

COAL MINING IN INDIA

OPPORTUNITIES AND PROSPECTS



COAL INDIA LIMITED

:: MINExpo INTERNATIONAL 2008 :: LAS VEGAS :: SEPT 2008 ::

India's Energy Landscape

- ❖ Abundance of coal resources compared to oil and gas
-- Indian energy supply largely dependent on coal
- ❖ Coal contributes to about 55% of the commercial energy consumption as compared to 27 % world average
- ❖ India is the 3rd largest coal producing country after China and USA.
- ❖ More than 65% of electricity generation capacities are coal based.
- ❖ Surging oil and international coal prices compels coal Industry to play key role for energy security of the country

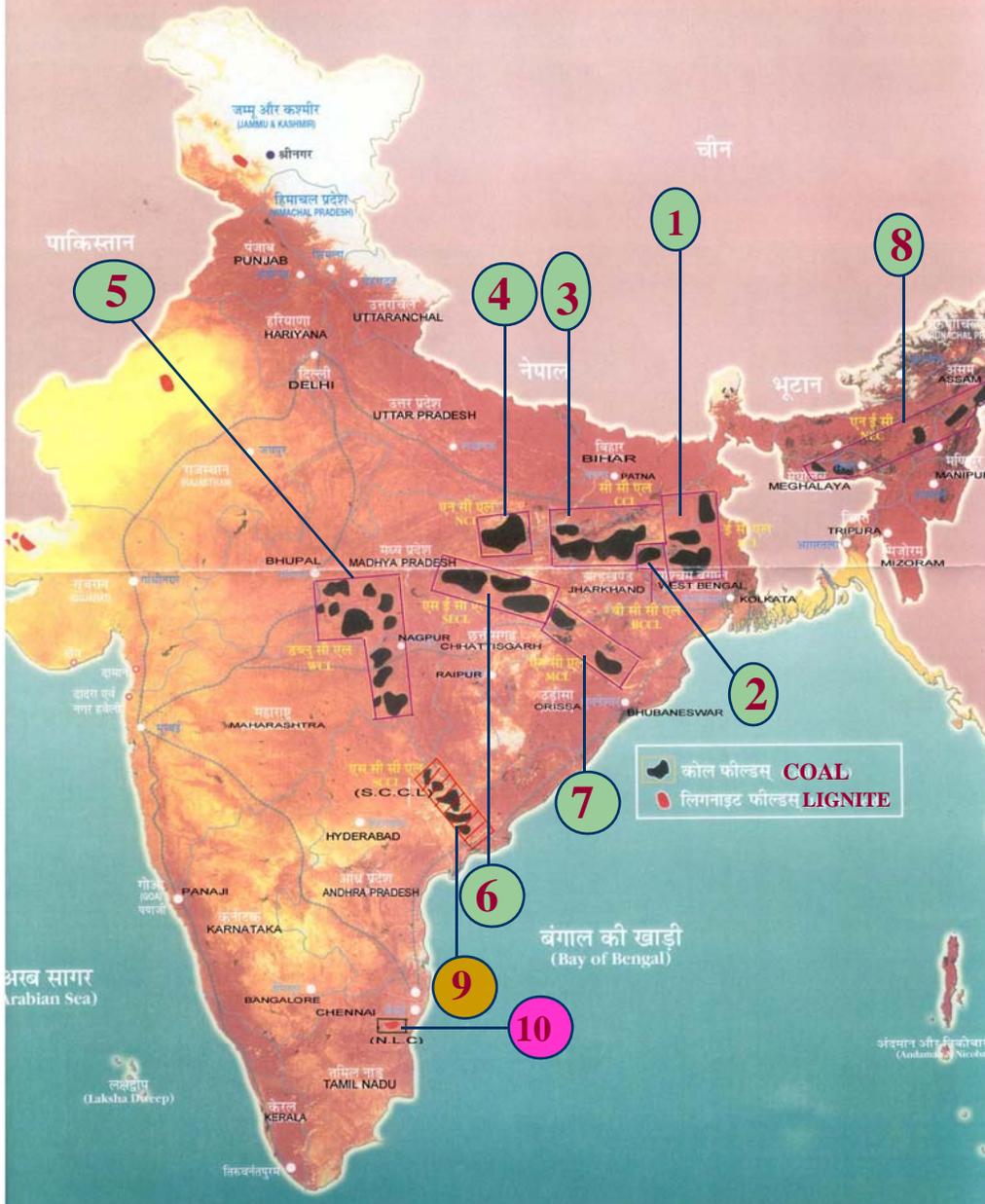
COAL INDIA LTD (CIL) – PROFILE

- ❑ Contributes around 85% of coal production in India.
- ❑ Meets 46% of commercial energy needs of the country
- ❑ Single largest coal producing company in the World
- ❑ Employs over 420 thousand persons and is the largest corporate employer in the country.
- ❑ One of the largest Companies in the country, turnover being 9.69 billion US \$ in 2007-08
- ❑ Paid 1.09 billion US \$ to Govt. exchequer by way of Tax in 2007-08
- ❑ Paid highest ever Dividend of 426 million US \$ to the Govt. of India in 2007-08
- ❑ In India, CIL offers coal at much lesser price than the International prices.

