



FOREWORD

Electricity generation in the country is and would remain predominantly coal based during the near future. The Indian coal is of low grade having high ash content of the order of 30 - 45% generating large quantity of fly ash at coal/lignite based thermal power stations in the country. The management of fly ash has thus been a matter of concern in view of requirement of large area of land for its disposal because of its potential of causing pollution of air and water.

To address the above concerns, Ministry of Environment & Forests (MoEF) has issued various Notifications on fly ash utilization prescribing therein the targets for fly ash utilization for Coal/Lignite power based Thermal Power Stations with an aim to achieve 100% utilization in a phased manner. Central Electricity Authority has been monitoring since 1996 fly ash generation and its utilization in the country for having its factual status.

A large number of technologies have been developed for gainful utilization and safe management of fly ash under the concerted efforts made by Fly Ash Mission/Fly Ash Unit under Ministry of Science & Technology, GOI since 1994. As a result, Fly ash earlier considered to be "hazardous industrial waste" material, has now acquired the status of useful and saleable commodity. The utilization of fly ash has increased from 6.64 million ton in 1996-97 to a level of 100.37 million-ton in 2012-13.

Report that follows gives an overview of current status of fly ash generation and its utilization in the country for the year 2011-12 and 2012-13 which, I am sure, will serve as useful information to guide further strategies that all stakeholders can evolve to turn the "menace" into a "meaningful" engagement on issues related to implementation on fly ash utilization of Ministry of Environment & Forests Notification of 3rd November, 2009.

I wish to express my sincere thanks to all the Power Utilities and Thermal Power stations in the country for providing data/information on fly ash generation and its utilization to CEA for bringing out this report.

New Delhi
January, 2014

(Neerja Mathur)
Chairperson, CEA
& Ex-officio Secretary
to the Government of India

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New Delhi
January, 2014



(Gorakh Thakur)
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FLY ASH GENERATION AT COAL/LIGNITE BASED THERMAL POWER STATIONS AND ITS UTILIZATION IN THE COUNTRY (FOR THE YEARS 2011-12 AND 2012-13)

1.0 BACKGROUND

Coal/Lignite based Thermal Power Generation has been the backbone of capacity addition in the country. Indian coal is of low grade having ash content as high as 45% in comparison to imported coals which have low ash content of the order of 10-15%. Large quantity of ash is, thus, being generated at coal/lignite based Thermal Power Stations in the country, which not only requires large area of precious land for its disposal but is also one of the sources of pollution of both air and water.

To reduce the requirement of land for disposal of fly ash in ash ponds and to address the problem of pollution caused by fly ash, Ministry of Environment & Forests (MoEF) has issued various Notifications on fly ash utilization, first Notification was issued on 14th September, 1999 which was subsequently amended in 2003 and 2009 vide Notifications dated 27th August, 2003 and 3rd November, 2009 respectively. The said Notifications prescribe targets of Fly Ash utilization for all Coal/Lignite based Thermal Power Stations in the country with an aim to achieve 100% utilization in a phased manner.

Central Electricity Authority (CEA) has been monitoring since 1996 on behalf of Ministry of Power the fly ash generation and its utilization at coal/ lignite based thermal power stations in the country. Data on fly ash generation and utilization including modes of utilization is obtained from thermal power stations on half yearly as well as yearly basis. The data thus obtained is analyzed and a report bringing out the status of fly ash generation and its utilization in the country is prepared. The said report is submitted to Ministry of Power and Ministry of Environment and Forests and also uploaded on the web site of CEA for bringing out the information in the public domain so that users of fly ash can have access to the information on the availability of fly ash at different thermal power stations in the country, which would facilitate and promote the utilization of fly ash.

The monitoring of fly ash generation and its utilization at coal/lignite based thermal power stations provides factual information and the status of fly ash utilization in the country. It also facilitates to ascertain the level of fly ash utilization achieved by various power stations in relation to targets prescribed in MoEF's notification of 3rd November, 2009 and to take corrective measures in cases of Thermal Power Stations that are lagging behind achieving the prescribed targets of fly ash utilization.

2.0 ASH GENERATION & UTILIZATION DURING THE YEAR 2011-12 & 2012-13

2.1 A Brief Summary

Fly ash generation & utilization data for the Years 2011-12 and 2012-13 has been received from **124** (One hundred twenty four) and **138** (One hundred thirty eight) coal/lignite based thermal power stations of various power utilities in the country. Data received has been analyzed to derive conclusions on present status of fly ash generation and its utilization in the country as a whole. A brief summary of status is given in Table-I below:

TABLE-I**SUMMARY OF FLY ASH GENERATION AND UTILIZATION DURING THE YEAR 2011-12 AND 2012-13**

Description		2011- 12	2012-13
• Nos. of Thermal Power Stations from which data was received	:	124	138
• Installed capacity (MW)	:	1,05,925.3	1,20312.30
• Coal consumed (Million tons)	:	437.41	482.97
• Average Ash Content (%)	:	33.24	33.87
• Fly Ash Generation (Million tons)	:	145.42	163.56
• Fly Ash Utilization (Million tons)	:	85.05	100.37
• Percentage Utilization	:	58.48	61.37

Power Station wise fly ash generation & its utilization status including modes of utilization for the Year 2011-12 for all the **124** thermal power stations which were in operation as on 31st March, 2012 and for the Year 2012-13, for all the **138** thermal power stations which were in operation as on 31st March, 2013 is given in the statements at **Annex-I and Annex-II** respectively.

2.2 Retirement of Units during the Years 2011-12 and 2012-13:

During the Year 2011-12, total eight Units, having a total installed capacity of 495 MW and during the Year 2012-13, four Units having a total installed capacity of 195 MW of various thermal power stations as per details given in Table-II below have been decommissioned:

TABLE-II**DETAILS OF RETIREMENT OF UNITS DURING THE YEARS 2011-12 AND 2012-13**

Sl. No.	Name of Thermal Power Station	Name of Power Utility	Unit No.	Capacity (MW)	Date of Retirement
(1)	(2)	(3)	(4)	(5)	(6)
2011-12					
1	Bhusawal	MAHAGENCO (Maharashtra)	1	50	19.05.2011
2	Paras		2	55	
3	Parli		1	20	
			2	20	
4	Nashik	1	125	25.06.2011	
		2	125		
5	Barauni	B.S.E.S. (Bihar)	4	50	12.03.2012
			5	50	
Total for 2011-12				495	
2012-13					
1	Durgapur Projects Power Station	Durgapur Projects Ltd. (West Bengal)	1	30	10.05.2012
			2	30	10.05.2012
2	Satpura	M.P.P.G.C. Ltd. (M.P.)	3	62.5	01.10.2012
			5	62.5	01.02.2013
Total for 2012-13				195	

2.3 Power Utility wise Status of Fly Ash Generation & its Utilization during the Year 2011-12 and 2012-13

The status of fly ash generation & utilization for the years 2011-12 and 2012-13 for various power utilities in the country has been assessed based on data received from Thermal Power Stations and the same is given in Table-III below:

TABLE-III
POWER UTILITY WISE FLY ASH GENERATION AND UTILIZATION FOR THE YEARS 2011-12 AND 2012-13

Sl. No.	Name of Power Utility	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)		Fly Ash Utilization			
				2011-12	2012-13	(In Million -ton)		(In Percentage)	
						2011-12	2012-13	2011-12	2012-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Assam Power Generation Corporation Ltd. (A.P.G.C.L.)	1	60	-	-	-	-	-	-
2	Andhra Pradesh Power Generation Corporation (A.P.GENCO)	6 (7)	4592.5 (5092.5)	9.9827	11.8620	4.7549	5.5947	47.63	47.17
3	Aryan Coal Beneficiation Pvt. Ltd. (Chhattisgarh)	1	135 (270)	0.1143	0.7090	0.0958	0.3398	83.80	47.92
4	Adani Power Ltd. (Gujarat)	1	4620	0.5410	1.1540	0.5410	1.1540	100.00	100.00
5	Aravali Power Company Pvt. Ltd. (Haryana)	1	1000 (1500)	0.7165	1.3689	0.1736	0.1190	24.23	8.70
6	Abhijit MADC Nagpur Energy Pvt. Ltd. (Maharashtra)	1	246	0.3110	0.2407	0.0235	0.0407	7.55	16.90
7	Bajaj Energy Pvt. Ltd. (B.E.P.L.), U.P.	5	450	0.1132	0.9790	0.0957	0.8046	84.56	82.18
8	Bihar State Electricity Board (B.S.E.B.)	1	110 (220)	0.0804	0.0000*	0.0988	0.0148	122.94	98.63
9	C.E.S.C. Ltd. , (W.B).	4	1285	2.0480	2.0921	2.0480	2.0921	100.00	100.00
10	Coastal Gujarat Power Ltd. (C.G.P.L.), Gujarat	1	800	-	0.3250	-	0.0270	-	8.31
11	Chhattisgarh State Power Generation Company Ltd. (C.S.P.G.C.L.)	3	1780	3.5310	3.6266	0.8477	1.3665	24.01	37.68
12	Damodar Valley Corporation (D.V.C.)	6	4710 (5710)	6.6734	8.5392	5.1999	6.8786	77.92	80.55
13	Durgapur Projects Ltd. (D.P.L.), W.B.	1	641	0.6908	0.7033	0.6051	0.6411	87.59	91.16

* Existing stock of unutilized Ash is 0.0149 MT

Sl. No.	Name of Power Utility	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)		Fly Ash Utilization			
				2011-12	2012-13	(In Million -ton)		(In Percentage)	
						2011-12	2012-13	2011-12	2012-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
14	D.P.S.C. Ltd. (W.B)	1 (2)	30 (42)	0.0153	0.0197	0.0149	0.0197	97.16	100.00
15	Essar Power Gujarat Ltd. (Gujarat)	1	600 (1200)	0.0036	0.1367	0.0036	0.1367	100.00	100.00
16	Gujarat Industries Power Corporation Ltd. (G.I.P.C.L.), Gujarat	1	500	0.4580	0.5721	0.4582	0.5721	100.05	100.00
17	Gujarat Mineral Development Corporation Ltd. (G.M.D.C.L.), Gujarat	1	250	0.1705	0.1858	0.1871	0.1859	109.76	100.03
18	Gujarat State Electric Corporation Ltd. (G.S.E.C.L), Gujarat	5	3720	6.2370	5.1810	3.0080	3.4836	48.23	67.24
19	Haryana Power Generation Corporation, Ltd. (H.P.G.C.L.), Haryana	3	3167.5	5.2096	4.4406	1.7862	1.5768	34.29	35.51
20	Indraprastha Power Generation Company Ltd. (I.P.G.C.L), Delhi	1	135	0.2278	0.2384	0.1725	0.1999	75.70	83.85
21	Jharkhand State Electricity Board (J.S.E.B.), Jharkhand	1	770	0.1510	0.2590	0.0117	0.0061	7.75	2.37
22	Jhajjar Power Ltd. J.H.P.L (Haryana)	1	1320	0.0412	0.7795	0.0412	0.7795	100.00	100.00
23	Jindal Power Ltd. (J.P.L.), Chhattisgarh	1	1000	1.9350	1.9990	1.1360	1.1940	58.71	59.73
24	JSW Energy Ltd.	2	2060	0.4473	0.5275	0.3951	0.5064	88.33	96.00
25	Karnataka Power Corporation Ltd. (K.P.C.L.), Karnataka	2	2220 (2720)	2.3992	3.0313	1.1833	1.2913	49.32	42.60
26	Kanti Bijlee Utpadan Nigam Ltd. (K.B.U.N.L.), Bihar	1	220	0.0863	-	0.0863	-	100.00	-
27	LANCO Power Ltd.	2	1800	0.9740	1.8073	0.2360	0.3662	24.23	20.26
28	Madhya Pradesh Power Generation Corporation Ltd. (M.P.P.G.C.L.), M.P.	3	2932.5	4.3736	5.0533	1.6608	2.4843	37.97	49.16
29	Maithon Power Ltd. (M.P.L.), Jharkhand	1	1050	0.3550	1.2977	0.0013	0.3691	0.36	28.44
30	Maharashtra State Power Generation Corporation Ltd. (M.S.P.G.C.L)	7	6960	10.4091	11.3386	5.3263	6.6454	51.17	58.61

Sl. No.	Name of Power Utility	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)		Fly Ash Utilization			
				2011-12	2012-13	(In Million -ton)		(In Percentage)	
						2011-12	2012-13	2011-12	2012-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
31	Neyveli Lignite Corporation Ltd. (N.L.C. Ltd.)	5	2990	1.4947	1.6020	0.9391	1.1662	62.83	72.80
32	NTPC-SAIL Power Co. Ltd. (N.S.P.C.L.), Chhattisgarh	1	500	1.1342	0.9945	0.3252	0.6976	28.67	70.15
33	NTPC Ltd.	15 (16)	27535 (31355)	50.0520	56.2978	27.5290	30.9670	55.00	55.01
34	NTPC-Tamilnadu Energy Co. Ltd. (N.T.E.C.L.), Tamil Nadu	1	500	0.0000	0.2342	0.0000	0.0000	0.00	0.00
35	Odisha Power Generation Corporation Ltd. (O.P.G.C.L.), Odisha	1	420	1.0478	1.1093	0.1754	0.1801	16.74	16.24
36	Punjab State Power Corporation Ltd. (P.S.P.C.L.), Punjab	3	2620	3.4062	3.3577	2.8202	2.7762	82.80	82.68
37	Rajasthan Rajya Vidyut Utpadan Nigam Ltd. (R.R.V.U.N.L.)	4	3490	4.8987	4.8314	4.5750	4.9061	93.39	101.55
38	Reliance Infrastructure Ltd. (R.I.L)	1	500	0.7790	0.8370	0.6080	0.7200	78.05	86.02
39	Rosa Power Supply CO. Ltd. (R.P.S.C.L.), U.P.	1	1200	0.8599	1.0889	0.0779	0.3416	9.06	31.37
40	Raj West Power Ltd. (R.W.P.L.), Rajasthan	1	540 (1080)	0.2073	0.5275	0.1144	0.3614	55.18	68.51
41	Sterlite Energy Ltd. (S.E.L.), Odisha	1	1800 (2400)	2.1854	2.6256	0.4639	1.3376	21.23	50.94
42	Simhapuri Energy Pvt. Ltd. (S.E.P.L.), Andhra Pradesh	1	150 (300)	0.0013	0.0658	0.0010	0.0654	80.00	99.45
43	S.V. Power Pvt. Ltd. (S.V.P.P.L.)	1	63	0.0334	0.0278	0.0334	0.0278	100.00	100.00
44	ST-CMS Electric Company Pvt. Ltd.	1	250	0.1446	0.1700	0.1305	0.1406	90.24	82.71
45	Tata Power Company (T.P.CO.)	2	1177.5	0.9660	0.0784	0.7443	0.0787	77.05	100.38
46	Tenughat Vidyut Nigam Ltd. (T.V.N.L.), Jharkhand	1	420	0.6167	0.8467	0.5838	0.2700	94.67	31.89
47	Tamil Nadu Generation & Distribution Corp. Ltd., Tamil Nadu	4	2970	5.1456	5.0997	6.7500	6.0513	131.18	118.66

Sl. No.	Name of Power Utility	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)		Fly Ash Utilization			
				2011-12	2012-13	(In Million -ton)		(In Percentage)	
						2011-12	2012-13	2011-12	2012-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
48	Torrent Power Ltd. (Gujarat)	1	400	0.4700	0.4690	0.6565	0.4590	139.68	97.87
49	Udupi Power Corporation Ltd. (U.P.C.L.), Karnataka	1	600 (1200)	0.0800	0.1390	0.0490	0.1080	61.25	77.70
50	Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd. (U.P.R.V.U.N.L.)	5	4200 (4950)	5.6228	5.3649	1.0166	1.4500	18.08	27.03
51	Vandana Energy & Steels Pvt. Ltd. (V.E.S.P.L), Chhattisgarh	1	35	0.0037	-	0.0037	-	100.00	-
52	West Bengal Power Development Corporation Ltd. (W.B.P.D.C. L.), W.B.	5	3860	7.1710	6.7792	6.4630	6.9663	90.13	102.76
53	Wardha Power Co. Pvt. Ltd. (W.P.C.L.), Maharashtra	1	540	0.7992	0.8453	0.7992	0.8453	100.00	100.00
54	Gupta Energy Pvt. Ltd. (Maharashtra)	0 (1)	0 (120)	-	0.1428	-	0.1428	-	100.00
55	J.P. Ventures Ltd., (M.P.)	0 (1)	0 (500)	-	0.1569	-	0.1047	-	66.74
56	AP&NR Ltd. (Jharkhand)	0 (1)	0 (540)	-	0.0946	-	0.0189	-	20.00
57	VIP Limited (Maharashtra)	0 (1)	0 (300)	-	0.0017	-	0.0000	-	0.00
58	EMCO Energy Ltd., (Maharashtra)	0 (1)	0 (300)	-	0.0241	-	0.0200	-	83.04
59	Spectrum Coal & Power Ltd., (Chhattisgarh)	0 (1)	0 (50)	-	0.0103	-	0.0103	-	100.00
60	Adani Power Ltd., (Maharashtra)	0 (1)	0 (1320)	-	0.0979	-	0.0479	-	48.93
61	Indiabulls Power Ltd., (Maharashtra)	0 (1)	0 (270)	-	0.0001	-	0.0001	-	100.00
62	Ideal Energy Projects Ltd., (Maharashtra)	0 (1)	0 (270)	-	0.0015	-	0.0005	-	33.40
63	ESSAR Power M.P. Ltd., (M.P.)	0 (1)	0 (600)	-	0.0080	-	0.0080	-	100.00
64	Meenakshi Energy Pvt. Ltd., (Andhra Pradesh)	0 (1)	0 (300)	-	0.0072	-	0.0032	-	44.75
	GRAND TOTAL	124 (138)	105925.3 (120312.3)	145.42	163.56	85.05	100.37	58.48	61.37

[Values in brackets in above Table are for year of 2012-13]

It may be seen from the Table-III above that:

- (i) The data of fly ash generation and utilization for the year 2011-12 was received from 53 Power Utilities out of which **13** Power Utilities have achieved fly ash utilization level of 100% or more and **15** power utilities have achieved fly ash utilization level in the range of less than 100% to 75%;
- (ii) The data of fly ash generation and utilization for the year 2012-13 was received from **64** Power Utilities, out of which **17** Power Utilities have achieved fly ash utilization level of 100% or more and **13** power utilities have achieved fly ash utilization level in the range of less than 100% to 75%.

