A Pilot Project on Capacity Building on Electricity Reforms In Bangladesh, India and Nepal (RESA Project)

TERRITORIAL TRAINING MANUAL ON POWER SECTOR REFORMS IN WEST BENGAL

November 2008

CUTS Calcutta Resource Centre

Contents

Chapter - I
Reforms and Regulations of the Electricity Sector

1. 1 Introduction

Electricity is considered as the most versatile and civilised form of energy. Due to its environment friendly nature, it is most preferred energy source at the consumer ends. In addition to satisfying the individual consumer's basic human needs like lighting, heating, cooling, etc., it is used as a basic input in production process in agricultural, commercial and industrial sectors.

Low availability of electricity adversely affects the economic as well as social development of a country. Recognising its importance, various international agencies such as United Nations Development Programme (UNDP) has given due weight to *per capita electricity consumption* in concluding *Human Development Reports (HDR).* Therefore, most of the nations have started to pay due attention to increase the availability of electricity. In this process, they have taken reform initiatives in the power sector.

1.2 Electricity Supply Industry

There are three distinct features of the electricity in comparison to other services that requires the policy makers, regulators, producers as well as consumers to treat it in a different way. These are:

a. *Non-storable output:* Another important feature is non-storability of output. Electricity cannot be stored feasibly/profitably for future use in large scale. As such suppliers are required to match the supply to the demand at the time point of consumption.

b. *Continuous Network Requirement:* It requires that production as well consumption points are continuously connected.

c. *Demand never remains constant:* The demand for electricity never (hardly) remains constant. It varies across different months of year and hours of a day for the obvious reason that the needs of the consumer also varies in a similar fashion.

All the above stated characteristics provides strong basis to consider the electricity supply industry as a natural monopoly. Consequently, in most of the countries of the world, it was designed in a monopolistic structure considering it's certain advantages.

Figure 1: Flow of Electricity from Generation to Consumption Point

Generation **Transmission** **Distribution** **Consumption**

1.3 Need for Reforms

The power sector is the most important constituent of infrastructure. The performance of the power sector directly impacts the overall economy of the state. The basic problem of developing countries like India is the ignorance of the infrastructure and due to this most of the State Electricity Boards (SEBs) incurred heavy financial losses and became dependent on financial support from their respective state governments. When the state provided this service, it had to cross-subsidise between different classes of consumers, to achieve the stated socio-economic objectives of the state. Introduction of subsidies made the electricity market inefficient and lack of competition led to more inefficiency. These included high transmission and distribution (T&D) losses, skewed tariffs, poor quality of supply, weak and deteriorating T&D network and rapidly declining capability of state governments to provide budgetary support to the power sector. There was also reluctance on the part of financial institutions to lend funds without reform. All the states were characterised by more or less similar set of conditions in the sector and West Bengal was no exception. Urgent steps were needed to reinvigorate the sector.

1.4 Electricity Reforms in West Bengal

Almost all over the nation, poor technical and financial performance ensured that most of the SEBs became bankrupted. High T&D losses, low Plant Load Factor (PLF) and poor quality were reported as main problems in the sector. Therefore, reforms were initiated to overcome these problems. Since Electricity is listed as a concurrent subject in the Constitution of India, Centre as well state governments are entitled to enforce a law/rule relevant to the sector. West Bengal is one of the pioneer states, where restructuring process was initiated at the State-level. The following are some of the major developments that transpired:

- The Department of Power of the West Bengal Government has set up a separate organisation, the West Bengal Rural Energy Development Corporation in 1998[1] to undertake the major responsibility of rural electrification and supply of electricity at 400 volts and below to consumers in rural sector with active involvement of *Panchayat* institutions.
- The West Bengal Electricity Regulatory Commission (WBERC) was constituted on January, 1999. The Commission is currently considering the tariff petitions filed by West Bengal State Electricity Board (WBSEB) and other power utilities in the State.
- To ensure more uniformity in the restructuring process among the different states of India and facilitate fair competition in the electricity sector, the Electricity Act 2003 was enforced in June 2003, which replaced all the existing Acts in the electricity sector. Consequently, functioning of Electricity Regulatory Commissions (ERCs) and electricity utilities is governed by this Act all over India except the State of Jammu & Kashmir.
- Unbundling of integrated WBSEB into separate entities, viz;
  Generation: West Bengal Power Development Corporation Limited (WBPDCL)
  Transmission: West Bengal State Electricity Transmission Company Limited (WBSETCL)
  Distribution: West Bengal State Electricity Distribution Company Limited (WBSEDCL)
- As per provision of the Electricity Act 2003, various important functions, such as licensing, framing regulations, tariff fixation, promoting competition and consumer protection are now being discharged by WBERC.
- 100 percent feeder metering; computerisation of all commercial activities; and strong anti-theft legislations were enforced at the State-level.

[1] http://www.powermin.nic.in/acts_notification/westbengal.htm

- The West Bengal Electricity Regulatory Commission (*Guidelines for Establishment of Forum for Redressal of Grievances of Consumers and Time and Manner of Dealing with such Grievances by the Ombudsman*) Regulations, 2006 has made provision for redressal of grievances of consumers against the licensees regarding supply of electricity and related matters (such as *excess billing, security deposit, incorrect disconnection, non receipt of meter*).
- To promote Open Access and invite more competition, WBREC has made the regulations (under notification nos. 30, 35). Under these regulations T&D has been opened for private participation. These moves are to throw open the electricity market in the State to competitive supply, thus offering significant business opportunities for private companies as also improved service delivery to consumers.
- Energy losses have come down over the last five years, principally as a result of improvements in recovery of dues and reduction in the T&D losses

Once the Reform Provisions are fully implemented, consumers are expected to be better off in terms of service delivery.

1.5 How Reforms are Beneficial to Consumers?

The reforms are principally aimed at increasing the transparency, accountability and efficiency in service delivery to the consumer by the utilities & the electricity sector as a whole. The various provisions of consumer-friendly regulations, opening up to private participation, strengthening the consumer grievance redressal mechanism, et al were done with a view that the consumers will have prompt grievance redressal, increased role in the decision making processes, higher understanding and consequently a better & more responsible access to energy for their consumption. The following points capture the main areas where the consumer is benefited by the regulations laid down in the Electricity Act, 2003:

- Increased investment in power sector resulting in more generation and supply of power;
- Improvement in quality of service;
- Various consumer friendly regulation by independent WBERC;
- Increased role of consumers in decision-making; and
- Steady tariff over a decade.

