. One solution is to develop the other resource available in Bangladesh: coal, which has not been exploited adequately. This Session will also look at the regulatory structure that is required. Key questions that could be addressed are:

(a) What type of contracts will make Bangladesh more attractive to potential investors in hydrocarbon exploration?

(b) What will it take to make coal exploitation a reality in Bangladesh?

Financing Energy Projects - A prerequisite for a successful project is its financing. Power projects and hydrocarbon exploration programmes are capital-intensive, requiring large-scale foreign and local financing. While the global financial situation has made project financing more difficult, those providing capital will require certain conditions to be met. This Session will address some of these key concerns and requirements, in particular:

(a) Is the global financial environment of the post-2008 period more difficult for project financing?

(b) What can Bangladesh do to increase its attractiveness for project financing?

CONCLUDING PLENARY - The discussion in the Plenary and the Breakout Sessions will be presented in this Session. The recommendations emerging from this Session will form the basis for follow-up in subsequent conferences.

Given the importance of this subject, it is contemplated that this Conference be just the beginning of a process in which the ICC Bangladesh, in cooperation with the Government and the private sector, will continue to address this critical issue. This Conference provides a befitting occasion for the ICC Bangladesh to celebrate 15 years of its existence.

## LESSONS FROM THE PHILIPPINE ELECTRICITY CRISIS

### I. Introductory

In Mid-1992, I Assumed The Presidency Of A Country Literally In Darkness. A power crisis was shutting down our factories and small shops; and homes in our metro centers were enduring brownouts that lasted for as long as ten hours a day. In that inhospitable atmosphere, I launched "Philippines 2000!" a strategic plan for reform and development - whose goal was to raise the country to the threshold of newly-industrializing economy (n.i.e.) status by the turn of the 21st century.

Necessarily, the development of an adequate and dependable power supply was one of our key strategies.

"Philippines 2000!" was an ambitious - even visionary - undertaking given our country's record of lackluster economic performance over the past generation. Within six years, however, upon our "graduation" in March 1998 from the "intensive care ward" of the International Monetary Fund (I.M.F.) after 35 years and 22 loan programs, the Philippines was being called the emerging "tiger cub" in Southeast Asia.

And by mid-1998 - despite the devastation of a financial crisis that hit the whole of East Asia and much of the developing world - we had met most of the growth targets of our medium-term development plan for "Philippines 2000!"

As for the power crisis, we overcame it in 18 months. "By Christmas 1993," as Time Magazine noted, "Manila was festooned with holiday lights that blinked - and stayed on."

How did we do it? Therein lies the story.

### Background to the crisis

When a "people power" revolution finally kicked out the Marcos martial law regime in February 1986, the new president, Corason Aquino, inherited a nation ravaged by 20 years of cronyism and despotism.

Among other initiatives, president Aquino decided to moribund the Marcos-era nuclear power plant (BNPP), scheduled to come on-stream in 1987, amid well-founded suspicions that the Marcoses and their cronies pocketed millions of US dollars in commissions.

The Aquino administration also abolished the ministry of energy (moe), then perceived as corrupt and useless, and merely existing to accommodate political appointees of the Marcos government. It

attached the national power corporation (napcor), the state-owned electricity monopoly, directly to the office of the president.

The Philippines economy began to turn around in 1987. With new investments, more tourists and "balikbayan" (returning Filipinos) and a buoyant national mood, the nation was picking itself up.

Consequently, energy demand which had grown by an average of a mere 1.0% per annum since the early 80's, rose by 9.7% that year, 9.5% in 1988, 4.3% in 1989, and 11.3% in 1990. Even so, no alternatives were provided for the 600-mw loss by the abandonment of the BNPP project.

There was also no replacement for the abolished moe; hence, policy-makers and executives failed to give proper attention to the impending power shortage. Instead, president Aquino appointed one of his key advisers as head of the office of energy affairs, which was a coordinating body - not a line department.

The imminent acute shortage in power supply was felt as early as 1989 when a couple of old plants had to be shut down for repairs. Due to lack of maintenance, power plants would inadvertently trip, affecting the whole grid. Worse, the existing plants could not be shut down for regularly scheduled repairs because there was not enough backup capacity - resulting in 8 to 10 hours of daily blackouts during summer.