COAL INDIA'S OPERATION

- ❑ Spreads over Eight States in India (Jharkhand, West Bengal, Orissa, Chattisgarh, M.P., U.P., Maharashtra & Assam)
- ❑ Operates 473 Mines (UG Mines:283, OC Mines:155, Mixed Mines:35) through 7 coal producing Subsidiary companies (ECL, BCCL, CCL, SECL, WCL, NCL, MCL) and one consultancy company (CMPDIL)
- ❑ Operates 17 Washeries
(Coking Coal - 11, Non Coking coal - 6)
- ❑ Has Over 200 Other Establishments Like Workshops, Hospitals, Captive Power Plants Etc.

COAL AND LIGNITE RESOURCES IN INDIA



A. CIL : COAL PRODUCING SUBSIDIARIES

- EASTERN COALFIELDS LTD.(ECL) (1)
- BHARAT COKING COAL LTD.(BCCL) (2)
- CENTRAL COALFIELDS LTD.(CCL) (3)
- NORTHERN COALFIELDS LTD.(NCL) (4)
- WESTERN COALFIELDS LTD.(WCL) (5)
- SOUTH EASTERN COALFIELDS LTD.(SECL) (6)
- MAHANADI COALFIELDS LTD.(MCL) (7)
- NORTH EASTERN COALFIELDS.(NEC) (8)
- (A UNIT UNDER CIL(HQ))

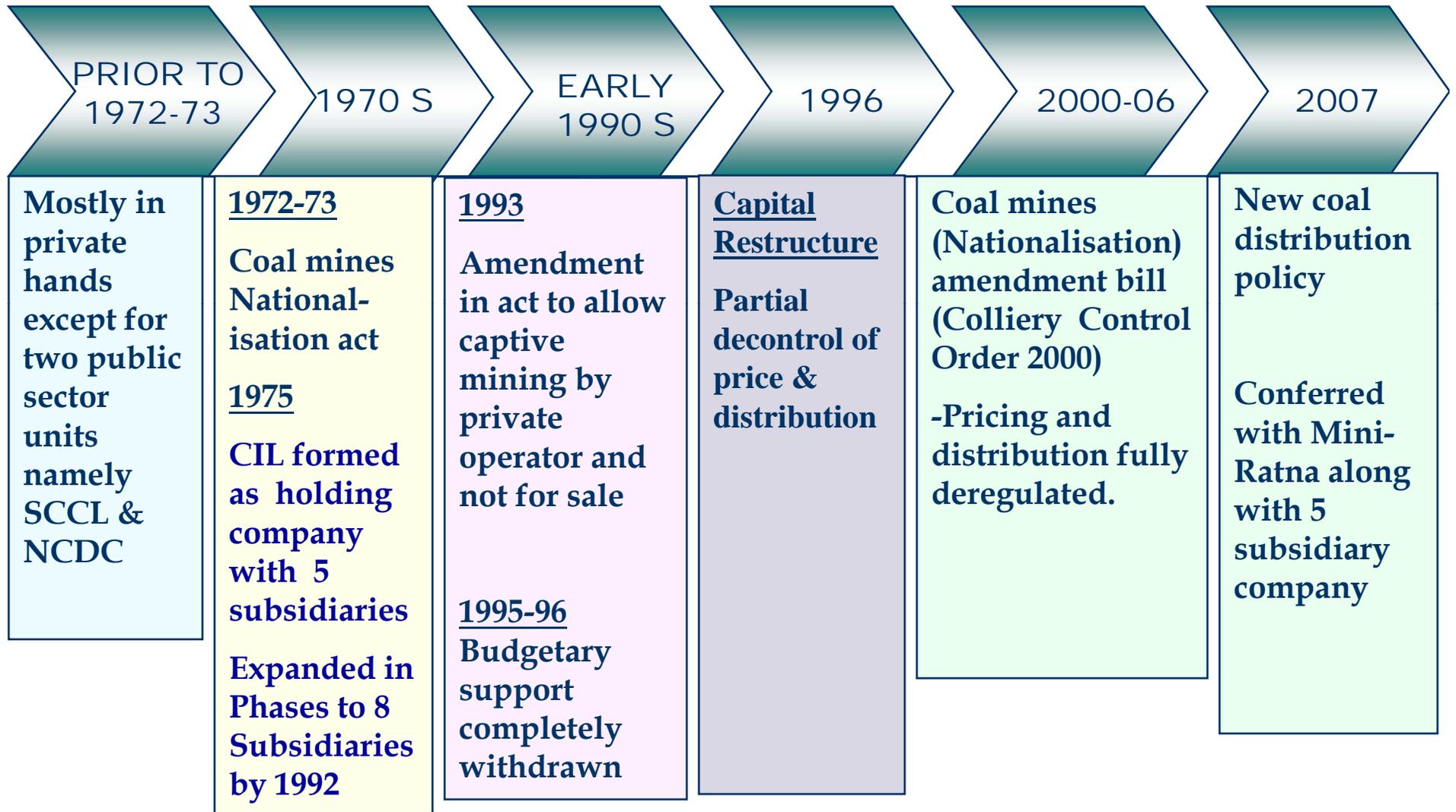
PLANNING & DESIGN INSTITUTE

CENTRAL MINE PLANNING & DESIGN INSTITUTE (CMPDIL)