Chapter – II
Rights of Consumer

Consumers/Civil Society Organisations (CSOs) are expected to present their views on the proposed regulations based upon their experience and reports in media etc. Among others, the following are important issues:

1. Procedure for getting a New Connection /Extension or Shifting of Meter
2. Metering and Billing
3. Disconnection and Restoration of Electricity Supply
4. Quality of Service Monitoring
5. Redressal of Consumer Complaints

On behalf of utilities, adequate information should be made available so that consumers are well aware of the process and procedures. Unfortunately, it has been revealed from the recent consumer survey conducted under this (RESA) project that the quality of consumer service is very poor. Most of the respondents expressed inadequate supply of power, poor metering and billing, high electricity tariff and poor quality of supply as the major problems related to electricity in their area. This substantiate that projects like RESA are the urgent need of the hour.

2.1 Procedure for Getting a New Electricity Connection

The procedure for getting a new electricity connection should be simple and consumer friendly. At the time of submission of application, consumer should be informed about the process and the time to be taken in getting the service.

In many cases, it has been observed that no reliable information is provided to the consumers about the process and charges payable for getting a new connection. As a result, consumers have to face harassment. Sometimes, the Utility Company charges for installation of a new connection, but the distribution licensee does not give any cost break-up for this. Unavailability of the electricity post/pole in the vicinity of their residents is the chief reason for not having access to electricity. In many cases, it has been observed that people filed applications and even paid the required amount to the distribution licensee but no action was taken though the stipulated period for the same, viz. *one* month, was already over.

FAQ's

a) Who is an Electricity Consumer? Who is a Supplier of Power to him?

Consumer means the end user or final user of electricity supplied by the Distribution Supply Licensee. Some of the major Distribution Supply Licensees, in West Bengal are CESC, WBSEDCL, DPL and DPSCL.

b) *What* is the Procedure for Getting a New Connection?

An intending consumer will have to write to the local office of the distribution licensee in the prescribed format (available in the separate Booklet provided along with), upon which the licensee shall conduct an inspection of the premises and communicate to the consumer an estimate of the expenses to be bourne by him for the new connection. For the inspection to be done the consumer will have to deposit an earnest money along with the application as per conditions given below:

Earnest Money:

A. For LV & MV supply
(i) For domestic & commercial loads:
Rural – Rs 200
Urban – Rs 500
(ii) For industrial loads – Rs 2000

B. For HV & EHV supply
(i) 11KV – Rs 5,000/-
(ii) 33 KV – Rs 20,000/-
(iii) 132 KV – Rs1,00,000/-

The cost of providing a new connection varies according to where the connection is to be provided. A detailed description of the procedure followed is given in the booklet attached which gives the charges and time span applicable for new connections under different conditions.

c) Who will do Electrical Installation at the Consumer's Premises?
A licensed contractor will carry out all installations within your premises. The responsibility for electrical installations inside your premises is yours.

d) What Charges will the Consumer have to Pay for a New Connection?
The prospective consumers applying for service connection shall have to pay application fee except Central/State Government departments. The application fee so deposited will be adjusted with the energy bill.

e) How Can One Get a Temporary Connection?
Temporary connection for the purpose of religious, social such as marriage, etc. will normally be allowed, for a period not exceeding 15 days. The period may be extended under special circumstances at the discretion of the Board. Temporary connection will only be provided on the following conditions:

i) The applicant must make his requisition in the prescribed format obtainable at the distribution licensee's offices at least seven clear days before the actual date in which the temporary connection is required.
ii) The following are to be submitted as part of the application tender:
   - A test report in the prescribed form certifying that the installation conforms to the relevant Rules.
   - The required amount as security deposit with the distribution licensee at least on the preceding working day before the day on which supply is actually required.
   - The prescribed amount of connection charge.
iii) The applicant must submit the prescribed amount of connection charge.

2.2 Metering and Billing

Proper metering and billing of electricity consumption is a very important issue affecting the consumers' interest at large. Electricity distribution companies should ensure that consumption is estimated with 100 percent accuracy and consumers are satisfied with the metering and billing process. The Electricity bills should contain adequate information to understand the bill amount. All details should be provided in a transparent manner. It should be as simple as possible and should be in local vernacular so that the rural people can

easily understand and interpret the same. Difficulties faced by the consumers while making payment of electricity dues are also important problems of consumers. These include:

- The payment counters of the distribution companies are opened just for few hours, i.e. generally between 10:00 to 1400 hours; and
- Long queues at the payment counters.

The licensee should ensure that consumers are satisfied with metering process. It is for them to pay the dues.

FAQ

a) What is the Process for Installation and Maintenance of Electricity Meter at the Consumer Premises?

Appropriate meter/set of meters shall be installed at the point of supply to measure electricity by the Distribution Licensee. The number of units supplied to each consumer shall be ascertained by means of an appropriate meter or meters which shall be provided by the Distribution Licensee and shall be fixed in a suitable position in the consumer's premises connected and maintained by the Licensee and for each such meter the consumer shall pay to the Licensee a monthly rent as specified in the Licensee's Rate Schedule. Any meter so provided shall remain the property of the Board who will make periodical test at its own expense.

b) What are the Different Meter Rents Applicable to Different Categories of Consumers?

Category of Consumer	Phase	Charge (Rs/month)
Domestic	Single	9
	Three Phase or Three Single Phase	27
Commercial	Single	20
	Three Phase or Three Single Phase:	
	• Electromagnetic Type	100
	• Electronic Type	100

c) Who will Take Meter Reading and How?

A meter reader is a representative of the electricity service provider who visits every consumer's premise either every month (in case of CESC consumers) or every three month (in case of WBSEDCL consumers) to note down the units consumed as indicated in the electricity meters, in presence of the consumer or his representative. Such reading is recorded in a card specially meant for the purpose and the meter reader is to authenticate the meter reading by signing at the specified place in the card. The consumer is also responsible for the safekeeping of the card or book, wherever the meter reading is recorded.

d) What Information Should the Bill Contain?