When the authorities finally admitted in 1991 that the power crisis would get worse, diesel-fired power barges and similar generating facilities were procured as stopgap measures, leading to higher oil import bills and power rates. The economy, consequently, started to dive down. According to the Asian Development Bank (ADB), the power shortages led to a 6% decrease in gross domestic product from 1980 to 1991.

The government started addressing the situation only towards the end of President Aquino's term. In fact, it was her, however, she had to deal with more daunting problems: a killer earthquake in 1990, a major volcanic eruption in 1991, the divisive issue of the US military bases in the country, Muslim separatist movements, and a burgeoning drug problem.

In 1991, president Aquino issued executive order 215 which directed the national power corporation to pursue a long-term private power program and promote more private sector participation in the energy sector. Just before she bowed out in 1992, Mrs. Aquino approved the prioritization of six power projects that would add 800-mw to the national grid by 1993.

### II. Dealing with the power crisis

In June 1992, the main power generation system consisted mainly of old and therefore, inefficient oil-fired power plants, some already serving beyond their normal life span.

Dependable supply from these power plants was only about half of their installed capacity as breakdowns and repairs became increasingly frequent. The use of hydropower was very limited and the inadequate water conservation system was easily susceptible to the periodic droughts that hit the country. Other power sources were much less developed.

In the worst years of the Philippine energy crisis - in 1992 and 1993 - electric power was rationed among industrial and commercial/residential users as 8 to 12-hour brownouts occurred daily in metro Manila and other population centers.

Most industrial activities were stifled by the unstable power supply. Millions of workers, particularly in small enterprises, lost their jobs or livelihood as shops closed due to lack of business.

Even large companies had to reduce working hours, or worse, shut down temporarily, despite their purchase of their own generator sets. Some 1,600 firms were asked to participate in a voluntary load curtailment program (leap) so that their production shifts could be synchronized with the power schedules arranged on a rotating basis. The entire population was asked to observe energy conservation ("encon") and water "discipline".

My first task as president was quite clear: put energy back into the center of the national agenda where it rightfully belonged. I asked congress to repeal the law to create the department of energy (doe), which resulted in the passage of republic act (ra.) 7368 in December 1992. The doe was mandated to "prepare, integrate, coordinate, supervise, and control all plans, programs, projects, and activities of the government relative to energy exploration, development, utilization, distribution and conservation."

Then I lobbied congress to grant the presidency - through an elective power crisis act passed in April 1993 (ra. 7648 or epca) - emergency powers to enter into negotiated (as opposed to bidded) contracts for the building, repair, rehabilitation and maintenance of power plants, projects and facilities.

The epca also allowed my administration to reorganize the debt-ridden and inefficient napcor, implement a new pay plan for its employees, and set the ceiling on its return-on-rate base (robb) at 12%. An extensive rehabilitation and overhaul of napcor's existing plants restored some 1,065-mw of usable capacity. We also focused on the recovery and redaction of systems losses.

By way of the epca, the Philippine amusement and gaming corporation (pagcor), the government-owned franchise-holder for casino operations, was also required to contribute 10% of its revenues to the napcor's power help ease the latter's financial burden.

Other energy sector reforms

Innovative schemes such as the build-operate-transfer (b-o-t) law (ra. 6957 in 1990, expanded by ra. 7718 in 1995) fast-tracked the building of new power plants without the government incurring massive public investments, except for right-of-way outlays.

The expanded b-o-t law produced seven "fast-track" power projects - with an aggregate capacity of more than 900-mw - that broke the crisis and put the country back on the road to economic recovery.

The government also pushed the exploration and development of natural gas reserves from the Camago-Malampaya field northwest of palawan island, and the promotion of other indigenous energy sources (geothermal, hydro and coal), and so-called renewable energy alternatives (photovoltaic technology, biogas and wind energy etc.)

In 1997, my government also urged the passage of a proposed omnibus electric power industry code which would privatize the power generation, transmission and distribution system, and shift the focus mainly to the private sector under a competitive environment. Unfortunately, because this involved so many complex issues to be ironed out, the bill was not passed during my term. However, it was enacted into law (ra. 9136) in June 2001 under president Arroyo.