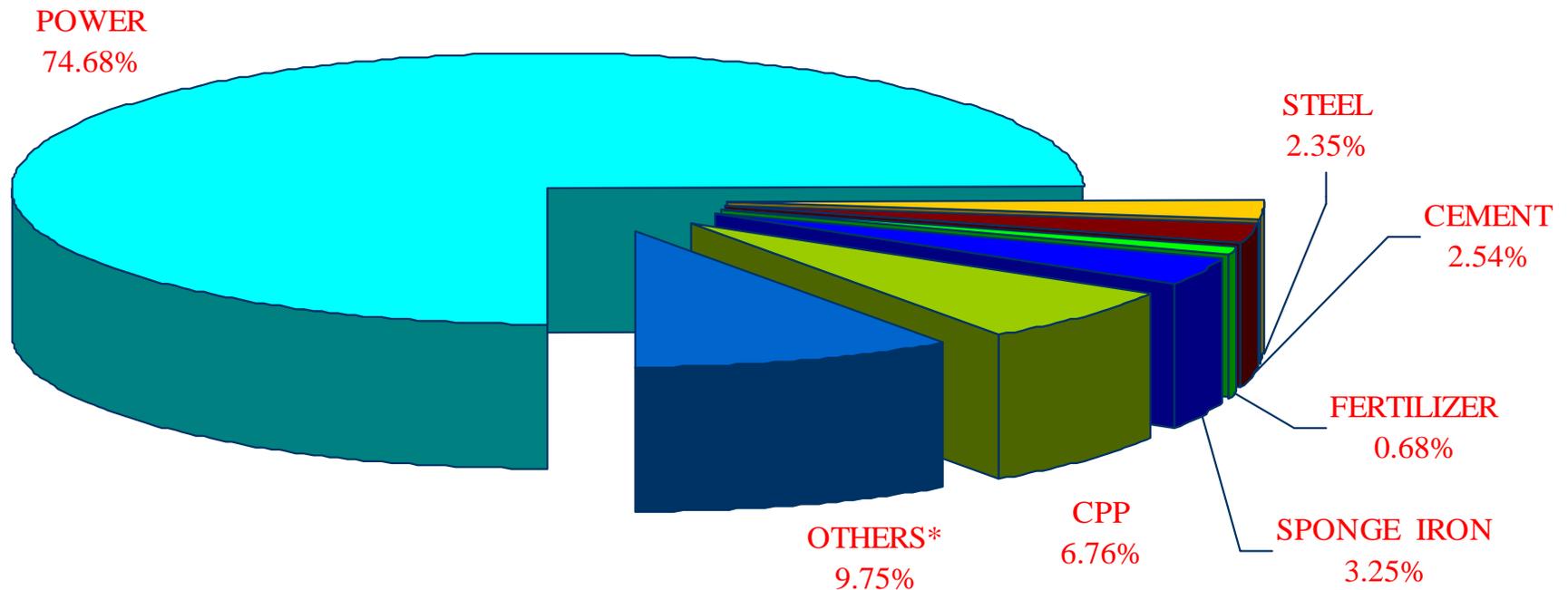
- B. SINGARENI COLLIERIES CO. LTD. (9)
- (SCCL)

- C. NEYVELI LIGNITE CORPORATION (10)
- (NLC)

