COAL & LIGNITE RESOURCE

According to the National Coal Inventory of 2023, published by Geological Survey of India based on resources estimated by CMPDI, GSI, MECL, SCCL, and some private/public entrepreneurs, a maximum depth of up to 1200m.; the total estimated coal reserve (resource) of India is **378.21billion tonnes as of 01.04.2023.**

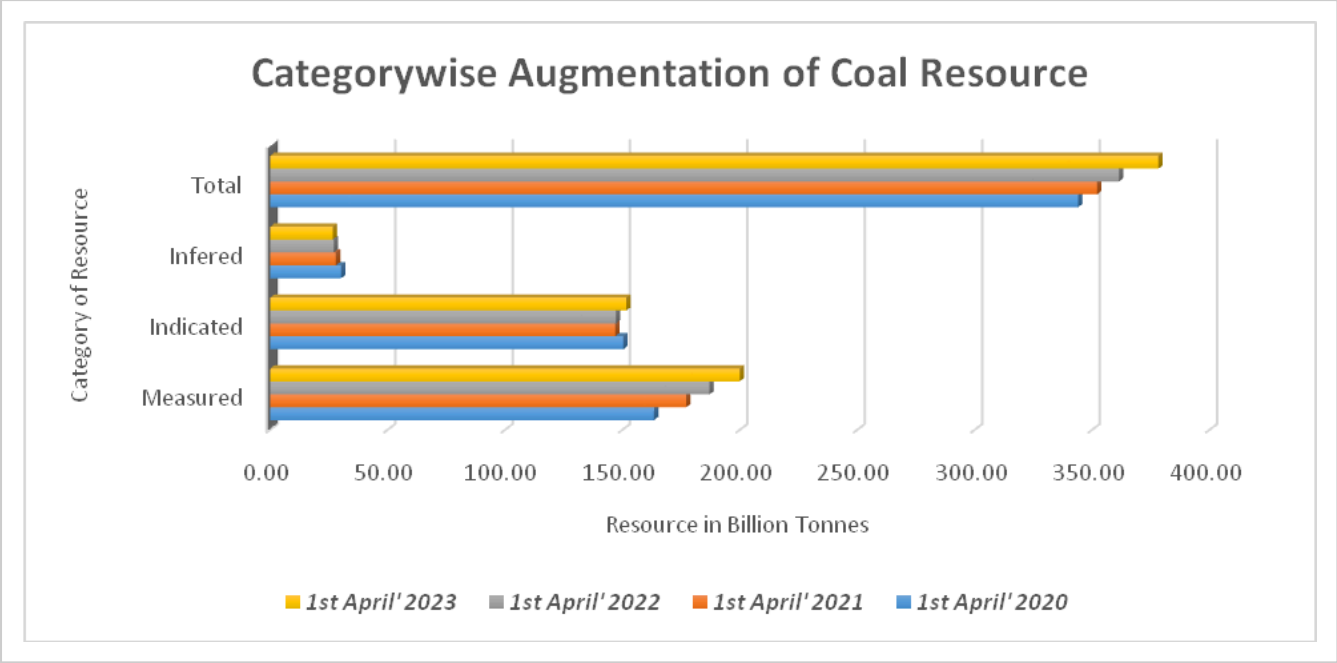
With Continuous exploration efforts in 64 coal fields (45 Gondwana &19 Tertiary Coalfields) and 15 lignite fields have resulted in substantial augmentation of the geological resources of coal and lignite.As 1st April'2023 total updated geological coal and lignite resources of the country stand at **378.21 billion tonnes and 47.36 billion tonnes** respectively. An amount of 16.8billion tonnes of coal and 1.16 billion tonnes of lignite resources have been augmented in the year 2022-23

(Billion tonnes)

Coal Resources in Billion Tonnes					
As on	**Measured**	**Indicated**	**Inferred**	**Total**	**Resource Augmentation in comparison to the previous year**
1st April 2020	**163.46**	**150.39**	**30.17**	**344.02**	**17.52***
1st April 2021	**177.18**	**146.95**	**28.00**	**352.13**	**8.11**
1st April 2022	**187.11**	**147.25**	**27.05**	**361.41**	**9.29**
1st April 2023	**199.90**	**151.68**	**26.62**	**378.21**	**16.80**

*Resource for the year 2019: 326.5 Billion tonnes.

