

Knowledge Co-Creation Program on Energy Policy



Country Report of Bangladesh

MOJAMMEL HAQ

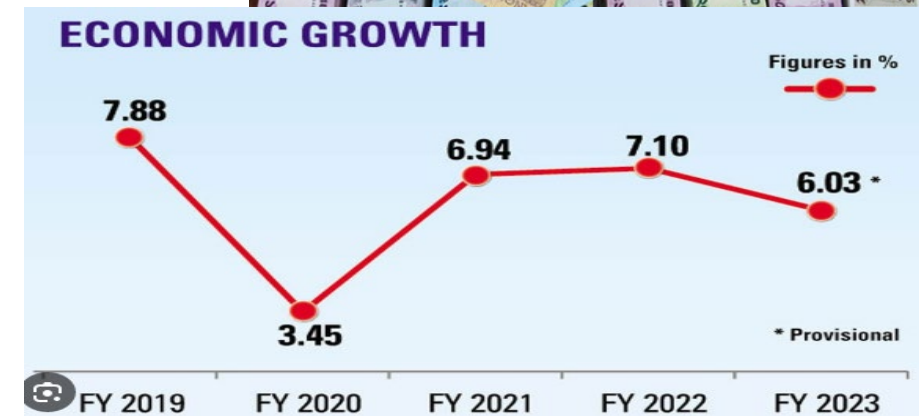
Assistant Director, Power Cell

Power Division, Government of Bangladesh

June 2023

Country Profile & Economic Indicators

- ❑ Name of the Country : Government of the People's Republic of Bangladesh
- ❑ Capital City : Dhaka
- ❑ Country Area : 148,460 Square Kilometres (57,320 sq mi)
- ❑ GDP in FY 2022-23 : 44,392 Billion Tk. (Provisional)
- ❑ GDP Growth in FY 2022-23 : 6.03% (Provisional)
- ❑ Population : 16,51,58,616 (P&H Census 2022)
(Men 8.17 Crore & Women 8.34 Crore)
- ❑ No. of Households : 4,10,10,051 (P&H Census 2022)
- ❑ Population Density : 1,119 Per Square Kilometer
- ❑ Annual Avg. Growth : 1.22%
- ❑ Per Capita Income : 2,765 USD (FY 2022-23)
- ❑ Foreign exchange reserves : 29.87 billion USD (May 2023)
- ❑ Inflation Rate : 7.56% (June 2023)
- ❑ Literacy Rate : 74.66% (P&H Census 2022)

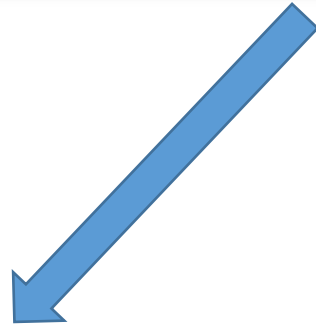


Administrative Unit Map of Bangladesh

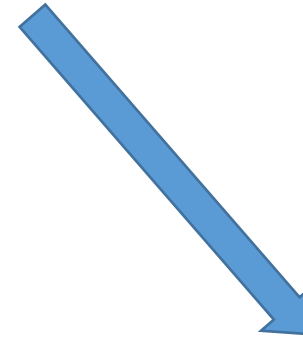


Ministry of Power, Energy and Mineral Resources

(Government of the People's Republic of Bangladesh)



Energy and Mineral Resources Division



Power Division



Organizational Structure

Ministry of Power, Energy and Mineral Resources

Energy and Mineral Resources Division

Geological Survey of Bangladesh (GSB)

Bangladesh Petroleum Institute (BPI)

Bureau of Mineral Development (BMD)

Hydrocarbon Unit

Department of Explosives

Bangladesh Energy Regulatory Commission (BERC)

Petrobangla

BAPEX

BGFCL

SGFCL

GTCL

TGTDCL

BGDCL

JGTDSL

PGCL

KGDCL

SGCL

RPGCL

BPCMCL

MGMCL

Bangladesh Petroleum Corporation

POCL

MPL

JOCL

ERL

LPGI

Power Division

Org/Cell	Generation	Transmission	Distribution
EPRC	BPDB	PGCB	BPDB
SREDA	APSCL		BREB
CEI	EGCB		DESCO
Power Cell	NWPGCL		DPDC
BPMI	RPCL		WZPDCO
	CPGCBL		NESCO
	BRPL		

