JK PAPER LTD. UNIT: CPM

CII National award for excellence in Energy management-2024

Lingaraj Panigrahi	: GM Mechanical
Suresh Naidu Seepana	: Senior Manager Pulp
Mayuri Bezalwar	: Executive - Operation Excellence

About JK Paper

JK Organization: A reputed & diversified group in business for over 125 years with a turnover of $4.0 billion.

JK Paper Ltd. is the leading player in manufacturing of office paper, coated paper and packaging board segments with total installed capacity of 7.87 Lac TPA.

Production Capacity (3 Units).

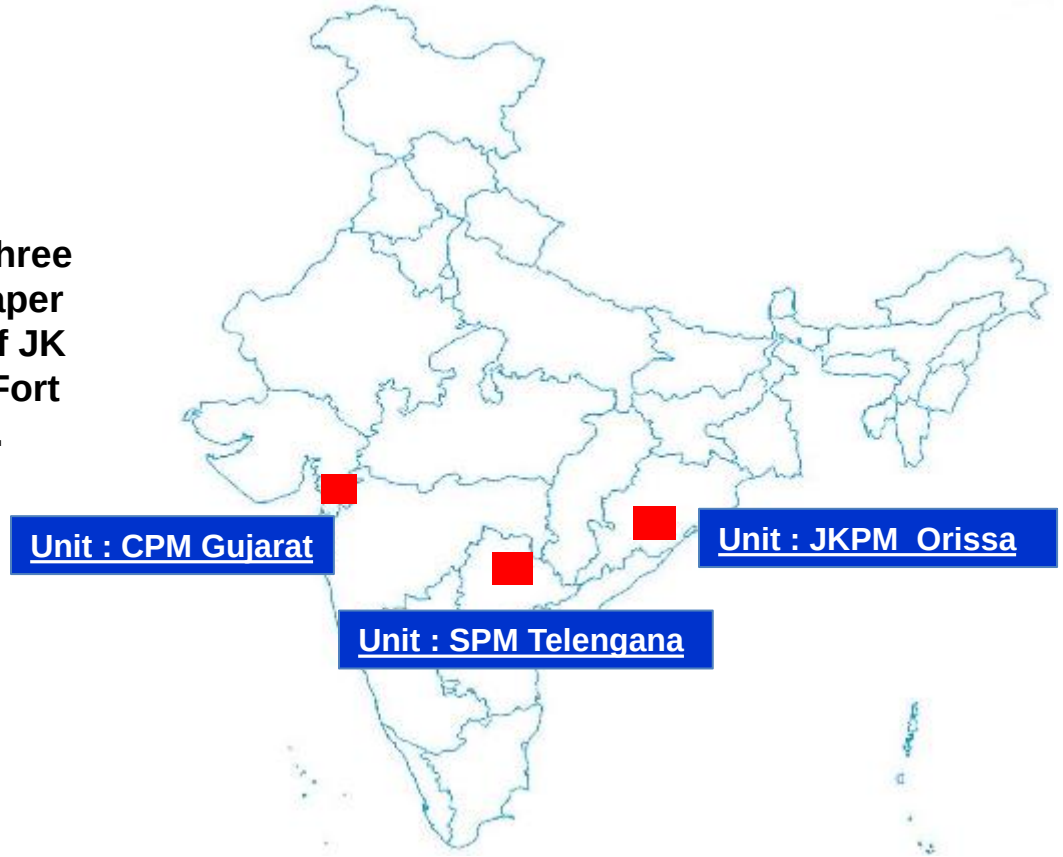
Saleable Product : 7,87,000 (TPA)
Pulp : 4,75,000 (TPA BD)

Product Mix

Uncoated Paper : 4,31,000 MT
Coated Paper : 55,000 MT

Packaging Board : 3,01,000 MT

Unit: CPM One of the three integrated pulp and paper manufacturing units of JK Paper Ltd. located at Fort Songadh (Gujarat).



