REPORT

ON

FLY ASH GENERATION

AT

COAL/LIGNITE BASED THERMAL POWER STATIONS

AND

ITS UTILIZATION IN THE COUNTRY

FOR

1ST HALF OF THE YEAR 2016-17
(April, 2016 to Sept., 2016)

CENTRAL ELECTRICITY AUTHORITY

NEW DELHI

May, 2017

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CENTRAL ELECTRICITY AUTHORITY
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 2016-17 (APRIL, 2016 TO SEPTEMBER, 2016)

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 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 the information regarding the level of fly ash utilization achieved by various power stations in relation to targets prescribed in MoEF&CC's notification of 3rd November, 2009 and to take corrective measures in the cases of Thermal Power Stations lagging behind in achieving the prescribed targets of fly ash utilization.

2.0 ASH GENERATION & UTILIZATION DURING THE 1ST HALF OF THE YEAR 2016-17

2.1 A Brief Summary

Fly ash generation & utilization data for the 1st half of the Year 2016-17 (April, 2016 to Sept., 2016) has been received from **144** (One hundred forty-four) 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 2015-16	1st Half Year 2016-17
Nos. of Thermal Power Stations from which data was received	:	132	**144**
Installed capacity (MW)	:	130428.80	**147697.5**
Coal consumed (Million-Ton)	:	251.69	**261.36**
Average Ash Content (%)	:	33.23	**32.71**
Fly Ash Generation (Million-Ton)	:	83.64	**85.48**
Fly Ash Utilization (Million-Ton)	:	46.87	**49.52**
Percentage Fly Ash Utilization	:	56.04	**57.93**

It can be seen from the above table that during current half year, **144** 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 2016-17 in comparison to the utilization during the 1st half of previous year (of **132** thermal power stations).

Power Station wise fly ash generation & its utilization status including modes of utilization for the 1st half of the Year 2016-17 for all the **144** 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 2016-17

The status of fly ash generation & utilization for the 1st half of the year 2016-17 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 FOR THE 1st HALF OF THE YEAR 2016-17

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 Co. (APGENCO)	2	2810.00	2.8699	2.0416	71.14
2	APPDCL(Andhra Pradesh)	1	1600.00	0.6752	0.2860	42.36
3	APL (Gujarat)	1	4620.00	0.4210	0.4776	113.44
4	ACB (INDIA) Ltd. (Chhattisgarh)	4	390.00	0.7642	0.7480	97.88
5	AMNEPL (Maharashtra)	1	246.00	0.0000	0.0000	0.00
6	Adani Power Ltd. (Maharashtra)	1	3300.00	1.5000	0.7045	46.97
7	Adani Power Ltd. (Rajasthan)	1	1320.00	0.1987	0.1544	77.71
8	BEPL (UP)	5	450.00	0.4353	0.4352	99.98
9	C.E.S.C. Ltd.	3	1125.00	0.6900	0.6900	100.00
10	C.G.P.L (Gujarat)	1	4000.00	0.3730	0.3200	85.79
11	Chhattisgarh State Power Generation Company Ltd. (C.S.P.G.C.L.)	3	1780.00	2.0230	0.1222	6.04
12	COASTAL ENERGEN Pvt. Ltd (Tamil Nadu)	1	1200.00	0.0542	0.0560	103.17
13	Damodar Valley Corporation (D.V.C.)	7	7410.00	4.6946	4.4543	94.88
14	Durgapur Projects Ltd. (D.P.L.)	1	660.00	0.2793	0.2640	94.55
15	Dhariwal Infrastructure Ltd. (Maharashtra)	1	600.00	0.1550	0.1550	100.00
16	ESSAR POWER MP LTD.(M.P)	1	1200.00	0.2000	0.1899	94.95
17	Gujarat Industries Power Corporation Ltd. (G.I.P.C.L.)	1	500.00	0.2899	0.2899	100.00
18	Gujarat Mineral Development Corporation Ltd. (G.M.D.C.L.)	1	250.00	0.0940	0.0931	99.01
19	G.S.E.C.L. (Gujarat)	5	4720.00	1.5687	1.7432	111.12
20	Gupta Energy Pvt. Ltd.(Maharashtra)	1	120.00	0.0000	0.0000	0.00
21	GMR Kamalanga Energy Ltd (Odisha)	1	700.00	0.6980	0.4643	66.53
22	G.M.R. Warora Energy Ltd. (Maharashtra)	1	600.00	0.3125	0.2723	87.14
23	GMR Chhattisgarh Energy Ltd. (Chhattisgarh)	1	1370.00	0.0832	0.0715	85.95
24	Haryana Power Generation Cor. Ltd. (H.P.G.C.L.)	3	2720.00	1.1452	1.9246	168.06
25	HALDIA ENERGY LIMITTED (W.B.)	1	600.00	0.4880	0.4910	100.61
26	Indraprastha Power Generation Company Ltd. (I.P.G.C.L)	1	135.00	0.0000	0.0000	0.00
27	Ideal Energy Projects Ltd.(Maharashtra)	1	270.00	0.0000	0.0000	0.00
28	INDIAN METALS & FERRO ALLOYS LTD. (Odisha)	1	258.00	0.2294	0.2294	100.00
29	Indian Bulls Power Ltd. (Maharashtra)	1	1350.00	0.2282	0.1237	54.20
30	J.H.P.L (HR)	1	1320.00	0.2721	0.2025	74.41
31	J.P.L (Chhattisgarh)	2	2800.00	1.6070	0.6700	41.69
32	JSW Energy Ltd.	2	2060.00	0.1728	0.1728	100.00
33	Karnataka Power Corporation Ltd. (K.P.C.L.)	2	3420.00	1.6051	0.8401	52.34
34	Lanco Power Ltd.	1	600.00	0.5632	0.2813	49.94

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)
35	Madhya Pradesh Power Generation Corporation Ltd. (M.P.P.G.C.L.)	4	4080.00	1.4905	0.8882	59.59
36	M.P.L (Jharkhand)	1	1050.00	0.8362	0.8993	107.55
37	Maharashtra State Power Generation Corporation Ltd. (M.S.P.G.C.L)	8	9930.00	5.2587	3.0441	57.89
38	Meenakshi Energy Ltd. (A.P)	1	300.00	0.0228	0.0075	33.06
39	Maruti Clean Coal and Power Limited (Chhattisgarh)	1	300.00	0.1291	0.0607	47.03
40	Neyvelli Lignite Corporation Ltd. (N.L.C. Ltd)	5	3240.00	0.6784	0.6158	90.77
41	NSPCL (Chhattisgarh)	1	500.00	0.5731	0.5215	91.00
42	N.T.P.C. Ltd.	18	33925.00	30.1404	11.6577	38.68
43	NTECL (Tamil Nadu)	1	1500.00	0.8210	0.2306	28.09
44	Orissa Power Generation Corporation Ltd. (O.P.G.C.L.)	1	420.00	0.6186	0.1468	23.73
45	Punjab State Power Corporation Ltd. (P.S.P.C.L).	3	2640.00	1.1268	1.1113	98.62
46	PGCIL (Chhattisgarh)	1	720.00	0.0000	0.0000	0.00
47	Rajasthan Rajya Vidyut Utpadan Nigam Ltd. (R.R.V.U.N.L.)	2	2240.00	1.3627	1.4103	103.49
48	Reliance Infrastructure Limited (R.I.L)	1	500.00	0.2540	0.3091	121.69
49	RPSCL (UP)	1	1200.00	0.9149	0.5142	56.20
50	R.W.P.L. (JSW)	1	1080.00	0.5237	0.5441	103.90
51	Spectrum Coal & Power Ltd. (Chhattisgarh)	1	50.00	0.0836	0.0583	69.67
52	Taqa Neyveli Power Company Pvt.Ltd.	1	250.00	0.0342	0.0341	99.87
53	Tata Power Company (T.P.CO.)	2	1297.50	0.5632	0.5403	95.93
54	Torrent Power Ltd.	1	422.00	0.1949	0.1949	100.00
55	TSGENCO (Telangana)	4	2100.00	1.5984	0.5119	32.02
56	UPCL (Karnataka)	1	1200.00	0.0587	0.0503	85.69
57	Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd (UPRVUNL)	5	4844.00	5.6023	1.4272	25.48
58	West Bengal Power Development Corporation Limited (W.B.P.D.C.L)	5	4365.00	3.4165	2.6814	76.50
59	WPCL (KSKEV Ltd.) (Maharashtra)	1	540.00	0.1610	0.1610	100.00
60	SEL(Andhra Pradesh)	1	450.00	0.0282	0.0282	99.96
61	M/S JHABUA POWER LIMITED (MP)	1	600.00	0.0758	0.0692	91.33
62	JAYPEE BINA THERMAL POWER PLANT (MP)	2	1820.00	0.6600	0.6600	100.00
63	NLC TAMILNADU POWER LIMITED (Tamil Nadu)	1	1000.00	0.4161	0.4161	100.00
64	THERMAL POWERTECH CORPORATION OF INDIA LIMITED (Andhra Pradesh)	1	1320.00	0.4421	0.0531	12.02
65	BRBCL (Bihar)	1	250.00	0.0000	0.0000	0.00
66	THE DURGAPUR PROJECTS LIMITED (West Bengal)	1	660.00	0.2793	0.2640	94.55
67	M/S TALWANDI SABO POWER Ltd. (Punjab)	1	1980.00	0.9160	0.1950	21.29
68	NABHA POWER LIMITED (Punjab)	1	1400.00	0.7685	0.7034	91.53

