

PROPOSED NATIONAL ENERGY POLICY FOR BANGLADESH

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Prepared By

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The draft was prepared by Mr. Delwar Hossain, Appointed one man committee by FBCCI Executive Committee in 2004 to draft the national energy policy on behalf of FBCCI. The draft forwarded to Ministry of Energy, Power & Mineral Resources and the National Energy Policy is still under consideration of the Government.

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1.0 Introduction

Energy is the prime requirement for development of the economy of the country. Modern statecraft and the economy can't go ahead without the support of energy. Now a days the level of consumption of energy shows the standard of the country's economy.

Bangladesh is a developing country. It is still very poor in energy production and consumption. Government of Bangladesh has decided to have an energy policy considering socio-economic development. The requirement of different kind of energy is growing day by day. A policy is needed for sustainable growth of energy for the economic development of the country.

The national energy policy will guide all the Ministry of the government, Department of the government, Public and Private bodies, Industrialist, Foreign and Local Investors and the general masses. This energy policy will work us key factor for formulation of rules and regulation of the government .The end user will get protection from any mismanagement or wrong action. Energy policy should be implemented by the government .

The energy policy 2004 will have adequate provision for guiding the people. Implementation of the energy policy will be key factor for development of energy as well as the economy of the country.

Ministry of energy, Government of Bangladesh will issue necessary order and will formulate the rules, regulation, by-laws for achieving success in the implementation of energy policy. Other ministries of government and department may also issue necessary order for implementation the national energy policy if so requires and thinks necessary.

The national energy policy will continue to remain effective till further amendment in this regard by the government. This policy will published in the official gazette of the government and will be treated as policy direction of the government.

In this national energy policy all kinds of energy has been taken into consideration and proper guideline for development, production, distribution, sales, marketing and pricing of energy has been made to follow all concern very carefully.

National energy policy will prevail above any or all other condition of energy. Respective department will, take steps to rescind the contradictory condition if any after the effectiveness of the national energy policy.

2.0 Different kinds of energy and its availability

There are various kinds of energy used by the people of this country. The sources of energy are different in nature. The main and the prime energy sources and availability in Bangladesh are described in brief:

2.1: Bio- mass: Bio-mass is defined as organic matters by photosynthesis process in plants. The Bio-mass are used as food, fodder, fuel, manure and building materials depending on their characteristics and quality.

A fraction of Bio mass is used as fuel. Bio mass fuels are obtained from three sources: a) Trees b) Field crops (Agricultural residue), c) Animal dung (Source from livestock)

The Bio-mass is the main sources of energy in Bangladesh. As per the study about 70% of the requirement of energy are full filled by the Bio-mass. The country sites are producing trees and bushes. The rural people are accustomed to use the tree branches and the plants of different kind bushes and jungles for their cooking of food, heating of paddy for producing rice, processing of daily necessities. The residue of agricultural crops like paddy, jute, sugar cane etc are used as the fuel for all kinds of economic activities including running the rice mill boiler.

Bio-mass fuels play an important role (about 65% of primary energy) in meeting total energy need of the country. Unplanned and uncontrolled use of bio-mass fuels is causing environmental degradation.

In the foreseeable future there are limited prospects of increasing the supply of Bio-mass fuels. On the other hand, it is not economically viable to substitute all the Bio-mass fuels by commercial fuels. The demand of Bio-mass fuels in excess of sustainable limits is to be met by commercial fuels.

In future, the demand of commercial energy will increase to meet the growing needs of different end use sectors.

Cow dung, that means animal dung is one of the main energy sources in the rural area. This Bio-mass is generally used in the area where they produced . The Bio- mass energy has not yet developed as commercial energy, although fuel wood and the fuel sticks including bamboo and jute sticks are abundantly sold in the market. This Bio-mass is the prime energy of Bangladesh. The requirement of Bio-mass is still high and scarcity are found in some areas of the country. Bio-mass is the silent energy protecting the country from severe crisis of energy.

2.2 Solar energy: Solar energy is a well-known energy for human being. Now a days solar photovoltaic technology can generate altering from solar. The solar energy is mostly used for drying crops, fishes and salt.

Bangladesh can get solar energy on average daily of 5.05 kwh/hqm in winter season and 8.76 kws in summer. Bangladesh having lots of potentiality for using solar energy by converting into electricity through generation photovoltaic technology. The God gifted energy sources are remains unused due to our lack of awareness and initiative of tapping the solar energy for commercial use.

2.3:Gas: Bangladesh is blessed with natural gas. It is a primary energy source and using the natural gas in all kinds of furnace, dryer, and boiler. Natural gas is the primary raw materials for generation of electricity and production of fertilizer or petro chemicals. Bangladesh have reasonable quantity of gas in reserve.

The natural gas resource in Bangladesh estimated to 4.2 tcf. At present natural gas is fulfilling the requirement of around 5000 MW electricity generation, and two million tons of fertilizer, production, besides around 1 million household are directly connected through gas pipe line for household cooking in Dhaka, Chittagong and Sylhet Division. Large numbers of industry are run by the natural gas. The gas pipeline has gone the western zone of the country through Jumuna Bridge. People of the whole country are demanding for supply of natural gas through the pipeline. Natural gas is also supply in the CNG filling station. The natural Gas can be the backbone of economy if properly utilized in proper plan.

2.4 Coal: Bangladesh have achieved success in extraction of coal from Barapukuria coal mine. Coal is a primary energy and it can be used for production of electricity and it can be used for industrial furnace or household cooking.

Discovery of coal dates back to the late fifties when an exploratory oil well was drilled through coal beds in Bogra. Subsequent explorations resulted in the discovery of the Jamalgonj coal deposit at a depth of about 1000 meter and having an estimated reserve of more than 1000 million tons of coal. Feasibility studies conducted have indicated that development of this deposit is not yet feasible under the prevailing international market price. However, with increase in gas price, these deposits may become competitive. In 1984-85 Geological Survey of Bangladesh has discovered another coal deposit at Khalaspir (Pirgonj) of Rangpur at a lower depth (150 m), with an estimated reserve of 450 million tons of coal. This deposit requires to be appraised in respect of its potential. An Australian Company BHP recently discovered another coal

deposit in Phulbari with initial deposit of 400 million ton and recoverable reserve of 80 million ton.

Total coals in place in all the 4 fields are around 2527 million tons out of which about 492 million tons is recoverable. This recoverable reserve is equivalent to about 14.00 TCF of gas.

Mineable coal deposit was discovered in Barapukhuria area of Parbatipur, Dinajpur at a reasonably shallow depth (240 m) with an estimated reserve of about 300 million tons. Based on this, A project has been completed for construction of an underground mine at an estimated investment of Tk. 887.36 core with expected annual output of 1 million ton commencing from 2004-2005. The indigenous coal may be utilized as an alternative of gas fuel source in the installation of power plants .A coal-based Power Plant of capacity 250 MW at Barapukuria is under construction with Chinese assistance.

The target production is 1 million ton of coal from Barapukuria coal field. Techno economic feasibility shows availability of coal in Khalaspir or Rangpur district and Jamalgonj of Jaypurhat district and Fhulbari of Dinajpur district only 20 Kilometer away from Barapukuria .

The use of the coal has not been properly explored in Bangladesh. Coal is a big resource of Bangladesh and proper planning for mining of coal to be taken up for sustainable growth of economy.

2.5 Peat: Peat is a low category quality of coal. Fortunately Bangladesh has got the availability of peat in the greater Faridpur district. Peat resource has not been utilized so long.

Peat coal is available in the district of Madaripur and Khulna. So far the study reports has been received, the available peat in Madaripur district may be obtained and 50 megawatt power station can be run for next 20 years. No proper survey has been yet been made for ascertainment of peat in Khulna district. Peat a expectable energy source and peat can be used as a primary energy in the different field.

Deposits of peat occur at shallow depths in different low-lying areas of Bangladesh. According to Geological Survey of Bangladesh, the reserve of dry peat is about 170 million tons. The major deposits are in greater districts of Faridpur (150 million tons), Khulna (8 million tons) and Sylhet (13 million tons). Peat requires drying before making briquettes for use as fuel. Petrobangla implemented a pilot project for extraction of peat and making briquettes. A details techno-economic feasibility study may be carried urgently for use of all kinds of primary sources.

2.6 Electricity: Electricity is the secondary energy. Popularly used now days. Electricity has become the basic necessity of human life. Electricity can be generated by a) hydro power b) gas based power plant c) oil based power plant. d) Coal based power plant e) Solar energy power generation f) wind power generation g) Tidal and wave power generation etc.

Electricity is the primary necessity for the economic development of the country. Electricity is the secondary energy, it should be produced through process by using any primary energy like gas, coal etc. There are some kinds of electricity, which has been generated from solar, wind and water force. The present production of electricity of Bangladesh is around 4230 megawatt of which 3470 megawatt in the eastern zone 755 Megawatt is the western zone. The eastern zone power plants are run by the natural gas and one power station in Kaptia is run by Hydro electricity system. The western zone power plants are run by imported petroleum oil.

The requirement of electricity of western zone fulfilled by transferring electricity from the eastern zone through East and West electrical inter - connector crossing Jumuna river. The inter connector capacity 450 megawatt.

The national gas line has been reached in the western zone. New power station at Bagabari, Sirajgong, Ishardi and Bogura has taken into consideration for establishment on gas base. The Barapukuria coal based power station in the western zone is in the final stage of construction and it will contribute 250 MW in the national grid from 2005.

Electricity generation, from solar energy, hydro power, tidal and wave may be big source for Bangladesh which is not been explored yet. Both in the eastern and western zone lots of opportunities is available for construction of gas based power station for generation of electricity. Bangladesh can be sufficient in electricity by using all its sources for production of electricity. Electricity is the essential ingredient for sustainable economic development.

2.7 CNG: Compressed natural gases is a secondary energy produced from natural gas. It's suitable for automobiles. It is environment friendly secondary energy.

CNG process has become very popular in Dhaka and Chittagong city in a short time. Bangladesh can produce CNG in the all gas area of the country. By the conversion of all automobiles into CNG the demand of CNG may be increased. For better environment use of CNG should get preference over diesel and petrol automobiles.

In order to reduce the air pollution in Dhaka and other cities, the Government has given emphasis on the best possible use of environmental friendly fuel CNG in transport sectors. As such government has liberalised and opened the sector for private participation to supplement the activities of the public sectors. The use of CNG in all types of road and riverine transports replacing motor spirit and diesel will be commercialized. No duty, sales tax or surcharge will be levied on equipment imported for compression and refueling of natural gas and for conversion of vehicles. Local as well as foreign private capital will be encouraged to invest in all phases of CNG business.

2.8 LPG: It's a secondary energy manufactured as a by-product of oil refining process. Its suitable for used in all kinds of energy requirements.

After meeting the domestic LPG requirement, the surplus may be considered to be used as automotive fuel.

Most of the LPG is to be allocated for the west zone until the equitable gas distribution system is established, primarily for the domestic sector. LPG may also be imported for meeting the demand of the country.

LPG is a good quality source and suitable for domestic uses. On the popularity of using LPG can help conservation of Bio- gas energy. The domestic uses of natural gas through pipeline may also replace by LPG in the long run. At present LPGA produce in eastern refinery and LPG is also importing from abroad. Both private and public sector is bottling the LPG both in eastern and western zone.

2.9 NGL: It's manufactured by fractionating of natural gas through a process for distribution in the cylinder. Bangladesh have good opportunities for NGL product although it has not yet been explored.

NGL is the also secondary energy. It can use for different purpose. This will also help conservation of Bio-mass energy.

Gas fields having higher NGL content are to be given priority for development of NGL supply.

NGL plants at Ashugong and Kailashtila are to be commissioned at the earliest.

2.10 Fuel Oil: The petroleum oil are considered as fuel oil a) Octane b) Petrol c) diesel d) Kerosene, oil are considered as the fuel oil.

Bangladesh are producing very small quantity of crude oil is Khailastila and Rashidpur gas field in Sylhet district. The balance crude oils are imported. There is only one refinery in the country. Crude oil used in manufacturing

petrol, octane and diesel. Out of the total requirement 40% are manufactured in the refinery and the balance 60% petroleum oil imported as finished product.

Bangladesh Petroleum Corporation is authorized to import the petroleum oil and marketing through its three oil companies like Padma; Meghna and Jumuna Oil Company. These are 100 % government own company. These oil companies is strong with their oil depot in the strategies location of the country and distributing the oil at fixed price by the government through their 3000 dealer and agents all over the country.

Total yearly (2000-2001) import of petroleum fuels is about 3.44 million tones of which about 1.34 million tones is imported as crude, while the import of refined products like Petrol, Diesel, Kerosene, Jet A-1 & Lubricating Base Oil account for the rest. In comparison to this, indigenous production of liquid fuels (condensate) is only about 2.5% of total annual demand.