JK ‘Paper products’ making lives sustainable

Copier Paper

Applications –
Printing, Stationery

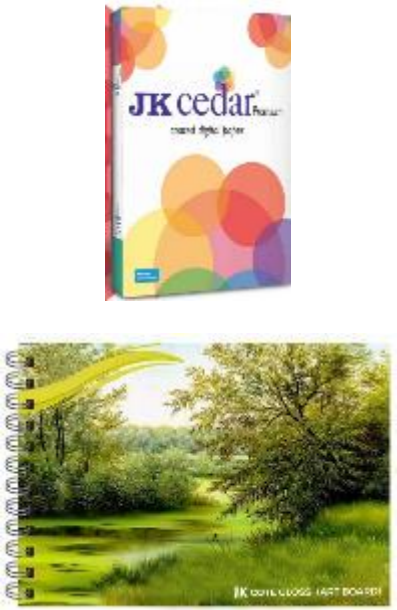
Maplitho

Applications –
Publication, Printing, Notebooks etc

Packaging Board

Applications –
Packaging material

Coated Paper



Applications –
Wedding cards, visiting cards etc

Our Journey – JK Paper Ltd. Unit: CPM

Mill Established
1968


1992
JK Acquired CPM


1995
Stabilisation of operations

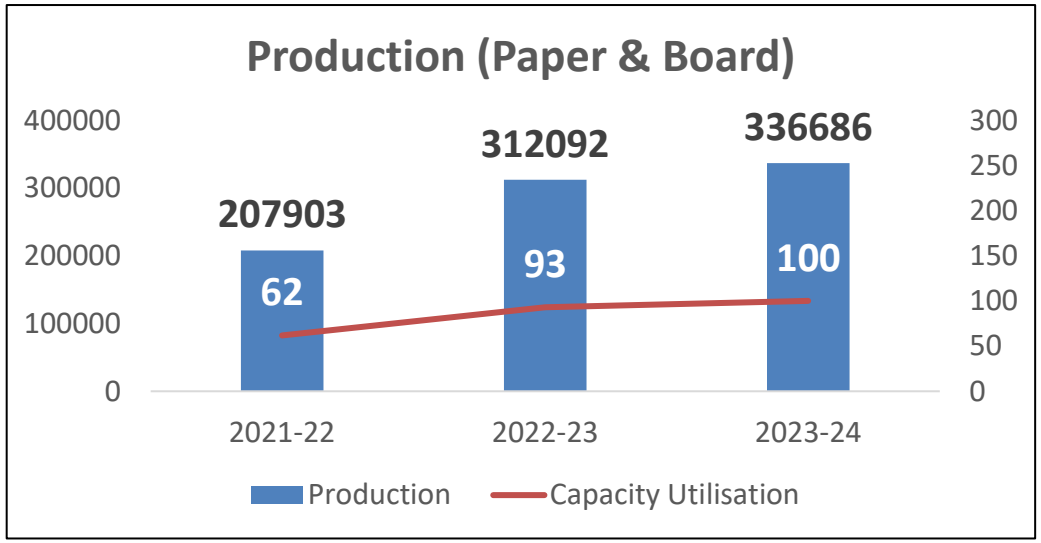
2007
BM-4 (Board)


2022
BM-5 (Board)
Pulp & Recovery Plant
Power plant

Machine	Capacity TPA	Speed MPM	GSM	Product
PM 1	26000	360	68-180	W&P Paper
PM 2	40000	380	68-210	W&P Paper
BM 4	100000	420	190-430	Packaging Board
BM 5	170000	600	140-440	Packaging Board

Plant	Capacity
Pulp Mill	150000 BDMT/Annum
LFB	950 BLDS/day.
CFB	150 TPH (Running) ,70TPH (S/B), 50TPH (S/B)
TG sets	28MW,18MW (Running), 12 MW x 2 (S/B)

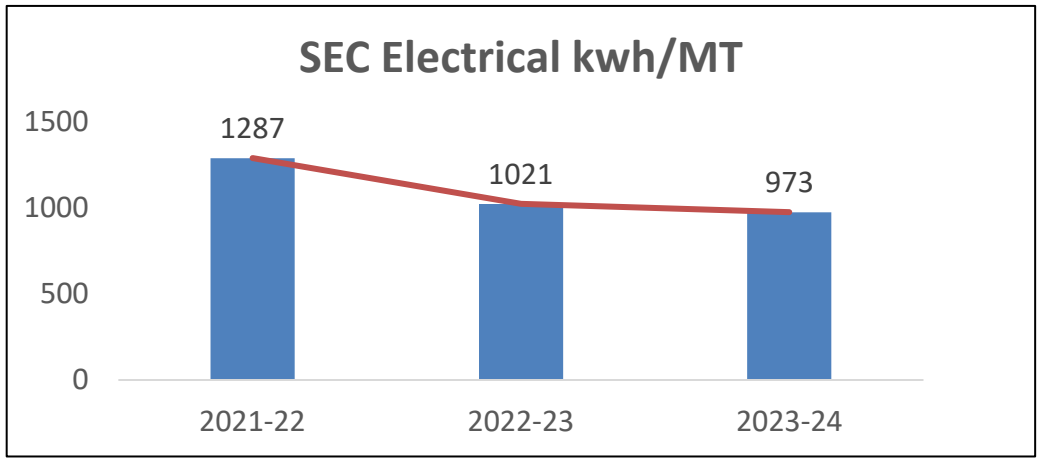
Production & Specific Energy Consumption - Overall