The performance of these power utilities in fly ash utilization has been excellent during the aforesaid periods (i.e. during the years 2011-12 and 2012-13).

2.4 State wise Status of Fly Ash Generation & its Utilization during the Year 2011-12 & Year 2012-13

The state wise status of fly ash generation & utilization in the country based on data received from Thermal Power Stations/ Power Utilities has also been assessed and the same is given in Table-IV below:

TABLE-IV

STATE WISE FLY ASH GENERATION AND ITS UTILIZATION DURING THE YEARS 2011-12 AND 2012-13

Sl. No.	Name of the State	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)		Fly Ash Utilization			
						(In Million-ton)		(In Percentage)	
				2011-12	2012-13	2011-12	2012-13	2011-12	2012-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Assam	1	60	-	-	-	-	-	-
2	Andhra Pradesh	9 (12)	8842.5 (10292.5)	17.0939	19.6810	9.0518	10.6754	52.95	54.24
3	Bihar	3	2670 (2780)	4.0857	4.5630	1.1451	1.0368	28.03	22.72
4	Chhattisgarh	11	8373 (9878)	15.7476	18.8157	6.7438	7.2742	42.82	38.66
5	Delhi	2	840 (840.5)	1.4918	1.4404	1.2735	1.2409	85.36	86.15
6	Gujarat	11	10890 (11490)	7.8813	8.0236	4.8544	6.0183	61.59	75.01
7	Haryana	5	5487.8 (5987.8)	5.9673	6.5890	2.0006	2.4753	33.53	37.57
8	Jharkhand	7 (8)	4687.5 (5297.5)	4.6806	7.0198	3.7752	4.7472	80.66	67.63
9	Karnataka	4	3680 (4780)	2.7011	3.4041	1.4507	1.6322	53.71	47.95
10	Madhya Pradesh	4 (6)	6192.5 (8292.5)	10.6209	12.1532	4.5554	7.2100	42.89	59.33
11	Maharashtra	12 (16)	10196 (13276)	12.5960	13.9107	7.0055	8.8137	55.62	63.36
12	Odisha	4	5680 (6280)	10.6612	11.6959	3.6263	5.3027	34.01	45.34
13	Punjab	3	2620	3.4062	3.3577	2.8202	2.7762	82.80	82.68
14	Rajasthan	6	4280	5.2241	5.5886	4.8075	5.5075	92.02	98.55

Sl. No.	Name of the State	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)		Fly Ash Utilization			
						(In Million-ton)		(In Percentage)	
				2011-12	2012-13	2011-12	2012-13	2011-12	2012-13
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
			(4820)						
15	Tamil Nadu	10	6460	6.6668	6.8763	7.7015	7.1181	115.52	103.52
16	Uttar Pradesh	17	14360 (15610)	20.4509	22.2475	10.4291	12.4175	51.00	55.82
17	West Bengal	15 16	10606 (11618)	16.1414	18.4139	13.8056	17.0572	85.53	92.63
	GRAND TOTAL	124 (138)	105925.30 (120312.30)	145.42	163.56	85.05	100.37	58.48	61.37

[Values in brackets in above Table are for the year 2012-13]

It may be seen from Table-IV above that:

- Out of 17 states, 7 states have generated more than 10 million-ton of fly ash during the Years 2011-12 and 2012-13 and the maximum fly ash of more than 20 million ton was generated in U.P. during the aforesaid periods.
- During the Year 2011-12, the State of Tamil Nadu has achieved fly ash utilization level of more than 100% and the States of Delhi, Jharkhand, Punjab, Rajasthan and West Bengal have achieved the fly ash utilization level of more than 80%.
- During the Year 2012-13, the State of Tamil Nadu has achieved the fly ash utilization level of more than 100% and the States of Delhi, Punjab, Rajasthan and West Bengal have achieved the fly ash utilization level of more than 80%.

The performance of aforesaid states in fly ash utilization has been excellent during the aforesaid periods.

3.0 TARGETS FOR FLY ASH UTILIZATION AS PER MoEF'S NOTIFICATION OF 3rd NOVEMBER, 2009

3.1 Thermal Power Station in Operation as on 3rd November, 2009

All coal/lignite based thermal Power Stations and/or expansion units in operation on or before the date of MoEF's notification i.e. 03.11.2009 are required to achieve the targets of fly ash utilization as given in Table-V below:

TABLE-V

TARGETS FOR FLY ASH UTILIZATION FOR THERMAL POWER STATIONS IN OPERATION AS ON 3rd NOVEMBER, 2009

Sl. No.	Target of Fly Ash Utilization (In Percentage)	Target Date
(1)	(2)	(3)
1	At least 50% of Fly Ash generation	One year from the date of notification
2	At least 60% of Fly Ash generation	Two years from the date of notification
3	At least 75% of Fly Ash generation	Three years from the date of notification
4	At least 90% of Fly Ash generation	Four years from the date of notification
5	100% of Fly Ash generation	Five years from the date of notification

The unutilized fly ash, if any, in relation to the target during a year would be required to be utilized within next two years in addition to the targets stipulated for those years and the balance unutilized fly ash accumulated during first five years (the difference between the generation and the utilization target) would be required to be utilized progressively over the next five years in addition to 100% utilization of current generation of fly ash.

3.2 Thermal Power Station Commissioned after 3rd November, 2009

New coal/lignite based thermal Power Stations and/or expansion units commissioned after issuance of MoEF's notification of 3rd November, 2009 are required to achieve the target of fly ash utilization as given in Table-VI below:

TABLE-VI

TARGETS FOR FLY ASH UTILIZATION FOR THERMAL POWER STATION COMMISSIONED AFTER 3rd NOVEMBER, 2009

Sl. No.	Target of Fly Ash Utilization (In Percentage)	Target Date
(1)	(2)	(3)
1	At least 50% of fly ash generation	One year from the date of Commissioning
2	At least 70% of fly ash generation	Two years from the date of Commissioning
3	At least 90% of fly ash generation	Three years from the date of Commissioning
4	100% of fly ash generation	Four years from the date of commissioning

The unutilized fly ash, if any, in relation the target during a year would be required to be utilized within next two years in addition to the targets stipulated for these years and the balance unutilized fly ash accumulated during first four years (the difference between the generation and utilization target) would be required to be utilized progressively over next five years in addition to 100% utilization of current generation of fly ash.

4.0 PRESENT STATUS OF FLY ASH UTILIZATION AS PER MoEF'S NOTIFICATION OF 3rd NOVEMBER, 2009

Fly ash generation and utilization data received from Thermal Power Stations/Power Utilities in the country for the years 2011-12 and 2012-13 has been analyzed broadly to ascertain the power stations which have achieved the targets of fly ash utilization as prescribed in MoEF's notification of 3rd November, 2009.

During the Year 2011-12, all those thermal power stations which were in operation on the date of issuance of MoEF's notification (i.e. 3rd November, 2009) should have achieved the target of fly ash utilization of 60% within two years from the date of notification i.e. by 3rd November, 2011. All those thermal power stations which have come into operation after the date of issuance of MoEF's notification (i.e. 3rd November, 2009) should have achieved the target of fly ash utilization as specified in Table-VI above depending upon their date of commissioning.

During the Year 2012-13, all those thermal power stations which were in operation on the date of issuance of MoEF's notification (i.e. 3rd November, 2009) should have achieved the target of fly ash utilization of 75% within three years from the date of notification i.e. by 3rd November, 2012. All those thermal power stations which have come into operation after the date of issuance of MoEF's notification (i.e. 3rd November, 2009) should have achieved the target of fly ash utilization as specified in Table-VI above depending upon their date of commissioning.

4.1 Status during the Year 2011-12 and 2012-13

To have a broad assessment of the achievement of targets of fly ash utilization by those thermal power stations which were in operation as on 3rd November, 2009 (i.e. date of MoEF's Notification) for the years 2011-12 and 2012-13, the fly ash utilization in terms of percentage as achieved by thermal power stations as on 31st March, 2012 and 31st March, 2013 respectively has been compared with the targets of fly ash utilization required to be achieved by them as on 3rd November, 2011 for the Year 2011-12 and as on 3rd November, 2012 for the Year 2012-13 as per MoEF's Notification of 3rd November, 2009.

For thermal power stations which were commissioned after 3rd November, 2009 (i.e. date of MoEF's Notification), the fly ash utilization in terms of percentage as achieved by them as on 31st March, 2012 for the year 2011-12 and as on 31st March, 2013 for the year 2012-13 has been compared with the targets of fly ash utilization required to be achieved by them as per MoEF's Notification of 3rd November, 2009 and given in Table-VI above depending upon their date of commissioning.

For thermal power stations which were in operation for less than one year as on 31st March, 2012 for the Year 2011-12 and as on 31st March, 2013 for the Year 2012-13, the target of fly ash utilization of 50% as applicable for the 1st year from the date of commissioning has been considered.

Based on above, the status of achievement of targets of fly ash utilization as prescribed in MoEF's notification of 3rd November, 2009 for the Years 2011-12 and 2012-13 has been assessed and the same is given in Table-VII below.

TABLE-VII

STATUS OF UTILIZATION OF FLY ASH AS PER MOEF'S NOTIFICATION DATED 3rd NOVEMBER, 2009 FOR THE YEARS 2011-12 AND 2012-13

Sl. No.	Description	Nos. of TPS	
		2011-12	2012-13
(1)	(2)	(3)	(4)
1	Nos. of TPS which have achieved the target of fly ash utilization as per MoEF's Notification of 3 rd November, 2009	73	66
2	Nos. of TPS which have not been able to achieve the target of fly ash utilization as per MoEF's Notification of 3 rd November, 2009	43	66
3	Nos. of TPS which have not generated any significant fly ash or any fly ash	8	6
	Total	124	138

It may be seen from Table-VII above that:

- (i) During the Year 2011-12, out of **124** (one hundred twenty four) thermal power stations for which data was received, **73** (seventy three) power stations have achieved the targets of fly ash utilization as stipulated in MoEF's Notification of 3rd November, 2009.

- (ii) During the year of 2012-13, out of **138** (one hundred thirty eight) thermal power stations for which data was received, **66** (sixty six) power stations have achieved the targets of fly ash utilization as stipulated in MoEF's Notification of 3rd November, 2009.

4.2 Range of Fly Ash Utilization during the Years 2011-12 and 2012-13

Based on the analysis of fly ash utilization data received from Thermal Power Stations/Power Utilities, the range of fly ash utilization in percentage and numbers of thermal power stations in that range has been assessed and the same is given in Table-VIII below:

TABLE-VIII

RANGE OF PERCENTAGE FLY ASH UTILIZATION DURING THE YEARS 2011-12 AND 2012-13

Sl. No.	Level of Fly Ash utilization	Nos. of Power Stations	
		2011-12	2012-13
(1)	(2)	(3)	(4)
1	100% and more than 100%	29	32
2	Less than 100% and up to 75%	27	33
3	Less than 75% and up to 60%	17	19
4	Less than 60%	43	48
5	Nos. of TPS which have not generated any significant fly ash or any fly ash	8	6
	Total	124	138

It may be seen from Table-VIII above that **29** thermal power stations during the year 2011-12 and **32** thermal power stations during the year 2012-13 have achieved fly ash utilization level of 100% or more. The performance of these thermal power stations in fly ash utilization has been excellent.

4.3 Thermal Power Stations that have achieved Fly Ash utilization level of 100% or more during the Years 2011-12 and 2012-13

The following names of Thermal Power Stations achieved the fly ash utilization level of 100% or more during 2011-12 and 2012-13. The fly ash utilization level achieved by each of these power stations is given in Table-IX below:

TABLE-IX

THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF 100% OR MORE DURING THE YEARS 2011-12 AND 2012-13

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	MUNDRA TPS, A.P.L. (Gujarat)	4620	0.5410	0.5410	100.00	1.1540	1.1540	100.00
2	BARAUNI, B.S.E.B. (Bihar)	110	0.0804	0.0988	122.94	-	-	-

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
3	B.B.G.S., C.E.S.C. (W.B.)	750	1.4630	1.4630	100.00	1.3790	1.3790	100.00
4	S.G.S., C.E.S.C. (W.B.)	135	0.2630	0.2630	100.00	0.2680	0.2680	100.00
5	T.G.S., C.E.S.C. (W.B.)	240	0.3220	0.3220	100.00	0.3900	0.3900	100.00
6	BOKARO 'B', D.V.C. (Jharkhand)	500	1.4908	1.7489	117.31	1.3475	1.4907	110.63
7	SALAYA, E.P.G.L. (Gujarat)	600 (1200)	0.0036	0.0036	100.00	0.1367	0.1367	100.00
8	SURAT LIGNITE, G.I.P.C.L. (Gujarat)	500	0.4580	0.4582	100.05	0.5721	0.5721	100.00
9	AKRIMOTA, G.M.D.C.L. (Gujarat)	250	0.1705	0.1871	109.76	0.1858	0.1859	100.00
10	KUTCH LIGNITE, G.S.E.C.L. (Gujarat)	290	0.2750	0.2760	100.36	0.3610	0.3610	100.00
11	MAHATMA GANDHI, J.H.P.L., (Haryana)	1320	0.0412	0.0412	100.00	0.7795	0.7795	100.00
12	BARSINGSAR LIGNIT, E.N.L.C. (Rajasthan)	250	0.1181	0.1181	100.00	0.2297	0.2400	104.51
13	TALCHAR, NTPC Ltd. (Odisha)	460	1.1930	1.1930	100.00	1.2350	1.2350	100.00
14	KOTA, R.R.V.U.N.L., (Rajasthan)	1240	2.0284	2.1070	103.87	1.8504	2.2891	123.71
15	GIRAL, R.R.V.U.N.L., (Rajasthan)	250	0.1831	0.1831	100.00	0.1942	0.1942	100.00
16	SVPL, S.V.P.P.L., (Chhattisgarh)	63	0.0334	0.0334	100.00	0.0278	0.0278	100.00
17	TROMBAY T.P. CO., (Jharkhand)	750	0.0722	0.0722	100.00	0.0784	0.0787	101.00
18	METTUR T.N.G & D., (Tamil Nadu)	840	1.6497	2.7372	165.92	1.3432	2.4561	183.86
19	NORTH CHENNAI T.N.G & D, (Tamil Nadu)	630	0.9580	2.3180	241.96	1.1090	1.7690	159.58

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
20	PANKI, U.P.R.V.U.N.L., (U.P.)	210	0.2747	0.3789	137.95	0.2571	0.4016	156.21
21	KOLAGHAT, W.B.P.D.C.L., (W.B.)	1260	2.5470	3.0200	118.57	2.4387	3.4196	143.63
22	BANDEL, W.B.P.D.C.L. (W.B.)	450	0.6510	0.7410	113.82	0.5617	0.7479	146.32
23	BAKRESWAR, W.B.P.D.C.L. (W.B.)	1050	1.9760	2.3780	120.34	2.0795	2.3103	111.31
24	WARDHA, W.P.C.L., (Maharashtra)	540	0.7992	0.7992	100.00	0.8453	0.8453	100.00
25	MUZAFFARPUR, K.B.U.N.L., (Bihar)	220	0.0863	0.0863	100.00	-	-	-
26	KHAPARKHEDA, M.S.P.G.C.L., (Maharashtra)	840	1.4801	1.5501	104.73	-	-	-
27	SABARMATI, Torrent Power Ltd. (Gujarat)	400	0.4700	0.6565	139.68	-	-	-
28	HARDUAGANJ, U.P.R.V.U.N.L., (U.P.)	420	0.0191	0.0232	121.47	-	-	-
29	KATGHORA, V.E.S.P.L., (Chhattisgarh)	35	0.0037	0.0037	100.00	-	-	-
30	GEPL, Gupta Energy Pvt. Ltd., (Maharashtra)	120	-	-	-	0.1428	0.1428	100.00
31	RATIJA, Spectrum Coal & Power Ltd., (Chhattisgarh)	50	-	-	-	0.0103	0.0103	100.00
32	AMARAVATI, Indiabulls Power Ltd., (Maharashtra)	270	-	-	-	0.0001	0.0001	100.00
33	NEW COSSIPORE, C.E.S.C. (W.B.)	160	-	-	-	0.0551	0.0551	100.00
34	DISHERGARH POWER STATION, D.P.S.C.L., (W.B.)	12	-	-	-	0.0197	0.0197	100.00
35	MAHAN, ESSAR POWER MP Ltd., (M.P.)	600	-	-	-	0.0080	0.0080	100.00

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
36	GANDHINAGAR, G.S.E.C.L.(Gujarat)	870	-	-	-	0.8580	0.8590	100.15
37	SIKKA, G.S.E.C.L.(Gujarat)	240	-	-	-	0.1850	0.2136	115.37
38	JOJOBERA, Tata Power Co., (Jharkhand)	427.5	-	-	-	1.1552	1.2084	105.56

['-' denotes that TPS is not in the range of fly ash utilization under consideration]

It may be seen from Table-IX above that:

- (i) During the Year 2011-12, **29** thermal power stations have achieved the fly ash utilization level of 100% or more than 100%. **15** thermal power stations out of 29 have achieved fly ash utilization level of more than 100%.
- (ii) During the year 2012-13, **32** thermal power stations have achieved the fly ash utilization level of 100% or more than 100%. **13** thermal power stations out of 32 have achieved fly ash utilization level of more than 100%.

Power Stations which have achieved fly ash utilization level of more than 100% during the years 2011-12 and/or during the year 2012-13 have utilized the fly ash stored in ash ponds during earlier years.