2.11: Furnace Oil: (HFO): Furnace oil is the secondary energy good for industrial uses. Furnace oil is basically a residue of petrol and diesel in the refinery. While crude oil are process in the refinery for manufacturing of petrol, diesel and octane, The hard and soil contain clay are remain in the refinery as residue, where from no petrol, octane, diesel and kerosene can be extracted. These residues are drains out from the refining. But due to its energy value it call as a furnace oil and used in the industry.

Furnace oil a residue of refinery also distributed through the oil companies. The present production is around 3,50,000 tons of furnace oil. This furnace oil is used by the industry. A stable price of furnace oil is necessary for the industrial growth of the country.

2.12 Gas hole: By processing the molasses the residue of sugar-can while manufacturing sugar can be used for manufacturing of gas hole and ethanol. This can be mixed with the octane /petrol for use as a fuel oil.

There is opportunity of producing gas hole from the 17 sugar mills of the country. This can supplement our imported petroleum oil and foreign currency can be saved and sugar mill can be more economically viable.

2.13 Coke: Coke is a secondary energy can be manufactured by processing the still dust. At present Bangladesh import in the coke.

The manufacturing of coke should be taken up as early as possible to meet up the demand of Coke.

2.14 Animal Energy: There are about 10.3 million draught animals including 0.7 million cows. Milch cows are used for land preparation to meet the shortage of draught cattle. At present power tillers and tractors are used to meet the shortage of animal draught power. Energy need for these devices is accounted under agriculture sector.

2.15 Mini hydro: Assessment of low head hydro-power potentials in Bangladesh has been undertaken in recent years. Twenty three sites of hydro-power plant ranging in capacity from 10 kw to 5 mw have been located in the flat plains with available capacities for the 6 month, June to October. No plant has yet been installed.

2.16 Wind Energy: The long term wind flow of Bangladesh (specifically in islands and the southern coastal belt of the country) indicate that the average wind speed remains between 3 to 4.5 m/s for the months of March to September and 1.7 to 2.3 m/s for remaining period of the year. There is a good opportunity in island and coastal areas for the application of wind mills for pumping and electricity generation. But during the summer and monsoon seasons, (March to October) there can be very low-pressure areas and storm wind speeds of 200 to 300 kmph can be expected. Wind turbines should be strong enough to withstand these high wind speeds.

Local knowledge of wind resources appears to indicate the potential for wind energy use in the coastal areas of Bangladesh for both grid applications and for isolated village electrification. However, measured resource data of adequate quality is lacking. Bangladesh is strongly influenced by the southwest monsoon winds that blow from about March to October. These winds are further strengthened as they pass through the V-shaped coastline of Bangladesh. It is these monsoon winds that have made possible extensive wind farm developments in India, where, for example, more than 200 MW are operating in Tamil Nadu. Wind speeds are expected to be high enough for economic grid power generation to feed the main grid or for isolated grids in wind-diesel hybrid configurations.

Good quality wind data for one year is now available for Patenga, Chittagong, a potential wind farm site, where in 1995 wind speeds ranged from 4.2 to 8.1 m/s and averaged 6.5 m/s at 20 m. Winds are strongest from March to October, which exceed 5 m/s at 20 m for over 6000 hours per year (cut in speed of large wind turbines is about 4 m/s). Preliminary estimate of net output from a 500 KW wind turbine with a 40 m hub height is 1200 MWh/year at Patenga which seems to be feasible.

There is a number of windy locations along the coast line where land is available and where there is grid and road access. Given the danger from

cyclones, it is important that the survivability of wind turbines be investigated. Wind potential at Patenga along is reportedly suitable for production of about 100 MW.

2.17 Tidal Energy: The tides at Chittagong, south east of Bangladesh are predominantly semidiurnal with a large variation in range corresponding to the seasons, the maximum occurring during the south-west monsoon. A strong diurnal influence on the tide results in the daytime tides being smaller than the night time.

In the year 1984, an attempt was made from the EEE department of BUET, Dhaka to assess the possibility of tidal energy in the coastal region of Bangladesh, especially at Cox's Bazar and at the islands of Moheshkhali and Kutubdia. The average tidal range was found to be within 4-5 meter and the amplitude of the spring tide exceeds even 6 meter. From different calculation it is anticipated that there are a number of suitable sites at Cox's Bazar, Moheshkhali, Kutubdia and other places, where a permanent basin with pumping arrangements might be constructed which would be a double operation scheme. Tidal energy might be a good alternative source for Kutubdia Island where about 500 kw power could be obtained. At present there are only 2x73 kva diesel generator sets to supply electricity for 5-6 hours/day for 72,000 people and there is practically no possibility of main grid supply in the future.

2.18 Wave Energy: Until now no attempt has been made by Government of Bangladesh to assess the prospects for harnessing energy from sea waves in the Bay of Bengal. Wave power could be a significant alternative source of energy in Bangladesh with favorable wave conditions specially during the period beginning from late March to early October. Waves are generally prominent and show a distinct relation with the wind. Waves generated in the Bay of Bengal and a result of the south-western wind is significant. Wave heights have been recorded by a wave rider buoy and correlated with wind data. Maximum wave height of over 2 m, with an absolute maximum of 2.4 m, on the 29 July were recorded. The wave period varies between 3 to 4 sec for waves of about 0.5 m, and about 6 sec for waves of 2 m.

In Bangladesh wind speeds of up to 650 kmph (400mph), 221 kmph (138 mph) and 416 kmph (260 mph) have been recorded in the years 1969, 1970 and 1989 respectively. Severe cyclonic storms and storm surge of up to 15 m have been reported. Plant must also be able to survive the exceptional occurrence of very high waves in storm conditions.

2.19: River Current: A network of rivers, canals, streams etc. numbering about 230 with a total length of 24140 km covers the whole of Bangladesh flowing down to the Bay of Bengal. Different sizes of boats are the main

carriers of people and goods for one place to another. Boatmen usually use the water-sails to run their boats against the wind direction. But until now no research has been reported to utilize the energy of river current properly.

2.20 Waste to Electrical Energy: Dhaka City has been suffering for a long time from a tremendous environmental pollution caused by municipal solid waste, medical waste and various industrial wastes. In order to save the city from environmental pollution the waste management as well as electricity generation from the solid wastes programme should be taken up urgently.

2.21 Rural Energy Scenario: More than 80 percent of total population of the country lives in rural areas. At present major portion of total energy needs is met by locally produced Bio-mass fuels which is mostly consumed in the household sector for cooking, Ongoing rural electrification programme meets a small portion of total rural energy needs. For overall national development there is a need to pay special attention so that the energy needs of rural areas for subsistence and productive requirements (e.g. agriculture, industries, transport) are met on a sustainable basis. An area based planning methodology will have to be considered to meet the energy needs of different locations.

3.0: Objective of the Energy policy:

The government and all other policy planners should followed the national energy policy for the government to achieve success and to fulfill the objective of energy policy. The main objective of the energy policy are:

- 3.1 For sustainable economic growth of the country the needs of energy should be fulfilled by the developing of different kinds of energy resources.
- 3.2 To achieve the socio-economic development optimum level of development of indigenous energy sources should be given preference.
- 3.3 Gas field development including exploration of gas and construction of gas pipeline should be taken up to cover gas supply at least in 45 districts.
- 3.4 Electricity generation in the different part of the country by construction of small and medium gas base power plant in the private sector. Small power plant up to 50 MW may be given in the private sector for development by negotiation of the price of sale of electricity supply to the national grid on BOO basis immediately.
- 3.5 To get rid off from the load shading immediate steps should be taken up for power generation .To fulfill the demand of electricity, effective program should be taken up for construction of power station both in public and private sector.. Government may consider unsolicited offer for power generation to fulfill the requirement of electricity on emergency basis through a transparent process.
- 3.6 Private sector should be highly encouraged for development of captive generation.
- 3.7 The development of coal base power plant in Khalaspir of Rangpur and Phulbari of Dinajpur should be taken up immediately with the project for exploration of coal mine in Khalaspir & phulbari
- 3.8 Development of natural gas liquid (NGL) be taken up on priority basis for bringing the facility of gas to every bodies door.

- 3.9 Development of peat resources be taken up on priority. The foreign and local private sector may be invited to develop both peat and peat base power plant in Madaripur. Government will take up plan to recover the source of peat from Khulna and Sylhet district.
- 3.10 The development of unexplored area of the country may be taken up for further exploration to ascertain the availability of gas and coal or crude oil.
- 3.11 Necessary coal handling conveyer facilities should be well established in the port of Mongla for export of coal on future.
- 3.12 To expand the gas pipeline for supply of the natural gas in all the area of the country. Specially the city of Khulna, Rajshahi, Panchagar should be connected with gas pipeline considering industrial development, tea garden development and suitable economic growth. The present project of connecting gas should be extended from Bogra to Saidpur and Rajshahi in north and from Gopalganj to Bagerhat and Khulna in the west and Kustia & Jessore from Ishardi. The gas pipe line crossing the jumuna Brodge is not sufficient to supply gas to the all the area and to supply gas for fertilizer factory & new power plant in western zone. The new gas pipeline for Jamuna crossing to be taken up for meet up the demand.
- 3.13 To construct more electric transmission line and substation for evacuating electricity from the power plant and ensure required growth of national grid.
- 3.14 The Rooppur nuclear power project could not be established during last four decades and Nuclear power plant has become a difficult proposition due to the changed world order. Big power plant of gas base may be established in Rooppur land for immediate expansion of electricity generation. Rooppur is already connected with gas and suitable location for established of big power plant under BOO.

- 3.15 New petroleum refinery should be established in the port of the Mongla. Small and medium refinery should be established by the private and public sector at Barisal, Chandpur, Bagabari, Serajgonj, Chilmari and other strategic location of the country. This will decrease the import of final petroleum products and will increase final petroleum fuel plus the production of LPG and furnace oil.
- 3.16 Storage facilities for petroleum fuel should be increased at least for 100 days requirements from the present level of 50 days requirement. These storage facilities should be created all over the country considering extreme, natural events like cyclone, flood or war.
- 3.17 Massive tree plantation programmes both in public and private sector for further creation of Bio-mass be taken up on priority basis. The present policy of forest department of government should be recast and local government be given responsibility to get mass participants in tree plantation & conservation of forest
- 3.18 To formulate necessary rules and regulation for conservation of Bio-mass fuel on putting restriction to uses of Bio-mass fuel in brickfield , hotel and restaurant up to Upzilla level and heating the bitumen for road construction. The uses of coal, LPG and NGL be encouraged instead of BIO-fuel for the above purpose.
- 3.19 A pricing procedure in the interest of socio-economic development and industrial growth, for all kinds of energy like gas, electricity, furnace oil etc, be followed, which are directly used in the industry .The price of gas, electricity and furnace oil should be determined in consultation with the stakeholder like business association, ministry of industry, ministry of commerce, Bangladesh bank and ministry of finance. The prices of gas, electricity and furnace oil having direct bearing on employment, investment and industry therefore a stable price is essential for national interest. The price of coal also should come under the special price fixing authority. Since there is a chance of growth of coal base industry in future with the availability of local coal in the market. A pricing committee with the representative of all

above be formed immediately and any change of price should be done through the committee and or energy regulatory commission.

- 3.20 To ensure proper supply of gas, electricity, furnace oil, coal and petroleum oil in all over the country. Demand and requirement be fulfilled by improving necessary facilities of all the items in proper manner and proper way on urgent basis. Representative Government agencies be directed to take necessary steps
- 3.21 In order to minimize any of future global energy crisis dependency on single fuel types should be avoided. Security of energy supply, logistic of transportation storage and handling of energy supply should be made available for any emergency of the country.
- 3.22 The present system of fix the price of different petroleum items be continued but the price of furnace oil be considered with the price of gas and electricity instead of petroleum product like petrol, octane, diesel, CNG, LPG.
- 3.23 To oversee the terms and condition of the P.S.C (Production Sharing Contract) signed with the different companies for production of gas & oil annual inspection and audit should be conducted. Transfer of ownership in any counterpart of P.S.C should be done under prior approval of the competent level and after paying necessary fees for transfer of ownership, to be imposed by the government . A new organization or the petroleum institute may be entrusted to inspect and audit the psc on behalf of the government. The capacity of petroleum institute be enhanced to take such responsibility.
- 3.24 To undertake the systematic survey of exploration and development of indigenous resources of energy of the country.
- 3.25 To fixed up standard and technical facilities for different kinds electrical equipment's, accessories and appliance. Strong monitoring of quality standard is required for proper functioning of the energy sector. For avoiding any electrical accident, all kinds of electrical equipment including cable ,

conductor, switch etc are to be specified and should meet the quality standard. The imported item should have required test certificate as per IEC or equivalent BSTI standard

- 3.26 To fix up standard and technical specification of all kinds of electric meter and measurement tools. Necessary calibration facilities should be created at all the strategic locations to get facilities all over the country for testing & calibration of meter.
- 3.27 To provide facilities and encouragement for establishment of industry for manufacturing of energy related equipment, accessories and appliance. The government may decide to buy the local goods through sub-contracting system and on negotiated pricing from the local manufacturer who fulfilled the standard.
- 3.28 To establish Electro-mechanical laboratory to create the facilities for testing different kinds of electrical equipment used in the electric generation, transmission and distribution.
- 3.29 To ensure establishment of institutions both public and private sector for teaching and training for creation of human resources required for the energy sector. Take necessary steps for research & development of Technical capacity.
- 3.30 To create modern management system for all energy sector both public and private sector for getting competitive advantages.
- 3.31 To ensure the use of the energy efficient electrical appliance like fluorescent lamp with ballast, electric regulator for fans, power factor for motors and other devices instead of conventional items. This will save energy and help conservation.
- 3.32 To create environment for regional and international cooperation for electricity, specially negotiation for development of electricity generation and transmission from Bhutan and Nepal should be taken up for fulfillment of future requirement of electricity. Government may get cheaper electric supply from Nepal and Bhutan through regional grid transmission connection through India, necessary steps should be taken in this regard.