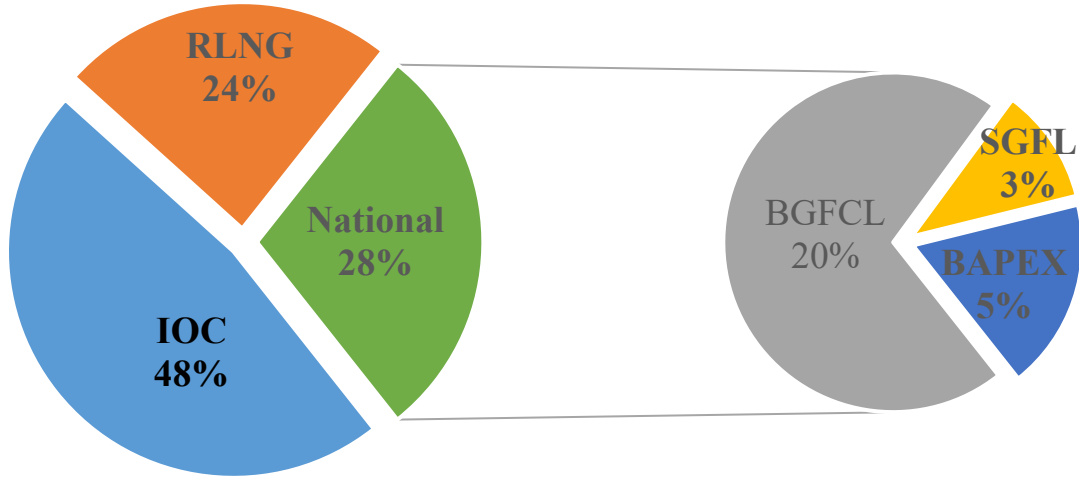
ENERGY AND MINERAL RESOURCES DIVISION

Vision of Energy & Mineral Resources

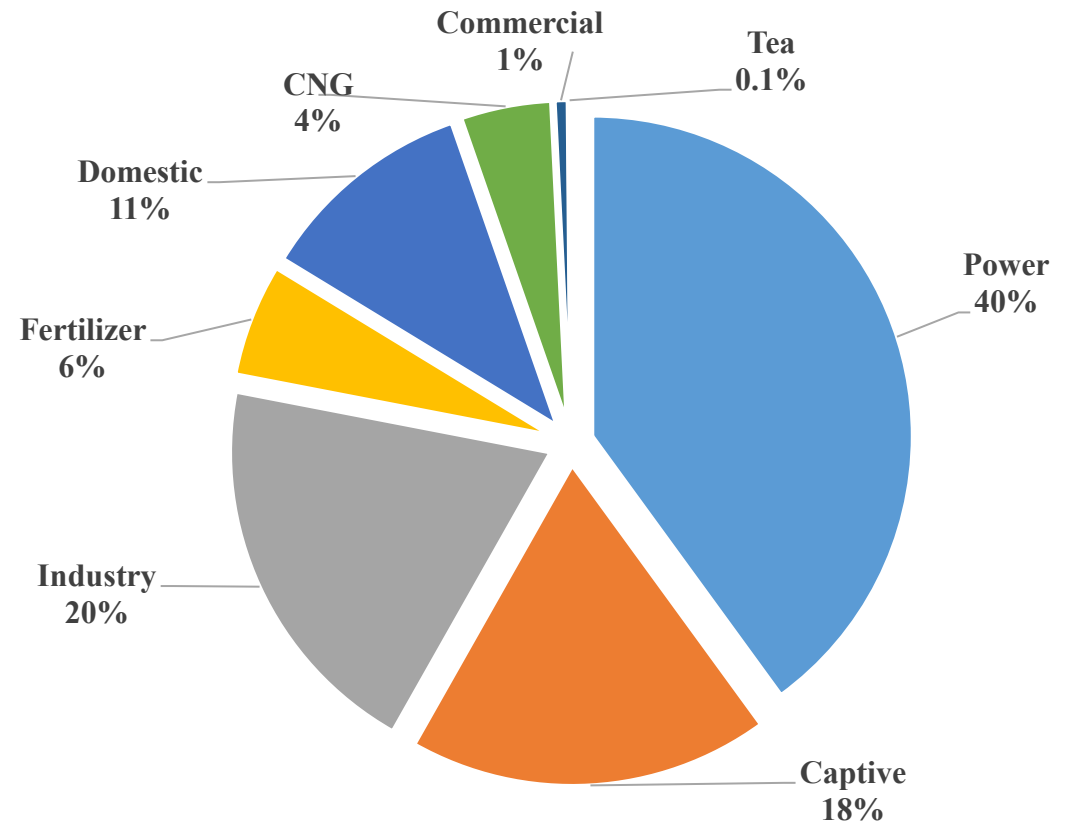
To achieve energy security for the country through supply of sustainable energy services for all at affordable prices and exploit mineral resources in an environmentally sustainable manner.