Evolution of Coal India Limited (CIL) as Coal Giant – Saga of 32 years journey

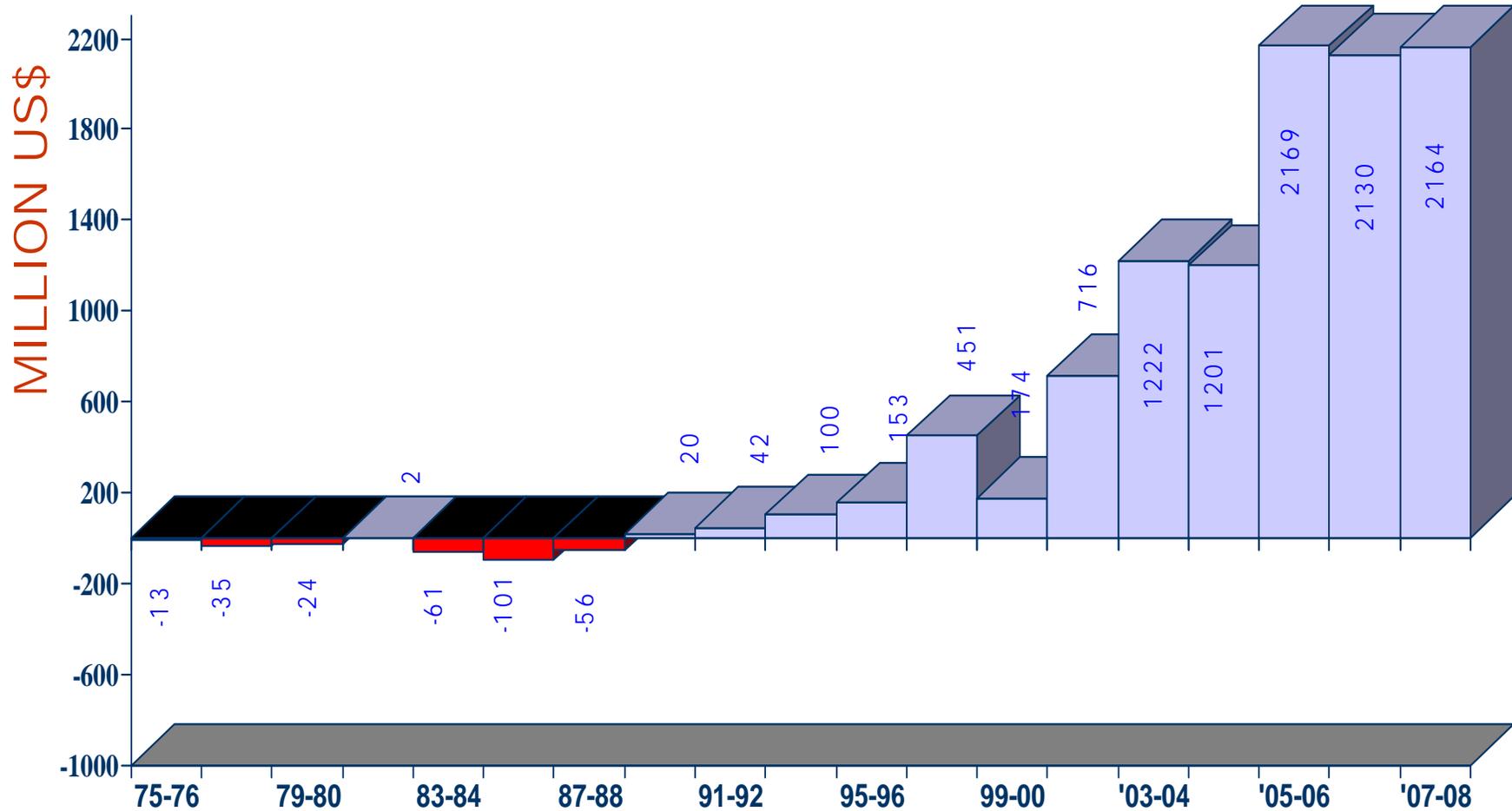


CONSUMER PROFILE (2007-08)