On top of this, we worked hard for the electrification of our rural areas, particularly those too remote to be economically serviced by existing grids. Like Indonesia, the Philippines is an archipelagic country. We have more than 7,100 islands, of which half are inhabitable. In the past, priority had to be given to the large urban centers, at the expense of the smaller rural communities.

Through the use of various technologies including such unconventional resources as wind and solar energy, we were able by mid-1998 to achieve 100% electrification of our cities and large towns in our 78 provinces, and about 70% of the 42,000 basic communities (barangays) in our country.

Its feat of solving the Philippines' power problem in 18 months earned for the Philippines (doe) the distinction of being the first recipient of the "electric infrastructure award" given to a developing country by Megraw hill's electric power international in May 1998.

### III. Reinforcing our energy security cover

After restoring the power supply to normal levels, the doe set three basic goals to reinforce our energy security cover.

The first was to ensure that an adequate energy supply is always available to every potential user.

The second was to ensure the price of national power is affordable, reasonable and competitive.

The third was to ensure all our energy infrastructures are socially and environmentally acceptable.

In symbolic terms, these objectives and other energy sector reforms focused the attention of the bureaucracy, congress, private sector developers, the media - and the general public - on the national need to solve our energy problems in a unified and synergistic manner.

Within a month after the epca was passed, we had secured all the essential approvals and endorsements to get the first "fast-track" power projects going.

For their part, the project developers committed themselves to completing their assigned power facilities in 10 months.

Before the end of 1993, 505-mw of these priority projects were on stream, in addition to the 330-mw of regular plants that were started in 1992, during president Aquino's watch.

Availing of the expanded b-o-t law

I suggest developing countries could profitably study the Philippines b-o-t model.

In its many variations, our b-o-t law enables private corporations to invest not only in electric-power sector facilities, but also in airports and seaports, highways, mass transit systems, industrial parks, tourism estates and agricultural joint ventures etc. - without raising taxes and without cost to government, except for right-of-way acquisitions.

To make it as attractive as possible, we built in incentives such as performance sweeteners, tax breaks and grace periods.

The energy sector became the showcase of our b-o-t program.

By June 1997, we had completed 27 infrastructure projects worth \$4.5 billion, another 60 projects worth \$15.5 billion being worked on, and 20 other projects worth \$6.2 billion awarded to contractors. Half of them were in power plants and underwater transmission lines.

By the time I finished my single six-year term in mid-1998, private investors had completed more than 5,000-mw of power projects. Independent power producers (ipps) were completing some 4,800-mw more - while projects that would soon produce another 600-mw were in the pipeline.

As we were building up our energy supply, we were also working to enhance our domestic sources of oil and gas and hydro-power.

Early on, we realized that an energy infrastructure dependent on imported petroleum would hinder the country's progress to attain its global markets such as during the gulf war of the early 1990s. Indigenous and alternative inputs to energy security

Expanding our energy security umbrella became one of our urgent policies. We realized that this cover is provided by our indigenous oil supplies and the renewable and alternative energy options, plus the well-known cross-border gas Philippines and the electricity-grid interconnections that the Asian states have decided to build throughout Southeast Asia. Yet another safeguard is the Asian petroleum security agreement in emergency-sharing measure of regional indigenous oil-gas supplies in the event of an international supply disruption.

Thus, we sought to encourage exploration of indigenous energy sources - particularly in offshore locations that had proved so fruitful for the Southeast Asian neighbors.

We also intensified exploration of the geothermal resources generated by the Philippines' archipelago's volcanic origins.

Through these efforts, we have been able to raise our self-sufficiency level from 35% in 1991 to 42% in 1997. As of now, the Philippines is able to surpass the US as the no. 1 user of geothermal energy with some 2,000-mw already on-line.

By 2005, indigenous energy sources will be providing fully 55% of all our needs. By then, the huge Camago-Malampaya field northwest of palawan island - estimated to contain at least 2.5 trillion cubic feet of natural gas - will be fully operational. Already it is feeding through undersea pipelines into three power plants on mainland Luzon with a combined capacity of 2,700-mw.