Gas Supply and Consumption

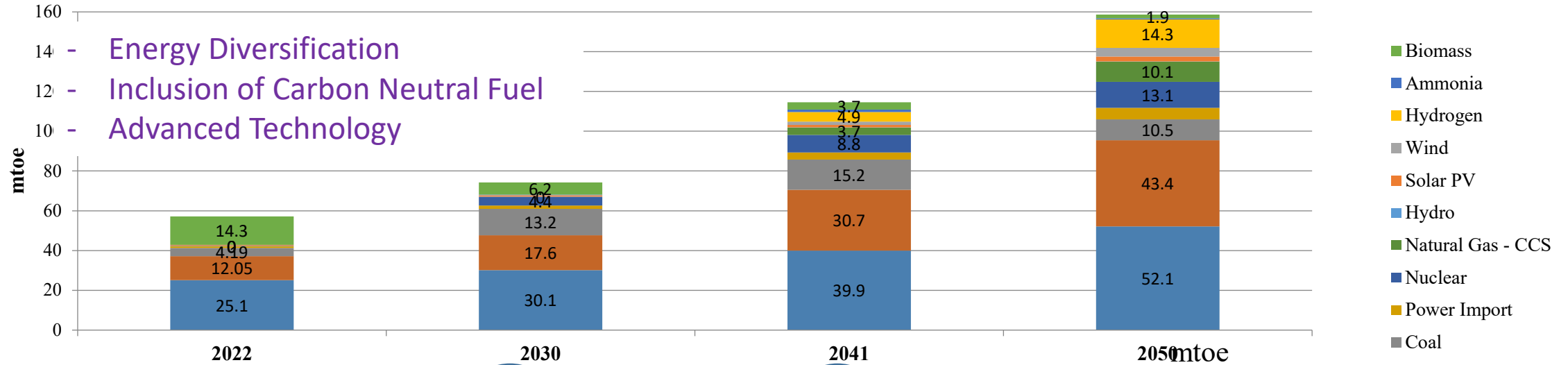


- Domestic Production
 - National Companies
 - International Oil Companies
- Import



- Eight Customer Categories

Primary Energy Perspective to IEPMP



Primary Energy	2022	2030	2041	2050
Natural Gas	25.1	30.1	39.9	52.1
Oil	12.05	17.6	30.7	43.4
Coal	4.19	13.2	15.2	10.5
Power Import	0.86	1.7	3.5	5.8
Nuclear	0	4.4	8.8	13.1
Natural Gas - CCS	0	0	3.7	10.1
Hydro	0.17	0.1	0.1	0.1
Solar PV	0.53	0.7	1.3	2.5
Wind	0	0.1	1.6	4.3
Hydrogen	0	0	4.9	14.3
Ammonia	0	0.2	1.2	0.6
Biomass	14.3	6.2	3.7	1.9
Total	57.2	74.3	114.6	158.7

POWER DIVISION

Vision of Energy & Mineral Resources


Universal access to quality electricity in a cost-effective and affordable manner.





