



REPORT
ON
FLY ASH GENERATION
AT
COAL/LIGNITE BASED THERMAL POWER STATIONS
AND
ITS UTILIZATION IN THE COUNTRY
FOR
1ST HALF OF THE YEAR 2017-18
(April, 2017 to Sept., 2017)



CENTRAL ELECTRICITY AUTHORITY
NEW DELHI
JUNE 2018

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THERMAL CIVIL DESIGN DIVISION

FLY ASH GENERATION AT COAL/LIGNITE BASED THERMAL POWER STATIONS AND ITS UTILIZATION IN THE COUNTRY FOR THE 1ST HALF OF THE YEAR 2017-18 (APRIL, 2017 TO SEPTEMBER, 2017)

1.0 BACKGROUND

Coal/Lignite based Thermal Power Generation has been the backbone of power capacity addition in the country. Indian coal is of low grade with ash content of the order of 30-45 % 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.

Central Electricity Authority (CEA) on behalf of Ministry of Power has been monitoring since 1996-97 the fly ash generation and its utilization in the country at coal/ lignite based thermal power stations. 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 forwarded to Ministry of Power, Ministry of Environment, Forests and Climate Change(MoEF&CC) and is also uploaded on the web site of CEA for bringing out the information in the public domain so that users of fly ash have access to the information on the availability of fly ash at different thermal power stations (TPSs) in the country.

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 and Climate Change has issued various Notifications on fly ash utilization, first Notification was issued on 14th September, 1999 which was subsequently amended in 2003, 2009 and 2016 vide Notifications dated 27th August, 2003, 3rd November, 2009 and 25th January, 2016 respectively.

Towards the efforts in the direction of enhancing gainful utilization of fly ash, the latest MoEF&CC's Notification of 25th January, 2016 stipulates mandatory uploading of details of fly ash available on TPS's website and updating of stock position at least once in every month; increase in mandatory jurisdiction of area of application from 100 km to 300 km; cost of transportation of fly ash to be borne entirely by TPS up to 100 km and equally shared between user and TPS for more than 100 km and up to 300 km; and mandatory use of fly ash based products in all Government schemes or programmes e.g. Pradhan Mantri Gramin Sadak Yojana, Mahatma Gandhi National Rural Employment Guarantee Act, 2005, Swachh Bharat Abhiyan, etc.

The Notification of 3rd November, 2009 prescribes targets of Fly Ash utilization in a phased manner for all Coal/Lignite based Thermal Power Stations in the country so as to achieve 100% utilization of fly ash. The Thermal Power Stations in operation before the date of the Notification (i.e. 3rd November, 2009) are to achieve the target of fly ash utilization in successive 5 years -50% in first year; 60% in second year; 75% in third year; 90% in fourth year and 100% in fifth year. The new Thermal Power Stations coming into operation after the MoEF&CC's notification (i.e. 3rd November,

2009) are to achieve the target of fly ash utilization as 50% in the first year, 70% during two years, 90% during three years and 100% during four years depending upon their date of commissioning.

The report on fly ash generation and its utilization at coal/lignite based thermal power stations provides the status of fly ash generation as well as utilization in the country. The report also contains conclusion and recommendation for increasing the present rate of utilization of the fly ash.

2.0 ASH GENERATION & UTILIZATION DURING THE 1ST HALF OF THE YEAR 2017-18

2.1 A Brief Summary

Fly ash generation & utilization data for the 1st half of the Year 2017-18 (April, 2017 to Sept., 2017) has been received from **138** (One hundred thirty eight) coal/lignite based thermal power stations of various power utilities in the country.

Data thus 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

Description		1st Half Year 2016-17	1st Half Year 2017-18
· Nos. of Thermal Power Stations from which data was received	:	144	138
· Installed capacity (MW)	:	147697.50	147725.50
· Coal consumed (Million tons)	:	261.36	263.73
· Fly Ash Generation (Million tons)	:	85.48	84.68
· Fly Ash Utilization (Million tons)	:	49.52	51.13
· Percentage Utilization of Fly Ash (%)	:	57.9	60.38
· Percentage Average Ash Content (%)	:	32.71	32.11

It can be seen from the above table that during current half year, **138** thermal power stations have reported Fly Ash Generation & its Utilization data. Based on this, Fly Ash Utilization percentage has increased during 1st half of the year 2017-18 in comparison to the utilization during the 1st half of previous year (of **144** thermal power stations).

Power Station wise fly ash generation & its utilization status including modes of utilization for the 1st half of the Year 2017-18 for all the **138** thermal power stations is given in the statement at **Annex-I**.

2.2 Power Utility-wise Status of Fly Ash Generation & its Utilization during the 1st Half of the Year 2017-18

The status of fly ash generation & utilization for the 1st half of the year 2017-18 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-II:

TABLE-II**POWER UTILITY WISE FLY ASH GENERATION AND UTILIZATION DURING THE
1st HALF OF THE YEAR 2017-18**

Sl. No.	Name of Power Utility	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)	Fly Ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Andhra Pradesh Power Generation Corporation (A.P.GEN.CO)	2	2810.00	2.9410	2.3777	80.85
2	APPDCL (Andhra Pradesh)	1	1600.00	0.4170	0.3086	74.00
3	APL (Gujarat)	1	4620.00	0.4130	0.4097	99.20
4	ACB (INDIA) Ltd. (Chhattishgarh)	4	390.00	0.7238	0.7238	100.00
5	AMNEPL (Maharastra)	1	246.00	0.0000	0.0000	0.00
6	Adani Power Ltd. (Maharastra)	1	3300.00	1.8526	1.3966	75.39
7	Adani Power Rajasthan Ltd. (Rajasthan)	1	1320.00	0.3058	0.2633	86.10
8	ADHUNIK POWER & NATURAL RESOURCES LIMITED (Jharkhand)	1	540.00	0.4513	0.3895	86.31
9	BEPL (UP)	5	450.00	0.2145	0.2144	99.95
10	C.E.S.C. Ltd.	3	1125.00	0.7390	0.7390	100.00
11	C.G.P.L (Gujarat)	1	4000.00	0.3539	0.2785	78.69
12	Chattisgarh State Power Generation Company Ltd. (C.S.P.G.C.L.)	1	1340.00	1.4102	0.2451	17.38
13	COASTAL ENERGEN PVT. LTD (Tamil Nadu)	1	1200.00	0.0339	0.0332	97.90
14	Damodar Valley Corporation (D.V.C.)	7	7640.00	4.8195	3.9172	81.28
15	Durgapur Projects Ltd. (D.P.L.)	1	660.00	0.3281	0.3171	96.64
16	Dhariwal Infrastructure Ltd. (Maharashtra)	1	600.00	0.2680	0.2406	89.77
17	INDIA POWER CORPORATION LIMITED(West Bengal)	1	12.00	0.0125	0.0125	100.00
18	Gujarat Industries Power Corporation Ltd. (G.I.P.C.L.)	1	500.00	0.2602	0.2602	100.00
19	Gujarat Mineral Development Corporation Ltd. (G.M.D.C.L.)	1	250.00	0.0974	0.1418	145.63
20	G.S.E.C.L. (Gujarat)	5	4000.00	1.8320	1.7530	95.69
21	Gupta Energy Pvt. Ltd.(Maharastra)	1	120.00	0.0000	0.0000	#DIV/0!
22	GMR Kamalanga Energy Ltd (Odisha)	1	1050.00	0.7175	0.8562	119.33
23	G.M.R. Warora Energy Ltd. (Maharashtra)	1	600.00	0.3292	0.3245	98.58
24	GMR Chhattisgarh Energy Ltd. (Chhattisgarh)	1	1370.00	0.0837	0.0837	100.00
25	Haryana Power Generation Cor. Ltd. (H.P.G.C.L.)	2	2120.00	0.9658	1.0041	103.96
26	HALDIA ENERGY LIMITED (W.B.)	1	600.00	0.4800	0.4810	100.21
27	HINDUJA NATIONAL POWER COPORATION LIMITED (Andhra Pradesh)	1	1040.00	0.4884	0.0425	8.71
28	Inderprastha Power Generation Company Ltd. (.I.P.G.C.L)	1	135.00	0.0000	0.0000	#DIV/0!
29	INDIAN METALS & FERRO ALLOYS LTD. (Odisha)	1	258.00	0.2144	0.2144	99.99
30	RattanIndia Power Ltd. (Maharashtra)	1	1350.00	0.3934	0.1331	33.84
31	IL & FS TAMIL NADU POWER COMPANY Ltd (Tamil Nadu)	1	1200.00	0.0509	0.0509	100.00