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)
69	ADHUNIK POWER & NATURAL RESOURCES LIMITED (Jharkhand)	1	5400.00	0.4012	0.3509	87.47
70	LALITPUR POWER GENERATION COMPANY LIMITED (UP)	1	1980.00	0.2249	0.1642	73.03
GRAND TOTAL		**144**	**147697.50**	**85.4829**	**49.5208**	**57.93**

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 2016-17 was received from **70** Power Utilities out of which **18** Power Utilities have achieved fly ash utilization level of 100% or more and **22** Power Utilities have achieved fly ash utilization level in the range of less than 100% to 75%.

The comparison between performance of power utilities during the 1st half of the year 2015-16 and 1st half of the year 2016-17 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	
		1st Half of the Year 2015-16	1st Half of the Year 2016-17
(1)	(2)	(3)	(4)
1	100% and more than 100%	15	18
2	Less than 100% and up to 75%	20	22
3	Less than 75% and up to 60%	4	5
4	Less than 60%	17	19
5	No Generation	2	6
TOTAL		**58**	**70**

The performance of the power utilities with respect to 100 % & more utilization has increased during the 1st half of the year 2016-17 in comparison to same period of previous year.

2.3 State wise Status of Fly Ash Generation & its Utilization during the 1st half of the Year 2016-17

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 1ST HALF OF THE YEAR 2016-17

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	ANDHRA PRADESH	7	10780.00	7.7804	5.0419	64.80
2	ASSAM	1	250.00	0.1030	0.0000	0.00
3	BIHAR	3	3910.00	3.7920	0.7848	20.70
4	CHHATISGARH	17	14090.00	11.2924	3.9404	34.89
5	DELHI	2	840.00	0.3180	0.5320	167.30
6	GUJARAT	10	14512.00	2.9415	3.1187	106.02
7	HARYANA	4	4040.00	1.4173	2.1271	150.08
8	JHARKHAND	6	9517.50	3.4062	3.4051	99.97
9	KARNATAKA	4	5480.00	1.7392	0.9658	55.53
10	MADHYA PRADESH	9	11960.00	6.3483	2.5273	39.81
11	MAHARASHTRA	20	20406.00	8.3731	5.2125	62.25
12	ODISHA	5	4838.00	5.6581	2.2465	39.70
13	PUNJAB	5	6020.00	2.8113	2.0096	71.48
14	RAJASTHAN	5	4890.00	2.1847	2.2085	101.08
15	TAMILNADU	8	6940.00	1.9042	1.2529	65.80
16	TALANGANA	5	2400.00	1.6213	0.5194	32.04
17	UTTAR PRADESH	17	16784.00	13.9188	5.7488	41.30
18	WEST BENGAL	16	14400.00	9.8730	7.8796	79.81
GRAND TOTAL		**144**	**147697.50**	**85.4829**	**49.5208**	**57.93**

It may be seen from Table-IV above that:

(i) 4 states namely Chhattisgarh, Maharashtra, Uttar Pradesh and West Bengal have generated more than **8** million-ton of fly ash during the 1st half of the Year 2016-17 and the maximum fly ash of more than **13** million-ton was generated in U.P. during the aforesaid period.

(ii) During the 1st half of the Year 2016-17, Out of 18 states namely Gujarat, Haryana and Rajasthan have achieved the fly ash utilization level of more than 100% with Delhi reporting 167.30 % fly ash utilization.

(iii) 14 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 2016-17 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 2016-17, 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 about 90% within four 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 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. However, it is seen that the target set by MoEF&CC's notification has not achieved as a whole.

3.1 Range of Fly Ash Utilization during the 1st Half of the Year 2016-17

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	
		1st Half of the Year 2015-16	1st Half of the Year 2016-17
(1)	(2)	(3)	(4)
1	100% and more than 100%	43	44
2	Less than 100% and up to 75%	30	37
3	Less than 75% and up to 60%	14	12
4	Less than 60%	40	44
5	Nos. of TPS which have not generated any significant fly ash or any fly ash	5	7
TOTAL		**132**	**144**

3.2 Thermal Power Stations that have achieved Fly Ash utilization level of 100% or more during the 1st half of the Year 2016-17

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 2016-17.

TABLE–VI

THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF 100% OR MORE DURING THE 1st HALF OF THE YEAR 2016-17

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	0.4210	0.4776	113.44
2	CHAKABURA TPP (EXTN)	ACB (INDIA) Ltd. (Chhattisgarh)	30.00	0.0832	0.0832	100.00

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)
3	BARKHERA	BEPL (UP)	90.00	0.0843	0.0843	100.00
4	KHAMBERKHERA	BEPL (UP)	90.00	0.0818	0.0818	100.00
5	KUNDARKI	BEPL (UP)	90.00	0.0935	0.0935	100.00
6	B.B.G.S.	C.E.S.C. (West Bengal)	750.00	0.6120	0.6120	100.00
7	S.G.S.	C.E.S.C. (West Bengal)	135.00	0.0540	0.0540	100.00
8	T.G.S.	C.E.S.C. (West Bengal)	240.00	0.0240	0.0240	100.00
9	BOKARO 'B'	D.V.C. (Jharkhand)	630.00	0.2999	0.6283	209.48
10	DURGAPUR	D.V.C.(West Bengal)	350.00	0.0542	0.3887	716.92
11	MEJIA	D.V.C.(West Bengal)	2340.00	1.8980	2.0662	108.86
12	SURAT LIGNITE	G.I.P.C.L. (Gujarat)	500.00	0.2899	0.2899	100.00
13	GANDHINAGAR	G.S.E.C.L. (Gujarat)	870.00	0.2410	0.4367	181.20
14	SIKKA	G.S.E.C.L. (Gujarat)	740.00	0.0427	0.1041	243.79
15	WANAKBORI	G.S.E.C.L. (Gujarat)	1470.00	0.4850	0.5480	112.99
16	YAMUNANAGAR	H.P.G.C.L.(Haryana)	600.00	0.3087	0.7057	228.64
17	PANIPAT	H.P.G.C.L.(Haryana)	920.00	0.2820	0.6725	238.46
18	INDIAN METALS & FERRO ALLOYS LTD.	INDIAN METALS & FERRO ALLOYS Ltd. (Odisha)	258.00	0.2294	0.2294	100.00
19	RATNAGIRI	JSW Energy Ltd. (Maharashtra)	1200.00	0.1251	0.1251	100.00
20	VIJAYANAGAR	JSW Energy Limited (Karnataka)	860.00	0.0477	0.0477	100.00
21	MAITHON RBTPP	MPL (Jharkhand)	1050.00	0.8362	0.8993	107.55
22	NASHIK	M.S.P.G.C.L.(Maharashtra)	630.00	0.4814	0.5194	107.90
23	NEYVELI - II EXPN	N.L.C. Ltd (Tamil Nadu)	500.00	0.0282	0.0282	100.00
24	BARSINGSAR LIGNITE	N.L.C. Ltd (Rajasthan)	250.00	0.0997	0.0997	100.00
25	BADARPUR	N.T.P.C. Ltd (Delhi)	705.00	0.3180	0.5320	167.30
26	DADRI	N.T.P.C. Ltd (U.P.)	1820.00	1.1340	1.6880	148.85
27	TALCHAR(TPS)	N.T.P.C. Ltd (Odisha)	460.00	0.5900	0.5909	100.15
28	ROPAR	P.S.P.C.L. (Punjab)	1260.00	0.5154	0.6627	128.58
29	KOTA	RRVUNL (Rajasthan)	1240.00	0.7366	0.7498	101.79
30	CHHABRA	RRVUNL (Rajasthan)	1000	0.6261	0.6605	105.49
31	JALIPA KAPURDI	RWPL (Rajasthan)	1080	0.5237	0.5441	103.90
32	DAHANU	RELIANCE INFRASTRUCTURE Ltd. (Maharashtra)	500.00	0.2540	0.3091	121.69
33	TROMBAY	T.P.CO. (Maharashtra)	750.00	0.0267	0.0267	100.00
34	SABARMATI	TORENT POWER Ltd. (Gujarat)	422.00	0.1949	0.1949	100.00
35	PANKI	U.P.R.V.U.N.L. (U.P.)	210.00	0.1448	0.1732	119.60
36	SAI WARDHA POWER Ltd. WARORA	WPCL (Maharashtra)	540.00	0.1610	0.1610	100.00
37	HALDIA ENERGY LIMITED	HALDIA ENERGY LIMITED (W.B)	600.00	0.4880	0.4910	100.61
38	DHARIWAL INFRASTRUCTURE Ltd.	Dhariwal Infrastructure Ltd. (Maharashtra)	600.00	0.1550	0.1550	100.00
39	SVPPL Renki	ACB India Limited (Chhattisgarh)	60.00	0.0062	0.0062	100.00
40	CHAKABURA TPP	ACB (INDIA) Ltd. (Chhattisgarh)	30.00	0.0934	0.0934	100.00
41	MUTIARA	COASTAL ENERGEN PVT. LTD (Tamil Nadu)	1200.00	0.0542	0.0560	103.17
42	JAYPEE BINA TPP	JAYPEE BINA THERMAL POWER PLANT (MP)	500.00	0.0270	0.0270	100.00
43	JAYPEE NIGRIE SUPER TPP	JAYPEE BINA THERMAL POWER PLANT (MP)	1320.00	0.6330	0.6330	100.00