4.4 Power Stations in Fly Ash Utilization Range of less than 100% and up to 75% during the Years 2011-12 and 2012-13

The names of Thermal Power Stations which have achieved the fly ash utilization level of less than 100% and up to 75% during the years 2011-12 and 2012-13 along with fly ash utilization level achieved by each of these power stations are given in Table-X below:

TABLE-X

THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF LESS THAN 100% AND UP TO 75% DURING FOR THE YEARS 2011-12 AND 2012-13

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	KASAI PALLI, A.C.B.P.L., (Chhattisgarh)	135	0.1143	0.0958	83.80	-	-	-
2	BARKHERA, B.E.P.L. (U.P.)	90	0.0295	0.0251	85.06	0.2043	0.1634	80.00
3	KHAMBAR KHERA, B.E.P.L. (U.P.)	90	0.0412	0.0347	84.24	0.2084	0.1701	81.64
4	KUNDARKI, B.E.P.L. (U.P.)	90	0.0110	0.0093	84.45	0.2023	0.1759	86.96
5	MAQSOODPUR, B.E.P.L. (U.P.)	90	0.0235	0.0199	84.41	0.2104	0.1706	81.06

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6	UTRAULA, B.E.P.L. (U.P.)	90	0.0079	0.0067	85.00	0.1536	0.1245	81.06
7	D.P.L, D.P.L. (W. B.)	641	0.6908	0.6051	87.59	0.7033	0.6411	91.16
8	RAJGHAT, I.P.G.C.L. (Delhi)	135	0.2278	0.1725	75.70	0.2384	0.1999	83.85
9	RATNAGIRI, JSW Energy Ltd. (Maharashtra)	1200	0.2250	0.1760	78.22	0.2937	0.2731	93.00
10	VIJAYANAGAR, JSW Energy Ltd., (Karnataka)	860	0.2223	0.2191	98.56	0.2338	0.2334	99.57
11	SANJAY GANDHI, M.P.P.G.C.L (M.P.)	1340	1.6610	1.5680	94.40	2.2907	1.8017	78.65
12	NASHIK, M.S.P.G.C.L., (Maharashtra)	630	1.2760	1.0381	81.36	1.2680	0.9530	75.12
13	NEYVELI -I EXPN. N.L.C. Ltd. (Tamil Nadu)	420	0.2270	0.2221	97.84	0.2385	0.2385	99.80
14	BADARPUR, NTPC Ltd. (Delhi)	705	1.2640	1.1010	87.10	1.2020	1.0410	86.61
15	FARAKKA, NTPC Ltd. (W.B.)	2100	2.2070	1.9810	89.76	3.6470	3.3340	91.40
16	LEHRA MOHABAT, P.S.P.C.L., (Punjab)	920	1.4113	1.1482	81.35	1.2306	1.0788	87.66
17	ROPAR, P.S.P.C.L. (Punjab)	1260	1.5284	1.4373	94.04	1.8056	1.4764	81.76
18	SURATGARH, R.R.V.U.N.L., (Rajasthan)	1500	2.1100	1.7275	81.87	2.1259	1.8796	88.40
19	CHHABRA R.R.V.U.N.L., (Rajasthan)	500	0.5774	0.5575	96.56	0.6609	0.5433	84.36
20	DAHANU, Reliance Infrastructure Ltd. (Maharashtra)	500	0.7790	0.6080	78.05	0.8370	0.7200	86.07
21	CUDDALORE, ST-CMS, (Tamil Nadu)	250	0.1446	0.1305	90.24	0.1700	0.1406	82.71
22	ENNORE, T.N.G & D. Corporation, (Tamil Nadu)	450	0.4324	0.4148	95.92	0.3941	0.3331	84.54
23	CHINAKURI, D.P.S.C.L. (W.B.)	30.00	0.0153	0.0149	97.16	-	-	-

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
24	GANDHINAGAR, G.S.E.C.L.(Gujarat)	870	1.2450	0.9870	79.28	-	-	-
25	UNCHAHAHAR, NTPC Ltd. (U.P.)	1050	2.5730	1.9320	75.09	-	-	-
26	JOJOBERA, Tata Power Co. (Jharkhand)	427.5	0.8938	0.6721	75.19	-	-	-
27	TENUGHAT, T.V.N.L. (Jharkhand)	420	0.6167	0.5838	94.67	-	-	-
28	RAYALSEEMA, A.P.GENCO (A.P.)	1050	-	-	-	2.0868	1.6271	77.95
29	BARAUNI, B.S.E.B. (Bihar)	220	-	-	-	0.0000*	0.0148	98.63
30	KORBA (WEST), C.S.P.G.C.L. (Chhattisgarh)	840	-	-	-	1.4829	1.2395	83.58
31	DURGAPUR, D.V.C. (W. B.)	350	-	-	-	0.8172	0.6933	84.84
32	MEJIA, D.V.C. (W.B.)	2340	-	-	-	3.7320	3.1610	84.70
33	DADRI, NTPC Ltd. (U.P.)	1820	-	-	-	2.7440	2.3800	86.75
34	SABARMATI, Torrent Power Ltd. (Gujarat)	400	-	-	-	0.4690	0.4590	97.76
35	SIMHAPURI, S.E.P.L. (A.P.)	300	-	-	-	0.0658	0.0654	99.45
36	UDUPI, U.P.C.L. (Karnataka)	1200	-	-	-	0.1391	0.1075	77.32
37	EMCO ENERGY, EMCO ENERGY Ltd. (Maharashtra)	300	-	-	-	0.0241	0.0200	83.00
38	PARAS M.S.P.G.C.L. (Maharashtra)	500	-	-	-	0.9440	0.7210	75.23
39	PARLI M.S.P.G.C.L. (Maharashtra)	1130	-	-	-	1.5060	1.1920	79.16

[^-\ denotes that TPS is not in the range of fly ash utilization under consideration]

* Existing stock of unutilized Ash is 0.0149 MT

It may be seen from Table-X above that **27** thermal power stations during the year 2011-12 and **33** thermal power stations during the Year 2012-13 have achieved fly ash utilization level in the range of less than 100% to 75%.

4.5 Power Stations in Fly Ash Utilization Range of less than 75% and up to 60% during the Years 2011-12 & Year 2012-13

The names of Thermal Power Stations which have achieved the fly ash utilization level of less than 75% and up to 60% during the years 2011-12 and 2012-13 along with fly ash utilization level achieved by each of these power stations are given in Table-XI below:

TABLE-XI

THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF LESS THAN 75% AND UP TO 60% DURING THE YEARS 2011-12 AND 2012-13

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	RAYALSEEMA, A.P.GENCO (A.P.)	1050	2.2650	1.5650	69.10	-	-	-
2	KAKATIA, A.P.GENCO (A.P.)	500	0.6206	0.3760	60.58	-	-	-
3	CHANDRAPURA, D.V.C. (JHARKHAND)	890	1.1733	0.7574	64.55	2.0191	1.3840	68.54
4	DURGAPUR, D.V.C. (W.B.)	350	0.7173	0.4956	69.10	-	-	-
5	MEJIA, D.V.C. (W.B.)	1840	3.2920	2.1980	66.77	-	-	-
6	BHUSAWAL, M.S.P.G.C.L (MAHARASTRA)	420	0.7349	0.4806	65.39	0.6929	0.4918	70.68
7	PARLI, M.S.P.G.C.L (MAHARASTRA)	1130	0.1731	0.1191	68.80	-	-	-
8	NEYVELI-I, N.L.C. Ltd. (TAMIL NADU)	600	0.2506	0.1779	70.99	0.3342	0.2132	64.51
9	RAMAGUNDAM, NTPC Ltd. (A.P.)	2600	4.2940	2.6080	60.74	4.5210	3.0520	67.52
10	SIMHADRI NTPC Ltd. (A.P.)	1500 (2000)	2.8160	1.6900	60.01	3.2250	1.9600	60.78
11	KORBA NTPC Ltd. (CHHATTISGARH)	2600	5.4070	3.7440	69.24	-	-	-
12	RIHAND, NTPC Ltd. (U.P.)	2000	3.1190	1.8920	60.66	-	-	-
13	SINGRAULI, NTPC Ltd. (U.P.)	2000	3.7930	2.3240	61.27	3.7770	2.2660	60.00
14	TANDA, NTPC Ltd. (U.P.)	440	1.3600	0.8460	62.21	1.1560	0.7310	63.42
15	DADRI NTPC Ltd. (U.P.)	1820	3.0100	2.2470	74.65	-	-	-

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
16	TUTICORIN, TG & D.C. Ltd. (TAMIL NADU)	1050	2.1054	1.2800	60.79	2.2534	1.4930	66.25
17	UDUPI U.P.C.L. (KARNATAK)	600	0.0800	0.0490	61.25	-	-	-
18	BHILAI, N.S.P.C.L. (CHHATTISHGARH)	500	-	-	-	0.9945	0.6976	70.15
19	DR. NTR (VIJAIWADA), APGENCO (A.P.)	1760	-	-	-	4.1007	2.9170	71.13
20	BELLARY, K.P.C.L. (KARNATKA)	1000	-	-	-	0.5381	0.3813	70.85
21	VINDHYACHAL, NTPC Ltd. (M.P.)	4260	-	-	-	6.9350	4.6130	66.50
22	BHATINDA, P.S.P.C.L. (PUNJAB)	440	-	-	-	0.3215	0.2211	68.77
23	KHAPARKHEDA, M.S.P.G.C.L. (MAHARASTRA)	840	-	-	-	1.8457	1.2867	69.70
24	NEYVELI-II, N.L.C. Ltd. (TAMIL NADU)	1470	-	-	-	0.7996	0.4745	60.50
25	UNCHAHAR, NTPC Ltd. (U.P.)	1050	-	-	-	2.4540	1.5320	62.49
26	JALIIPA KAPURDI, R.W.P.L. (RAJASTHAN)	1080	-	-	-	0.5275	0.3614	68.50
27	PARICHHA, U.P.R.V.U.N.L. (U.P.)	1140	-	-	-	1.1380	0.7033	61.80
28	BINA, Jaypee Bina Thermal Power Plant (M.P.)	500	-	-	-	0.1569	0.1047	66.66

['-' denotes that TPS is not in the range of fly ash utilization under consideration]

It may be seen from Table-XI above that **17** thermal power stations during the year 2011-12 and **19** thermal power stations during the year 2012-13 have achieved fly ash utilization level of less than 75% and up to 60%.

4.6 Power Stations with Fly Ash Utilization Level of less than 60% during the Years 2011-12 and 2012-13

The names of Thermal Power Stations which have achieved the fly ash utilization level of less than 60% during the years 2011-12 and 2012-13 along with fly ash utilization level achieved by each of these power stations are given in Table-XII below:

TABLE-XII**THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF BELOW 60%
DURING THE YEARS 2011-12 AND 2012-13**

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	CHANDRAPUR A.P.G.P.C.L. (Assam)	60.00	No fly ash was generated			No fly ash was generated		
2	KOTHAGUDAM A.P. GENCO (A.P.)	720	2.0113	0.1191	5.92	2.1051	0.1995	9.48
3	KOTHAGUDEM-V A.P. GENCO (A.P.)	500	0.9090	0.2000	22.00	1.4032	0.0711	5.09
4	RAMAGUNDUM'B' A.P. GENCO (A.P.)	62.50	0.1398	0.0748	53.51	0.1425	0.0601	42.18
5	Dr. N.T.R (VIJAWADA) A.P. GENCO (A.P.)	1760	4.0370	2.4200	59.95	-	-	-
6	INDIRA GANDHI, A.P.C.P.L. (Haryana)	1000	0.7165	0.1736	24.23	1.3689	0.1190	8.70
7	MIHAN, A.M.N.E.P.L. (Maharashtra)	246	0.3110	0.0235	7.55	0.2407	0.0407	26.98
8	KORBA (WEST), C.S.P.G.C.L. (Chhattisgarh)	840	1.5737	0.6279	39.90	-	-	-
9	KORBA(EAST), C.S.P.G.C.L. (Chhattisgarh)	440	0.9701	0.2198	22.66	1.0557	0.1270	12.03
10	DSPM, C.S.P.G.C.L. (Chhattisgarh)	500	0.9872	0.0000	0.00	1.0880	0.0000	0.00
11	SIKKA, G.S.E.C.L.(Gujarat)	240	0.3480	0.1830	52.59	-	-	-
12	UKAI, G.S.E.C.L (Gujarat)	850	1.4530	0.5230	35.99	1.3780	0.7490	54.34
13	WANAKBORI, G.S.E.C.L. Gujarat)	1470	2.9160	1.0390	35.63	2.3990	1.3010	54.23
14	HISAR, H.P.G.C.L. (Haryana)	1200	1.0995	0.0319	2.90	1.4738	0.1856	12.59
15	YAMUNANAGAR, H.P.G.C.L. (Haryana)	600	0.8470	0.3480	41.09	0.2410	0.0259	10.75
16	PANIPAT, H.P.G.C.L. (Haryana)	1367.8	3.2631	1.4063	43.10	2.7258	1.3653	50.09

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
17	O.P. JINDAL, J.P.L. (Chhattisgarh)	1000	1.9350	1.1360	58.71	1.9990	1.1940	59.72
18	PATRATU, J.S.E.B. (Jharkhand)	770	0.1510	0.0117	7.75	0.2590	0.0061	2.36
19	BELLARY, K.P.C.L. (Karnataka)	500	0.5422	0.2283	42.11	-	-	-
20	RAICHUR, K.P.C.L. (Karnataka)	1720	1.8570	0.9550	51.43	2.4932	0.9100	36.50
21	AMARKANTAK, LANCO Power Ltd.	600	0.9740	0.2360	24.23	0.8335	0.3582	42.96
22	SATPURA, M.P.P.G.C.L. (M.P.)	1142.5	2.1676	0.0328	1.52	2.0185	0.5221	25.86
23	AMARKANTAK, M.P.P.G.C.L. (M.P.)	450	0.5450	0.0600	11.01	0.7441	0.1605	21.57
24	CHANDRAPUR, M.S.P.G.C.L. (Maharashtra)	2340	4.6157	1.1245	24.36	4.2539	1.5419	36.18
25	KORADI, M.S.P.G.C.L. (Maharashtra)	1100	1.2080	0.5250	43.46	0.8280	0.4590	51.46
26	PARAS, M.S.P.G.C.L. (Maharashtra)	500	0.9212	0.4890	53.08	-	-	-
27	NEYVELI-II, N.L.C. Ltd. (Tami Nadu)	1470	0.8990	0.4210	46.83	-	-	-
28	BHILAI, N.S.P.C.L. (Chhattisgarh)	500	1.1342	0.3252	28.67	-	-	-
29	KAHALGAON, NTPC Ltd.	2340	3.9190	0.9600	24.50	4.5630	1.0220	22.40
30	SIPAT, NTPC Ltd.	1660 2980	2.6150	0.3220	12.31	4.1760	0.8620	20.64
31	VINDHYACHAL, NTPC Ltd.	3260	6.2470	2.8950	46.34	-	-	-
32	TALCHAR (KAN), NTPC Ltd.	3000	6.2350	1.7940	28.77	6.7260	2.5500	37.91
33	IB VALLEY, O.P.G.C.L. (Odisha)	420	1.0478	0.1754	16.74	1.1093	0.1801	16.24
34	BATHINDA, P.S.P.C.L. (Punjab)	440	0.4664	0.2347	50.32	-	-	-

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
35	JALIPA KAPURDI, R.W.P.L. (Rajasthan)	540	0.2073	0.1144	55.18	-	-	-
36	ROSA PHASE-I, R.P.S.C.L. (U.P.)	1200	0.8599	0.0779	9.06	1.0889	0.3416	31.37
37	STERLITE, S.E.L. (Odisha)	1800 2400	2.1854	0.4639	21.23	2.6256	1.3376	50.94
38	ANPARA 'A' & 'B', U.P.R.V.U.N.L. (U.P.)	1630	2.9540	0.0200	0.68	2.6619	0.0145	0.55
39	OBRA, U.P.R.V.U.N.L. (U.P.)	1300	1.5230	0.1603	10.52	1.2620	0.3061	24.26
40	PARICHA, U.P.R.V.U.N.L. (U.P.)	640	0.8520	0.4341	50.96	-	-	-
41	SAGARDIGH, W.B.P.D.C.L (W.B.)	600	1.3210	0.1840	13.93	1.0906	0.2218	21.29
42	SANTALDIH, W.B.P.D.C.L. (W.B.)	500	0.6760	0.1400	20.71	0.6087	0.2667	43.81
43	MAITHON (RIGHT BANK), M.P.L. (Jharkhand)	1050	0.3550	0.0013	0.36	1.2977	0.3691	28.00
44	NEW COSSIPRE, C.E.S.C. (W.B.)	160	No significant fly ash was generated			-	-	-
45	KOTHAGUDEM-VI, A.P. GENCO (A.P.)	500	-	-	-	0.9543	0.3673	38.56
46	KORBA, NTPC Ltd.	2600	-	-	-	6.4390	2.4180	37.55
47	MUNDRA UMPP, C.G.P.L. (Gujarat)	800	No significant fly ash was generated			0.3250	0.0270	8.20
48	TENUGHAT, T.V.N.L. (Jharkhand)	420	-	-	-	0.8467	0.2700	59.81
49	RIHAND, NTPC Ltd.	2500	-	-	-	3.4890	1.9710	56.49
50	ANPARA 'C', LANCO Power Ltd. (U.P.)	1200	No significant fly ash was generated			0.9738	0.0080	0.82
51	DURGAPUR STEEL, D.V.C. (W.B.)	1000	No significant fly ash was generated			0.6234	0.1497	24.01
52	KAKATIYA, A.P. GENCO (A.P.)	500	-	-	-	1.0695	0.3528	32.98
53	KASAI PALLI, A.C.B.P.L. (Chhattisgarh)	270	-	-	-	0.7090	0.3398	47.92

Sl. No.	Name of TPS & Power Utility	Installed Capacity	2011-12			2012-13		
			Fly ash Generation	Fly ash Utilization	Percentage (%)	Fly ash Generation	Fly ash Utilization	Percentage (%)
			(In Million-ton)			(In Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
54	KODARMA, D.V.C. (Jharkhand)	500	No significant fly ash was generated			No significant fly ash was generated		
55	CHINAKURI, D.P.S.C.L. (W.B.)	30	-	-	-	No significant fly ash was generated		
56	MUZAFFARPUR, K.B.U.N.L. (Bihar)	220	-	-	-	No significant fly ash was generated		
57	THAMMINAPATNAM, Meenakshi Energy Pvt. Ltd. (A.P.)	300	-	-	-	0.0072	0.0032	44.74
58	NEYVELI-II EXPN, N.L.C. Ltd. (Tamil Nadu)	250	No significant fly ash was generated			No significant fly ash was generated		
59	VALLUR, N.T.E.C.L. (Tamil Nadu)	500	No significant fly ash was generated			0.2342	0.0000	0.00
60	MOUDA, NTPC Ltd. (Maharashtra)	500	-	-	-	0.0088	0.0000	0.00
61	HARDUAGANJ, U.P.R.V.U.N.L. (U.P.)	670	-	-	-	0.0460	0.0245	53.30
62	KATGHORA, V.E.S.P.L. (Chhattisgarh)	35	-	-	-	No significant fly ash was generated		
63	BUTIBORI V.I.P. Ltd. (Maharashtra)	600	-	-	-	0.0017	0.0000	0.00
64	MAHADEV PRASAD, Adhunik Power & Natural Resources Ltd.	540	-	-	-	0.0946	0.0189	20.00
65	TIRORA, Adani Power Ltd. (Maharashtra)	1320	-	-	-	0.0979	0.0479	48.93
66	BELA, Ideal Energy Projects Ltd. (Maharashtra)	270	-	-	-	0.0015	0.0005	33.40

[*] denotes that TPS is not in the range of fly ash utilization under consideration]

It may be seen from Table-XII above that:

- (i) During the year 2011-12, out of **124** (one hundred twenty four) thermal power stations, **43** TPS have not been able to achieve the level of fly ash utilization of 60% and **8** TPS did not generate any significant fly ash.
- (ii) During the year 2012-13, out of **138** (one hundred thirty), **48** TPS have not been able to achieve the level of fly ash utilization of 60% and **6** TPS did not generate any significant fly ash.

