Energy Scenario
of
Bangladesh 2021- 22

Hydrocarbon Unit
Energy and Mineral Resources Division
Ministry of Power, Energy and Mineral Resources

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HYDROCARBON UNIT
Energy and Mineral Resources Division

Preface

Report on Energy Scenario, Bangladesh was prepared and published by Hydrocarbon Unit for the first time in October 2009. The present one is the issue of Energy Scenario, Bangladesh for the period of July 2021 to June 2022. In this report, Energy Scenario of Bangladesh has been reflected. Daily average gas production rate has been included in the report as well. Moreover, Share of Primary and Commercial energy, Sector-wise Liquid fuel consumption, Historical Gas production and Net Energy Generation along with the graphical presentation have been depicted.

This report has been prepared based on the data available from the Monthly Reserve and Gas Production Report of HCU and Monthly Information System (MIS) of Petrobangla. Bangladesh Petroleum Corporation (BPC), Bangladesh Power Development Board (BPDB).

It is expected that the report will be helpful as reference book and elements of interest for the concerned.

The report will also be available at HCU's website: www.hcu.org.bd.

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1.0 Introduction

Bangladesh is a mid-income country. Her GDP growth rate is one of the world's largest. For any country, development is the precondition for continued growth of GDP. And the main driving force of the country's development is energy. Proper use of energy is essential to meet the country's growing energy demands as well as to lift up from a mid-income country to a developed country. Energy is playing a vital role in implementing Vision-2121, Vision-2041 and achieving Sustainable Development Goals.

In Bangladesh, about 59 percent of energy demand is met from natural gas. Among other fuels- oil, coal, biomass etc. are vital. There is a huge reserve of coal in our country, but coal is less produced as well as less used here. On the other hand, natural gas reserve is not that substantial, but its production and consumption are the highest among the available resources. Besides those, energy demand is being met through imported oil and LPG. Moreover, the government has already started importing LNG to meet increasing gas demand. Biomass is being used as a lion's share of energy. The energy demand is also being met by importing electricity from India.

The use of renewable energy instead of gas, coal and oil has been started in the whole world and is essential for sustainable development and keeping up with the environment by preventing carbon emissions. Many countries in the world like Sweden, Germany, China and USA are currently using renewable energy as a significant part of their energy demand. Bangladesh is also using renewable energy, but it's very less than necessity. The government has taken various steps to increase the use of renewable energy in the future, including solar home system, solar irrigation system, Rooppur nuclear project, etc.

Development of energy sector is the key factor for continued development of the country. Bangladesh needs to emphasize on the new exploration activities using latest techniques to explore new mines. Apart from reducing dependence on natural gas, it needs to be coordinated with the imported LNG and enhance the percentage of usage oil and LPG; thereby Bangladesh will succeed in reaching its desired goal of development.

2.0 Current Position of Energy Resources

Known commercial energy resources in Bangladesh include indigenous natural gas, coal, imported oil, LPG, imported LNG, imported electricity and hydro-electricity. Biomass accounts for about 25% of the primary energy and the rest 75% is being met by commercial energy. Natural gas accounts for about 59% of the commercial energy (with 13% imported LNG). Imported oil accounts for the lion's share of the rest. In this year, Bangladesh imports about 9.56 million metric ton of crude and refined Petroleum Products. Apart from natural gas and crude oil, coal is mainly used as fuel in the brick-fields and Thermal Power Plant.

Moreover, power is also generated by capitalizing Solar Home System (SHS) in on-grid and off grid areas. The amount of power generation using solar system is currently about 723.68 MW. In addition, there are some poultry and dairy farms in which bio-gas plants are being set up and this bio-gas is used for cooking and power generation. The amount of power generation from such plants is currently about 0.69 MW. Generation of electricity by Bio-Mass Gasification Method is 0.4 MW in the country.

[Source: http://www.renewableenergy.gov.bd/]

Estimated final consumption of total energy is around 57.20 MTOE. Average increase of energy consumption is about 6% per annum. Per capita consumption of energy in Bangladesh is on an average 346 kgoe (Kilogram Oil Equivalent) and per capita generation of electricity is 608.76 kWh with an access to electricity 100%, which is lower than those of South Asian neighboring countries.

Table 1: Energy calculation for 2021-22 in MTOE

Total Primary Energy 57.20 MTOE, FY 2021-22			
Name	**Unit**	**Amount**	**Mtoe**
Oil (Crude + Refined)	K ton	10509.167	10.51
LPG	K ton	1543	1.54
Natural Gas	Bcf	842.01	19.52
LNG	Bcf	240.56	5.58
Coal (Imported)	K ton	6140	3.88
Coal (Local)	K ton	488.724	0.31
RE (Hydro)	MW	230	0.17
RE (Solar+ wind)	MW	717.5	0.53
Electricity (Imported)	MW	1160	0.86
Total Commercial			42.90
Biomass			14.30
Total primary			57.20

[Source: HCU Data Bank]

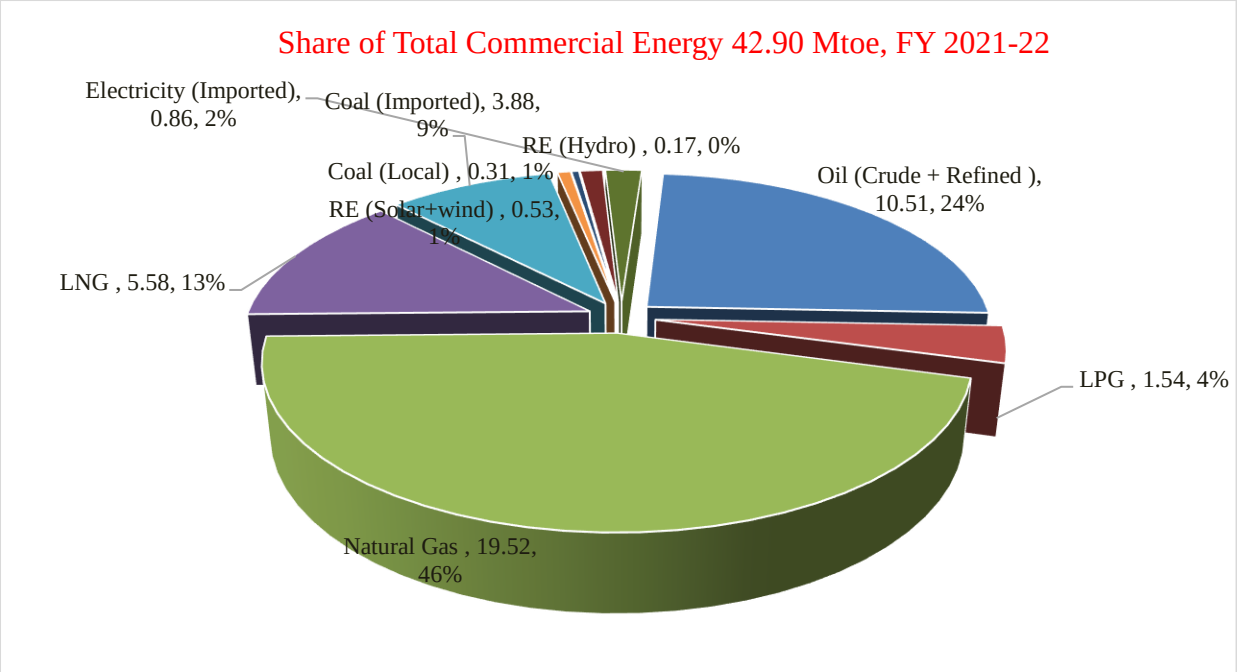
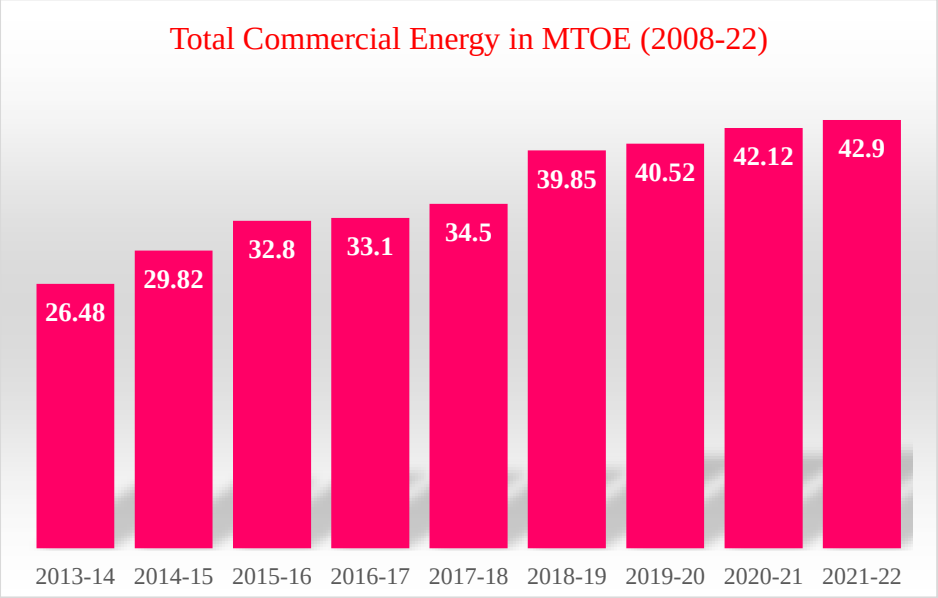


Figure 1: Share of Total Commercial Energy (2021-22) [Source: HCU Data Bank]

Bangladesh also has a bright potential to produce electricity from wind and mini-hydro. Recently, solar power-based irrigation pump has been used in a number of areas of the country. Its wide use will lessen the pressure on diesel and electricity.