3.33 The use of electricity for signboard, Bill board and neon sign should be totally banned for next 10 years. The country is facing load shading i.e. the electricity supply is failed in the industry for production purpose, residential home for living, school and institution or hostel for education and the national economy suffered great losses, in other hand the big marketing or commercial companies , financial companies lighting their sign board in the road side or on the top of the building only to fulfill the greet or to create competitive advantages over their competitor in the market. A total ban on use of neon sign for commercial advertisement or lighting of signboard in the road side be made immediately. Minimum of 100 MW electricity will be recovered by banning the lighting of signboard, which can be diverted for production of industrial goods. One bulb or a tube light may be used for lighting of sign board put up in the front of any shop of any market, beyond that limits of lighting, & electricity supply be totally banned.

3.34 The load management is an important factor. The evening peak demand can be rationalized if all the shop and commercial enterprise are closed by 6 P.M. Only hospital, medicine shop, clinic, restaurant and educational institution can be remain open after 6P.M. all other establishment must be closed by 6 P.M up to district level. The shop owner if so want can open shop in the early morning from 6 A.M instead of 10 A.M. The shops may be kept open in the holidays. Of course this is for the temporary measure till load shading is required to continue. If within 5 years the load shading is overcome than the opening of market beyond 6 p.m. may be considered.

The present load management for agricultural crops may be continued. More efficient measure should be taken to make generation economically viable and ensure supply of electricity to the productive purpose for the end user like industry, education and agriculture etc

3.35 One price of electricity and gas be fixed up on the basis of techno-economic feasibility. Thereafter discount may be given to bulk user like for gas electricity generation, fertilizer, captive generation and industry. Same for electricity the industry, agriculture, educational institution

may be given. Classification of different category of customer for fixation of price be abolished. The price will be fixed for all the customer at same level but the government or committee may give discount to different customer depending on their consumption. Discount only for those consumers who consume more, not to the lower consumer.

The present system of very low price for lowest category user of electricity is one of the prime reasons of system loss or theft. This should be rather reversed, those who will consume more will get lower rating. The socialistic idea of giving less price to the residential customer using very low quantity of electricity be avoided. This not for economic reason rather to use as weapon to remove the high system loss. In all cases the customer should get discount of higher uses. So that the users will prefer to get higher slap to pay less. (In Bangladesh 80% people are not covered by electricity. The poor peoples are living in rural area, low price for lower electricity users in urban area is not genuinely helping the poor people)

- 3.36 The minimum charges of gas price are to be abolished by introducing alternate method for recovery of fixed cost of gas sector.
- 3.37 The construction of gas pipeline up to Khulna from Gopalganj, Panchagar from Bogra, Rajshahi from Serajgonj and Jessore and Kustia from Ishardi be completed by the next 5 years. The whole nation or at least 45 district head quarters should bring under gas facility by 2009.
- 3.38 The power generation capacity to be increased to 20,000 MW by 2010. The crying needs for electricity to be meet up by more and more generation in the private sector.
- 3.39 Undertake systematic survey, exploration and exploration of petroleum resource and to ensure their rational use for sustainable development of the country.
- 3.40 Expedite exploration and development of indigenous petroleum resources.

4.0 Development strategies of different kinds of energy

To fulfill the objective of the policy and for the sustainable economic growth of the country strategic development programme should be taken up by the government and private sector.

4.1 Gas: Natural gas is primary energy available in Bangladesh. Natural gas is currently the only indigenous non-renewable primary energy resource of the country, which is being produced and consumed in significant quantities. Gas, the main source of commercial energy plays an active role towards economic growth of the country. Natural gas now accounts for about 70% of the country's commercial energy supply.

Out of the total 22 gas fields so far discovered, currently gas is being produced from 12 (twelve) gas fields operated by the three public and two private sector international companies. During 2002-2003, average daily gas demand is about 1155 million cubic feet per day. Gas production has been increasing sharply over the last decades. While only 83 bcf (2.3 bcm) gas was produced in 1983-84, production grew to about 265 bcf (7.5 bcm) during 1995-96; gas production reached 421 bcf (11.9 bcm) during FY 2003. Current level of natural gas related liquids production is about 4000 bbl/day.

The major driving force behind the growth of gas production is the power and fertilizer sector. Power sector is the single largest consumer of gas, and at present nearly 90% of the power generated in the country is gas based. Due to the near absence of any other major energy source, dependence on gas for power generation has spiraled and is expected to remain so.

As an agricultural country, use of fertilizer is very important to meet up the food grain deficiency. Over the last decade, cultivation of HYV crops has gained popularity and consequently, demand of nitrogenous fertilizer has increased sharply, which is expected to continue.

Gas consumption in major industries like textile, dyeing, paper, pulp, cement etc. and in the commercial sector, including tea gardens is also increasing steadily. With the gradual coverage of major growth centers with gas distribution network, use of gas as domestic fuel is increasing manifold.

During 2001-2002 share of gas consumption is power 48%, fertilizer 24% and non-bulk 28% (industrial, commercial, domestic, tea estate, brick field and CNG).

According to the latest study by the Hydrocarbon Unit of the Energy and Mineral Resources Division and Norwegian Petroleum Directorate, the initial gas in place (proven+Probable) reserve of the 22 gas fields of the country is

28.4 TCF out of which 20.5 TCF is considered recoverable. Out of this recoverable reserve, 5.1 TCF has been consumed up to June 2003 leaving remaining recoverable reserve of 15.4 TCF.

United States Geological Survey (USGS) conducted a study for undiscovered gas resource of the country in 2000. According to this study there is 50% probability of getting another 32 TCF of gas (undiscovered resource). A study jointly conducted by the Hydrocarbon Unit and Norwegian Petroleum Directorate (NPD) in 2001 suggested that there is 50% probability of striking additional 42 TCF of gas (undiscovered resource).

The value of fuel and figure shows demand of the gas is being increase geometrically. The increase production of gas remains marginal to meet up the demand. So it is very important for the national economic growth to develop and discover further resource of gas supply. The study conducted by Norwegian Petroleum Directorate and United States geological survey be taken up to develop project on that basis and be taken up on urgent basis.

The present policy of production, sharing contract with private companies should be continued, besides government should take up exploration from its own resources by creating special fund. Government should also considered to develop the gas field through bi- lateral negotiation with friendly countries and government to achieve success in gas field development of gas. Government may consider both solicited and unsolicited offer to develop gas for national interest. While considering any unsolicited offer, for the sack of transparency government should compare the same with solicited offers. Government may also take the views of parliamentary standing committee for considering unsolicited offer where both treasury & opposition M.Ps are represented.

Explored gas should be transmitted to different areas of the country to ensure the supply of gas through high-pressure pipeline. Government may also follow standard policy for construction of the high-pressure transmission line through private investment. A policy of construction of the high pressure gas transmission line may be formulated and the private sector both local and foreign may be invited for investment for construction of gas line on whiling charge basis.

The massive investment requires for construction on gas pipe line should be open for private investment by framing a standard regulation and under the supervision of energy regulatory commission.

4.2 Electricity: Generation of electricity, transmission and distribution capacity is essential for economic development for the country.

Total installed power plants of the country is about 4230 MW of which 3475 MW is located in the East Zone and 755 MW in the West Zone. Of the total installed power plants, the effective operational capacity is about 4055 MW against the peak demand of about 3459 MW in 2001. Timely maintenance and replacement of old units have not been possible due to non-availability of funds. So far maximum generation was 3171 MW (on 06-04-2002). As a result, it is difficult to maintain a reliable supply due to shortage of available generation capacity. In case of emergency outage and or/major overhauling, the supply is managed by load shedding. The situation has improved to some extent with the establishment of some new generating stations by Independent Power Producers (IPPs) and some rehabilitation of some existing power units.

Indigenous energy sources (e.g. natural gas, hydro) are used for the generation of electricity in the East Zone and imported petroleum fuels are used to generate electricity in areas of the West Zone where natural gas supply is not available. In order to minimize the effect of fuel cost on power generation, electricity generated in the East Zone is transferred to the West Zone via East West Electrical Inter-Connector established in 1982. The transfer capacity of the Inter-Connector has almost reached its limit (450 MW).

Gas is already available at Baghabari - Seraganj in the West Zone through Jamua Bridge and there is plan to extend gas network all over the West Zone. It is logical and economical to install gas based power plants in the West Zone. Accordingly, gas power plants have been planned to be built gradually in the West Zone for regional generation balance.

In 2001, total electricity generation was 17021 GWh and fuel mix was as follows: hydro (5.71%), natural gas (87.56%) and petroleum fuels (6.74%). Total electricity generation in 1999 was 13638.5 GWh and the fuel mix was as follows: hydro 6.08%, natural gas (84.29%), petroleum fuels (9.63%).

A coal based power station 250 MW is under final stage of construction and it will supply electricity in the national grid 2005.

Distribution of service connections in 2001 among the three utilities were as follows: BPDB 15,42,650 (28%), DESA 5,89,754 (11%), REB 33,95,721 (62%). Distribution of energy sales by the three utilities were as follows: BPDB 14003 GWh (including bulk sale to DESA and REB), DESA 5381 GWh (including bulk sale to REB) and REB 3131 GWh.

The consumption of electricity in 2001 in different end-user categories were as follows: domestic (41%), commercial (8%), industrial (44%), irrigation (5%) and others (2%). During the period from 1982 to 2001 the share of domestic consumption of electricity has increased from 15.3% to 41%, whereas the

productive use (commercial, industrial, agriculture) has decreased from 77.3% to 59%. In order to increase the contribution of electricity in economic growth it is necessary to increase the productive use of electricity.

The overall programme of rural electrification is administered by Rural Electrification Board; and the specific distribution system within a particular area is owned and managed by the respective Rural Electricity Co-operative known as Pallibiddyut Samity (PBS).

On the average, a PBS covers an area of 1800 KM² and 6 Upazilas (Upzila headquarters and adjacent rural areas). Total number of PBSs established upto 2000-2001 were 67. Average investment costs of establishing a PBS upto the year 2000 was approximately Tk. 1000 million (Equivalent to 20 million US Dollar).

The total installed transformer capacity of 67 PBSs upto June 2001 was 3000 MVA as against the peak demand of 900 MW (using 0.8 as the factor of coincidence). Thus the capacity utilization of the installed distribution network in terms of peak demand was only 30%.

Total number of consumers connection of REB upto June 2001 were 33,95,721 and the mix of consumers was as follows: domestic 83.5%, commercial 11.6%, irrigation 2.7%, industry 2% and others 0.2%. The total energy consumption in 2000-2001 was 3158 GWh and the shares of different categories of consumers were as follows: domestic 39.30%, irrigation 11.85%, industry 42.81%, commercial 5.77% and other 0.27% in the year 2000-2001.

Based on the REB standard of 4 km per sq-km, the network now covers about 32,500 villages. Thus now about 38% of villages out of 86,000 have electricity network.

To meet the increasing demand of electricity government should have a multimode development strategy for electricity generation transmission and distribution.

4.3 Electricity distribution /The present Scenario: Per capita electricity consumption in Bangladesh is estimated at Kwh, about a quarter of the rate in India. Less than 20% of the population currently have access to distributed power. In rural districts, where 80% of the population live, the figure is less than 10%.

For most of the last decade, peak demand has exceed available capacity on between 230 and 340 days a year, resulting in regular and extensive load shading. In the last four year the annual duration of load shading has averaged nearly 1800 hours. Load shading has occurred as a result of failure of gas supply

for generating, units being shut down because of equipment failure and inadequate load management.