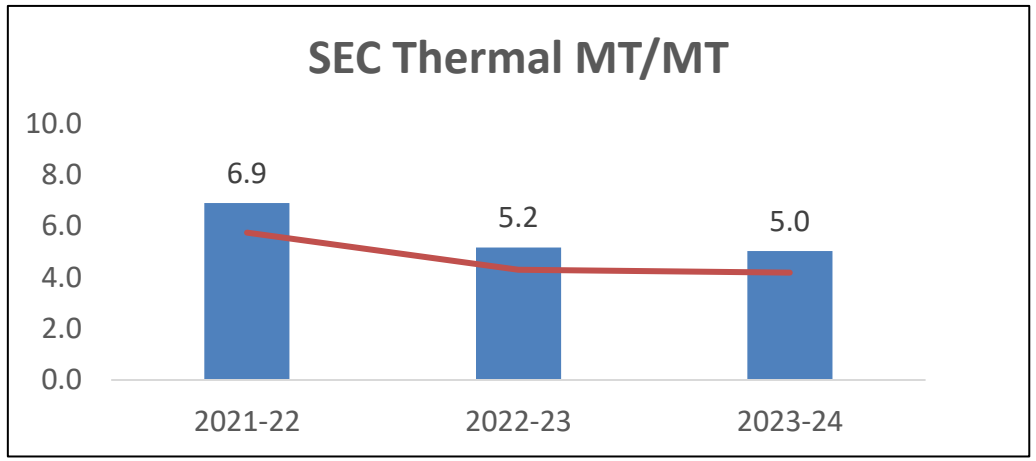
Capacity utilisation 100%

SEC Elect reduced by 4.7%

SEC Thermal reduced 2.8%



Benchmark	KWH/MT	Reference
Global Avg.	1000-1100	CPPRI Study
National Avg.	1400-1500	CPPRI Study
Competitor 1	1053	CII Energy award



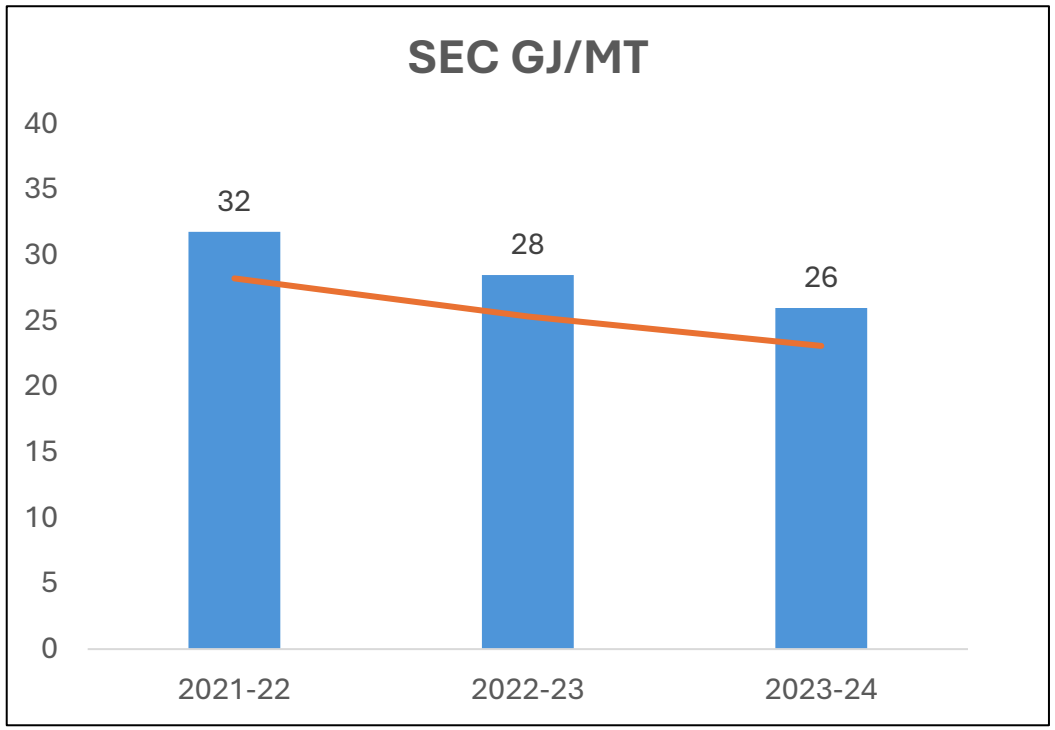
Benchmark	MT/MT	Reference
Global Avg.	7.0-9.0	CPPRI Study
National Avg.	12-13	CPPRI Study
Competitor 1	4.91	CII Energy award