Sl. No.	Name of Power Utility	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)	Fly Ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
32	J.P.L (Chhatisgarh)	2	3400.00	1.8390	1.0270	55.85
33	JSW Energy Ltd.	2	2060.00	0.2451	0.2430	99.14
34	JINDAL INDIA THERMAL POWER LIMITED (Odisha)	1	1200.00	0.4616	0.4605	99.77
35	Karnataka Power Corporation Ltd.(K.P.C.L.)	2	3420.00	1.5130	0.8480	56.04
36	Madhya Pradesh Power Generation Corporation Ltd. (M.P.P.G.C.L.)	4	4080.00	1.9424	1.1418	58.79
37	M.P.L (Jharkhand)	1	1050.00	0.9474	0.9143	96.50
38	Maharashtra State Power Generation Corporation Ltd. (M.S.P.G.C.L.)	6	7770.00	4.2513	2.2788	53.60
39	Meenakshi Energy Ltd. (A.P)	1	300.00	0.0238	0.0885	371.93
40	Maruti Clean Coal and Power Limited (Chhattisgarh)	1	300.00	0.3238	0.2785	86.01
41	Neyveli Lignite Corporation Ltd. (N.L.C.LTD)	5	3240.00	1.7908	1.8362	102.54
42	NSPCL (Chhatisgarh)	1	500.00	0.4692	0.5111	108.95
43	N.T.P.C.LTD.	20	38255.00	29.8624	11.7244	39.26
44	NTECL (Tamil Nadu)	1	1500.00	0.9000	0.4870	54.11
45	Orissa Power Generation Corporation Ltd. (O.P.G.C.L.)	1	420.00	0.5478	0.1898	34.65
46	Punjab State Power Corporation Ltd. (P.S.P.C.L.)	2	2180.00	0.6911	0.8869	128.35
47	Rajasthan Rajya Vidyut Utpadan Nigam Ltd. (R.R.V.U.N.L.)	2	2500.00	0.8991	1.1437	127.20
48	Reliance Infrastructure Limited (R.I.L)	1	500.00	0.3760	0.2327	61.88
49	RPSCL (UP)	1	1200.00	0.8760	0.5490	62.68
50	R.W.P.L. (JSW)	1	1080.00	0.4738	0.4993	105.39
51	Spectrum Coal & Power Ltd.(Chhattisgarh)	1	100.00	0.3367	0.2646	78.59
52	Taqa Neyveli Power Company Pvt.Ltd.	1	250.00	0.0379	0.0379	99.97
53	Tata Power Company (T.P.CO.)	2	1297.50	0.4636	0.3646	78.66
54	Torent Power Ltd.	1	422.00	0.1888	0.1888	100.00
55	TSGENCO (Telangana)	5	2820.00	2.8939	0.9544	32.98
56	T.N.G & D Corporation (Tamil Nadu)	1	600.00	0.1912	0.1523	79.67
57	TRN ENERGY PRIVATE LIMITED (Chhattisgarh)	1	600.00	0.2277	0.1398	61.39
58	UPCL (Karnataka)	1	1200.00	0.0710	0.0604	85.07
59	Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd.(U.P.R.V.U.N.L.)	5	5650.00	4.3540	1.2623	28.99
60	West Bangal Power Development Corporation Limited (W.B.P.D.C.L)	5	4865.00	2.6496	2.0764	78.37
61	WPCL (KSKEV Ltd.) (Maharashtra)	1	540.00	0.1290	0.1293	100.23
62	SIMHAPURI ENERGY LIMITED (Andhra Pradesh)	1	600.00	0.0023	0.0023	100.00
63	JHABUA POWER LIMITED (MP)	1	600.00	0.1169	0.0854	73.08
64	NLC TAMILNADU POWER LIMITED (Tamil Nadu)	1	1000.00	0.5182	0.5182	100.00

Sl. No.	Name of Power Utility	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)	Fly Ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
65	TENUGHAT VIDHYUT NIGAM LIMITED (Jharkhand)	1	420.00	0.2261	0.3123	138.10
66	M/S TALWANDI SABO POWER LTD.(PUNJAB)	1	1980.00	0.9400	0.3700	39.36
67	NABHA POWER LIMITED(Punjab)	1	1400.00	0.7213	0.9314	129.13
68	LALITPUR POWER GENERATION COMPANY LIMITED (UP)	1	1980.00	0.9790	0.7279	74.36
GRAND TOTAL		138	147725.50	84.6778	51.1314	60.38

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

The data of fly ash generation and utilization for the 1st half of the year 2017-18 was received from **68** Power Utilities out of which **22** Power Utilities have achieved fly ash utilization level of 100% or more and **24** Power Utilities have achieved fly ash utilization level in the range of less than 100% to 90%.

The performance of power utilities during the 1st half of the year 2017-18 is tabulated below:

TABLE-III

POWER UTILITY-WISE RANGE OF PERCENTAGE FLY ASH UTILIZATION

Sl. No.	Level of Fly Ash utilization	Nos. of Power Utilities
		1 st Half of the Year 2017-18
1	2	3
1	100% and more than 100%	22
2	Less than 100% and up to 90%	11
3	Less than 90% and up to 70%	16
4	Less than 70% and up to 50%	8
5	Less than 50%	8
6	No Generation	3
TOTAL		68

The **22** Nos of the power utilities has been achieved to 100 % & more during the 1st half of the year 2017-18.

2.3 State wise Status of Fly Ash Generation & its Utilization during the 1st half of the Year 2017-18

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:

TABLE-IV**STATE WISE FLY ASH GENERATION AND ITS UTILIZATION DURING THE
1ST HALF OF THE YEAR 2017-18**

Sl. No.	Name of State	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)	Fly Ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	ANDHARAPRADESH	7	10650.00	7.4827	5.9501	79.52
2	ASSAM	1	500.00	0.0310	0.0000	0.00
3	BIHAR	2	3660.00	3.2480	0.9285	28.59
4	CHHATISGARH	14	13580.00	10.7201	4.4917	41.90
5	DELHI	2	840.00	0.3030	0.3120	102.97
6	GUJARAT	10	13792.00	3.1453	3.0320	96.40
7	HARYANA	2	2120.00	0.9658	1.0041	103.96
8	JHARKHAND	7	5447.50	3.6676	3.6042	98.27
9	KARNATAKA	5	7080.00	1.8298	1.0370	56.67
10	MADHYA PRADESH	6	9440.00	6.0143	1.7703	29.43
11	MAHARASHTRA	18	19956.00	8.6410	5.3577	62.00
12	ODISHA	6	6388.00	6.4723	3.3419	51.63
13	PUNJAB	4	5560.00	2.3524	2.1883	93.03
14	RAJASTHAN	5	5150.00	2.9545	3.1822	107.70
15	TAMILNADU	10	8740.00	2.2471	1.8399	81.88
16	TALANGANA	6	3120.00	2.9177	1.0429	35.74
17	UTTAR PRADESH	17	17590.00	12.8640	5.6257	43.73
18	WEST BENGAL	16	14112.00	8.8212	6.4230	72.81
GRAND TOTAL		138	147725.50	84.6778	51.1314	60.38

It may be seen from Table-IV above that:

- (i) 5 states namely Andhra Pradesh, Chhattisgarh, Maharashtra, Uttar Pradesh and West Bengal each have generated more than 7 million-ton of fly ash during the 1st half of the Year 2017-18 . Maximum fly ash of more than 12 million-ton was generated in Uttar Pradesh during the aforesaid period.
- (ii) During the 1st half of the Year 2017-8, Out of 18 states, Delhi, Haryana and Rajasthan have achieved the fly ash utilization level of more than 100% with Rajasthan reporting highest 107.70 % fly ash utilization.

(iii) 15 states, however, have not achieved the targets.

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

Fly ash generation and utilization data received from Thermal Power Stations/Power Utilities in the country for the 1st half of the year 2017-18 has been compiled to see the fly ash utilization vis-à-vis the target of fly ash utilization as prescribed in MoEF&CC's notification of 3rd November, 2009.

During the 1st half of the Year 2017-18, all those thermal power stations which were in operation on the date of issuance of MoEF&CC's notification (i.e. 3rd November, 2009) should have achieved the target of fly ash utilization of 100% within five years from the date of notification. All those thermal power stations which have come into operation after the date of issuance of MoEF&CC's notification (i.e. 3rd November, 2009) should have achieved the target of fly ash utilization of 100% within four years depending upon their date of commissioning. However, it is seen that the target set by MoEF&CC's notification has not been achieved by most of the TPS.

3.1 Range of Fly Ash Utilization during the 1st Half of the Year 2017-18

Based on the fly ash utilization data received from Thermal Power Stations/Power Utilities, the thermal power stations have been grouped into five categories as noted below depending upon range of utilization of fly ash by the stations.

TABLE-V

POWER STATION WISE RANGE OF PERCENTAGE FLY ASH UTILIZATION

Sl. No.	Level of Fly Ash utilization	Nos. of Power Stations
		1 st Half of the Year 2017-18
1	2	3
1	100% and more than 100%	44
2	Less than 100% and up to 90%	16
3	Less than 90% and up to 70%	30
4	Less than 70% and up to 50%	15
5	Less than 50%	29
6	Nos. of TPS which have not generated any significant fly ash or any fly ash	4
	TOTAL	138

3.2 Thermal Power Stations that have achieved Fly Ash utilization level of 100% or more during the 1st half of the Year 2017-18

The following Thermal Power Stations as given in Table-VI achieved the fly ash utilization level of 100% or more during the 1st half of the year 2017-18.