The bills are to be made in such a manner that it is convenient for the consumers to understand the details the payment of the same. The bill contains mainly

i) Meter number;
ii) Consumer number, name, address and category;
iii) Bill number and bill's issue date;
iv) Energy charges;
v) Meter reading date;
vi) Consumption period in months;
vii) Units consumed;
viii) Fixed charges;
ix) Total charges – the rounded off payment;
x) Due date of payment;
xi) The authority in whose favour the bank draft or cheque has to be issued;
xii) Amount received against the previous bill;
xiii) Amount Outstanding on account of the non payment of the previous bill; and
xiv) Name and address of the distribution licensee, and Grievance Redressal Officers.

e) When Should the Consumer Receive the Bill?

For consumers receiving supply at low and medium voltage, the licensee shall issue bills at intervals of not less than 28 days and not more than 91 days. The bill is normally generated every three months with monthly payment option. For consumers receiving supply at HV and EHV, bills are to be issued monthly. The bill should be sent to the customer, by the licensee at least seven days before the due date of payment.

f) What charges other than charges for energy consumption does the consumer have to pay?

Consumers have to pay the following charges to the distribution licensee: i) Energy Charge; ii) Electricity Duty; iii) FPPCA; and iv) Meter Rent.

2.3 Disconnection and Restoration of Electricity Supply

Statues authorise the distribution companies to disconnect the connection of a consumer in case of non-payment of electricity bills. But in certain cases it was reported that dues are pending because of the following reasons:

- Agricultural consumer was not satisfied with the reading of the electricity meter;
- Utility had sent a bill that was due for a long time but consumer was not aware of the same; and
- Dues were pending towards the previous occupant of the house/premise.

It has been reported that it is very difficult for the consumers to reconnect to the system. A utility also takes restoration charges in addition to the payment of pending dues towards consumer. It is suggested that procedure for re-connection should be simple and transparent.

FAQ

a) What Could be the Possible Reasons for Disconnection?

i Disconnection for Non-payment

The connection for electricity supply can be disconnected if the consumer fails or neglects to pay the amount payable according to the bill.

ii Disconnection for Theft or Unauthorised Use of Electricity:

The licensee may disconnect or cause to be disconnected, the supply to a person and/or premises immediately upon detection of theft or unauthorised use of electricity.

iii Disconnection for Distress or Damage to the Electrical Plants, Electric Lines or Meter or for Prevention of Loss of Human Life and Property:
If the consumer is found to have used the electricity supplied in a manner that is harming the electric lines and other equipments, causing harm or loss to human life and property, then the licensee may disconnect the line. With regard to such disconnection, the consumer is entitled to receive in writing, the reasons for disconnection from the licensee. If the consumer manages to remove the causes, with proper grounds, the line does not get disconnected.

iv Disconnection on Request
The consumer can get his line disconnected by requesting the distribution licensee and the latter will take such action, provided that there are no outstanding dues and the bills have been paid or adjusted (against security deposits) even of the last month before disconnection.

v Disconnection for Incorrect or Wrong Declaration
The licensee may disconnect the line of a consumer on the ground that the consumer has misrepresented facts on purpose for getting a new connection. The consumer gets the intimation of such disconnection by a notice and the same also gets a reasonable opportunity to remove the grounds put forward for disconnection.

vi Termination of Agreement
If the power supply to any consumer remains disconnected continuously for a period of 180 days where the disconnection has been effected in compliance with any of the provisions of the Act or regulations, the agreement of the licensee with the consumer for supply of electricity shall be deemed to have been terminated. In such cases, the licensee shall have the right to remove the service line and other installations through which electricity is supplied to the consumer.

b) What is the Reconnection Process? What are its Charges?

- For those consumers whose supply has been disconnected for theft or unauthorised use of electricity, the licensee shall not reconnect the supply of electricity to a person,
- For those consumers whose supply has been disconnected for non-payment of electricity charges and other charges, the licensee shall reconnect the supply of electricity at the earliest and positively within 48 hours form the time of payment of the assessed amount.

2.4 Quality of Service Monitoring

Supplying power with continuity and within acceptable voltage limits are main issues concerned with quality of service. It has been reported that consumers suffer from poor quality of service including frequent interruptions, load shedding and low voltage etc. As a result, consumers have to make additional investment to ensure uninterrupted power supply and safety of the equipment.

Given the development in the technology, consumer groups/CSOs may keep a check on the quality of service supplied by utility. For example, *PRAYAS*, a Pune-based NGO has initiated the process to monitor the quality of service in certain areas of Pune City (Maharashtra), India. Under its programme, Electricity Supply Monitoring Initiatives (ESMI), three data loggers have been installed at different locations of the city. *PRAYAS* is

providing regular feedback to the regulatory body of the state as well consumers. *(For details, please log on www.prayaspune.org)*

To take similar initiatives in other areas, consumers should have an access to resources and aware of the technology/process. With the support of distribution companies as well regulatory bodies, it is possible to empower the consumers with these tools.

FAQ

a) Is the Consumer entitled to Notice for a Power Cut?

When there is a planned interruption of supply lasting more than six hours at a stretch for planned maintenance but not including emergency repair, the distribution licensee shall notify the consumers at least three days before the supply is cut off through announcements in radio/TV, advertisements in leading dailies, beating of drums etc. and restore the supply within the time to be announced. Special care is to be taken regarding notifying the planned interruption if water supply, hospitals or railway traction is likely to be affected by the interruption. If the planned interruption is for more than 12 hours at a stretch, temporary arrangement may be made to provide power after 12 hrs.

In case of unplanned interruptions, caused by natural calamities, in electricity supply, the consumers are entitled to get their supply restored by the distribution licensee according to the time specified in the regulation.

b) What is to be Done if Voltage is Low?

The consumer can register complaints citing low voltage issues to the grievance redressal cell of the distribution licensee. In case of voltage complaints within limits specified in the regulations, the same is taken care of within 15 days if the problem is in the urban area and about six months, if the problem has taken place in the rural areas.

Complaints about the voltage fluctuations beyond the specified limits shall be attended by the distribution licensee within the time periods specified in the regulation.

2.5 Redressal of Consumer Complaints

Redressal of consumer complaints is an important issue. It is duty of the distribution company to take proper and timely action in order to resolve the complaint registered by a consumer. Regulatory bodies are also in process to frame guidelines on the proper redressal of consumer complaints. In this process, CSOs may play an important role in helping *both the regulatory bodies and the consumers* to make effective regulations on this important issue. However, it requires the CSOs as well consumers to be well aware of the process and initiate appropriate actions on behalf of the consumers.

