

A PRESENTATION ON

BANGLADESH COAL SECTOR

PRESENT STATUS AND FUTURE PLAN

PRESENTATED BY

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BANGLADESH

Prime Source of Energy in Bangladesh

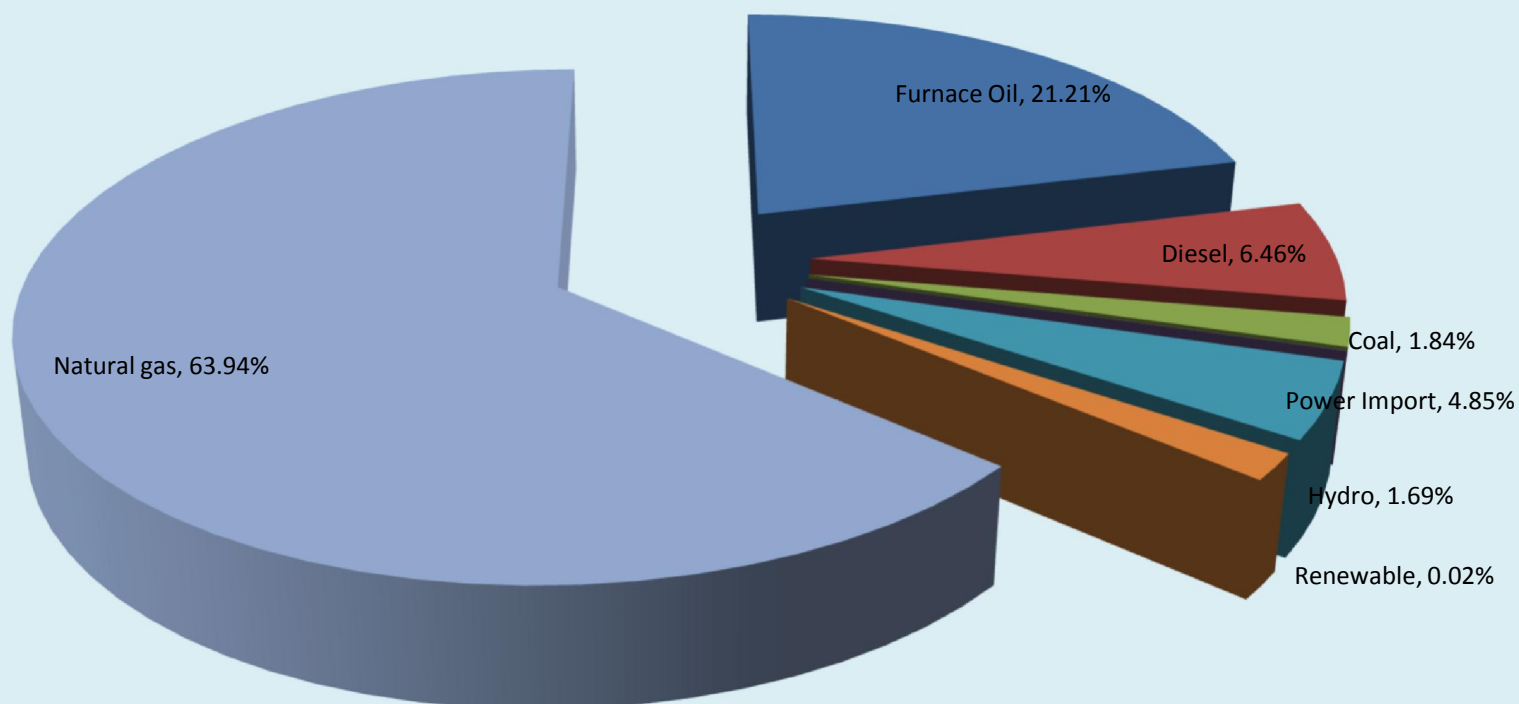
- **The Prime source of energy in Bangladesh is Natural gas**
- **Total GIIP is 38.952 tcf**
- **Proved, probable and possible is (3P) 31.31 tcf**
- **Proved & probable is (2P) 27.12 tcf,**
- **Proved gas reserve is (1P) 20.77 tcf,**
- **Remaining gas reserve is 13.60 tcf. (As of 1 Jan 2016)**
- **The reserve of natural gas in Bangladesh is declining.**

Importance of Coal as Energy for Bangladesh

- Coal could be a good alternative for energy in Bangladesh.**
- It is a reliable and affordable source of energy worldwide.**
- More than 40% of global power generation is based on coal. In Bangladesh it is less than 2%.**
- The coal of Bangladesh is high quality and more environment friendly.**

Fuel Mix for Power Generation in Bangladesh

**Installed Power Generation Capacity in Bangladesh
up to 30 September 2017 (By Fuel Type)**



Total Installed Capacity including Captive Power: 15,821 MW

■ Furnace Oil ■ Diesel ■ Coal ■ Renewable ■ Power Import ■ Hydro ■ Natural gas

Yearly Coal Demand in Bangladesh

- **In 2002 yearly demand was 2.50 million mt.**
- **2005 demand was 4.0 million mt**
- **Present demand apx. 6.0 million mt.**
- **As per vision 2021 coal demand will be 35 MTPA in Power Sector.**
- **As PSMP-2016, Coal demand will be 71.20 MTPA in 2041**