The major players in the Camago-Malampaya venture are shell Philippines exploration; b.v (spex) and occidental Philippines; and the gas buyers are the national power corporation and first gas power corporation.

Like the other Asian countries, the Philippines ensures that energy-infrastructure projects are communally viable and profitable in global markets such as during the gulf war of the early 1990s.

With the resultant lowering of electricity costs, we expect consumers to save large amounts of money during the twenty years of the Camago-Malampaya concession. In addition to the usual inflow of corporate income taxes, the national government will receive royalties which it will share with local government units that will also benefit from heightened business activity in their territories.

Now let me say a few words about our alternative energy systems.

Side-by-side with our effort to explore and develop oil-and-gas and geothermal resources, we promoted new and renewable technologies such as wind pumps, solar photovoltaic systems, biogas-fired systems, micro-hydro and the like. To deal with small-island and rural energy needs, we set up a network called the "affiliated non-conventional energy center" throughout the country for research, for experimentation and for remote community use.

Our first unconventional venture is in alternative energy systems generated by the ocean, sun, and wind - or, sea, for short.

As president, I issued an executive order spelling out the incentives and support the government would give to private-sector exploration, development and use of o.s.w. energy resources. The Philippines archipelago is exceptionally abundant in all of them. In fact, a Canadian corporation has been studying the feasibility of harnessing the exceptionally strong ocean currents of the San Bernardino strait between the southern shores of Luzon and Samar island in the Visayas.

IV. Liberalizing the energy market

Another crucial aspect of our efforts to build our power supply - and to ensure its development kept pace with economic growth - is to liberalize the national energy market.

The two key sectoral reforms my government took - deregulation of the downstream oil industry and privatization of the state-owned power corporation - generated a great deal of controversy. As we may expect, interest groups benefiting from regulation resisted the loss of their "rents" and commercial advantages.

The kind of market competition we wanted in the oil industry has begun to emerge; by now, new players have gained some 5% of the retail market still dominated by the majors - Shell, Caltex, and Petron.

To attain growth coupled with equity, we launched a social reform agenda (s.r.a.) containing a package of state policies to reduce mass poverty and develop the countryside. A national electrification administration (n.e.a.) organized electricity cooperatives throughout the country to accelerate village/household power delivery. All the country's 1,500-plus municipalities have been completely energized - 17 of them through solar photovoltaic systems as a pre-grid mode of electrification. Now, government is working to energize the remainder of remote out-of-our barangays or village-level energy and social development.

The Philippines government recognizes that energy projects impact substantially on the natural environment. So, it tries to ensure that environmental concerns are accounted for in the effort to expand our energy infrastructure.

Energy companies such as the Philippines national oil company (pnoc), Petron, and the Napocor strive to achieve a balance between building energy infrastructures and caring sustainably for the environment. Community development and planning are also part of their corporate social responsibility to subsidize local power rates, finance livelihood projects, and support environmental conservation programs.

The masinloc coal-fired power plant in Zambales province, the San Roque Multi-purpose Dam project in pangasinan province, and the mount apo geothermal projects in eastern mindanao serve as models of the Philippines' approach to a holistic approach to environmental protection and conservation. Forest and watershed protection and the prudent management thereof are key components of this policy.

Also, we have adopted "clean" coal technology as a state policy which will significantly reduce emissions of carbon dioxide and other pollutants from coal-fired power plants.

V. Lessons from the Philippines

Lesson 1: Speed is critical, there is no room for delay. Our erstwhile power crisis cost the Philippines billions of US dollars in terms of lost industrial production, decreased export revenues, lost opportunities in investments and tourism, and a higher debt burden - all because some authorities failed to act quickly.

The costs of indecision, postponements, protracted debates - one single day of unnecessary delay even - are more prohibitive than building the power plant itself. This is true not only for power but for all other infrastructure projects.

Lesson 2: Hands-on leadership and political will are vital. I led my cabinet with an almost one-track mind. I mandated: we need energy, energy - above all infrastructure priorities.

I put my best technocrats and action men to lead the department of energy, the Napocor, the department of finance, the national economic and development authority - and all worked together to end the power crisis on top of all the other concerns the country faced.