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)
44	NLC TAMILNADU POWER LTD.	NLC TAMILNADU POWER LIMITED (Tamil Nadu)	1000.00	0.4161	0.4161	100.00

It may be seen from Table-VI above that:

During the 1st half of the Year 2016-17, **44** thermal power stations have achieved the fly ash utilization level of 100% or more including **23** thermal power stations which have achieved fly ash utilization level of more than 100%.

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

3.3 Thermal Power Stations with Fly Ash Utilization Level of 75% to 100% during the 1st half of the Year 2016-17

The names of Thermal Power Stations which have achieved the fly ash utilization in the range of 75% to 100% during the 1st half year 2015-16 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 75% to 100% DURING THE 1st HALF OF THE YEAR 2016-17

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	RAYALSEEMA	A.P.GENCO (Andhra Pradesh)	1050.00	0.9495	0.7249	75.38
2	KASAI PALI	ACB(INDIA)L (Chhattisgarh)	270.00	0.5815	0.5653	97.21
3	KAWAI	ADANI POWER RAJASTHAN Ltd. (Rajasthan)	1320.00	0.1987	0.1544	77.71
4	MAQSOODAPUR	BEPL (UP)	90.00	0.0831	0.0830	99.95
5	UTRAULA	BEPL (UP)	90.00	0.0926	0.0925	99.97
6	MUNDRA UMPP	CGPL (Gujarat)	4000.00	0.3730	0.3200	85.79
7	CHANDRAPURA	D.V.C.(Jharkhand)	890.00	0.8090	0.7976	98.59
8	D.P.P.S.	D.P.L (West Bengal)	660.00	0.2793	0.2640	94.55
9	MAHAN	ESSAR POWER MP Ltd.(M.P.)	1200.00	0.2000	0.1899	94.95
10	AKRIMOTA	G.M.D.C.L. (Gujarat)	250.00	0.0940	0.0931	99.01
11	KUTCH LIGNITE	G.S.E.C.L. (Gujarat)	290.00	0.1680	0.1674	99.64
12	UKAI	G.S.E.C.L. (Gujarat)	1350.00	0.6320	0.4870	77.06
13	HISAR	H.P.G.C.L.(Haryana)	1200.00	0.5545	0.5465	98.54
14	SANJAY GANDHI	M.P.P.G.C.L. (M.P.)	1340.00	0.8211	0.6476	78.88
15	BHUSAWAL	M.S.P.G.C.L. (Maharashtra)	1420.00	0.6274	0.4935	78.65

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)
16	PARAS	M.S.P.G.C.L. (Maharashtra)	500.00	0.4356	0.4292	98.53
17	NEYVELI -I EXPN	N.L.C. Ltd (Tamil Nadu)	420.00	0.1225	0.1224	99.97
18	NEYVELI - II	N.L.C. Ltd (Tamil Nadu)	1470.00	0.2830	0.2807	99.19
19	BHILAI	NSPCL (Chhattisgarh)	500.00	0.5731	0.5215	91.00
20	CUDDALORE	TAQA Neyveli Power Co. Pvt. Ltd. (Tamil Nadu)	250.00	0.0342	0.0341	99.87
21	FEROZE GANDHI UNACHAR	N.T.P.C. Ltd (U.P.)	1050.00	0.8975	0.6970	77.66
22	TANDA	N.T.P.C. Ltd (U.P.)	440.00	0.4330	0.4050	93.53
23	MOUDA TPS	N.T.P.C. Ltd (Maharashtra)	1000.00	0.3519	0.2910	82.69
24	BATHINDA	P.S.P.C.L. (Punjab)	460.00	0.1333	0.1065	79.88
25	JOJOBERA	T.P.CO. (Jharkhand)	547.50	0.5365	0.5136	95.73
26	KAKATIA (Stage-I)	T.S.G.E.N.C.O. (Telangana)	500.00	0.2807	0.2394	85.31
27	PARICHHA	U.P.R.V.U.N.L. (U.P.)	1140.00	0.9870	0.7791	78.93
28	UDUPI	UPCL (Karnataka)	1200.00	0.0587	0.0503	85.69
29	KOLAGHAT	W.B.P.D.C.L(W.B.)	1260.00	1.1438	1.0381	90.76
30	SANTALDIH	W.B.P.D.C.L (W.B.)	500.00	0.3584	0.3352	74.99
31	GMR WAROARA ENERGY Ltd.	GMR WAROARA ENERGY Ltd. (Maharashtra)	600.00	0.3125	0.2723	87.14
32	GMR Chhattisgarh	GMR Chhattisgarh Energy Ltd. (Chhattisgarh)	1370.00	0.0832	0.0715	85.95
33	SIMHAPURI	SEL (Andhra Pradesh)	450.00	0.0282	0.0282	99.96
34	JHABUA POWER LIMITED	M/S JHABUA POWER LIMITED (MP)	600.000	0.0758	0.0692	91.33
35	THE DURGAPUR TPS	THE DURGAPUR PROJECTS LIMITED (West Bengal)	660.00	0.2793	0.2640	94.55
36	RAJPURA	NABHA POWER LIMITED(Punjab)	1400.00	0.7685	0.7034	91.53
37	ADHUNIK PNR LTD.	ADHUNIK POWER & NATURAL RESOURCES LIMITED (Jharkhand)	5400.00	0.4012	0.3509	87.47

It may be seen from Table-VII above that **37** thermal power stations during the 1st half of the year 2016-17 have achieved fly ash utilization level in the range of 75% to 100%.

3.4 Thermal Power Stations with Fly Ash Utilization Level of 60% to 75% during the 1st half of the Year 2016-17

The Thermal Power Stations which have achieved the fly ash utilization in the range of 60% to 75% during the 1st half of the year 2016-17 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 60% TO 75% DURING THE 1ST HALF OF THE YEAR 2016-17.