Graphical Representation of the category-wise augmentation of Coal resource

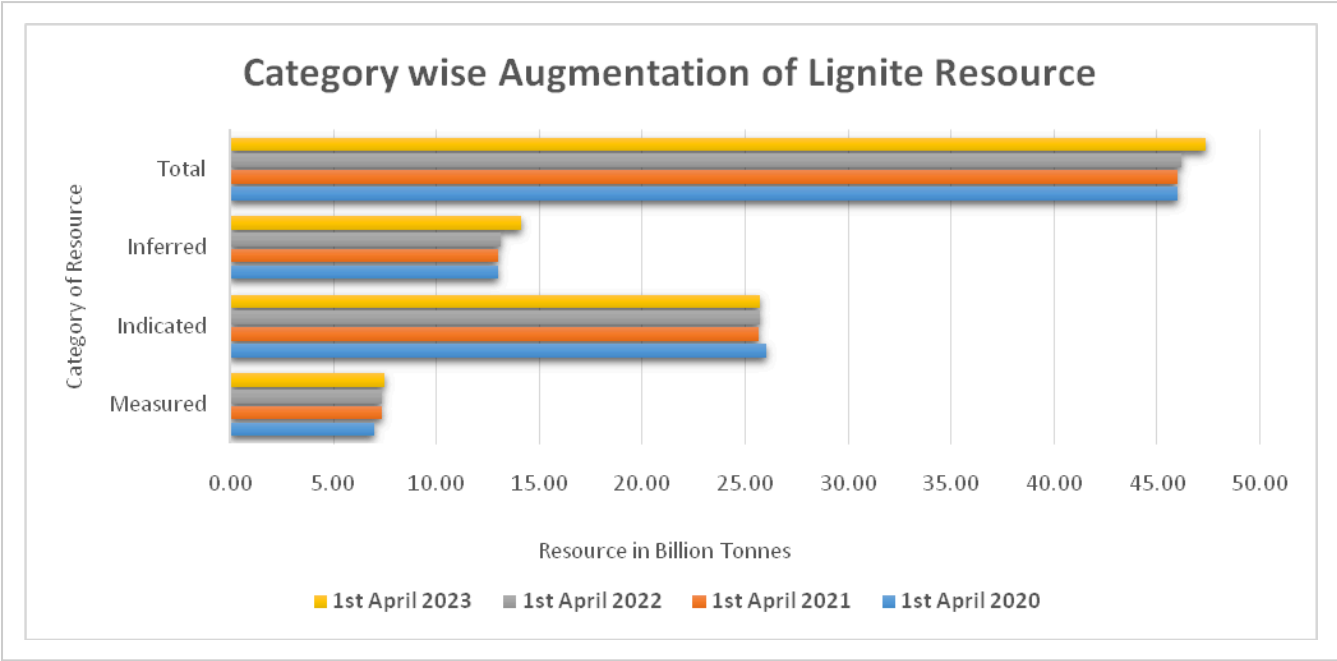


(Billion tonnes)

Lignite Resources in Billion Tonnes					
As on	**Measured**	**Indicated**	**Inferred**	**Total**	**Resource Augmentation**
1st April 2020	**6.97**	**26.06**	**12.99**	**46.02**	**0.26***
1st April 2021	**7.37**	**25.65**	**12.99**	**46.02**	**NIL**
1st April 2022	**7.37**	**25.72**	**13.11**	**46.20**	**0.18**
1st April 2023	**7.51**	**25.70**	**14.15**	**47.37**	**1.17**

**Resource for the year 2019: 45.76 Billion tonnes.*

Graphical Representation of the category-wise augmentation of Coal resource in Billion Tonnes



Category-wise Coal resources in MTOE as on 1st April'2023

Category-wise Coal Resources in Million Tonne Oil Equivalent (MTOE)			
Measured	**Indicated**	**Inferred**	**Total**
128914.81	**97817.32**	**17167.66**	**243899.79**

Note:For the purpose of calculation, the following conversion factors have been applied used

i) metric tonne= 27 GJ (for coal)