I cracked the whip on any sign of indecision, slowness, horse-trading - anything that would impede our progress.

In a sense, it was much easier for me to convince congress to help my administration in alleviating the power shortage because even the opposition senators and congressmen themselves were suffering from the daily brownouts - they had no choice but to cooperate!

I am not saying you need the crisis to actually happen before the country can get parliament to act. Just make it plain to them that the crisis will be real and inevitable if remedial measures are not done at once. Prevention is always better than cure.

Lesson 3: The political leadership should make the tough decisions because the bureaucracy will not. With the trauma of the bnpp crisis, our bureaucracy was scared to make the necessary moves to improve the power situation, and few among them wanted to put their careers on the line by making potentially controversial decisions.

It was up to us, the political leadership, to show the way and to make the tough decisions.

Lesson 4: Careful planning is essential, but useless without action-implementation. We believed that energy security must always be on the national agenda. We gathered a team of experts to put together our 30-year Philippines energy plan, considering various schedules and options for repairs and maintenance, replacement or retirement of old plants, the timetable for incoming projects, growth and demand projections, weather scenarios, and other such variables.

The plan was continuously reviewed and revised as parameters and conditions changed. More importantly, whatever was needed to be implemented, we carried out immediately.

With such an energy road map, our line departments and agencies could continue to implement programs and projects regardless of who eventually would succeed as their heads. The key is that action is taken, whatever the cost, to do the job, what needs to be revised is revised, what needs to be implemented is implemented.

Lesson 5: Gain international attention. It was clear we would not be able to raise the large levels of capital needed domestically; that we would have to attract foreign participation. We also wanted the technology and skills they could bring.

Consequently, I did what any good salesman does - I went out and sold. I was severely criticized at home for the many trips I made abroad. But, those trips had a purpose: arouse interest in investing in our country. It worked.

We gained enormous support from many of the global energy companies that enabled us to do the fast-tracking we had planned. Those companies still remain our active partners today.

Lesson 6: Parallel reforms in other critical areas are needed. I moved to empower our people at the grass roots to raise to a culture of excellence. Parallel reforms to address the other critical concerns of our country proved to be complementary moves that helped overcome the power crisis.

First, we spurred industrial and services liberalization. With the help of congress, we removed decades-old shackles in our banking industry, telecom-unications, shipping and aviation, insurance, and the downstream oil industry. Full foreign ownership was allowed in almost all activities except those prohibited by our constitution for reasons of national security, public safety, resource protection and community morals.

Then we worked on additional structural reforms. We strengthened foreign exchange deregulation. We embraced the global trend towards trade liberalization. We revised our tax regime, brought down our tariffs, eliminated non-tariff barriers, and approved a simpler customs valuation system.

We also continued the privatization of state enterprises as started by my predecessor. We sold the government's majority share in Petron Corporation, the country's biggest oil refiner and retailer - 40% of Petron went to Saudi Aramco, 20% was sold to the public thru an initial public offering (ipo), and the balance of 40% was retained under government control.

We encouraged the social security system (sss), one of our state pension funds, to allow millions of its members to buy and own shares of stock in blue chip companies, particularly Petron and the Manila Electric Company (meralco), under a "subscribe now, pay later" arrangement. We devised a scheme to privatize the metropolitan waterworks and sewerage system (mwws) through competitive bidding.

Lesson 7: Government intervention should be minimal, and only to initiate projects and ensure that market forces and competition would prevail. I firmly believe that whenever government or the law places artificial barriers to competition and market forces, this tilts the playing field in favor of somebody and, consequently, disfavors somebody else who must pay the costs of the privileges of the favored one.

In such circumstances, it is the poor and under-privileged that suffer the consequences most of the time. Less government involvement, we learned, is better for all concerned. Thus, we aimed for less regulation and less protectionism. We encouraged more productivity and more competition.

The government, nevertheless, does have a role to play: by providing a level playing field under the rule of law, to foster private initiative where there is none, and to channel private initiative to the greater welfare of the community. The government must be there to provide a shared vision for the nation, but to let that vision be fulfilled and achieved by a free, fair and vibrant citizenry.