The power stations which are not able to achieve the targets of fly ash utilization as prescribed in MoEF's Notification of 3rd November, 2009 during the years 2011-12 and 2012-13 would be required to utilize the unutilized fly ash in relation to the target for a particular year in the subsequent years in the manner prescribed in said notification and given in Para 3.1 & 3.2 above.

5.0 MODES OF FLY ASH UTILIZATION DURING THE YEAR 2011-12 AND 2012-13

The data on fly ash utilization received from Thermal Power Stations/Power Utilities for the years 2011-12 and 2012-13 has been analyzed to ascertain the major modes in which fly ash was utilized and the quantity utilized in each mode.

The major modes in which fly ash was utilized during the years 2011-12 and 2012-13 along with utilization in each mode are given in Table-XIII below:

TABLE-XIII

MAJOR MODES OF FLY ASH UTILIZATION DURING THE YEARS 2011-12 AND 2012-13

Sl. No.	Mode of utilization	Quantity of Fly Ash utilized in the mode of utilization			
		2011-12		2012-13	
		Million-ton	Percentage (%)	Million-ton	Percentage (%)
(1)	(2)	(3)	(4)	(5)	(6)
1	Cement	38.08	44.77	41.33	41.18
2	Reclamation of low lying area	14.21	16.71	11.83	11.78
3	Roads & Embankments	5.54	6.51	6.02	6.00
4	Concrete	0.63	0.74	1.03	1.03
5	Ash Dyke Raising	5.86	6.89	10.93	10.89
6	Mine filling	7.74	9.10	10.34	10.30
7	Bricks & Tiles	5.83	6.86	9.98	9.94
8	Agriculture	0.88	1.03	2.50	2.49
9	Others	6.28	7.38	6.41	6.39
Total		85.05	100	100.37	100

The pie diagrams showing the modes of utilization of fly ash during the Years 2011-12 and 2012-13 are given in Figure-1 & Figure-2 respectively below:

MODES OF FLY ASH UTILIZATION DURING 2011-12

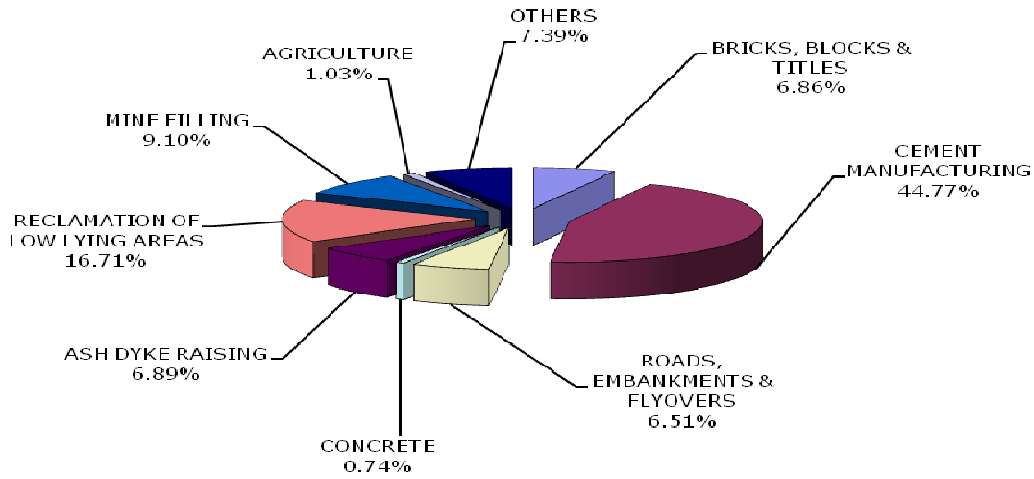


FIGURE-1

MODES OF FLY ASH UTILIZATION DURING 2012-13

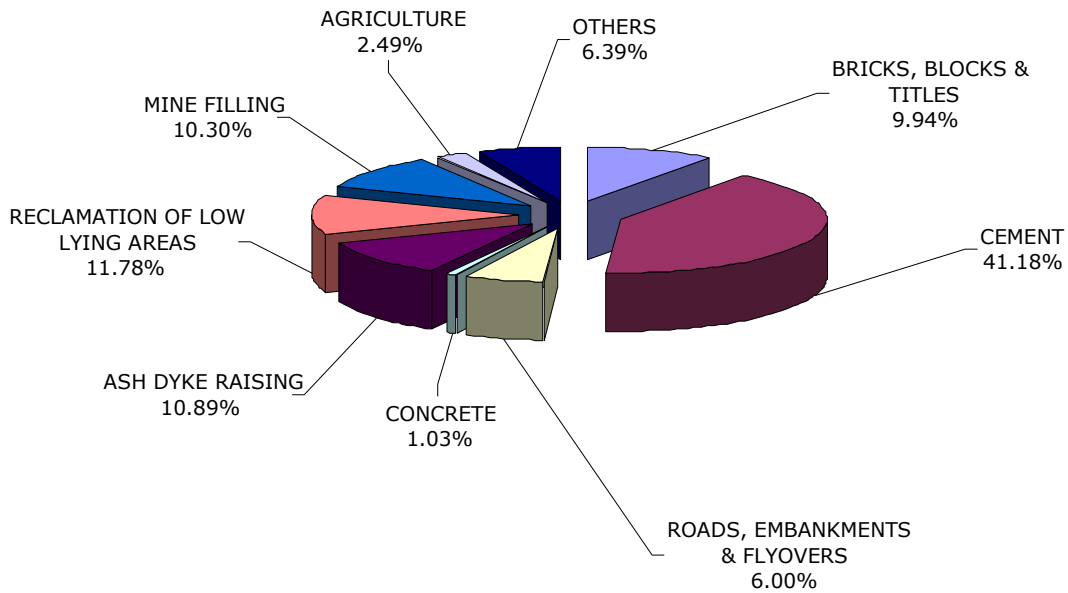


FIGURE-2

It may be seen from Table-XIII and Figures-1 & 2 above that:

- (i) During the Year 2011-12, the maximum utilization of fly ash to the extent of 44.77% of total fly ash utilized was in the Cement sector, followed by 16.71% in reclamation of low lying area, 9.10% in mine filling, 6.89% in ash dyke raising, 6.86% in making bricks & tiles, 6.51 % in roads & embankments etc.
- (ii) During the Year 2012-13, the maximum utilization of fly ash to the extent of 41.18.% of total fly ash utilized was in the Cement sector, followed by 11.78% in reclamation of low lying area, 10.89% in ash dyke raising, 10.30% in mine filling, 9.94% in making bricks & tiles, 6.00 % in roads & embankments etc.

6.0 PROGRESSIVE FLY ASH GENERATION & UTILIZATION DURING THE PERIOD FROM 1996-97 TO 2012-13

Central Electricity Authority has been monitoring the fly ash generation and its utilization at coal/lignite based thermal power stations in the country since 1996-1997. Based on data of fly ash generation and utilization received from Thermal Power Stations/Power Utilities since 1996-97, the progressive fly ash generation and its utilization for the period from 1996-97 to 2012-13 is given in Table-XIV below:

TABLE-XIV

PROGRESSIVE FLY ASH GENERATION AND ITS UTILIZATION DURING THE PERIOD FROM 1996-97 TO 2012-13

Sl. No.	Year	Fly Ash Generation (Million-ton)	Fly Ash Utilization (Million-ton)	Fly Ash Utilization in Percentage (%)
(1)	(2)	(3)	(4)	(5)
1	1996-97	68.88	6.64	9.63
2	1997-98	78.06	8.43	10.80
3	1998-99	78.99	9.22	11.68
4	1999-2000	74.03	8.91	12.03
5	2000-01	86.29	13.54	15.70
6	2001-02	82.81	15.57	18.80
7	2002-03	91.65	20.79	22.68
8	2003-04	96.28	28.29	29.39
9	2004-05	98.57	37.49	38.04
10	2005-06	98.97	45.22	45.69
11	2006-07	108.15	55.01	50.86
12	2007-08	116.94	61.98	53.00
13	2008-09	116.69	66.64	57.11
14	2009-10	123.54	77.33	62.60
15	2010-11	131.09	73.13	55.79
16	2011-12	145.41	85.05	58.48
17	2012-13	163.56	100.37	61.37

A graph showing progressive fly ash generation and its utilization for the period from 1996-97 to 2012-13 is given in Figure-3 below:

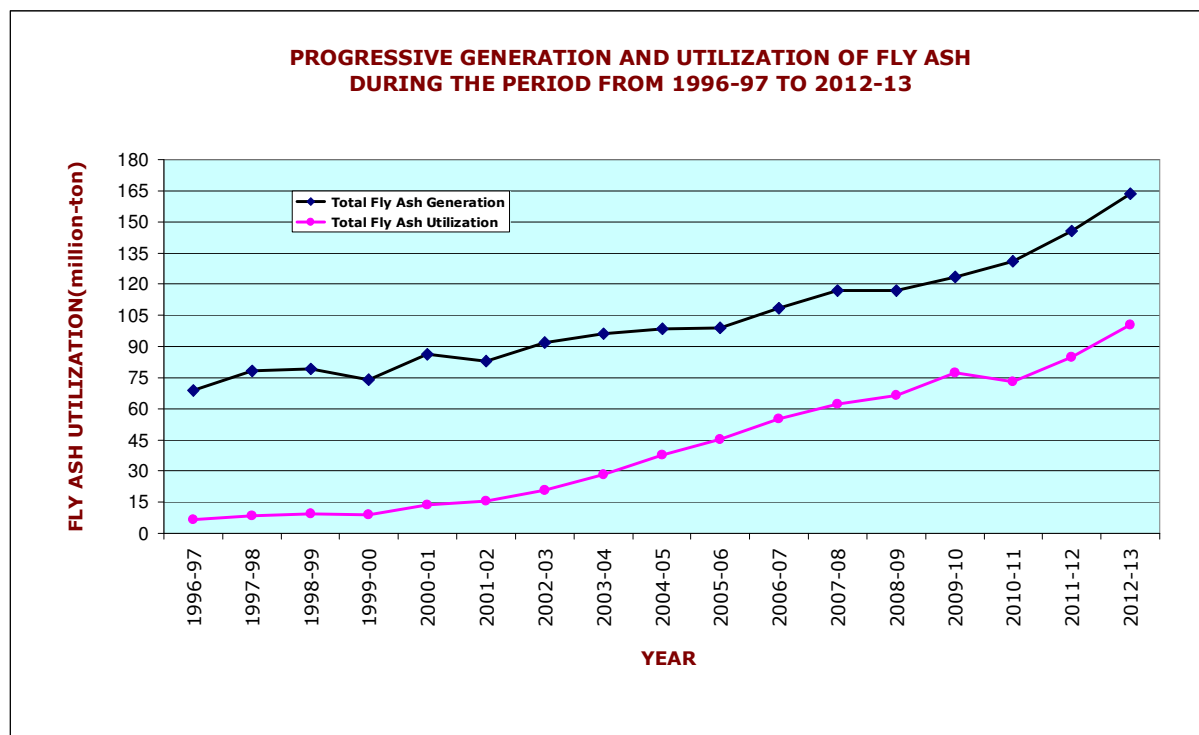


FIGURE-3

It may be seen from Table-XIV and Figure-3 above that:

- (i) The fly ash utilization has been generally increasing, both in terms of percentage and quantity over the years since 1996-97.
- (ii) Fly ash utilization in terms of percentage of total fly ash that was generated at thermal power stations in the country has increased from 9.63% in 1996-97 to the highest level of 62.60% in 2009-10 and it was about 58.48% during 2011-12 and about 61.37% during 2012-13.
- (iii) The quantity wise fly ash generation has increased from 68.88 million-ton in 1996-97 to 63.5 million-ton in 2012-13 i.e. nearly 2.5 times.
- (iv) However, the quantity wise, fly ash utilization has increased from 6.64 million-ton in 1996-97 to a level of 100.37 million ton in 2012-13 i.e. more than 15 times over the same period.

7.0 PROGRESSIVE FLY ASH UTILIZATION IN VARIOUS MODES DURING THE PERIOD FROM 1998-99 TO 2012-13

7.1 Cement Industry

Fly ash is being used by Cement Industry as a pozzolanic material in manufacturing of Portland Pozzolana Cement. It saves both precious lime stone and coal. The utilization of fly ash in manufacturing of cement is highly value added use. A graph showing progressive utilization of fly ash by Cement Industry for the period from 1998-99 to 2012-13 is given in Figure-4 below:

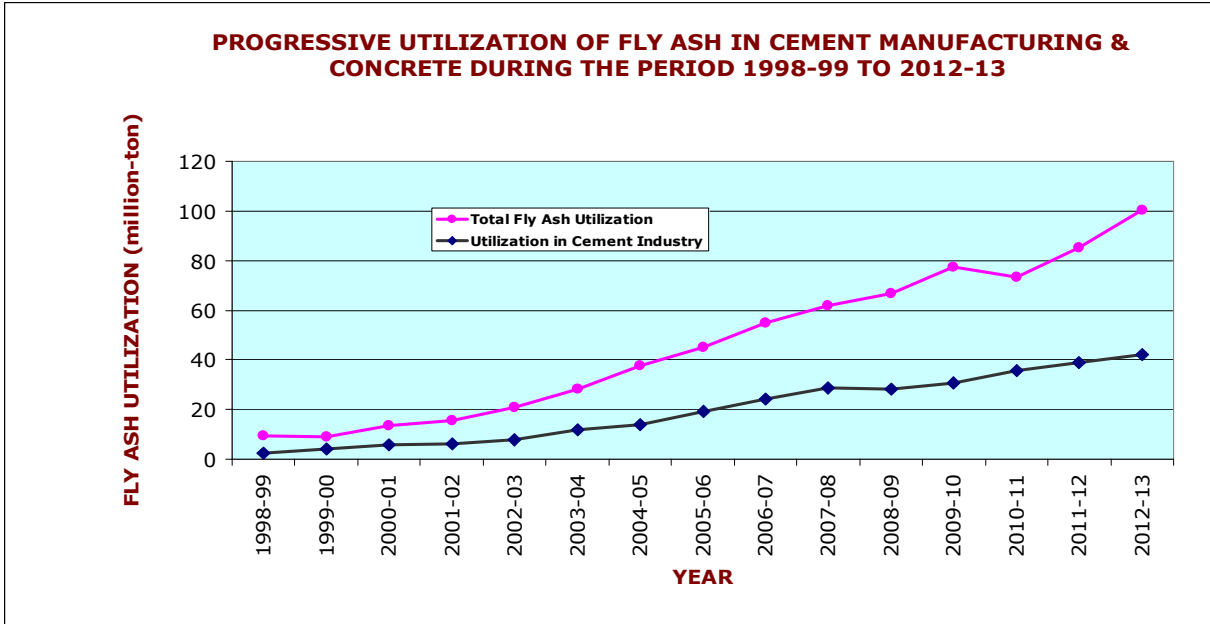


FIGURE-4

It may be seen from Figure-4 above that 2.45 million-ton of fly ash was used by Cement Industry in 1998-99 which increased to 38.08 million-ton during 2011-12 and constituted 44.77% of total fly ash utilization in the aforesaid year. During 2012-13, it was 41.33 million-ton and constituted 41.18% of total fly ash utilization in the aforesaid year.

7.2 Reclamation of Low Lying Areas

Fly ash is being used for reclamation of low lying areas which results in saving of fertile top soil. A graph showing the progressive utilization of fly ash in reclamation of low lying area for the period from 1998-99 to 2012-13 is given in Figure-5 below:

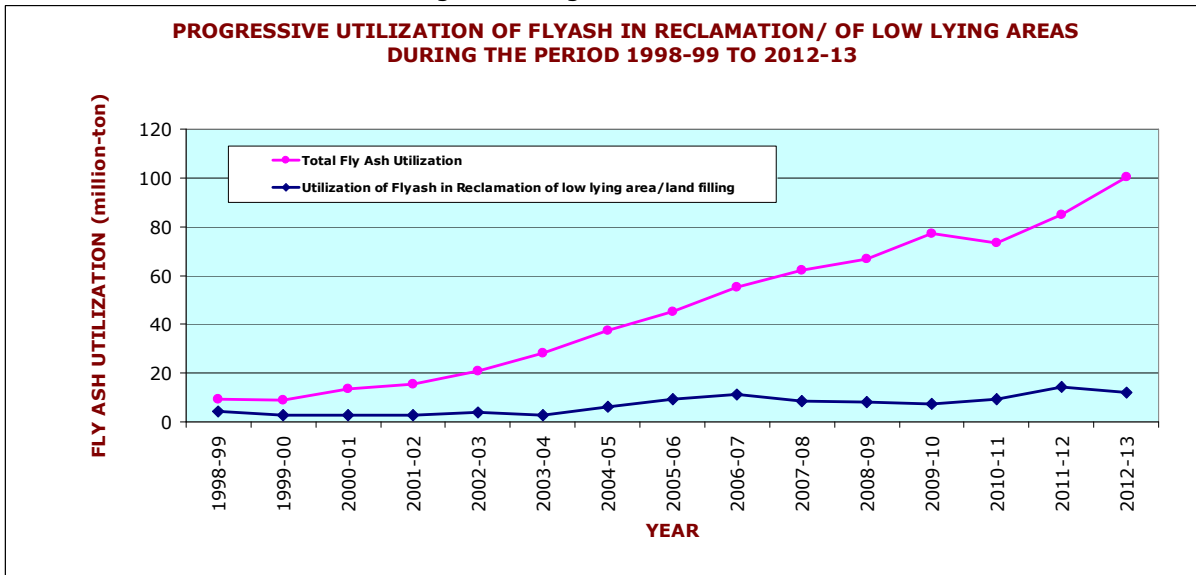


FIGURE-5

It may be seen from Figure-5 above that 4.17 million-ton of fly ash was used for reclamation of low lying area in 1998-99 which has increased to 14.21 million ton in 2011-12 and constituted 16.71% of total fly ash utilization during the aforesaid year. During the year 2012-13, the utilization of fly ash in reclamation of low lying areas was 11.83 million-ton and constituted 11.78% of total fly ash utilization during the aforesaid year.