TABLE-VI**THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF 100% OR MORE DURING THE 1st HALF OF THE YEAR 2017-18**

Sl. No.	Name of TPS	Power Utility	Installed Capacity (MW)	Fly ash Generation (Million-ton)	Fly ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	KASAI PALI	ACB(INDIA)Ltd (Chhattisgarh)	270.00	0.5357	0.5357	100.00
2	CHAKABURA TPP (EXTN)	ACB (INDIA) Ltd. (Chhattisgarh)	30.00	0.0804	0.0804	100.00
3	KUNDARKI	BEPL (UP)	90.00	0.0396	0.0396	100.00
4	MAQSOODAPUR	BEPL (UP)	90.00	0.0409	0.0409	100.00
5	B.B.G.S.	C.E.S.C. (West Bengal)	750.00	0.7080	0.7080	100.00
6	S.G.S.	C.E.S.C. (West Bengal)	135.00	0.0310	0.0310	100.00
7	BOKARO 'B'	D.V.C.(Jharkhand)	1130.00	0.4167	0.4571	109.69
8	CHANDRAPURA	D.V.C.(Jharkhand)	760.00	0.5350	0.7166	133.95
9	SURAT LIGNITE	G.I.P.C.L. (Gujarat)	500.00	0.2602	0.2602	100.00
10	AKRIMOTA	G.M.D.C.L. (Gujarat)	250.00	0.0974	0.1418	145.63
11	GANDHINAGAR	G.S.E.C.L. (Gujarat)	630.00	0.3420	0.4510	131.87
12	KUTCH LIGNITE	G.S.E.C.L. (Gujarat)	290.00	0.1490	0.1490	100.00
13	SIKKA	G.S.E.C.L. (Gujarat)	500.00	0.0540	0.1290	238.89
14	PANIPAT	H.P.G.C.L.(Haryana)	920.00	0.3600	0.4799	133.31
15	RATNAGIRI	JSW Energy Ltd (Maharashtra)	1200.00	0.1563	0.1564	100.06
16	NASHIK	M.S.P.G.C.L. (Maharashtra)	630.00	0.3643	0.4300	118.01
17	NEYVELI - II	N.L.C.LTD(Tamil Nadu)	1470.00	0.2169	0.2985	137.59
18	NEYVELI - II EXPN	N.L.C.LTD (Tamil Nadu)	500.00	0.0634	0.0638	100.74
19	BARSINGSAR LIGNITE	N.L.C.LTD (Rajasthan)	250.00	1.2758	1.2758	100.00
20	BHILAI	NSPCL (Chhattisgarh)	500.00	0.4692	0.5111	108.95
21	BADARPUR	N.T.P.C.LTD (Delhi)	705.00	0.3030	0.3120	102.97
22	FEROZE GANDHI UNCHA HAR	N.T.P.C. LTD(U.P.)	1050.00	0.9056	0.9250	102.14
23	TANDA	N.T.P.C.LTD (U.P.)	440.00	0.3500	0.4440	126.86
24	TALCHAR(TPS)	N.T.P.C.LTD (Odisha)	460.00	0.6070	0.6079	100.15
25	ROPAR	P.S.P.C.L. (Punjab)	1260.00	0.3069	0.5790	188.64
26	CHHABRA	RRVUNL (Rajasthan)	1000.00	0.5301	0.6843	129.10
27	SURATGARH	RRVUNL (Rajasthan)	1500.00	0.3691	0.4594	124.48
28	JALIPA KAPURDI	RWPL (Rajasthan)	1080.00	0.4738	0.4993	105.39
29	SABARMATI	TORENT POWER Ltd. (Gujarat)	422.00	0.1888	0.1888	100.00
30	PANKI	U.P.R.V.U.N.L. (U.P.)	210.00	0.1044	0.1921	183.91
31	BANDEL	W.B.P.D.C.L (W.B.)	455.00	0.2809	0.3627	129.13
32	SAI WARDHA POWER Ltd.	WPCL (Maharashtra)	540.00	0.1290	0.1293	100.23

Sl. No.	Name of TPS	Power Utility	Installed Capacity (MW)	Fly ash Generation (Million-ton)	Fly ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	WARORA					
33	GMR KAMALANGA TPP	GMR KAMALANGA ENERGY Ltd. (Odisha)	1050.00	0.7175	0.8562	119.33
34	HALDIA ENERGY LIMITED	HALDIA ENERGY LIMITED (W.B.)	600.00	0.4800	0.4810	100.21
35	GMR Chhattisgarh	GMR Chhattisgarh Energy Ltd. (Chhattisgarh)	1370.00	0.0837	0.0837	100.00
36	SVPPL Renki	ACB India Limited (Chhattisgarh)	60.00	0.0142	0.0142	100.07
37	THAMMINAPATNAM TPS	MEENAKSHI ENERGY Ltd.(Telangana)	300	0.0238	0.0885	371.93
38	CHAKABURA TPP	ACB (INDIA) Ltd. (Chhattisgarh)	30.00	0.0935	0.0935	100.00
39	SIMHAPURI	SIMHAPURI ENERGY LIMITED (Andhra Pradesh)	600.00	0.0023	0.0023	100.00
40	NLC TAMILNADU POWER LTD.	NLC TAMILNADU POWER LIMITED (Tamil Nadu)	1000.00	0.5182	0.5182	100.00
41	TENUGHAT TPS	TENUGHAT VIDHYUT NIGAM LIMITED (Jharkhand)	420.00	0.2261	0.3123	138.10
42	RAJPURA	NABHA POWER LIMITED(Punjab)	1400.00	0.7213	0.9314	129.13
43	DISHERGARH TPS	INDIA POWER CORPORATION LIMITED(West Bangal)	12.00	0.0125	0.0125	100.00
44	IL & FS TNPC Ltd	IL & FS TAMIL NADU POWER COMPANY Ltd (Tamil Nadu)	1200.00	0.0509	0.0509	100.00

It may be seen from Table-VI above that:

During the 1st half of the Year 2017-18, **44** thermal power stations have achieved the fly ash utilization level of 100% or more including **28** thermal power stations which have achieved fly ash utilization level of more than 100%.

Fly ash utilization level of more than 100% indicates full utilization of fly ash generated during the period of report along with that from ash pond.

3.3 Thermal Power Stations with Fly Ash Utilization Level of less than 100% and up to 90% during the 1st half of the Year 2017-18

The names of Thermal Power Stations which have achieved the fly ash utilization in the range of 90% to 100% during the 1st half year 2017-18 along with fly ash utilization level achieved by each of these power stations are given in Table-VII below:

TABLE-VII**THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF LESS THAN 100% AND UP TO 90% DURING THE 1st HALF OF THE YEAR 2017-18**

Sl. No.	Name of TPS	Power Utility	Installed Capacity (MW)	Fly ash Generation (Million-ton)	Fly ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	MUNDRA TPS	APL (Gujarat)	4620.00	0.4130	0.4097	99.20
2	BARKHERA	BEPL (UP)	90.00	0.0451	0.0450	99.82
3	KHAMBER KHERA	BEPL (UP)	90.00	0.0449	0.0449	99.97
4	UTRAULA	BEPL (UP)	90.00	0.0440	0.0440	99.99
5	D.P.P.S.	D.P.L (West Bengal)	660.00	0.3281	0.3171	96.64
6	INDIAN METALS & FERRO ALLOYS LTD.	INDIAN METALS & FERRO ALLOYS Ltd. (Odisha)	258.00	0.2144	0.2144	99.99
7	VIJAYANAGAR	JSW Energy Limited (Karnataka)	860.00	0.0888	0.0866	97.52
8	MAITHON RBTPP	MPL (Jharkhand)	1050.00	0.9474	0.9143	96.50
9	NEYVELI -I EXPN	N.L.C.LTD(Tamil Nadu)	420.00	0.1027	0.1027	99.98
10	CUDDALORE	TAQA Neyveli Power Co. Pvt. Ltd. (Tamil Nadu)	250.00	0.0379	0.0379	99.97
11	DADRI	N.T.P.C.LTD (U.P.)	1820.00	1.0970	1.0830	98.72
12	RAMAGUNDAM	N.T.P.C.LTD (Andhra Pradesh)	2600.00	2.2050	2.1170	96.01
13	TROMBAY	T.P.CO.(Maharashtra)	750.00	0.0254	0.0238	93.70
14	GMR WARORA ENERGY Ltd.	GMR WARORA ENERGY Ltd. (Maharashtra)	600.00	0.3292	0.3245	98.58
15	MUTIARA	COASTAL ENERGEN PVT. LTD (Tamil Nadu)	1200.00	0.0339	0.0332	97.90
16	DERANG TPP	JINDAL INDIA THERMAL POWER LIMITED (Odisha)	1200.00	0.4616	0.4605	99.77

It may be seen from Table-VII above that **16** thermal power stations during the 1st half of the year 2017-18 have achieved fly ash utilization level in the range of 90% to 100%.

3.4 Thermal Power Stations with Fly Ash Utilization Level of less than 90% and up to 70% during the 1st half of the Year 2017-18

The names of Thermal Power Stations which have achieved the fly ash utilization in the range of less than 90% and up to 70% during the 1st half year 2017-18 along with fly ash utilization level achieved by each of these power stations are given in Table-VIII below:

TABLE-VIII

THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF LESS THAN 90% AND UP TO 70% DURING THE 1st HALF OF THE YEAR 2017-18