[Source: HCU Data Bank]

Figure 2: Year-wise (2008-20) Commercial Energy in MTOE

3.0 Natural Gas

3.1 Organizational Structure

Bangladesh Oil, Gas, and Mineral Corporation, short named Petrobangla, under the Energy and Mineral Resources Division of the Ministry of Power, Energy and Mineral Resources is entrusted with the responsibility of exploration of oil and gas, and production, transmission and marketing of natural gas in the country.

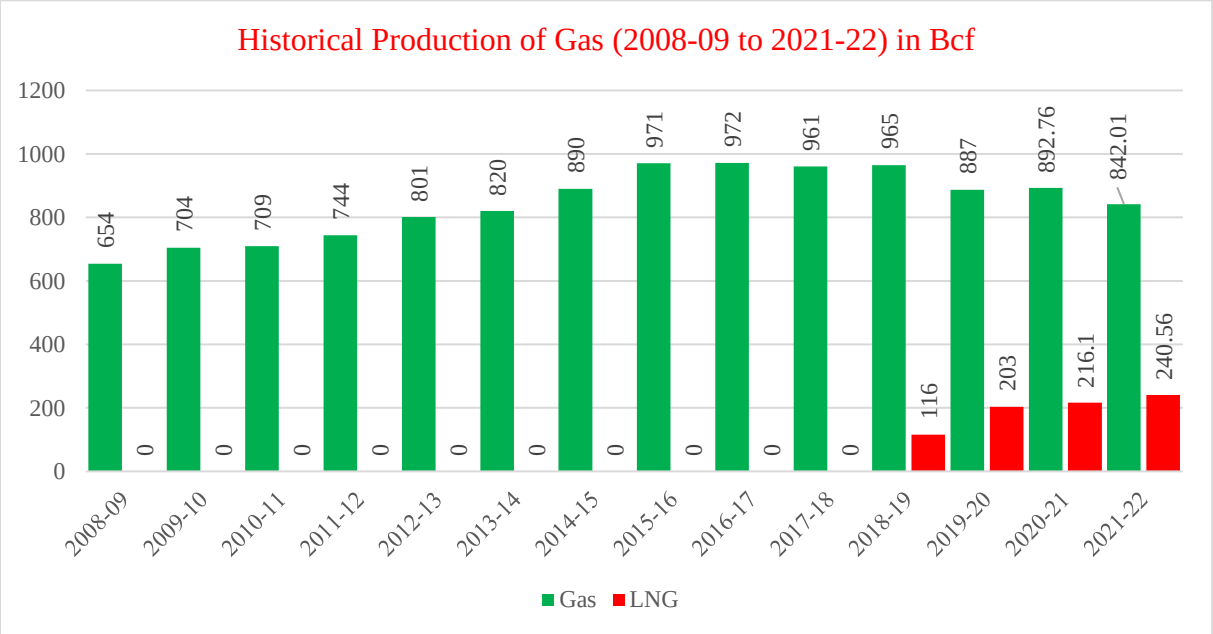
3.2 Natural Gas Reserve

Since first discovery in 1955 as of today 26 gas fields, 24 in the onshore and 2 in the offshore have been discovered in the country. Of them 20 gas fields are in production, one offshore gas field have depilated after 14 years of production while other offshore field has not been viable for production due to small reserve. The estimated proven plus probable recoverable reserve was 40.09 Tcf. As of June 2020, a total of 19.51 Tcf gas has already been produced leaving only 10.42 TCF recoverable reserve in proven plus probable category. Some key information about the natural gas sector is presented in the Table 2.

Table 2: Natural Gas Sector at a Glance

Description	Amount
Total number of gas fields	26
Number of gas fields in production	20
Number of producing wells	112
Present gas production capacity	2750 MMcfd
Avg. gas production rate	1744-2750 MMcfd
Avg. Gas Production/day	2978 MMcfd
Highest Production (6th May, 2015)	2785.80 MMcfd
Total recoverable (Proven + Probable) reserve	40.09 Tcf
Cumulative Production (June,2021)	19.51 Tcf
Annual Production by NOC	308.17 (37%)
Annual Production by IOC	533.82 Bcf (63%)
Remaining Reserve (Recoverable)	10.42 Tcf
Present Demand	3508 MMcfd
Present Deficit	530 MMcfd (along with LNG)
Number of Customer	43 Lakh (Appx.)

[Source: Petrobangla MIS Report and HCU Data Bank]

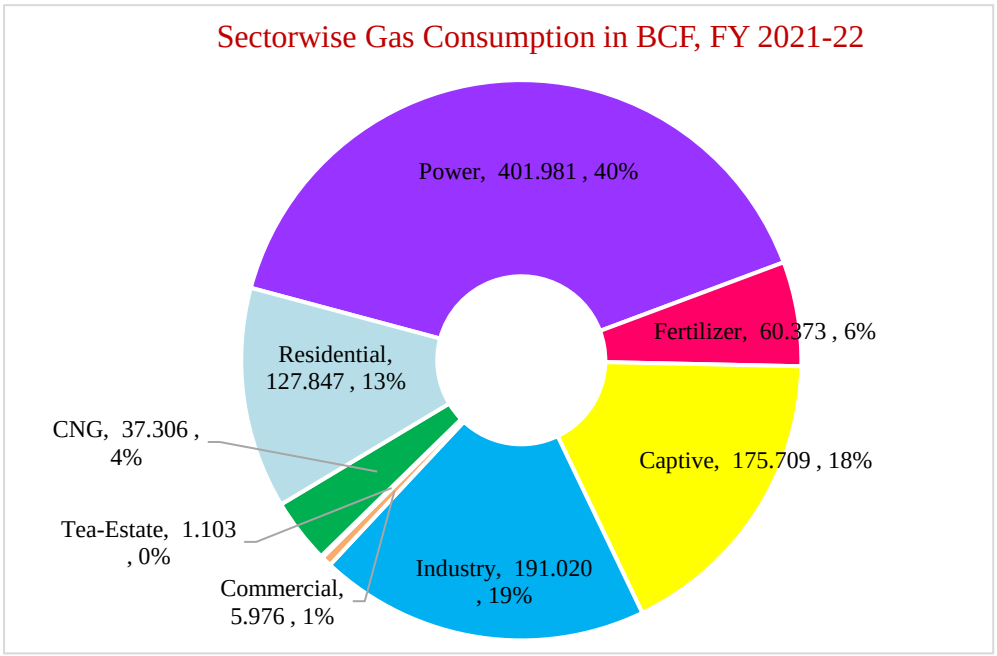


[Source: Petrobangla, HCU Data Bank]

Figure 3: Historical Gas Production in Bangladesh (2008 – 2022)

3.3 Natural Gas Consumption

The current average production of natural gas is about 2978 MMcfd. A total 842.01 billion Cubic Feet (BCF) of natural gas was produced and 240.56 BCF LNG is imported in 2021-22 which was used by power 40%, fertilizer 6%, captive power 18%, industry 19%, domestic 13%, CNG 4% and others is 1% (commercial and tea estate). Natural gas accounts for the 59% grid electricity generation while all the 7urea fertilizer factories are dependent on natural gas for feedstock. Natural gas has made tremendous contribution towards industrial growth in the country as fuel for heating and captive power generation at very favorable price. While the whole nation has been benefitted by this resource, about 13% of the populations have directly been benefitted by using piped natural gas for household purposes. Expansion of CNG facilities early last decade dramatically improved air quality in large cities especially in the capital Dhaka as well as lot amount of foreign exchange has been saved due to less amount of oil import.



[Source: Petrobangla MIS Report June, 2022]

Figure 4: Sector wise Gas Consumption in Bangladesh (2021-22)

3.4 Natural Gas Demand

Being almost single indigenous sources of commercial energy demand for natural gas experienced vary fast growth over the last three decades often outstripping the supply. Present demand for gas in the country is about 3508 MMscfd whereas supply is 2978 MMscfd (Gas + imported LNG) indicating a shortage of about 530 MMscfd. It is estimated that demand for natural gas will rise to about 4622 MMscfd by the 2030. Natural gas demand projection in the country is shown in the figure below:

Table 3: Natural Gas Supply & Demand

Unit: MMcfd

Year	* Power	Ferti-lizer	Cap. Power	Indus-try	Domes-tic	CNG	Commer-cial & Tea	Total De-mand	Total Sup-ply
2019	1284	316	480	710	425	139	38	3392	3331
2020	1334	316	480	776	425	139	38	3508	3477
2021	1384	316	480	842	425	139	38	3624	3500
2022	1662	316	432	908	425	130	38	3911	3769
2023	1786	316	389	974	420	125	38	4048	3915
2024	1780	316	350	1040	431	120	38	4075	4061
2025	1803	316	315	1106	442	110	38	4130	4300
2026	1844	317	283	1172	453	100	38	4207	4350
2027	1958	319	255	1238	465	100	38	4373	4400
2028	2087	321	230	1304	476	75	38	4531	4450
2029	2060	323	207	1370	488	75	38	4561	4500
2030	2058	325	186	1440	500	75	38	4622	4600

[Source: HCU Data Bank]

3.5 LNG import to Supplement Indigenous Supply

To accomplish Vision 2021 and sustainable development goals (SDGs), particularly Goal # 7: Secure access to affordable, reliable, sustainable and modern energy for everyone by 2030 and to minimize the demand supply gap, the Government has invigorated its effort to enhance gas

production along with initiatives to import significant quantities of liquefied natural gas (LNG).