Overall energy performance

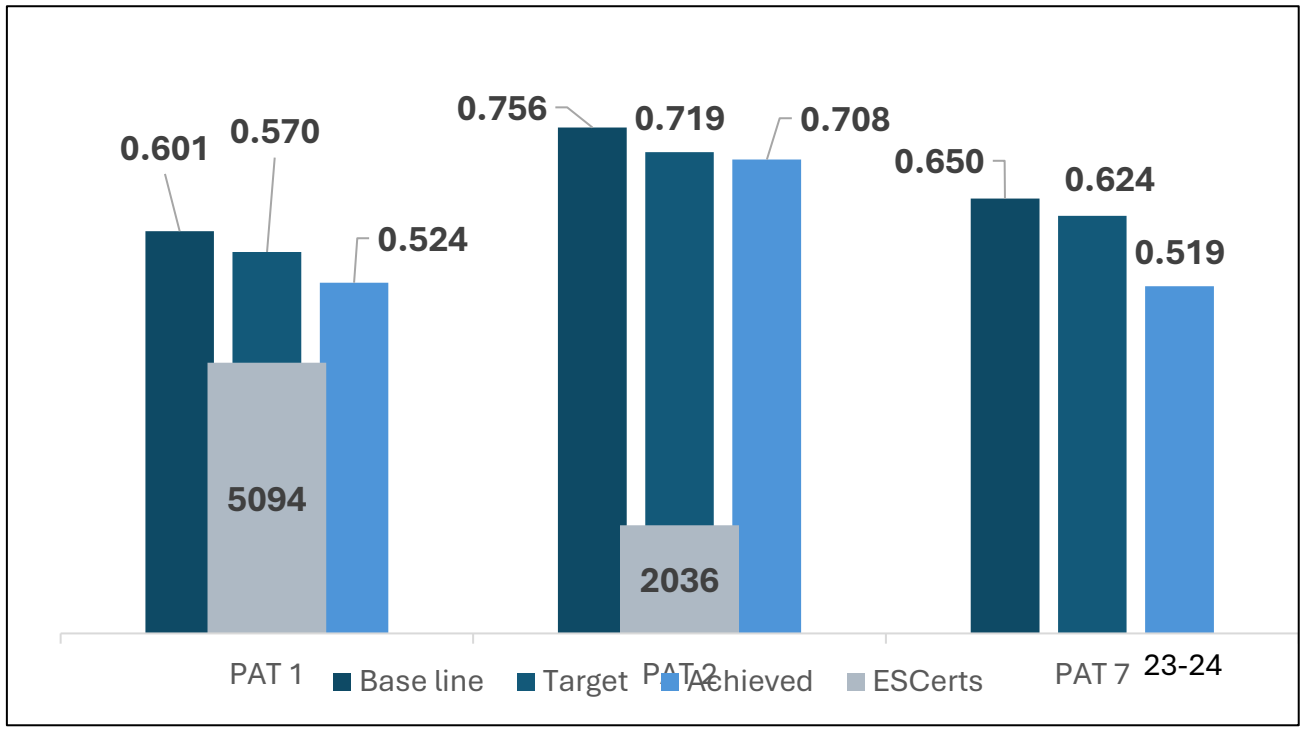
7% reduction in Overall specific consumption in terms of primary energy