Sl. No.	Name of TPS	Power Utility	Installed Capacity (MW)	Fly ash Generation (Million-ton)	Fly ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Dr. N.T.R (Vijawada)	A.P.GENCO (Andhra Pradesh)	1760.00	1.9117	1.6164	84.55
2	RAYALSEEMA	A.P.GENCO (Andhra Pradesh)	1050.00	1.0292	0.7613	73.96
3	SRI DAMODARAM SANJEEVAIAH	APPDCL (Andhra Pradesh)	1600.00	0.4170	0.3086	74.00
4	TIRODA	ADANI POWER Ltd. (Maharashtra)	3300.00	1.8526	1.3966	75.39
5	KAWAI	ADANI POWER RAJASTHAN Ltd. (Rajasthan)	1320.00	0.3058	0.2633	86.10
6	MUNDRA UMPP	CGPL (Gujarat)	4000.00	0.3539	0.2785	78.69
7	MEJIA	D.V.C.(West Bengal)	2340.00	1.8954	1.6779	88.53
8	KODERMA	D.V.C. (Jharkhand)	1000.00	0.6528	0.4735	72.53
9	UKAI	G.S.E.C.L. (Gujarat)	1110.00	0.5900	0.4570	77.46
10	WANAKBORI	G.S.E.C.L. (Gujarat)	1470.00	0.6970	0.5670	81.35
11	HISAR	H.P.G.C.L.(Haryana)	1200.00	0.6058	0.5242	86.52
12	SANJAY GANDHI	M.P.P.G.C.L. (M.P.)	1340.00	0.8809	0.6886	78.17
13	BHUSAWAL	M.S.P.G.C.L (Maharashtra)	1210.00	0.7561	0.6197	81.96
14	PARLI	M.S.P.G.C.L. (Maharashtra)	1170.00	0.3560	0.3187	89.52
15	NEYVELI - I	N.L.C.LTD(Tamil Nadu)	600.00	0.1320	0.0954	72.30
16	SIMHADRI	N.T.P.C.LTD (Andhra Pradesh)	2000.00	1.4290	1.1020	77.12
17	LEHRA MOHABAT	P.S.P.C.L. (Punjab)	920.00	0.3841	0.3079	80.16
18	JOJOBERA	T.P.CO. (Jharkhand)	547.50	0.4382	0.3408	77.79
19	METTUR-II	T.N.G & D Corporation (Tamil Nadu)	600.00	0.1912	0.1523	79.67
20	HARDUAGANJ	U.P.R.V.U.N.L. (U.P.)	670.00	0.5233	0.4631	88.49
21	UDUPI	UPCL (Karnataka)	1200.00	0.0710	0.0604	85.07
22	KOLAGHAT	W.B.P.D.C.L(W.B.)	1260.00	0.7147	0.5865	82.06
23	SANTALDIH	W.B.P.D.C.L (W.B.)	500.00	0.0350	0.0294	83.90
24	BAKRESWAR	W.B.P.D.C.L(W.B.)	1050.00	0.9192	0.7499	81.58
25	RATIZA TPS	Spectrum Coal & Power Limited (Chhattisgarh)	100.00	0.3367	0.2646	78.59
26	DHARIWAL INFRASTRUCTURE Ltd.	Dhariwal Infrastructure Ltd. (Maharashtra)	600.00	0.268	0.24059	89.77

Sl. No.	Name of TPS	Power Utility	Installed Capacity (MW)	Fly ash Generation (Million-ton)	Fly ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
27	MCCPL BANDHAKHAR	Maruti Clean Coal and Power Limited (Chhattisgarh)	300.00	0.3238	0.2785	86.01
28	JHABUA POWER LIMITED	JHABUA POWER LIMITED (MP)	600.00	0.1169	0.0854	73.08
29	ADHUNIK PNR LTD.	ADHUNIK POWER & NATURAL RESOURCES LIMITED (Jharkhand)	540.00	0.4513	0.3895	86.31
30	LALITPUR TPS	LALITPUR POWER GENERATION COMPANY LIMITED (UP)	1980.00	0.9790	0.7279	74.36

It may be seen from Table-VIII above that **30** thermal power stations during the 1st half of the year 2017-18 have achieved fly ash utilization level in the range of 90% to 70%.

3.5 Thermal Power Stations with Fly Ash Utilization Level of less than 70% and up to 50% during the 1st half of the Year 2017-18

The Thermal Power Stations which have achieved the fly ash utilization in the range of less than 70% and up to 50% during the 1st half of the year 2017-18 along with fly ash utilization level achieved by each of these power stations are given in Table-IX below:

TABLE-IX

THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF LESS THAN 70% AND UP TO 50% DURING THE 1ST HALF OF THE YEAR 2017-18.

Sl. No.	Name of TPS	Power Utility	Installed Capacity (MW)	Fly ash Generation (Million-ton)	Fly ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	DURGAPUR STEEL	D.V.C. (West Bengal)	1000.00	0.8843	0.5853	66.19
2	O.P.Jindal Super TPP (Stage-I)	JPL (Chhattisgarh)	1000.00	1.0170	0.6020	59.19
3	O.P.Jindal Super TPP(Stage-II)	JPL (Chhattisgarh)	2400.00	0.8220	0.4250	51.70
4	BALLARI	K.P.C.L (Karnataka)	1700.00	0.2290	0.1281	55.92
5	RAICHUR	K.P.C.L.(Karnataka)	1720.00	1.2840	0.7199	56.07
6	SHREE SINGAJI TPS	M.P.P.G.C.L. (M.P.)	1200.00	0.3414	0.2381	69.74
7	PARAS	M.S.P.G.C.L.(Maharashtra)	500.00	0.4076	0.2584	63.39
8	MOUDA TPS	N.T.P.C.LTD (Maharashtra)	2320.00	0.8048	0.4050	50.32
9	SOLAPUR	N.T.P.C.LTD (Maharashtra)	660.00	0.0550	0.0370	67.27
10	ROSA PHASE-I	RPSC(L.U.P)	1200.00	0.8760	0.5490	62.68

Sl. No.	Name of TPS	Power Utility	Installed Capacity (MW)	Fly ash Generation (Million-ton)	Fly ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
11	DAHANU	RELIANCE INFRASTRUCTURE Ltd. (Maharashtra)	500.00	0.3760	0.2327	61.88
12	VALLUR	NTECL (Tamil Nadu)	1500.00	0.9000	0.4870	54.11
13	KAKATIYA (Stage-I)	TSGENCO (Telangana)	500.00	0.4167	0.2563	61.50
14	KOTHAGUDEM-VI	TSGENCO (Telangana))	500.00	0.4631	0.2706	58.42
15	RAIGARH TPP	TRN ENERGY PRIVATE LIMITED (Chhattisgarh)	600.00	0.2277	0.1398	61.39

It may be seen from Table-IX above that **15** thermal power stations during the 1st half year 2017-18 have achieved fly ash utilization level of less than 70% and up to 50%.

3.6 Power Stations with Fly Ash Utilization Level of less than 50% during the 1st half of the Year 2017-18

The Thermal Power Stations which have achieved the fly ash utilization level of less than 50% during the 1st half year 2017-18 along with fly ash utilization level achieved by each of these power stations are given in Table-X:

TABLE-X

THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF LESS THAN 50% DURING THE 1st HALF OF THE YEAR 2017-18

Sl. No.	Name of TPS	Power Utility	Installed Capacity (MW)	Fly ash Generation (Million-ton)	Fly ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	DURGAPUR	D.V.C.(West Bengal)	210.00	0.1117	0.0017	1.48
2	RAGHUNATHPUR	D.V.C. (West Bangal)	1200.00	0.3236	0.0051	1.57
3	AMARAVATI TPS	RATTANINDIA POWER Ltd. (Maharashtra)	1350.00	0.3934	0.1331	33.84
4	SATPURA	M.P.P.G.C.L. (M.P.)	1330.00	0.5496	0.1374	25.00
5	AMARKANTAK	M.P.P.G.C.L. (M.P.)	210.00	0.1705	0.0777	45.58
6	CHANDRAPUR	M.S.P.G.C.L. (Maharashtra)	2920.00	1.5141	0.3916	25.86
7	KHAPARKHEDA	M.S.P.G.C.L. (Maharashtra)	1340.00	0.8531	0.2604	30.52

Sl. No.	Name of TPS	Power Utility	Installed Capacity (MW)	Fly ash Generation (Million-ton)	Fly ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
8	SINGRAULI	N.T.P.C.LTD (U.P.)	2000.00	1.9290	0.0760	3.94
9	RIHAND	N.T.P.C.LTD (U.P.)	3000.00	2.1590	0.3440	15.93
10	KORBA	N.T.P.C.LTD (Chhattisgarh)	2600.00	2.5730	0.8070	31.36
11	VINDHYACHAL	N.T.P.C.LTD(M.P.)	4760.00	3.9550	0.5430	13.73
12	SIPAT	N.T.P.C.LTD (Chhattisgarh)	2980.00	2.7330	0.4110	15.04
13	FARAKKA	N.T.P.C.LTD (W.B.)	2100.00	1.3970	0.5270	37.72
14	KAHALGAON	N.T.P.C.LTD(Bihar)	2340.00	2.0560	0.7880	38.33
15	BARH SUPER TPS	N.T.P.C.LTD (Bihar)	1320.00	1.1920	0.1405	11.79
16	TALCHAR(KAN)	N.T.P.C.LTD(Odisha)	3000.00	3.9240	1.0130	25.82
17	BONGAIGAON	N.T.P.C.LTD (Assam)	500.00	0.0310	0.0000	0.00
18	KUDGI	N.T.P.C.LTD (Karnataka)	1600.00	0.1570	0.0420	26.75
19	IB VALLEY	O.P.G.C.L.(Odisha)	420.00	0.5478	0.1898	34.65
20	KOTHAGUDEM-V	TSGENCO (Telangana)	500.00	0.7512	0.0000	0.00
21	KOTHAGUDEM-I to IV	TSGENCO (Telangana))	720	0.7451	0.2555	34.30
22	KAKATIYA (Stage-II)	TSGENCO (Telangana)	600.00	0.5177	0.1720	33.21
23	ANPARA 'A' & 'B'	U.P.R.V.U.N.L. (U.P.)	2630.00	2.1494	0.0219	1.02
24	OBRA	U.P.R.V.U.N.L. (U.P.)	1000.00	0.5931	0.1234	20.80
25	PARICHHA	U.P.R.V.U.N.L. (U.P.)	1140.00	0.9837	0.4619	46.95

Sl. No.	Name of TPS	Power Utility	Installed Capacity (MW)	Fly ash Generation (Million-ton)	Fly ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
26	SAGARDIGHI	W.B.P.D.C.L(W.B.)	1600.00	0.6998	0.3479	49.72
27	TALWANDI	M/S TALWANDI SABO POWER LTD.(PUNJAB)	1980.00	0.9400	0.3700	39.36
28	KORBA (WEST)	C.S.P.G.C.L (Chhattisgarh)	1340.00	1.4102	0.2451	17.38
29	HINDUJA NATIONAL POWER COPORATION TPP (Vizag)	HINDUJA NATIONAL POWER COPORATION LIMITED (Andhra Pradesh)	1040.00	0.4884	0.0425	8.71

It may be seen from Table-X above that:

During the 1st half of the year 2017-18, out of **138** thermal power stations, **29** stations could not reach the level of fly ash utilization to 50%.

