



Perform, Achieve and Trade



सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF POWER

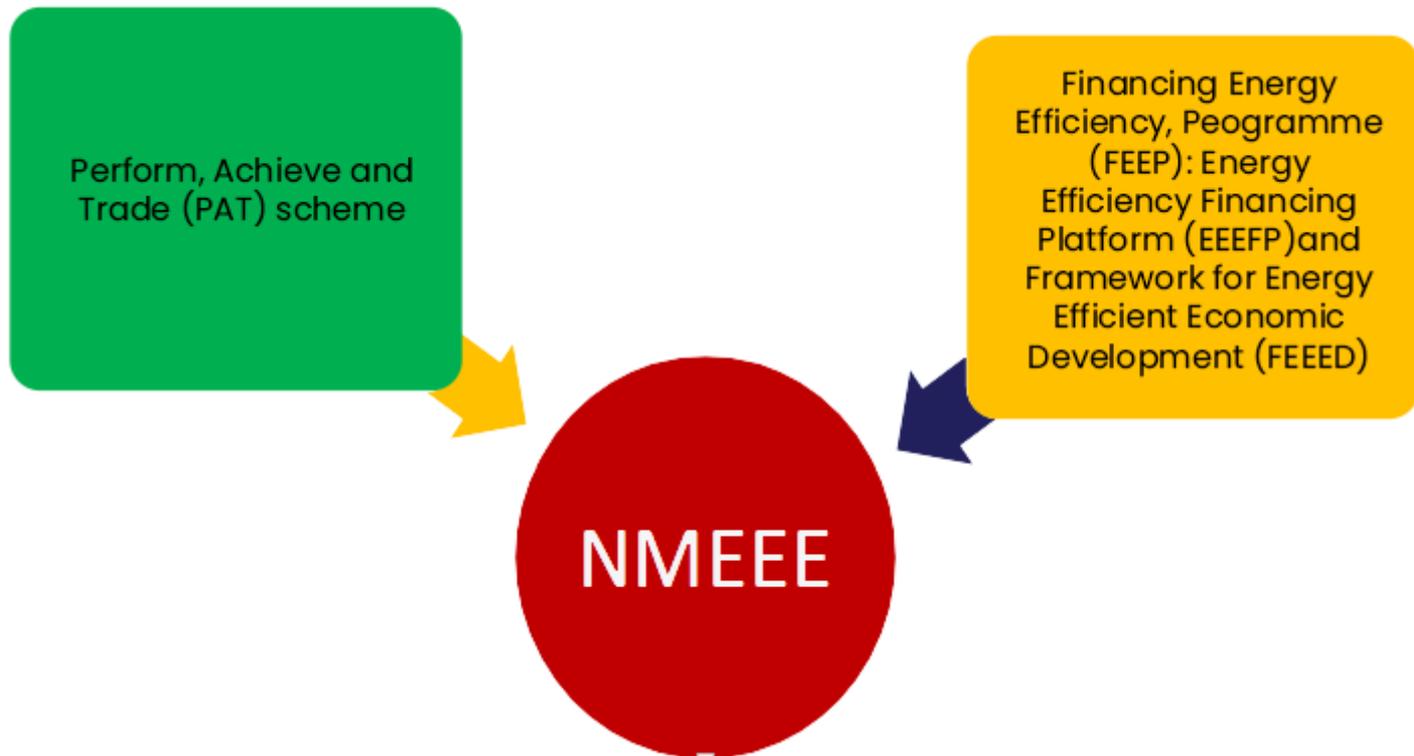


National Action Plan on Climate Change (NAPCC)





Nation Mission for Enhanced Energy Efficiency (NMEEE)





Regulatory Framework



- **Energy Conservation (EC) Act 2001**
- **Norms for Energy Intensive Industries**
- Standard & Labeling
- Energy Conservation Building Code
- Demand Side Management
- Certification of Energy Professionals

Perform, Achieve & Trade

- ❖ A **market based regulatory instrument** to reduce specific energy consumption in industries, **to enhance the cost effectiveness** through tradable **energy saving certificates**.
- ❖ [Section 14 \(g\): Establish norms](#)
- ❖ [Section 14 \(n\): Direction to Industries](#)
- ❖ Section 14A: Energy Saving Certificates
- ❖ Section 26: Penalty & Enforcement
- ❖ Section 27: Adjudication