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	1.9204	1.3168	68.57
2	MAHATMA GANDHI	JHPL (Haryana)	1320.00	0.2721	0.2025	74.41
3	RAMAGUNDAM	N.T.P.C. Ltd (Andhra Pradesh)	2600.00	2.2230	1.6550	74.45
4	SIMHADRI	N.T.P.C. Ltd (Andhra Pradesh)	2000.00	1.5420	0.9780	63.42
5	LEHRA MOHABAT	P.S.P.C.L. (Punjab)	920.00	0.4781	0.3420	71.54
6	HARDUAGANJ	U.P.R.V.U.N.L.(U.P.)	670.00	0.5302	0.3509	66.18
7	SAGARDIGHI	W.B.P.D.C.L(W.B.)	1100.00	0.5425	0.3353	61.82
8	BANDEL	W.B.P.D.C.L (W.B.)	455.00	0.2969	0.1813	61.06
9	BAKRESWAR	W.B.P.D.C.L (W.B.)	1050.00	1.0750	0.7915	73.63
10	GMR KAMALANGA TPP	GMR KAMALANGA ENERGY Ltd. (Odisha)	700.00	0.6980	0.4643	66.53
11	RATIZA TPS	Spectrum Coal & Power Limited (Chhattisgarh)	50.00	0.0836	0.0583	69.67
12	LALITPUR TPS	LALITPUR POWER GENERATION COMPANY LIMITED (UP)	1980.00	0.2249	0.1642	73.03

It may be seen from Table-VIII above that **12** thermal power stations during the 1st half year 2016-17 have achieved fly ash utilization level of less than 75% and up to 60%.

3.5 Power Stations with Fly Ash Utilization Level of less than 60% during the 1st half of the Year 2016-17

The Thermal Power Stations which have achieved the fly ash utilization level of less than 60% during the 1st half year 2015-16 along with fly ash utilization level achieved by each of these power stations are given in Table-IX:

TABLE-IX

THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF BELOW 60% DURING THE 1st HALF OF THE YEAR 2016-17

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	SRI DAMODARAM SANJEEVAIAH	APPDCL(Andhra Pradesh)	1600.00	0.6752	0.2860	42.36
2	TIRODA	ADANI POWER Ltd. (Maharashtra)	3300.00	1.5000	0.7045	46.97
3	DSPM	C.S.P.G.C.L. (Chhattisgarh)	500.00	0.6750	0.0007	0.10
4	KORBA (EAST)	C.S.P.G.C.L (Chhattisgarh)	440.00	0.5108	0.0495	9.68

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)
5	KORBA (WEST)	C.S.P.G.C.L. (Chhattisgarh)	840.00	0.8372	0.0720	8.60
6	DURGAPUR STEEL	D.V.C. (West Bengal)	1000.00	0.8966	0.3563	39.74
7	KODERMA	D.V.C. (Jharkhand)	1000.00	0.5234	0.2153	41.15
8	RAGHUNATHPUR	D.V.C. (West Bengal)	1200.00	0.2135	0.0020	0.91
9	AMARAVATI TPS	RATTANINDIA POWER Ltd. (Maharashtra)	1350.00	0.2282	0.1237	54.20
10	O.P.Jindal Super TPP (Stage-I)	JPL (Chhattisgarh)	1000.00	0.7860	0.3730	47.46
11	O.P.Jindal Super TPP(Stage-II)	JPL (Chhattisgarh)	1800.00	0.8210	0.2970	36.18
12	BALLARI	K.P.C.L (Karnataka)	1700.00	0.5196	0.2511	48.32
13	RAICHUR	K.P.C.L.(Karnataka)	1720.00	1.0855	0.5890	54.26
14	AMARKANTAK TPS	LANCO POWER Ltd. (Chhattisgarh)	600.00	0.5632	0.2813	49.94
15	SATPURA	M.P.P.G.C.L. (M.P.)	1330.00	0.4303	0.1593	37.02
16	AMARKANTAK	M.P.P.G.C.L. (M.P.)	210.00	0.1492	0.0656	43.98
17	SHREE SINGAJI TPS	M.P.P.G.C.L. (M.P.)	1200.00	0.0899	0.0156	17.40
18	CHANDRAPUR	M.S.P.G.C.L. (Maharashtra)	3340.00	1.9600	0.9431	48.12
19	KHAPARKHEDA	M.S.P.G.C.L. (Maharashtra)	1340.00	0.9048	0.1940	21.44
20	KHAPARKHEDA (EXT)	M.S.P.G.C.L. (Maharashtra)	500.00	0.4615	0.0307	6.65
21	KORADI	M.S.P.G.C.L. (Maharashtra)	1280.00	0.3880	0.1380	35.57
22	NEYVELI - I	N.L.C.LTD(Tamilnadu)	600.00	0.1451	0.0848	58.47
23	SINGRAULI	N.T.P.C.Ltd (U.P.)	2000.00	1.7610	0.1550	8.80
24	RIHAND	N.T.P.C.Ltd (U.P.)	3000.00	2.5160	0.2630	10.45
25	KORBA	N.T.P.C.Ltd (Chhattisgarh)	2600.00	2.6570	0.8790	33.08
26	VINDHYACHAL	N.T.P.C.Ltd (M.P.)	4760.00	3.9220	0.7200	18.36
27	SIPAT	N.T.P.C.Ltd (Chhattisgarh)	2980.00	2.8090	0.5280	18.80
28	FARAKKA	N.T.P.C.Ltd (W.B.)	2100.00	1.5690	0.6760	43.08
29	KAHALGAON	N.T.P.C.Ltd(Bihar)	2340.00	2.7850	0.7780	27.94
30	BARH SUPER TPS	N.T.P.C.Ltd (Bihar)	1320.00	1.0070	0.0068	0.67
31	TALCHAR(KAN)	N.T.P.C.Ltd (Odisha)	3000.00	3.5220	0.8150	23.14
32	BONGAIGAON	N.T.P.C.Ltd (Assam)	250.00	0.1030	0.0000	0.00
33	IB VALLEY	O.P.G.C.L.(Odisha)	420.00	0.6186	0.1468	23.73
34	ROSA PHASE-I	RPSCL(U.P)	1200.00	0.9149	0.5142	56.20
35	KOTHAGUDEM-V	TSGENCO (Telangana)	500.00	0.6712	0.0007	0.10
36	KOTHAGUDEM-VI	TSGENCO (Telangana))	500.00	0.4407	0.2452	55.65
37	KAKATIA (Stage-II)	T.S.G.E.N.C.O. (Telangana)	600.00	0.2059	0.0266	12.91
38	ANPARA 'A' & 'B'	U.P.R.V.U.N.L. (U.P.)	1630.00	3.2500	0.0057	0.17
39	OBRA	U.P.R.V.U.N.L. (U.P.)	1194.00	0.6902	0.1184	17.15
40	MCCPL BANDHAKHAR	Maruti Clean Coal and Power Limited (Chhattisgarh)	300.00	0.1291	0.0607	47.03
41	THAMMINAPATNAM TPS	MEENAKSHI ENERGY Ltd. (Telangana)	300.00	0.0228	0.0075	33.06

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)
42	VALLUR	NTECL (Tamil Nadu)	1500.00	0.8210	0.2306	28.09
43	THERMAL POWERTECH CORPORATION OF INDIA LIMITED	THERMAL POWERTECH CORPORATION OF INDIA LIMITED (Andhra Pradesh)	1320.00	0.4421	0.0531	12.02
44	TALWANDI	M/S TALWANDI SABO POWER Ltd. (PUNJAB)	1980.00	0.9160	0.1950	21.29

LIST OF THERMAL POWER STATIONS WITH NO FLY ASH GENERATION

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	0	0	0.00
2	RAJGHAT	IPGCL (Delhi)	135	0	0	0.00
3	BELA TPS	IDEAL ENERGY PROJECTS Ltd. (Maharashtra)	270	0	0	0.00
4	PARLI	M.S.P.G.C.L. (Maharashtra)	920	0	0	0.00
5	GEPL TPP	GUPTA ENERGY Pvt. Ltd. (Maharashtra)	120	0	0	0.00
6	UCHPINDA	PGCIL (Chhattisgarh)	720	0	0	0.00
7	NABINAGAR	BRBCL (Bihar)	250	0	0	0.00

It may be seen from Table-IX above that:

During the 1st half of the year 2016-17, out of **144** thermal power stations, **44** stations could not reach the level of fly ash utilization to 60%.