Power Sector: At a Glance


 **Generation Growth** : 10 % (Av.)

 **Installed Capacity (Inc. Captive & RE)** : 27,481 MW

 **Power Import** : 1,908 MW

 **Consumers** : 45 Million

 **Transmission Line** : 14,717 Ckt. km

 **Distribution Line** : 6,28,562 km

 **Distribution Loss (FY 2021-22)** : 7.74 %

 **Per Capita Generation** : 608.76 kWh

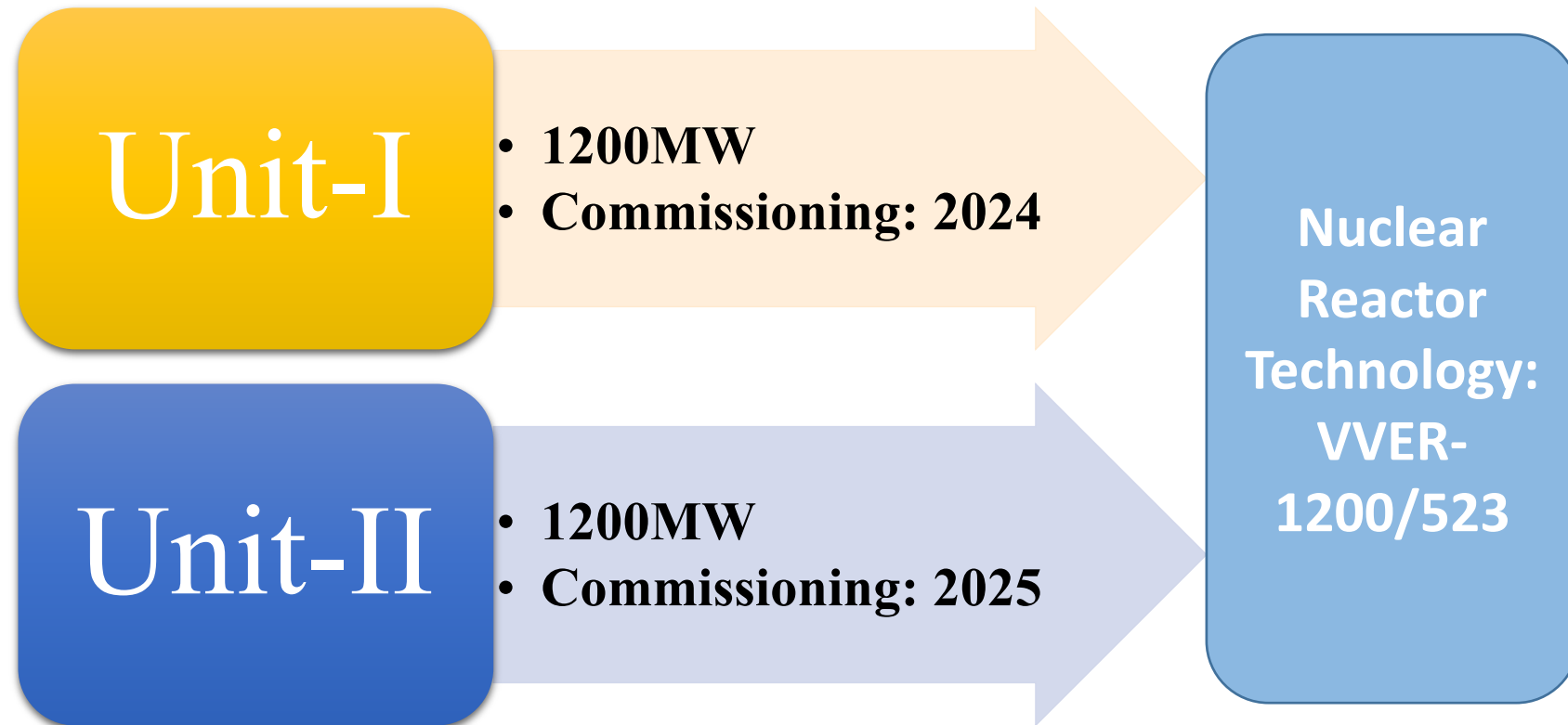
 **Access to Electricity** : 100.00%

Fuel Mix in Power Generation

Fuel Type	Capacity(Unit)	Total(%)
Coal	3440.00 MW	14.18 %
Gas	11592.00 MW	47.78 %
HFO	6441.00 MW	26.55 %
HSD	941.00 MW	3.88 %
Hydro	230.00 MW	0.95 %
Imported	1160.00 MW	4.78 %
Solar	459.00 MW	1.89 %
Total	24263 MW	99 %

Nuclear Power Project

Rooppur Nuclear Power Project



RE Achievements



Solar Home System



Solar Mini Grid



Solar Irrigation System



Grid-tie Solar Park

Technology	Off-Grid (MW)	On-Grid (MW)	Total (MW)
Solar	365.51	584.13	949.64
Wind	2	0.9	2.9
Hydro	0.00	230	230
Biogas to Electricity	0.69	0.00	0.69
Biomass to Electricity	0.40	0.00	0.40
Total	368.6	815.03	1183.63

Technology-wise Progress of RE

Solar Home System (SHS)

6.04 million (263.60 MW)

Solar Park

10 (461 MW)

Solar Irrigation

2858 (52 MW)

Solar Roof-top

Except Net-Metering: 212 (68 MW)

Net Metering: 1910 (74.58 MW)

Solar Charging Station

14 (0.28 MW)

Solar Drinking Water System

82 (0.1 MW)

Wind Power Plant

3 (3 MW)

Biomass & Biogas

8 (1 MW)

Hydro

230 MW

Countrywide CO2 Emission

Sector	Amounting (metric tonnes)	%
Energy Sector i.e power, transport, industry, households, commercial, agriculture, brick kilns and fugitive emissions	84.45	55.07%
Agriculture, livestock and forestry	46.24	27.35%
Cement and fertiliser	5.6	3.32%
Municipal solid waste and wastewater	24.11	14.26%

In 2021, China is the largest emitter of carbon dioxide gas in the world. It accounts for 28% of the world's emissions, the United State of America has 15%, India 7%, and **Bangladesh only 0.09%**.

Bangladesh pledges to reduce 22% carbon emissions by 2030

Impact of COVID-19 on these Sector

- **Approximately 30% electricity demand reduced due to shut down of educational Institutes, Industries, Offices and all business area.**
- **Development works specially transmission network were in difficulty.**
- **About 176,660 million taka revenue lost due to less electricity generation instead of demand.**
- **About 44,110 million taka subsidize for Bulk Tariff payment from IPPs and Imports.**
- **Less sectoral budget allocation in ADP and target fails.**
- **Overall country economic growth were less.**