Sectoral Coverage



Criteria for Identification of Sectors

- ❖ Listed in Schedule of EC Act
- ❖ Intensity or quantity of energy consumed
- ❖ Amount of investment needed
- ❖ Capacity to invest
- ❖ Availability of energy efficient technology

PAT 1 Sectors

PAT 2 Sectors

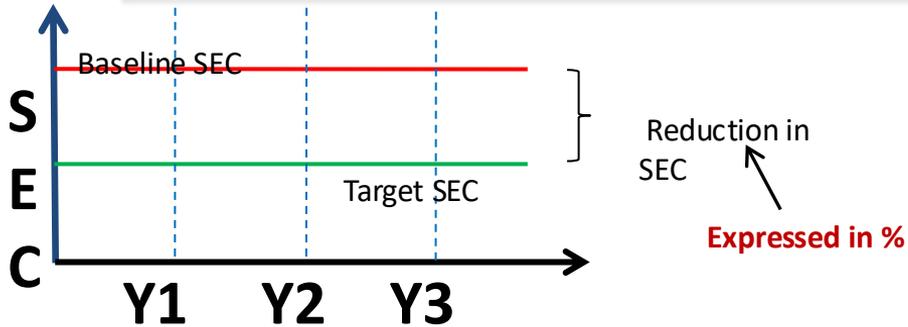
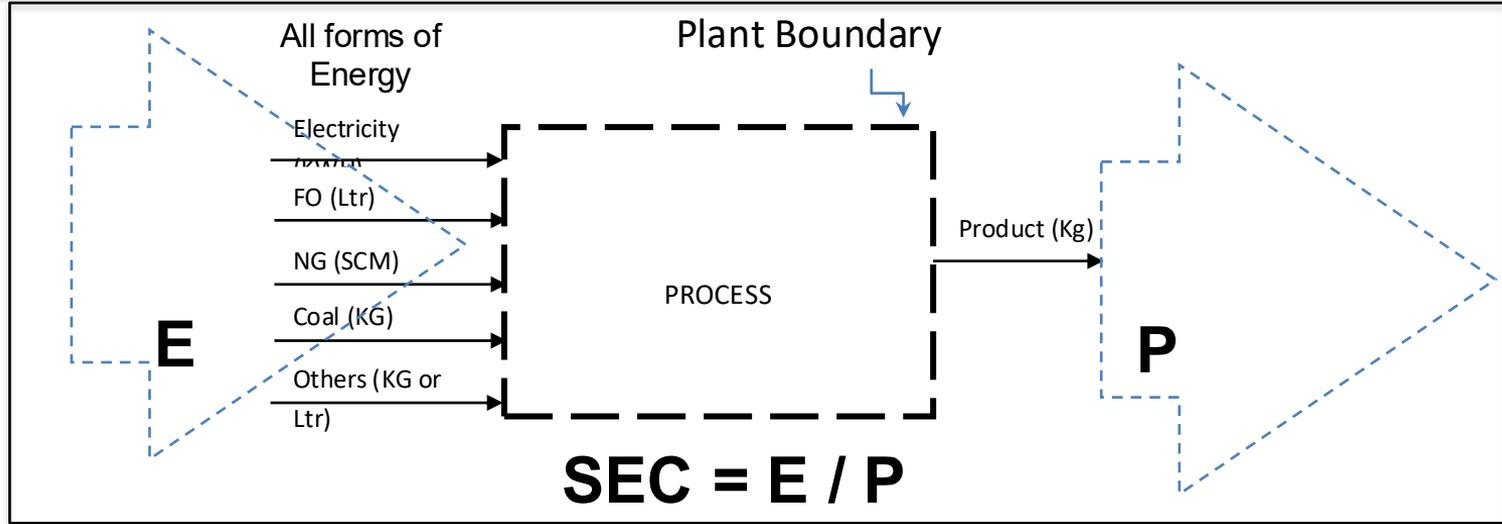
PAT 4 Sectors