Power is generated and distributed nationally by the Bangladesh Power Development Board. It is distributed in urban areas by local supply authorities. The biggest of these urban authorities is the Dhaka electric supply Authority. In rural area distribution is handled mostly by local cooperatives- Palli Bidyut Samities (PBSs) contracting with the rural Electrification board. The urban power utilities run at a substantial loss, estimated by the world bank at about US\$100 million a year. The losses are mainly due to illegal connection and collusive underbilling by utility employees. Loss of electricity due to theft is estimated at 40 % of generation. System losses are lower and collection performance better in the PBSs.(Temple,2000); (World Bank PER 1997); (ADB 1969)

A survey of customer for government that works indicated that dissatisfaction [with electricity services] is widespread—nearly 60% in the urban area and nearly 40% in the rural area. It is the result of intermittent and frequent power cuts, voltages fluctuations and excessive billing. A survey by of public service in six sectors found that 70% of surveyed households with an electricity connections and accessories; 21% had to make frequent visits to obtain service ; 12% reported undue delay in responses and 40% reported other difficulties. About 30% reported that the meter reader would arrange to reduce their electricity bill. (Transparency international Bangladesh (TIB) Baseline survey 1997).

Problems with billing are frequent. The TIB survey found that about 12% of these households with an electricity connection rarely if ever received an electricity bill. Bills are often received very close to the last of the payment for payment. Payment requires standing in queues for many hours at designed payments offices. DESA employees frequently re-send old bills with claims for arrears.

The governance and management of the electricity distribution system contributes both to the inconvenience and high cost for consumers and the opportunities for extensive corruption. Some of the contributory factors include:

- 1) Highly centralized and politicized control of procurement and project management.
- 2) Poor management of demand and inability to control systems losses.
- 3) The power & political connection of employees and trade union.
- 4) Corrupt Engineers.

To overcome the present scenario of electricity distribution Government shall have to take effective measure which is include.

- a) One price for electricity.
- b) Discount for more electricity.
- c) Billing & bill collection to be given to private sector.
- d) Small Distribution Company for each district be established having direct responsibility for earning by the companies.
- e) Customer Council be formed for all industrial customer and bulk customer. strong monitoring of the meter of bulk customer be done.

4.4 Policy guideline for Electricity generation

- a) The policy of small power generation should be continued. The capacity of small power generation may be increased to 30 MW. The present policy of fixing electricity purchase rate through RFP is combersum and time consuming instead government may fixed the purchasing price, wheeling charges through energy regulatory commission and the private sector should ask to construct the small power plant in different location of the country for immediate fulfillment of the requirements of electricity.
- b) Government policy for construction of large-scale power plant under IPP or government ownership be continued.
- c) The power generation by using municipal wastage be taken up in the metropolitan areas. Special incentive and negotiated package can be offered for such generation plant for immediate implementation. Government may considered unsolicited offer in consultation with energy regulatory commission for such project.
- d) Power generation by using coal and peat should also be taken up as special case to meet the demand.
- e) A composite development strategy for development of gas field, gas transmission line, electricity generation and electricity distribution line should be framed to meet the requirement of electricity and gas in the inter country.
- f) Government should take up a plan for electricity transmission and distribution network and private sector may be encouraged to invest in the sub station and distribution line on rental or whiling charge basis.

g) The captive generation should be facilitated to be continued. A policy for purchase the excess electricity produced by any captive generating unit for distribution to others customers through national grid be formulated. An electricity purchase rate, from the captive generation and whiling charges may be fixed in consultation with the energy regulatory commission for easy excess of captive power producer for selling their electricity in the national grid.

4.5 Coal: Government should take immediate steps for exploration and mining of coal from Phulbari of Dinajpur and Khalaspir of Rangpur district coal field. Government should also consider the alternative process/method for recover of coal from the existing platform types recovery process adapted in Barapukuria. Due compensation be paid to the people at present inhabitant of the coal mine area before undertaking mining. The economic feasibility of Jamalgon coal field may be re- examine with the increase of price of energy.

4.6 Peat: Bangladesh an energy starving country should explore all alternative sources including the peat. The discovered of peat in greater Faridpur district should be recover and used for generation of electricity immediately. This project may be allocated to private sector through negotiation. The government should also take steps of recovery of peat from the district of Khulna and Sylhet.

4.7 Fuel Oil: Government should reduce import of finish fuel and should develop refining in different location to meet up the requirement of fuel oil. Government may also consider export of final fuel oil in the long run.

A) A refining at Ashugonj or Sylhet may immediately be taken up for refining of crude oil, now are available in Rashidpur.

B) Further exploration is essential by the government directly or through contract sharing basis for finding source of crude oil in the geographical boundary of Bangladesh.

4.8 Solar Energy: Solar heat has been used in Bangladesh for centuries in a variety of economic activities such as drying of washed clothes, food-grains, fish, vegetable, raw jute, etc. and evaporation of saline water for salt production. There are various activities in rural Bangladesh which depend totally on the use of solar energy and if these could be performed more quickly and efficiently by using simple devices, it would increase productivity without making and demand on commercial energy sources. The export of dry fish is still 100% depended on solar energy.

The long-term average sunshine data indicates that the period of bright (i.e. more than 200 watts/sq.m intensity) sunshine hours in the coastal region of Bangladesh varies from 3 to 11 hours daily. The global radiation varies from 3.8 kwh/sq.m/day to 6.4 kwh/sq.m/day. These data indicate that there are good prospects for solar thermal and photovoltaic application in Bangladesh. It was found that during and after a disaster (cyclone) over some islands and coastal belts of Bangladesh in 1991, the photovoltaic generation of Sandwip Island was the only source of energy to provide to communication link between the people of the island with the main land when all other communications were totally disrupted.

With good to excellent solar resource available in the country throughout the year, there is a good potential for PV in unelectrified villages. The solar technology can be extremely beneficial for remote areas of Bangladesh. A public body should be established for proper use and development of solar energy.

4.9 Wind Energy: The long term wind flow of Bangladesh (specifically in islands and the southern coastal belt of the country) indicate that the average wind speed remains between 3 to 4.5 m/s for the months of March to September and 1.7 to 2.3 m/s for remaining period of the year. There is a good opportunity in island and coastal areas for the application of windmills for pumping and electricity generation. But during the summer and monsoon seasons, (March to October) there can be very low-pressure areas and storm wind speeds of 200 to 300 kmph can be expected. Wind turbines should be strong enough to withstand these high wind speeds. Bangladesh should take up project to use the wind into energy.

Local knowledge of wind resources appears to indicate the potential for wind energy use in the coastal areas of Bangladesh for both grid applications and for isolated village electrification. However, measured resource data of adequate quality is lacking. Bangladesh is strongly influenced by the southwest monsoon winds that blow from about March to October. These winds are further strengthened as they pass through the V-shaped coastline of Bangladesh. It is these monsoon winds that have made possible extensive wind farm developments in India, where, for example, more than 200 MW are operating in Tamil Nadu. Wind speeds are expected to be high enough for economic grid power generation to feed the main grid or for isolated grids in wind-diesel hybrid configurations.

Good quality wind data for one year is now available for Patenga, Chittagong, a potential wind farm site, where in 1995 wind speeds ranged from 4.2 to 8.1 m/s and averaged 6.5 m/s at 20 m. Winds are strongest from March to October, which exceed 5 m/s at 20 m for over 6000 hours per year (cut in speed of large

wind turbines is about 4 m/s). Preliminary estimate of net output from a 500 KW wind turbine with a 40 m hub height is 1200 MWh/year at Patenga which seems to be feasible.

There is a number of windy locations along the coast line where land is available and where there is grid and road access. Given the danger from cyclones, it is important that the survivability of wind turbines be investigated. Wind potential at Patenga along is reportedly can produce about 100 MW. Therefore further investigation of the potential wind power development is warranted. A new organization may be set up as a special division /cell for future development.

4.10 Mini-Hydro: Assessment of low head hydro-power potentials in Bangladesh has been undertaken in recent years. Twenty three sites of hydro-power plant ranging in capacity from 10 kw to 5mw have been located in the flat plains with available capacities for the 6 month, June to October. No plant has yet been installed.

The private sector both local and foreign for production of electricity through hydro generation or mini hydro generation may be allowed. Government may consider any unsolicited offer. For the sake of transparency government may discuss the acceptability of such proposal with the parliamentary standing committee on energy. Both government and opposition party will have the opportunities to discuss the offer of energy in such place.

4.11 Tidal Energy: The tides at Chittagong, south east of Bangladesh are predominantly semidiurnal with a large variation in range corresponding to the seasons, the maximum occurring during the south-west monsoon. A strong diurnal influence on the tide results in the daytime tides being smaller than the nighttime.

In the year 1984, an attempt was made from the EEE department of BUET, Dhaka to assess the possibility of tidal energy in the coastal region of Bangladesh, specially at Cox's Bazar and at the islands of Moheshkhali and Kutubdia. The average tidal range was found to be within 4-5 meter and the amplitude of the spring tide exceeds even 6 meter. From different calculation it is anticipated that there are a number of suitable sites at Cox's Bazar, Moheshkhali, Kutubdia and other places, where a permanent basin with pumping arrangements might be constructed which would be a double operation scheme. Tidal energy might be a good alternative source for Kutubdia Island where about 500 kw power could be obtained. At present there are only 2x73 kva diesel generator sets to supply electricity for 5-6 hours/day for 72,000 people and there is practically no possibility of main grid supply in the future.

The new organization for wind energy should also look into the tidal energy project

4.12 Wave Energy: Until now no attempt has been made by Government of Bangladesh to assess the prospects for harnessing energy from sea waves in the Bay of Bengal. Wave power could be a significant alternative source of energy in Bangladesh with favorable wave conditions specially during the period beginning from late March to early October. Waves are generally prominent and show a distinct relation with the wind. Waves generated in the Bay of Bengal and a result of the south-western wind is significant. Wave heights have been recorded by a wave rider buoy and correlated with wind data. Maximum wave height of over 2 m, with an absolute maximum of 2.4 m, on the 29 July were recorded. The wave period varies between 3 to 4 sec for waves of about 0.5 m, and about 6 sec for waves of 2 m.

In Bangladesh wind speeds of up to 650 kmph (400mph), 221 kmph (138 mph) and 416 kmph (260 mph) have been recorded in the years 1969, 1970 and 1989 respectively. Severe cyclonic storms and storm surge of up to 15 m have been reported. Plant must also be able to survive the exceptional occurrence of very high waves in storm conditions.

The new organization for wind, wave & tidal energy be formed for tapping the resources of electricity generation at the earliest

4.13 Bio-Mass: Bio-Mass energy is the life line of the Bangladesh economy. 80% people living in the rural area are fully depended on the Bio-mass energy. Government will take strong and effective steps for development of Bio-mass energy in the following manner:

- A) Massive tree plantation policy both in the private and public sector should be taken up to create facility to more Bio-mass energy.
- B) Government will further stress for increase of animal head, to get more animal dung for bio-, mass energy. 7(Seven) Kg of animal dung can be recovered from one animal increase of one hundred thousand animal head will bring seven hundred thousand animal dung, that means seven hundred tons of animal dung per day, which is sufficient to run a 100 MW power plant. The residue of the animal dung after burning on the power plant or fire can be used as manure. Increase of animal head can be solved the problem of energy, electricity as well as fertilizer.

A massive program for increase of the cattle head should be taken by the government immediately, which will bring sufficiency in dairy product as well as will meet up the demand of energy and fertilizer.

C) The development of Bio-mass will remain with the development of dairy and forest. In the both cases the private sector should be encouraged to develop the resource. An example can be cited that 1000 cattle will give around 7000 kg of cattle dung everyday i.e. 7 tons of cattle dung by which a mini electricity plant can be run. If we increased our cattle head by 100 million heads in next 5 years we can electrify our rural area by the waste of cattle dung.

4.14 Jatro-Phacurcas & Bio-diesel: Government will undertake a massive plantation programme for production of Jatro-phacurcas plant. It has been invented very recently that the seeds of Jatro-phacurcas are very suitable for manufacturing of Bio-diesel. One hundred hectares of Jetro-phacurcas plantation can produce one million metric ton of Jetro seeds or the poison nut. This will produce three hundred thousand tons of Jetro-pha oil and by refining of the Jatro-phaoil, bio-diesel to be produced.

A Jetro-phacurcas tree will contribute to give seeds for period of 40 years after three years of growth of the tree for plantation. The estimated production of per litter bio-diesel will be Taka 15 in the present market. The Jetro-phacurcas can be planted in the vast vacant land in the country. Unutilized land of the different government department and forest department. The land of the road department and railway line may be bought for cultivation of jetro-phacurcas.

The sufficient production of Jetro-phacurcas can alone bring the self-sufficiency in fuel oil. A new department under the government can be prompt keeping the representative of the private sector in the management for implementation of program of plantation of Jetro-phacurcas. Residue of the oil seed is very suitable for uses on fertilizer for all kinds of crops.

A new department or wing may be created in the energy ministry with the representative of agriculture and forest ministry to develop this cash crop and ultimate raw materials for energy

4.15 River Current: A network of rivers, canals, streams etc numbering about 230 with a total length of 24140 km covers the whole of Bangladesh flowing down to the Bay of Bengal. Different sizes of boats are the main carriers of people and goods from one place to another. Boatmen usually use the water-sails to run their boats against the wind direction. But until now no research has been reported to utilize the energy of river current properly. A study should be conducted for the use of river current.