3.7 Power Stations with no fly ash Generation during the 1st half of the Year 2017-18

The Thermal Power Stations, which have no fly ash generation during the 1st half year 2017-18 along with the details of these power stations are given in Table-XI:

TABLE-XI

LIST OF THERMAL POWER STATIONS WITH NO FLY ASH GENERATION DURING THE 1st HALF OF THE YEAR 2017-18

Sl. No.	Name of TPS	Power Utility	Installed Capacity (MW)	Fly ash Generation (Million-ton)	Fly ash Utilization (Million-ton)	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	MIHAN	AMNEPL (Maharashtra)	246.00	TPS is under shut down condition since 5 th November,2013 till date		
2	T.G.S.	C.E.S.C. (West Bengal)	240.00	TPS have been under reserve shut down from 09.01.2016 till date		
3	RAJGHAT	IPGCL (Delhi)	135.00	TPS is not in operation since 21.05.2015 and it is in process of closure.		
4	GEPL TPP	GUPTA ENERGY Pvt. Ltd. (Maharashtra)	120.00	TPP is under shut down since June 2013.		

4.0 MODES OF FLY ASH UTILIZATION DURING THE 1ST HALF OF THE YEAR 2017-18

The data on fly ash utilization received from Thermal Power Stations/Power Utilities for the 1st half of the year 2017-18 has been compiled to ascertain the modes in which fly ash was utilized and the quantity utilized in each mode.

The modes in which fly ash were utilized during the 1st half year 2017-18 along with utilization in each mode are given in Table-XII:

TABLE-XII

MODES OF FLY ASH UTILIZATION DURING THE 1ST HALF OF THE YEAR 2017-18

Sl. No.	Mode of Utilization	Quantity of Fly Ash utilized in the mode of utilization	
		Million-ton	Percentage (%)
(1)	(2)	(3)	(4)
1	Cement	20.1100	23.75
2	Mine filling	5.6415	6.66
3	Bricks & Tiles	6.6873	7.90
4	Reclamation of low lying area	7.7373	9.14
5	Ash Dyke Raising	4.1055	4.85
6	Roads & flyovers	1.9250	2.27
7	Agriculture	0.2417	0.29
8	Concrete	0.6398	0.76
9	Hydro Power Sector	0.0052	0.01
10	Others	4.0379	4.77
11	Unutilized Fly Ash	33.55	39.62
Total		84.6778	100.00

The pie diagram showing the modes of utilization of fly ash during the 1st half of the Year 2017-18 is given in Figure-1 below:

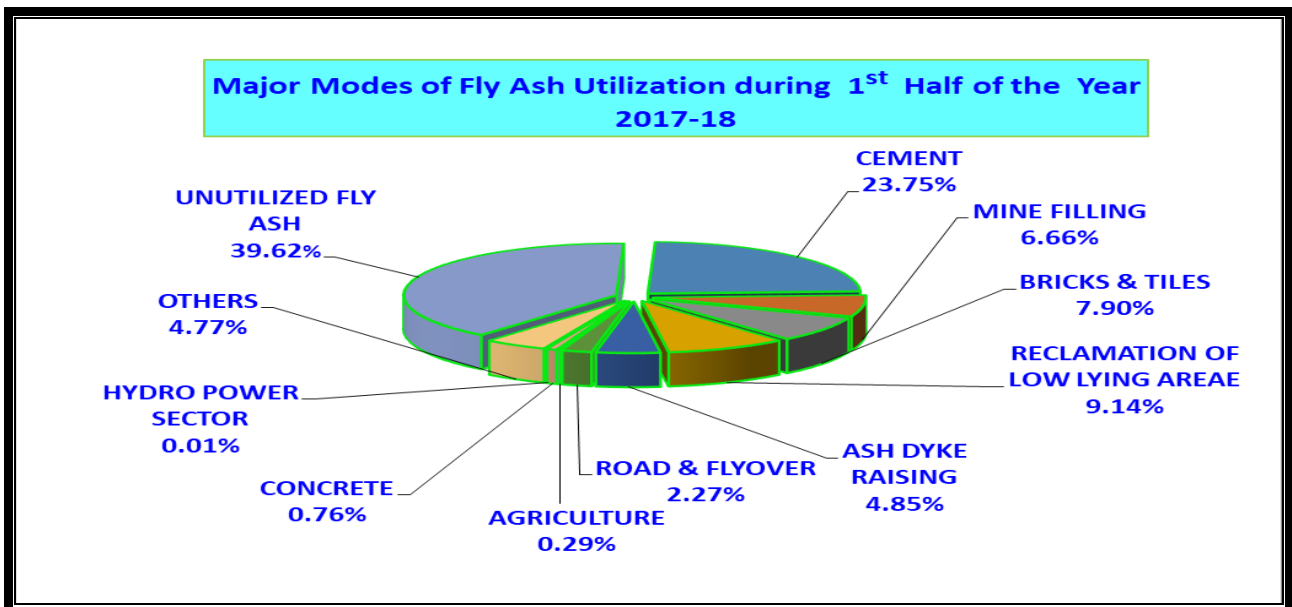


FIGURE-1

It may be seen from Table-XII and Figure -1 above that:

During the 1st half of the Year 2017-18, the maximum utilization of fly ash to the extent of 23.75 % of total fly ash utilized was in the Cement sector, followed by 9.14 % in reclamation of low lying area, 7.90 % in making bricks & tiles, 6.66 % in mine filling, , 4.85 % in ash dyke raising, 2.27 % in roads & embankments, 0.76 % in concrete, 0.29 % in agriculture and 4.77 % Ash is utilized in others etc. and 39.62 % Fly Ash remain Unutilized.

5.0 CONCLUSIONS & RECOMMENDATIONS

1. The highest level of fly ash utilization of about 63.28% was achieved in the year 2016-17 and it was about 58.48 % in the year 2011-12, about 61.37 % in the year 2012-13, 57.63 % in the year 2013-14, 55.69 % in 2014-15 and 60.97% in the year 2015-16. During the current period i.e. 1st half of the year **2017-18**, utilization of fly ash is **60.38 %** which is behind the stipulated target.
2. The utilization of fly ash is in the range of 6-7 % in making fly ash based building products and mine filling, whereas it is less than 5 % in the construction of roads & embankments. 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.
3. A Web page has been developed for Fly Ash Generation & its Utilization and Mobile App 'ASH TRACK' has been launched by Ministry of Power as an interface between TPS and potential users.
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 300 km of any coal/ lignite based thermal power station as mandated in MoEF&CC's Notification of 25th January, 2016. 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&CC's Notification of 25th January, 2016 within a prescribed distance from 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 300 km of any thermal power station as mandated in MoEF&CC's Notification of 25th January, 2016 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 regard.
- 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&CC'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 overburden (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 Railway Design & Standards Organization (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 but the utilization is below expectation. This may be attributed mainly to reservations in various quarters for use of fly ash in agriculture because of presence of heavy metals and radioactive elements in fly ash however, findings of research projects funded by Fly Ash Unit under Ministry of Science & Technology and studies carried out by other organizations indicate that there are no adverse effects in using fly ash in agriculture. Therefore, these concerns are required to be addressed for increasing the fly ash utilization.
- 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&CC's notifications of 3rd November, 2009 and 25th January 2016.
- There is a need to encourage 'Industry-Institute Interactions' for entrepreneur development, creating awareness and organizing training programmes and workshops.

- New emerging areas such as Light Weight Aggregates and Geo-polymers, Coal Beneficiation-Blending and Washing, etc. needs to focus for higher utilization of fly ash in the country.
- In view of large quantity of fly ash generation, utilization of fly ash may be introduced as construction material in academic curriculum of Engineering, Architecture, Mining, Agriculture etc.