Consequently, 2 separate terminal use agreements (TUA) have been signed with Excelerate Energy Bangladesh Limited (EEBL) and Summit LNG Terminal Co. (Pvt.) Ltd. to install 2 floating storage and regasification units (FSRU) at Moheshkhali approximately 90 kilometers south of Chattogram for supplying 500 MMscfd of RLNG each. The first ever FSRU (by EBBL) was commissioned in August, 2018 and the second FSRU (by Summit) was commissioned in April, 2019.

Besides, Petrobangla engaged the joint venture of Tokyo Gas Engineering Solutions Corporation (TGES), Japan, and Nippon Koei Co. (NK), Japan for techno-economic feasibility study, engineering services, and tender management services for the construction of a land-based LNG terminal at Matarbari, Cox's Bazar having a capacity of handling 7.5 MTPA of LNG equivalent to 1,000 MMscfd of RLNG (gas). A feasibility study for the construction of a land-based LNG terminal at Matarbari has been completed and an RFP has been prepared for issuing to the shortlisted terminal developers.

Figure 5: Maheshkhali LNG Terminal

Two long-term LNG sale and purchase agreements (SPA) were signed with Ras-Laffan Liquefied Natural Gas Company Limited (3) of RasGas, Qatar and with Oman Trading International (OTI) (presently known as OQ Trading Limited/OQT), Oman for supplying LNG to these terminals. Additionally, a master sale and purchase agreement (MSPA) was signed with 16 nos. suppliers/traders to purchase LNG on the spot market. The first ever spot cargo was imported in September, 2020.

Construction of a 30" x 91 km transmission pipeline and a parallel 42" x 79 km pipeline

from Moheshkhali to Anowara in Chattogram and another 42" x 30 km gas transmission pipeline from Anowara to Faujdarhat have been completed to evacuate RLNG (gas).

[Source: Petrobangla Annual Report 2021]

Table 4: LNG Scenario

Total LNG Import in June 2021	**22.33**	**Bcf**	**0.02**	**Tcf**
LNG Import from July 2020 to June 2021	**240.57**	**Bcf**	**0.24**	**Tcf**
Cumulative LNG import from August 2018 to June 2021	**775.43**	**Bcf**	**0.775**	**Tcf**

[Source: RPGCL]

3.6 Exploration Activities:

Geological: During 2021, a 98 line-km geological survey has been completed in Sitakund structure of Chattogram district. A complete geological map of the structure is being prepared after analyzing the collected data and information. BAPEX discovered Zakiganj-1 as the 28th gas field in the country which is capable of producing about 10 MMscfd of gas. The estimated reserve of the Zakiganj gas field is 68 BCF, of which the recoverable reserve is 48 BCF. Well proposals for Srikail North-1A exploratory well, Sundalpur-3 appraisal-cum development well and Begumganj-4 (west) appraisal-cum development well have been prepared after analyzing relevant 2D and 3D seismic data and information as well as the information collected from the previously drilled wells in the surrounding areas. In line with the study, well locations for Sylhet-10 and Kailashtila-9 appraisal-cum development wells under SGFL have been confirmed through field surveys. In order to meet the growing demand for gas in the country, explore the presence of gas in the deeper zone of the existing gas field, well proposals have been prepared for Srikail Deep-1 exploratory well and Mubarakpur Deep-1 exploratory well. Well location with other technical parameters of Srikail-5 appraisal cum development well have been finalized.

Two consultants have been appointed to ensure smooth implementation of the geological and geophysical survey. In order to explore gases from dry, abandoned and suspended wells, 2 EOI have been called from the eligible companies experienced in this regard. A Memorandum of

Understanding (MoU) was signed between BAPEX and Gazprom EP International to evaluate Bhola Island fields. In addition, a Memorandum of Understanding (MoU) has been signed between BAPEX and Mitsui Oil Exploration Co. Ltd. (MOECO), Japan on "Joint exploration proposal for Bangladesh Onshore Blocks 8 and 11". For both the MOU, data has been transferred for joint study.

[Source: Petrobangla Annual Report, 2021]

2D Seismic Survey: With a view to identifying locations of exploratory wells under the scope of a project entitled 'Rupkalpa-9 2D Seismic Project' financed by the gas development fund (GDF), a total of 500 lkm 2D seismic data has been acquired over Noakhali and Laxmipur districts. Total 3,500 lkm data has been processed and interpreted by foreign experts. Three well locations have been recommended in Block-10 by foreign interpretation experts which are in Char Jublee at 3,500m depth, Ewazbalia at depth of 4,500m and Char Amanullah at 3,500m. Ten lead areas (in Madarganj and Southeast of Hazipur area) have been identified in blocks- 8 and 11. Till 30 June, 2021, a total of Tk. 1,630.37 million has been spent out of the total allocated amount of Tk. 2,120.88 million marking 76.87% financial and 100% physical progress.
With a view to identifying locations of exploratory wells under the scope of a project titled '2D Seismic Survey over Exploration Block 15 & 22' financed by the gas development fund (GDF) and its own fund, a total of 3,000 lkm of 2D seismic data acquisition (1,000 lkm by BAPEX and 2,000 lkm by SINOPEC), processing, interpretation, and resource estimation have been underway in 8 districts namely Chattogram, Cumilla, Noakhali, Feni, Khagrachari, Rangamati, Bandarban and Cox's Bazar. The project has just been approved on 26th July, 2021. Till 31 December, 2021 258 lkm data has been acquired with the financial progress of Tk. 63.30 million.

[Source: Petrobangla Annual Report, 2021]

Drilling

Rupakalpa-2 Drilling Project: Drilling of Zakiganj-1 well started on 1 March, 2021 with Bijoy-12 rig with the GDF finance and was completed on 8 May, 2021. The 27 gas fields of the country have been discovered after drilling the well to a depth of 2,981 meters. About 48 BCF of recoverable gas reserves have been estimated in this gas field. After the completion of a transmission line, it will be possible to supply ±10 million cubic feet of gas daily from this well to the national grid. About Tk. 410.40 million has been spent out of the Tk. 415.00 million allocated for the project in this financial year under consideration. As such, the financial

progress of the project is at 99%.

Figure 6: Seismic drilling in a 2D seismic survey over exploration blocks 15 and 22 by BAPEX

Drilling of the Sylhet-9 well: Drilling of the Sylhet-9 well under Sylhet Gas Fields Limited (SGFL) started on 1 October, 2020 and completed on 31 January, 2021. The well was drilled with a Bijoy-12 rig up to 2,136 metres. From this well 4-5 MMscfd of gas are being supplied to the national grid.

Shariatpur-1 Exploratory Well Drilling Project: The project has been undertaken with a view to drilling 1 exploratory well in Naria Upazila of Shariatpur. The project has already been approved by the Energy and Mineral Resources Division. The estimated cost of the project is Tk. 959.00 million and the tenure is from 1 July, 2021 to 31 December, 2022.

[Source: Petrobangla Annual Report, 2021]

Workover

Shahbazpur-3: The risky extra high pressure well drilling started on 8 August, 2020 with BAPEX's own rig and manpower without foreign consultants and the workover was successfully completed on 20 September, 2020. At present, 20-25 MMscfd of gas is being supplied from the well to Sundarban Gas Company Limited.

Srikail-4: The workover activities started on 24 September, 2020 through BAPEX's rig and manpower which ended successfully on 21 November, 2020. Currently, 20-24 MMscfd of gas is being supplied to the national grid from this well.

Fenchuganj-4: The workover activities started on 3 February, 2021 with BAPEX's rig and manpower which ended successfully on 4 May, 2021. At present, about 10 MMscfd of gas is being supplied to the national grid from this well.

Titas-6: The workover programme on this well under the agreement between BAPEX and BGFCL started on 1 September, 2020. The foreign consultant appointed by BGFCL couldn't join owing to the ongoing COVID-19 pandemic. Nonetheless, the work was continuing with the assistance of a local consultant of BAPEX. Considering the overall condition of the Titas-6 well, the well was almost abandoned. However, BAPEX's manpower continued to work in the well persistently to achieve their goals. Going beyond the conventional method, the skilled and dedicated employees of BAPEX applied their own talents and techniques to make harpoon locally and pull wireline logging cables and worn-out tubing. Subsequently, 4 gas zones were identified after wireline logging. Finally, on 30 May, 2021, the well was successfully completed. About 20-25 MMscfd of gas is being supplied to the national grid from this well.

Fenchuganj-3: The workover activities started on 8 August, 2021 with BAPEX's rig and manpower, ended successfully on 23 December, 2021. At present, about 9 MMscfd gas is being supplied to the national grid from this well.

Sylhet-8: The workover activities started on 31 October, 2021 with BAPEX's rig and manpower under Sylhet Gas Fields Limited (SGFL) was completed on 5 January, 2022. At present, about 5 MMscfd of gas is being supplied to the national grid from this well.

[Source: Petrobangla Annual Report, 2021]

3.7 Exploration of Unconventional form of energy

Exploration of different form of Unconventional energy like Coal Bed Methane (CBM), Shale gas, Underground Coal Gasification (UCG) is going on in search of alternate energy.

Petrobangla has undertaken a project to assess the potentiality of coal bed methane in Jamalganj coal deposit, the largest and deepest coal deposit in the country.

A Preliminary Study on Shale Gas Potentiality in Bangladesh has been prepared by the Hydrocarbon Unit. Hydrocarbon Unit has prepared another report titled "Action Plan and Guide lines for CBM, UCG and Hard Rock Development in Bangladesh".