Sectors in PAT Scheme

1. Aluminum;
2. Fertilizers;
3. Iron and Steels;
4. Cement;
5. Pulp and Paper;
6. Chlor Alkali;
7. Sugar;
8. Textile;
9. Chemicals;
10. **Railways**;
11. Port Trust
12. Transport Sector (Industries and Services)
13. **Petrochemical-Gas Crackers, Naphtha Crackers and Petroleum Refinery**
14. Thermal Power Stations, Hydel Power Stations, Electricity transmission companies and **distribution companies**;
15. **Commercial Buildings or Establishment**

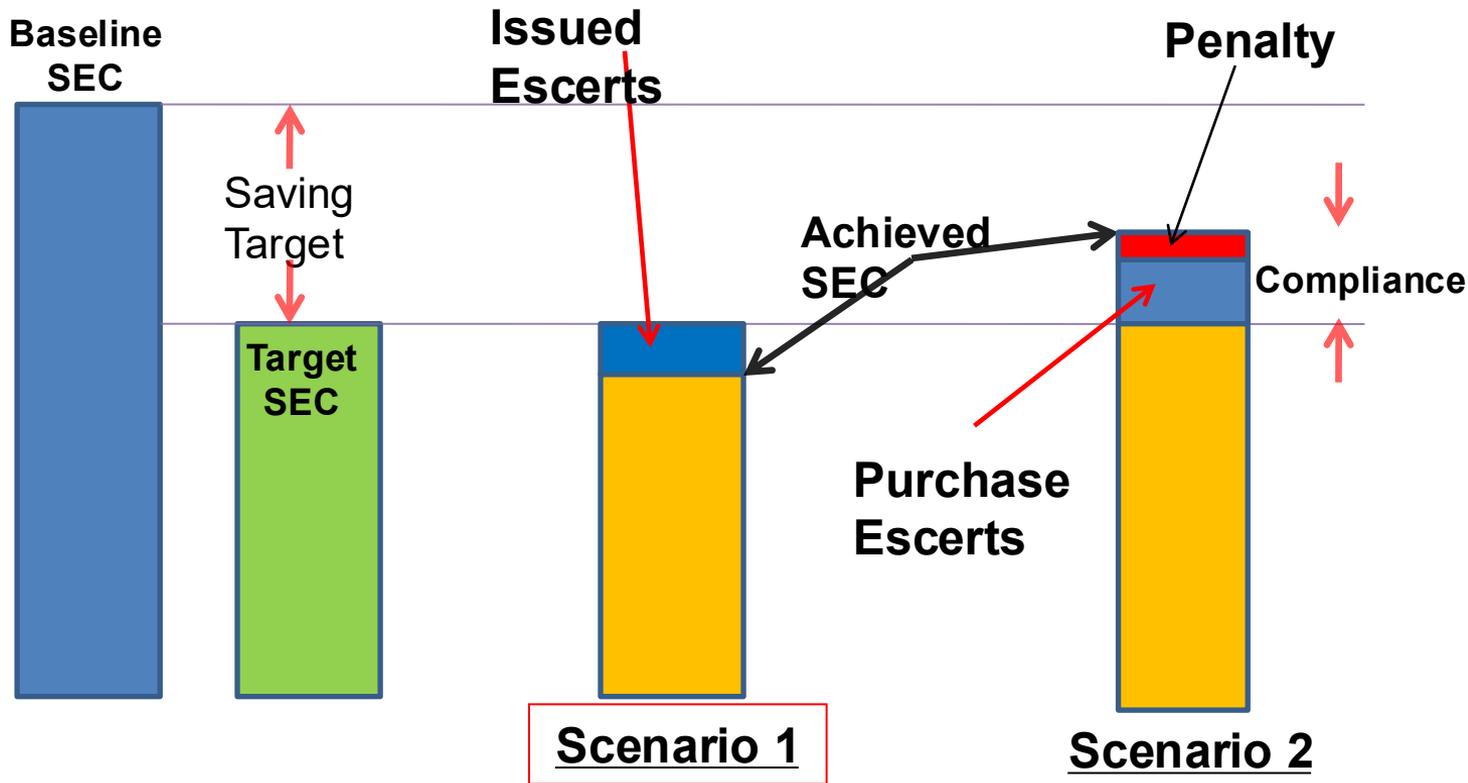


Gate-to-Gate concept



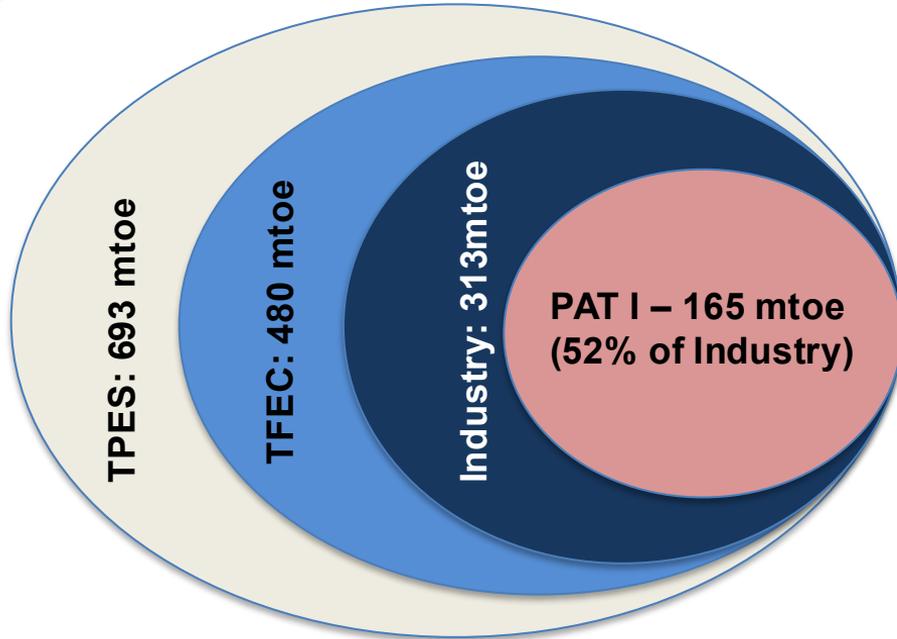


Concept of Target, Compliance,

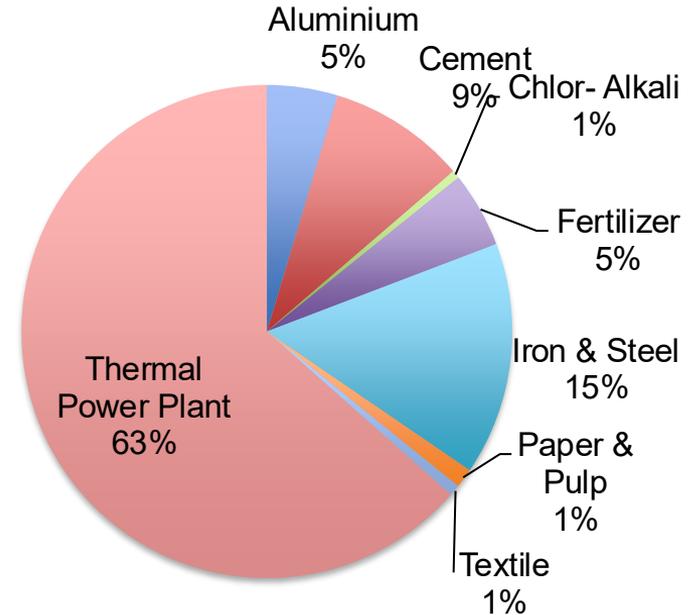




PAT 1 Coverage



TPES: Total Primary Energy Supply
TFEC: Total Final Energy Consumption
Industry includes Thermal Power Plants
mtoe: Million tonnes of Oil Equivalent