4.0 MODES OF FLY ASH UTILIZATION DURING THE 1st HALF OF THE YEAR 2016-17

The data on fly ash utilization received from Thermal Power Stations/Power Utilities for the 1st half of the year 2016-17 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 2016-17 along with utilization in each mode are given in Table-X below:

TABLE-X

MODES OF FLY ASH UTILIZATION DURING THE 1st HALF OF THE YEAR 2016-17

Sl. No.	Mode of Utilization	Quantity of Fly Ash utilized in the mode of utilization	
		Million-ton	Percentage (%)
(1)	(2)	(3)	(4)
1	Cement	20.5475	24.04
2	Mine filling	5.8574	6.85
3	Bricks & Tiles	6.2962	7.37
4	Reclamation of low lying area	5.0153	5.87
5	Ash Dyke Raising	4.3612	5.10
6	Roads & flyovers	2.5476	2.98
7	Agriculture	0.8424	0.99
8	Concrete	0.5150	0.60
9	Hydro Power Sector	0.0126	0.01
10	Others	3.5256	4.12
11	Unutilized Fly Ash	35.9622	42.07
Total		**85.4829**	**100.00**

The pie diagram showing the modes of utilization of fly ash during the 1st half of the Year 2016-17 is given in Figure-1 below:

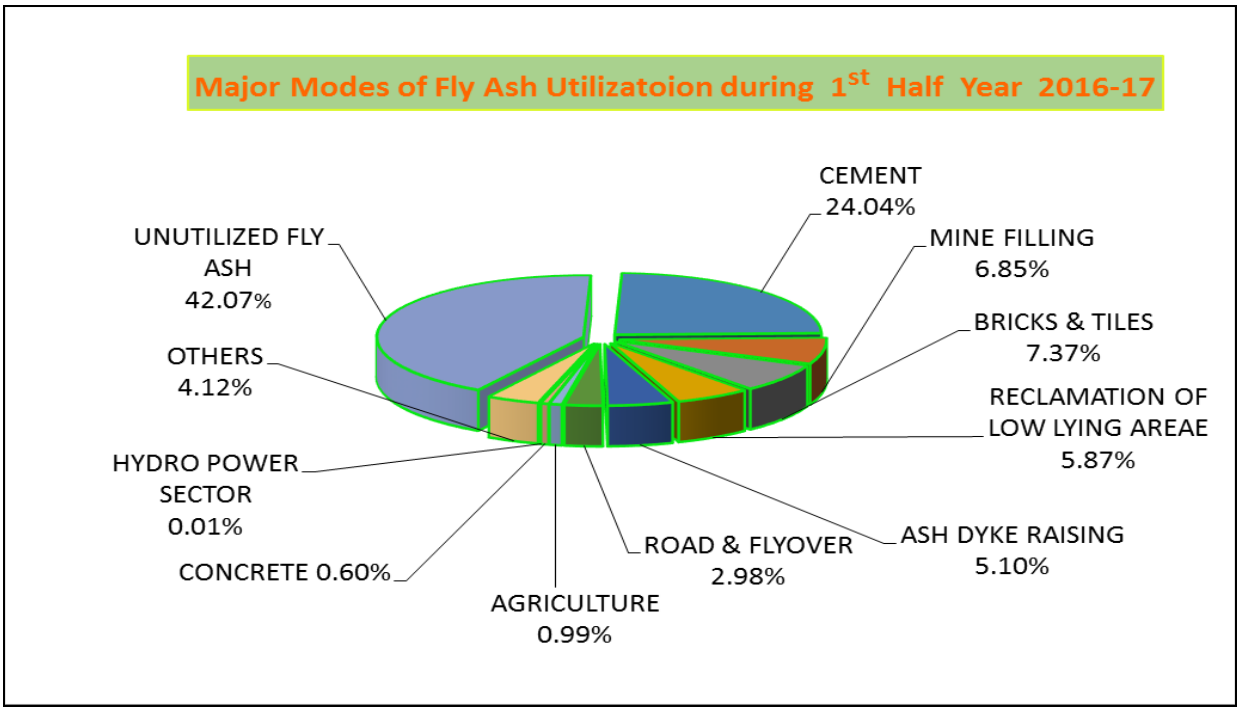

FIGURE-1

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

During the 1st half of the Year 2016-17, the maximum utilization of fly ash to the extent of 24.04 % of total fly ash utilized was in the Cement sector, followed by 7.37 % in making bricks & tiles, 6.85 % in mine filling, 5.87 % in reclamation of low lying area, 5.10 % in ash dyke raising, 2.98 % in roads & embankments, 0.99 % in agriculture, 0.60 % in concrete and 4.12 % in others etc. and 42.07 % Fly Ash remain Unutilized.

5.0 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, 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 2016-17, utilization of fly ash is 57.93 % which is behind the stipulated target.

2. The utilization of fly ash is in the range of 7-6 % in making fly ash based building products and mine filling each, 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 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.

- In view of large quantity of fly ash generation, this may be introduced as construction material in academic curriculum of Engineering, Architecture, Mining, Agriculture etc.

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6.0 ABBREVIATIONS

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. WBPDCL: 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 2016-17(APRIL-2016 TO SEPTEMBER-2016)(POWER UTILITY WISE)

Sl No.	Name of TPS	Power Utility & State	Installed Capacity	Coal Consumed	Ash Content of coal	Fly Ash Genaration	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 Arae	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) Σ(10) to (19)
(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	4.2506	45.18	1.9204	1.3168	68.57	0.6477	0.4557	0.0128	0.0296			0.1036			0.0673	1.3168
2	RAYALSEEMA	A.P.GENCO (Andhra Pradesh)	1050.00	2.2357	42.37	0.9495	0.7249	75.38	0.1112	0.6137									0.7249
3	SRI DAMODARAM SANJEEVAIAH	APPDCL (Andhra Pradesh)	1600.00	2.2480	30.04	0.6752	0.2860	42.36	0.0379	0.2357					0.0124				0.2860
4	KASAI PALI	ACB(INDIA)Ltd (Chhattishgarh)	270.00	1.0207	56.97	0.5815	0.5653	97.21	0.0432		0.0220				0.5001				0.5653
5	MUNDRA TPS	APL (Gujarat)	4620.00	8.0580	5.22	0.4210	0.4776	113.44	0.0006	0.1800	0.0880				0.0840			0.1250	0.4776
6	TIRODA	ADANI POWER Ltd. (Maharashtra)	3300.00	4.7676	31.46	1.5000	0.7045	46.97	0.0217	0.0070				0.1513	0.1384		0.0001	0.3859	0.7045
7	KAWAI	ADANI POWER RAJASTHAN Ltd. (Rajasthan)	1320.00	2.3431	8.48	0.1987	0.1544	77.71	0.0013	0.1531									0.1544
8	MIHAN	AMNEPL (Maharastra)	246.00	0.0000	0.00	0.0000	0.0000	0.00											0.0000
9	CHAKABURA TPP (EXTN)	ACB (INDIA) Ltd. (Chhattishgarh)	30.00	0.1514	54.96	0.0832	0.0832	100.00	0.0073						0.0759				0.0832
10	BARKHERA	BEPL (UP)	90.00	0.2006	42.03	0.0843	0.0843	100.00	0.0001	0.0255					0.0587				0.0843
11	KHAMBER KHERA	BEPL (UP)	90.00	0.2026	40.35	0.0818	0.0818	100.00	0.0018	0.0683					0.0117				0.0818
12	KUNDARKI	BEPL (UP)	90.00	0.2411	38.79	0.0935	0.0935	100.00	0.0003	0.0700					0.0232				0.0935
13	MAQSOODAPUR	BEPL (UP)	90.00	0.2294	36.22	0.0831	0.0830	99.95	0.0007	0.0148					0.0676				0.0830
14	UTRAULA	BEPL (UP)	90.00	0.2247	41.20	0.0926	0.0925	99.97		0.0506					0.0419				0.0925
15	B.B.G.S.	C.E.S.C. (West Bengal)	750.00	1.8510	33.06	0.6120	0.6120	100.00	0.0210	0.4360		0.0010			0.1540				0.6120
16	S.G.S.	C.E.S.C. (West Bengal)	135.00	0.2320	23.28	0.0540	0.0540	100.00	0.0050	0.0370		0.0050			0.0070				0.0540
17	T.G.S.	C.E.S.C. (West Bengal)	240.00	0.1520	15.79	0.0240	0.0240	100.00	0.0100	0.0110					0.0030				0.0240
18	MUNDRA UMPP	CGPL (Gujarat)	4000.00	4.9600	7.52	0.3730	0.3200	85.79		0.3200									0.3200
19	DSPM	C.S.P.G.C.L. (Chhattisgarh)	500.00	1.4670	46.01	0.6750	0.0007	0.10						0.0000	0.0000		0.0007		0.0007
20	KORBA (EAST)	C.S.P.G.C.L (Chhattisgarh)	440.00	1.1708	43.63	0.5108	0.0495	9.68	0.0006					0.0450	0.0038				0.0495
21	BOKARO 'B'	D.V.C.(Jharkhand)	630.00	0.6454	46.47	0.2999	0.6283	209.48	0.0001							0.6282			0.6283
22	CHANDRAPURA	D.V.C.(Jharkhand)	890.00	1.7252	46.89	0.8090	0.7976	98.59	0.0003	0.0313						0.7660			0.7976
23	DURGAPUR	D.V.C.(West Bengal)	350.00	0.1155	46.92	0.0542	0.3887	716.92				0.0158				0.3729			0.3887
24	MEJIA	D.V.C.(West Bengal)	2340.00	4.1570	45.66	1.8980	2.0662	108.86	0.0067	0.4226	0.0000					1.6368			2.0662