* * *

1. CEA : Central Electricity Authority
2. MoEF&CC: Ministry of Environment, Forest & Climate Change
3. MW : Mega Watt
4. MoP : Ministry of Power
5. MT : Million-Ton
6. TPS : Thermal Power Stations
7. APGENCO: Andhra Pradesh generation Corporation Ltd.
8. ACBPL : Aryan Coal Beneficiation Private Ltd.
9. APL : Adani Power Ltd.,
10. APCPL : Aravali Power Corporation Pvt.Ltd.
11. AMNEPL: Abhijeet MADC Nagpur energy Pvt. Ltd.
12. BEPL : Bajaj Energy Pvt. Ltd.
13. BSEB : Bihar State Electricity Supply Company
14. BRBC L: Bhartiya Rail Bijlee Company Limited
15. CESC : Calcutta Electric Supply Company
16. CGPL : Coastal Gujarat Power Ltd.
17. CSPGCL: Chhattisgarh State Power Generation Company Ltd.
18. DVC : Damodar Valley Corporation
19. DPL : Durgapur Project Ltd.
20. DPSC : Dishengardh Power Supply Company Ltd.
21. EPGL : Essar Power Gujarat Ltd.
22. GIPCL : Gujarat Industries Power Corporation Ltd.
23. GMDCL: Gujarat Mineral Development Corporation Ltd.
24. GSECL: Gujarat State Electric Corporation Ltd.
25. HPGCL: Haryana Power Generation Company Ltd.
26. IPGCL: Indraprastha Power Generation Company Ltd.
27. JSEB : Jharkhand State Electricity Board.
28. JHPL : Jhajjar Power Ltd.
29. JPL : Jindal Power Ltd.
30. JSW : Jindal Steel Works
31. KPCL : Karnataka Power Corporation Ltd.
32. KBUNL: Kanti Bijlee Utpadan Nigam Ltd.
33. MPPGCL: Madhya Pradesh Power Generating Company Ltd.
34. MPL : Maithon Power Ltd.
35. MSPGCL: Maharashtra State Power Generating Company Ltd.
36. NLC: Neyvelli Lignite Corporation
37. NSPCL: NTPC -SAIL Power Corporation Ltd.
38. NTPC : National thermal Power Corporation
39. NTECL: NTPC – Tamilnadu Electric Company Ltd.
40. OPGCL: Odisha Power Generation Corporation Ltd.
41. PSPCL: Punjab State Power Corporation Ltd.
42. RRVUNL: Rajasthan Rajya Vidyut Utpadan Nigam Ltd.
43. RIL : Reliance Infrastructure Ltd.
44. RPSCL: Rosa Power Supply Company Ltd.
45. RWPL: Raj West Power Ltd.
46. SEL : Sterlite energy Ltd.
47. SVPPL: Shri Vardhman Power Pvt. Ltd.
48. ST-CMS: ST-CMS

- 49. TPCO : Tata Power Company Ltd.
- 50. TUNL : Tenunghat Vidyut Nigam Ltd.
- 51. TNG&D: Tamil Nadu Generating and Distribution Corporation Ltd.
- 52. UPCL: Udupi Power Company Ltd.
- 53. UPRVUNL: Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd.
- 54. VESPL : Vandana Energy Supply Power Ltd.
- 55. WBPDC: West Bengal Power Development Corporation Ltd.
- 56. WPCL : Wardha Power Company Ltd.
- 57. GEPL : Gupta Power Company Ltd.
- 58. VIP : Vidharbha Industries Power Ltd.
- 59. EPL : Essar Power Ltd.
- 60. ACB : Aryan Coal Beneficiary Ltd.
- 61. AP : Andhra Pradesh
- 62. MP : Madhya Pradesh
- 63. TN : Tamil Nadu
- 64. UP : Uttar Pradesh
- 65. WB : West Bengal
- 66. OB : Overburden
- 67. RDSO : Research Designs & Standards Organization

Annex-I

FLY ASH GENERATION AND ITS UTILIZATION AT COAL/LIGNITE BASED THERMAL POWER STATIONS IN THE COUNTRY FOR THE 1ST HALF YEAR 2017-18 (APRIL-2017 TO SEPTEMBER-2017) (POWER UTILITY WISE)

Sl No.	Name of TPS	Power Utility & State	Installed Capacity	Coal Consumed	Ash Content of coal	Fly Ash Generation	Fly Ash Utilization	Percentage Utilization	In making of Fly Ash based/Brick/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 in RCC Dam construction	In Ash Dyke raising	In reclamation of low lying Areae	In Mining filling	In agriculture/waste land Development	Others	Total Utilization
			(MW)	(MT)	%age (7)/(5)x100	(MT)	(MT)	%age (8)/(7)x100	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	Dr. N.T.R (Vijawada)	A.P.GENCO (Andhra Pradesh)	1760.00	4.2389	45.10	1.9117	1.6164	84.55	0.7257	0.4802	0.0159	0.0257			0.3055			0.0633	1.6164
2	RAYALSEEMA	A.P.GENCO (Andhra Pradesh)	1050.00	2.3349	44.11	1.0292	0.7613	74.29	0.1456	0.6156									0.7613
3	SRI DAMODARAM SANJEEVAIAH	APPDCL (Andhra Pradesh)	1600.00	1.4450	28.86	0.4170	0.3086	74.00	0.0471	0.1676					0.0939				0.3086
4	KASAI PALI	ACB(INDIA)Ltd (Chhattishgarh)	270.00	0.9348	57.30	0.5357	0.5357	100.00	0.0432						0.4925				0.5357
5	MUNDRA TPS	APL (Gujarat)	4620.00	6.8900	5.99	0.4130	0.4097	99.20	0.0004	0.1600	0.0013				0.0860			0.1620	0.4097
6	TIRODA	ADANI POWER Ltd. (Maharashtra)	3300.00	5.7977	31.95	1.8526	1.3966	75.39	0.0209	0.0313	0.0242				0.1611			1.1591	1.3966
7	KAWAI	ADANI POWER RAJASTHAN Ltd. (Rajasthan)	1320.00	1.7356	17.62	0.3058	0.2633	86.10	0.0027	0.2606									0.2633
8	MIHAN	AMNEPL (Maharastra) (No Generation)	246.00	0.0000	0.00	0.0000	0.0000	0.00											0.0000
9	CHAKABURA TPP (EXTN)	ACB (INDIA) Ltd. (Chhattishgarh)	30.00	0.1463	54.96	0.0804	0.0804	100.00	0.0073						0.0731				0.0804
10	BARKHERA	BEPL (UP)	90.00	0.1026	43.93	0.0451	0.0450	99.82	0.0003	0.0044					0.0403				0.0450
11	KHAMBER KHERA	BEPL (UP)	90.00	0.1075	41.77	0.0449	0.0449	99.97	0.0170	0.0178					0.0102				0.0449
12	KUNDARKI	BEPL (UP)	90.00	0.0953	41.54	0.0396	0.0396	100.00	0.0002	0.0360					0.0034				0.0396
13	MAQSOODAPUR	BEPL (UP)	90.00	0.1008	40.60	0.0409	0.0409	100.00		0.0068					0.0341				0.0409
14	UTRAULA	BEPL (UP)	90.00	0.1071	41.05	0.0440	0.0440	99.99		0.0358					0.0082				0.0440
15	B.B.G.S.	C.E.S.C. (West Bengal)	750.00	1.9870	35.63	0.7080	0.7080	100.00	0.0170	0.5440	0.0070	0.0020			0.1380				0.7080
16	S.G.S.	C.E.S.C. (West Bengal)	135.00	0.1310	23.66	0.0310	0.0310	100.00	0.0030	0.0160		0.0070			0.0050				0.0310
17	T.G.S.	C.E.S.C. (West Bengal) (No Generation)	240.00	0.0000	#DIV/0!	0.0000	0.0000	#DIV/0!	0.0000	0.0000					0.0000				0.0000
18	MUNDRA UMPP	CGPL (Gujarat)	4000.00	4.9570	7.14	0.3539	0.2785	78.69	0.0006	0.2220		0.0098						0.0461	0.2785
19	BOKARO 'B'	D.V.C.(Jharkhand)	1130.00	0.9738	42.79	0.4167	0.4571	109.69								0.4571			0.4571
20	CHANDRAPURA	D.V.C.(Jharkhand)	760.00	1.2513	42.76	0.5350	0.7166	133.95		0.0093						0.7074			0.7166

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			(MW)	(MT)	%age (7)/(5)x100	(MT)	(MT)	%age (8)/(7)x100	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
21	DURGAPUR	D.V.C.(West Bengal)	210.00	0.2589	43.15	0.1117	0.0017	1.48				0.0017							0.0017
22	MEJIA	D.V.C.(West Bengal)	2340.00	4.0949	46.29	1.8954	1.6779	88.53	0.0056	0.6046						1.0678			1.6779
23	DURGAPUR STEEL	D.V.C. (West Bengal)	1000.00	1.9534	45.27	0.8843	0.5853	66.19		0.4123					0.1730				0.5853
24	KODERMA	D.V.C. (Jharkhand)	1000.00	1.4970	43.61	0.6528	0.4735	72.53	0.0009	0.2795					0.1931				0.4735
25	RAGHUNATHPUR	D.V.C. (West Bengal)	1200.00	0.7087	45.66	0.3236	0.0051	1.57	0.0051										0.0051
26	D.P.P.S.	D.P.L (West Bengal)	660.00	0.8894	36.89	0.3281	0.3171	96.64	0.0055	0.2170	0.0863				0.0083				0.3171
27	SURAT LIGNITE	G.I.P.C.L. (Gujarat)	500.00	1.6225	16.04	0.2602	0.2602	100.00	0.1922									0.0680	0.2602
28	AKRIMOTA	G.M.D.C.L. (Gujarat)	250.00	0.5761	16.90	0.0974	0.1418	145.63								0.1418			0.1418
29	GANDHINAGAR	G.S.E.C.L. (Gujarat)	630.00	1.0090	33.89	0.3420	0.4510	131.87	0.1300	0.2490		0.0650						0.0070	0.4510
30	KUTCH LIGNITE	G.S.E.C.L. (Gujarat)	290.00	0.7470	19.95	0.1490	0.1490	100.00		0.0180						0.1310			0.1490
31	SIKKA	G.S.E.C.L. (Gujarat)	500.00	0.5740	9.41	0.0540	0.1290	238.89	0.1010	0.0280									0.1290
32	UKAI	G.S.E.C.L. (Gujarat)	1110.00	1.7530	33.66	0.5900	0.4570	77.46	0.2280	0.1600								0.0690	0.4570
33	WANAKBORI	G.S.E.C.L. (Gujarat)	1470.00	1.9510	35.73	0.6970	0.5670	81.35	0.0500	0.3550				0.0170				0.1450	0.5670
34	HISAR	H.P.G.C.L.(Haryana)	1200.00	1.5250	39.73	0.6058	0.5242	86.52	0.0063	0.2961	0.2094	0.0125							0.5242
35	PANIPAT	H.P.G.C.L.(Haryana)	920.00	0.9440	38.14	0.3600	0.4799	133.31	0.0314	0.4225					0.0104			0.0156	0.4799
36	RAJGHAT	IPGCL (Delhi) (No Generation)	135.00	0.0000	0.00	0.0000	0.0000	0.00	0.0000	0.0000	0.0000								0.0000
37	AMARAVATI TPS	RATTANINDIA POWER Ltd. (Maharashtra)	1350.00	1.2515	31.43	0.3934	0.1331	33.84	0.1245		0.0063			0.0007	0.0017				0.1331
38	INDIAN METALS & FERRO ALLOYS LTD.	INDIAN METALS & FERRO ALLOYS Ltd. (Odisha)	258.00	0.4742	45.22	0.214444	0.2144	99.99	0.0557		0.0620				0.0961			0.0006	0.2144
39	O.P.Jindal Super TPP (Stage-I)	JPL (Chhattisgarh)	1000.00	2.3070	44.08	1.0170	0.6020	59.19						0.5150	0.0670	0.0200			0.6020

