

COAL EXPLORATION & RESOURCES

3.1 INTRODUCTION

Exploration for Coal in the country is carried out in two broad stages i.e. the Regional Exploration and Detailed Exploration. The regional exploration for Coal is carried out by the Government organizations whereas detailed exploration is largely undertaken by Coal companies.

3.1.1 Regional and Promotional Exploration

In the first stage of exploration, Geological Survey of India (GSI, under Ministry of Mines) undertakes Regional Exploration of large areas to find out the broad availability of Coal seams, geological structure, resource etc. on a systematic routine basis. In order to supplement and augment the efforts of the GSI, Ministry of Coal (MoC) is also undertaking regional exploration of Coal on promotional basis. A central sector scheme of Promotional Exploration of Coal and Lignite has been introduced in 1989 and is continuing on plan-to-plan basis through Mineral Exploration Corporation (MECL), GSI, State Govts. and CMPDI. DGM (Nagaland & Assam) has also been inducted in

the scheme. The reconstituted Committee-V (on Energy Minerals & Resources) of Central Geological Programming Board approves the programmes, coordinates and reviews the work. CMPDI acts as a nodal agency for disbursement of funds for Promotional Exploration besides carrying out technical supervision of MECL's work in Coal sector. The Promotional Exploration programme for XII plan has proposed to undertake 8.14 lakh metre of drilling (4.80 lakh metre in Coal and 3.34 lakh metre in lignite) along with sub-components of creation of Coal & lignite information system and CBM studies.

3.1.2 Detailed Exploration:

In the second stage, Detailed Exploration is carried out in potential areas identified through Regional/Promotional Exploration. Such blocks are taken up for detailed drilling and geological assessment to bring the reserves into Proved category to increase the confidence level. The Geological Reports of such detailed exploration form the basis of Mine Feasibility Studies/Mining Plans and

formulation of Project Reports for mining and updation of National Coal Inventory. Detailed exploration in areas of Coal PSUs is funded by respective companies whereas some of the Captive Mining block allocatees are also funding detailed drilling in blocks allotted to them. In addition, the MoC's Plan scheme of Detailed Drilling in Non-CIL/Captive Mining Blocks aims at covering exploration of Coal blocks in order to reduce time lag between allotment and development of blocks. The scheme is continuing on plan-to-plan basis. The proposed outlay for undertaking 20.13 lakh metre of drilling in non-CIL/Captive blocks through CMPDI and outsourcing during XII plan is ₹ 974.69 Crore.

3.1.3 Guidelines for conducting Detailed Exploration of captive Coal blocks by the block allottees:

All regionally explored/unexplored Coal blocks already allotted or to be allotted can be taken up for detailed exploration by the allottees on their own as per the guidelines of Ministry of Coal.

3.2 EXPLORATION ACTIVITIES IN 2013-14

3.2.1 Promotional Exploration :

A total of 1,53,000 metre of Promotional drilling has been targeted in 2013-14. Against these targets, a total of 1,32,040 metre of promotional drilling has been carried out during the year 2013-14.

3.2.2 About 1,03,000 metre of multi-probe Geophysical Logging has been carried out during the period April, 2013 to March, 2014.

3.2.3 During the period April'2013 to March'2014, CMPDI and GSI have completed samples collection from fifteen boreholes for CBM studies & 6 boreholes for Shale Gas studies were completed by CMPDI under the promotional exploration programme. The analysis of samples and preparation of report is under progress.

3.2.4 Under the project on creation of 'Integrated Coal Resource Information System (ICRIS)' design of database has been completed and the final report submitted to MoC and is accepted. During XII Plan, modelling of 467 zones is envisaged to be completed.

During 2013-14, 42 nos. of geological models has been completed by CMPDI and updated in the database. It is also proposed to upgrade the

current hardware and software because of obsolescence and is to be completed by 2014-15 at all the data centres working at different locations.

Geological modelling of 7 zones by SCCL under ICRIS project has been completed and submitted for uploading in database during April to December'2013.

UNFC classification of reserves of 147 blocks has been done by NLC under 'Integrated Lignite Resource Information System (ILRIS)' project. The salient features of 65 blocks have been completed and 10 GRs uploaded in database.

3.2.5 Detailed Drilling in Non-CIL Blocks:

In 2013-14, a total of 3,62,400 metre of detailed drilling has been targeted in Non-CIL/Captive Mining blocks. Out of it, 76,400 metre is targeted for CMPDI (departmentally) and 2,86,000 metre through outsourcing. Against this target 2,37,563 metre of detailed drilling has been carried out during 2013-14.