2.6 System for Redressing Consumer's Complaints in West Bengal

West Bengal Electricity Regulatory Commission issued the (Guidelines for Redressal of Grievances) Regulations, 2003, main features of which are given below:

The Redressal Mechanism

In order to protect the interest of the consumers, the Commission took action as per Electricity Act 2003. These Regulations came into force with effect from October 08, 2003, in the Kolkata Gazette. This set of Regulations specified the manner in which grievances of the public should be redressed at three successive tires within the organisational structure of the licensees.

The customers are to submit their grievances to the grievance officers at any level, (sub-district/district/ region/zone/Central Grievance Redressal Office (GRO) at corporate

Head Quarter level) in writing, whereby; the officers take up the complaint and proceed for an action for their redressal. The officers might call in for inspection by experts, etc, consult the authorities concerned for the deficiency in services and communicate the result of their actions to the petitioners. The grievance officers also collect relevant information regarding the records and the documents concerning the complaint of the individual's complaint thereafter the GRO is required to pass on order.

The details of the grievance redressal forums and the officers are communicated to the customers, by prominently displaying them on the Electricity Bills, near the main entrance of the offices, sub-offices and the website. With this, the aggrieved customers are in a position to know how to seek help, when aggrieved regarding the deficiency in the services of electric supply.

Working Procedure for the Grievance Redressal Officers
An aggrieved consumer may approach the Grievance Redressal Officer of his area only through a written petition, submitting in the same, as much concrete and detailed information about grievance as possible. If his grievance is the subject matter of any court case, he should furnish a copy of his plaint and indicate the status of the court case; in case, the court case has already resulted in an order, he should submit a copy of that order.

The customer receives the written acknowledgment of the complaint filed from the grievance officers within seven working days. Every complaint is given a plaint number and such number is to be communicated to the petitioner.

If the complaint does not require the consultation from any technical expert, the petitioner can expect his plaint to be redressed within 21 working days, lest it might require inspection or decision from an expert, the redressal procedure can be expected to be complete within 45 working days.

The complainant, if dissatisfied with the decision of the redressal decisions, is at liberty to approach the Ombudsman, who has the final authority to dispose off the grievance.

A consumer must approach at least one Grievance Redressal Officer or one Central Grievance Redressal Officer before he can represent his case to the Ombudsman. If a consumer is not satisfied with an order from any Grievance Redressal Officer, as aforesaid, or if he does not receive any order from the Grievance Redressal Officer to whom he has approached at the first instance seeking redressal of his grievance(s) within 60 days from the date of lodging his grievances, he may submit a written representation to the Ombudsman for the purpose of settlement of his grievances/complaints.

A consumer, can at his will, move to any other authority or a court of law, or a consumers' forum for redressal of his grievances. However, if he has moved any such authority, or court of law, or a consumer's forum, he shall disclose the same with all necessary details to the Ombudsman when he files a representation to the latter.

FAQ

What Action can Consumers Take in Case of a Disputed Bill?
In case if there is any dispute in respect of the billed amount, the consumer may lodge a complaint with the Grievance Redressal Officer of the licensee and thereafter to the Ombudsman in appeal against the order of the Grievance Redressal Officer, if the consumer is aggrieved by the order of the Grievance Redressal Officer, in accordance with the provisions of the concerned Regulations. In such a case, the aggrieved consumer may, under protest, pay -

(i) an amount equal to the sum claimed from him in the disputed bill, or

(ii) an amount equal to the electricity charges due from him for each month calculated on the basis of average charge for electricity paid by him during the preceding six months, whichever is less pending disposal of the dispute.

Such amount shall be accepted by the licensee on a provisional basis. In the light of provisional payment made by the consumers, no action against the consumers can be taken including disconnection or charging a surcharge. This provisional payment is adjusted in the subsequent bills delivered to the consumer. If after the resolution of the dispute, it is found that the consumer had paid an extra amount for his bill; such amount is refunded to the consumer along with some amount as interest, payable as per the provisions of the Regulation.

Chapter - III
Responsibility of Consumers

Responsibilities on Part of the Consumer's

Consumers have very important role to play in the electricity reform process. Apart from participating in the decision-making process, they can help the government as well utilities in reducing the requirement for additional energy. Broadly their role may be classified into these three areas:

3.1 Policy and Regulatory Process
3.2 Reduction of Energy Losses
3.3 Energy Conservation
3.4 Curbing Power Theft and Unauthorised Use of Electricity

3.1 Policy and Regulatory Process

The newly established regulatory mechanism supposes electricity consumers to participate in the policy formulation as well as regulatory decision-making process. Some important areas for consumer participation include:

- Comments on the draft/proposed electricity *regulations*
- Views on the draft electricity policy
- Interventions during the regulatory decision-making process
- Feedback on the utility's performance
- Feedback and Information on Theft and/or unauthorised use of electricity

3.2 Reduction of Energy Losses

A high T&D loss is one of the major problems in power sector in many countries for both consumers as well utilities. High T&D loss is a problem related to consumers, as theft of power constitutes a significant portion of these losses. As a result of high losses, honest (paying) consumers suffer from the shortage of power and poor quality of service. On the other, utilities loose substantial part of their revenue that further results into low investment and inadequate infrastructure. Consumers have a significant role to play to counter this. They should educate other consumers and also inform the utilities about the sites where theft is taking place. They should discourage all unfair means, such as tempering with lines/meter etc. By doing this, they are reducing the cost of supply and finally tariff payable.

3.3 Energy Conservation

Most of the countries are facing problem of inadequate power supply. Citizens have to remain without power for long hours. There are two ways to deal with this problem. One is to increase the generation capacity, and the other is to reduce the demand by promoting energy saving schemes. The second option will not only help in reducing the cost of supply but also contribute to the sustainable environment.

In all segments of the economy-household, industry, business, agriculture etc, there is huge scope for energy saving. In a county like India where T&D loss level is about 50%, two units are needed to supply one unit of energy at the consumer ends. It implies that if one unit is saved at the consumer end, it results into surplus of two units that may be supplied to other consumers.

How to Save Energy

The first step in this regard is to make the consumer aware. Unless a consumer is aware and prepared to save energy, no better outcome is expected. The following are some suggested measures that may help consumer to save energy.

Designing a House/Building

In an economy, about 50 percent of the total electricity consumption is used to meet lighting, cooling and heating purposes. The design of the building is a major determinant for electricity consumption. While designing a building, the engineer should pay due cognisance so that sun, air and such natural resources available to us, are utilised effectively.