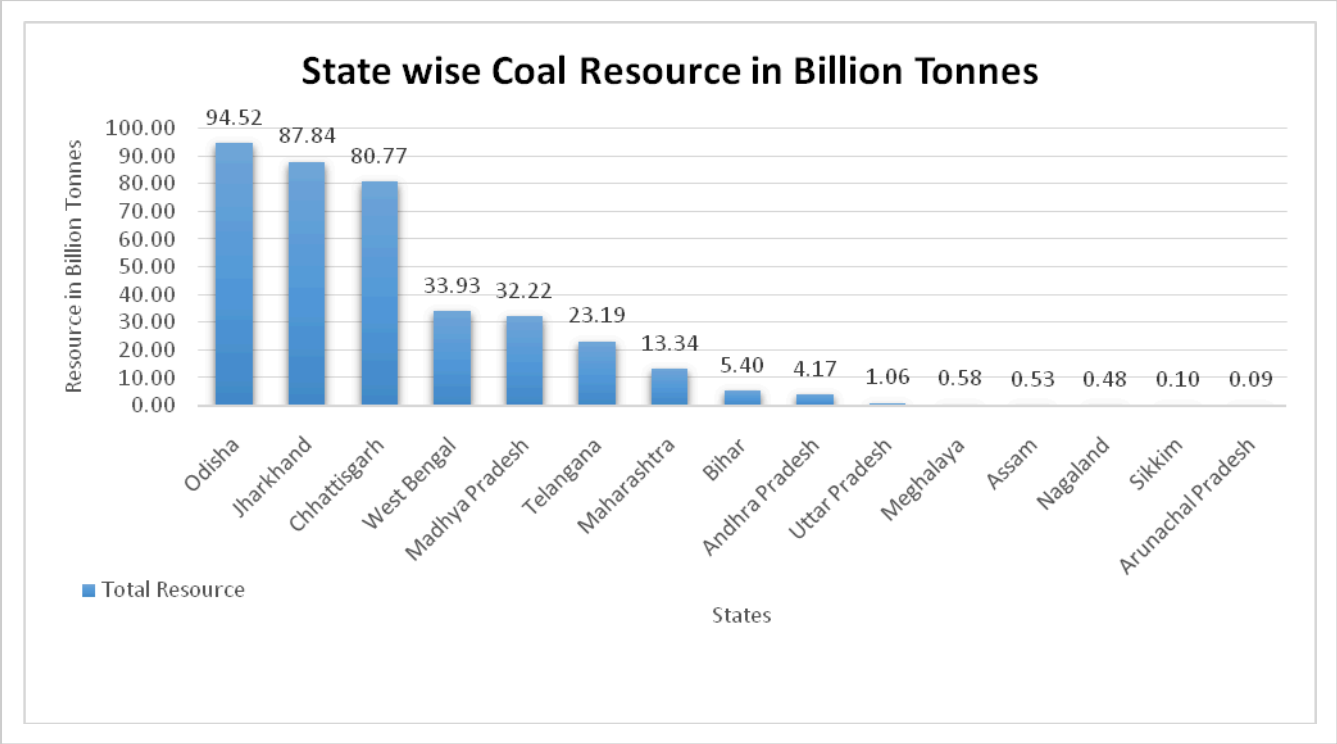
*ii) 1 GJ = 2.388458966275*10 -8 MTOE*

(Ref. : Conversion factors for Bioenergy from https://content.ces.ncsu.edu/conversion- factors-for- bioenergy and https://www.unitjuggler.com/convert-energy-from-GJ-to-Mtoe.html)

Details of State-wise and category-wise coal resources are given as under:

(Billion tonnes)

State	**Measured (331)**	**Indicated (332)**	**Inferred (333)**	**Total Resource**
Odisha	52.05	37.54	4.94	94.52
Jharkhand	55.75	26.99	5.09	87.84
Chhattisgarh	37.24	42.29	1.24	80.77
West Bengal	17.46	12.70	3.78	33.93
Madhya Pradesh	15.28	12.46	4.48	32.22
Telangana	11.26	8.50	3.43	23.19
Maharashtra	8.06	3.42	1.85	13.34
Bihar	0.31	5.04	0.05	5.40
Andhra Pradesh	1.02	2.37	0.78	4.17
Uttar Pradesh	0.88	0.18	0.00	1.06
Meghalaya	0.09	0.02	0.47	0.58
Assam	0.46	0.06	0.00	0.53
Nagaland	0.01	0.02	0.45	0.48
Sikkim	0.00	0.06	0.04	0.10
Arunachal Pradesh	0.03	0.04	0.02	0.09
Total	**199.90**	**151.68**	**26.62**	**378.21**



Grade wise & state-wise Coal and Lignite Resources as of 01.04.2023:

Grade-wise, state-wise and category-wise coal resources of non-coking coal

(In Billion Tonnes)

Resource Category	Grade	States											
		West Bengal	Jharkhand	Bihar	Madhya Pradesh	Chhattisgarh	Uttar Pradesh	Maharashtra	Odisha	Andhra Pradesh	Telangana	Assam	Sikk
Measured (331)	G1-G3	**0.17**	**0.34**	0.00	**0.23**	**0.70**	0.00	**0.01**	**0.04**	**0.00**	0.09	0.00	0.0
	G4-G5	**2.53**	**0.96**	0.00	**0.97**	**1.05**	0.00	**0.21**	**0.37**	**0.00**	0.52	0.00	0.0
	G6	**4.66**	**1.53**	0.00	**2.26**	**1.42**	0.01	**0.86**	**0.52**	**0.00**	1.99	0.00	0.0
	G7-G8	**4.63**	**4.84**	0.00	**3.81**	**3.59**	0.28	**2.73**	**1.62**	**0.01**	2.58	0.00	0.0