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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) Σ(10) to (19)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
25	DURGAPUR STEEL	D.V.C. (West Bengal)	1000.00	2.0163	44.47	0.8966	0.3563	39.74	0.0152	0.3411	0.0000				0.0000				0.3563
26	KODERMA	D.V.C. (Jharkhand)	1000.00	1.2444	42.06	0.5234	0.2153	41.15	0.0187	0.1966									0.2153
27	RAGHUNATHPUR	D.V.C. (West Bangal)	1200.00	0.5348	39.93	0.2135	0.0020	0.91	0.0020										0.0020
28	D.P.P.S.	D.P.L (West Bengal)	660.00	0.5623	49.66	0.2793	0.2640	94.55	0.0051	0.1756	0.0753				0.0081				0.2640
29	MAHAN	ESSAR POWER MP LTD. (M.P.)	1200.00	0.7480	26.74	0.2000	0.1899	94.95		0.0038	0.0020			0.0401	0.1440				0.1899
30	SURAT LIGNITE	G.I.P.C.L. (Gujarat)	500.00	1.6702	17.36	0.2899	0.2899	100.00	0.2259									0.0641	0.2899
31	AKRIMOTA	G.M.D.C.L. (Gujarat)	250.00	0.6166	15.24	0.0940	0.0931	99.01								0.0931			0.0931
32	GANDHINAGAR	G.S.E.C.L. (Gujarat)	870.00	0.7320	32.92	0.2410	0.4367	181.20	0.1330	0.2330		0.0680						0.0027	0.4367
33	KUTCH LIGNITE	G.S.E.C.L. (Gujarat)	290.00	0.9480	17.72	0.1680	0.1674	99.64		0.0064						0.1610			0.1674
34	SIKKA	G.S.E.C.L. (Gujarat)	740.00	0.4190	10.19	0.0427	0.1041	243.79	0.0340	0.0701									0.1041
35	UKAI	G.S.E.C.L. (Gujarat)	1350.00	1.8620	33.94	0.6320	0.4870	77.06	0.2710	0.1600								0.0560	0.4870
36	WANAKBORI	G.S.E.C.L. (Gujarat)	1470.00	1.4150	34.28	0.4850	0.5480	112.99	0.0530	0.2890				0.1350				0.0710	0.5480
37	HISAR	H.P.G.C.L.(Haryana)	1200.00	1.4983	37.01	0.5545	0.5465	98.54	0.0029	0.3418	0.1370	0.0235		0.0412					0.5465
38	YAMUNANAGAR	H.P.G.C.L.(Haryana)	600.00	1.0746	28.72	0.3087	0.7057	228.64	0.0107	0.2349	0.3645						0.0119	0.0838	0.7057
39	PANIPAT	H.P.G.C.L.(Haryana)	920.00	0.7168	39.34	0.2820	0.6725	238.46	0.0230	0.4283	0.2211								0.6725
40	RAJGHAT	IPGCL (Delhi)	135.00	0.0000	0.00	0.0000	0.0000	0.00	0.0000	0.0000	0.0000								0.0000
41	AMARAVATI TPS	RATTANINDIA POWER Ltd. (Maharashtra)	1350.00	0.8779	25.99	0.2282	0.1237	54.20	0.0757		0.0039			0.0268	0.0172				0.1237
42	BELA TPS	IDEAL ENERGY PROJECTS Ltd. (Maharashtra)	270.00	0.0000	0.00	0.0000	0.0000	0.00											0.0000
43	INDIAN METALS & FERRO ALLOYS LTD.	INDIAN METALS & FERRO ALLOYS Ltd. (Odisha)	258.00	0.4986	46.02	0.229431	0.229410	100.00	0.0332		0.1043				0.0884			0.0035	0.2294
44	MAHATMA GANDHI	JHPL (Haryana)	1320.00	0.7588	35.86	0.2721	0.2025	74.41	0.0106	0.1876	0.0000							0.0042	0.2025
45	O.P.Jindal Super TPP (Stage-I)	JPL (Chhattisgarh)	1000.00	1.7870	43.98	0.7860	0.3730	47.46						0.1670	0.2060				0.3730
46	O.P.Jindal Super TPP(Stage-II)	JPL (Chhattisgarh)	1800.00	1.8430	44.55	0.8210	0.2970	36.18	0.0300					0.2670	0.0000				0.2970
47	RATNAGIRI	JSW Energy Ltd (Maharashtra)	1200.00	1.6435	7.61	0.1251	0.1251	100.00	0.0001	0.0303		0.0947							0.1251
48	VIJAYANAGAR	JSW Energy Limited (Karnataka)	860.00	0.6677	11.29	0.0754	0.0754	100.00	0.0052	0.0626								0.0075	0.0753

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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) Σ(10) to (19)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
49	BALLARI	K.P.C.L (Karnataka)	1700.00	1.8019	28.84	0.5196	0.2511	48.32		0.2511									0.2511
50	RAICHUR	K.P.C.L.(Karnataka)	1720.00	3.3150	32.75	1.0855	0.5890	54.26	0.1270	0.4620									0.5890
51	AMARKANTAK TPS	LANCO POWER Ltd. (Chhattisgarh)	600.00	1.5737	35.79	0.5632	0.2813	49.94	0.0000	0.2134								0.0678	0.2813
52	MAITHON RBTPP	MPL (Jharkhand)	1050.00	0.2552	30.52	0.8362	0.8993	107.55	0.0472	0.0010	0.0315					0.8197			0.8993
53	SANJAY GANDHI	M.P.P.G.C.L. (M.P.)	1340.00	2.2402	36.65	0.8211	0.6476	78.88	0.0200	0.6277									0.6476
54	SATPURA	M.P.P.G.C.L. (M.P.)	1330.00	0.9796	43.93	0.4303	0.1593	37.02	0.0969	0.0144		0.0071				0.0410			0.1593
55	AMARKANTAK	M.P.P.G.C.L. (M.P.)	210.00	0.3817	39.10	0.1492	0.0656	43.98	0.0150	0.0398	0.0108								0.0656
56	SHREE SINGAJI TPS	M.P.P.G.C.L. (M.P.)	1200.00	0.2286	39.31	0.0899	0.0156	17.40	0.0027									0.0130	0.0156
57	BHUSAWAL	M.S.P.G.C.L (Maharashtra)	1420.00	1.9760	31.75	0.6274	0.4935	78.65	0.2059	0.1210							0.1029	0.0637	0.4935
58	CHANDRAPUR	M.S.P.G.C.L. (Maharashtra)	3340.00	5.0188	39.05	1.9600	0.9431	48.12	0.0123	0.5194	0.0490				0.0855	0.0180	0.0062	0.2527	0.9431
59	KHAPARKHEDA	M.S.P.G.C.L. (Maharashtra)	1340.00	2.6609	34.00	0.9048	0.1940	21.44	0.0885		0.0000			0.0295			0.0760	0.0000	0.1940
60	KHAPARKHEDA (EXT)	M.S.P.G.C.L. (Maharashtra)	500.00	1.1924	38.70	0.4615	0.0307	6.65	0.0307										0.0307
61	KORADI	M.S.P.G.C.L. (Maharashtra)	1280.00	0.9790	39.63	0.3880	0.1380	35.57	0.0740		0.0640								0.1380
62	NASHIK	M.S.P.G.C.L. (Maharashtra)	630.00	1.4201	33.90	0.4814	0.5194	107.90	0.3365	0.1515	0.0001			0.0312					0.5194
63	PARLI	M.S.P.G.C.L. (Maharashtra)	920.00	0.0000	0.00	0.0000	0.2963	0.00	0.2064	0.0372							0.0159	0.0369	0.2963
64	PARAS	M.S.P.G.C.L.(Maharashtra)	500.00	1.2810	34.00	0.4356	0.4292	98.53	0.0807	0.3484									0.4292
65	NEYVELI - I	N.L.C.LTD(Tamil Nadu)	600.00	2.8320	5.12	0.1451	0.0848	58.47	0.0156	0.0678								0.0014	0.0848
66	NEYVELI -I EXPN	N.L.C.LTD(Tamil Nadu)	420.00	1.6838	7.27	0.1225	0.1224	99.97	0.0204	0.0777						0.0244			0.1224
67	NEYVELI - II	N.L.C.LTD(Tamil Nadu)	1470.00	5.9884	4.73	0.2830	0.2807	99.19	0.0620	0.1405						0.0782			0.2807
68	NEYVELI - II EXPN	N.L.C.LTD (Tamil Nadu)	500.00	0.9268	3.04	0.0282	0.0282	100.00	0.0186							0.0096			0.0282
69	BARSINGSAR LIGNITE	N.L.C.LTD (Rajasthan)	250.00	0.5437	18.33	0.0997	0.0997	100.00	0.0282	0.0407						0.0309			0.0997
70	BHILAI	NSPCL (Chhattisgarh)	500.00	1.3096	43.76	0.5731	0.5215	91.00	0.0572	0.3588	0.0843							0.0211	0.5215
71	CUDDALORE	TAQA Neyveli Power Co. Pvt. Ltd. (Tamil Nadu)	250.00	0.5236	6.53	0.0342	0.0341	99.87	0.0057	0.0272				0.0012					0.0341
72	BADARPUR	N.T.P.C.LTD (Delhi)	705.00	1.0570	30.09	0.3180	0.5320	167.30	0.1720	0.1530	0.2070								0.5320