Use of Energy Efficient Equipment

Apart from the purpose of use, energy consumption also depends upon the efficiency/quality of the electrical equipment. Energy efficient equipments result in consumption of lesser amounts of energy while serving the same purpose. The list of energy efficient equipment is available with the government agencies engaged in rating of equipment. For example in India, Bureau of Energy Efficiency (BEE) has made it mandatory for the manufacturers to get their products rated. It makes possible for the consumers to compare different products. Every product has been labelled from one star (*) to five Stars. More stars mean more energy efficient equipment.

It may be noted that one time cost of equipment having more stars may be slightly higher than one having lesser stars. However, during the lifetime of equipment, consumer saves lot of money since operation cost of more efficient equipment is very low. This message needs to be conveyed to consumers

Stop Wastage

Electricity is a very scarce economic resource. Consumer should make its optimal use. Electricity appliance should be switched off when not in use. Wastage of energy is very common in households as well government office. Even a consumer has to pay for the wasteful consumption; wastage is a net social cost.

3.4 Curbing Power Theft

Role of Consumers in Curbing Power Theft

The most disturbing issue that requires attention is the heavy cost incurred by the paying consumers of electricity due to power theft. During power theft, electricity is illegally gained access to by the wrong doers from either the premises of the consumers or from the main cable by hooking. Both these ways of *power theft amount to extra consumption of electricity on the part of the paying consumers.*

Power theft is not only resulting in the unreasonable hike of tariff for the stolen electricity, but also l*eading to excess demand for electricity in a particular area.* Often cables designed to supply a certain amount of power cannot transmit the excess amount of electricity beyond its capacity. This leads to permanent faults in the cables, or irregular supply of power, shortage of supply and also voltage fluctuations.

The consumers themselves have to find a way out to be active in checking power theft within the provisions of law. The consumers will firstly have to be aware of the provision of filing a complaint against power theft to the authorities. Many consumers despite the knowledge of the same are reluctant to complain being intimidated by the involvement of anti-social elements in the power theft nexus. Others have just lost faith in the authorities that the latter will be of any help if a complaint is filled. This is where the CSOs have got very important role to play. Most often it is found that the consumers cannot alone proceed

to the authorities with their complaint. The CSOs will have to support such consumers in order to seek justice against theft. Firstly, they will have to be fully aware of the legal procedures concerning power theft, and secondly, inform the consumers of the same by conducting meetings and awareness campaigns in order to make the consumers proactive to save their own interest.

Essentials for Success of Anti-theft Measures

- Constitution of Electricity Committees at village level to create awareness about implications of power theft and grievance redressal procedure.
- Research should be carried out to find out exact data of the loss due to theft and transmission and distribution, for better transparency on the part of the utility companies.
- Capacity building of consumers and CSOs on power sector reforms, so that they can act as watch-dogs on the functioning of the service providers.
- Improving quality of service.
- Energy Audit and technical measures.
- Providing incentives to the people working to curb power theft and welfare activities by Utilities in the area where there is no loss due to power theft.

Chapter – IV
Electricity Tariff

4.1 Definition

Tariff is a schedule of prices for various consumer categories. Electricity supply like other commodities/services imposes certain cost on the supplier. This cost must be recovered from the beneficiaries to sustain the supply in future. Earlier, the respective government took the decision on consumer tariff. Now, it is the independent regulatory body that fix the tariff payable.

4.2 Objectives and Principles of Tariff Settings

The determination of tariff is a complex issue. It requires the regulator to make a balance among conflicting interests of various stakeholders. Certainly, tariff results as a cost for end-users, therefore, they seek for a lower tariff. Higher tariff may result into loss of consumer welfare. On the other hand, un-reasonably lower tariff may leave the supplier with deficit revenue and lead to poor quality of service. However, there are certain principles/objectives that need to be followed while determining tariff for end users.

- *Principle of Economic Efficiency*

Economic efficiency implies that the cost of supply is minimum, given the level of technology. Tariff should be a signal to utilities forcing them to ensure economic efficiency in the sector. Cost of inefficiency on part of the supplier should not be imposed on the consumer.

- *Principle of Adequacy*

Approved tariff should be adequate in order to recover all reasonable cost of production. All expenses on part of power purchase, manpower, operation & maintenance, depreciation, acceptable energy losses and reasonable return should be met out of the tariff. If tariff approved is too low, it would not only affect the present financial performance of the company but also hurt level of future investment in the sector.

- *Principle of Economy*

Energy is a scare economic resource, so it should be utilised in a most efficient manner. Tariff should also be a signal for the consumer to use electricity efficiently. It will help in saving energy and further reducing the cost of supply. It requires progressive tariff structure, i.e. higher tariff for higher amount of consumption.

- *Principle of Affordability*

Affordability implies that existing tariff is not acting as a barrier in fulfilling the basic human needs such as lighting, cooling etc. If certain class of consumers is unable to attain the minimum required consumption at the existing price, some concession in the tariff is desirable. It may be done by cross-subsidy or direct subsidy by the government. Cross-subsidy is the subsidy given to one consumer category at the cost of another category. But again, it requires proper identification of the target beneficiaries to avoid misuse of subsidy.

4.3 Methods of Tariff Regulation

In order to follow these principles of tariff, there are various methods available for the consideration of the regulators. Each of the methods has its advantages and disadvantages. Selection of appropriate method depends upon the socio-economic characteristics and

degree of competition that exists in the sector. There are three most popular methods/approaches used by different regulatory agencies across the world.

- Cost Plus
- Price Cap
- Performance Based Regulation

Cost Plus: This is also termed as Rate of Return (RoR) method. It allows companies to earn a reasonable rate of return on the investment after meeting all other expenses. All cost items are segregated and discussed. On the basis of information available for the last two/three year, cost is approved. Under this method, the licensees are also entitled to make a claim for the unforeseen expenses, such as fuel surcharge adjustment etc for the past years. The simple formula used for approving tariff using cost plus method is given below.

$$RR = PPC+E+D+T+ (B\times R) + VC$$

Where
RR: Revenue Requirement of the Utility
PPC: Cost of Power Purchase
E: Operating Expenses; Cost of items such as labour (Employees), fuel, repair and maintenance (not used for construction work) etc.
D: Annual Depreciation Expenses.
T: Taxes payable to the Government.
B: Rate Base, the amount of capital invested in the business
R: Allowed or reasonable rate of return.
VC: Variable Cost viz. fuel, coal etc.