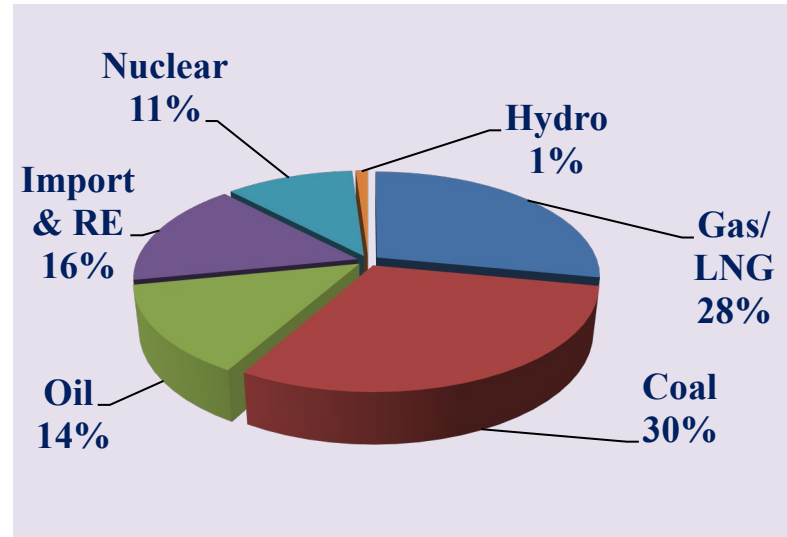
Fuel Mix Power Generation Plan

24,951 MW

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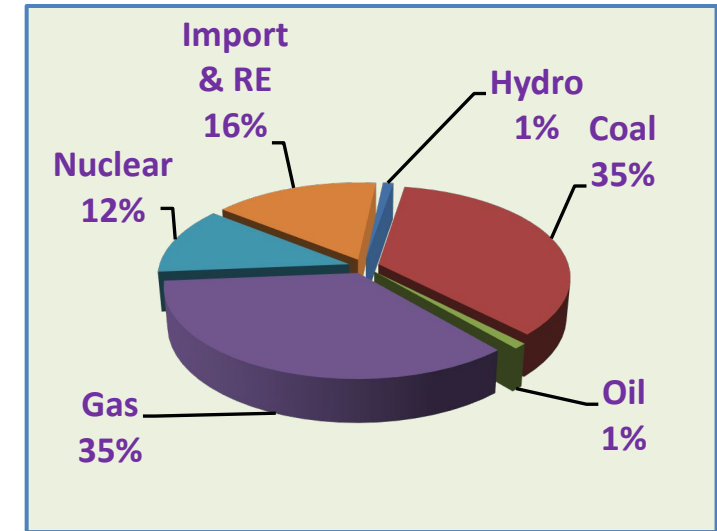
2023