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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) Σ(10) to (19)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
73	DADRI	N.T.P.C.LTD (U.P.)	1820.00	3.3630	33.72	1.1340	1.6880	148.85	0.2040	0.5970	0.6450				0.2420			0.0000	1.6880
74	SINGRAULI	N.T.P.C.LTD (U.P.)	2000.00	4.9830	35.34	1.7610	0.1550	8.80	0.0040	0.0110				0.1400					0.1550
75	RIHAND	N.T.P.C.LTD (U.P.)	3000.00	7.3270	34.34	2.5160	0.2630	10.45	0.0260	0.0150				0.1670	0.0550			0.0000	0.2630
76	FEROZE GANDHI UNACHAR	N.T.P.C. LTD(U.P.)	1050.00	2.2930	39.14	0.8975	0.6970	77.66	0.0120	0.5070	0.0530			0.1000				0.0250	0.6970
77	TANDA	N.T.P.C.LTD (U.P.)	440.00	1.1700	37.01	0.4330	0.4050	93.53	0.0610	0.2120				0.0450				0.0870	0.4050
78	KORBA	N.T.P.C.LTD (Chhattisgarh)	2600.00	6.7100	39.60	2.6570	0.8790	33.08	0.0660	0.0200	0.0050			0.2660				0.5220	0.8790
79	VINDHYACHAL	N.T.P.C.LTD(M.P.)	4760.00	10.8010	36.31	3.9220	0.7200	18.36	0.0610	0.0250				0.2300	0.0110			0.3930	0.7200
80	SIPAT	N.T.P.C.LTD (Chhattisgarh)	2980.00	7.3110	38.42	2.8090	0.5280	18.80	0.1130	0.1660				0.1770	0.0550			0.0170	0.5280
81	RAMAGUNDAM	N.T.P.C.LTD (Andhra Pradesh)	2600.00	6.0890	36.51	2.2230	1.6550	74.45	0.3230	0.5540	0.0000			0.0610		0.5030	0.0110	0.2030	1.6550
82	SIMHADRI	N.T.P.C.LTD (Andhra Pradesh)	2000.00	4.9370	31.23	1.5420	0.9780	63.42	0.1690	0.1110	0.0000			0.6700	0.0280				0.9780
83	FARAKKA	N.T.P.C.LTD (W.B.)	2100.00	4.5840	34.23	1.5690	0.6760	43.08	0.0110	0.0500	0.0460			0.0910	0.3780			0.1000	0.6760
84	KAHALGAON	N.T.P.C.LTD(Bihar)	2340.00	6.7050	41.54	2.7850	0.7780	27.94	0.0740	0.3100	0.0100			0.1340	0.0760			0.1740	0.7780
85	BARH SUPER TPS	N.T.P.C.LTD (Bihar)	1320.00	2.3600	42.67	1.0070	0.0068	0.67	0.0019	0.0048									0.0068
86	TALCHAR(TPS)	N.T.P.C.LTD (Odisha)	460.00	1.5160	38.92	0.5900	0.5909	100.15	0.0109							0.5800			0.5909
87	TALCHAR(KAN)	N.T.P.C.LTD(Odisha)	3000.00	9.1220	38.61	3.5220	0.8150	23.14	0.0480	0.0140				0.7530					0.8150
88	MOUDA TPS	N.T.P.C.LTD (Maharashtra)	1000.00	1.1070	31.79	0.3519	0.2910	82.69	0.2590	0.0060	0.0260								0.2910
89	BONGAIGAON	N.T.P.C.LTD (Assam)	250.00	0.4250	24.24	0.1030	0.0000	0.00											0.0000
90	IB VALLEY	O.P.G.C.L.(Odisha)	420.00	1.4364	43.07	0.6186	0.1468	23.73	0.0106		0.0084			0.1179	0.0024			0.0076	0.1468
91	BATHINDA	P.S.P.C.L. (Punjab)	460.00	0.4259	31.31	0.1333	0.1065	79.88	0.0047	0.1018									0.1065
92	LEHRA MOHABAT	P.S.P.C.L. (Punjab)	920.00	1.2291	38.90	0.4781	0.3420	71.54	0.0162	0.3163		0.0095							0.3420
93	ROPAR	P.S.P.C.L. (Punjab)	1260.00	1.4839	34.73	0.5154	0.6627	128.58	0.0088	0.5201		0.0046			0.1289			0.0003	0.6627
94	KOTA	RRVUNL (Rajasthan)	1240.00	2.3330	31.57	0.7366	0.7498	101.79	0.2374	0.5030		0.0000			0.0035			0.0058	0.7498
95	CHHABRA	RRVUNL (Rajasthan)	1000.00	1.9921	31.43	0.6261	0.6605	105.49	0.1203	0.4453			0.0126					0.0823	0.6605
96	JALIPA KAPURDI	RWPL (Rajasthan)	1080.00	3.0816	16.99	0.5237	0.5441	103.90	0.0458	0.4205						0.0778			0.5441
97	ROSA PHASE-I	RPSCL(U.P)	1200.00	3.2405	28.23	0.9149	0.5142	56.20	0.0003	0.2732	0.0000	0.0000		0.0000	0.2406				0.5142

FLY ASH GENERATION AND ITS UTILIZATION AT COAL/LIGNITE BASED THERMAL POWER STATIONS IN THE COUNTRY FOR THE 1ST HALF YEAR 2016-17(APRIL-2016 TO SEPTEMBER-2016)(POWER UTILITY WISE)