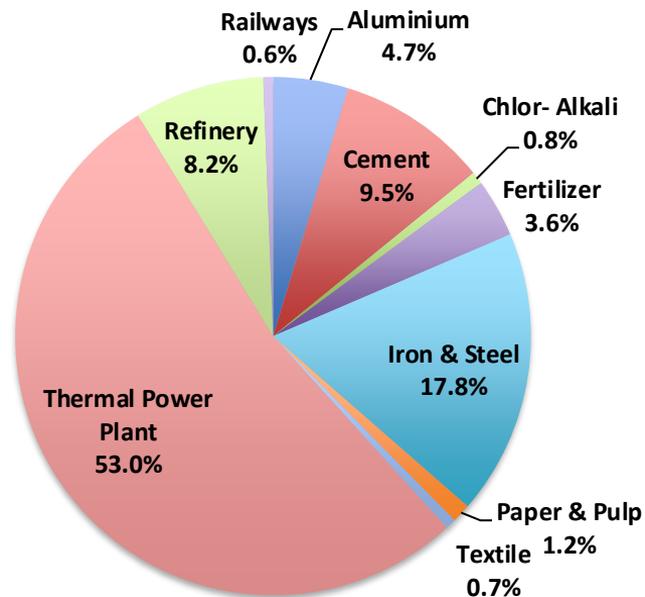
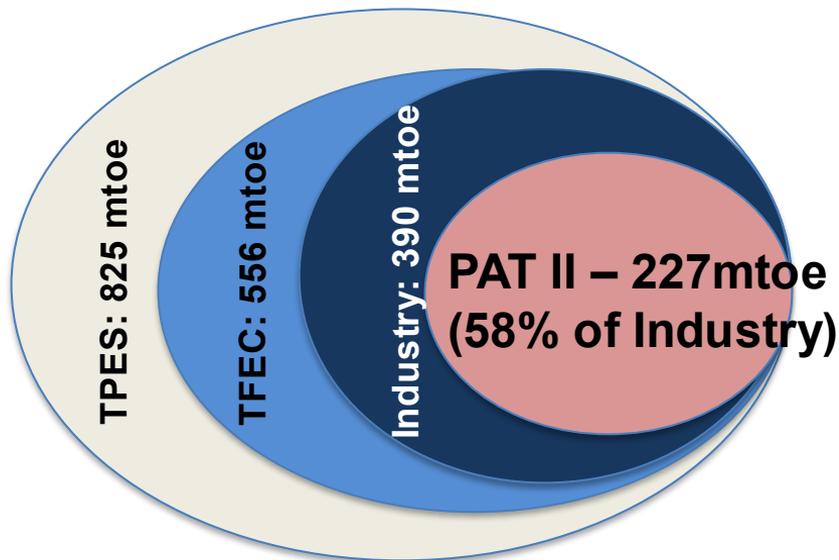
Baseline Year: 2010
Data Source: IEA and BEE



PAT 2 Coverage



Target Energy Saving Share



Target : 13.63 mtoe

TPES: Total Primary Energy Supply
TFEC: Total Final Energy Consumption
Industry includes Thermal Power Plants and Railways
mtoe: Million tonnes of Oil Equivalent



PAT- Salient features



- Regulatory instrument linked with market mechanism
 - Certification of energy saving
- Consultative approach
 - Ministries/DCs/Associations/FIs/Research Organizations
- Outreach/ Capacity Development
 - Workshops/Seminars/ Visits
- “Self – competing”
 - Unit specific targets
- Relative responsibility
 - Less target for more efficient and more for less efficient



Industry & Media Viewpoint



“Excellent ‘baseline’ data established”

“Excellent methodology and formats for monitoring developed - ACC, Ultratech etc.. using these formats for regular monitoring”



The "Perform, Achieve and Trade" (PAT) mechanism is the most innovative and challenging initiative introduced under NMEEE (National Mission for Enhanced Energy Efficiency). FICCI

*“It’s really interesting. There’s no other country in the world that’s doing this so ambitiously.” **Noah Sachs, a law professor at the University of Richmond in Virginia, who spent the spring studying the program.***

*“The Indian program is particularly promising because it is a national, as opposed to a regional or statewide or provincial, program,”, **Richard Sandor, the chairman of Environmental Financial Products**a firm that has helped introduce several climate-related financial exchanges.*



Realized Impacts – PAT I to VI (2012-2023)



Energy Saving

27.07 mtoe
~4.5% of India's
total primary energy consumption (Yr 2024)



Emission Reduction

~115.21 million tonnes of CO2

~3.9% of India's Emissions (as per BUR4)



Capacity building

17000+ Engineers and operators
19199 Energy Auditors & Managers
302 Accreditation



ESCerts Trading

33.66 lakhs

ESCerts traded. Resulting Business of
INR ~440 crore



Investment

Encouraged investments for energy efficient technologies

Rs 75,400 Crore (reported)



Savings

Monetary savings

Rs 58444 Crores



Realized Impacts – PAT I (2012-2015)