40,000 MW



2030

60,000 MW



2041

Shifting from Coal Based Power Plants



10 coal projects are being considered for implementation



No New Approval For Coal Based Plant

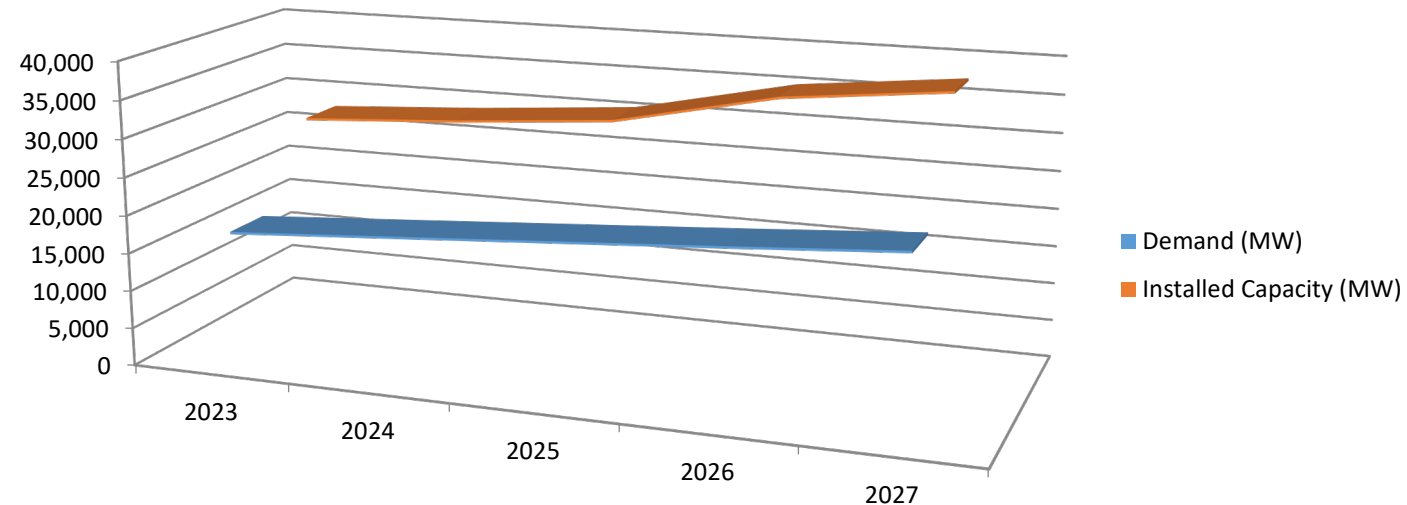


Adoption of Clean Technology for Coal based Power Plants

Electricity Demand & Production Forecast

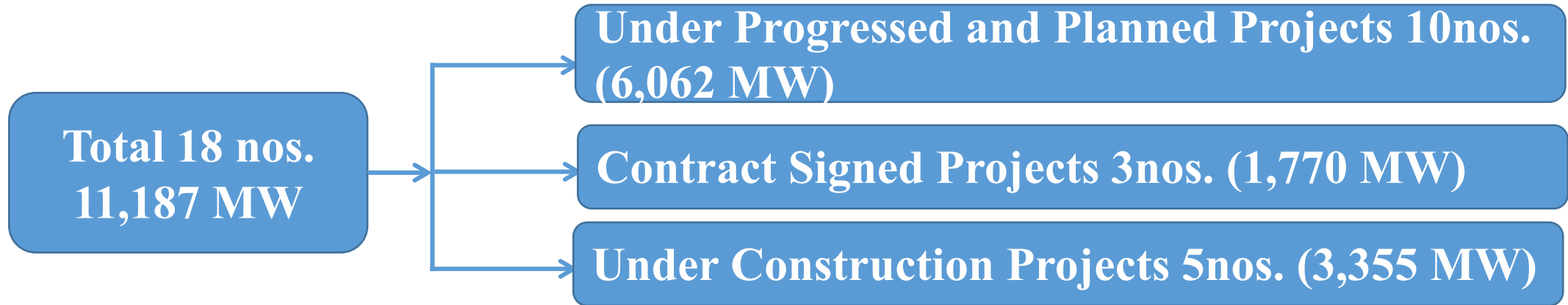
As per Power System Master Plan (PSMP)-2016

	2023	2024	2025	2026	2027
Demand (MW)	17,100	18,500	19,900	21,300	22,800
Installed Capacity (MW)	27,750	29,005	30,656	35,218	37,425