4.16 CNG: The strategies for the development of CNG as transportation fuels are:

- (i) Banning of diesel buses and trucks in cities roads with a rigid cut off date
- (ii) To convert existing petrol vehicles to CNG by establishment of sufficient number of conversion workshop by Public/Private Sector in all the major cities
- (iii) To install and operate adequate number of CNG refueling station by Public and Private Sector in the major cities and the connecting highways
- (iv) Set up emission standard for CNG vehicles
- (v) Elimination of two-stroke baby taxi.
- (vi) Encourage introduction of CNG dedicated buses and four-stroke Baby Taxis through reduction of duty.
- (vii) Monitor CNG converted vehicles closely to ensure quality of emission and to ensure pollution control.
- (viii) To introduce appropriate regulatory frame-work for more systematic monitoring, closer control and regulation. Meanwhile, GOB has already introduced gazette the guideline and procedure for establishment of CNG refueling station and conversion workshop.

4.17 Small Refinery: Government should formulate plan to meet up the requirement of fuel oil, CNG, LPG, Coal and furnace oil. Small and medium refinery may be allowed to setup by the private sector in the different location of the country. All other energy both public and private sector should be developed to fulfill the requirements.

5.0 The Management of Energy Sector **Organization**

The ministry of energy is the policy-making authority and all necessary Law, Act, Rules and Regulation will be made by the energy ministry to improvements of the national energy policy as per the rules of business.

5.1 Power Cell: The Power Cell should be re organized to carry more responsibility. This should be re-named by Power Generation Authority or Power Sector Investment Board. Power generation authority will issue license for all the power generation plants both in public and private sector.

The Power Generation Authority (PGA) will not generate electricity themselves but work as coordinating facilities body like board of investment for industry to all power producer., The PGA will fixed the rate of selling electricity to the national grid in consultation with energy regulatory commission. The PGA will fixed the wheeling charges of different utilities of PDB, DESA, REB while using by any captive generator or private producer of electricity to national grid or a third customer of their choice. All the producer will sale & buy electricity as per the rate fixed by PGA.

The power generation authority will make a plan for generation of electricity both in public sector and private sector. The basic plan will be to make the target of production of electricity and attract to the investor for investment in power sector.

Considering the demand of electricity, PGA will allow private investor to setup power plants up to 20,000MW generation capacity from the present level of around 5000 MW. PGA will fixed a rate of purchase of electricity from the producer for next 15 years with 60% capacity utilization considering the rates of different solicited offer for power generation by private producer . PGA will ask the investor to invest directly by getting clearances from PGA at a specific location . The PGA will determine the location in consultation with environment & BPDB. The PGA may decide the sponsor on first come first service basis. PGA will negotiate with Nepal, Bhutan, India to import cheap electricity through regional cooperation.

The negotiation between PDB, DESA, REB has not been successful for selling excess electricity to national grid by captive generator for not been reached the wheeling charges due to non availability of a policy. Necessary policy in this respect will be formulated by the power generation authority or existing power cell to enable the generator to sell their excess production to became more competitive in investing for power generation.

The PGA will fixed the rate of the electricity for the distribution companies or the government utilities and issue clearance to set up the power plant up to 10-30 MW at different location of the country. The utilities will enter into contract for purchase of electricity from any investor or sponsor after the issue of clearance certificate by the PGA and the price fixed shall be accepted by the utilities for purpose of electricity. Government may avoid issue of RFP for purchase for electricity. The nation is starving for power, door of investment in power sector to be opened to local and foreign investors in such a way so that the investor can invest easily and the country can fulfill the requirement of electricity.

PGA will take up development project for effective development of different kind of power generation sources like solar energy, tidal energy, peat based power generation unit, hydro power generation in the private sector and gas based power generation in the private sector. PGA will negotiate with the investors and issue license to development generation plan in the private sector. The distribution company will purchase the electricity from the private generation at a negotiated price to be fixed up by power generation authority in consultation with Energy regulatory commission. The power generation authority will take up plan to meet up the generation gap immediately to remove the problem of load shading.

5.2 Energy Regulatory Commission (ERC): The commission should start work immediately as per the Energy Regulatory Commission act. Government should put its priority for effectiveness of the ERC. The present method of appointing chairman be changed. For such high profile post a committee may be formed to suggest at least 3 names to the president and the president will appoint one of them. The committee be formed with of the republic 1) Energy Minister 2) Principal secretary to PM 3) President of FBCCI 4) President, Supreme court bar & 5) Chairman, University grant commission.

5.3 Petro Bangla: The Petro Bangla the owner of oil field, gas field and shareholder with foreign companies under Psc. There should be changes in the organogram and work in the Petro Bangla due to changed situation. A team or committee should be formed by ministry of energy to make necessary recommendation for bringing the dynamism in the work of Petro Bangla. Till than Petro Bangla will contribute to carry out their responsibility. A committee comprising FBCCI, Industry Ministry, BOI & Energy Ministry be formed to make the guideline for Petrol Bangla.

5.4 Bangladesh Petroleum Corporation (BPC): Bangladesh Petroleum Corporation (BPC) works under the petroleum act 1974, there should be changed in the petroleum act 1974. The BPC established considering a socialistic model of economy of the country but under the free market economy the fate of BPC should be changed. BPC basically control three oil companies and eastern refinery.

BPC may be converted into Petroleum Directorate and may be entrusted with job of issue license for import of crude oil and different kinds of petroleum product and monitor the activities of oil companies. The oil companies may be allowed to work independently for import of petroleum product and marketing the same.

The Petroleum Directorate should formulate a plan for holding a stock of at least 100 days requirements of petroleum product in the country by constructing the storage facilities both in the public and private sector in period of 3 years times. Petroleum Directorate will fix the price in consultation with the energy regulatory commission, for different kind of petroleum product, except the price of furnace oil which should be dealt separately, since furnace oil is industrial materials. The national energy committee should decide the price of gas, electricity and furnace oil.

The Department of Petroleum will also monitor the quality of petroleum product transportation of petroleum product and supply of kerosene oil and LPG in the rural area of the country. The Department of Petroleum may extend their offices up to district level to fetch the problem of supply of petroleum product and stabilization of price of petroleum product in the whole country.

Proper information and statistics in respect of petroleum product should be maintained by the Directorate of Petroleum. The total policy of Petroleum to be undertaken by the Directorate of the Petroleum.

5.5 Bangladesh Power Development Board (BPDB): Bangladesh Power Development Board is the major organization controlling around 4000 MW power generation of the country along with the transmission and distribution lines. Major changes required in the BPDB .

- A) All power generator units should be separated and segregated by forming separate company for management, operation and accountability of investment and profit and loss of each generation unit.
- B) Distribution Company for each district to be formed as separate unit under company act and separate accounts of investment and income should be maintained.
- C) A separate directorate under PDB should be made or a separate wing in each distribution company should be made for industrial and bulk customers.

The premises of bulk customer should be visited by an engineer or by an officers of the revenue department at least once in a month to see the condition of electricity supply, examine the meter and record the electricity consumption factors.

One representative from the trade organization and one representative from the local municipality should be included in

the management board in the distribution company of each district level.

- D) Government will take initiative to hand over the responsibility of generation unit and distribution unit to the private sector investors gradually but as early as possible.
- E) Electricity connection to industrial customer should be given up to level of for 500 KW instead of the present level of 50 KW at the cost of BPDB. However the cost of sub station may be recovered in 60 annual investment from the industrial customer of above 100 KW connection.

5.6 DESA, REB: The service of REB is satisfactory but the DESA service required improvement. The system of customer association like REB may be followed by DESA. Industrial and bulk customer in each zone and area should be discussed to overcome the problem of system loss of DESA. Authority should holds the regular meeting with customers committee by formation of committee of council for customer in each some and district.

5.7 Power Grid Corporation of Bangladesh (PGCB): Power Grid Corporation of Bangladesh should take more project for transmission of electricity. Power Grid Corporation should be entrusted for negotiation with power authority of Nepal, India & Bhutan for implementation of international power grid line, Specially the project for interconnection with Nepal & Bhutan. Negotiation should start with India, Nepal and Bhutan to import of electricity from the cheap sources from Bhutan and Nepal.

The 4- Boarder power transmission project of Tala (Bhutan) to Ahuba (Nepal) and Shiligori (India) to Thakurgoan should be taken up in consultation with Asian Development Bank (ADB) & World Bank.

5.8 Titas, Bakrabad, Jalalabad and Pashimunchal Gas distribution Company: Distribution company for national gas should be restructures as follows:

- A) Maximum of four administrative district should be under in one gas distribution company. Titas gas company should be bifurcated immediately. Three company should be formed to look after the gas supply of Titas gas and the responsibilities be transferred from Titas immediately.

- I) Mymensing, Tangail, Jamalpur be under one gas distribution company.
 - II) Narangonj, Monshigonj, Narshindi should be under one gas distribution company.
 - III) Titas gas distribution & Transmission Company should be responsible for Dhaka, Gazipur and Manikgonj.
- B) The gas companies board should have a full time chairman instead of present part time chairman. Energy ministry will nominate the chairman from among the distinguished person for a period of 3 years beyond any government servant.
- C) No Secretary or joint secretary of any ministry will be chairman or director of the gas companies. However the retired secretary may be chosen for appointed as a chairman if government thinks fit. In all the board of the Gas Company representative of form trade organization must be included.
- D) All the gas company will have a arbitration tribunal and appeal tribunal to dispose of and to consider any grievances of or against of the company or against any official.
- E) Government will take the initiative to hand over all gas distribution company to private sector gradually but as early as possible

5.9 Padma, Meghna, Jumuna Oil companies: Oil companies should re-organized as follows:

- A) All oil companies will have the full time chairman of the board to be nominated by the energy ministry for a period of 3 years. Energy ministry will nominate the chairman from among the distinguished person beyond Government servant.

No secretary or joint secretary of government will remain as chairmen or director of the oil companies. Oil Company should be accountable for their investment profit and losses. Oil Companies will fix a value of their share and at a least 51 % of share should be off loaded though security and exchange commission or the stock exchange.

- B) Each oil companies should own at least a refinery for fulfillment of demand of refines petroleum product from own sources instead of import

of final product. Oil Company may appoint agent for operating or running oil depots from the private sector.

- C) All oil companies should use ethanol or gas -hole as adhesive with octane and petrol. The oil companies will take initiative for production of ethanol from molasses available in the sugar mill to save the costly foreign currency. This will also help the sugar industry to become economically viable
- D) Government may consider change the name of the oil companies like Bangladesh national oil companies or Bangladesh petroleum marketing companies etc from the existing Padma, Meghna & Jamuna.

6.0 Customer Council

For gas, electricity and furnace oil a customer council will be formed from the industrial customer of the energy.

In every calendar year the regional and zonal or district level distribution or marketing companies will invite all their industrial customer of gas and electricity and furnace oil. At least 15 days clear notice to be issued to all customers and advertisement in the newspaper should be given where the customer exceed more than 100 numbers of any area or sector. The respective authority for gas, electricity and furnace oil will arrange meeting separately. The following agenda will be discussed in the meeting.

- A) Present Position and problem of supply of Gas /Electricity/H.F.O
- B) Future demand and the problem of new customer.
- C) Collection of bills.
- D) Any illegal use / illegal trade of gas, electricity and H.F.O
- E) Importance of elimination of system loss.
- F) Any complaints of customer against any employees of the sales, distribution and marketing companies of gas, electricity and furnace oil.

6.1 A district level meeting of all customer or district level meeting of the representative of customer shall be held in every calendar year and dispose of the above issues, where the customers less than 100 in a district separate zonal meeting is not required.

6.2 Similarly national level meeting of the customer's representative shall be held in every calendar year. The concern minister and secretary of the division should attend the national meeting of the customer.

6.3 In the national level committee the nomination of representative for arbitration tribunal and the appeal tribunal to be made and price fixation committee be made.

6.4 The zonal meeting will be called by the Zonal/ regional head .The district meeting will be held by the district's head or regional officer of gas/electricity department. The national level meeting by each gas distribution companies, BPDB, DESA & BPC for furnace oil. All expenses in this regards except the travel expenses of the participant if any will born by the respective companies.

7.0 Association of Owner, Employers

The employers and agencies and owners engaged in the energy sector business and the employees, owner and agents like gas exploration, crude oil refining, oil distribution, filling station, power generation, power distribution both in the public and private sector, transmission and distribution companies or oil marketing companies will not be allowed to act in any trade union activities. They will be responsible as individual for their deeds. No permission will be given to arrange meeting by the employees or the employees of the agents or dealer against the management of energy generation, distribution & marketing companies.

7.1 Necessary amendment in Industrial Relation Ordinance 1969 to be made that all person engaged in energy sector activities will not be allowed to trade union activities. The private owner of the power unit or filling station or CNG station or LPG feeling station or distributor will also not be allowed for form any organization or to carry any activities of trade union Act under labor now but the owners will be allowed join any trade organization affiliated by ministry of Commerce.