PAT CYCLE-I SUMMARY SHEET

S.NO.	Sec Code	Sector	No. of Identified DCs	Annual Energy Consumption (Million toe)	Target Energy Reduction (Million toe)	Savings Achieved (Million TOE)	CO2 Emissions (Mn tonne of CO2)
1	ALM	Aluminium	10	7.71	0.456	0.73	3.1
2	CMT	Cement	85	15.01	0.815	1.48	4.34
3	CNA	Chlor and Alkali	22	0.89	0.054	0.09	0.62
4	FTZ	Fertilizer	29	8.20	0.478	0.78	0.93
5	INS	Iron & Steel	67	25.32	1.486	2.10	6.51
6	PNP	Paper & Pulp	31	2.09	0.118	0.29	1.24
7	TXT	Textile	90	1.20	0.065	0.13	0.62
8	TPP	Power (Thermal)	144	104.56	3.211	3.06	13.64
		Grand Total	478	165.00	6.683	8.66	31.00



Realized Impacts – PAT II (2016-2019)



PAT CYCLE-II SUMMARY SHEET

S.NO.	Sec Code	Sector	No. of Identified DCs	Annual Energy Consumption (Million toe)	Target Energy Reduction (Million toe)	Savings Achieved (Million TOE)	CO2 Emissions (Mn tonne of CO2)
1	ALM	Aluminium	12	10.56	0.466	1.226	4.2
2	CMT	Cement	111	21.43	1.117	1.559	5.45
3	CNA	Chlor- Alkali	24	1.77	0.102	0.133	0.55
4	FTZ	Fertilizer	37	8.26	0.447	0.383	1.18
5	INS	Iron & Steel	71	40.44	2.283	2.845	11.85
6	TXT	Textile	99	1.48	0.088	0.135	0.66
7	PNP	Paper & Pulp	29	2.68	0.146	0.315	1.35
8	TPP	Power (Thermal)	154	120.16	3.134	3.435	11.57
9	DIS	DISCOM	44	76.31	4.675	2.423	25.44
10	REF	Refinery	18	18.50	1.098	1.430	5.19
11	RLY	Railways	22	3.30	0.077	0.196	1.0
		Grand Total	621	227.840	13.633	14.080	68.43



Realized Impacts – PAT III (2017-2020)



PAT CYCLE-III SUMMARY SHEET

S.NO.	Sec Code	Sector	No. of Identified DCs	Annual Energy Consumption (Million toe)	Target Energy Reduction (Million toe)	Savings Achieved (Million TOE)	CO2 Emissions (Mn tonne of CO2)
1	ALM	Aluminium	1	1.019	0.061	0.089	0.345
2	CMT	Cement	14	1.743	0.096	0.156	0.339
3	INS	Iron & Steel	29	7.648	0.457	0.572	1.691
4	PNP	Paper & Pulp	1	0.057	0.003	0.005	0.015
5	TXT	Textile	34	0.668	0.040	0.048	0.261
6	TPP	Power (Thermal)	37	24.055	0.406	0.724	2.94
		Grand Total	116	35.190	1.063	1.594	5.591



Realized Impacts – PAT IV (2018-2022)



PAT CYCLE-IV SUMMARY SHEET

S.NO.	Sec Code	Sector	No. of Identified DCs	Annual Energy Consumption (Million toe)	Target Energy Reduction (Million toe)	Sum of Savings Achieved (Million TOE)	CO2 Emissions (Mn tonne of CO2)
1	CMT	Cement	1	0.074	0.0040	0.0021	0.0106
2	CNA	Chlor- Alkali	2	0.050	0.0030	0.0008	0.0036
3	INS	Iron & Steel	35	3.334	0.1934	0.3605	1.5472
4	TXT	Textile	7	0.342	0.0204	-0.0379	-0.2537
5	PNP	Paper & Pulp	2	0.164	0.0098	0.0043	0.0262
6	TPP	Power (Thermal)	17	10.751	0.2373	0.3021	1.1950
7	PC0	Petrochemical	8	3.823	0.2295	0.2835	1.0072
8	BHT	Building	37	0.062	0.0037	0.0037	0.0260
		Grand Total	109	18.600	0.701	0.9191	3.5621



Realized Impacts – PAT V (2019-2022)