20% reduction in PAT cycle 7 by FY 23-24

Overall specific primary energy

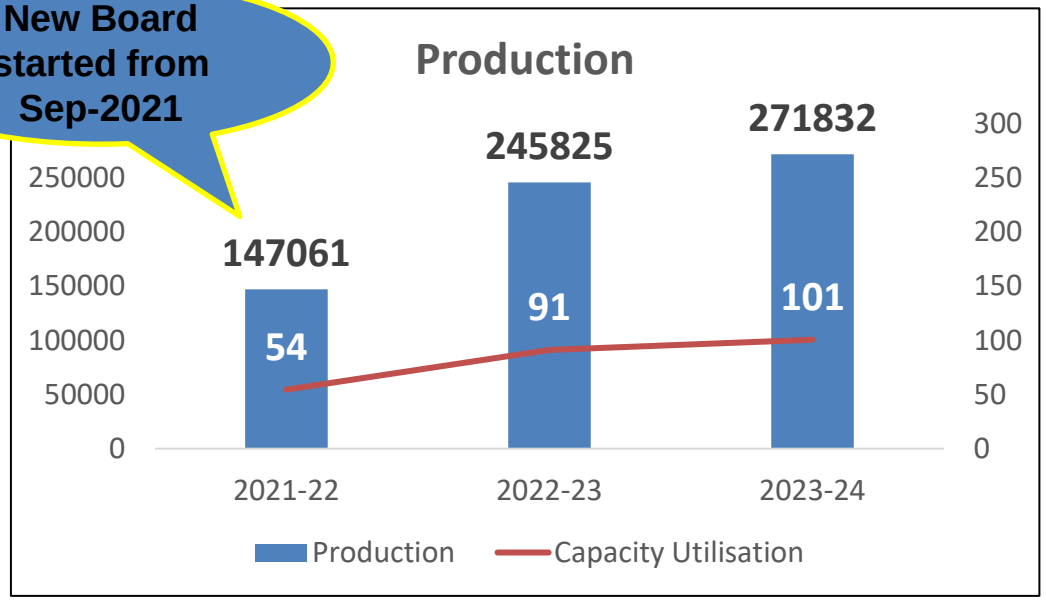


SEC Trends in MTOE/MT of Normalised production



Production performance trends plant wise –Packaging Board

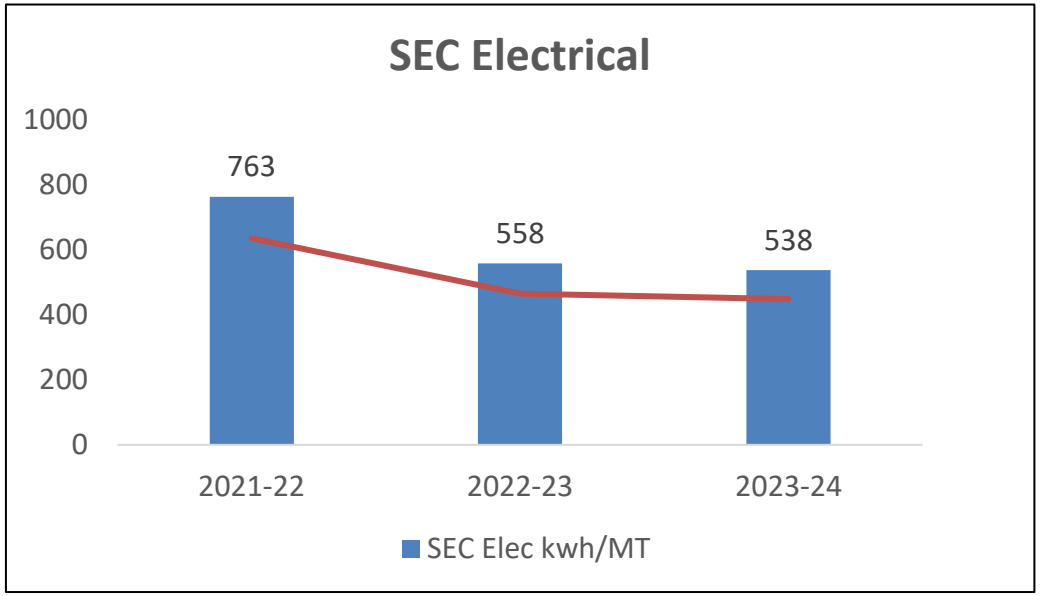