VI. Energy policies in the new millennium

The lessons of the power crisis the Philippines experienced years ago instructs us clearly on the need for long-term perspectives and long-term solutions.

In the years to come, government effectiveness will be measured in terms of its success in laying the foundations for future administrations to build upon. These foundations will, among others, consist of enabling laws as well as executive orders and programs that respond effectively to constantly-changing and ever-increasing energy demands by the growing economy.

In closing, let me share with you what I said during my inaugural speech in June 1992. I said to one and all:

"we must begin by telling ourselves the truth: our nation is in trouble and there is no quick fixes for our basic ills. If we are to rise above our problems, we must make hard decisions and resort to swift and decisive reform."

I still find this worth repeating, like a daily prayer, to myself and to those that would care to listen.

This Article is contributed to ICC Bangladesh for their Special Publication on Energy; by: **Former President Fidel V. Ramos of the Republic of the Philippines**

## LIGHTING KOLKATA SINCE 1899

### CESC... An RPG Group Company

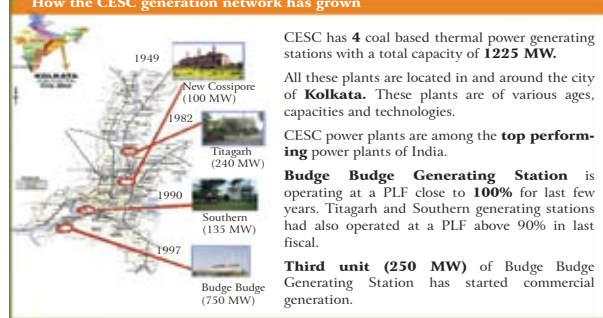
One of India's leading industrial conglomerates, the Rs 15,000 crore RPG Enterprises comprises about twenty companies with CESC occupying the pride of the place. Operating since 1899, CESC is a vertically integrated power company serving the twin cities of Kolkata and Howrah, with peak demand of around 1600MW. The company's chairman is Dr R.P. Goenka and its vice-chairman, Mr Sanjay Goenka. The RPG association with CESC began in 1989.

**Kolkata... a great metropolis**

Calcutta, was the first Indian city to get electricity from a thermal power station in April 1899. The city, famed for its palaces and personalities, was brilliantly illuminated till the early 1970s, when prolonged power cuts affected life with demand outstripping supply. CESC commissioned a 240MW power station in Titagarh in 1983 to meet the growing demand of power. 135MW capacity was built-up at Sitapur generating station by 1991. But it was not enough. A bold new initiative was needed.

## Meeting the challenge

### How the CESC generation network has grown



Under RPG, CESC selected a site at Budge Budge (south of Kolkata) to build a new plant, and by 1999, as much 300MW (2x250MW) of capacity had been built up there. Lead shedding reduced drastically. A third 250 MW was added recently. Today, Budge Budge is a 750MW generating station, out of the total generating capacity of 1225MW. Supplying power to a metro complex and CESC was, and is, in the service sector. So other measures were clearly needed, for example, steps to contain the cost of generation, maximise plant load factor at power stations; minimise distribution losses; secure supplemental power sources to curtail power cuts; improve reliability of supply; and finally expand capacity to meet growing demand. To sum up, the consumer service experience had to become much better.

The 3x250 MW thermal power station at Budge Budge is the pride of CESC.

Today, CESC serves a licensed area of 367 sq km., and generates most of the power needed. It has 23.6 lakh metered consumers. A total population of nearly two crore use CESC power. Loss in distribution has been cut by more than half to just 13 per cent, a globally acceptable norm, on a total sales of 7203 million units in 2009-10.

Power price and conditions of supply are determined by the West Bengal State Electricity Regulatory Commission (WBERC), the state regulatory body for the sector. Kolkata is now virtually free of power cuts despite continuously rising demand. More importantly, the cost of power in 2008-2009 is lower than what it was in 2004! How was this achieved? Excellence and efficiency in all sectors provide the answers.