PAT CYCLE-V SUMMARY SHEET

S.NO.	Sec Code	Sector	No. of Identified DCs	Annual Energy Consumption (Million toe)	Target Energy Reduction (Million toe)	Savings Achieved (Million TOE)	CO2 Emissions (Mn tonne of CO2)
1	ALM	Aluminium	1	1.2375	0.0738	0.08772	0.5296
2	CMT	Cement	12	1.6000	0.0870	0.15162	0.6774
3	CNA	Chlor- Alkali	2	0.0282	0.0017	0.00309	0.0170
4	INS	Iron & Steel	23	2.8255	0.1687	0.26127	1.1377
5	TXT	Textile	16	0.2267	0.0135	0.01172	0.0784
6	PNP	Paper & Pulp	8	0.2837	0.0169	0.01995	0.1202
7	TPP	Power (Thermal)	17	9.0200	0.1500	0.21113	0.8388
8	BHT	Building	31	0.0223	0.0013	0.00130	0.0091
Grand Total			110	15.244	0.5130	0.7478	3.4082



Realized Impacts – PAT VI (2020-2023)



PAT CYCLE-VI SUMMARY SHEET					
S.NO.	Sec Code	Sector	No. of Identified DCs	Target Energy Reduction (Million toe)	Savings Achieved (Million TOE)
1	CMT	Cement	37	1.242	0.063
2	INS	Iron & Steel	5	0.515	0.031
3	TXT	Textile	7	0.112	0.007
4	PNP	Paper & Pulp	2	0.055	0.003
5	BHT	Building	64	0.070	0.004
6	REF	Refinery	20	21.304	1.169
		Grand Total	135	23.300	1.277



Realized Impacts – PAT VII (2022-2025)



PAT CYCLE-VII SUMMARY SHEET

S.NO.	Sec Code	Sector	No. of Identified DCs	Annual Energy Consumption (Million toe)	Target Energy Reduction (Million toe)
1	ALM	Aluminium	12	13.30	0.619
2	CMT	Cement	120	25.56	0.896
3	CNA	Chlor- Alkali	24	2.48	0.097
4	INS	Iron & Steel	134	60.06	2.729
5	TXT	Textile	120	1.92	0.099
6	PNP	Paper & Pulp	24	2.21	0.081
7	TPP	Power (Thermal)	152	138.82	2.486
8	DIS	DISCOM	95	16.35	1.382
9	RLY	Railways	26	3.37	0.096
		Grand Total	707	248.20	8.485



Realized Impacts – PAT VIII (2023-2026)



PAT CYCLE-VIII SUMMARY SHEET				
Sr. No.	Sector	Number of Designated Consumers	Total Energy Consumption (Million TOE)	Target Energy Reduction (Million toe)
1	Aluminium	1	0.1268	0.0074
2	Cement	25	0.6281	0.0323
3	Chlor-Alkali	1	0.1356	0.0081
4	Iron & Steel	66	3.7101	0.2438
5	Pulp & Paper	7	0.2	0.0118
6	Textile	38	0.5619	0.0335
	TOTAL	138	5.3625	0.3370



PAT Scheme DCs Overview



Sector / No. of DCs	PAT Cycle I	PAT Cycle II	PAT Cycle-III	PAT Cycle-IV	PAT Cycle-V	PAT Cycle-VI	PAT Cycle-VII	PAT Cycle-VIII	Total Notified DCs Notified till Apr'2023
	(FY'12-15)	(FY'16-19)	(FY'17-20)	(FY'18-22)	(FY'19-22)	(FY'20-23)	(FY'22-25)	(FY'23-26)	
Aluminium	10	12	1	-	1	-	12	1	14
Cement	85	111	14	1	12	37	120	25	200
Chlor- Alkali	22	24	-	2	2	-	24	1	29
Fertilizer	29	37	-	-	-	-	0	0	37
Iron & Steel	67	71	29	35	23	5	134	66	270
Paper & Pulp	31	29	1	2	8	2	24	7	55
Textile	90	99	34	7	16	7	120	38	206
Thermal Power Plant	144	154	37	17	17	-	152	0	239
Refinery	-	18	-	-	-	20	0	0	20
Railways	-	22	-	-	-	-	26	0	26
DISCOMs	-	44	-	-	-	-	95	0	96
Petrochemical	-	-	-	8	-	-	0	0	8
Buildings	-	-	-	37	31	64	0	0	133
Total	478	621	116	109	110	135	707	138	1333