(PSMP-2016)

Projection of Primary Energy Supply

Primary Energy Sources Natural Gas	2014		2041		Annual growth rate (14~41)
	ktoe	share	ktoe	share	
Natural Gas	20,726	56%	50,149	38%	3.30% p.a.
Oil (Crude oil + Refined Products)	6,263	17%	32,153	25%	6.20% p.a.
Coal	1,361	4%	26,273	20%	12.70% p.a.
Nuclear Power	-	-	11,942	9%	-
Hydro, Solar, Wind Power and Others	36	0%	197	0%	6.50% p.a.
Biofuel and Waste	8,449	23%	4,086	3.00%	-2.70%
Power (Import)	377	1%	6,027	5%	10.80% p.a.
Total	36,888	100%	130,827	100%	4.80% p.a.

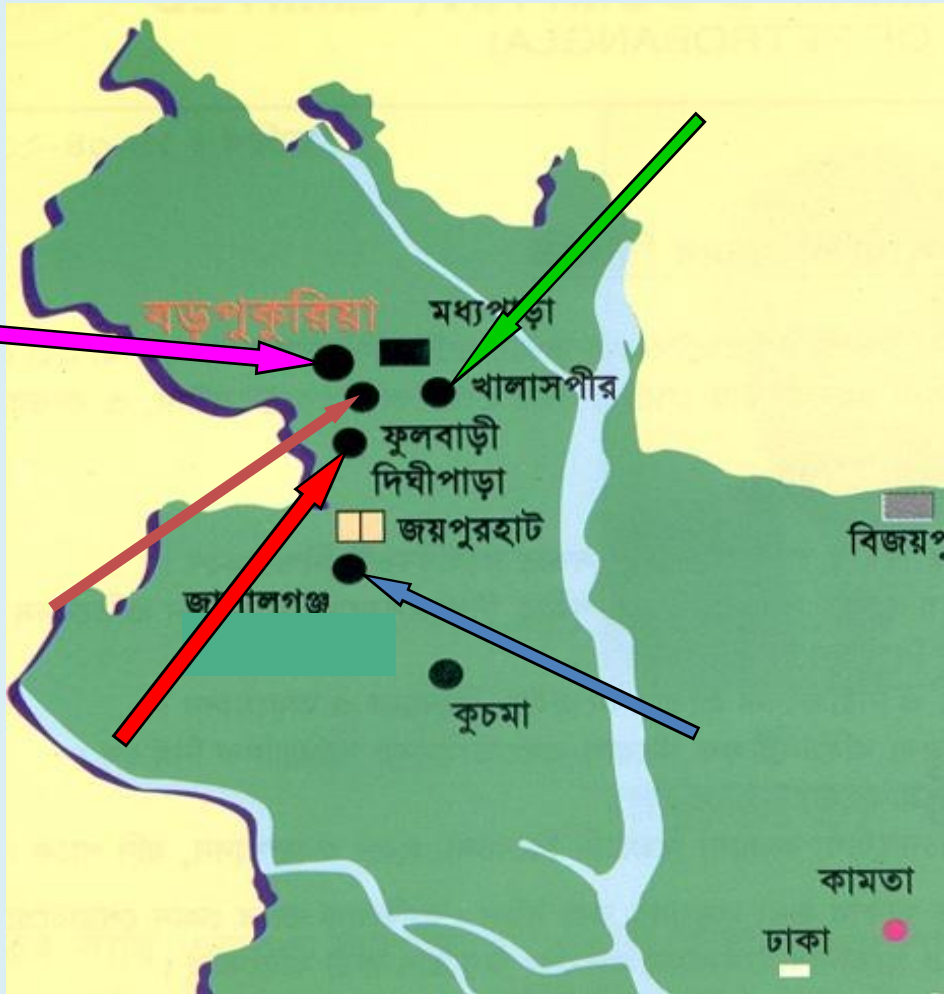
(PSMP-2016)

Global Coal Based Power Generation

Countries	Percent
South Africa :	93 %
China :	79 %
Australia :	78 %
India :	68 %
USA :	49 %
Japan :	27 %
Pakistan :	06 %
Bangladesh :	1.84 %
World Average :	41 %