4.0 Oil (Petroleum) Sector

4.1 Organizational Structure

Bangladesh Petroleum Corporation (BPC) under the Energy & Mineral Resources Division of the government is the nodal organization in the petroleum sectors which deals with

import of crude oil and products, oil refining and marketing finished petroleum products. One refining company with lone crude oil refinery in Chittagong is engaged in refining of crude oil while four oil marketing companies are responsible for marketing of finished products across the country. Oil business used to be government monopoly until 1997 when one private company entered in fractionation of gas condensate extracted from gas fields. Presently, gas condensates, are fractionated by small scale fractionation plants of Petrobangla, BPC and private entrepreneurs. Besides, there two petrochemical plants in the private sector that imported condensate as feed.

4.2 Supply and Consumption of Oil

Petroleum products viz. diesel, petrol, octane furnace oil etc., account for about 20 % commercial energy supply in the country. Liquid fuel used in Bangladesh is mostly imported. Bangladesh imports about 1.31 million metric tons of crude oil along with 4.3 million metric tons (approx.) of refined petroleum products per annum. About 0.35 million metric tons per year locally produced gas condensate, which is fractionated mainly into petrol, diesel and kerosene, is the only domestic source of liquid fuel. Major consumer of liquid fuel is transport followed by power, agriculture, industry and commercial sectors. Sector-wise consumption of petroleum products is transport- 62%, power 13%, agriculture 17%, industry 5%, domestic 1% and others 2%.

Table 5: Petroleum Sector at a Glance (2021-22)

Product	FY 2021-22 (in Metric Ton)
Import of refined oil	4,809,131.00
Import of furnace oil	3,741,511.90
Import of crude oil	1,611,930.79
Production of Condensate	346,593.60
Total Import & Production	**10,509,167.28**
Production of Naptha	101,861.14
Storage Capacity of BPC	1,358,000.00
Refining Capacity of ERL	1,570,000.00
LPG Production from ERL	11,938.00
LPG Production from Kailashtila Frac. Plant	423.00
LPG import (private)	1,531,230.18

[Source: NBR, BPC, Petrobangla and HCU Data Bank]

Table 6: Sale of Petroleum Products by BPC during last 10 Year

[*Quantity in MT]*

Prod-ucts	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Octane	110850	117452	126114	147557	186911	230280	266988	262943	303917	**395,602.00**
Petrol	169710	178674	166823	137360	232359	284668	318593	321940	378846	**446,647.00**
Diesel	2962872	3242554	3396061	3606404	4000044	4835712	4593486	4015633	4597585	**4,850,700.00**
Kero-sene	314450	289871	263029	213685	170993	138403	121497	106195	101783	**86,117.00**
Furnace Oil	1070096	1202505	906771	711889	806440	925150	683725	362713	559032	**571,586.00**
Jet A-1	318423	323327	338829	347323	376700	408272	429951	350605	237894	**428,024.00**
Others	131591	130583	123796	91802	115283	125851	129982	68639	120673	**136,334.00**
Total	**5077992**	**5484966**	**5321423**	**5256020**	**5888730**	**6948336**	**6544222**	**5488668**	**6299730**	**6,915,010.00**

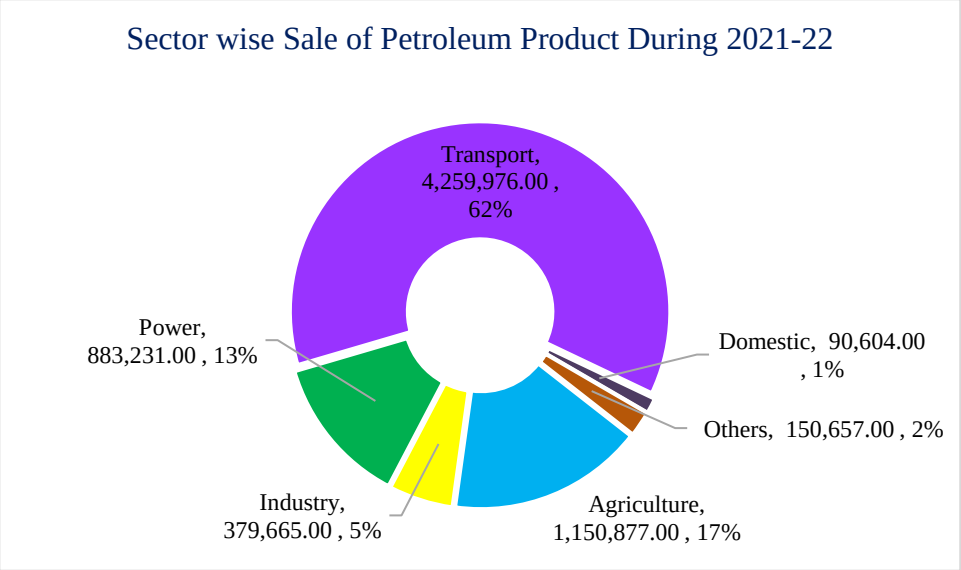
[Source: BPC Website and Annual Report 2021-22]

Diesel is the dominant liquid fuel used in the country. Petroleum products used during last seven years are shown in the above table.

Table 7: Sector wise petroleum consumption 2021-22

Sector	FY 2021-22	%
Agriculture	1,150,877.00	17%
Industry	379,665.00	5%
Power	883,231.00	13%
Transport	4,259,976.00	62%
Domestic	90,604.00	1%
Others	150,657.00	2%
Total	6,915,010.00	100%

[Source: BPC and HCU Energy Data Center]



[Source: BPC and HCU Energy Data Center]

Figure 7: Sector wise Liquid Fuel Consumption in Bangladesh (2021-22)

4.3 Capacity Enactment Projects

Eastern Refinery Limited (ERL) installed in 1968 at Chittagong with the processing capacity of 1.5 million tons annually.

Crude oil Processing units:

The refinery was the first to start production with three main processing units. These three processing units are-

Table 8: ERL Process plant scenario

No.	Description	Annual Production Capacity (Metric Ton)
1	Crude Distillation Unit	1.5 million

2	Catalytic Reforming Unit	70,0000
3	Hydrodesulphurization unit (this is later converted to a mild hydrocracking unit)	--

[Source: ERL Website]

A Project has taken for installation of 2nd unit of the existing refinery with annual refining capacity of 3 (three) million tons. Besides the state initiative, government allowed private entrepreneurs to establish Condensate Fractionation Plants to split Natural Gas Condensate (NGC) received from various gas fields in Bangladesh as well as imported NGC. Total storage capacity of different grades of petroleum is around 1.3 million metric tons across the country. It may be mentioned that, according to the national energy policy, 60 days' stock of petroleum products to be maintained for energy security of the country.

Table 9: Naptha Production Scenario

FY	Crude Processing, MT	Naptha Production, MT	Naptha Sales in MT		
			Local	International	Total
2015-16	1,129,160.00	131,726.49	83,049.00	37,566.00	120,615.00
2016-17	1,391,665.00	153,567.08	50,825.00	109,130.00	159,955.00
2017-18	1,241,730.00	95,107.84	64,446.00	18,584.00	83,030.00
2018-19	1,410,400.00	100,678.27	71,888.00	36,513.00	108,401.00
2019-20	1,078,670.00	77,015.09	82,386.00		82,386.00
2020-21	1,545,240.00	143,560.69	129,842.46	18,795.27	148,637.73
2021-22	1,377,370.00	101,861.14	101,194.59	-	101,194.59

However, at present BPC is able to maintain 35 to 40 days' stock of petroleum products due to lack of storage capacity as well as involvement of huge amount money for procuring petroleum. BPC has completed a project for construction of **Mongla Oil Installation** as 2nd main installation to enhance 0.10 million metric tons with 14 oil storage tanks.

Single Point Mooring (SPM) project is now in progress which will enable BPC to receive Crude Oil and Diesel from large size vessels of 120,000 metric tons carrying capacity

through subsea pipeline, from near Kutubdia of the Bay of Bengal, within 48 hours instead of present required time of 9/10 days.

Figure 8: Single Point Mooring (SPM) with Double Pipeline

Storage facility will be constructed of 0.24 million metric tons, for crude oil 0.15 million metric tons and for diesel 0.09 million tons, at Maheshkhali under SPM Project for smoothing receiving of petroleum. Operational flexibility will improve amazingly after completion of the SPM project.

Upcoming major projects of BPC:

- India-Bangladesh Friendship pipeline (IBFPL).
- Installation of Custody Transfer Flow Meter at ERL Tank firm.
- Terminal Automation of marketing companies of BPC.
- Establishment of LPG terminal by BPC in Maheshkhali-Matarbari area of Cox's Bazar district.

4.4 Demand for Petroleum Products

Demand for petroleum products is growing at the rate of 2 to 4% per year. If this trend continues demand for oil will increase to about 15 million tons by the year 2030. Government of Bangladesh has decided to make road connectivity with the neighboring countries like India, Nepal, Bhutan etc. Transport movement will increase remarkably in Bangladesh territory to avail port facilities Chittagong and Mongla ports by our neighbors. However, future demand will depend upon the future energy mix in the country and availability of other fuels.

4.5 Source Countries for Imported Oils

Bangladesh mainly imports oil from Saudi Arabia and the United Arab Emirates. These are imported on a year-to-year basis with the respective companies of relevant countries. Basically, the price has to be paid based on the price of the day of the world market on which the oil will be shipped. ADNOC of UAE and Saudi Aramco of Saudi Arabia are suppliers for crude that BPC imports while finished products are imported from 13 National Oil Companies (NOC) of different countries. A project is in active consideration by the government to import diesel, produced in Numaligarh Refinery Limited (NRL) in Assam, from its marketing terminal at Shiliguri through pipeline to Parbatipur depot at Dinajpur district of Bangladesh.