7.2 However any employees will be allowed to make any appeal to the honorable minister of the ministry directly for any injustice or complaints of corruption against any officer or employees or against any decision of individually without the proper channel. They can also apply to arbitration tribunal for their problem. This opportunity to direct approach to the honorable minister may be given or to take opportunity to go for arbitration tribunal will be given in lieu of ban on trade union activities.

8.0 Salary to the Officer & Employees of Energy sector

8.1 In 1972 the country thought to be a socialistic economy and on that basis a national pay scale has been adopted for all sector including energy sector by the government and the same is being followed by all successive government although it has been proven detrimental to the nation.

8.2 Two separate pay structure to be implemented for energy sector. One for officers and another for employees and by scarping the present national pay scale.

8.3 At least 50 slap of pay scale should be introduced for different kinds employees enjoyed in different section depending on this work. The technical staff of energy sector may be reworded considering the job description. Say a electrician works for low voltage line can not be considered for a electrician working for high voltage line. So even the designations are same but the job are not same and pay & allowances should be determined considering the jobs. A separate pay recommendation committee be formed by ministry of energy to make necessary suggestions to the government. It is to be seen that the employees will have no right to trade union and works on their skill on hire & fire basis to get better services for public, so the pay & allowances should be attractive . This facility of enhancement of pay will also lead to reduce of system loss.

9.0 Price Fixation Committee

9.1 A national committee for price fixation of gas, electricity and furnace oil will be formed with energy minister as chairman. The members will be taken form :

- a) FBCCI president or his representative
- b) Representative form the customer of gas, electricity & furnace oil.
- c) Representative of ministry of Industry.
- d) Representative of ministry of Commerce.
- e) Representative of ministry of Agriculture.

f) Representative of ministry of Finance or NBR.

10.0 Cost of Electricity

The cost of electricity generation is Taka 1.00 only per unit and cost of gas Tk.0.80 for production of one KW electricity, and profit and depreciation cost of any company will be around 0.80 only, so the total price of electricity is Taka 2.60 only. The transmission and distribution cost should be 0.40 only. So the electricity should be sold to industrial customer at Taka 3 only, but the price of electricity is high due to system loss and wrong perception. The electricity system loss should be reduced by elimination of different slaps of pricing. There should be one price and the discount to be given to bulk consumer, in that case no body will try to remain at low slap for paying low rate of tariff of electricity.

All industrial customers are to be dealt separately from the existing unit of distribution along with residential customer. The bulk consumer having different problem and special care to be taken. Inspection of the premises of the factory should be made by officers in every month or within two months at least to see the condition of supply of electricity in the industry. This will reduce the system loss.

10.1 Limits of connection to industrial customer: The electricity connection to any industrial unit up to 500 KW should be given by the utilities under a contract with the own investment form the utilities, however, the cost of substation may be recovered from the customer above 100 KW connection within 5 years in equal installment. The BPDB, DESA, REB may take loan from leasing companies in this respect. At present policy is to provide connection only up to 50 KW which is inadequate to small and medium industry. The limit was fixed in 1989 when the medium enterprise has not grown. This limit to be extended up to 500 KW for rapid industrial development of the country. BPDB/REB will make necessary amendment in their order within one month of the acceptance of this policy by the Government. Any industry will be allowed to more than one meter, more than one connection if so required.

11.0 Electricity Distribution and Accident

11.1 All electricity installments must have the standard and meet the requirement of specification set by BSTI. The inspector or the

electrician should give the certificate in this regard before connection is given.

- 11.2** All the citizen have the right of safety from electricity accident and the use of quality cable, switch, circuit breakers can guarantee the safety. The inspection of quality goods used in the construction of electric line must be checked properly to prevent accident
- 11.3** The electrical advisor will also make companies of awareness to prevent electrical accident.

12.0 Levi on gas sale for raising supporting fund for industrial development in non gas area

The gas is the national wealth and the developing of gas has been taken place from the national budget as national fund. So every citizen have the right to get the benefit from gas but it is not possible to bought the gas to every body's door. So a Levi up to 5% of selling price to the maximum to be imposed on sale of gas and the fund should be used as follows:

12.1 Subsidy to be given in case of any future import of HFO(Furnace oil) so that the furnace oil can be sold at the price of equivalent heating value of gas to all the industrial customers.

12.2 To develop Bio-diesel fuel by plantation of Jatro-phacurcas and more other trees for production of Bio-mass.

12.3 To develop dairy industry for increase of cattle head to get more animal dung which is a prime energy in Bangladesh

12.4 To develop any other indigenous energy like solar, Wind, Mini Hydro etc as per the decision of the ministry of energy.

13.0 Transportation of petroleum product and the limitation of sales of petroleum products

All vessel, Bus, Tank Lori should be suitable for carrying petroleum products.

13.1 No vassal or Tank Lori above 15 years old should be used for carrying of petroleum products.

13.2 No bus will carry drum, jar or container of petroleum product.

13.3 Without approval of the Explosive Department no tank Lori will carry petrol or octane.

13.4 No person will carry any can or bottle of octane and petrol.

13.5 No petrol pump will sell octane or petrol in any jar, bottle and cane or drum.

13.6 Kerosene, diesel and furnace oil can carry in the drum and the petrol pump may allow selling diesel in drum. But in no circumstances petrol pump will sell petrol or octane in any kind of jar or container.

13.7 All municipalities will issue trade license for selling the petroleum product after issuance of explosive license under petroleum act 1974 by the Chief Inspector of explosive. However the diesel, kerosene and lubricant will not be under this perview. The trade licensee will mention the name of products specifically in the trade license.

13.8 Government will take up measure to remove all illegal shops, hats or place of illegal trade of petroleum products. Illegal trade of petrol and octane will be severely dealt with and the matter may be refereed to RAB action against the illegal trade of petrol & octane.

13.9 The Import of furnace oil, coal, gas, should be allowed to any private business for his own business and for export to any third countries after value addition or for selling in the local; market without value addition.

14.0 Arbitration

14.1 All the companies of gas and electricity distribution and oil marketing companies will have arbitration tribunal and a appealed tribunal board to be formed as follows:

- A) A representative to be nominated for a period of 3 years by the FBCCI on behalf of business committee.
- B) A representative for the customer to be nominated by the customer's council or in lieu of by FBCCI

- C) A representative for Gas/Electricity /Oil companies for a period of 3 years to be nominated by the ministry of energy.
- D) A representative to be nominated by Petro Bangla or BPC/BPDB/DESA from their employees or from any institution or any distinguished persons for a period of 3 years
- E) Ministry of energy will appoint a chairmen who will not be the government servant but a distinguished person and acceptable to all other members for a period of 3 years. Once the chairmen and members will be appointed than they will not be removed till expiring of 3 years.

14.2 A person aggrieved against any decision of any official or any action of the companies or facing any problem with the energy can ask a remedy to the arbitration tribunal by making a submission in person or by the lawyer on his behalf. Submission may be submitted by paying a tribunal fees of Taka 5000. The tribunal will give their verdict and that will be binding on all parties with the right to appeal to Appealed Tribunal.

14.3 Any person can make an appeal to the appeal board against the judgement of arbitration tribunal. The applicant will pay Taka 10,000 for an appeal against the verdict of arbitration tribunal. All parties will bind with the verdict of appealed tribunal. The appealed tribunal have the right to rescind the verdict of arbitration tribunal and also the right to hold the judgement of arbitration tribunal in pending till hearing of appealed tribunal.

14.4 Any employers of the gas, oil and electricity companies may also take the shelter of arbitration tribunal or appeal tribunal before going to court for any injustice to them by the companies.

14.5 All concern shall have to go to the arbitration tribunal before going to any court of law. The court will not established any submission by passing arbitration tribunal.

The arbitration tribunal and the appealed tribunal are indemnified from any charges for these judgments.

15.0 Rural Bangladesh

15.1 Rural Bangladesh should be covered with electricity by solar energy & bio-mass energy to be produced by the public & private sector entrepreneur on commercial basis.

Energy producer will purchase the animal dung and trees from the farmers and will produce electricity from the bio-mass and will sale the electricity to the local inhabitant to meet the needs of electricity

15.2 All rural area should be brought under bio-gas energy production. A department under the ministry of energy will be established to promote bio-gas on commercial basis. Medium level bio-gas plant can be taken up and the electricity be distributed through wire from house to house.

16.0 Binding of National Energy Policy

16.1 The violation of National Energy Policy may be considered an offence and the energy regulatory commission can try and imposed punishment as per the provision of energy regulatory commission.

16.2 Energy sector will be free from agitation and strike like REB.

16.3 Energy sector must be free from corruption, a separate pay scale or package be introduced for the management & staff of energy sector. Discipline and chain of command must restore in the operation of energy sector be straight measure be taken against the corrupt official.

17.0 Policy for Setup Oil Refinery

Government may make a role to setup oil refinery in private sector.

17.1 Private sector will be free to set up new refineries, with approval from any authority designated by GOB.

17.2 Private sector will be encouraged to install secondary conversion units for upgrading residual fuel to higher value products in collaboration with the existing refinery.

17.3 New marketing companies linked with investment in development of infrastructure (storage, pipelines, wharves and other facilities) will be allowed.

17.4 Joint venture companies for 18.1,18.2 and 18.3 outlined above will be encouraged.

17.5 The pricing formula for refinery products will be based on import parity Prices with a negotiated discount.

17.6 Refineries will be allowed to import required crude oil after lifting locally produced crude oil allocated from local source(s), and foreign exchange for import of crude oil will be made available.

17.7 Refineries will be free to sell their products to any marketing company or directly from the plant to any customer(s) within the country.

17.8 Foreign companies investing in refinery or in blending plants whether on their own or in association with local investors will enjoy the benefit of Foreign Private Investment (Promotion and Protection) Act, 1980.

18. Marketing of Lubricating Oil

18.1 Lubricating oil products will be free from price control.

18.2 Permission may be obtained from GoB for import or establishing lubricating oil blending plants, grease and wax manufacturing plants subject to registration for quality check.

18.3 Investors will be free to procure raw materials from local or foreign sources.

18.4 Unless the regulations are enacted for disposal of used lubricating oil these will exclusively be used as FO (Furnace Oil) and no recycling will be allowed at the fulfill condition under environment Act 1994.

18.5 Quality standards of lube oils will be defined according to the international standards and BSTI each plant will be required to establish adequate testing facilities. Penalty as per "Petroleum Act & BPC Ordinance" for non-compliance will be imposed in respect of checking quality.

18.6 Marketing of Straight mineral oil, mild additive treated lubricating oil and any type of loose lubricating oil is prohibited. Marketing of lubricating oil are to be encouraged in small pack or container.

18.7 All blending plants (including private) should be of international standard and must be upgraded with laboratory facilities.

19.0 Marketing and Distribution of Petroleum Oil

19.1 In consultation with the Government, the prices of products will be fixed and equalized for main installation and depots at various places in the country and freight will be added beyond these points.

19.2 Subject to uniformity in coverage development of retail outlets will be done by the marketing companies and individual investors based on environment, explosive and safety rules.

19.3 The commission of marketing companies and dealers will be excluded from the notified prices, and the dealers commission will be left out to be determined by the marketing company or by the individual retailer.

19.4 The private sector will be encouraged to invest in infrastructure like pipeline(s) including carriers, storage and distribution /handling facilities.

19.5 Private sector may also be involved in phases in import and distribution of POL.

19.6 Marketing companies (under BPC) may import POL products after lifting the locally produced products.

19.7 To check adulteration and to enforce quality & quantity while selling to end users level existing laws will be updated and necessary facilities of testing be created.

20.0 Fiscal Incentive to Investor in Gas Sector

The following incentive be offered to the investor of gas sector:

20.1 Private and public sectors will be treated uniformly.

20.2 Repatriation of profit as per production sharing contract (PSC) provision will be allowed.

20.3 No administering fee or signature bonus will be necessary on signing of PSC. Contract service fee to be paid annually will be biddable with a minimum of US \$ 50,000.00(fifty thousand US dollars).

20.4 Special consideration will be given to application for PSC in offshore areas.

20.5 For offshore production, rate of bonuses and the Government's share would be lower than onshore production.

20.6 No duty will be levied on machinery, equipment and consumables imported for petroleum operation during exploration, development or production stage.

20.7 The equipment imported for enhanced oil and gas recovery will also be subject to the same concessionaire rate duty, and locally manufactured machinery and equipment used by the exploration companies will be entitled to all such benefits as are admissible on their export.

20.8 Pre-shipment inspection of machinery and other imported items will be mandatory.

20.9 Companies will remain harmless of taxes as are determined under the terms of PSC.

20.10 Incentive oriented agreements will be made for exploration in and recovery from deeper horizons.

20.11 Local private companies will be encouraged to seek joint ventures with foreign companies and /or with BAPEX in exploration.

20.12 The practice of accepting a commercial discovery on the basis of the first exploration well followed by one appraisal well to determine the extent of the reservoir will be changed and declaration of commercial on conclusive ground will be accepted even on basis of one well.