Price Cap: Under Price Cap regulation, on the basis of historical cost and future efficiency gains, a ceiling price is fixed by the regulator. While approving tariff, no segregation of cost takes place openly. Regulator approves tariff taking into account the general price level and future efficiency gains.

Performance Based Regulation (PBR): Under PBR approach, tariff is linked with the performance of the utility. For example, if a utility is able to reduce more T&D losses, it may be allowed to earn more return on the capital base. On the other hand, poor performance may result into no return or negative rate of return (= penalty).

As stated, the selection of the appropriate method depends upon a number of parameters, such as availability of adequate and reliable information, responsiveness of market, degree of competitiveness and other socio-economic factors. Almost all Indian Electricity Regulators have followed the rate of returns method.

4.4 Components of Tariff

The total cost of supply may be segregated into various cost components. Whatsoever method the respective tariff-setting authority uses, calculation of tariff is an important exercise in order to assess the financial performance of the utility. In the detailed tariff regulation such as RoR as in case of India, each of the components is explicitly scrutinised by the respective regulatory body. Various stakeholders are invited to comment on the various cost components. While in case of price cap regulation this detailed cost examination is an internal exercise. The major components of tariff are discussed here.

Table 1: Cost Components of a Generation Company

Fuel Cost	Depending upon the type of plants, such as thermal, nuclear hydro etc. fuel is required. In thermal and nuclear power plants, it is major cost item. In case of Hydropower plants, it is almost negligible.
Transportation Cost	It is mainly the cost incurred in transporting fuel to plants. It may also a major component if the plant is not located nearer to pit heads/source of fuel.
Employee Cost	This is the cost on account of salaries and other benefits payable to the employees engaged in the Generation business.
Repair and Maintenance Cost	On part of the accidental and routine repair & maintenance of the plants.
Depreciation Cost	It is an item for the wear and tear of capital. In other words, the cost of one time investment made in the business. Total investment should be recovered during the useful time of the asset.
Pollution Control Expenses	All thermal power plants are required to installed pollution control equipments for the safety of citizens.
Taxes	Any tax especially in case of private power plants imposed by the government.
Return on Capital	It is surplus over the expenses. A minimum rate of return is necessary to attract the required capital in the sector.
Interest	On loan capital and working capital.

In case of a transmission company, depreciation, salary of employees, repair & maintenance, metering etc. are major cost items. During the transmission, some energy is lost. The cost on account of the lost is called as transmission losses. For the purpose of a distribution company the generation cost and transmission cost becomes power purchase cost (PPC). In Distribution Company's point of view, PPC is an external cost component because it has no control to reduce this cost. However, if adequate energy is available, a distribution company can ensure merit order purchase. This move may force the high-cost companies to reduce the cost of generation. But given the shortage of power and existence of long-term agreements between distribution and generation companies, it is not taking place in most of the countries, including India.

Table 2: Cost Components of a Distribution Company

Power Purchase Cost	It the cost on account on energy purchased from all sources, such as directly from the power plants, traders, captive power plants, imported etc. If it is purchased from the market traders, it also includes trading margin that is presently 4 Paisa fixed by Central Electricity Regulatory Commission (CERC) in case of India.
Employee Cost	This is the cost on account of salaries and other benefits payable to the employees engaged in the Distribution business.
Repair and Maintenance Cost	On part of the accidental and routine repair of the distribution lines, transformers etc.
Depreciation Cost and Interest	It is an item for the wear and tear of capital. In other words the cost of one time investment made in the business. Total investment should be recovered during the useful time of the asset.
Energy losses	It is a major cost item for most of the electricity utilities. Theft of power, underestimation of consumption, technical losses (not very much) etc constitute energy losses.
Taxes	Any tax especially in case of private licensee, imposed by the government
Return on Capital	It is surplus over the expenses. A minimum rate of return is necessary to attract the required capital in the distribution business.

After examining the various cost components, the total cost of supply in other words Annual Revenue Requirement is calculated by the Regulatory authority. Then, the regulatory body is required to fix the tariff on the basis of the parameters laid down in the Electricity Act, 2003.

Single or Two-part Energy Tariff for Consumer

Earlier, most of electricity utilities used to bill the consumers only on the basis of energy consumption. It is termed as a signal part tariff. However, for the efficient use of electricity, two part electricity tariff at consumer ends is advocated. In the two part tariff, there are two components of tariff- 1) capacity charges and 2) energy charges.

Capacity charges are justified on account of network capacity (also generation capacity, if the utility is integrated) dedicated to the consumer. Generally, these charges are positively proportionate to the maximum demand or the connected load of the consumer. While energy charges vary according to the energy consumption.

Chapter - V
Decision Making Process & Participation in the Policy Making/Regulatory Process

5.1 Key Issues

In the pre-reform days, power utilities were operated and controlled by the government in most of the countries. Apart from the policy decisions, the respective government were reportedly interfering into day-to-day operational matters of the utilities. It led to inefficient and unprofessional decision-making process. Most of the decisions taken on key issues, such as tariff, subsidy, investment, and recruitments were politically motivated. That further resulted into poor commercial outlook of the sector and unsatisfactory quality of service.

5.2 Requirements of Good Decision-making Process

One of the main objectives of creating independent regulatory bodies is to insulate the decision-making process from political interference. The decisions should be taken in a transparent manner by professional body rather than political parties.
There are three basic requirements of a good process:

- Transparency and Comprehension
- Accountability and Commitment
- Effective Public Participation and Positive Contribution

Transparency
Decision-making process is said to be transparent when it is open for all stakeholders. The process to be followed should be pre-defined. For example, in India all ERCs have issued Conduct of Business Regulation (CBR) to ensure transparency in the decision-making process. How Commission will conduct public *consultation* and who will participate in the *consultation* have been specified in the CBR.

Accountability
Another important feature is accountability of regulators to the decisions made by them. If any of the stakeholders/involved parties is aggrieved by the decisions, law should allow them to challenge the decisions before the higher authority, such as appellate authority or court of law. In India, Appellate Tribunal for Electricity has been constituted to hear the appeals against the decisions of ERCs. Further, ERCs are bound by the Act as well as National Electricity Policy 2005. ERCs are guided by certain policy guidelines in the process of making decisions.