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			(MW)	(MT)	%age (7)/(5)x100	(MT)	(MT)	%age (8)/(7)x100	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
40	O.P.Jindal Super TPP(Stage-II)	JPL (Chhattisgarh)	2400.00	1.8960	43.35	0.8220	0.4250	51.70	0.0210					0.3520		0.0520			0.4250
41	RATNAGIRI	JSW Energy Ltd (Maharashtra)	1200.00	1.5487	10.09	0.1563	0.1564	100.00	0.0159	0.0340		0.1065							0.1564
42	VIJAYANAGAR	JSW Energy Limited (Karnataka)	860.00	0.7670	11.58	0.0888	0.0866	97.52	0.0060	0.0621			0.0035					0.0150	0.0866
43	BALLARI	K.P.C.L (Karnataka)	1700.00	0.8051	28.44	0.2290	0.1281	55.92	0.0261	0.1018	0.0002								0.1281
44	RAICHUR	K.P.C.L.(Karnataka)	1720.00	3.7000	34.70	1.2840	0.7199	56.07	0.1382	0.5800	0.0017								0.7199
45	MAITHON RBTPP	MPL (Jharkhand)	1050.00	2.3568	40.20	0.9474	0.9143	96.50	0.0207	0.0074	0.0352					0.8511			0.9143
46	SANJAY GANDHI	M.P.P.G.C.L. (M.P.)	1340.00	2.3389	37.66	0.8809	0.6886	78.17	0.0263	0.6558	0.0065								0.6886
47	SATPURA	M.P.P.G.C.L. (M.P.)	1330.00	1.3501	40.71	0.5496	0.1374	25.00	0.1074	0.0055			0.0037		0.0208				0.1374
48	AMARKANTAK	M.P.P.G.C.L. (M.P.)	210.00	0.4930	34.59	0.1705	0.0777	45.58	0.0320	0.0458									0.0777
49	SHREE SINGAJI TPS	M.P.P.G.C.L. (M.P.)	1200.00	0.8367	40.80	0.3414	0.2381	69.74	0.0020	0.0082					0.1704			0.0576	0.2381
50	BHUSAWAL	M.S.P.G.C.L (Maharashtra)	1210.00	2.2239	34.00	0.7561	0.6197	81.96	0.2603	0.1494							0.0951	0.1150	0.6197
51	CHANDRAPUR	M.S.P.G.C.L. (Maharashtra)	2920.00	5.9909	25.27	1.5141	0.3916	25.86	0.0125	0.3791									0.3916
52	KHAPARKHEDA	M.S.P.G.C.L. (Maharashtra)	1340.00	2.5092	34.00	0.8531	0.2604	30.52	0.0767				0.1534				0.0303		0.2604
53	NASHIK	M.S.P.G.C.L. (Maharashtra)	630.00	1.1194	32.55	0.3643	0.42995	118.01	0.2941	0.1351			0.0008						0.42995
54	PARLI	M.S.P.G.C.L. (Maharashtra)	1170.00	0.9517	0.00	0.3560	0.3187	89.52	0.1340	0.1222							0.0087	0.0538	0.3187
55	PARAS	M.S.P.G.C.L.(Maharashtra)	500.00	1.1988	34.00	0.4076	0.2584	63.39	0.1684	0.0871	0.0028								0.2584
56	NEYVELI - I	N.L.C.LTD(Tamil Nadu)	600.00	2.7217	4.85	0.1320	0.0954	72.30	0.0159	0.0783		0.0013							0.0954
57	NEYVELI -I EXPN	N.L.C.LTD(Tamil Nadu)	420.00	1.5843	6.48	0.1027	0.1027	99.98	0.0133	0.0677		0.00005				0.0217			0.1027
58	NEYVELI - II	N.L.C.LTD(Tamil Nadu)	1470.00	5.6462	3.84	0.2169	0.2985	137.59	0.0522	0.1565	0.0062					0.0836			0.2985
59	NEYVELI - II EXPN	N.L.C.LTD (Tamil Nadu)	500.00	1.0178	6.23	0.0634	0.0638	100.74	0.0400				0.0238						0.0638

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			(MW)	(MT)	%age (7)/(5)x100	(MT)	(MT)	%age (8)/(7)x100	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
60	BARSINGSAR LIGNITE	N.L.C.LTD (Rajasthan)	250.00	6.1607	20.71	1.2758	1.2758	100.00	0.2336	0.6598						0.3824			1.2758
61	BHILAI	NSPCL (Chhattisgarh)	500.00	1.2080	38.84	0.4692	0.5111	108.95	0.0619	0.3743				0.0605	0.0145				0.5111
62	CUDDALORE	TAQA Neyveli Power Co. Pvt. Ltd. (Tamil Nadu)	250.00	0.4898	7.74	0.0379	0.0379	99.97	0.0045	0.0244				0.0085		0.0007		-0.0002	0.0379
63	BADARPUR	N.T.P.C.LTD (Delhi)	705.00	1.0110	29.97	0.3030	0.3120	102.97	0.1110	0.0950	0.1060								0.3120
64	DADRI	N.T.P.C.LTD (U.P.)	1820.00	3.3110	33.13	1.0970	1.0830	98.72	0.3100	0.5490	0.1250				0.0990			0.0000	1.0830
65	SINGRAULI	N.T.P.C.LTD (U.P.)	2000.00	5.3770	35.88	1.9290	0.0760	3.94		0.0080				0.0040	0.0640				0.0760
66	RIHAND	N.T.P.C.LTD (U.P.)	3000.00	7.0040	30.83	2.1590	0.3440	15.93	0.0450	0.0040				0.2620	0.0330				0.3440
67	FEROZE GANDHI UNCHAHAR	N.T.P.C. LTD(U.P.)	1050.00	2.3230	38.98	0.9056	0.9250	102.14	0.0180	0.5150	0.2630					0.0090		0.1200	0.9250
68	TANDA	N.T.P.C.LTD (U.P.)	440.00	1.0410	33.62	0.3500	0.4440	126.86	0.0070	0.1900	0.1690			0.0270	0.0510				0.4440
69	KORBA	N.T.P.C.LTD (Chhattisgarh)	2600.00	6.7670	38.02	2.5730	0.8070	31.36	0.0750					0.2170		0.0110		0.5040	0.8070
70	VINDHYACHAL	N.T.P.C.LTD(M.P.)	4760.00	11.8530	33.37	3.9550	0.5430	13.73	0.0350	0.0290				0.0680	0.0150			0.3960	0.5430
71	SIPAT	N.T.P.C.LTD (Chhattisgarh)	2980.00	7.1620	38.16	2.7330	0.4110	15.04	0.1180	0.1930	0.0150			0.0020	0.0830				0.4110
72	RAMAGUNDAM	N.T.P.C.LTD (Andhra Pradesh)	2600.00	5.9170	37.27	2.2050	2.1170	96.01	0.3520	0.1570					0.4170	1.0570		0.1340	2.1170
73	SIMHADRI	N.T.P.C.LTD (Andhra Pradesh)	2000.00	4.0700	35.11	1.4290	1.1020	77.12	0.2130	0.2070				0.6280	0.0540				1.1020
74	FARAKKA	N.T.P.C.LTD (W.B.)	2100.00	4.2250	33.07	1.3970	0.5270	37.72	0.0320	0.1470	0.0290			0.0010	0.2200			0.0980	0.5270
75	KAHALGAON	N.T.P.C.LTD(Bihar)	2340.00	6.2270	33.02	2.0560	0.7880	38.33	0.0650	0.1910	0.0220			0.0160	0.3050			0.1890	0.7880
76	BARH SUPER TPS	N.T.P.C.LTD (Bihar)	1320.00	2.8280	42.15	1.1920	0.1405	11.79	0.0672	0.0733									0.1405
77	TALCHAR(TPS)	N.T.P.C.LTD (Odisha)	460.00	1.5560	39.01	0.6070	0.6079	100.15	0.0079							0.6000			0.6079
78	TALCHAR(KAN)	N.T.P.C.LTD(Odisha)	3000.00	8.9730	43.73	3.9240	1.0130	25.82	0.0330	0.0120				0.9680					1.0130
79	MOUDA TPS	N.T.P.C.LTD (Maharashtra)	2320.00	2.2800	35.30	0.8048	0.4050	50.32	0.1970	0.0990	0.1050				0.0040				0.4050