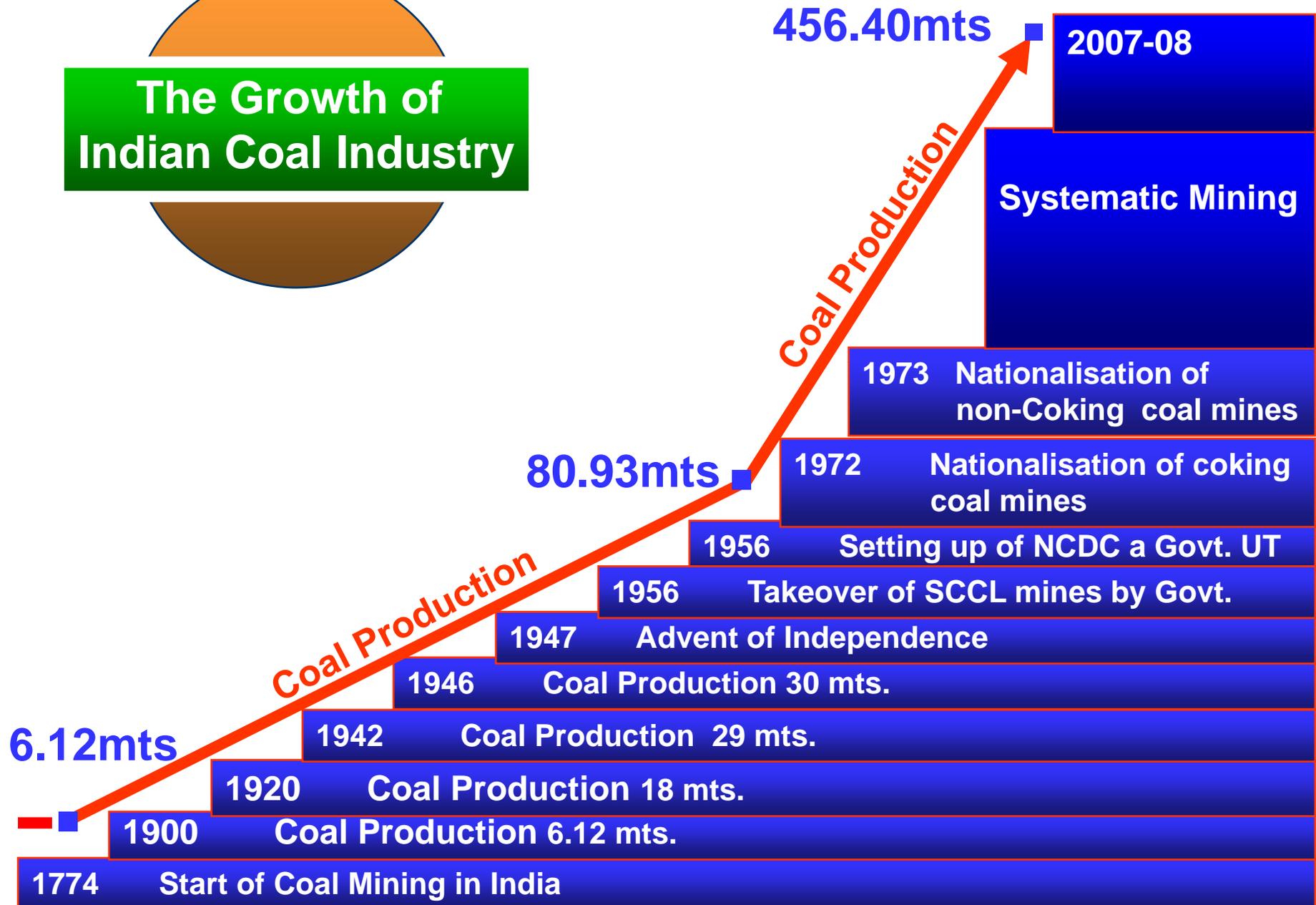


OTHERS(Non core): SSF (Special Smokeless Fuel) units, Briquette manufacturing units, Chemical, Glass & Potteries, Leather units, coke oven etc.

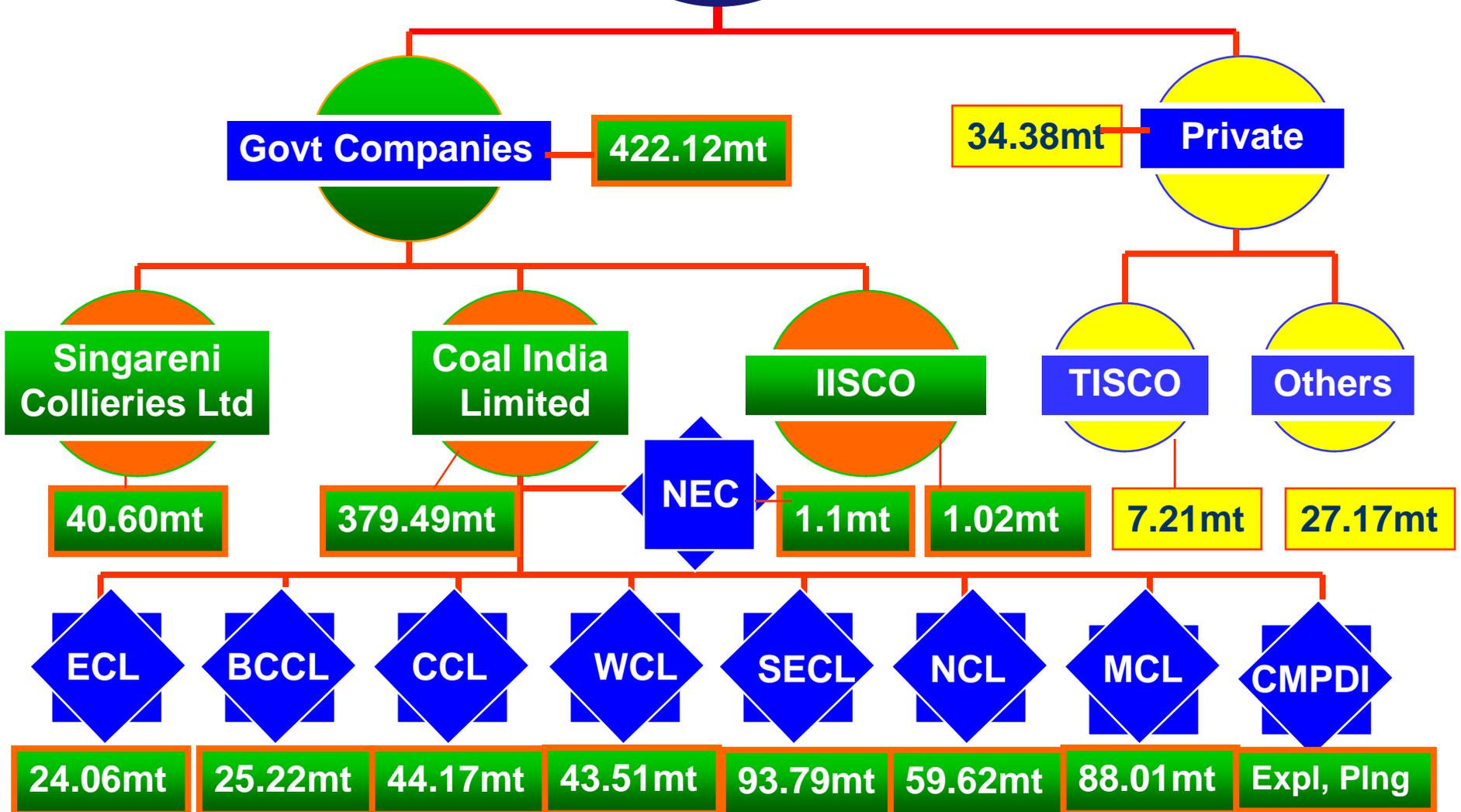
YEAR WISE INCREASE IN PROFITABILITY (PROFIT BEFORE TAX)



The Growth of Indian Coal Industry



Coal Production in India 2007-08



INDIAN COAL DEPOSITS – ASSOCIATED PROBLEMS

1. LIMITED RESERVES OF COKING COAL (33.34 BT).
2. HIGH ASH AND LOW CALORIFIC VALUES
3. MISMATCH IN LOCATION OF DEPOSITS AND MAJOR CONSUMPTION CENTRES
4. HIGH COST OF TRANSPORT