Discovered Coal Deposits

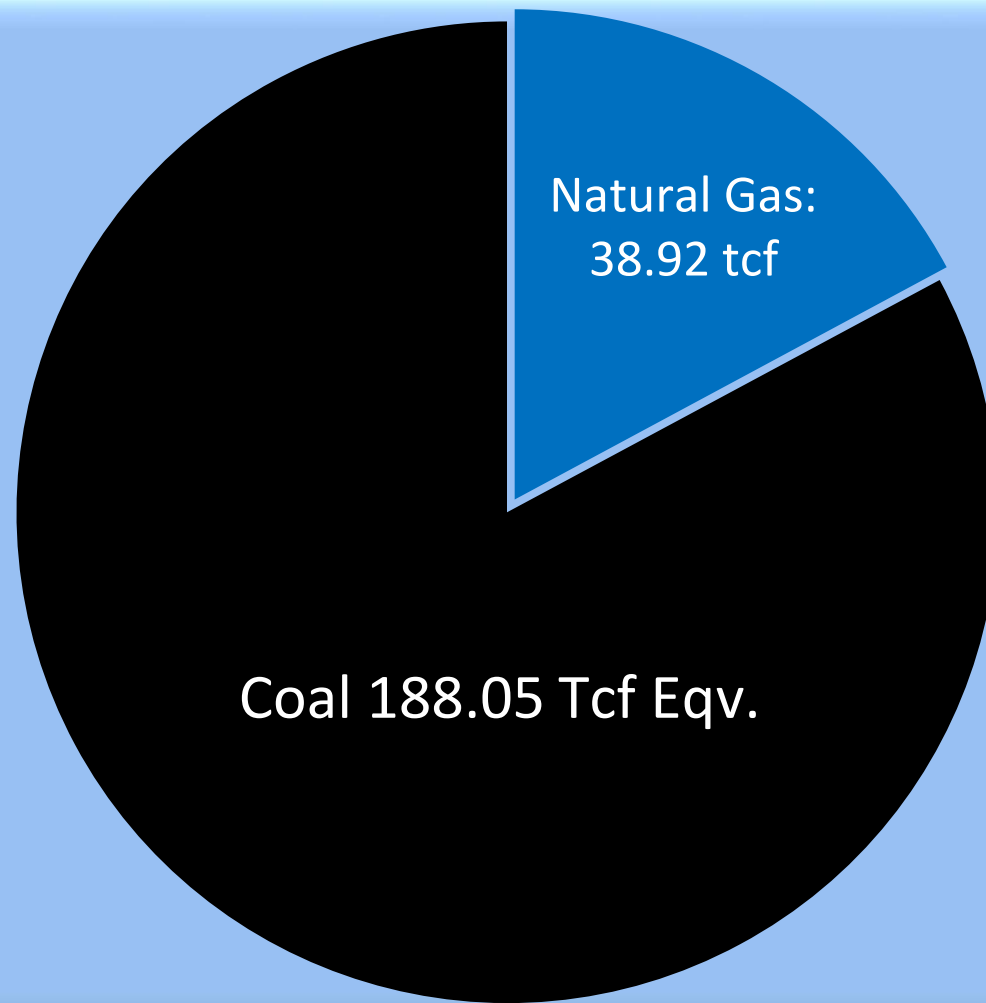


5 Coal Fields.

Reserves 7962 million ton.

<u>Fields</u>	<u>Million ton</u>
Barapukuria	: 390
Khalashpeer	: 685
Jamalgonj	: 5450
Phulbari	: 572
Dighipara	: 865
TOTOL	: 7962

Coal vs Gas Reserves in Bangladesh



Discovered Peat Deposits in Bangladesh

Reserve in million metric tonne

Peat Deposits	In-situ Reserve (Probable)
Gopalganj	150.00
Khulna	8.00
Sunamganj	9.71
Moulavibazar	3.00
TOTAL	170.71

Present Status of Coal Fields in Bangladesh

Sl. No.	Name of the Coal Field	Year of Discovery	Present Status
1	Barapukuria	1985	Production continued since 2005 by underground Longwall and LTCC method.
2	Dighipara	1995	A 2-D survey has been Completed and Techno-Economic Feasibility Study is in progress.
3	Jamalganj	1962	Recently conducted a study for CBM extraction, but there is no CBM for extraction and recommended for underground mining.
4	Khalashpir	1989	A feasibility study conducted but acquired data was insufficient or limited. Require further study.
5	Phulbari	1994	A detailed feasibility study conducted for Open Pit Mining. Require further evaluation of the feasibility study report.