New Board started from Sep-2021

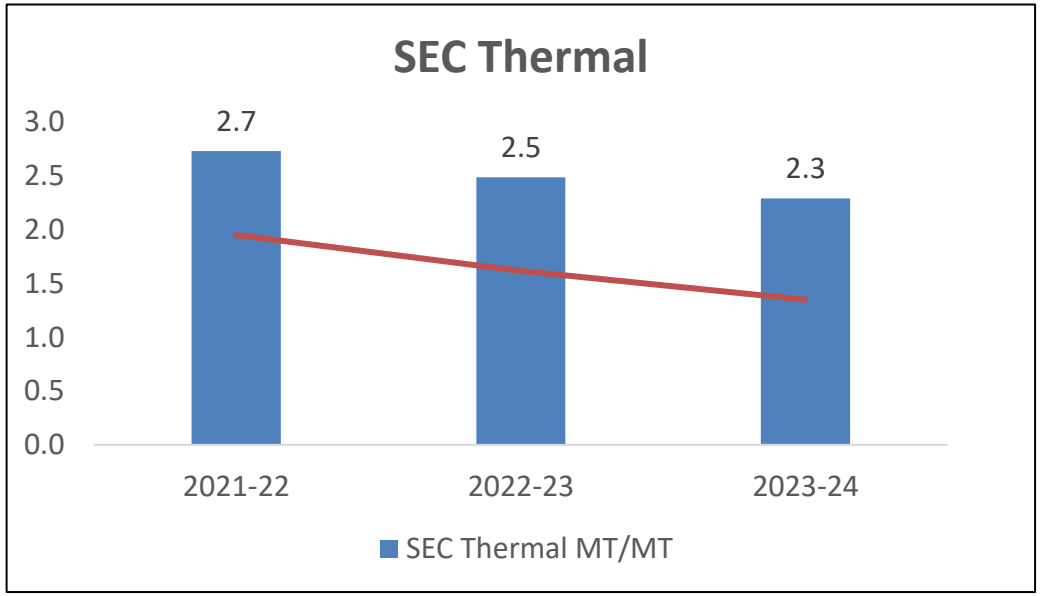


Capacity utilisation 107%

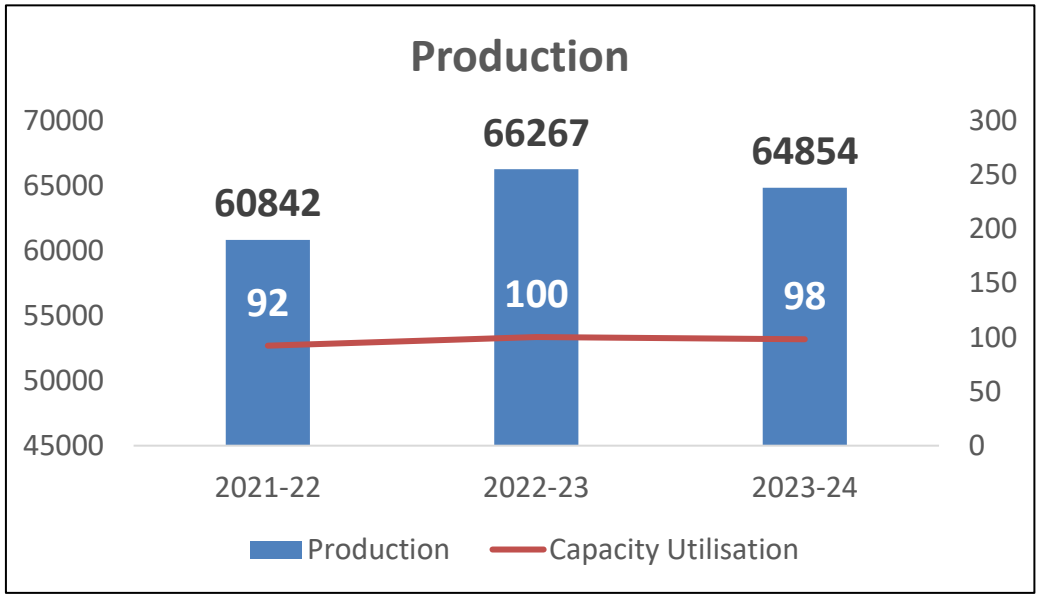
SEC Elect reduced by 3.6%

SEC Thermal reduced by 7.9%





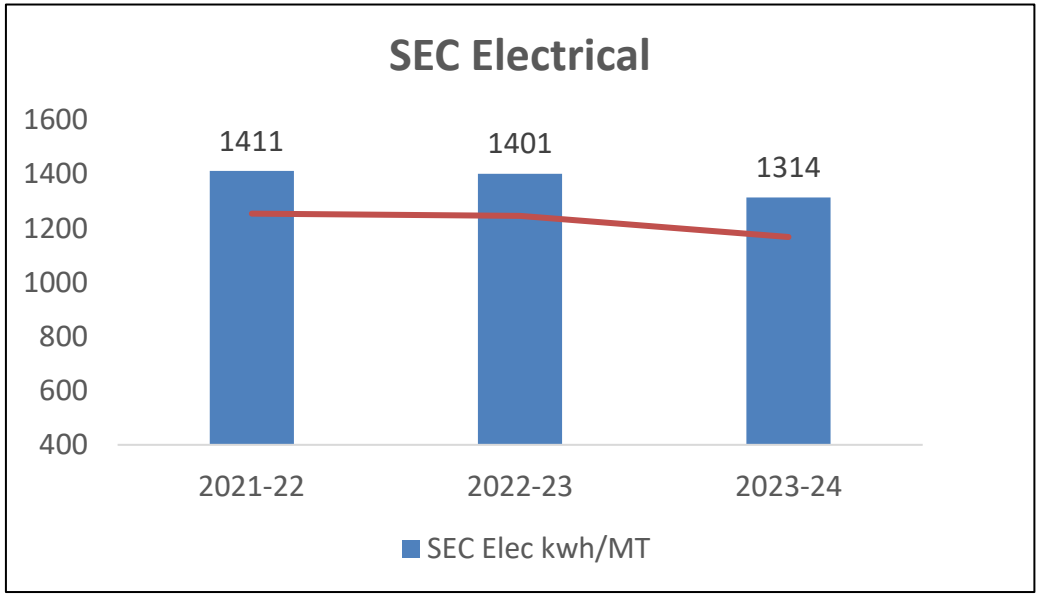
Production performance trends plant wise – Paper