5.0 Liquefied Petroleum Gas (LPG)

Demand of Liquefied Petroleum Gas (LPG) in Bangladesh is very high. In the public sector 12,361 MT is produced during 2021-22 FY whereas 1,531,231 MT is imported thru private entity. Therefore, public and private sector combining do the marketing of 1.54 million MT of LPG in 2021-22, which is meeting a certain portion of LPG demand of the country.

Table 10: LPG scenario of last 5 year

Year	Public Sector Production MT	Import (Private) MT	Total MT
2017-18	15,936	537,686	553,622
2018-19	19,228	681,036	700,264
2019-20	13,414	835,027	848,441
2020-21	13,461	1,427,826	1,441,287
2021-22	12,361	1,531,231	1,543,592

[Source: HCU Data Bank]

Considering the rising demand for LPG, government has decided to enhance LPG bottling facilities for marketing more imported LPG. For this purpose, two LPG bottling plants, each having capacity of 100 thousand MT per annum, will be set up in the coastal area.

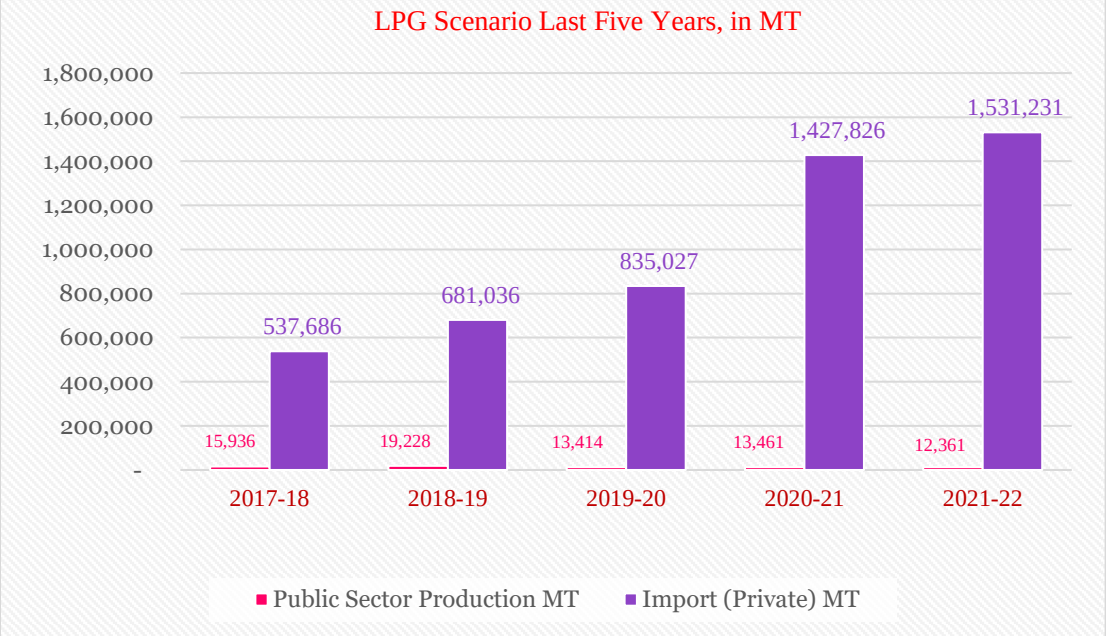


Figure 9: LPG Scenario in Last 5 years in Bangladesh

Of them, one plant will be installed by Bangladesh Petroleum Corporation (BPC) and the other in public private partnership with BPC.

6.0 Coal

Energy is the main indicator of economic growth for a country and constitutes one of the vital infrastructural inputs in socio-economic development. At present, natural gas is the main indigenous primary energy source of Bangladesh. Several studies reveal that domestic production of natural gas will be depleting soon in the near future. Considering the uncertainty of sustainable supply of primary energy, it is imperative to diversify the primary energy sources in the country. In that case, domestic coal can be a major alternative energy source for the energy security of the country. At present 6.24% of electricity has been produced from domestic and imported coal.

5 coal fields so far discovered, namely Barapukuria, Khalaspir, Phulbari, Jamalganj and Dighipara. If initiatives are taken for exploration all over the country, there are enough possibilities to discover more coal mines. Out of the discovered mines, coal from 4 deposits (118-509 meters) is extractable at present. Production from Jamalganj may not be viable with present day's technology due to the depth of the deposits.

Table 11: Coal Fields of Bangladesh

Place/Field (Discovery Year)	Depth (Meter)	Area (Sq. Km)	Reserve (Million Ton)	Depth (Meter)	Calorific Value (BTU/lb)
Barapukuria, Dinajpur (1985)	119-506	6.68	390	119-506	11,040
Khalaspir, Rangpur (1995)	257-483	12.00	523	257-483	12,700
Phulbari, Dinajpur (1997)	150-240	30.00	572	150-240	11,900
Jamalganj, Jaipurhat (1965)	900-1000	16.00	1,054	900-1000	11,000
Dighipara, Dinajpur (1995)	327	15.00	600	327	13,090
			Total = 3139		

Coal might be the alternative fuel to natural gas. These coals can conveniently meet the energy needs of Bangladesh for 50 years. It is notable that the coal of Bangladesh is considered to be high quality in terms of its high level of heat generation capacity as well as low Sulphur content.

Table 12: Coal scenario of last 5 year

Year	Public Sector Production	Import (Private)	Total (Metric Ton)
2016-17	1,160,657.81	2,801,407.00	3,962,065.00
2017-18	923,276.00	3,394,534.24.00	4,317,810.00
2018-19	803,315.00	5,754,025.00	6,557,339.00
2019-20	808,358.00	6,828,032.00	7,636,390.00
2020-21	753,973.00	6,751,000.00	7,504,973.00
2021-22	488,724.19	6,140,305.60	6,629,029.79

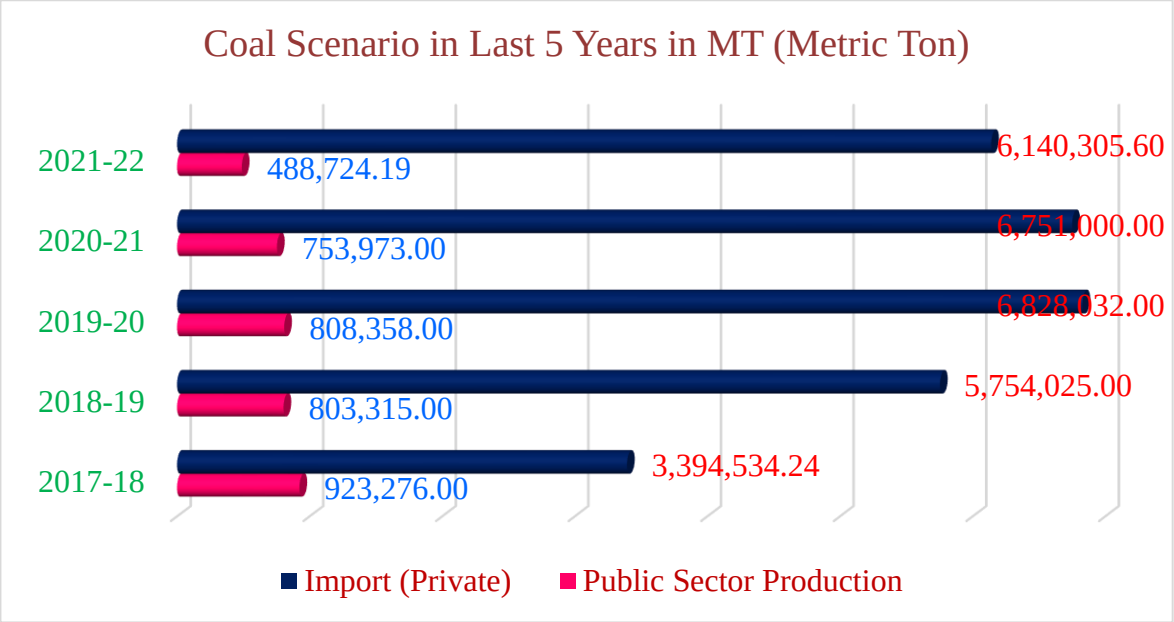


Figure 10: Coal scenario of last 5 year

Commercial production of Barapukuria Coal Mine commenced from 10 September 2005 using underground mining method with the targeted capacity of one million metric tons per year. Almost 65% of the production is being used by 250 MW (2x 125 MW) Coal fired power station operated by Power Development Board of Bangladesh near Barapukuria coal mine. Remaining 35% coal is being used in brick fields and other domestic purposes which have an impact of reducing deforestation. A total of 488,724 MT of coal has been extracted in the FY 2021-22 and 6,140,305 MT has been imported. As a result, about 6.63 million MT coal has been consumed in this FY.

7.0 Peat

The peat deposits of Bangladesh are located in the low-lying areas of the alluvial plain which are generally submerged under water for a large period each year. Peat occurs in Baghia-Chanda beel under Madaripur and Gopalganj district, Kola Mouza of Khulna district, Chatal beel area of Moulavibazar district, Pagla, Dirai and Shalla area of Sunamganj district, Chorkai area of Sylhet district, Brahmanbaria Sadar upazila of Brahmanbaria district and Mukundapur area of Habiganj district. It has a carbon content of 50-60% and has a calorific value between 5500 Btu/lb. and 7000 Btu/lb. The peat occurs at the surface or at shallow depths below the surface. The total peat reserve (dry peat) discovered in Bangladesh is 146.36 million tons. There is no commercial utilization of peat in Bangladesh at present. Peat can be conveniently

used in the form of briquette, ovoid and compressed tablets as an alternative fuel to household work, in brick and lime industries and in small capacity thermal power plant (10 MW) in rural areas. Three exploration licenses of peat is granted in Rajoir Upazila of Madaripur and Kotalipara Upazila of Gopalganj district.