	G9-G14	**4.67**	**27.54**	0.29	**7.16**	**28.73**	0.60	**4.18**	**46.03**	**0.89**	6.07	0.00	0.0
	G15-G17	**0.01**	**0.28**	0.02	**0.06**	**1.42**	0.00	**0.07**	**3.47**	**0.12**	0.01	0.00	0.0
Total		**16.67**	**35.49**	**0.31**	**14.50**	**36.90**	**0.88**	**8.06**	**52.05**	**1.02**	**11.26**	**0.00**	**0.0**
Indicated (332)	G1-G3	**0.24**	**0.02**	**0.00**	0.34	**0.42**	0.00	**0.03**	**0.11**	**0.00**	**0.13**	0.00	0.0
	G4-G5	**1.25**	**0.18**	**0.01**	1.62	**0.89**	0.00	**0.15**	**0.54**	**0.00**	**0.40**	0.00	0.0
	G6	**3.50**	**0.93**	**0.10**	2.90	**2.36**	0.00	**0.61**	**0.82**	**0.00**	**1.04**	0.00	0.0
	G7-G8	**2.80**	**4.00**	**0.65**	2.66	**6.60**	0.10	**0.97**	**2.77**	**0.02**	**1.66**	0.01	0.0
	G9-G14	**4.47**	**12.19**	**3.93**	3.44	**30.62**	0.08	**1.62**	**31.20**	**2.13**	**5.26**	0.01	0.0
	G15-G17	**0.01**	**0.07**	**0.35**	0.21	**1.28**	0.00	**0.05**	**2.09**	**0.21**	**0.01**	0.00	0.0
Total		**12.28**	**17.39**	**5.04**	**11.16**	**42.17**	**0.18**	**3.42**	**37.54**	**2.37**	**8.50**	**0.01**	**0.0**
Inferred (333)	-	**3.64**	**3.55**	0.05	4.21	1.24	0.00	**1.85**	4.94	0.78	3.43	0.00	0.0
Grand Total		**3.64**	**3.55**	**0.05**	**4.21**	**1.24**	**0.00**	**1.85**	**4.94**	**0.78**	**3.43**	**0.00**	**0.0**

- **State-wise and coke-type-wise coal resource of coking coal (in Billion tonnes)**

Coke Type	States						Total Resource
	West Bengal	Jharkhand	Bihar	Madhya Pradesh	Chhattisgarh	Assam	

Prime Coking	0.00	5.32	5.32	0.00	0.00	0.00	**5.32**
Medium Coking	0.55	25.34	0.00	2.36	0.27	0.00	**28.53**
Semi-Coking	0.79	0.75	0.17	0.08	0.18	0.01	**1.80**
Total	**1.34**	**31.41**	**5.49**	**2.44**	**0.46**	**0.01**	**35.64**

State-wise coal resource of high Sulphur coal (in Billion tonnes)

Item	States				Total
	Assam	**Arunachal Pradesh**	**Meghalaya**	**Nagaland**	
High Sulphur Coal	**0.51**	**0.09**	**0.58**	**0.48**	**1.66**

<u>Lignite Resource</u>

The inventory of lignite resources for the year 2022-23 was prepared by compiling and collating updated information from different lignite exploration agencies, such as NLC India Ltd., Geological Survey of India (GSI), and Mineral Exploration Corporation Limited (MECL). The finalization of the inventory was done through close interaction between GSI and NLC. As of 1st April 2023, the total geological resource of lignite in the country stands at **47.36billion tonnes.**

(Billion tonnes)

State	**Measured (331)**	**Indicated (332)**	**Inferred (333)**	**Total Resource**
Tamilnadu	5.023	21.885	10.688	37.597
Rajasthan	1.204	3.109	2.274	6.586
Gujrat	1.279	0.284	1.160	2.722
Jammu&Kashmir	0.000	0.020	0.007	0.028
West Bengal	0.000	0.001	0.003	0.004
Odisha	0.006	0.000	0.000	0.006
Total	**7.512**	**25.704**	**14.153**	**47.369**

Category-wise Coal resources in MTOE as of 1st April'2023

Category-wise Coal Resources in Million Tonne Oil Equivalent (MTOE)			
Measured	**Indicated**	**Inferred**	**Total**
2691.32	**9208.94**	**5070.58**	**16970.84**

Note:For the purpose of calculation, the following conversion factors have been applied used

i) metric tonne= 15 GJ (for Lignite)

*ii) 1 GJ = 2.388458966275*10 -8 MTOE*

(Ref. : Conversion factors for Bioenergy from https://content.ces.ncsu.edu/conversion- factors-for-bioenergy and https://www.unitjuggler.com/convert-energy-from-GJ-to-Mtoe.html)