7.3 Construction of Roads/Embankments/Flyovers and raising of Ash Dykes

Fly ash is being used in construction of roads/embankments/flyovers and the raising of ash dykes which results in saving of top fertile soil. It has a large potential for fly ash utilization. A graph showing the progressive utilization of fly ash in the construction of roads & embankments and the raising of ash dykes for the period from 1998-99 to 2012-13 is given in Figure-6 below:

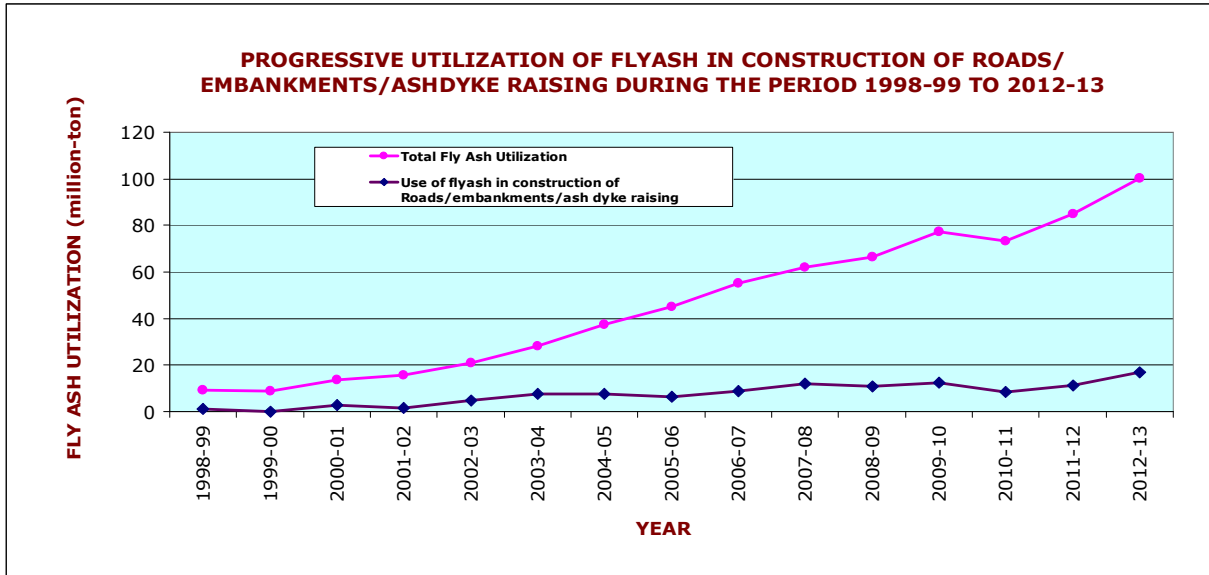


FIGURE-6

It may be seen from Figure-6 above that 1.055 million-ton of fly ash was used in the construction of roads/embankments/flyovers and raising of ash dykes etc during 1998-99 which increased to 5.54 million-ton in 2011-12 and constituted 6.51% of total fly ash utilization in the aforesaid year. During 2012-13, it was 6.02 million-ton and constituted 6.00% of total fly ash utilization in the aforesaid year.

7.4 Back Filling/Stowing of Mines

Fly ash is being used for backfilling of open cast mines and stowing of underground mines which results in saving of top fertile soil and precious river sand. It has large potential for fly ash utilization especially for pit head thermal power stations. A graph showing the progressive utilization of fly ash in backfilling/stowing of mines for the period from 1998-99 to 2012-13 is given in Figure-7:

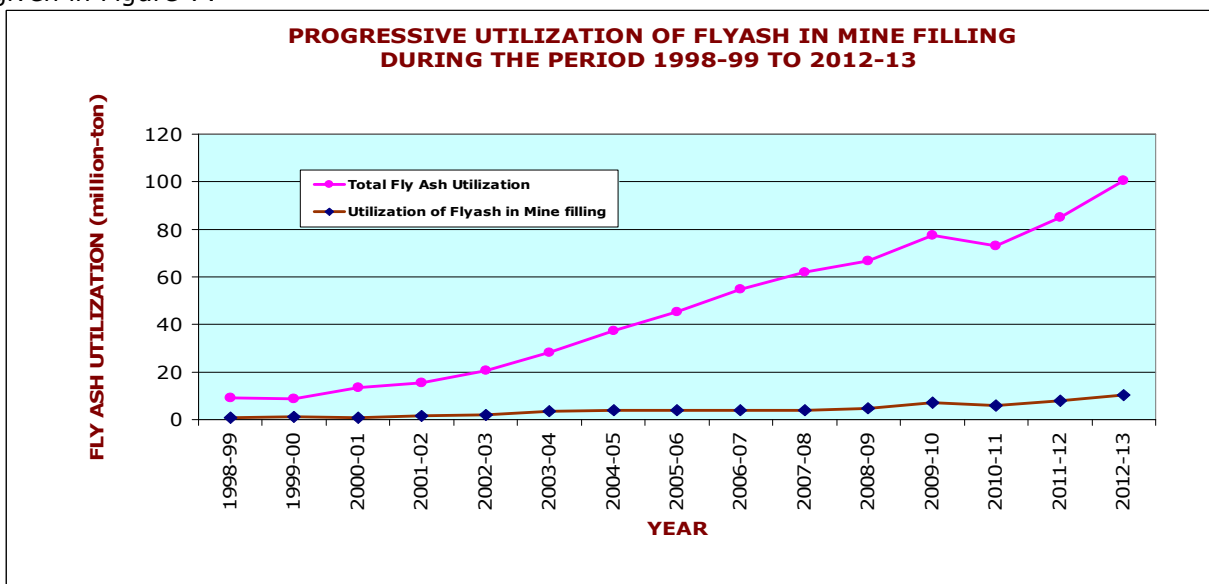


FIGURE-7

It may be seen from Figure-7 above that 0.65 million-ton of fly ash was used for backfilling/stowing of open cast and underground mines during 1998-99 which increased to 7.74 million-ton in 2011-12 and constituted 9.10% of total fly ash utilization in the aforesaid year. In the Year 2012-13, it was 10.34 million-ton and constituted 10.30% of total fly ash utilization in the aforesaid year.

7.5 Building Materials like Bricks, Blocks and Tiles etc.

Fly ash is being used in manufacturing of fly ash based building products like bricks, blocks, tiles etc which results in saving of fertile top soil. Fly ash based bricks/blocks/tiles are as good as clay based conventional building products. It has substantial potential of fly ash utilization especially for thermal power stations located near load centers. A graph showing progressive utilization of fly ash in making of fly ash based building products for the period from 1998-99 to 2012-13 is given in Figure -8 below:

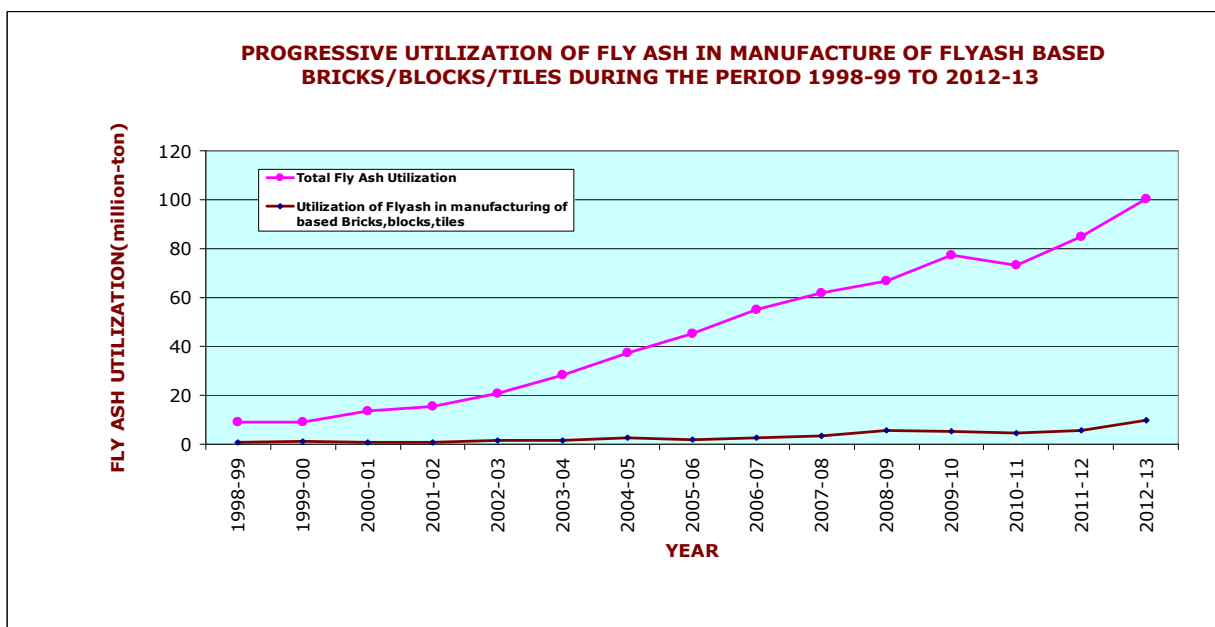


FIGURE-8

It may be seen from Figure-8 above that 0.70 million-ton of fly ash was used for making of fly ash based bricks/blocks/tiles etc during 1998-99 which increased to 5.83 million-ton in 2011-12 and constituted 6.86% of total fly ash utilization in the aforesaid year. In 2012-13, it was 9.98 million-ton and constituted 9.94% of total fly ash utilization in the aforesaid year.

7.6 Agriculture

Fly ash is being used as manure in agricultural sector as it has many micronutrients. The progressive utilization of fly ash in Agricultural Sector for the period from 1998-99 to 2012-13 is given in Figure-9.

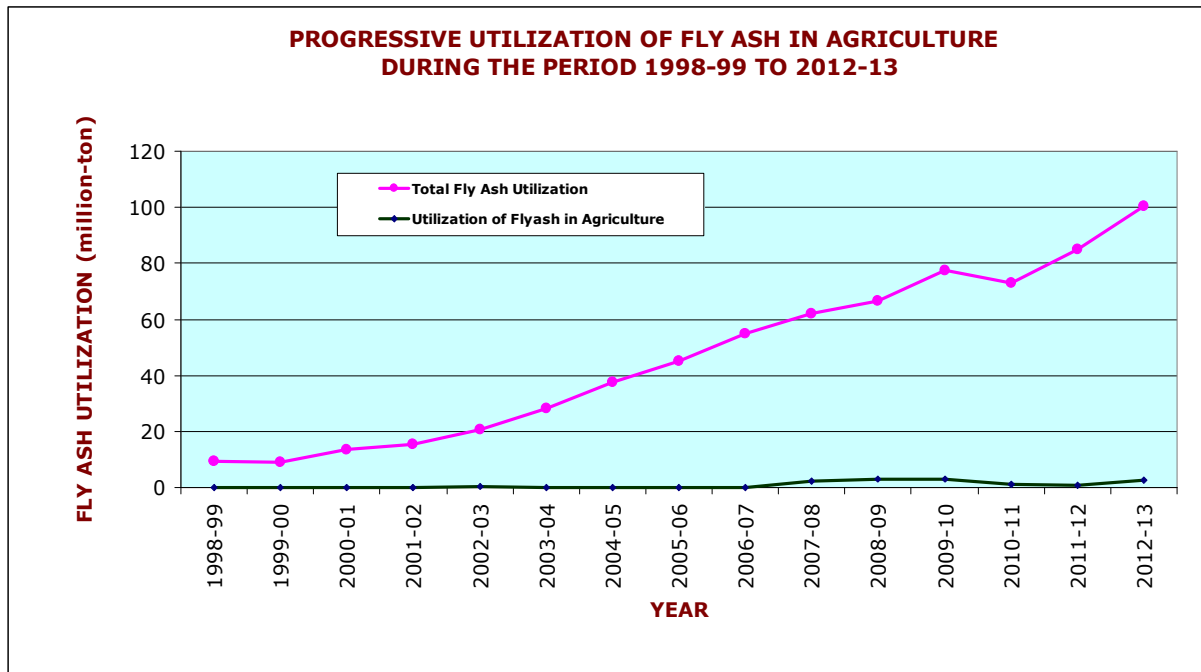


FIGURE-9

It may be seen from Figure-9 above that 0.126 million ton of fly ash was used in agricultural sector during 1998-99 which increased to 0.88 million ton in 2011-12 and constituted about 1.03% of total fly ash utilization in the aforesaid year. In 2012-13, it was 2.50 million ton and constituted 2.49% of total fly ash utilization in the aforesaid year.

8.0 CONCLUSIONS & RECOMMENDATIONS

1. The highest level of fly ash utilization of about 62.6% was achieved in the year 2009-10 and it was about 58.48% in the year 2011-12 and about 61.37% in the year 2012-13. It would require a lot of efforts to achieve the target of 100% utilization of fly ash as stipulated in MoEF's Notification of 3rd November, 2009.
2. While according environmental clearance to Thermal Power Projects, MoEF has been recently stipulating conditions to the effect that fly ash shall not be used in filling of low lying areas, in agriculture and in backfilling/stowing of mines etc. These conditions are contrary to provisions in MOEF's own Notification of 3rd November, 2009 on fly ash utilization and are going to have adverse impact on the pace of fly ash utilization in the country. Many organizations including NTPC have raised their concern on these conditions. These conditions may have to be suitably reviewed by MoEF so that the target of 100% utilization of fly ash as mandated in MoEF's Notification of 3rd November, 2009 could be achieved.
3. The utilization of fly ash in mine filling, in making fly ash based building products and in the construction of roads & embankments has been less than 10% or around 10% in each of these areas of fly ash utilization. These areas have large potential of fly ash utilization which needs to be explored for increasing the overall utilization of fly ash in the country.
4. A few strategies which need to be adopted to further increase the utilization level of fly ash are given below:
 - Renovation and modernization of coal/lignite based Thermal Power Station needs to include the technological advancement required to ensure development of dry fly ash collection, storage and disposal facilities so that fly ash in dry form could be made

available to its users. Renovation and modernization should also include a marketing strategy for the development of fly ash based industries and making available fly ash and fly ash based building products in the nearby markets.

- The states and districts where thermal power stations are located need to be sensitized to the need for utilization of fly ash and fly ash based building products and take necessary measures to promote them in the construction of buildings, highways/roads/flyovers and other infrastructure projects. Measures can include policy intervention, planning strategies, fiscal incentives, recognizing specific efforts etc.
- Use of fly ash based building products like fly ash based bricks, blocks, tiles etc. by both Govt. and Public & Private Construction agencies at Central and State levels is required to be ensured especially in construction works within a radius of 100km of any coal/lignite based thermal power station as mandated in MoEF's Notification of 3rd November, 2009. The government agencies responsible for approval of building plans may have to ensure stipulation of a condition in their approval to the effect that only fly ash based building products like bricks/blocks/tiles etc shall be used in the construction of buildings as prescribed in MoEF's Notification of 3rd November, 2009 within a prescribed distance of any thermal power station especially in the construction of large office/commercial buildings and housing projects being developed both in government and private sectors.
- Use of fly ash in the construction of roads, road embankments and flyovers is well established and is slowly picking up. However, its potential is yet to be fully utilized. The use of fly ash in these projects within a radius of 100 km of any thermal power station as mandated in MoEF's Notification of 3rd November, 2009 has to be ensured right from project formulation stage and included in tender documents by having a prior tie up with the concerned thermal power station for their requirement. There is a need to sensitize National Highway Authority of India, CPWD, State PWDs and other agencies both at Central and State levels that are involved in the construction of highways, roads, flyovers etc in this matter.
- Use of fly ash in backfilling/stowing of closed/abandoned/running open cast and underground mines has large potential for utilization of fly ash, especially for pit head thermal power stations which otherwise have limited avenues for fly ash utilization. However, its potential is yet to be fully utilized. The use of fly ash in back filling/stowing of open cast and underground mines within a radius of 50 km of any thermal power station as mandated in MoEF's Notification of 3rd November, 2009 has to be ensured right from initial stage of preparation of mine development plan. Inclusion of fly ash and bottom ash as backfill materials in the guidelines for preparation of mine closure plan is required for which Ministry of Coal and other concerned Ministries/Authorities have to take necessary action. There are environmental and safety concerns for use of fly ash along with OB material for back filling of operating open cast mines. These concerns need to be addressed.
- Use of fly ash in the construction of embankments for laying railway lines has also significant potential for large scale utilization of fly ash. There are safety concerns in use of fly ash in the construction of railway embankments having passenger traffic. There is a need to address these concerns by carrying out necessary studies by organizations like RDSO, a research organization under the Ministry of Railways.
- Thermal Power Stations have to ensure the utilization of fly ash and fly ash based building products within the thermal power station for the development of infrastructure like construction of buildings & roads, reclamation of low lying areas, the raising of ash dyke etc.
- The use of fly ash in Agriculture and waste land development has large potential. There are reservations in various quarters for use of fly ash in agriculture because of presence

of heavy metals and radioactive elements in fly ash inspite of findings of research projects funded by Fly Ash Unit under Ministry of Science & Technology and studies carried out by other organizations to any adverse effects. However, these concerns are required to be addressed for increasing the fly ash utilization.

- A large number of technologies have been developed for gainful utilization and safe management of fly ash through research projects funded by Fly Ash Mission/ Fly Ash Unit under Ministry of Science & Technology, GOI since 1994. Propagation of these technologies by establishing 'Self sustaining technology demonstration centers' would facilitate and accelerate the fly ash utilization in the country.
- Thermal Power Stations have to explore and promote all possible modes of fly ash utilization at their respective thermal power station for increasing the fly ash utilization in the country in line with MoEF's notification of 3rd November, 2009.
- There is a need to encourage 'Industry-Institute Interactions' for entrepreneur development, creating awareness and organizing training programmes and workshops.
- Induction of 'Fly Ash' as a subject in academic curriculum of Engineering and Architecture is needed.