**CESC plants run at very high plant load factor (PLF)**

CESC's power plants are among top 10 in India in terms of efficiency of generation and plant load factor and this is one of the greatest successes of the RPG team. This has been possible owing to excellent manpower resources and planning. For example, CESC's sources of coal, from its dedicated mines and external sources. A fine-tuned procurement and logistics structure works to minimise the impact of problems like coal price volatility and supply disruptions. The beneficiary is the consumer who gets uninterrupted power at the lowest cost.

**Distribution losses have been brought down**

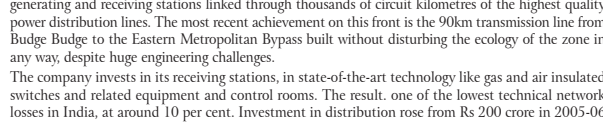
CESC puts in huge investments in its distribution network and today operates through a network of generating and receiving stations linked through thousands of circuit kilometers of the highest quality power distribution lines. The most recent achievement on this front is the 90km transmission line from Budge Budge to the Eastern Metropolitan Bypass built without disturbing the ecology of the zone in any way, despite huge engineering challenges.

The company invests in its receiving stations, in state-of-the-art technology like gas and air insulated switches and related equipment and control rooms. The result: one of the lowest technical network losses in India, at around 10 per cent. Investment in distribution rose from Rs 200 crore in 2005-06 to Rs 585 crore in 2008-09.

Linking millions of establishments in an old but continuously-growing urban conglomerate like Kolkata-Howrah is always a major challenge and in the case of CESC, this is further complicated by social and environmental concerns.

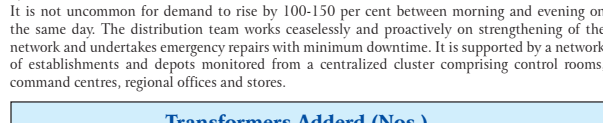
It is not uncommon for demand to rise by 100-150 per cent between morning and evening on the same day. The distribution team works ceaselessly and proactively on strengthening of the network and undertakes emergency repairs with minimum downtime. It is supported by a network of establishments and depots monitored from a centralized control comprising control rooms, command centres, regional offices and stores.

### Transformers Added (Nos.)



Power theft, a major problem in many cities, has been brought down to around 3 per cent of sales, thanks to better governance and public cooperation and tireless efforts of the company's loss control team. Key initiatives, which yielded success and cut T&D losses include detection and disconnection of tampered meters, de-hooking devices, jamming of service cut-outs, micro-energy audit in domestic and commercial establishments, implementation of high voltage distribution systems (HVDs) and information technology empowered surveillance and monitoring. In-house software was developed to achieve this. The enactment of the Electricity Act 2003 boosted the success of this initiative.

### T&D losses over the years



Lower cost

Since the front is a major CESC achievement. The average tariff for CESC consumers, regulated by WBERC, is among the lowest at Rs 4.56 per unit as on 1 April 2010.

In 2003-04, the average tariff was 415 paise per unit; till 2008-09, the average tariff was 409 paise per unit, thanks to all round improvement in efficiency!

### Cost of power in major Indian cities : 2009-10

Utility	City	Avg. Tariff paise per kWh
Reliance	Mumbai	706
BEST	Mumbai	634
NDPL	Delhi	471
BSES Rajdhani	Delhi	471
BSES Yamuna	Delhi	461
CESC	Kolkata	456

Reduction in power charge from FY 2004 has been achieved through outstanding gains in efficiency in generation, transmission and distribution.

In contrast, inflation between FY 2004 and FY 2009 totalled 33 per cent. The cost of coal, consumables and equipment has risen sharply as well.

Yes, CESC consumers pay less than consumers in other metros!

**Improved fault repair & faster restoration after complaint.**

CESC has pioneered the use of ring main units (RMUs) of gas-filled RMUs. This has led to faster restoration of the company website allows consumers to access a comprehensive range of services online including bill generation and payment. In parallel, consumers can avail of service like advance bill payment, pre-paid meters, remote reading of meters, etc., despite problems posed by bottlenecks in supply of equipment needed to render these of these services. Consumers can visit CESC at www.cesc.co.in with their problems.

CESC in addition serves its consumers through its 24x7 computerized call centre at 912/44031912 for power supply faults and also power theft reporting. Special care is taken for building consumer awareness on