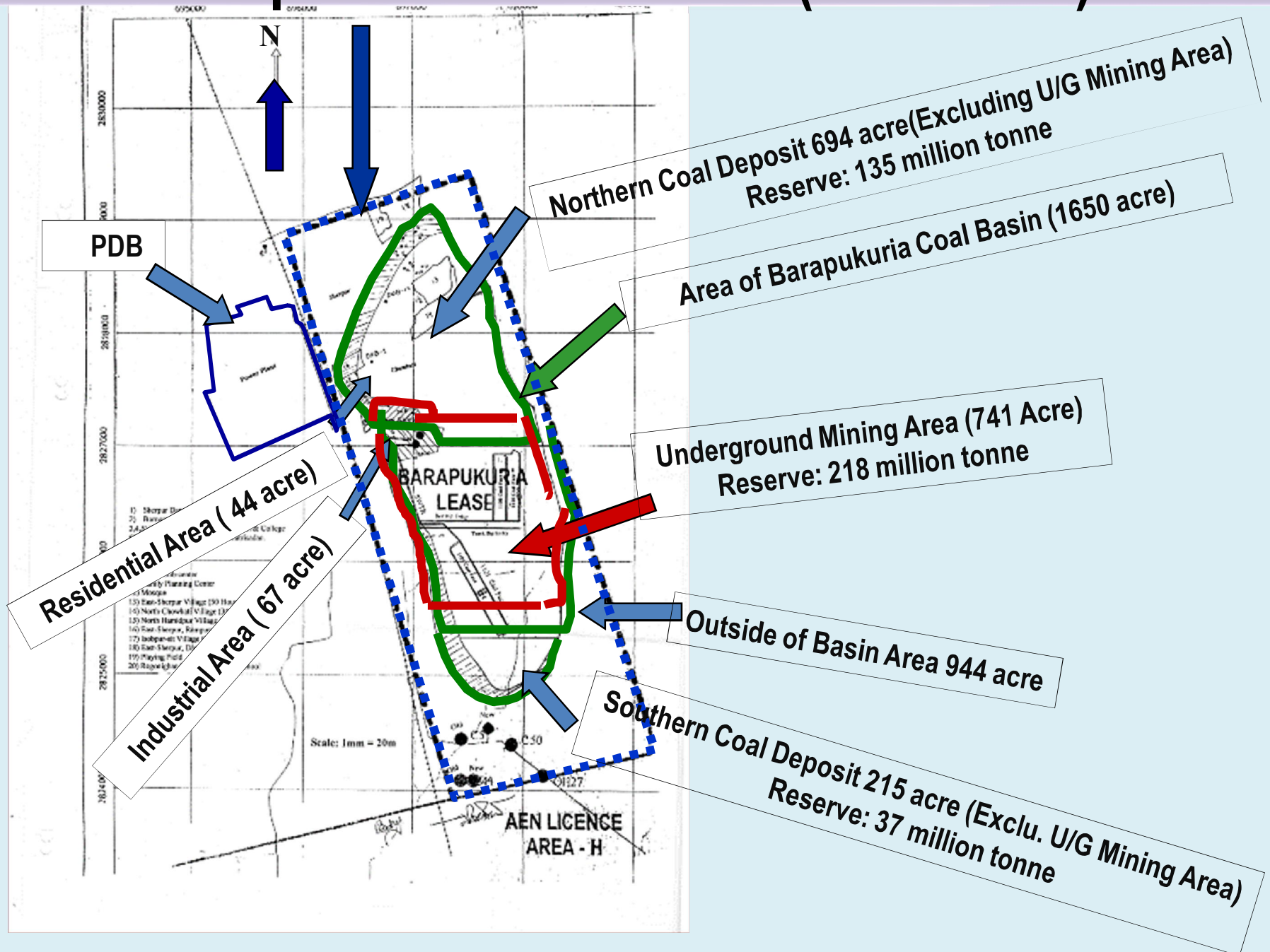
Specifications of Barapukuria Coal

BCMCL Coal:

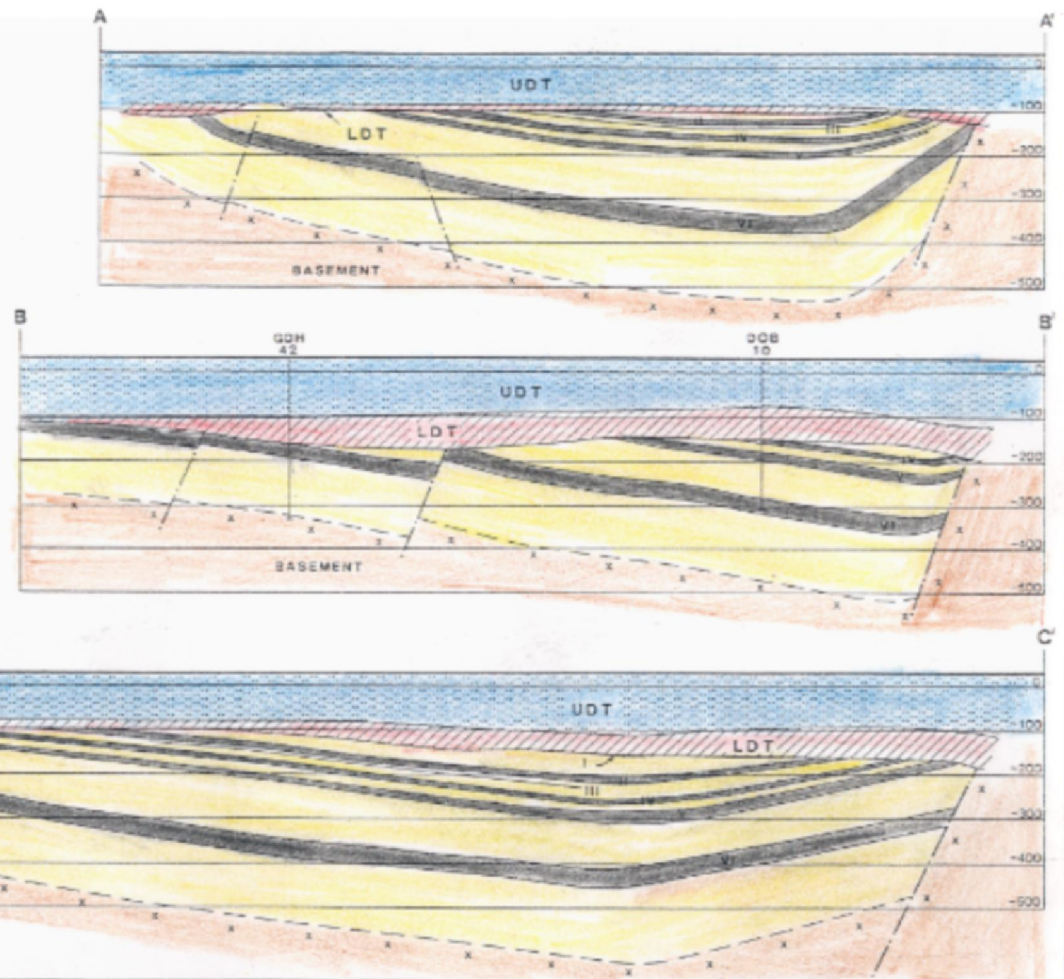
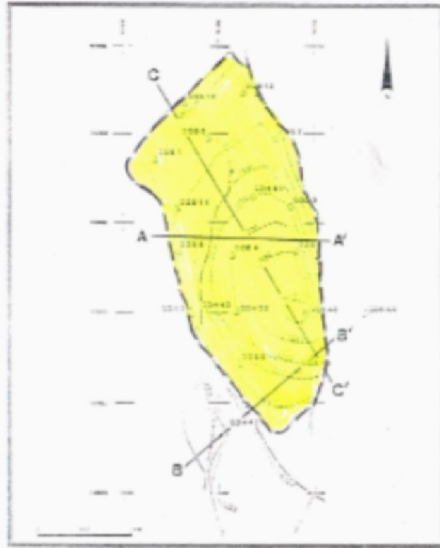
High Volatile Bituminous Coal