8.0 Condensate and Natural Gas Liquids (NGL)

Some of the gas fields located in the north-eastern part of Bangladesh contain high concentrations of liquid hydrocarbons or condensate. This condensate has been processed in refineries and turned into petrol, diesel and kerosene since the beginning. In FY 2020-21, a total of 33,78,564 barrels of condensate and 20,203 barrels of natural gas liquids (NGL) have been produced as gas byproducts from the gas fields operating under national gas production companies and production sharing contracts (PSCs).

From this condensate, 27,93,140 barrels of condensate have been sold directly to Bangladesh Petroleum Corporation and private companies. The rest of the condensate and the whole amount of NGL produced are processed in plants owned by companies operating under Petrobangla and in this way 4,29,378 barrels of petrol, 61,538 barrels of diesel, 45,074 barrels of kerosene and 720 metric tons of liquefied petroleum gas (LPG) have been produced in FY 2020-21. These products are sold to various companies operating under the Bangladesh Petroleum Corporation. In 2018, a fractionation plant of 4,000-barrel capacity was established in Rashidpur by SGFL to process the condensate produced. Moreover, in 2021 a catalytic reforming unit (CRU) with 3,000 barrels of capacity has been established by SGFL.

[Source: Annual Report Petrobangla, 2021]

9.0 Power Sub-Sector

9.1 Primary Energy Mix for Power Generation

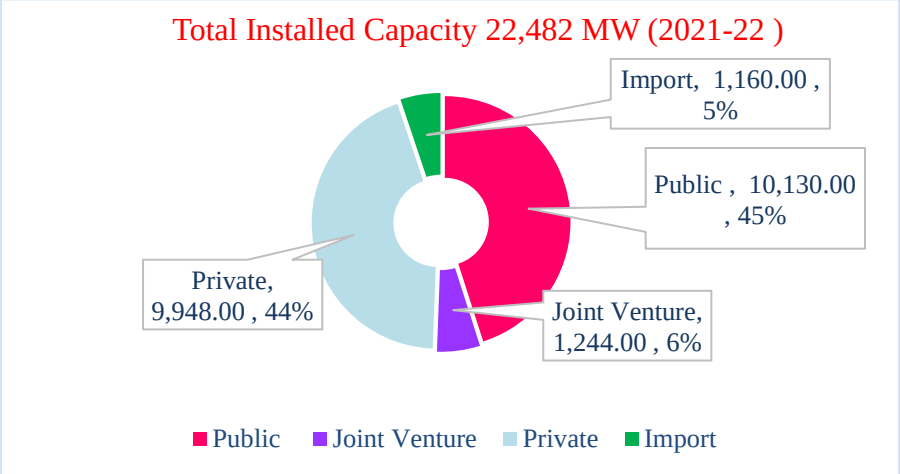
Maximum generation actually obtained till 30 June 2022 was 14,782 MW. It might have occurred due to fuel supply constraint. Of the total generation capacity between public sector and private sector entities are 45% and 44% respectively and from import 5% and joint venture 6%. Bangladesh has started importing 500MW electricity from India (started in October 2013) additional 100 MW from March'16 and 560 MW from December 2018 which contributed 9% of total power generation.

Table 13: Bangladesh's Power Sector: At a Glance (2021-22)

Types	Amount
Number of Power Plants	153
Installed Capacity (MW)	25,700
Maximum Generation (MW)	14,782
Total Consumers (in Millions)	43.10
Transmission Lines (km)	13,889
Distribution Lines (km)	629,000
Grid Substation Capacity (MVA)	56,882
Per Capita Generation (including Captive)	608.76 Kwh
Access to Electricity (Including Off-Grid Renewable)	100%
Overall System Loss (%)	10.41

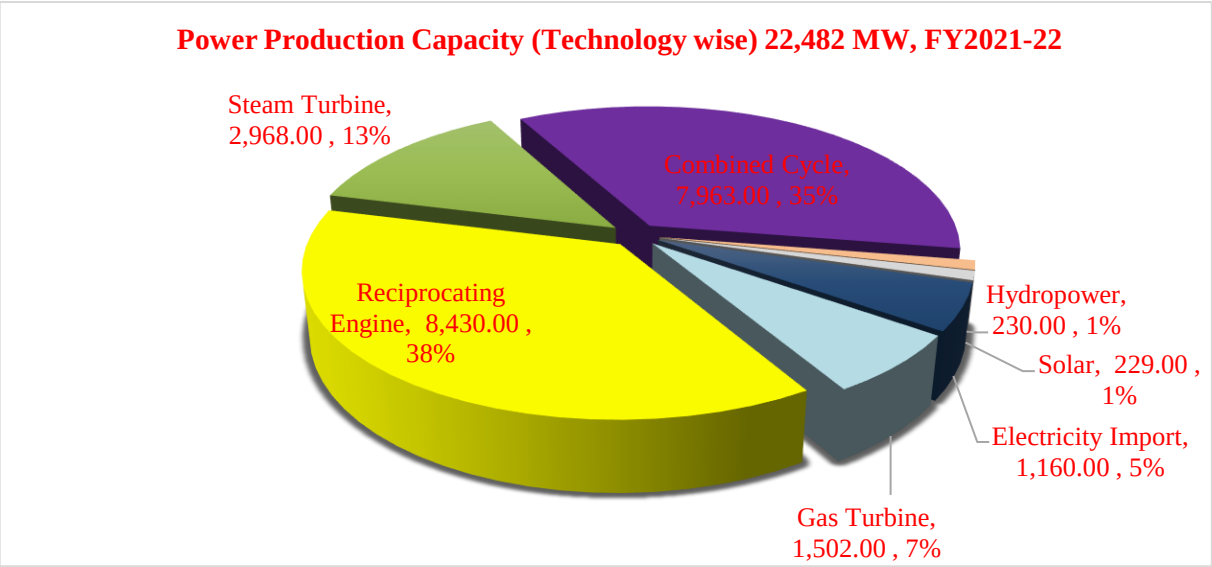
[Source: Power Division Annual Report 2021-22]

As of June 2022, the total installed power generation capacity on-grid and off-grid is 25,700 MW. On-grid installed power generation capacity is 22,482 MW.



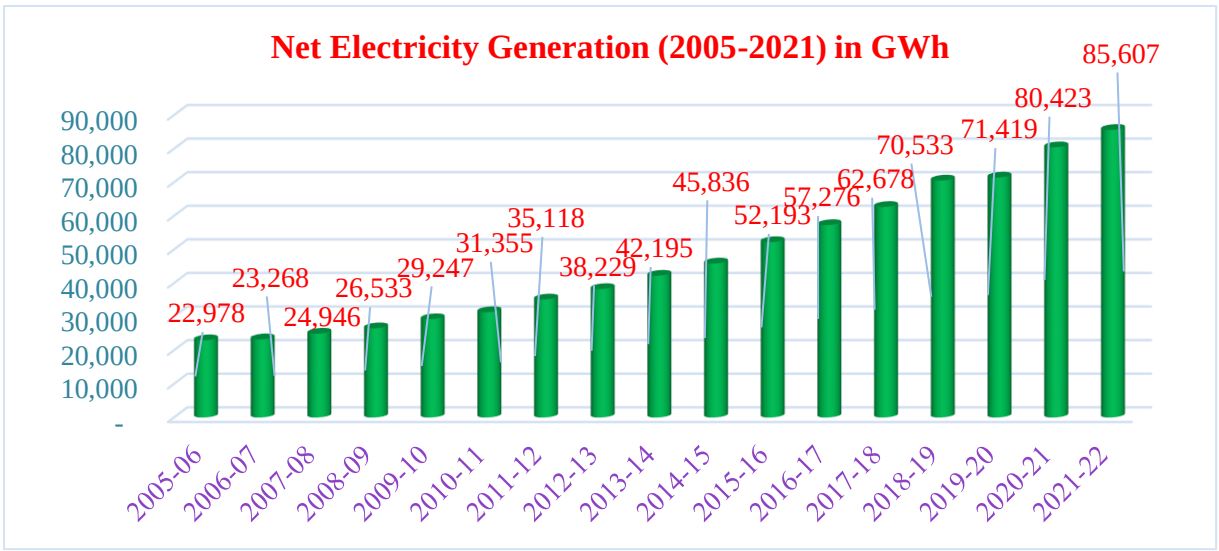
[Source: Power Division Annual Report 2020-21]

Figure 11: Total Installed Capacity 22,482 MW (2021-21)



[Source: Power Division Annual Report 2021-22]