Public Participation
Public participation is very important issue especially when decision-making authority is an independent agency. Law requires the regulatory bodies to listen to consumers' views before passing the decision. Effective public participation helps regulators in passing fair decision and also ensures protection of consumer interests. The typical decision-making process followed by various ERCs in India is given here:

Step I: *Preparation of the draft Proposal* – a draft proposal on important issues, such as Annual Revenue Requirement (ARR), tariff application, quality of service standards etc. is prepared by respective electricity utilities.

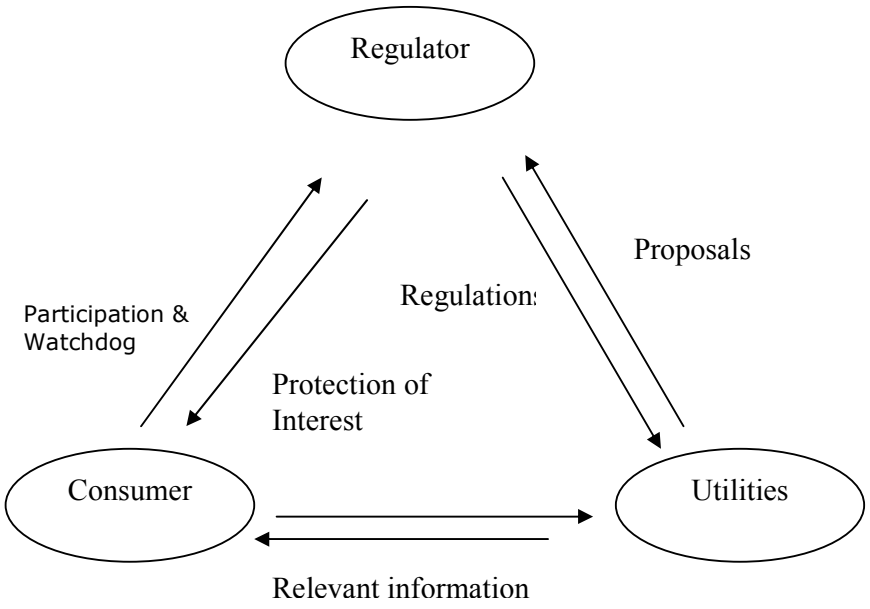
Step II: *Submission of the Proposal* – it is submitted to the regulatory commission before the due date. For example in case of ARR or tariff application, it should be filed to the regulatory authority four months before the starting of financial year. It is required to ensure that decision is passed before the start of new financial year.

Step III*: Issuance of Public Notice* – public notice giving salient features of the proposal are published in newspaper inviting public comments. The information about the relevant documents with respective prices, if any, is also given.

Step IV: *Response to the Public Comments* – the respective licensee/company is required to respond to the comments received on behalf of consumers/stakeholders.

Step V: *Public Consultation* – the respective regulatory commission conducts public hearing. Consumers are allowed to participate in the open house discussion. Apart from the stakeholders who have submitted written comments, other also may participate in the hearings.

Step VI: *Decision on the proposal* – the commission takes into account views of all stakeholders while processing the decision. Sometime, an interim order is issued to seek further comments/views of the stakeholders in order to make the decision more acceptable.
As it is shown in the diagram the consumers have important role to play in the decision-making process after new regulatory regime in power sector. They act as a watchdog on the regulatory institutions as well as utilities.



Annexure

Simulation Exercise

Territorial Training I

Thursday, September 11, 2008
Day 1

Session IV: Complaint Redressal Mechanism

Resource Person: P K Chakrabarti, Ombudsman, WBERC

HOW A CONSUMER SHOULD SEEK REDRESS OF HIS GRIEVANCES UNDER THE FOLLOWING CIRCUMSTANCES:

1. A consumer used to pay monthly energy bill for 250-300 units during the period from January 2005 to July 2008. He received a bill for 1850 units for the month of August 2008 form the Distribution Licensee.
2. A consumer's meter was burnt in April 2006. The matter was reported to the licensee. Bills were issued on the basis of average consumption. The consumer paid the bills regularly. The meter was replaced in January 2008. The Distribution Licensee claimed outstanding dues for consumption during the period from July 2006 to January 2008, along with the first bill after replacement of the meter.
3. An intending consumer received quotation form the licensee for payment of service connection charges, cost of meter and Security Deposit. Details of the estimated expenditures for service connection were not enclosed with the quotation.
4. Some officers of the Distribution Licensee held inspection in the petitioner's and seized the meter etc. Subsequently, the consumer received a bill for Rupees ninety thousand for unauthorised use of electricity.
5. A tenant used to get supply of electricity from his landlord. The landlord discontinued supply of electricity. He refused to give consent for taking a separate electricity connection by the tenant for the Distribution Licensee.
6. A tenant used to get supply of electricity from his landlord. He applied to the Distribution Licensee for a separate electricity connection in his name. The licensee refused to provide service connection to him on the ground of splitting of registration.

The above mentioned situations were provided to the participants (grouped as clusters) with each cluster getting a different situation. They were asked to list out the steps that would be involved in the grievance redressal process and also the officials that they would need to communicate with, given the circumstance.

Thursday, September 11, 2008
Session V: Procedure for Getting a New Electricity Connection – Permanent and Temporary

Resource Person: D C Dutta, Chief Engineer (Commercial), WBSEDCL

Questionnaire:

1) **Relevant Authority for Getting Supply**

Type of Supply	Relevant Authority
a) Low & Medium Voltages	
b) High Voltage (Contract demand between 50 KVA & 500 KVA)	
c) High/Extra Voltage Supply (Contract demand above 500 KVA)	

2) **Earnest Money Required?**

Type of Supply	Amount (in Rs)
a) **Low & Medium Voltage**	
i) Domestic & Commercial Load	
Urban:	
Rural:	
ii) Industrial:	
b) **High/Extra Voltage Supply:**	
i.) 11 KV Supply:	
ii.) 33 KV Supply :	
iii.) 132 KV and above :	

3) **Documents Required to be Submitted along with Earnest Money?**

Type of Supply	Required Documents
a) **Low & Medium Voltage**	
i.) Domestic:	
ii.) Commercial:	
iii.) Industrial:	
b) **High/Extra Voltage Supply:**	
i.) Domestic:	
ii.) Commercial:	
iii.) Industrial:	

4) **Documents required to be submitted along with service connection charge?**

Type of Supply	Required Documents
a) **Low & Medium Voltage**	
b) **High/Extra Voltage Supply**	

5) Documents Required to be Submitted before Effecting the Connection?