☐ Avg. Gross Cal. Value	: 11,040 btu/lb
☐ Ash	: 12.40%
☐ Moisture	: 10.00%
☐ Fixed Carbon	: 48.40%
☐ Volatile Matter	: 29.00%
☐ Sulphur	: 0.53%

Barapukuria Lease Area (2594 Acre)



Barapukuria Coal Basin and its Cross Section



WA WARDLE ARMSTRONG
 Mining Engineering
 Mineral Management
 Geology and Geotechnics

PETROBANGLA
 (B.O.G.M.C.)

REFERENCE

Upper Dupi Tila Formation UDT
 Lower Dupi Tila Formation LDT
 (Madhupur Clay not shown)

TITLE

GEOLOGICAL CROSS SECTIONS

PROJECT No:- 4289 / 78

GOB-UK COAL PROJECT
 BARAPUKURIA COAL DEPOSIT
 STAGE 2
 FEASIBILITY STUDY

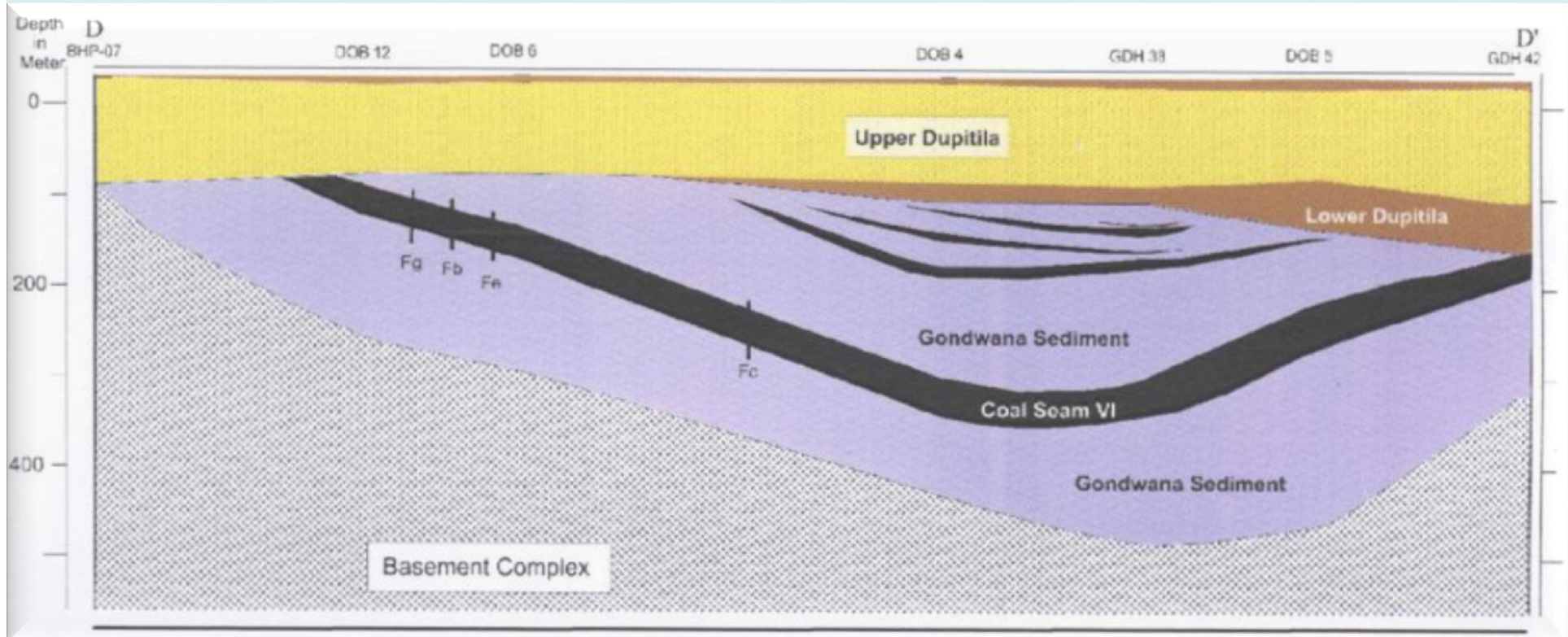
FIG.No.