* * *

**FLY ASH GENERATION AND ITS UTILIZATION AT COAL/LIGNITE BASED THERMAL POWER STATIONS IN THE COUNTRY FOR THE YEAR 2011-12 (FROM APRIL, 2011 to MARCH, 2012)
(POWER STATION WISE)**

Sl. No.	Name of TPS	Power Utility & State	Installed Capacity	FLY ASH GENERATION AND ITS UTILIZATION					MODES OF UTILIZATION										Total Utilization	
				Coal consumed	Ash content of coal	Fly Ash Generation	Fly Ash Utilization	% age Utilization	In making of Fly Ash based Bricks/Blocks/Tiles etc.	In manufacture of Portland Pozzolana Cement	In construction of Highways & Roads including Flyovers	Part replacement of cement in concrete	In Hydro Power Sector as part replacement of cement in concrete	In Ash dyke raising	In reclamation of low lying Area	In Mine filling	In Agriculture / Waste land Development	Others		
				(MW)	(Million-ton)	% age	(Million-ton)	(Million-ton)	%	(10)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)		(Million-ton)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	
1	CHANDRAPUR	A.P.G.P.C.L. (Assam)	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	KOTHAGUDEM	A.P. GENCO (Andhra Pradesh)	720	4.3892	45.82	2.011250	0.119107	5.92	0.014950	0.084486	-	-	-	-	-	-	-	-	0.019667	0.119103
3	KOTHAGUDEM-V		500	2.6800	33.89	0.909000	0.200000	22.00	0.060000	0.140000	-	-	-	-	-	-	-	-	-	0.200000
4	RAMAGUNDAM 'B'		62.50	0.3260	42.86	0.139800	0.074800	53.51	0.038900	0.035900	-	-	-	-	-	-	-	-	-	0.074800
5	RAYALSEEMA		1050	5.4853	41.29	2.265034	1.565047	69.10	0.573061	0.991780	-	-	-	-	-	-	-	-	-	1.564841
6	Dr. N.T.R (Vijawada)		1760	9.8020	41.19	4.037000	2.420000	59.95	0.642000	1.249000	0.163000	0.040000	-	-	0.170000	-	-	0.156000	2.420000	
7	KAKATIA		500	1.4871	41.70	0.620610	0.375979	60.58	0.001407	0.154836	-	-	-	-	0.219736	-	-	-	0.375979	
8	KASAI PALLI	A.C.B.P.L. (Chhattishgarh)	135	0.2027	56.80	0.114287	0.095772	83.80	0.017534	-	-	-	-	0.009415	0.068822	-	-	-	0.095771	
9	INDIRA GANDHI	A.P.C.P.L. (Haryana)	1000	2.4279	36.84	0.716531	0.173615	24.23	-	-	-	-	-	-	-	-	-	0.173615	0.173615	
10	Mundra TPS	A.P.L. (Gujrat)	4620	7.1370	7.58	0.541000	0.541000	100.00	-	0.229000	0.080000	-	-	0.027000	0.204000	-	-	-	0.540000	
11	Mihan	A.M.N.E.P.L. (Maharashtra)	246	0.7143	43.50	0.311030	0.023470	7.55	0.023020	0.000441	-	-	-	-	-	-	-	-	0.023461	
12	BARAUNI	B.S.E.B. (Bihar)	110	0.1663	48.34	0.080397	0.098840	122.94	0.054000	-	0.015000	-	-	-	-	-	-	0.029841	0.098841	
13	Barkhera	B.E.P.L. (U.P.)	90	0.0849	34.77	0.029495	0.025088	85.06	-	0.010000	-	-	-	0.015000	-	-	-	-	0.025000	
14	Khambar Khera		90	0.1175	35.27	0.041196	0.034705	84.24	-	0.019000	-	-	-	-	0.016103	-	-	-	0.035103	
15	Kundarki		90	0.0301	36.60	0.011036	0.009320	84.45	-	0.005734	-	-	-	-	0.003585	-	-	-	0.009319	
16	Maqsoodpur		90	0.0654	36.14	0.023532	0.019863	84.41	-	0.010542	-	-	-	-	0.009321	-	-	-	0.019863	
17	Utraula		90	0.0218	36.71	0.007928	0.006739	85.00	-	0.003663	-	-	-	-	0.003075	-	-	-	0.006738	
18	B.B.G.S.	C.E.S.C. (West Bengal)	750	3.5680	36.28	1.463000	1.463000	100.00	0.018000	1.111000	-	-	-	-	0.334000	-	-	-	1.463000	
19	S.G.S.		135	0.7270	31.59	0.263000	0.263000	100.00	0.002000	0.221000	-	-	-	-	0.040000	-	-	-	0.263000	
20	T.G.S.		240	1.0910	27.30	0.322000	0.322000	100.00	0.044000	0.016000	0.051000	-	-	-	0.211000	-	-	-	0.322000	
21	New Cossipore		160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
22	Mundra UMPP	C.G.P.L. (Gujarat)	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
23	KORBA (WEST)	C.S.P.G.C.L. (Chhattishgarh)	840	4.7011	33.47	1.573700	0.627900	39.90	0.002700	-	-	-	-	0.597700	0.027500	-	-	-	0.627900	
24	DSPM		500	2.2501	43.66	0.987153	0.000000	-	-	-	-	-	-	-	-	-	-	-	-	
25	KORBA (EAST)		440	2.7738	43.72	0.970100	0.219800	22.66	-	-	-	-	-	0.206800	-	-	0.013000	-	0.219800	
26	BOKARO 'B'	D.V.C. (Jharkhand)	630	3.0080	48.87	1.490807	1.748890	117.31	-	0.031172	-	-	-	-	-	1.717718	-	-	1.748890	
27	CHANDRAPURA		890	2.3093	50.79	1.173304	0.757417	64.55	0.006190	-	-	-	-	-	0.751231	-	-	-	0.757421	
28	DURGAPUR	D.V.C.(West Bengal)	350	1.5623	45.55	0.717286	0.495629	69.10	0.002296	-	-	-	-	-	0.493334	-	-	-	0.495630	
29	MEJIA		1840	7.2333	45.49	3.292000	2.198000	66.77	0.036000	0.579000	-	-	-	-	1.585000	-	-	-	2.200000	
30	Durgapur Steel		500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
31	Kodarma	D.V.C. (Jharkhand)	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
32	D.P.L	D.P.L. (West Bengal).	641	1.5913	43.41	0.690792	0.605082	87.59	0.010699	0.034398	0.071953	-	-	-	-	-	0.488032	-	0.605082	
33	Chinakuri	D.P.S.C.L. (West Bengal)	30.00	0.0415	36.88	0.015298	0.014863	97.16	-	-	-	-	-	-	-	0.014863	-	-	0.014863	
34	Essar Power Gujrat Ltd.Salaya	E.P.G.L. (Gujarat)	600	0.0542	66.76	0.003617	0.003617	100.00	-	0.001428	-	-	-	0.000993	0.000474	-	0.000722	-	0.003617	
35	SURAT LIGNITE	G.T.P.C.L.(Gujarat)	500	2.7167	16.87	0.458000	0.458236	100.05	0.383970	-	0.033208	-	-	-	-	0.041096	-	-	0.458274	
36	AKRIMOTA	G.M.D.C.L.(Gujarat)	250	0.8130	20.97	0.170456	0.187094	109.76	-	0.004790	-	-	-	-	0.182000	-	-	-	0.186790	
37	GANDHINAGAR	G.S.E.C.L. (Gujarat)	870	3.7180	33.48	1.245000	0.987000	79.28	0.015829	0.873836	-	0.074518	-	-	-	-	0.022890	-	0.987072	
38	KUTCH LIGNITE		290	1.8417	14.96	0.275000	0.276000	100.36	-	-	-	-	-	-	-	0.276000	-	-	0.276000	
39	SIKKA		240	0.8320	41.88	0.348000	0.183000	52.59	0.076588	0.106831	-	-	-	-	-	-	-	-	0.183419	
40	UKAI		850	4.0300	35.90	1.453000	0.523000	35.99	0.038000	0.268000	-	-	-	-	-	-	-	0.217000	0.523000	
41	WANAKBORI		1470	7.3100	39.78	2.916000	1.039000	35.63	-	0.788000	-	-	-	-	-	-	-	0.250000	1.038000	

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Sl. No.	Name of TPS	Power Utility & State	Installed Capacity	FLY ASH GENERATION AND ITS UTILIZATION						MODES OF UTILIZATION									Total Utilization	
				Coal consumed	Ash content of coal	Fly Ash Generation	Fly Ash Utilization	% age Utilization	In making of Fly Ash based Bricks/Blocks/Tiles etc.	In manufacture of Portland Pozzolana Cement	In construction of Highways & Roads including Flyovers	Part replacement of cement in concrete	In Hydro Power Sector as part replacement of cement in concrete	In Ash dyke raising	In reclamation of low lying Area	In Mine filling	In Agriculture / Waste land Development	Others		
				(Million-ton)	% age	(Million-ton)	(Million-ton)	%	(10)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	
42	HISAR	H.P.G.C.L.(Haryana)	1200	2.9180	37.68	1.099533	0.031911	2.90	0.000310	0.031601	-	-	-	-	-	-	-	-	-	0.031911
43	YAMUNANAGAR		600	2.1100	32.17	0.847000	0.348000	41.09	-	0.345000	-	-	-	-	-	-	-	-	0.003000	0.348000
44	PANIPAT		1367.8	7.8235	41.71	3.263060	1.406310	43.10	-	1.406310	-	-	-	-	-	-	-	-	-	1.406310
45	RAJGHAT	I.P.G.C.L. (Delhi)	135	0.6796	33.52	0.227836	0.172473	75.70	-	0.160793	0.011680	-	-	-	-	-	-	-	-	0.172473
46	Mahatma Gandhi	J.H.P.L. (Haryana)	1320	0.1197	34.37	0.041151	0.041151	100.00	-	0.023140	-	-	-	0.013275	-	-	-	0.004736	-	0.041151
47	O.P.Jindal	J.P.L. (Chhattisgarh)	1000	5.2440	36.92	1.935000	1.136000	58.71	0.016000	-	-	-	-	-	0.264000	0.856000	-	-	-	1.136000
48	PATRATU	J.S.E.B. (Jarkhand)	770	0.4040	37.40	0.151000	0.011700	7.75	0.004800	0.006000	-	-	-	-	-	0.001000	-	-	-	0.011800
49	RATNAGIRI	JSW Energy Limited (Maharashtra)	1200	3.6300	6.55	0.225000	0.176000	78.22	0.077000	0.009000	-	0.090000	-	-	-	-	-	-	-	0.176000
50	VIJAYANAGAR	JSW Energy Limited (Karnataka)	860	2.2870	9.72	0.222300	0.219100	98.56	0.017000	0.200000	-	-	-	-	-	-	-	-	-	0.217000
51	BELLARY	K.P.C.L. (Karnataka)	500	2.1594	25.11	0.542207	0.228301	42.11	-	0.228301	-	-	-	-	-	-	-	-	-	0.228301
52	RAICHUR		1720	7.4900	34.58	1.857000	0.955000	51.43	0.138000	0.817000	-	-	-	-	-	-	-	-	-	0.955000
53	Muzaffarpur TPS	K.B.U.N.L. (Bihar)	220	0.1900	45.42	0.086289	0.086289	100.00	-	-	-	-	-	-	0.086289	-	-	-	-	0.086289
54	Amarkantak TPS	Lanco Power Ltd. (Chhattisgarh)	600	2.8800	42.20	0.974000	0.236000	24.23	-	0.031000	-	-	-	-	-	-	-	-	0.205000	0.236000
55	Anpara 'C'	Lanco Power Ltd. (U.P.)	1200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	Maithon RBTPP	M.P.L. (Jharkhand)	1050	0.7779	45.64	0.355000	0.001274	0.36	-	0.001274	-	-	-	-	-	-	-	-	-	0.001274
57	SANJAY GANDHI	M.P.P.G.C.L. (M.P.)	1340	5.8600	37.73	1.661000	1.568000	94.40	0.001000	1.567000	-	-	-	-	-	-	-	-	-	1.568000
58	SATPURA		1142.5	5.5305	39.19	2.167566	0.032842	1.52	0.000690	0.008252	0.000400	-	-	0.023500	-	-	-	-	-	0.032842
59	AMARKANTAK		450	1.5100	36.02	0.545000	0.060000	11.01	-	0.059500	-	-	-	-	-	-	-	-	-	0.059500
60	BHUSAWAL	M.S.P.G.C.L. (Maharashtra)	420	2.1612	34.01	0.734929	0.480557	65.39	0.133231	0.289657	-	-	-	-	-	-	0.006594	0.051075	-	0.480557
61	CHANDRAPUR		2340	10.7816	42.81	4.615747	1.124495	24.36	0.056419	1.059695	-	0.000600	-	-	-	-	-	0.007782	-	1.124496
62	KHAPARKHEDA		840	4.8125	30.76	1.480110	1.550067	104.73	0.471115	0.248527	0.553280	-	-	0.215000	-	-	-	-	0.062145	1.550067
63	KORADI		1100	2.8890	40.22	1.208000	0.525000	43.46	0.303000	0.031770	0.183000	-	-	0.007000	-	-	-	-	-	0.524770
64	NASHIK		630	3.3900	37.53	1.276006	1.038101	81.36	0.392200	0.490711	-	-	-	-	0.109900	-	0.045290	-	-	1.038101
65	PARAS		500	2.2493	40.96	0.921236	0.489005	53.08	0.283995	0.205010	-	-	-	-	-	-	-	-	-	0.489005
66	PARLI		1130	0.4179	41.42	0.173100	0.119100	68.80	0.035700	0.050900	-	-	-	-	-	-	0.001870	0.030600	-	0.119070
67	NEVELI - I	N.L.C. Ltd. (Tamil Nadu)	600	5.8850	5.67	0.250600	0.177910	70.99	0.013915	0.161600	-	-	-	-	-	-	-	-	0.002390	0.177905
68	NEVELI - I EXPN		420	3.1387	7.11	0.227000	0.222100	97.84	0.036000	0.143500	-	-	-	-	-	0.042500	-	-	-	0.222000
69	NEVELI - II		1470	12.1390	7.41	0.899000	0.421000	46.83	0.033000	0.147000	-	-	-	0.083000	-	0.154000	0.003800	-	-	0.420800
70	Neyveli-II Exp		250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	Barsingar-Lignite	N.L.C. Ltd. (Rajasthan)	250	0.6413	18.42	0.118105	0.118104	100.00	0.000116	0.084891	-	-	-	-	-	-	0.033096	-	-	0.118103
72	Bhilai	N.S.P.C.L. (Chhattisgarh)	500	2.7488	41.26	1.134225	0.325209	28.67	0.034751	0.289458	-	-	-	-	0.001000	-	-	-	-	0.325209
73	Vallur	N.T.E.C.L. (Tamil Nadu)	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.000000
74	RAMAGUNDAM	N.T.P.C. (Andhra Pradesh)	2600	13.0810	32.55	4.294000	2.608000	60.74	0.011000	1.606000	0.015000	-	-	0.182000	-	-	-	0.794000	-	2.608000
75	SIMHADRI		1500	7.6700	36.69	2.816000	1.690000	60.01	-	0.472000	0.172000	-	-	0.647000	0.002000	-	-	0.398000	-	1.691000
76	KAHALGAON	NTPC Ltd. (Bihar)	2340	11.5260	34.00	3.919000	0.960000	24.50	0.006000	0.151000	-	-	-	0.495000	0.303000	-	-	0.005000	-	0.960000
77	KORBA	NTPC Ltd. (Chhattisgarh)	2600	13.2340	40.72	5.407000	3.744000	69.24	0.020000	0.167000	-	-	-	0.678000	2.879000	-	-	-	-	3.744000
78	SIPAT		1660	7.1840	36.08	2.615000	0.322000	12.31	-	0.317000	-	-	-	-	0.004000	-	-	-	-	0.321000
79	BADARPUR	NTPC Ltd. (Delhi)	705	4.2120	30.00	1.264000	1.101000	87.10	0.002000	0.605000	0.482000	-	-	-	0.013000	-	-	-	-	1.102000
80	VINDHYACHAL	NTPC Ltd. (M.P.)	3260	18.0040	34.53	6.247000	2.895000	46.34	0.011000	0.776000	-	-	-	0.444000	0.410000	-	-	1.254000	-	2.895000
81	TALCHAR(KAN)	NTPC Ltd. (Odisha)	3000	17.1040	36.47	6.235000	1.794000	28.77	0.022000	0.079000	-	-	-	1.234000	0.120000	-	-	0.340000	-	1.795000
82	TALCHAR(TPS)		460	3.1000	38.50	1.193000	1.193000	100.00	0.004000	0.020000	-	-	-	-	-	1.168000	-	-	-	1.192000

**FLY ASH GENERATION AND ITS UTILIZATION AT COAL/LIGNITE BASED THERMAL POWER STATIONS IN THE COUNTRY FOR THE YEAR 2011-12 (FROM APRIL, 2011 to MARCH, 2012)
(POWER STATION WISE)**