DEMAND SUPPLY PROJECTION

Mill T

Year →		2011-12	2016-17
PRODUCTION	COKING	27.65	35.00
	NON-COKING	652.35	1020.00
	TOTAL	680.00	1055.00
DEMAND	COKING	68.50	105.00
	NON-COKING	662.60	1020.00
	TOTAL	731.10	1125.00
Shortfall	COKING	40.85	70
	NON-COKING	10.25	-
	TOTAL	51.10	70

GROWTH PLAN

- At present there are 145 ongoing projects with an ultimate capacity of 332.5 Mty for a sanctioned capital of 4731 million US \$
- These projects have contributed to the tune of 100 Mt during 07-08 and likely to contribute 214 Mt in 11-12
- 88 more projects with an ultimate capacity of 200 Mt are in different stages of formulation
- Higher level of mechanization with Introduction of PSLW faces, Continuous Miners, High Wall mining
- Larger capacity equipments are also being introduced in Opencast mines

Investment Opportunities /
New Avenues in Coal India Limited

Action Point - 1

Development and Operation of High capacity Underground Mines

- 17 Expressions of Interests(EoI) have been received for Construction, Development and Operation of 2 to 5 million tonne annual Capacity Underground Mines
- The EoIs are under scrutiny. Limited tender will be floated amongst short listed parties after pre-NIT meeting
- The bidding will be open for Contractual Operation by successful bidder in each project
- Scope Includes Exploration and Planning, Mine Construction, Mine Development, Mine Operation on Long-term Basis

Extraction of Residual Coal from Closed / Abandoned Mines

A large number of Underground Mines were Closed/ Abandoned for reasons of –

- Depletion of Reserves having residual Coal as Protective Pillars
- Mine Fire in the Working Seam/ Neighboring Seam(s)
- Presence of Water Logged Old Working in and around the Mine
- Poor Economic Returns due to obsolete technology

- Coal India Intends to Re-open such Mines for Extraction of Residual Coal
- For the First Phase of Re-opening/ Operation 18 Mines having Cumulative Reserves of 1647 million tonnes are being Considered
- These Mines are Open for Joint Venture Participation by Internationally Reputed Mining Companies
- Detailed Notice for Inviting Expression of Interest formulated and floated on 6.8.08. Last date of submission is 13.10.08
- Details are available in www.coalindia.nic.in

Action Point - 3

Opportunities in opencast mining

- ❑ From the present level of 335 Mt, the production in OC mines is expected to reach a level of 465 Mt in 2011-12 and 606 Mt in 2016-17
- ❑ Introduction of higher capacity/size equipment to support the growth parameters like:
 - ✓ Rope shovel with bucket capacity up to 42 cum
 - ✓ 10-15 cum hydraulic shovel
 - ✓ Rear dumper up to 240 t
 - ✓ Dozers up to 850 hp
 - ✓ Long term Maintenance And Repair Contract (MARC) with OEM.

- ❑ Inpit crushing & conveying technology as an alternative for large volume handling
- ❑ Use of Mobile crushing unit
- ❑ Drilling and Exploration
- ❑ Airborne laser Terrain mapping (ALTM) technology for regular monitoring of excavation and land restoration status in respect of Opencast Mines
- ❑ Use of GPS based TDS system in mining operation.

Future Requirement - DRAGLINE

Size	Existing	Proposed Future Requirement				
		08-09	09-10	10-11	11-12	12-13
42 M ³						
20-30 M ³	24					
10-15 M ³	2	2	1	1	0	0
5-10 M ³	15					

Future Requirement - ROPE SHOVEL

Size	Existing	Proposed Future Requirement				
		08-09	09-10	10-11	11-12	12-13
42 M ³		1	2	0	0	1
20 M ³	9	0	0	2	1	2
12.5 M ³	6					
10 M ³	111	11	12	5	6	3

Future Requirement - HYDRAULIC EXCAVATOR

Size	Existing	Proposed Future Requirement				
		08-09	09-10	10-11	11-12	12-13
More than 10 M ³	4	3	3	4	4	0
5-10 M ³	29	23	27	16	10	9
2.2-5 M ³	224	44	20	16	17	12
2.2 M ³ & below	99	29	18	14	5	12

Future Requirement - REAR DUMPER

Size	Existing	Proposed Future Requirement				
		08-09	09-10	10-11	11-12	12-13
240 T		8	14	4	4	7
170 T	35	26	10	15	5	1
120/150 T	260	35	14	12	51	15
85/100 T	678	240	110	96	106	55
50/60 T	675	153	267	206	141	153

Future Requirement - DOZER

Size	Existing	Proposed Future Requirement				
		08-09	09-10	10-11	11-12	12-13
<u>Crawler</u>						
More than 700 HP	9	11	1	10	6	2
410 HP	406	122	49	29	50	37
320 HP	520	66	77	40	77	32
<u>Wheel</u>						
400 HP	42	2	8	9	9	5
300 HP	21	1	1	0	0	3