2.9

SCALE

1:10,000 (approx.)
 (INSET 1:50,000 (approx.))

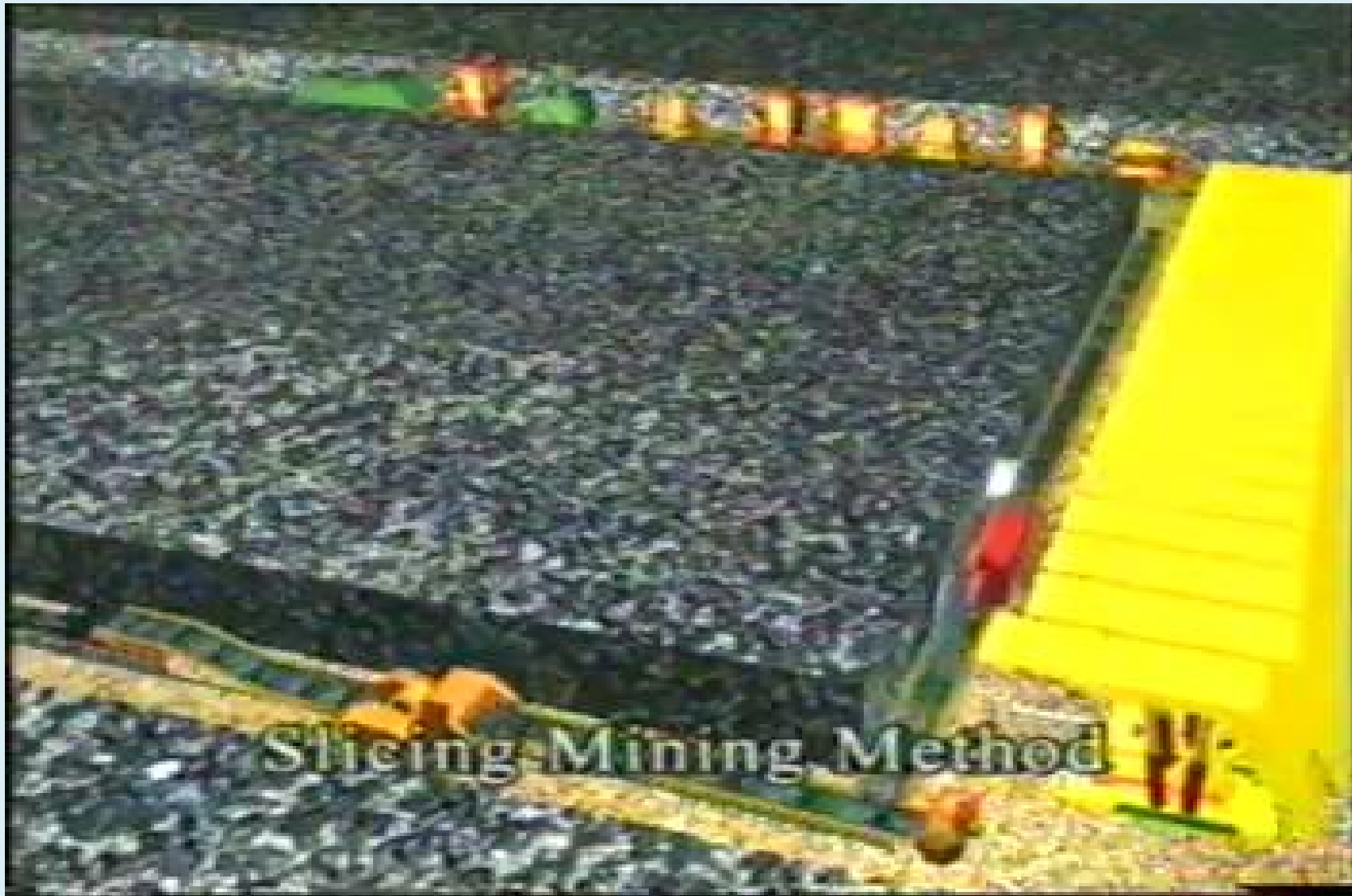
Geological Cross Section, Barapukuria



Mining Method in Barapukuria Coal Mine

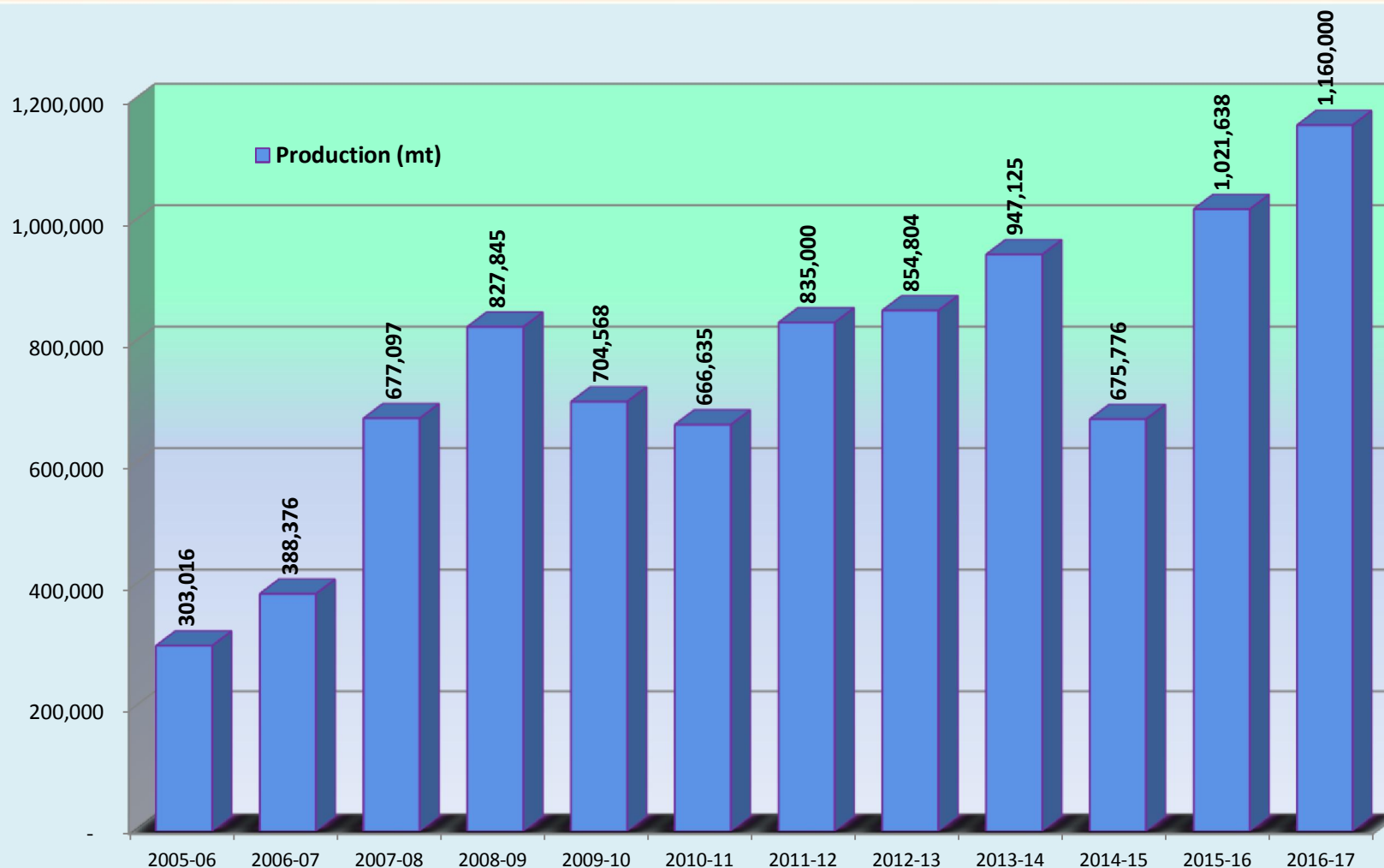
- **Coal being produced by using Multislicing Longwall Top Coal Caving (LTCC) method.**
- **Production from second slice is almost completed and production from third slice is forthcoming.**
- **LTCC is known as Mass Productive System in Underground Coal Mining Method.**

Video of LTCC Mining Method



Financial Year Wise Coal Production up to June 2017

(Total Production 9.20 million ton)



General Data of The Five Coal Fields

Serial No	Item	Unit	Barapukuria Coal Mine	Phulbari Coal Field	Khalashpir Coal Field	Jamalganj Coal Field	Dighipara Coal Field
1	Depth	m	118~509	141~340	222~516	640~1158	285~445
2	Estimated Geological Reserve	Million metric tonne	390	572	685	5450	865
3	Reserve area	Sq. Km.	6.68	24	12.26	11.66	24
4	No. of Coal Seam	No.	6	5	8	7	7
5	Total Seam Thickness	m	44	52	40	57	47.32~71.07
6	No. of Borehole	Nos.	38	118	18	14	4