Sl. No.	Name of TPS	Power Utility & State	Installed Capacity	FLY ASH GENERATION AND ITS UTILIZATION						MODES OF UTILIZATION									Total Utilization
				Coal consumed	Ash content of coal	Fly Ash Generation	Fly Ash Utilization	% age Utilization	In making of Fly Ash based Bricks/Blocks/Tiles etc.	In manufacture of Portland Pozzolana Cement	In construction of Highways & Roads including Flyovers	Part replacement of cement in concrete	In Hydro Power Sector as part replacement of cement in concrete	In Ash dyke raising	In reclamation of low lying Area	In Mine filling	In Agriculture / Waste land Development	Others	
				(MW)	(Million-ton)	% age	(Million-ton)	(Million-ton)	%	(10)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	(Million-ton)	
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	
83	RIHAND	NTPC Ltd. (U.P.)	2000	11.0560	28.20	3.119000	1.892000	60.66	0.002000	0.082000	-	-	-	0.293000	1.515000	-	-	-	1.892000
84	SINGRAULI		2000	11.2020	33.87	3.793000	2.324000	61.27	0.003000	0.310000	-	-	-	0.025000	1.009000	-	-	0.978000	2.325000
85	UNCHAHAHAR		1050	5.9870	42.86	2.573000	1.932000	75.09	0.001000	1.605000	0.008000	-	-	-	0.050000	-	-	0.268000	1.932000
86	TANDA		440	3.0400	44.39	1.360000	0.846000	62.21	0.004000	0.298000	-	-	-	0.222000	0.046000	-	-	0.276000	0.846000
87	DADRI		1820	8.8560	34.00	3.010000	2.247000	74.65	0.002000	1.658000	0.158000	-	-	-	0.429000	-	-	-	2.247000
88	FARAKKA	NTPC Ltd. (W.B.)	2100	6.9900	31.51	2.207000	1.981000	89.76	0.007000	0.918000	0.963000	-	-	-	0.093000	-	-	-	1.981000
89	IB VALLEY	O.P.G.C.L. (Odisha)	420	2.5729	40.70	1.047806	0.175425	16.74	0.010734	0.000210	-	-	-	0.038400	0.125980	-	-	0.000101	0.175425
90	BATHINDA	P.S.P.C.L. (Punjab)	440	1.3889	33.58	0.466425	0.234728	50.32	0.012758	0.221970	-	-	-	-	-	-	-	-	0.234728
91	LEHRA MOHABAT		920	4.5388	31.10	1.411315	1.148164	81.35	0.000680	1.051746	-	0.054068	-	-	0.041667	-	-	-	1.148161
92	ROPAR		1260	6.1529	33.04	1.528438	1.437345	94.04	0.005785	1.421655	-	0.009903	-	-	-	-	-	-	1.437343
93	KOTA	R.R.V.U.N.L. (Rajasthan)	1240	6.4826	31.29	2.028371	2.106950	103.87	0.188158	1.785527	0.059400	0.020952	-	-	-	-	0.007396	0.044662	2.106950
94	SURATGARH		1500	6.9202	30.48	2.109950	1.727470	81.87	0.132292	1.537327	0.049541	-	-	-	0.008260	-	-	-	1.727420
95	Chhabra		500	1.6817	34.33	0.577359	0.557505	96.56	0.221072	0.336343	-	-	0.000090	-	-	-	-	-	0.557505
96	Giral		250	0.5772	31.71	0.183069	0.183069	100.00	0.000600	0.000000	-	-	-	-	-	0.182469	-	-	0.183069
97	Jalpa Kapurdi	R.W.P.L. (Rajasthan)	540	1.6376	12.01	0.207275	0.114378	55.18	0.001857	0.012050	-	0.005522	-	-	0.094948	-	-	-	0.114377
98	Rosa Phase-I	R.P.S.C.L. (U.P.)	1200	2.8084	30.62	0.859928	0.077935	9.06	0.001434	0.069600	-	0.006902	-	-	-	-	-	-	0.077936
99	DAHANU	Reliance Infrastructure Ltd. (Maharashtra)	500	2.8060	27.75	0.779000	0.608000	78.05	0.000817	-	-	-	0.280000	0.307000	-	-	-	0.019540	0.607357
100	Sterlite	S.E.L. (Odisha)	1800	5.0990	42.85	2.185365	0.463860	21.23	0.000205	-	0.085613	-	-	0.084000	0.294042	-	-	-	0.463860
101	Simhapuri	S.E.P.L. (A.P.)	1500	0.0136	9.36	0.001275	0.001020	80.00	0.000714	0.000306	-	-	-	-	-	-	-	-	0.001020
102	CUDDALORE	ST-CMS (Tamil Nadu)	250	1.9269	7.50	0.144583	0.130477	90.24	-	0.112122	-	-	-	-	-	0.018000	-	-	0.130122
103	SVPL	S.V.P.P.L. (Chhattisgarh)	63	0.0648	51.56	0.033416	0.033416	100.00	0.000750	-	0.001750	-	-	0.028416	0.002500	-	-	-	0.033416
104	JOJOBBERA	T.P.CO. (Jarkhnad)	427.5	2.0071	44.53	0.893840	0.672091	75.19	0.000850	0.389910	-	0.005850	-	-	0.274060	0.001420	-	-	0.672090
105	TROMBAY	T.P.CO. (Maharashtra)	750	2.5680	2.81	0.072200	0.072200	100.00	0.005000	-	0.053000	-	-	-	-	-	-	0.014200	0.072200
106	SABARMATI	Torrent Power Ltd. (Gujarat)	400	1.8803	0.00	0.470000	0.656500	139.68	0.004500	0.348000	-	-	-	-	-	0.304000	-	-	0.656500
107	TENUGHAT	T.V.N.L. (Jarkhnad)	420	1.5416	40.00	0.616654	0.583801	94.67	-	-	-	-	-	-	0.583801	-	-	-	0.583801
108	ENNORE	T.N.G & D. Corporation (Tamil Nadu)	450	1.0574	40.90	0.432427	0.414777	95.92	0.034629	0.086026	0.062784	-	-	-	-	-	-	0.231338	0.414777
109	METTUR		840	4.8877	33.80	1.649742	2.737220	165.92	0.436732	2.300485	-	-	-	-	-	-	-	-	2.737217
110	NORTH CHENNAI		630	3.0660	31.32	0.958000	2.318000	241.96	0.086000	0.380000	1.845000	0.007260	-	-	-	-	-	-	2.318260
111	TUTICORIN		1050	5.9495	37.39	2.105430	1.279991	60.79	0.194015	1.070781	-	0.001772	-	-	0.013418	-	-	0.000050	1.280036
112	ANPARA 'A' & 'B'	U.P.R.V.U.N.L. (U.P.)	1630	8.4408	37.36	2.954000	0.020016	0.68	-	0.008399	-	-	-	-	0.010142	-	-	0.001475	0.020016
113	HARDUAGANJ		420	0.0962	19.85	0.019100	0.023200	121.47	-	-	0.023200	-	-	-	-	-	-	-	0.023200
114	OBRA		1300	3.9610	38.45	1.523000	0.160286	10.52	-	0.160286	-	-	-	-	-	-	-	-	0.160286
115	PANKI		210	0.8667	31.47	0.274679	0.378920	137.95	0.000588	0.106419	-	-	-	-	0.271913	-	-	-	0.378920
116	PARICHHA		640	2.5132	33.91	0.852000	0.434140	50.96	0.000030	0.404920	0.002550	-	-	-	0.026650	-	-	-	0.434150
117	Udupi	U.P.C.L. (KARNATAK)	600	1.5560	5.18	0.080000	0.049000	61.25	-	0.039000	-	0.010000	-	-	-	-	-	-	0.049000
118	Katghora	VESPL (Chhattisgarh)	35	0.0080	46.00	0.003691	0.003691	100.00	0.000096	0.000780	-	-	-	-	0.000120	-	-	0.002695	0.003691
119	KOLAGHAT	W.B.P.D.C.L.(W.B.)	1260	6.3430	40.12	2.547000	3.020000	118.57	0.174000	0.549000	0.393000	-	-	-	1.574000	-	-	0.332000	3.020000
120	SAGARDIGHI		600	2.9250	44.97	1.321000	0.184000	13.93	0.047000	0.115000	-	-	-	-	-	-	-	0.022000	0.184000
121	BANDEL		450	1.6380	39.85	0.651000	0.741000	113.82	0.026000	0.004000	-	-	-	-	0.658000	-	-	0.058000	0.746000
122	SANTALDIH		500	1.8040	37.49	0.676000	0.140000	20.71	0.002000	-	-	-	-	-	0.147000	-	-	0.000200	0.149200
123	BAKRESWAR		1050	5.0740	3.85	1.976000	2.378000	120.34	0.031000	0.938000	-	-	-	-	1.395000	-	-	0.015000	2.379000
124	Wardha Warora	W.P.C.L. (Maharashtra)	540	2.1281	37.46	0.799240	0.799240	100.00	0.010740	0.497996	-	0.024661	-	-	0.037891	0.225959	-	-	0.797247
GRAND TOTAL			105925.30	437.41	33.24	145.42	85.05	58.48	5.835421	38.078584	5.536359	0.632008	0.000090	5.861499	14.216197	7.743686	0.875440	6.285266	85.06

**FLY ASH GENERATION AND ITS UTILIZATION AT COAL/LIGNITE BASED THERMAL POWER STATIONS IN THE COUNTRY FOR THE YEAR 2012-13 (APRIL, 2012 TO MARCH, 2013)
(POWER STATION WISE)**

Sl. No.	Name of TPS	Power Utility & State	FLY ASH GENERATION AND ITS UTILIZATION						MODES OF UTILIZATION									Total Utilization	
			Installed Capacity	Coal consumed	Ash content of coal	Fly Ash Generation	Fly Ash Utilization	% age Utilization	In making of Fly Ash based/ Bricks/ Tiles etc.	In manufacture of Portland Pozzolana Cement	In construction of Highways & Roads including Flyovers	Part replacement of cement in concrete	In Hydro Power Sector as part replacement of cement in concrete	In Ash dyke raising	In reclamation of low lying Area	In Mine filling	In Agriculture/ Waste land Development		Others
			(MW)	(million-ton)	% age	(million-ton)	(million-ton)	%	(million-ton)	(million-ton)	(million-ton)	(million-ton)	(million-ton)	(million-ton)	(million-ton)	(million-ton)	(million-ton)		(million-ton)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	Chandrapur	A.P.G.P.C.L. (Assam)	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	KOTHAGUDEM	A.P. GENCO (Andhra Pradesh)	720	4.4432	47.37	2.105060	0.199485	9.48	0.035283	0.136266	-	-	-	-	-	-	-	0.027936	0.199485
3	KOTHAGUDEM-V		500	3.0097	46.65	1.403160	0.071066	5.09	0.015610	0.055330	-	-	-	-	-	-	-	0.000126	0.071066
4	KOTHAGUDEM-VI		500	2.5973	36.70	0.954340	0.367254	38.56	0.040480	0.363170	-	-	-	-	-	-	-	-	0.367250
5	RAMAGUNDAM'B		62.50	0.3284	43.44	0.142500	0.060100	42.18	0.043500	0.016600	-	-	-	-	-	-	-	-	0.060100
6	RAYALSEEMA		1050	5.1495	40.52	2.086760	1.627056	77.95	0.503689	1.123367	-	-	-	-	-	-	-	-	1.627056
7	Dr. N.T.R. (Vijawada)		1760	9.7922	41.88	4.100650	2.916983	71.13	0.730329	1.271500	0.507657	0.058732	-	0.205809	-	0.001034	0.141922	2.916983	
8	KAKATIA		500	2.4628	43.72	1.069540	0.352789	32.98	0.001299	0.351490	-	-	-	-	-	-	-	-	0.352789
9	KASAI PALLI	A.C.B.P.L. (Chhattisgarh)	270	1.3405	52.66	0.708963	0.339766	47.92	0.092373	-	-	0.000200	-	0.081901	0.164992	-	0.000300	-	0.339766
10	INDIRA GANDHI	A.P.C.P.L. (Haryana)	1500	3.6896	37.10	1.368890	0.119047	8.70	0.005068	0.011675	-	-	-	-	0.020000	-	-	0.082304	0.119047
11	MUNDRA TPS	A.P.L. (Gujarat)	4620	12.0560	9.41	1.154000	1.154000	100.00	0.041000	0.542000	-	-	0.193000	0.378000	-	-	-	-	1.154000
12	MIHAN	A.M.N.E.P.L. (Maharashtra)	246	0.5896	40.46	0.240720	0.040674	26.98	0.022369	0.018305	-	-	-	-	-	-	-	-	0.040674
13	BARAUNI	B.S.E.B. (Bihar)	220	-	-	-	0.014760	98.63	0.014760	-	-	-	-	-	-	-	-	-	0.014760
14	BARKHERA	B.E.P.L. (U.P.)	90	0.5250	38.91	0.204293	0.163432	80.00	0.000176	0.065148	-	-	-	-	0.098108	-	-	-	0.163432
15	KHAMBER KHERA		90	0.5162	40.36	0.208377	0.170128	81.64	-	0.087508	-	-	-	-	0.082619	-	-	-	0.170127
16	KUNDARKI		90	0.4633	43.66	0.202294	0.175917	86.96	-	0.129339	-	-	-	-	0.046578	-	-	-	0.175917
17	MAQSODPUR		90	0.5045	41.71	0.210407	0.170561	81.06	-	0.054067	-	-	-	-	0.116494	-	-	-	0.170561
18	UTRAULA		90	0.3600	42.68	0.153644	0.124542	81.06	-	0.069873	-	-	-	-	0.054669	-	-	-	0.124542
19	B.B.G.S.	C.E.S.C. (West Bengal)	750	3.5460	34.18	1.379000	1.379000	100.00	0.032000	0.998000	-	-	-	-	0.349000	-	-	-	1.379000
20	S.G.S.		135	0.7240	33.85	0.268000	0.268000	100.00	0.011000	0.214000	0.004000	-	-	-	0.039000	-	-	-	0.268000
21	T.G.S.		240	1.0400	29.27	0.390000	0.390000	100.00	0.067000	0.034000	0.072000	0.008500	-	-	0.217000	-	-	-	0.390000
22	NEW COSSIPORE		160	0.2310	21.57	0.055100	0.055100	100.00	-	-	-	-	-	-	0.032200	-	-	0.014400	0.055100
23	MUNDRA UMPP	C.G.P.L. (Gujarat)	800	6.0200	5.40	0.325000	0.027000	8.20	-	0.027000	-	-	-	-	-	-	-	-	0.027000
24	KORBA (WEST)	C.S.P.G.C.L. Chhattisgarh	840	4.5039	41.00	1.482900	1.239500	83.58	0.003590	-	-	-	-	0.598000	0.637900	-	-	-	1.239490
25	DSPM		500	2.4930	43.60	1.088000	0.000000	0.00	-	-	-	-	-	-	0.000000	-	-	-	-
26	KORBA (EAST)		440	2.3416	45.17	1.055734	0.127000	12.03	0.002000	-	-	-	-	0.125000	-	-	-	-	0.127000
27	BOKARO 'B'	D.V.C. (Jharkhand)	630	2.6925	50.08	1.347944	1.490702	110.63	-	-	-	-	-	-	-	1.490702	-	-	1.490702
28	CHANDRAPURA		890	3.8469	52.47	2.019089	1.383954	68.54	0.007340	0.021184	-	-	-	-	1.355430	-	-	-	1.383954
29	DURGAPUR	D.V.C. (West Bengal)	350	1.6748	49.06	0.817202	0.693326	84.84	0.000938	-	-	-	-	-	0.692389	-	-	-	0.693327
30	MEJIA		2340	8.1980	45.38	3.732000	3.161000	84.70	0.049000	0.551000	-	-	-	-	2.561000	-	-	-	3.161000
31	Durgapur Steel		1000	1.5990	39.48	0.623388	0.149666	24.01	-	0.149666	-	-	-	-	-	-	-	-	0.149666
32	KODARMA	D.V.C. (Jharkhand)	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	D.P.L.	D.P.L. (West Bengal)	641	1.6447	43.68	0.703299	0.641100	91.16	0.005603	0.027782	0.563487	-	-	-	-	0.044228	-	-	0.641100
34	CHINAKURI	D.P.S.C.L. (W.B.)	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	DISHERGARH POWER STATION	D.P.S.C.L. (W.B.)	12	0.0298	49.00	0.019713	0.019713	100.00	-	-	-	-	-	-	-	0.019713	-	-	0.019713
36	MAHAN	ESSAR POWER MP LTD.(M.P.)	600	0.0000	0.00	0.007983	0.007983	100.00	-	-	-	-	-	-	0.007983	-	-	-	0.007983
37	SALAYA	E.P.G.L. (Gujarat)	1200	2.4320	5.60	0.136700	0.136700	100.00	0.014000	0.044000	-	-	0.067000	0.006000	-	0.006000	-	-	0.137000
38	SURAT LIGNITE	G.I.P.C.L. (Gujarat)	500	3.4627	16.52	0.572080	0.572084	100.00	0.519370	-	0.031070	-	-	-	0.021644	-	-	-	0.572084
39	AKRIMOTA	G.M.D.C.L. (Gujarat)	250	0.9323	19.93	0.185886	0.185888	100.00	-	-	-	-	-	-	0.185888	-	-	-	0.185888
40	GANDHINAGAR	G.S.E.C.L. (Gujarat)	870	2.6140	32.81	0.858000	0.859000	100.15	0.031000	0.686000	-	0.120000	-	-	-	-	0.022000	-	0.859000
41	KUTCH LIGNITE		290	2.0080	17.87	0.361000	0.361000	100.00	-	-	-	-	-	-	0.361000	-	-	-	0.361000
42	SIKKA		240	0.5920	31.30	0.185000	0.213600	115.37	0.130000	0.084000	-	-	-	-	-	-	0.000000	-	0.214000
43	UKAI		850	3.8260	35.96	1.378000	0.749000	54.34	0.187000	0.303000	-	-	-	-	-	-	0.259000	-	0.749000
44	WANAKBORI		1470	6.3520	37.59	2.399000	1.301000	54.23	0.024200	0.971000	-	-	-	-	-	-	-	-	1.301200
45	HISAR	H.P.G.C.L. (Haryana)	1200	3.7554	39.24	1.473798	0.185588	12.59	0.002320	0.146403	0.036865	-	-	-	-	-	-	-	0.185588
46	YAMUNANAGAR		600	0.6340	38.25	0.241000	0.025900	10.75	-	0.025900	-	-	-	-	-	-	-	-	0.025900
47	PANIPAT		1367.8	6.6551	40.96	2.725834	1.365304	50.09	-	1.365304	-	-	-	-	-	-	-	-	1.365304
48	RAJGHAT	I.P.G.C.L. (Delhi)	135	0.7114	33.51	0.238384	0.199880	83.85	-	0.157080	0.042800	-	-	-	-	-	-	-	0.199880
49	MAHATMA GANDHI	J.H.P.L. (Haryana)	1320	2.0374	38.26	0.779492	0.779492	100.00	-	0.580314	-	-	0.199178	-	-	-	-	-	0.779492
50	O.P.Jindal	J.P.L. (Chhattisgarh)	1000	5.1720	38.65	1.999000	1.194000	59.72	0.022000	0.002000	-	-	-	0.036000	1.134000	-	-	-	1.194000
51	PATRATU	J.S.E.B. (Jharkhand)	770	0.6763	38.50	0.259038	0.006130	2.36	0.001141	0.005000	-	-	-	-	-	-	-	-	0.006141
52	RATNAGIRI	JSW Energy Limited (Maharashtra)	1200	4.5417	6.62	0.293746	0.273083	93.00	0.041614	0.055504	0.175965	-	-	-	-	-	-	-	0.273083
53	VIJAYANAGAR	JSW Energy Limited (Karnataka)	860	2.7382	11.51	0.233800	0.233360	99.57	0.012600	0.188200	-	-	-	-	-	-	0.032530	-	0.233360
54	BELLARY	K.P.C.L. (Karnataka)	1000	2.1018	32.60	0.538111	0.381272	70.85	-	0.381275	-	-	-	-	-	-	-	-	0.381275
55	RAICHUR		1720	7.4860	33.30	2.493158	0.910000	36.50	0.121340	0.788600	-	-	-	-	-	-	-	-	0.909940
56	MUZAFFARPUR TPS	K.B.U.N.L. (Bihar)	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	AMARKANTAK TPS	Lanco Power Ltd. (Chhattisgarh)	600	2.3928	44.53	0.833500	0.358200	42.96	0.001350	0.225600	-	-	-	0.006900	-	-	-	0.124300	0.358150
58	ANPARA 'C'	Lanco Power Ltd (U.P.)	1200	2.6815	35.81	0.973834	0.008029	0.82	-	-	-	-	-	0.008029	-	-	-	-	0.008029