3.2.6 CMPDI has decided to outsource nine more blocks, involving 2.75 lakh metre of detailed drilling, through e-tendering. This includes seven Non-CIL blocks involving 2.52 lakh metre

of drilling. In 1st phase, five blocks were tendered out of which work orders for three blocks have been issued and balance two blocks is to be re-tendered.

3.2.7 Coal Core Analysis Capacity Augmentation

A total of 15 Geological Reports on exploration have been submitted during 2013-14.

3.3 COAL RESOURCES

3.3.1 Inventory of Geological Resources of Coal in India

As a result of exploration carried out up to the maximum depth of 1200m by the GSI, CMPDI, SCCL and MECL etc, a cumulative total of 301.56 Billion tonnes of Geological Resources of Coal have so far been estimated in the country as on 1.4.2014. The details of state-wise geological resources of Coal are given as under:

3.3.2 Categorization of Resources

The Coal resources of India are available in older Gondwana Formations of peninsular India and younger Tertiary formations of north-eastern region. Based on the results of Regional/ Promotional Exploration, where the boreholes are normally

(in MT)

State	Proved	Indicated	Inferred	Total
West Bengal	13403	13022	4893	31318
Jharkhand	41377	32780	6559	80716
Bihar	0	0	160	160
Madhya Pradesh	10411	12382	2879	25673
Chhattisgarh	16052	33253	3228	52533
Uttar Pradesh	884	178	0	1062
Maharashtra	5667	3186	2110	10964
Odisha	27791	37873	9408	75073
Andhra Pradesh	9729	9670	3068	22468
Assam	465	47	3	515
Sikkim	0	58	43	101
Arunachal Pradesh	31	40	19	90
Meghalaya	89	17	471	576
Nagaland	9	0	307	315
Total	125909	142506	33149	301564

placed 1-2 Km apart, the resources are classified into 'Indicated' or 'Inferred' category. Subsequent Detailed Exploration in selected blocks, where boreholes are less than 400 meter

apart, upgrades the resources into more reliable 'Proved' category. The Formation-wise and Category-wise Coal resources of India as on 1.4.2014 are given in table below:

(in Million Tonnes)

Formation	Proved	Indicated	Inferred	Total
Gondwana Coals	125315	142407	32350	300072
Tertiary Coals	594	99	799	1493
Total	125909	142506	33149	201564

3.3.3 The Type and Category-wise Coal resources of India as on 1.4.2014 are given in table below:

(in Million Tonnes)

Type of Coal	Proved	Indicated	Inferred	Total
(A) Coking :-				
-Prime Coking	4614	699	0	5313
-Medium Coking	13303	11867	1879	27049
-Semi-Coking	482	1004	222	1708
Sub-Total Coking	18400	13569	2101	34070
(B) Non-Coking:-	106916	128838	30249	266002
(C) Tertiary Coal	594	99	799	1493
Grand Total	125909	142506	33149	301564

3.3.4 Status of Coal Resources in India during Last 5 years

As a result of Regional, Promotional and detailed Exploration by GSI, CMPDI, SCCL, MECL, State Govts.

etc., the estimation of Coal resources in India reached to 301.56 billion tones. The increase/up gradation of Coal resources in the country during last 5 years is furnished in table below:

(in Million Tonnes)

As on	Geological Resources of Coal			
	Proved	Indicated	Inferred	Total
1.4.2009	105820	123470	37920	267210
1.4.2010	109798	130654	36358	276810
1.4.2011	114002	137471	34390	285862
1.4.2012	118145	142169	33183	293497
1.4.2013	123182	142632	33101	298914
1.4.2014	125909	142506	33149	301564

3.4 LIGNITE RESERVES IN INDIA

Lignite reserves in India have been currently estimated at around

43215.86 million ones. The state wise distribution of lignite reserves as on 1.4.2013 is as follows:

State	Area		Geological Reserves (M.T.)
Tamilnadu & Puducherry	A. (i)	Neyveli Region	4150.00
	(ii)	Jayamkondacholapuram	1206.73
	(iii)	Eastern part of Neyveli	562.32
	(iv)	Veeranam	1342.45
	(v)	Others	987.82
	(vi)	Pondy (Bahur)	416.61
	B.	Mannargudi lignite field	24202.34
	C.	Ramanthapuram	1896.05
	Total		34764.32
Rajasthan		5689.52	
Gujarat		2722.05	
Jammu & Kashmir		27.55	
Kerala		9.65	
West Bengal		2.77	
Total		43215.86	