Power Plants Installation Forecast

LNG based Power Plants

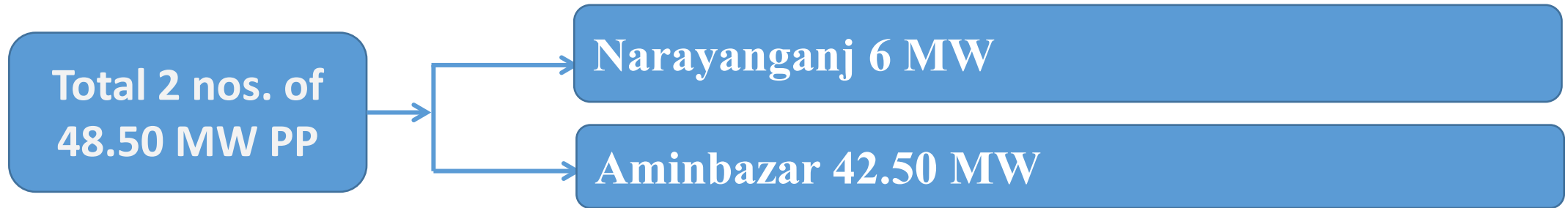


RE Projects-2030

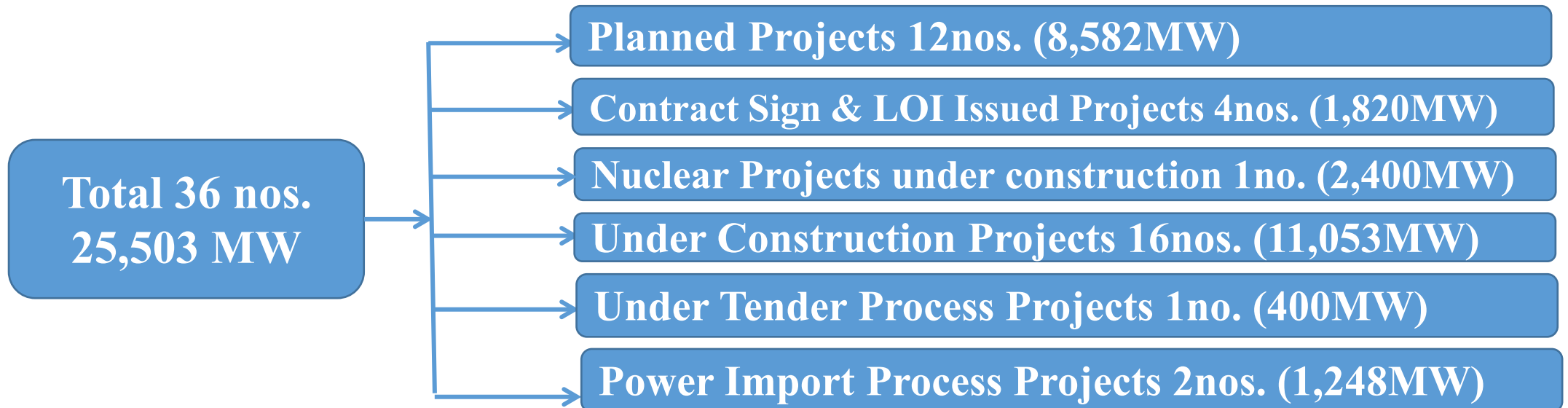


Power Plants Installation Forecast

Waste to Energy



Power Plant Installation up to 2030 excluding RE



Power Plants Installation Forecast

Potential of Battery Energy Storage System

Horizon Years	Installed Capacity (MW)	Option 1			Option 2		
		VRE %	VRE (MW)	Storage (MWh)	VRE %	VRE (MW)	Storage (MWh)
2026	36,082	25%	9,020	0	33%	11,907	0
2031	49,041	25%	12,260	0	No Second Option		
2036	52,158	25%	13,039	31,000 (7,750 MW)	39%	20,342	38,500 (9,625 MW)
2041	57,161	25%	14,290	30,000 (7,500 MW)	50%	28,580	39,000 (9,750 MW)

Current Energy Policy Measures

Act & Policy in Energy Sector

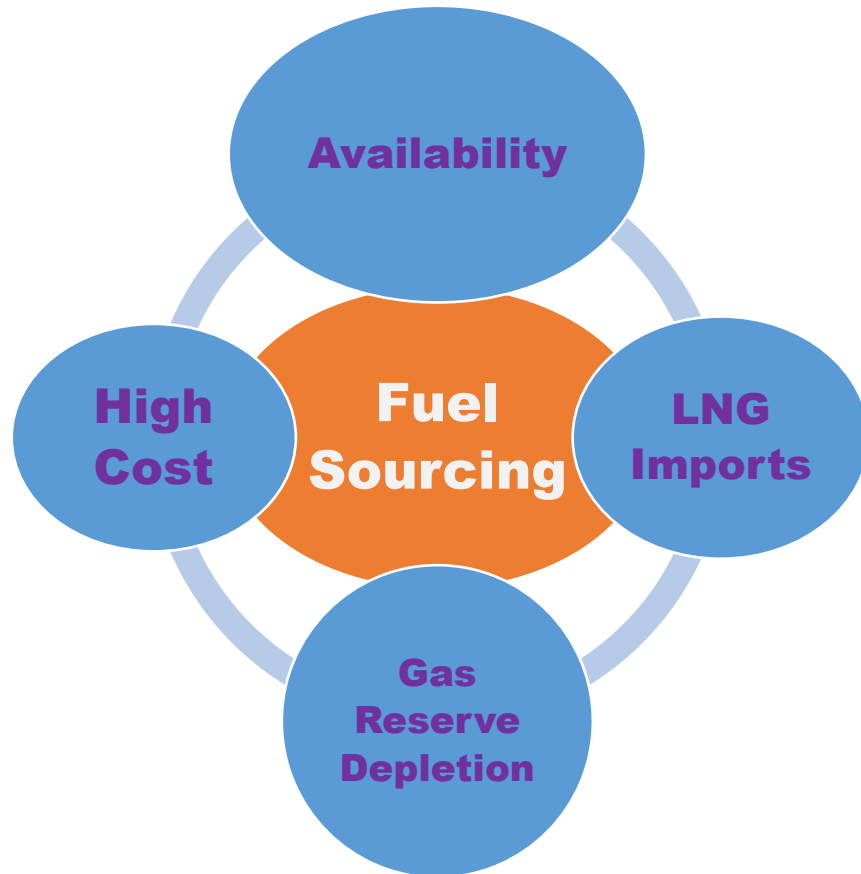
- **Bangladesh Energy Regulatory Commission Act, 2003(Amendment)**
- **Bangladesh Oil, Gas and Mineral Resources Corporation Act, 2022**
- **Electric vehicle charging guideline**
- **BPC Act 2016**
- **The Mines and Minerals Rules, 2012**
- **Petroleum Law 2016**
- **Expedited Supply of Electricity and Energy (Special Provisions) Act, 2010**
- **Bangladesh Gas Act, 2010**
- **Liquefied Petroleum Rules, 2004**
- **Explosives Rules, 2004**
- **National Energy Policy-2004**
- **Bangladesh Energy Regulatory Commission Act, 2003.**