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Sl No.	Name of TPS	Power Utility & State	Installed Capacity	Coal Consumed	Ash Content of coal	Fly Ash Generation	Fly Ash Utilization	Percentage Utilization	In making of Fly Ash based/Brick/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 in RCC Dam construction	In Ash Dyke raising	In reclamation of low lying Areae	In Mining filling	In agriculture/waste land Development	Others	Total Utilization
			(MW)	(MT)	%age (7)/(5)x100	(MT)	(MT)	%age (8)/(7)x100	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
100	ANPARA 'A' & 'B'	U.P.R.V.U.N.L. (U.P.)	2630.00	5.8173	36.95	2.1494	0.0219	1.02	0.0007	0.0159					0.0049			0.0004	0.0219
101	HARDUAGANJ	U.P.R.V.U.N.L. (U.P.)	670.00	1.2771	40.98	0.5233	0.4631	88.49	0.0036	0.1617					0.2978				0.4631
102	OBRA	U.P.R.V.U.N.L. (U.P.)	1000.00	1.8318	32.38	0.5931	0.1234	20.80	0.0008	0.0353	0.0873								0.1234
103	PANKI	U.P.R.V.U.N.L. (U.P.)	210.00	0.3050	34.24	0.1044	0.1921	183.91	0.0003	0.0110	0.0671				0.0000			0.1137	0.1921
104	PARICHHA	U.P.R.V.U.N.L. (U.P.)	1140.00	2.2785	43.17	0.9837	0.4619	46.95	0.0188	0.4097				0.0333	0.0000001				0.4619
105	UDUPI	UPCL (Karnataka)	1200.00	1.2665	5.61	0.0710	0.0604	85.07	0.0041	0.0455		0.0108							0.0604
106	KOLAGHAT	W.B.P.D.C.L(W.B.)	1260.00	1.8414	38.81	0.7147	0.5865	82.06	0.0355	0.2754					0.2756				0.5865
107	SAGARDIGHI	W.B.P.D.C.L(W.B.)	1600.00	2.0427	34.26	0.6998	0.3479	49.72	0.0693	0.2586	0.0086				0.0114				0.3479
108	BANDEL	W.B.P.D.C.L (W.B.)	455.00	0.7338	38.28	0.2809	0.3627	129.13	0.0086	0.1384					0.2157			0.0001	0.3627
109	SANTALDIH	W.B.P.D.C.L (W.B.)	500.00	0.0824	42.49	0.0350	0.0294	83.90	0.0004	0.0127					0.0161				0.0294
110	BAKRESWAR	W.B.P.D.C.L(W.B.)	1050.00	2.2894	40.15	0.9192	0.7499	81.58	0.0159	0.2333					0.5007				0.7499
111	SAI WARDHA POWER Ltd. WARORA	WPCL (Maharashtra)	540.00	0.3830	33.68	0.1290	0.1293	100.23	0.0230	0.0730	0.0003			0.0100		0.0230			0.1293
112	GMR WARORA ENERGY Ltd.	GMR WARORA ENERGY Ltd. (Maharashtra)	600.00	1.1347	29.01	0.3292	0.3245	98.58	0.0018	0.2893	0.0334								0.3245
113	GMR KAMALANGA TPP	GMR KAMALANGA ENERGY Ltd. (Odisha)	1050.00	2.0162	35.59	0.7175	0.8562	119.33	0.2530	0.0000	0.0026			0.0117	0.5889				0.8562
114	RATIZA TPS	Spectrum Coal & Power Limited (Chhattisgarh)	100.00	0.5446	61.83	0.3367	0.2646	78.59	0.0076						0.2570				0.2646
115	HALDIA ENERGY LIMITED	HALDIA ENERGY LIMITED (W.B.)	600.00	1.5620	30.73	0.4800	0.4810	100.21	0.0140	0.4600					0.0020			0.0050	0.4810
116	DHARIWAL INFRASTRUCTURE Ltd.	Dhariwal Infrastructure Ltd. (Maharashtra)	600.00	0.7940	33.75	0.2680	0.2406	89.93	0.0006	0.2400									0.2406
117	GMR Chhattisgarh	GMR Chhattisgarh Energy Ltd. (Chhattisgarh)	1370.00	0.2551	32.80	0.0837	0.0837	100.00	0.0022	0.0815									0.0837
118	MCCPL BANDHAKHAR	Maruti Clean Coal and Power Limited (Chhattisgarh)	300.00	0.7109	45.54	0.3238	0.2785	86.01							0.2785				0.2785

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			(MW)	(MT)	%age (7)/(5)x100	(MT)	(MT)	%age (8)/(7)x100	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)	(MT)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
119	SVPPL Renki	ACB India Limited (Chhattisgarh)	60.00	0.0239	59.55	0.0142	0.0142	100.07	0.0059					0.0083					0.0142
120	THAMMINAPATNAM TPS	MEENAKSHI ENERGY Ltd.(Telangana)	300.00	0.2964	8.03	0.0238	0.0885	371.93	0.0325					0.0560					0.0885
121	CHAKABURA TPP	ACB (INDIA) Ltd. (Chhattisgarh)	30.00	0.1700	55.00	0.0935	0.0935	100.00	0.0073						0.0862				0.0935
122	GEPL TPP	GUPTA ENERGY Pvt. Ltd. (Maharashtra) (No Generation)	120.00	0.0000	0.00	0.0000	0.0000	0.00											0.0000
123	VALLUR	NTECL (Tamil Nadu)	1500.00	2.6620	33.81	0.9000	0.4870	54.11	0.0940	0.1190		0.1190			0.0000			0.1550	0.4870
124	MUTIARA	COASTAL ENERGEN PVT. LTD (Tamil Nadu)	1200.00	1.1413	2.97	0.0339	0.0332	97.90	0.0102	0.0230									0.0332
125	SIMHAPURI	SIMHAPURI ENERGY LIMITED (Andhra Pradesh)	600.00	0.0132	17.53	0.0023	0.0023	100.00	0.0023										0.0023
126	JHABUA POWER LIMITED	JHABUA POWER LIMITED (MP)	600.00	0.3654	32.00	0.1169	0.0854	73.08	0.0038	0.0396	0.0127							0.0292	0.0854
127	NLC TAMILNADU POWER LTD.	NLC TAMILNADU POWER LIMITED (Tamil Nadu)	1000.00	1.5689	33.03	0.5182	0.5182	100.00	0.0325	0.4774							0.0083		0.5182
128	TENUGHAT TPS	TENUGHAT VIDHYUT NIGAM LIMITED (Jharkhand)	420.00	0.5415	41.77	0.2261	0.3123	138.10							0.3123				0.3123
129	TALWANDI	M/S TALWANDI SABO POWER LTD.(PUNJAB)	1980.00	2.4400	38.52	0.9400	0.3700	39.36		0.3700									0.3700
130	RAJPURA	NABHA POWER LIMITED(Punjab)	1400.00	2.3436	30.78	0.7213	0.9314	129.13	0.0200	0.5139	0.3218	0.0756							0.9313
131	ADHUNIK PNR LTD.	ADHUNIK POWER & NATURAL RESOURCES LIMITED (Jharkhand)	540.00	1.2282	36.75	0.4513	0.3895	86.31	0.0062	0.0147				0.1743	0.1942				0.3895
132	LALITPUR TPS	LALITPUR POWER GENERATION COMPANY LIMITED (UP)	1980.00	2.9289	33.42	0.9790	0.7279	74.36	0.0065	0.4328					0.2886				0.7279
133	KORBA (WEST)	C.S.P.G.C.L (Chhattisgarh)	1340.00	3.4585	40.78	1.4102	0.2451	17.38	0.0076					0.0572	0.1702			0.0101	0.2451
134	DISHERGARH TPS	INDIA POWER CORPORATION LIMITED(West Bangal)	12.00	0.0235	53.00	0.0125	0.0125	100.00								0.0125			0.0125
135	HINDUJA NATIONAL POWER COPORATION TPP (Vizag)	HINDUJA NATIONAL POWER COPORATION LIMITED (Andhra Pradesh)	1040.00	1.4208	34.38	0.4884	0.0425	8.71	0.0290	0.0000	0.0000	0.0000	0.0000	0.0000	0.0053	0.0000	0.0000	0.0083	0.0425
136	DERANG TPP	JINDAL INDIA THERMAL POWER LIMITED (Odisha)	1200.00	1.2147	38.00	0.4616	0.4605	99.77	0.0250					0.2849	0.1506				0.4605

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
137	RAIGARH TPP	TRN ENERGY PRIVATE LIMITED (Chhattisgarh)	600.00	0.6687	34.06	0.2277	0.1398	61.39	0.0049						0.1349				0.1398
138	IL & FS TNPC Ltd	IL & FS TAMIL NADU POWER COMPANY Ltd (Tamil Nadu)	1200.00	1.3113	3.88	0.0509	0.0509	100.00		0.0509									0.0509
Grand Total			147725.50	263.7313	32.11	84.6778	51.1314	60.38	6.6873	20.1100	1.9250	0.6398	0.0052	4.1055	7.7373	5.6415	0.2417	4.0379	51.1313