20.13 The gas production companies will be assured a market outlet within a reasonable time of commercial discovery, and if indication of an outlet is not given by the government within 12 months of the declaration of commercial discovery, the producer would be free to find market outlet within the country.

20.14 The companies would be required to undertake optimal development of oil gas fields for maximum recovery.

21.0 Fiscal Incentives for Investment in Energy Sector

The following Fiscal Incentives would be provided to renewable energy projects sponsors:

21.1 Renewable energy project sponsors whether public or private shall be exempted from corporate income tax for a period of 15 years.

21.2 100% depreciation in the first year for solar photovoltaic, solar thermal projects and 100% depreciation in five (5) years for wind, biomass, geothermal, tidal and small hydro projects.

21.3 The sponsors will be allowed to import plant and equipment directly related to renewable energy projects without payment of customs duties, VAT (Value Added Tax) and any other surcharges as well as import permit fee provided that the equipment is not manufactured or produced locally.

21.4 Repatriation of equity along with dividends will be allowed freely in case of foreign investors.

21.5 Exemption from income tax in Bangladesh for foreign lenders to such companies.

21.6 The foreign investors will be free to enter into joint ventures.

21.7 Companies will be allowed to buy insurance of their choice as per requirements of the lenders and the utilities and necessarily will be binded to buy insurance or re insurance from Shadharan Bima

21.8 The Instruments and Deeds required to be registered under local regulations for purchase of local or any property for setting up the power plant. will be exempted from stamp duty payment.

21.9 Power generation has been declared as an industry and the companies are eligible for all other concessions, which are available to industrial projects.

21.10 The private parties may raise local and foreign finance in accordance with regulations applicable to industrial projects as defined by the Board of Investment (BOI).

21.11 Local engineering and manufacturing companies will be encouraged to provide indigenously manufactured equipment of international standard to renewable energy project sponsors.

22.0 Facilities and Incentives for Foreign Investors

The following other facilities and incentives would be provided to renewable energy projects sponsors:

22.1 Tax exemption on royalties, technical know how and technical assistance fees and facilities for their repatriation.

- 22.2 Tax exemption on interest on foreign loans.
- 22.3 Tax exemption on capital gains from transfer of shares by the investing company.
- 22.4 Avoidance of double taxation in case of foreign investors on the basis of bilateral agreements.
- 22.5 Exemption of income tax for up to three years for the expatriate personnel employed under the approved industry.
- 22.6 Remittance of up to 50% of salary of the foreigners employed in Bangladesh and facilities for repatriation of their savings and retirement benefits at the time of their return.
- 22.7 No restrictions on issuance of work permits to project related foreign nationals and employees.
- 22.8 Facilities for repatriation of invested capital, profits and dividends.
- 22.9 TAKA, the national currency, would be convertible for international payments in current account.
- 22.10 Re-investment of remittable dividend to be treated as new foreign investment.
- 22.11 Foreign owned companies duly registered in Bangladesh would be on the same footing as locally owned companies with regard to borrowing facilities.
- 22.13 All the fiscal incentives listed in other clauses of this policy will also be applicable for renewable energy based captive generation having separate accounts and inventory statement.

23.0 Investment in Rural Area

- 23.1 A congenial atmosphere and incentive packages are to be developed and offered to the private sector for establishing industrial units in the rural areas of Bangladesh especially energy bas industry.

- 23.2 Categories of industries for implementation in rural areas are to be identified, and if needed new industries of such categories are to be allowed to be set up in rural areas only.
- 23.3 A list of industries may be drawn up for each of REB based on analysis of resources available, priority and other techno-economical considerations. Such a list of industries may be annexed to the master plan for rural electrification.
- 23.4 PBS with surplus cash may be encouraged to invest in local industrial ventures. The local financial institutions may be encouraged to accept a solvent PBS as a collateral security. The PBS can formed joint venture with any local or foreign joint venture industry.
- 23.5 Credit for rural industries may be provided at softer terms and conditions based on the consideration that the resulting improvement in rural economy, diversification of activities and improvement in life style would help restriction of migration and unplanned urbanization.
- 23.6 Ministry of power and REB may formed a working group with ministry of industry & FBCCI to excelarate the project for investment in rural Bangladesh.

24.0 Environmental Impact Assessment (EIA)

24.1 It is stipulated that the project proponent must follow “ Bangladesh Environmental Conservation Act’ 1995 and “ Environmental Conservation Rules’ 1997” at the time of establishing renewable energy project and clearance from the department of environment would be needed in this regard.

25.0 Development of Fund for Energy Sector

25.1 A revolving renewable energy trust fund may be created with grants from global environment facility and other climate change abatement funds to support renewable energy projects in Bangladesh.

- 25.2 Government of Bangladesh (GOB) may established renewable energy projects considering carbon emission trading as a signatory of Kyoto Protocol.
- 25.3 Government may secure funds from international donors by implementing clean development mechanism.
- 25.4 Funds may be raised for the development of renewable energy projects issuing corporate bonds with the consent of the Securities and Exchange Commission (SEC).
- 25.5 Foreign banks may be allowed to undertake the issue of share and bonds by the private power companies with the recognition by SEC of such underwriting.
- 25.6 Tax facilities for private sector instruments as available to non- banking financial institutions.

26.0 Research & Development

- 26.1 Comprehensive R&D works will be under taken by the energy ministry.
- 26.2 The PGA or power cell & Petro Bangla will have adequate fund for Research and Development.
- 26.3 All utilities will get fund for Research & Development.
- 26.4 A person or any company may ask for R &D fund and government after the careful examination may provide any fund for Research & Development to any person or to any company.

27.0 Gas Distribution Systems

- 27.1 A uniform gas connection policy for industry, commercial & domestic customer be followed.

27.2 The minimum charges to be abolished by all gas distribution company by replacing fixed cost charges to all customer within six month of the effectiveness of this energy policy.

28.0 System Loss

28.1 System loss for electricity be reduced by changing the tariff of pattern. There should be one rate for all customers for all types and discount should be given to bulk customer.

28.2 Meter of customer should be checked and bill should be made in time to pay by the customer.

28.3 For system loss reduction of gas the minimum charges to be abolished. Actual supply through meter be ascertained and actual billing to be found to detect the system loss.

29.0 Energy Security & Energy Cooperation

29.1 Researchers proposing energy cooperation in south Asia need to recognize and appreciate the political realities that operate behind these deals. Bangladesh should consider energy cooperation deals by ensuring long term energy security of the country.

29.2 In compression to her large population, Bangladesh has modest gas reserve and sources. Export of natural gas from reserves may effect the energy security in the short-term. Export of national gas from newly discovered reserves may affect the energy security of the country in the medium to long term horizon.

29.3 Gas utilization committee has suggested that in order to encourage the participation of IOCs in exploration activities they should be allowed to export IOCs share of gas via pipe line from newly discovered fields. In line with this recommendation a study has been undertaken to suggest appropriate method to export gas. Assuming that under production sharing contract (PSC) the share of gas between GOB and IOC is 50:50. In that case in order to ensure country's energy security IOCs will have to discover additional 7.3 TCF natural gas to export 3.65 TCF natural gas over a period of 20 years. At the next step it is also to be resolved that how to coordinate the activities of different IOCs working in Bangladesh to pool discovered reserved of 7.3 TCF gas, in order to facilitate the export of 3.65 TCF.

29.4 Shortage of gas will occur early if the economy achieves higher GDP growth rates (6.0-7.0%). It has been mentioned in IPRSP that Bangladesh needs to sustain a GDP growth rates of 7% per year over the next 15 years to reduce incidence of national poverty by half by 2015.

30.0 Capacity Building

30.1 Adequate attention should be given to develop and strengthen national capabilities in the planning and the management of energy sector programmes. This would involve initiation of appropriate educational programs in university, recruitment of qualified personnel and training recruited personnel on a continuing basis.

30.2 In certain cases it may be necessary to recruit expatriate Bangladesh as well as foreign nationals to meet the need of component experts in specialized fields.

30.3 National organizations should be encouraged to undertake research programme on policy and technology transfer issues.

30.4 Some of the areas requiring special attention are energy database management, national energy planning, sectoral energy planning and management, energy planning for remote areas, social sensitive energy planning, energy pricing etc.

31.0 Development of Renewable Energy

Renewable energy development Agency (REDA) should establish (as a public limited company) to provide necessary financial and policy supports for the diffusion of different renewable energy technologies

32.00 National Administrative Committee for Energy

A national administrative committee will be there to give policy direction, implementation orders, amendment to this national energy policy if any. The honorable prime minister the Head of the government will be the chairman of the NACE. The other members will be as followed:

- a) The minister, Ministry of Energy
- b) The minister, Ministry of Power
- c) The minister, Ministry of Industry
- d) The minister, Ministry of Agriculture
- e) The minister, Ministry of Shipping
- f) The minister, Ministry of Planning
- g) The minister, Ministry of Finance
- h) The Governance of Bangladesh Bank
- i) The chairman Parliamentary standing committee on power & energy
- j) The chairman Parliamentary standing committee on Industry
- k) The chairman Parliamentary standing committee on Agriculture
- l) The chief of the Army staff
- m) The chief of the Air staff
- n) The secretary ministry of Energy
- o) The secretary of defense ministry
- p) The secretary of ministry of home affairs
- q) The chairman of the University grant commission
- r) The chairman public service commission
- s) The chairman ERC
- t) The president FBCCI
- u) The secretary ERD
- v) The secretary planning division
- w) The chairman BOI
- x) The chairman BEPZA

y) Three representative of customer, one from gas one from furnace oil & one from electricity industrial customer.

The national administrative committee will sit at least twice in a year ie within six month from the last meeting. Energy ministry will work as a secretariat for the NACE and the energy secretary will be the Ex-office member secretary.

All issue related to energy will be discussed and decision will be taken for future guideline and instruction for implementation by the national administrative committee for energy.

32.2 A national implementation committee headed by the honorable energy minister will be there to look after the decision of national administrative committee for energy. This committee will also sit at least twice in a year. The members of the be decided by energy ministry but the representatives of stakeholder like FBCCI & customer's representatives will be the member of the committee. The committee will discuss the issue related to problem and implementation of the NEP & the decision of NACE.

Appendix 1

CONCEPTS AND DEFINITIONS

Commercial Energy: Energy sources that pass wholly or almost entirely through the organized market system are defined as commercial energy (e.g. coal, oil, gas electricity etc.) commercial energy sources are considered under national accounting system. Although fuel wood and charcoal are traded and fuel wood extracted from reserve forests are included in national accounting system, they are not consider as commercial energy.

Contingent Resources: Contingent resources are discovered resources but not commercially producible at present time due to economic, political, environmental or other technical reasons.

East Zone: Geographical area on the east side of the rivers Jamuna and Meghna, which means Chittangong, Dhaka and Sylhet divisions excluding greater Faridpur District.

Final Energy: The energy made available to the end-users for final utilization, or energy consumed by the final user for all energy purposes. Final energy excludes all energy lost in the transformation of primary to secondary energy, energy used within the transformation industries, and energy lost in the distribution process.

Hypothetical Resources: Hypothetical resources comprise resources which are mapped in the form of prospects, but which have not been discovered by drilling.

Marginal Gas Field: In Bangladesh 22 gas fields of sizes ranging from 25 to 4000 Bcf have so far been discovered. Fifteen of these gas fields have been brought under production. Some of these fields, which have been in the process of depletion for continued production over time, have become commercially unviable and remained unattended. There are yet other gas fields, which have not been put under operation for want of commercial viability right from the beginning. All these gas fields, which have no apparent prospect for further development under the existing techno-economic considerations, may be termed marginal/abandoned.

Non-Commercial Energy: Energy which is derived from traditional sources such as wood fuels (e.g. fuel wood, other tree Biomass and sawdust), agricultural residues (e.g. husk, straw, jute sticks etc.), animal dung are known as non-commercial energy.

Non-Renewable Resources: A more general term referring to the geological endowment of minerals in the earth's crust in such concentration that commercial extraction is either presently or potentially feasible.

Petroleum Resources originally in-place: Petroleum resources originally in-place comprises the resources, which are mapped/unmapped by geological and geophysical methods and are estimated by geological and petroleum technological methods, to be in place in a defined area/deposit.

Possible Reserves: Possible reserves are those unproved reserves which by analysis of geological and engineering data suggests are less likely to be recoverable than probable reserve.

Primary Energy : The energy available from energy sources extracted from stock of reserves within the country and imported from foreign countries. Some of the primary energy need processing (e.g. crude oil) before its use.

Probable Reserves: Probable reserves are those unproved reserves which by analysis of geological and engineering data suggest are more likely to be recoverable. Producing reserves are expected to be recovered from completion intervals, which are open and producing at the time of the estimate.

Proved Developed Reserves: Developed reserves are expected to be recovered from existing wells including reserves behind pipe. Improved recovery reserves are considered developed only after the necessary equipment has been installed, or when the costs to do so are relatively minor. Developed reserves may be subcategorized as producing or non-producing.