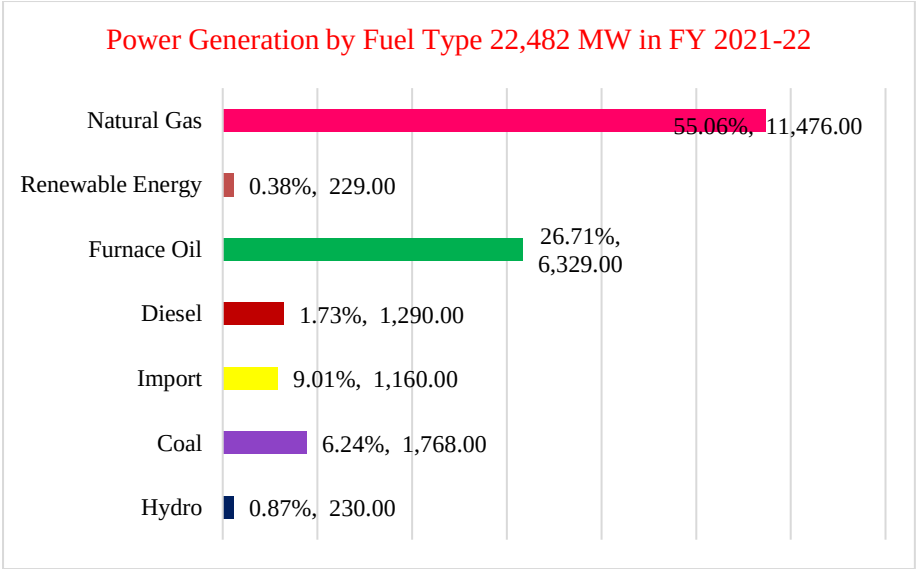
Figure 12: Power Production Capacity (Technology wise) in MW 2021-22



[Source: Power Division Annual Report 2021-22]

Figure 13: Historical Net Electricity Generation (GWh) in Bangladesh

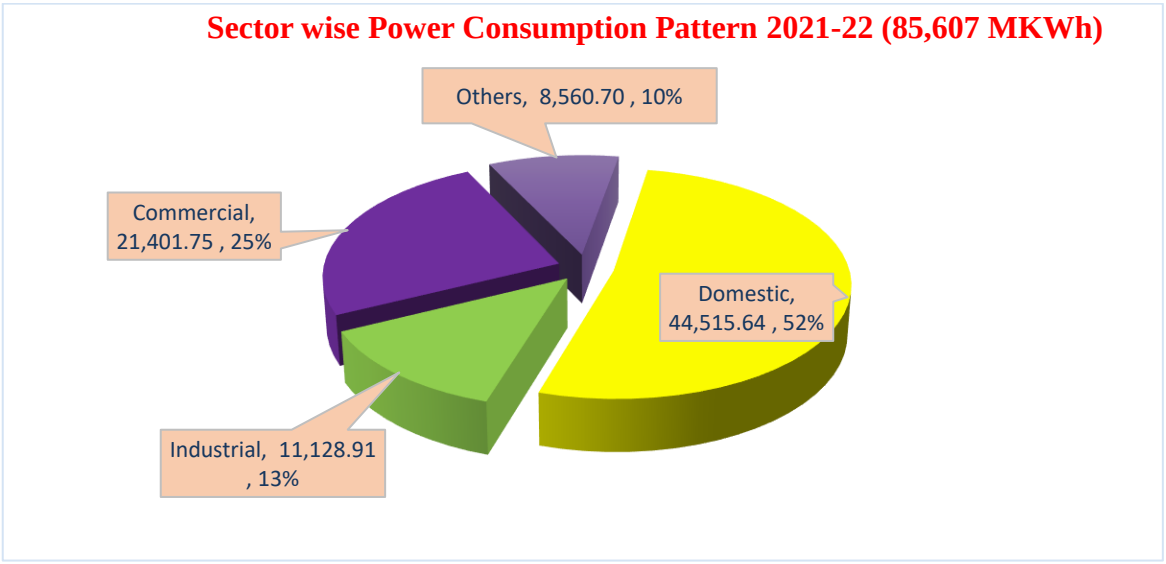
In the FY 2021-22, net electricity generation is 85,607 GWh is Bangladeshdesh.



[Source: Power Division Annual Report 2021-22]

Figure 14: Power Generation by Fuel Type (2021-22)

Of the total electricity generated in 2021-22, 62.17 % was generated from domestic fuels (natural gas, coal & hydro) and 28.44 % from imported petroleum fuels (diesel and furnace oil) and 9.01 % was electricity Import from India as cross border energy trade.



[Source: Power Division Annual Report 2021-22]

Figure 15: Sector wise Power consumption Pattern (2021-22)

9.2 Electricity Import

Bangladesh has entered into the era of cross border energy trade in October 2013 by importing electricity from India. Additional 100 MW from March 2016 from Tripura at present 1160 MW electricity is being importing from India and in near future it will increase considerably.

Figure 16: Bangladesh India Power Transmission Plant, Bheramara (Kustia)

Table 14: Electricity Import Scenario

Import Location	Power Transmission Capacity	Imported Electricity Amount (MW)
Bheramara, Kustia (from Baharampur, India)	400 KVA	1000
Cumilla (From Tripura)		160
Total Import from India		1160

[Source: Power Division]

10.0 Renewable Energy Resources

Renewable energy resources could assist in the energy security of Bangladesh and could help reduce the natural gas demand. Regions of the country without supply or access to natural

gas or the electric grid use biomass for cooking and solar power and wind for drying different grains and clothes. Biomass is currently the largest renewable energy resource in use due to its extensive noncommercial use, mainly for cooking and heating. Biomass comprises 27 percent of the total primary energy use in Bangladesh. The country has a huge potential for generating solar power. Moreover, the use of renewable energy has become popular worldwide in view of the depleting reserves of non-renewable fossil fuels. Renewable energy is environmentally friendly.

Renewable energy resources used in Bangladesh may be classified into three major types- (i) traditional biomass fuels, (ii) conventional hydropower, (iii) new-renewable resources (e.g., solar PV, wind, biogas etc.) of energy.

10.1 Traditional Biomass fuels

In Bangladesh, three major types of biomass fuel resources are in use: wood fuels, agricultural residues and animal dung. Wood fuels are obtained from different types of forests and tree resources grown in rural areas. Agricultural residues and animal dung contribute a substantial portion of biomass fuel in Bangladesh. A part of the total agricultural residues available during harvesting of crops and a part of total animal dung produced by animal resources are used as fuel. Availability of these resources (agricultural residues, animal dung) as fuel depends on local situation and socio-economic condition of the owners.

Figure 17: Conventional Biomass plant and ILRRC (Jashore) Operation

Converting biomass into more energy efficient fuel is a means of upgrading the rural energy consumption pattern. Biogas is very suitable for cooking and lighting (Mantel/Hazak) and for running a small generator to produce electricity. Throughout Bangladesh, there are currently about 80,000 households and village-level biogas plants in place. Around 50,000 domestic biogas plants already installed by IDCOL. There is a real potential for harnessing

basic biogas technology through rural electrification, village-level biogas production, and internal combustion (or even micro turbine) power generation.

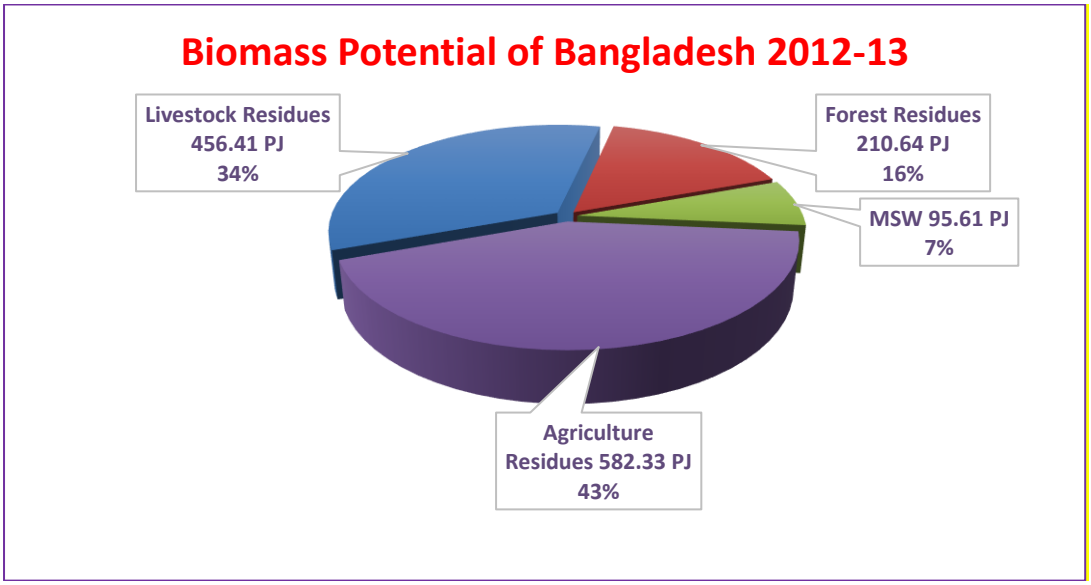


Figure 18: Biomass Potential of Bangladesh (2012 –13)

The power generation of the country largely depends on the non-renewable (fossil fuel) energy sources, mainly on the natural gas. This trend causes rapid depletion of non-renewable energy sources. Thus, it is necessary to trim down the dependency on non-renewable energy sources and utilize the available renewable resources to meet the huge energy demand facing the country. Most of the people living in rural, remote, coastal and isolated areas in Bangladesh have no electricity access yet. However, renewable energy resources, especially biomass can play a pivotal role to electrify those rural, remote, coastal and isolated areas in the country.

Humankind has been using biomass as an energy source for thousands of years. In a study (Paul & Others) assesses the bio-energy potential, utilization and related Renewable Energy Technologies (RETs) practice in Bangladesh. Improved cooking stove, biogas plant and biomass briquetting are the major RETs commonly practiced in Bangladesh. The assessment includes the potential of agricultural residue, forest residue, animal manure and municipal solid waste. The estimated total amount of biomass resource available for energy in Bangladesh in 2012–2013 is 90.21 million tons with the annual energy potential of 45.91 million tons of coal equivalent. The recoverable amount of biomass (90.21 million tons) in 2012–2013 has an energy potential of 1344.99 PJ which is equivalent to 373.71 TWh of electricity.