Current Energy Policy Measures

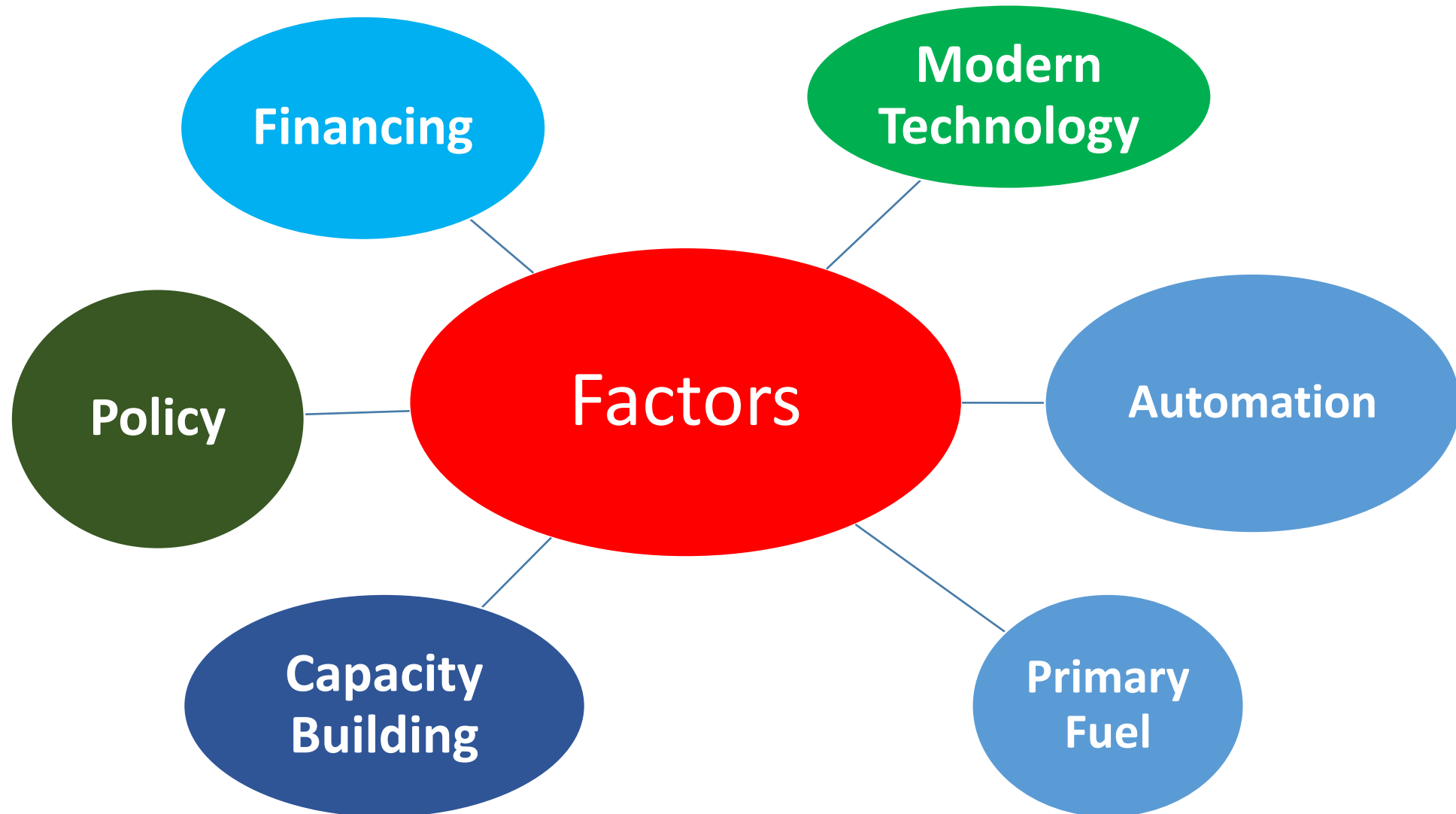
Act & Policy in Power Sector

- **Power & Energy Fast Supply Enhancement (Special Provision) (Amendment), 2021**
- **Electricity Rules, 2020**
- **The Electricity Act, 2018**
- **Energy Audit Regulations, 2018**
- **Energy Efficiency and Conservation Rules, 2016**
- **Bangladesh Energy & Electricity Research Council Act, 2015**
- **Rural Electrification Board Act, 2013**
- **Sustainable & Renewable Energy Development Authority Act, 2012**
- **Bangladesh Energy Regulatory Commission Act. 2003**
- **Private Sector Power Generation Policy of Bangladesh, 1996**
- **Amendment of Energy Efficiency and Conservation Rules, 2016**
- **Policy Guidelines for Power Purchase from Captive Power Plant, 2007**

Major difficulties and bottlenecks



Major difficulties and bottlenecks



Expectation from this Program

Adaptation of policy mechanism to existing power system improvement

Clean fuel i.e. RE, BESS, Hydrogen, Ammonia and others based power generation technologies

Country Energy Security Mechanism

THANK YOU ALL