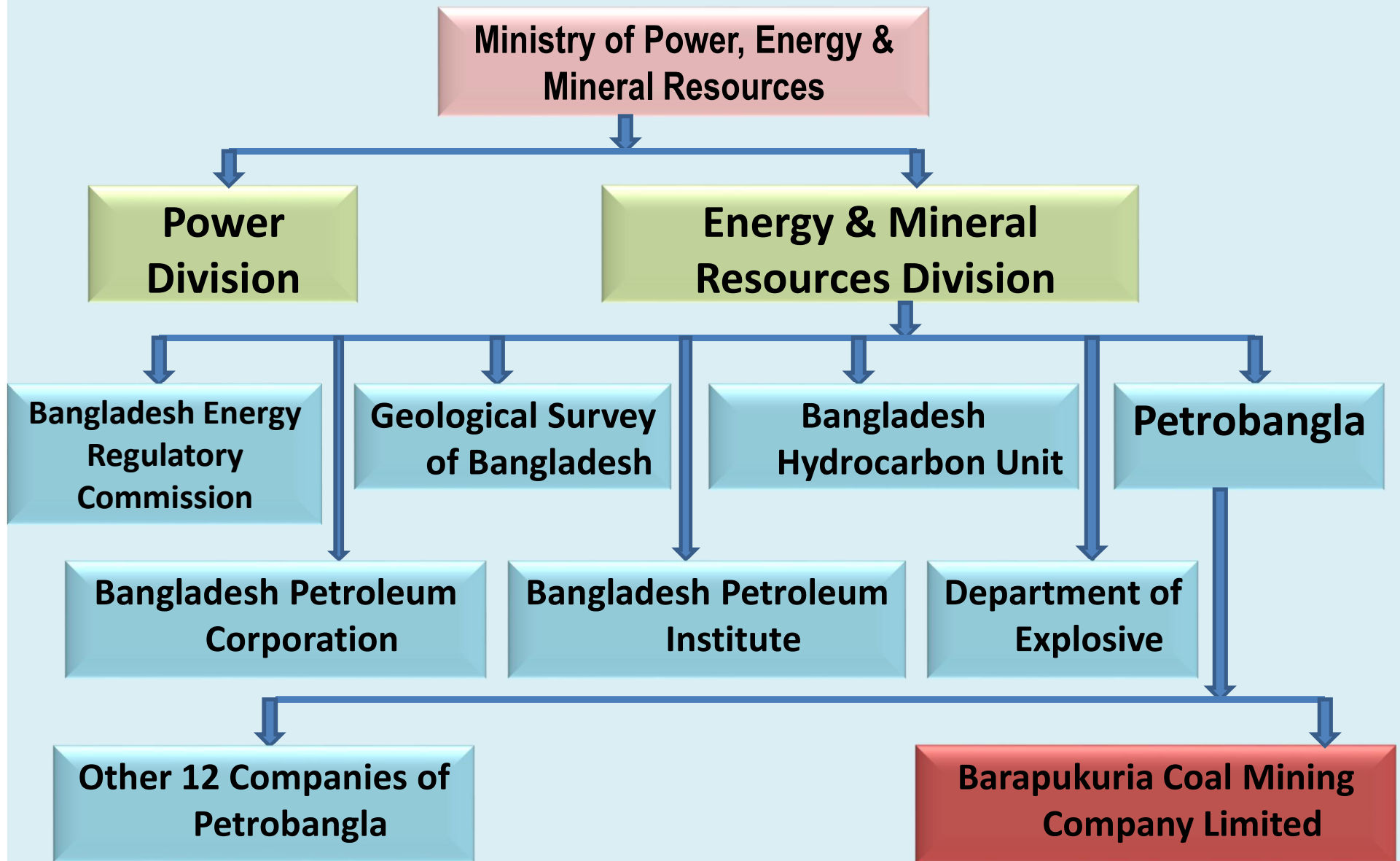
Coal Quality of The Five Coal Fields

Sl. No	Name	Rank of Coal	Gross Calorific Value, btu/lb	Ash (%)	Volatile Matter (%)	Sulfur (%)	Moisture (%)	Fixed Carbon (%)
1	Barapukuria Coal Mine	High Volatile Bituminous Coal	11,040	12.40	29.20	0.53	10.00	48.40
2	Phulbari Coal field		11,884	15.0	36.00	<1	2.40	51.50
3	Khalashpir Coal Field		12,700	13.30	22.15	0.67	2.14	59.90
4	Jamalganj Coal Field		11,870	25.70	40.60	0.60	Not tested	40.25
5	Dighipara Coal Field	Not determined						

Future Plan for Bangladesh Coal Fields

Sl. No.	Name of the Coal Field	Feasibility Study	Mine Development	Resume Production	Targeted Production (MT)/Year
1	Barapukuria (Underground)	N-S, 2016-2018	2019-2021	2022	1.00
2	Barapukuria (Open Pit)	2019-2021	2022-2024	2025	3.00~5.00
3	Dighipara	2017-2019	2021-2025	2026	3.00
4	Jamalganj	2019-2022	2024-2029	2030	5.00
5	Khalashpir	2020-2022	2024-2028	2029	3.00
6	Phulbari (Open Pit)	2019 (FSR Review)	2020-2022	2023	5.00~16.00

Institutional and Regulatory Framework



Mine Development Challenges in Bangladesh

- **Dense Population**
- **Land acquisition**
- **Relocation and Rehabilitation**
- **Selection of Mining Method**
- **Multiple and Thick Seam**
- **Coal is prone to spontaneous combustion**
- **Coal is under water body and itself porous**
- **Complex Hydrogeology**

Continued 2

Mine Development Challenges in Bangladesh

- **High temperature and humidity**
- **Higher geothermal gradient**
- **Subsidence Management**
- **Dewatering challenge in case of open pit mining**
- **Reinjection of water**
- **Storage of overburden including top soil**
- **Restoration of mined out area**

Mine Environment Protection

- About 40,000 saplings of various species have been planted on mining area.
- Seasonal birds to build nestles and expand their species.
- For suppression of coal dust in mining area regular water spray have been done.
- The mine water is treated through water treatment plant.
- Chemical and bacterial test of the mine water is done every 3 months interval.
- The treated water travelling through an 8 kilometer long canal.
- During dry season, this water is used for irrigation over an adjacent area of nearly 30 thousand acres.

Mine Environment Protection



WATER TREATMENT PLANT

Mine Environment Protection



Mine Environment Protection



Mine Environment Protection



Mine Environment Protection



Mine Environment Protection



Mine Environment Protection





Thank you

for

your kind attention