Type of Supply	Required Documents
a) **Low & Medium Voltage**	
b) **High/Extra Voltage Supply:**	

6) Temporary Supply: (Tick on the right answer)

i) Maximum period of temporary supply for marriage ceremony is 35 days: True/False

ii) Maximum period of temporary supply for watering of floriculture is 180days: True/False

iii) Maximum period of temporary supply for watering for farming of Rice is 125 days: True/False

7) **Steps Followed for Getting New Connection**:

a)	Application form (Annex-A) along with earnest money submitted	: Yes / No
b)	Necessary documents along with earnest money submitted	: Yes / No
c)	Joint Inspection done	: Yes / No
d)	Service connection charge deposited	: Yes / No
e)	Agreement Executed	: Yes / No
f)	Deposition of Security Deposit	: Yes / No
g)	Test for/ EI approval Submitted	: Yes / No
h)	Clearance from Pollution Controlled Board or other statutory body submitted	: Yes/No

Participants were asked to list out their answers to the questions given and were later requested to share it with the house

Friday, September 12, 2008
Day 2

Session II: Understanding Electricity Consumption & Bill
Resource Person: D Samajpati, Sr. Manager, Customer Relations, CESC

Questionnaire:

1. What is the periodicity of Electricity Bill?
2. In case of monthly billing what is the normal meter reading period?
3. How the Bills are sent to the consumers?
4. In case consumer does not receive the Bills in usual time how can the payment be made?
5. What are the additional information particulars etc. required to be printed on the bill?
6. How can an electricity bill be paid?

7. How the utility will prepare a bill in case there is an inaccessibility of meter for reading?
8. When the supply is disconnected for non-payment of the Bill?

Participants were asked to list out their answers to the questions given and were later requested to share it with the house

Territorial Training II

Thursday, September 25, 2008
Day 1

Session II: Tariff Determination Process
Resource Person: Anupam Ray, Associate Director, KPMG Advisory Services Pvt. Ltd.

The exercise is attached separately in PDF form. The attached PDF is an exercise for tariff calculation under some certain values of the parameters considered. A Blank template of the structure giving the parameters considered has been attached in PDF format. The resource person assigned values to the parameters (during the session) and asked the participants to calculate the applicable tariff.

Session IV: Energy Efficiency and Electrical Equipment Rating
Resource Person: D Samajpati, Sr. Manager Customer Relations, CESC

Questionnaire:

1. What is Demand Side Management (DSM)?

2. What is the purpose of DSM?

3. What is TOD & what is its purpose?

4. What do you understand by Electrical Rating?

5. Why is Electrical Rating required?

6. How may stars are there in BEE rating & how does it apply?

7. What are the ways of using energy efficiently in case of lighting?

8. What are the ways of using energy efficiently in case of Air-Condition?

Participants were asked to list out their answers to the questions given and were later requested to share it with the house.

Friday, September 26, 2008
Day 2

Session 1: Tariff Regulation: Key Issues
Resource Person: Rajesh Kumar, CUTS C-CIER

1. Understanding the Tariff Structure
Table 1 provides information on the existing and the proposed tariff structure.

Table 1: Tariff Structure for various consumer categories (in Rs)

Category of Consumers	Existing Tariff		Proposed Tariff	
	Energy Charges	Demand Charges	Energy Charges	Demand Charges
Rural Domestic (0-50 Units)	1.55	0.00	1.75	Rs 20/- per KW
Rural Domestic (51 Units +)	2.20	0.00	2.75	Rs 20/- per KW
Urban Domestic (0-50 Units)	1.55	0.00	1.75	Rs 20/- per KW
Urban Domestic (51 Units +)	2.20	0.00	2.75	Rs 20/- per KW
Non Domestic (0-100 Units)	2.64 + 1.46	0.00	3.04 +1.46	Rs 40/- per KW
Non Domestic (101 Units +)	3.04 + 1.46	0.00	3.44 +2.46	Rs 40/- per KW
Agricultural Metered – General Category	0.70	0.00	0.95	0

For the Group

- What is the justification for charging the demand charges separately from the energy charges?
- Calculate the percentage increase in billed amount (proposed) for the consumption of 100 units (KWH) and connected load 1KW assuming tax and other surcharges as nil for the following categories

  -Rural Domestic
  -Urban Domestic
  -Non Domestic
  -Agriculture metered (general categories)

- What are the implications of the metered and un-metered supply to agriculture sector on the utility's revenue and efficiency in consumption?

Some Issues in the Tariff Application

1. *Dakshin Haryana Bijli Vitran Nigam* Limited has made the following observations in its ARR petition for the year 2008-09 on the matter pertaining to subsidy to some specific consumer categories.

   a) Subsidy to some Consumer Categories

   - The State Government has decided that electricity tariff applicable to registered *Gaushalas* (A place where cows are kept for non-commercial purpose) should be Rs 2 per unit. The State Government would provide an amount of Rs 2000 per month to each registered *Gaushala* on this account

   - As per directives of the State Government, the tariff of horticulture & fisheries has been revised from existing Rs 4.28 per unit to Rs 2 per unit. It was decided that the difference between the cost of supply to these consumers and the tariff charged would be compensated by the State Government in the form of direct subsidy in line with subsidy given to agriculture pump-set consumers.

   b) Change in tariff to certain consumer categories:

   The following incentives were allowed by the Licensee to the consumers:

   (i) Rebate of 10 paisa per unit to women consumers (where domestic connection has been issued in the name of women consumers)
   (ii) Charging of domestic tariff instead of non-domestic tariff from Elementary Schools. (It may be noted that non-domestic tariff is about 40 percent higher than the domestic category.)
   (iii) Financial incentive of five percent for rural domestic and rural agriculture pump set consumers who have been regularly paying their bills for last 10 months prior to 17.6.2005.

   - The Hon'ble Commission in its orders dated 14/11/2005 on the ARR of DHBVN for FY 2005-06, under directive No.5, directed the Licensee to seek compensation from the State Govt. for the incentives allowed to the consumers.
   - The matter was taken up with the State Govt. jointly by UHBVN & DHBVN. The State Government vide letter dated 31/08/2007 has asked the distribution licensees to approach HERC for allowing this expenditure as a part of ARR. Accordingly the financial impact of these incentives amounting to Rs 8.03 million is being claimed in the ARR.

For the Group:
What objections you must raise, if any in the above matter? Why/ Why not?