Future Requirement - DRILL

Size	Existing	Proposed Future Requirement				
		08-09	09-10	10-11	11-12	12-13
311 MM & above	15	1	2	0	0	1
250 MM	245	47	20	20	11	14
160 MM	410	84	89	67	43	32

TENTATIVE REQUIREMENT OF OTR TYRES UPTO 2016-17

TYRE SIZE EXISTING	08-09	09-10	10-11	11-12	TOTAL UPTO 11-12	16-17
40.00 X 57 (240T)	-	24	62	74	160	129
36.00 X 51 (170T)	64	161	192	230	647	310
30.00 X 51 (120T)	473	766	914	1093	3246	1028
24.00 X 49 (85T)	1586	2686	2915	3168	10355	3161

UNDER GROUND MINING EQUIPMENTS

Equipment	Existing	Proposed Future Requirement			
		08-09	09-10	10-11	11-12
Side Discharge Loader	774	126	138	47	43
Load Haul Dump	264	49	42	25	23
Continuous Miner	5	4	6	12	16
Power Support Longwall	6	1	1	1	6

Opportunities in Exploration and Drilling

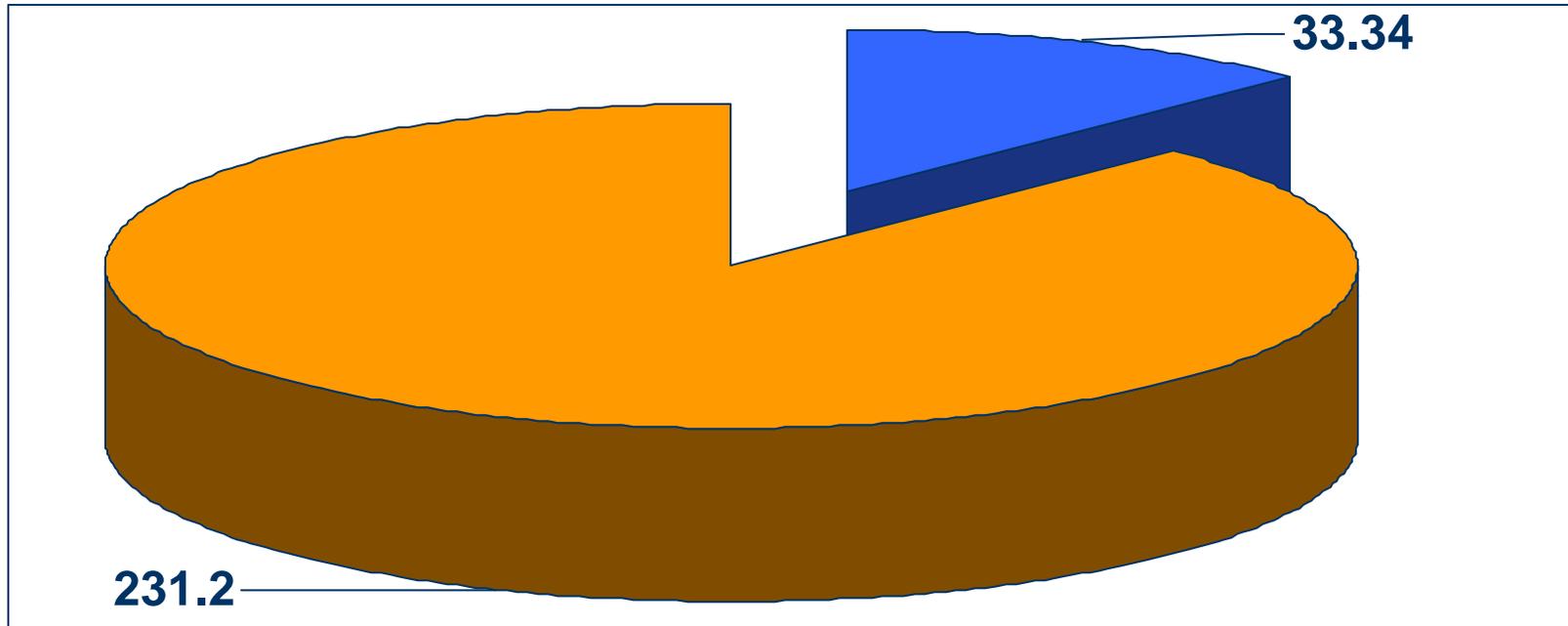
Status of Exploration

- ❑ Almost 85% of the Prime coking coal resources of the nation, which are confined to Jharia coalfield, stand 'Proved' catering to the needs of country's steel industry.
- ❑ Major part of the shallow non-coking coal resources within a depth range of 300m in different coalfields largely proved.
- ❑ These resources are contributing bulk of the national production of 'Power grade coals' mainly through open cast mining.

INDIAN COAL RESERVES

As on 1.4.2008

(Bill Tonnes)



■ Coking ■ Non-Coking

TOTAL RESOURCE – 264.54 Bt

GEOLOGICAL RESOURCES OF INDIAN COAL CATEGORYWISE AND DEPTHWISE (AS ON 01.04.2008)

(In Billion Tonnes)

Depth (M)	Proved	Indicated	Inferred	Total	%
0-300	79.34	66.84	14.34	160.52	60.7
300-600	7.11	45.22	18.10	70.43	26.6
0-600 (For Jharia)	137.1	0.50	-	14.21	5.4
600-1200	1.67	11.66	6.05	19.37	7.3
Total	101.83	124.22	38.49	264.54	100
%	38.49	46.96	14.55	100	-

Coal Resource Classification System in India

Coal Resources

Proved Reserves

Falling Within 200 m radius from a Bh or observation point.