Sl No.	Name of TPS	Power Utility & State	Installed Capacity	Coal Consumed	Ash Content of coal	Fly Ash Genaration	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 Arae	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) Σ(10) to (19)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
98	DAHANU	RELIANCE INFRASTRUCTURE Ltd. (Maharashtra)	500.00	1.0360	24.52	0.2540	0.3091	121.69	0.0003			0.1390		0.0500				0.1198	0.3091
99	JOJOBERA	T.P.CO. (Jharkhand)	547.50	1.2908	41.56	0.5365	0.5136	95.73	0.0001	0.3182		0.0007			0.1946				0.5136
100	TROMBAY	T.P.CO.(Maharashtra)	750.00	1.3640	1.96	0.0267	0.0267	100.00				0.0250					0.0017		0.0267
101	SABARMATI	TORENT POWER Ltd. (Gujarat)	422.00	0.8257	23.60	0.1949	0.1949	100.00		0.1521				0.0426			0.0002		0.1949
102	KOTHAGUDEM-V	TSGENCO (Telangana)	500.00	1.2597	53.28	0.6712	0.0007	0.10	0.0001	0.0005									0.0007
103	KOTHAGUDEM-VI	TSGENCO (Telangana))	500.00	1.0285	42.85	0.4407	0.2452	55.65	0.0057	0.2396									0.2452
104	KAKATIA (Stage-I)	TSGENCO (Telangana)	500.00	0.9563	29.35	0.2807	0.2394	85.31	0.0006	0.2388									0.2394
105	KAKATIA (Stage-II)	TSGENCO (Telangana)	600.00	0.7321	28.12	0.2059	0.0266	12.91	0.0004	0.0261									0.0266
106	ANPARA 'A' & 'B'	U.P.R.V.U.N.L. (U.P.)	1630.00	4.8513	66.99	3.2500	0.0057	0.17		0.0009					0.0046			0.0002	0.0057
107	HARDUAGANJ	U.P.R.V.U.N.L. (U.P.)	670.00	1.4728	36.00	0.5302	0.3509	66.18	0.0221	0.1431					0.1857				0.3509
108	OBRA	U.P.R.V.U.N.L. (U.P.)	1194.00	1.5875	43.48	0.6902	0.1184	17.15	0.0006	0.1177									0.1184
109	PANKI	U.P.R.V.U.N.L. (U.P.)	210.00	0.4422	32.74	0.1448	0.1732	119.60	0.0036	0.0190	0.0865				0.0000			0.0640	0.1732
110	PARICHHA	U.P.R.V.U.N.L. (U.P.)	1140.00	2.7631	35.72	0.9870	0.7791	78.93	0.0582	0.6037				0.1081	0.0091			0.00009	0.7791
111	UDUPI	UPCL (Karnataka)	1200.00	1.5409	3.81	0.0587	0.0503	85.69	0.0039	0.0337		0.0127							0.0503
112	KOLAGHAT	W.B.P.D.C.L(W.B.)	1260.00	2.8843	39.66	1.1438	1.0381	90.76	0.0288	0.1739							0.6158	0.2196	1.0381
113	SAGARDIGHI	W.B.P.D.C.L(W.B.)	1100.00	1.4214	38.16	0.5425	0.3353	61.82	0.0948	0.2406									0.3353
114	BANDEL	W.B.P.D.C.L (W.B.)	455.00	0.7418	40.02	0.2969	0.1813	61.06	0.0029	0.1265	0.0519								0.1813
115	SANTALDIH	W.B.P.D.C.L (W.B.)	500.00	1.0671	41.89	0.4470	0.3352	74.99	0.0029						0.3208			0.0115	0.3352
116	BAKRESWAR	W.B.P.D.C.L(W.B.)	1050.00	2.6670	40.31	1.0750	0.7915	73.63	0.0035	0.4600					0.3280			0.0000	0.7915
117	SAI WARDHA POWER Ltd. WARORA	WPCL (Maharashtra)	540.00	0.4940	32.59	0.1610	0.1610	100.00		0.1440						0.0170			0.1610
118	GMR WAROARA ENERGY Ltd.	GMR WAROARA ENERGY Ltd. (Maharashtra)	600.00	1.0144	30.80	0.3125	0.2723	87.14	0.2723										0.2723
119	GMR KAMALANGA TPP	GMR KAMALANGA ENERGY Ltd. (Odisha)	700.00	2.0616	33.86	0.6980	0.4643	66.53	0.1274						0.3370				0.4643
120	RATIZA TPS	Spectrum Coal & Power Limited (Chhattisgarh)	50.00	0.1456	57.44	0.0836	0.0583	69.67	0.0066						0.0517				0.0583
121	HALDIA ENERGY LIMITED	HALDIA ENERGY LIMITED (W.B.)	600.00	1.4850	32.86	0.4880	0.4910	100.61	0.0220	0.4300					0.0390				0.4910
122	DHARIWAL INFRASTRUCTURE Ltd.	Dhariwal Infrastructure Ltd. (Maharashtra)	600.00	0.5139	30.16	0.1550	0.1550	100.00		0.1550									0.1550

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Sl No.	Name of TPS	Power Utility & State	Installed Capacity	Coal Consumed	Ash Content of coal	Fly Ash Genaration	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 Arae	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) Σ(10) to (19)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
123	GMR Chhattisgarh	GMR Chhattisgarh Energy Ltd. (Chhattisgarh)	1370.00	0.3046	27.33	0.0832	0.0715	85.95	0.0010	0.0706									0.0715
124	MCCPL BANDHAKHAR	Maruti Clean Coal and Power Limited (Chhattisgarh)	300.00	0.3143	41.07	0.1291	0.0607	47.03	0.0025					0.0142	0.0440				0.0607
125	SVPPL Renki	ACB India Limited (Chhattisgarh)	60.00	0.0103	60.00	0.0062	0.0062	100.00	0.0029					0.0032					0.0062
126	THAMMINAPATNAM TPS	MEENAKSHI ENERGY Ltd.(Telangana)	300.00	0.5551	4.11	0.0228	0.0075	33.06	0.0075										0.0075
127	CHAKABURA TPP	ACB (INDIA) Ltd. (Chhattisgarh)	30.00	0.1698	55.00	0.0934	0.0934	100.00	0.0073						0.0861				0.0934
128	GEPL TPP	GUPTA ENERGY Pvt. Ltd. (Maharashtra)	120.00	0.0000	0.00	0.0000	0.0000	0.00											0.0000
129	VALLUR	NTECL (Tamil Nadu)	1500.00	2.9090	28.22	0.8210	0.2306	28.09	0.0396	0.0045		0.0095			0.0260			0.1510	0.2306
130	UCHPINDA	PGCIL (Chhattisgarh)	720.00	0.0000	0.00	0.0000	0.0000	0.00		0.0000					0.0000				0.0000
131	MUTIARA	COASTAL ENERGEN PVT. LTD (Tamil Nadu)	1200.00	1.3212	4.11	0.0542	0.0560	103.17	0.0173	0.0386									0.0560
132	SIMHAPURI	SEL(Andhra Pradesh)	450.00	0.7323	3.85	0.0282	0.0282	99.96	0.0244			0.0017			0.0021				0.0282
133	JHABUA POWER LIMITED	JHABUA POWER LIMITED (MP)	600.00	0.2360		0.0758	0.0692	91.33	0.0062	0.0524				0.0000				0.0105	0.0692
134	JAYPEE BINA TPP	JAYPEE BINA THERMAL POWER PLANT (MP)	500.00	0.0820	32.93	0.0270	0.0270	100.00	0.0017	0.0160					0.0093				0.0270
135	JAYPEE NIGRIE SUPER TPP	JAYPEE BINA THERMAL POWER PLANT (MP)	1320.00	2.4200	26.16	0.6330	0.6330	100.00		0.5580				0.0230	0.0520				0.6330
136	NLC TAMILNADU POWER LTD.	NLC TAMILNADU POWER LIMITED (Tamil Nadu)	1000.00	1.6563	25.12	0.4161	0.4161	100.00	0.0156	0.3143					0.0821			0.0042	0.4161
137	THERMAL POWERTECH CORPORATION OF INDIA LIMITED	THERMAL POWERTECH CORPORATION OF INDIA LIMITED (Andhra Pradesh)	1320.00	2.2624	19.54	0.4421	0.0531	12.02	0.0072	0.0459									0.0531
138	NABINAGAR	BRBCL (Bihar)	250.00	0.0000	0.00	0.0000	0.0000	0.00	0.0000	0.0000									0.0000
139	THE DURGAPUR TPS	THE DURGAPUR PROJECTS LIMITED(West Bangal)	660.00	0.6623	42.16	0.2793	0.2640	94.55	0.0051	0.1756	0.0753				0.0081				0.2640
140	TALWANDI	M/S TALWANDI SABO POWER LTD.(PUNJAB)	1980.00	2.2660	40.42	0.9160	0.1950	21.29	0.0000	0.1950									0.1950
141	RAJPURA	NABHA POWER LIMITED(Punjab)	1400.00	2.5420	30.23	0.7685	0.7034	91.53	0.0187	0.5542	0.0628	0.0677							0.7034
142	ADHUNIK PNR LTD.	ADHUNIK POWER & NATURAL RESOURCES LIMITED (Jharkhand)	540.00	1.2315	32.58	0.4012	0.3509	87.47	0.0022	0.0075				0.1617	0.1795				0.3509
143	LALITPUR TPS	LALITPUR POWER GENERATION COMPANY LIMITED (UP)	1980.00	0.6775	33.19	0.2249	0.1642	73.03	0.0021	0.1621									0.1643
144	KORBA (WEST)	C.S.P.G.C.L (Chhattisgarh)	840.00	2.3844	35.11	0.8372	0.0720	8.60	0.0000					0.0712	0.0008				0.0720
		Grand Total	**147697.50**	**261.3628**	**32.71**	**85.4829**	**49.5208**	**57.93**	**6.2962**	**20.5475**	**2.5476**	**0.5150**	**0.0126**	**4.3612**	**5.0153**	**5.8574**	**0.8424**	**3.5256**	**49.5208**