Proved Reserves: Proved reserves are those quantities of petroleum which, by analysis of geological and engineering data, can be estimated with reasonable certainty to be commercially recoverable, from a given date forward, from known reservoirs and under current economic conditions, operating methods and government regulations. Proved reserves can be divided into two groups: Developed Reserves and Undeveloped Reserves.

Proved Undeveloped Reserves: Undeveloped reserves are expected to be recovered from new wells on undrilled acreage, or from deepening existing wells to a different reservoir, or where a large expenditure is required to re-complete an existing well or install production or transport facilities for primary or improved recovery.

Renewable Biomass Fuels: Bio-mass is generally defined as the organic matter produced by photosynthesis process in plant kingdom. Bio-mass resources which are used as fuel such as woodfuels, agricultural residues, animal dung etc.

are termed as Biomass fuels. These fuels are also termed as traditional fuels. Biomass fuels are renewable upto the limit of its sustainable yield.

Renewable Energy: Energy sources which are regenerated after a regular time cycle are commonly known as “renewable sources of energy” e.g. hydro, solar radiation, wind energy, wave power, tidal power and Bio-mass fuels etc.

Renewable Non-Biomass Energy: Energy sources such as solar radiation, wind energy, wave power ,tidal energy etc. are examples of renewable non-Biomass Energy Sources.

Reserves: Reserves are those quantities of petroleum, which are anticipated to be commercially recoverable from known accumulations from a given date forward.

Rural Energy: Types of energy consumed in rural areas, namely commercial energy, Biomass fuels and renewable energy sources, which are used to meet the demand of different end use sectors, namely agriculture, domestic, commercial, industrial and transport.

Secondary Energy : The energy available after transformation of a primary energy source (e.g. electricity)

Speculative Resources: Speculative resources are referred to the unmapped prospects that have not been mapped in the basin. The unmapped resources are estimated by play assessment methods.

Sustainable Supply (Biomass Fuels): Sustainable supply would not cause net depletion (i.g. deforestation) of biomass fuels or would not deprive the soil from its availability as recycled natural nutrients.

Useful Energy: The amount of heat, light or work actually made available to a final user of energy (domestic, industry, transport etc.) on the output side or the user’s equipment and appliances.

West Zone: Geographical area on the west side of the rivers Jamuna and Meghna, which means Barisal, Khulna, Rajshahi division and greater Faridpur District.

Appendix -2

CONVERSION FACTORS

Agri. & Tree Res.	1000 Tonne = 0.0125 PJ
Crude Oil	1000 Tonne = 0.0427 PJ
Coal	1000 Tonne = 0.027 PJ
Dung	1000 Tonne = 0.0116 PJ
Electricity	1 GWh = 0.0036 PJ
Fuelwood	1000 Tonne = 0.0151 PJ
Natural Gas	1 MMCF = 0.00099 PJ
Petroleum Products (Av.)	1000 Tonne = 0.0427 PJ
Peat	1000 Tonne = 0.0151 PJ

Appendix – 3

UNITS AND CONVERSION FACTORS

Units

1 MCF	1000 Cubic Feet (One Thousand Cubic Feet)
1 MMCF	1,000,000 Cubic Feet (one Million Cubic Feet)
1 KW	1 Kilo Watt = 10 ³ Watt
1 MW	1 Mega Watt = 10 ⁶ Watt
1 GW	1 Giga Watt = 10 ⁹ Watt
1 GJ	1 Giga Joule = 10 ⁹ Joule
1 PJ	1 Peta Joule = 10 ¹⁵ Joule

1 TOE	1 Tonne Oil Equivalent = 42.7 GJ
1 MTOE	1 Million Tonne Oil Equivalent
1 Million	106
1 km	1 Kilometer

Appendix - 4

ACRONYMS AND ABBREVIATIONS

ABPL	Asphaltic Bitumen Plant
ACRE	Area Coverage Rural Electrification
ADB	Asian Development Bank
ADP	Annual Development Programme
BAEC	Bangladesh Atomic Energy Commission
BAPEX	Bangladesh Petroleum Exploration Co. Ltd.
BAU	Business As Usual Option
BBL	Barrels
BBM	Bangladesh Bureau of Mines
BCF	Billion (10 ⁹) Cubic Feet

BCSIR	Bangladesh Council of Scientific and Industrial Research
BEPP	Bangladesh Energy Planning Project
BGFCL	Bangladesh Gas Fields Co. Ltd.
BGSL	Bakhrabad Gas System Ltd.
BMEDC	Bangladesh Mineral Exploration and Development Corporation
BMRE	Balancing Modernization Rehabilitation and Expansion
BOGC	Bangladesh Oil and Gas Corporation (Short name Petrobangla)
BOGMC	Bangladesh Oil, Gas and Mineral Corporation (Short name of Petrobangla)
BPC	Bangladesh Petroleum Corporation
BPDB	Bangladesh Power Development Board
BPI	Bangladesh Petroleum Institute
BUET	Bangladesh

	University of Engineering and Technology
CBM	Coal Bed Methane
CNG	Compressed Natural Gas
CUFL	Chittagong Urea Fertilizer Factory, Chittagong
DESA	Dhaka Electricity Authority
DOE	Department of Environment
DOF	Department of Forest
DU	Dhaka University
EA & CEI	Electrical Advisor and Chief Electric Inspector
EIA	Environmental Impact Assessment
ELBP	Eastern Lube Blending Plant
EMCC	Energy Monitoring and Conservation Center
ERC	Energy Regulatory Commission
ERL	Eastern Refinery Ltd.
FBCCI	Federation of Bangladesh Chambers of Commerce and

	Industries
FO	Furnace Oil
GOB	Government of Bangladesh
GSB	Geological Survey of Bangladesh
GT	Gas Turbine
GTC	Gas Transmission Company
GW	Giga (10 ⁹) Watt
GWh	Giga (10 ⁹) Watt Hour
HHS	Hydrocarbon Habitat Compound
HOBC	High Octane Blending Compound
HSD	High Speed Diesel
HYV	
IMED	Implementation Monitoring and Evaluation Division
JBO	Jute Batching Oil
JFCL	Jamuna Fertilizer Company Ltd.
JGTDSL	Jalalabad Gas Transmission and Distribution Systems Ltd.
JOCL	Jamuna Oil Company Ltd.
JP-1	Jet Petrol-1

KAFCO	Karnafuli Fertilizer Co. Ltd., Chittagong
DFAED	Kuwait Fund for Arab Economic Development
KFW	Kreditsalt Fur Wiederaufbau
KGOE	Lilogram Oil Equivalent
LDO	Light Diesel Oil
LPG	Liquefied Petroleum Gas
LRMC	Long Run Marginal Cost
MCF	Thousand Cubic Feet
MIS	Management Information System
MJ	Mega (10 ⁶) Joule
MMCF	Million Cubic Feet
MMCFD	Million Cubic Feet Per Day
MOA	Ministry of Agriculture
MOEF	Ministry of Environment and Forest
MOEMR	Ministry of Energy and Mineral Resources
MOFL	Ministry of Fisheries

	and Livestock
MOI	Ministry of Industries
MPL	Meghna Petroleum Ltd.
MS	Motor Spirit
MT	Mineral Turpentine
MW	Mega (106) Watt
NEP	National Energy Policy
NEPFC	National Energy Policy Formulation Committee
NGFF	Natural Gas Fertilizer Factory, Fenchuganj
NGL	Natural Gas Liquid
ODA	Overseas Development Agency
OECD	Overseas Economic Co-operation Fund
PBS	Palli Bidyut Samity (Rural Electric Co- operative)
PJ	Peta Joule = 10 ¹⁵ Jule
POCL	Padma Oil Company Ltd.
PSC	Production Sharing Contract
PSIG	Pound Per Square Inch Gauge

PSMP	Power System Master Plan
PUFF	Polash Urea Fertilizer Factory, Ghorashal
REB	Rural Electrification Board
REDA	Renewable Energy Development Agency
RPDCL	Rupantarito Prakritik Gas Co. Ltd.
SAOCL	Standard Asiatic Oil Company Ltd.
SGFL	Sylhet Gas Fields Ltd.
SKO	Superior Kerosene Oil
SLA	Side Loan Agreement
ST	Stem Turbine
TCF	Trillion (10 ¹²) Cubic Feet
TGTDCL	Titas Gas Transmission and Distribution Company Ltd.
TJ	Tera (10 ¹²) Joule
Tonne	Thousand Kilogram
UFFG	Urea Fertilizer Factory Ltd., Ghorashal
WB	World Bank
ZFCL	Zia Fertilizer Co. Ltd, Ashuganj

To
The President
FBCCI
60, Motijheel C/A

Dhaka-1000

Sub: Comments on National Energy Policy

Dear Sir,

Many thanks for giving me the opportunity to give comments on the National Energy policy (NEP) 2004.

I am constrained to inform you that the present National Energy Policy (NEP) 1994 and newly drafted National Energy Policy are both is so complicated and without any specific program looks like a thesis instead of policy guideline.

I have recasted the whole policy and submitting wherewith a new draft prepared by me in a very simple manner and easy to understand by every body.

The draft prepared by me for FBCCI should be accepted by the Ministry of Energy as National Energy Policy 2004 instead of their draft forwarded to us for the comments. This draft policy may be considered as the comments of FBCCI.

The policy has the following main feathers:

- a) Description & availability of different kinds of energy.
- b) The objective of National Energy Policy.
- c) The development strategies for each energy.
- d) This policy has suggested to take up project for the newly innovated Bio-diesel producing plant Jetro-Phacurcas cultivation.

In the new policy it is suggested that price of gas, electricity & furnace oil should be decided by a high power committee. There should be one price for gas & electricity and discount may be given to bulk customer not to the small customer. Abolition of minimum charge for gas has been proposed.

New electric connection up to 500KVA may be given by the utility to the industrial customer and the cost may be recovered from the customer having connection above 100 KW have been proposed. At present only 50 KW connection are given.

The Management of different energy organization and their requirement of improvement of present organization and the proposal for new organization has been suggested in national energy policy.

It has been proposed that there should be new organization by converting power cell in the name of Power Generation Authority (PGA). This organization will fix a price for purchase of electricity and finalize the location for set up power plant and issue clearance certificate to the new investor in power generation.

The utilities will purchase the electricity from the producer directly having clearance from PGA for setting up power plant. This will help direct foreign investment in power generation. At least 50 numbers of 30 MW power plant be permitted directly for private investment has been proposed.

The ban on trade union activities for all employees and stakeholder of energy sector and formation of arbitration tribunal & appealed tribunal has been proposed.

A separate pay scale for the energy sector should be implemented has been proposed in the policy.

A proposal for impose Levi on sale of gas maximum to the extended of 5% has been proposed to create a fund for supporting energy need in the non gas zone area and to support the price of furnace oil to sale at the price of heating value of gas.

The national energy administrative committee and national monitoring committee and formation of customer council have been suggested in the draft policy.

During preparation of this policy, I had exclusive discussion with the following persons to get the suggestion for the above policy.

- 1) Dr. Taifur Ahmed Chowdhury, Professor Department of Electrical & Electronic, BUET.
- 2) Mr. Manzur Morshed, Ex-member BPDB.
- 3) Mr. Abdul Halim Mollah, Member Engineer of REB.
- 4) ZIA.R Khan, Member, California Energy Commission, USA.
- 5) Engineer Abdul Majid Fakir, Chairman Khaled & Partners, Bangladesh.
- 6) Mr. Hulous Kumar Golcha, Chairman Golcha group, Nepal (Manufacturer of Ethanol & Gashole).
- 7) Mr. Shakil Ahmed, DRM, Khargpur Rialway Division, Indian Railway and the Project Director for implementation of Jatro-Phacurcas.

(I have personally visited Kharagpur, in the district of Medinipur of West Bangal to get direct knowledge on Jetro-phacurcas & Bio-diesel manufacturing project).

8) Mrs Montaz Mirza, Senior Scientific Officer of National Herbarium regarding cultivation of Jetrophacurcas.

9) Mr. Nurul Alam, Chief Inspector of Explosive, Ministry of Energy.

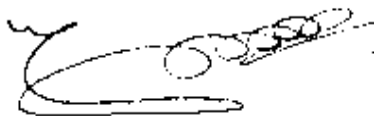
10) Engineer Nurul Anam; Managing Director of Shakti Engineering Company Limited.

Beside the above a wide range of people including industrial, residential customer of gas, electricity and furnace oil, has been discussed before making this draft.

Mr. Mohammed Shahidul Islam, Assistant Secretary, FBCCI has taken lots of trouble to make the draft and he has displayed excellent duty for preparation of this draft, National Energy Policy.

I believe you will find the above policy in good order and you will kindly try to get the policy accepted for welfare of the country as well as for the business community.

Thanking you,



(Mr. Delwar Hossian)
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Chairman of Asian Mercantile Company
&

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