Reliable

Indicated Resources

Occurring in the area falling Between radii of 200m and 1km from a Bh point.

Less Reliable

Inferred Resources

Occurring in the area falling between radii of 1km & 2km from a Bh point.

Conjectured

Targets of Drilling for CMPDIL (2007-08 to 11-12)

- ❑ 2.34 million metre exploratory drilling has to be achieved by departmental resources and outsourcing.
- ❑ In 2007-08, 0.209 million metre of drilling has been achieved.
- ❑ Departmental capacity to be increased from 0.20 million metre to 0.4 million metre by 2011-12. Outsourcing will continue during this period to achieve XI plan targets.
- ❑ Action initiated to enhance drilling capacity to 1.00 million metre/annum through departmental resources and outsourcing.

Projected Phasing of Exploration Program of CMPDIL in XI Plan (in thousand m)

Block- types	2007-08 Actual	2008-09 Program	2009-10 Projected	2010-11 Projected	2011-12 Projected	XI Plan Total
CIL Command	161	149	207	194	199	910
Outside CIL Command	045	174	265	423	443	1350
Regional/Prom otional	003	004	017	021	023	68
St.Govt.	-	013	003	-	-	16
Total	209	340	492	638	665	2344*
Through outsourcing	-	-	508	362	335	1205
Total	209	340	1000	1000	1000	3549

*Action initiated to enhance drilling capacity to 1.0 million metre/annum through departmental resources and outsourcing.

Outsourcing to Augment Exploration Capacity

- ❑ 9 blocks for 0.359 million metre – Work Order issued
- ❑ 4 blocks for 0.028 million metre through National tenders – LOI issued.
- ❑ 8 blocks involving 0.65 million metre – Global tender floated. (Last date extended: 21.09.2008; details and documents available at web site : www.cmpdi.co.in , www.cmpdi.gov.in)
- ❑ Expression of Interest invited and received from National/International parties for undertaking detailed exploration of Indian coal blocks involving 1.0 million metre/annum of drilling. EOI is under evaluation.

Setting up of Coal Beneficiation Plants

WASHED COAL SUPPLY POLICY

- Coal India has taken a policy decision to supply washed non-coking coal to all consumers by 2011-12 except pit head consumers.
- Coal India is going to set up Coal Washeries within next four years for a total capacity of 100.6 MTY (Primarily for non-coking coal)
- These Washeries will be built up, commissioned, operated and maintained by Private Operators selected by Global Bidding process.
- Coal India will provide Fund and infrastructure like land, power, water, Railway siding.

WASHERIES TO BE SET UP IN DIFFERENT SUBSIDIARY COMPANIES IN 1ST PHASE

SL.NO.	NAME OF COMPANY	CAPACITY (MTY)	No. OF WASHERY
1.	ECL	7.50	2
2.	BCCL	18.60	6
3.	CCL	19.50	4
4.	SECL	10.00	2
5.	MCL	40.00	4
6.	WCL	5.00	1
Total		100.60	19

CLEAN COAL TECHNOLOGIES

- ❖ A UNDP/GEF/GOI funded demonstration project under implementation for production & utilisation of CBM. Power generation from recovered gas & supply is in progress.
- ❖ CIL entered into JV with ONGC for development of CBM in 2 blocks.
- ❖ A perspective plan for harnessing CMM/AMM from CIL command area.
- ❖ ONGC & GAIL pursuing UCG in collaboration with CIL. MoU signed between CIL & ONGC for a pilot project in JV mode.

‘ COAL VIDESH’ – GOING GLOBAL

- **Widening of Demand-Supply Gap and Growing Imports**

<i>Imports -></i>	<i>2005-06 : 38 Mt</i>	<i>2006-07 : 45 Mt</i>
	<i>2011-12 : 51 Mt</i>	<i>2024-25 : 180 Mt</i>

- **Constraint of Indian coal reserves :**

Limited coking and low ash non-coking reserves

- **Leveraging Core Competence Abroad :**

Core competence in coal business value chain can be gainfully leveraged in the international market.

- **Transnational Business Competence :**

*Develop “transnational” business competence to venture into strategic opportunities abroad for yielding **higher ROI** and as well add value by inheriting **global best practices***

Supplementing production from mines abroad

- **CIL is pursuing the initiatives of acquiring coal resources abroad through two alternative routes :**
- **Participation in JV of PSUs for formation of an SPV to secure coal resources abroad**
 - ✓ **SPV was accorded approval of the Cabinet on 8th Nov 2007**
 - ✓ **SPV proposed to be formally registered as 'Coal Ventures International'**
 - **CIL a major stakeholder with contribution of Rs 1000 Crs in equity of Rs 3500 Crs**
- **Acquisition of coal mines/blocks by CIL**
 - **Pursued through Coal Videsh Division functioning at CIL(HQ)**
 - **CIL Board approved several proposals to operationalize the venture; Govt. approval is awaited**

THANK YOU