10.2 Conventional Hydropower

Total hydropower potential of the country was reported as 1500 MkWh/year at Kaptai (1000MkWh/year). Matamuhury (300MkWh/year) and Sangu (200MkWh/year) (GOB 1996). In 2018-19, total generation capacity of 5 hydropower units installed at Kaptai was 230MW and electricity generated was 8934 MkWh. Depending upon rainfall, yearly electricity generation capacity of hydro plants varies between 700 MkWh to 1000 MkWh.

It was reported that a feasibility study was undertaken in 1998 to establish additional hydropower units (Nos. 6 & 7) at Kaptai with generation capacity of 100MW. There is potential to install hydropower plant at the Sangu and the Matamuhury rivers in the Chittagong Hill Tracts and possibility of constructing a second dam, six kilometers downstream of existing Kaptai dam to generate hydropower. Though in Chittagong Hill Tracts local population are already conscious about the negative impacts of existing hydropower plants at Kaptai proper rehabilitation programed should be under taken. Considering the energy scarcity of the country, the feasibility of harnessing additional electricity through conventional hydropower technologies and mini & micro hydropower technologies should be explored to meet a part of future energy needs.

10.3 New-Renewable Energy Resources

It was mentioned in the Renewable Energy Policy 2008 that 5% and 10% of total electricity would be generated using renewable energy by 2015 and 2020 respectively (GOB 2008). SREDA Act 2012 was enacted for the establishment of Sustainable & Renewable Energy Development Authority (SREDA) for promotion of efficient energy and renewable energy technology. The authority (SREDA) is in the process of institutionalization. Total generation of electricity from renewable energy sources (e.g., solar, wind, hydro, biomass, biogas etc.) up to 2022 was 957.674 MW.

In line with the policy, government has already taken different initiatives in renewable energy development, in which some projects/programs have been completed and some are under implementation.

i. Solar Energy

Bangladesh is geographically located in a favorable position (within $20^0 34'$ to $26^0 38'$ north latitude) for harnessing sunlight, available abundantly for most of the year except for the three months June-August when it rains excessively. The amount of Solar Energy available in Bangladesh is high about 4 to 7 kWh/m2/day, enough to meet the demand of the country. There is a fast-growing acceptance of rural people to solar photovoltaic (PV) systems to provide electricity to households and small businesses in rural off grid areas.

The country's largest solar power plant at Mymensingh has been connected to the national grid. The plant has the capacity to generate 73 MW of electricity, which will help meet the government's target of generating 10% of the country's total electricity through using renewable energy by 2021.

Figure 19: Bangladesh's Largest (73 MW) Solar Power Plant, Mymensingh

With a 173K solar panel and 332 inverters, the solar power plant was fully installed with Huawei Smart photovoltaic (PV) solution to connect to the national grid.

The Rural Electrification Board (REB), a government agency has been engaged in commercializing solar power electrification of domestic, commercial, irrigation in rural area. IDCOL, a government-owned entity has disseminated some SHS through its partners NGOs. Due to higher cost of its production, it has to go a long way to become commercially competitive. However, in remote areas of Bangladesh, it is gradually becoming popular and government has undertaken a lot of schemes to subsidize on it. Government has planned to setup solar panel with capacity of 5~10 MW.

[Solar Home System (SHS)]

Solar Home System (SHS) provides reliable power for lighting and operating low powered appliances such as radio, television, small electric fans. The electricity provided by a SHS

can also be used to run Direct Current (DC) driven equipment such as DC shouldering irons, drilling machines etc. and to charge the battery of mobile phones. Larger systems can run computers, refrigerators, pumps etc. IDCOL and BREB are distributing Solar Home System (SHS) to the people living in the off-grid areas. IDCOL through different partner organization has already distributed about 60 lakhs (installed capacity 250 MW) SHS and BREB distributed about 30 thousand SHS throughout the country.

[Solar Irrigation System]

Solar powered irrigation is the breakthrough technology for energy stricken agro-based economy. Solar powered irrigation is the innovative and environment friendly solution for the irrigation system, which currently depends on hugely inefficient electric and diesel pumps.

Figure 20: Solar Pump System in Rangpur District

Gradually replacing the electric and diesel pumps for irrigation with solar water pumps could save significant capacity of electricity and huge investment cost. Up to June'21, a 2,125 nos. solar irrigation pump has been installed resulting 44 MW capacity.

ii. Bio fuel

Bio fuels can be produced from a variety of plants like rapeseed, mustard, corn, sunflower, canola algae, soybean, pulses, sugarcane, wheat, maize, and palm. The most popular option for producing bio-fuels is from non-edible oilseed bearing trees. The two most suitable species are:

Jamal gota (Jatropha curcas) and Verenda (Ricinus Communis). Both of these trees can grow virtually anywhere in any soil and geo- climatic condition.

Bio-fuel use is not new in Bangladesh. In the early 20th century, bio-fuel was used for lighting lamps or lanterns. In an agriculturally based country like Bangladesh, bio-fuel can be a better alternative

because a 30 percent blend of bio-fuel can be used along with our diesel or petrol. This can also be an excellent fuel to kindle lamps in rural Bangladesh.

The use of bio-fuel is increasing in most European countries. Germany has thousands of filling stations supplying bio-fuel and it is cheaper than petrol or diesel. The German government declared that 5 percent of every liter of fuel must be bio-fuel by 2020.

iii. Wind Energy

Bangladesh is exploring the potential of wind power. In the coastal area of Bangladesh, windmills with a capacity of 2.9 MW are in operation. Bangladesh has had to wait for a break-through in wind power technology to be competitive against other conventional commercial energy sources. A pilot project to install windmills along the seashore with a capacity of 20 MW has been planned by the government.

Figure 21: Windmill in Kutubdia, Cox's bazar

Based on the results of the pilot project, another 200 MW of power could be harnessed from wind power. Rising fossil fuel and CO_2 prices, technological advances and economies of scale with wider deployment are expected to make renewable-based systems increasingly cost-competitive in coming decades (IEA 2011).

iv. 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 tides results in the day time tides being smaller than the night time.

In the year 1984, an attempt was made from the EEE department of BUET, Dhaka to access the possibility of tidal energy in the coastal region of Bangladesh, especially at Cox's Bazar and at the islands of Maheshkhali 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, Maheshkhali, 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 2x73kVA 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.

v. Wave Energy

Until to 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 especially 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 heights 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.

vi. 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 boasts against the wind direction. But until now no research has been reported to utilize the energy of river current properly.

vii. 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 program is being taken by the Government.

11.0 Nuclear Power

Nuclear power is characterized by very large up-front investments, technical complexity, and significant technical, market and regulatory risks, but have very low operating costs and can deliver large amount of based load electricity while producing almost no CO_2 emissions. Typical construction times are between five and eight years from first concrete poured. Government of Bangladesh has signed a general contract with Russia on December 25, 2015 for the construction and commissioning of the country's first nuclear power plant (2*1200 MW) at Rooppur in Pabna at the cost of $12.65 billion.

Table 15: Planned Nuclear Power Reactors

Unit	Type	Capacity	Construction starts	Commercial Operation
Rooppur 1	VVER-1200/V-523	1200 MW	Oct 2017	*2023 or 2024*
Rooppur 2	VVER-1200/V-523	1200 MW	2018	*2024 or 2025*

All fuel for Rooppur is being provided by Rosatom, and all used fuel is to be repatriated to Russia, in line with standard Russian practice for such countries. A draft agreement on used fuel was signed in March 2017, totaling about 22.5 ton/yr. from each reactor (42 fuel assemblies, each with 534 kg of fuel). A further agreement for repatriation of used fuel for reprocessing was signed in August 2017.

The Bangladesh Atomic Energy Commission (BAEC) has taken an initiative to conduct a survey in eight char areas of southern region to select one or two suitable sites to set up the country's second nuclear power plant, aiming to meet the future demand of huge electricity. The study will cover a demographic survey over a 5-km diameter, seismic stability, geological location, and power infrastructure and communication system.

12.0 Conclusion

The government has taken several steps to deal with the reduction in the production of gas. Exploitation and exploration of domestic resources have been emphasized. Power Sector Master Plan has already been formulated and initiative has been taken to produce a large portion of the electricity using coal. Gas exploration activities by BAPEX have been strengthened and some prospective wells have already been identified. Discoveries of more new wells are much expected in the future. Besides onshore, exploration activities are being undertaken in the offshore and fields with large amount of gas are expected. In some old gas fields, the 3D Seismic survey has revealed more reserves of gas than before. For example, using new technology Bibiyana gas field found an increase of its reserve and a further production for some additional periods will continue. The government has taken initiative to meet the demand of energy through import of LNG, already LNG supplies have started and more LNG will be added to the national grid in the next few years. GSMP has been formulated and new entrepreneur-friendly PSC has been revised. Moreover, government has taken several steps to boost up the coal sector. ERL expansion is underway and SPM project has been initiated and the progress of the project work is ongoing. When the ongoing & future planning of development work of BPC will be implemented then the energy security will be enriched for the mass people of Bangladesh. New horizon has been exposed in sea after settlement of maritime boundary with Myanmar and India. Cross border energy trade will get momentum. Considering all the perspectives, we hope that in the near future, Bangladesh is well prepared to meet the Energy demand and ensure the supply of uninterrupted energy for achieving the 8th FYP, Vision-2021, SDG-2030 and Vision-2041.