**FLY ASH GENERATION AND ITS UTILIZATION AT COAL/LIGNITE BASED THERMAL POWER STATIONS IN THE COUNTRY FOR THE YEAR 2012-13 (APRIL, 2012 TO MARCH, 2013)
(POWER STATION WISE)**

Sl. No.	Name of TPS	Power Utility & State	FLY ASH GENERATION AND ITS UTILIZATION						MODES OF UTILIZATION										Total Utilization (million-ton)	
			Installed Capacity (MW)	Coal consumed (million-ton)	Ash content of coal % age	Fly Ash Generation (million-ton)	Fly Ash Utilization (million-ton)	% age Utilization	In making of Fly Ash based/ Bricks/ Tiles etc. (million-ton)	In manufacture of Portland Pozzolana Cement (million-ton)	In construction of Highways & Roads including Flyovers (million-ton)	Part replacement of cement in concrete (million-ton)	In Hydro Power Sector as part replacement of cement in concrete (million-ton)	In Ash dyke raising (million-ton)	In reclamation of low lying Area (million-ton)	In Mine filling (million-ton)	In Agriculture/ Waste land Development (million-ton)	Others (million-ton)		
																				(4)
59	THAMMINAPATNAM TPS	Meenakshi Energy Pvt. Ltd. (A.P.)	300	0.2810	2.50	0.007191	0.003218	44.74	-	0.000218	0.001050	-	-	-	-	-	-	0.001950	0.003218	
60	MALTHON RBTPP	M.P.L. (Jharkhand)	1050	2.8839	45.00	1.297700	0.369100	28.00	-	-	-	-	-	-	0.369100	-	-	-	0.369100	
61	SANJAY GANDHI	M.P.P.G.C.L. (M.P.)	1340	6.2689	36.44	2.290671	1.801672	78.65	0.001141	1.800531	-	-	-	-	-	-	-	-	1.801672	
62	SATPURA		1142.5	5.3182	37.95	2.018509	0.522108	25.86	0.011916	0.008943	0.202938	-	0.298311	-	-	-	-	-	0.522108	
63	AMARKANTAK		450	2.1664	34.35	0.744094	0.160478	21.57	0.004595	0.155883	-	-	-	-	-	-	-	-	0.160478	
64	BHUSAWAL	M.S.P.G.C.L. (Maharashtra)	420	1.8326	37.81	0.692947	0.491807	70.68	0.139342	0.284098	-	-	-	-	-	-	0.007374	0.058987	0.489801	
65	CHANDRAPUR		2340	11.8339	35.99	4.253873	1.541898	36.18	0.067278	1.217715	-	-	-	-	0.058000	0.008800	0.189368	1.541161		
66	KHAPARKHEDA		840.00	4.7408	38.93	1.845749	1.286725	69.70	0.501585	0.087390	0.321333	-	0.063595	0.214220	-	-	-	0.098600	1.286723	
67	KORADI		1100	2.0840	39.69	0.828000	0.459000	55.43	0.328000	0.020000	0.009000	-	0.102000	-	-	-	-	-	0.459000	
68	NASIK		630	3.1160	37.97	1.268000	0.953000	75.12	0.503000	0.411000	0.000000	-	-	0.030000	-	-	0.009000	-	0.953000	
69	PARAS		500	2.3300	44.21	0.944000	0.721000	75.23	0.292000	0.429000	0.000000	-	-	-	-	-	-	-	0.721000	
70	PARLI		1130	3.4720	43.52	1.506000	1.192000	79.16	0.432000	0.504000	0.000000	-	-	-	-	-	0.032000	0.224000	1.192000	
71	NEVELI - I	N.L.C. Ltd. (Tamil Nadu)	600	5.8710	5.83	0.334200	0.213190	64.51	0.029000	0.183000	0.000000	-	-	-	-	-	-	0.001190	0.213190	
72	NEVELI - I EXPN.		420	3.3845	7.10	0.238541	0.238529	99.80	0.042160	0.151913	0.000000	-	-	-	0.043917	-	-	0.000539	0.238529	
73	NEVELI - II		1470	12.3034	6.50	0.799615	0.474459	60.50	0.092263	0.221079	0.000000	-	-	-	0.159925	-	-	0.001192	0.474459	
74	NEVELI - II EXPN.	N.L.C. Ltd. (Tamil Nadu)	250	-	-	-	-	-	-	-	0.000000	-	-	-	-	-	-	-	-	-
75	BARINGSAR LIGNITE	N.L.C. Ltd. (Rajasthan)	250	1.2739	18.03	0.229669	0.240023	104.51	0.000934	0.179914	0.000000	-	-	-	-	0.059175	-	-	0.240023	
76	BHILAI	N.S.P.C.L. (Chhattisgarh)	500	2.6555	37.50	0.994533	0.697635	70.15	0.106026	0.591609	0.000000	-	-	-	-	-	-	-	0.697635	
77	VALLUR	N.T.E.C.L. (Tamil Nadu)	500	0.6741	34.70	0.234240	0.000000	0.00	-	-	0.000000	-	-	-	-	-	-	-	-	
78	RAMAGUNDAM	NTPC Ltd. (Andhra Pradesh)	2600	13.1040	34.32	4.521000	3.052000	67.52	0.827000	1.054000	0.066000	-	0.252000	-	0.137000	-	-	0.716000	3.052000	
79	SIMHADRI		2000	9.1520	35.37	3.225000	1.960000	60.78	0.112000	0.249000	0.002000	-	0.927000	-	-	-	-	0.670000	1.960000	
80	KAHALGAON	NTPC Ltd. (Bihar)	2340	13.4220	34.00	4.563000	1.022000	22.40	0.062000	0.254000	0.008000	-	0.410000	0.289000	-	-	-	0.001000	1.024000	
81	KORBA	NTPC Ltd. (Chhattisgarh)	2600	15.2520	42.19	6.439000	2.418000	37.55	0.037000	0.146000	-	-	-	2.134000	0.101000	-	-	-	2.418000	
82	SIPAT		2980	11.1530	37.28	4.176000	0.862000	20.64	0.078000	0.445000	-	-	-	0.314000	0.024000	-	-	-	0.861000	
83	BADARPUR	NTPC Ltd. (Delhi)	705	4.0060	30.00	1.202000	1.041000	86.61	0.391000	0.606000	0.030000	-	-	-	0.014000	-	-	-	1.041000	
84	VINDHYACHAL	NTPC Ltd. (M.P.)	4260	18.9210	36.66	6.935000	4.613000	66.50	0.494000	0.962000	-	-	0.765000	1.005000	-	-	-	1.387000	4.613000	
85	TALCHAR(KAN)	NTPC Ltd. (Odisha)	3000	17.5120	38.49	6.726000	2.550000	37.91	0.058000	0.065000	-	-	1.576000	0.496000	-	-	-	0.354000	2.549000	
86	TALCHAR(TPS)		460	3.1660	39.00	1.235000	1.235000	100.00	-	0.037000	-	-	-	-	-	1.198000	-	-	1.235000	
87	RIHAND	NTPC Ltd. (U.P.)	2500	1.1190	31.20	3.489000	1.971000	56.49	0.012000	0.097000	0.002000	-	0.522000	1.338000	-	-	-	-	1.971000	
88	SINGRAULI		2000	11.3140	33.37	3.777000	2.266000	60.00	0.014000	0.315000	-	-	1.266000	0.014000	-	-	-	0.657000	2.266000	
89	UNCHAHAR		1050	5.8550	41.88	2.454000	1.532000	62.49	0.043000	1.238000	0.005000	-	-	0.032000	-	-	-	0.214000	1.532000	
90	TANDA		440	2.6570	43.36	1.156000	0.731000	63.42	0.087000	0.162000	-	-	0.188000	0.064000	-	-	-	0.230000	0.731000	
91	DADRI		1820	8.4070	3.27	2.744000	2.380000	86.75	0.114000	1.846000	0.022000	-	-	-	0.399000	-	-	-	2.381000	
92	FARAKKA	NTPC Ltd. (W.B.)	2100	9.2010	39.47	3.647000	3.334000	91.40	0.024000	1.040000	1.710000	-	-	0.247000	0.314000	-	-	-	3.335000	
93	MOUDA TPS	NTPC Ltd. (Maharashtra)	500	0.0157	56.00	0.008805	0.000000	0.00	-	-	-	-	-	-	-	-	-	-	0.000000	
94	IB VALLEY	O.P.G.C.L. (Odisha)	420	2.7572	40.21	1.109346	0.180129	16.24	0.003094	-	-	-	-	0.059400	0.118635	-	-	-	0.180129	
95	BATHINDA	P.S.P.C.L. (Punjab)	440	1.0285	31.26	0.321512	0.221107	68.77	0.013885	0.207222	-	-	-	-	-	-	-	-	0.221107	
96	LEHRA MOHABAT		920	4.1181	29.88	1.230643	1.078750	87.66	0.003041	0.981854	-	0.057483	-	-	0.036374	-	-	-	1.078752	
97	ROPAR		1260	5.7293	31.51	1.805578	1.476364	81.76	0.008653	1.425268	0.010565	0.022008	-	-	-	0.009873	-	-	1.476367	
98	KOTA	R.R.V.U.N.L. (Rajasthan)	1240	6.2243	29.73	1.850390	2.289951	123.71	0.421905	1.539559	0.229300	0.020735	-	-	-	-	-	0.006442	2.289951	
99	SURATGARH		1500	6.8178	31.13	2.125903	1.879611	88.40	0.149685	1.575658	-	0.154278	-	-	-	-	-	-	1.879621	
100	CHHABRA		500	1.8719	35.31	0.660945	0.543274	84.36	0.000685	0.401587	-	-	-	0.004550	-	-	-	0.136452	0.543274	
101	GIRAL		250	0.5902	32.90	0.194160	0.194160	100.00	0.000270	-	-	-	-	-	-	0.193890	-	-	0.194160	
102	JALIPPA KAPURDI	Raj West Power (Rajasthan)	1080	3.7766	13.90	0.527500	0.361400	68.50	0.000770	0.203000	-	0.006540	-	-	0.122000	0.029100	-	-	0.361410	
103	ROSA PHASE-I	R.P.S.C.L. (U.P.)	1200	4.9578	21.96	1.088852	0.341564	31.37	0.001074	0.062691	0.105676	0.005065	-	-	0.166908	-	-	-	0.341414	
104	DAHANU	Reliance Infrastructure Ltd. (Maharashtra)	500	2.7570	30.35	0.837000	0.720000	86.07	-	-	-	0.299000	-	0.359000	-	-	-	0.061040	0.719040	
105	STERLITE	S.E.L. (Odisha)	2400	6.4117	40.99	2.625564	1.337590	50.94	0.000504	-	0.130038	-	-	0.016562	1.190486	-	-	-	1.337590	
106	SIMHAPURI	S.E.P.L. (A.P.)	300	1.0784	6.16	0.065794	0.065429	99.45	0.034306	0.031123	-	-	-	-	-	-	-	-	0.065429	
107	CUDDALORE	ST-CMS (Tamil Nadu)	250	1.9092	8.91	0.170024	0.140630	82.71	-	0.125947	-	-	-	-	-	0.014683	-	-	0.140630	
108	SIVPL	S.V.P.P.L. (Chhattisgarh)	63	0.0577	48.17	0.027812	0.027812	100.00	0.000750	-	0.001200	-	-	0.015862	0.010000	-	-	-	0.027812	
109	JOJIBERA	Tata Power Co. (Jarkhand)	427.5	2.6294	43.93	1.155210	1.208400	105.56	0.000530	0.497090	-	0.002400	-	0.707271	0.001100	-	-	-	1.208391	
110	TROMBAY	Tata Power Co. (Maharashtra)	750	2.8390	2.76	0.078400	0.078700	101.00	0.003700	-	-	0.063100	-	-	-	0.007000	-	-	0.078700	
111	SABARMATI	Torrent Power Ltd. (Gujarat)	400	1.8200	25.59	0.469000	0.459000	97.76	0.004000	0.340000	-	-	-	-	-	0.115000	-	-	0.459000	
112	TENUGHAT	T.V.N.L. (Jarkhand)	420	2.1168	40.00	0.846706	0.270000	59.81	-	-	-	-	-	-	0.270000	-	-	-	0.270000	
113	ENNORE	T.N.G & D Corporation (Tamil Nadu)	450	0.9662	40.90	0.394091	0.333148	84.54	0.040303	0.072969	0.028419	-	-	-	-	-	-	0.191457	0.333148	
114	METTUR		840	4.5629	21.99	1.343177	2.456119	183.86	0.09941	2.046178	-	-	-	-	-	-	-	-	2.456119	
115	NORTH CHENNAI		630	3.4820	32.00	1.109000	1.769000	159.58	0.085400	0.388000	1.293000	0.000263	-	-	-	-	-	-	1.766663	
116	TUTICORIN		1050	6.6490	33.89	2.253441	1.493013	66.25	0.236916	1.101912	-	-	-	-	0.153875	-	-	0.000310	1.493013	
117	ANPARA 'A' & 'B'	U.P.R.V.U.N.L. (U.P.)	1630	7.6053	39.24	2.661870	0.014530	0.55	-	0.005650	-	-	-	-	0.07255	-	-	0.001625	0.014530	
118	HARDUANGAN		670	0.1139	40.35	0.045993	0.024514	53.30	-	-	0.024514	-	-	-	-	-	-	-	0.024514	

**FLY ASH GENERATION AND ITS UTILIZATION AT COAL/LIGNITE BASED THERMAL POWER STATIONS IN THE COUNTRY FOR THE YEAR 2012-13 (APRIL, 2012 TO MARCH, 2013)
(POWER STATION WISE)**

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			Installed Capacity	Coal consumed	Ash content of coal	Fly Ash Generation	Fly Ash Utilization	% age Utilization	In making of Fly Ash based/ Bricks/ Tiles etc.	In manufacture of Portland Pozzolana Cement	In construction of Highways & Roads including Flyovers	Part replacement of cement in concrete	In Hydro Power Sector as part replacement of cement in concrete	In Ash dyke raising	In reclamation of low lying Area	In Mine filling	In Agriculture/ Waste land Development		Others	
			(MW)	(million-ton)	% age	(million-ton)	(million-ton)	%	(million-ton)	(million-ton)	(million-ton)	(million-ton)	(million-ton)	(million-ton)	(million-ton)	(million-ton)	(million-ton)		(million-ton)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	
119	OBRA		1300	3.1909	39.55	1.262000	0.306115	24.26	-	0.306115	-	-	-	-	-	-	-	-	-	0.306115
120	PANKI		210	0.7758	33.19	0.257053	0.401564	156.21	0.002346	0.141098	-	-	-	-	0.258120	-	-	-	-	0.401564
121	PARICHA		1140	3.3979	33.48	1.137951	0.703251	61.80	0.000180	0.531350	-	-	-	0.137760	0.030980	-	-	0.002920	0.000060	0.703250
122	UDUPI	U.P.C.L. (Karnatak)	1200	2.7550	5.04	0.139069	0.107536	77.32	0.000152	0.081327	-	-	0.026057	-	-	-	-	-	-	0.107536
123	KATGHORA	V.E.S.P.L. (Chhattisgarh.)	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
124	BUTIBORI	V.I.P Ltd. (Maharashtra)	300	0.0058	29.71	0.001720	0.000000	0.00	-	-	-	-	-	-	-	-	-	-	-	-
125	KOLAGHAT	W.B.P.D.C.L. (W.B.)	1260	6.0495	40.19	2.438700	3.419600	143.63	0.690200	0.532700	0.523840	0.010100	-	-	-	-	1.602700	0.059147	-	3.418687
126	SAGARDIGHI		600	2.6107	41.93	1.090625	0.221796	21.29	0.044326	0.142667	0.034330	-	-	-	-	-	-	-	0.000023	0.221346
127	BANDEL		450	1.5703	36.27	0.561700	0.747900	146.32	0.033100	-	-	-	-	-	-	-	-	0.663100	0.059800	0.756000
128	SANTALDIH		500	1.5959	38.42	0.608716	0.266692	43.81	0.008452	-	-	-	-	-	0.258188	-	-	-	-	0.266640
129	BAKRESWAR		1050	5.2808	39.31	2.079500	2.310300	111.31	0.058700	0.807000	-	-	-	-	1.430000	-	-	0.013500	-	2.309200
130	WARDHA WARORA	W.P.C.L. (Maharashtra)	540	2.3180	36.46	0.845300	0.845300	100.00	0.007328	0.542100	-	0.001100	-	-	0.049326	0.245509	-	-	-	0.845363
131	GEPL TPP	Gupta Energy Pvt. Ltd. (Maharashtra)	120	0.5059	28.22	0.142787	0.142787	100.00	0.008224	0.116667	-	-	-	-	0.007590	0.010306	-	-	-	0.142787
132	JAYPEE BINA TPP	Jaypee Bina Thermal Power Plant (M.P.)	500	0.3608	43.49	0.156941	0.104747	66.74	-	0.005563	-	-	-	-	0.099184	-	-	-	-	0.104747
133	MAHADEV PRASAD TPS	Adhunik Power & Natural Resources Ltd.	540	0.2129	44.43	0.094600	0.018920	20.00	0.009460	0.009460	-	-	-	-	-	-	-	-	-	0.018920
134	EMCO ENERGY Ltd.	EMCO Energy Ltd. (Maharashtra)	300	0.0602	40.00	0.024084	0.019998	83.00	-	0.015600	-	-	-	-	-	0.004398	-	-	-	0.019998
135	RATIJA TPS	Spectrum Coal & Power Ltd.(Chhattisgarh)	50	0.0251	51.00	0.010289	0.010289	100.00	0.001792	-	-	-	-	-	0.008497	-	-	-	-	0.010289
136	TIRORA	Adani Power Ltd. (Maharashtra)	1320	0.4200	24.20	0.097900	0.047900	48.93	0.000100	-	-	-	-	-	0.047800	-	-	-	-	0.047900
137	AMARAVATI TPS	Indiabulls Power Ltd. (Maharashtra)	270	0.0002	40.00	0.000096	0.000096	100.00	-	-	-	-	-	0.000096	-	-	-	-	-	0.000096
138	BELA TPS	Ideal Energy Projects Ltd. (Maharashtra)	270	0.0044	34.00	0.001497	0.000500	33.33	-	-	-	-	-	-	0.000500	-	-	-	-	0.000500
GRAND TOTAL			120312.30	482.9728	33.87	163.56	100.37	61.37	9.982954	41.327098	6.022582	1.027026	0.004550	10.925255	11.827079	10.342563	2.503798	6.409869	100.37	