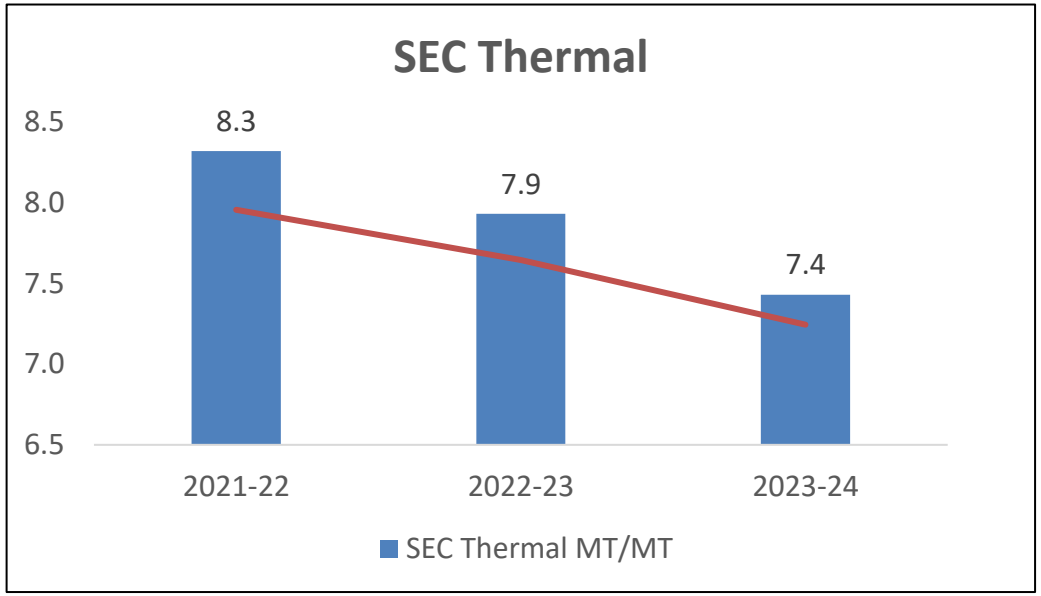


Capacity utilisation 107%

SEC Elect reduced by 6.2%

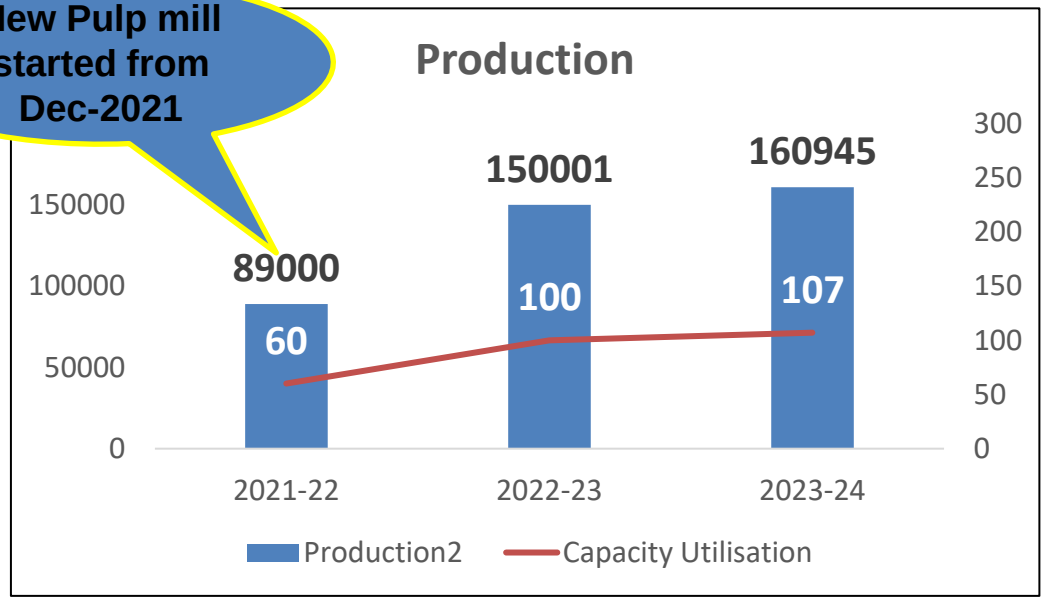
SEC Thermal reduced by 6.3%



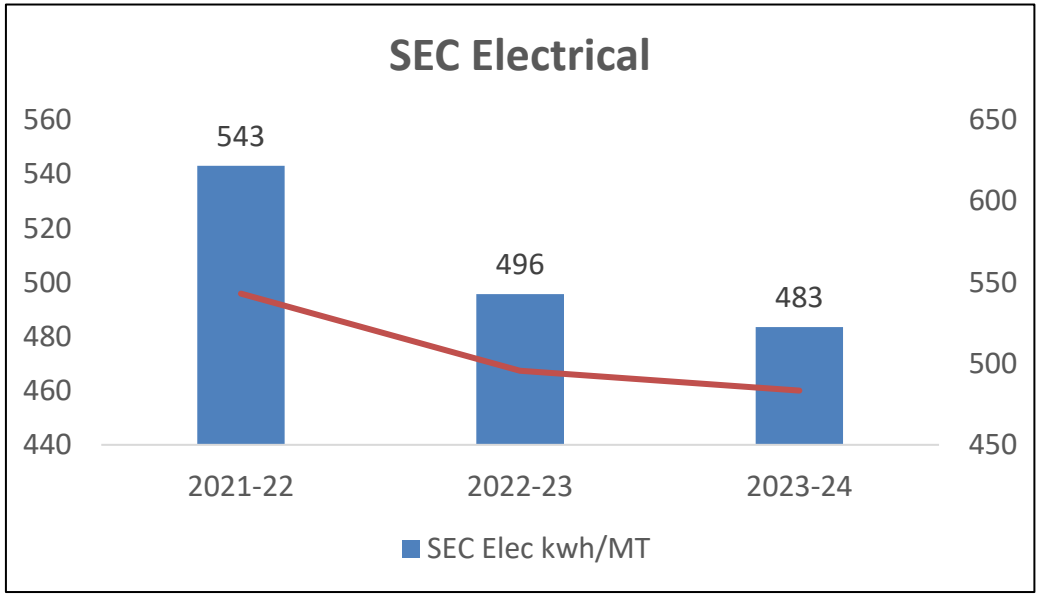


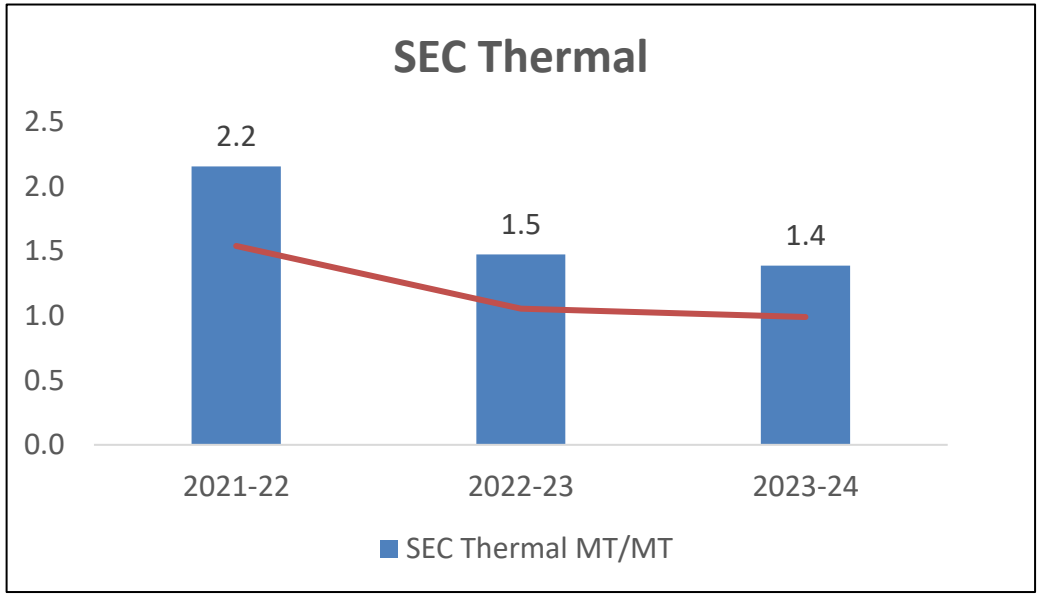
Production performance trends plant wise - Pulp

New Pulp mill started from Dec-2021



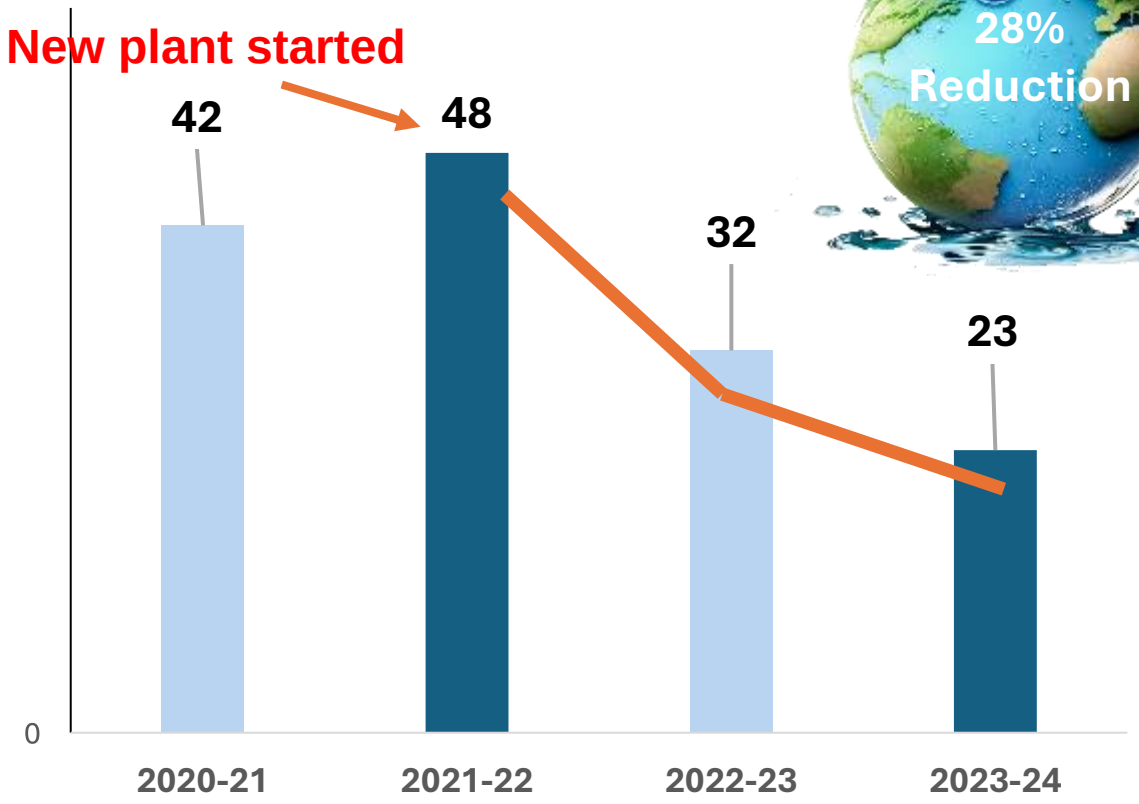
- Capacity utilisation 107%
- SEC Elect reduced by 2.5%
- SEC Thermal reduced 5.9%





Water consumption M³/MT

Water consumption reduced from **34000m³/day to 24000m³/day**



Water Saving Major Schemes			
S.N.	**Description**	**FY**	**Savings m³/MT**
1	RB Sealing & SWAS Cooling water diverted to TG-6 Cooling tower.	23-24	1.6
2	LMCD Vacuum pump sealing water replaced with Secondary Condensate	23-24	0.7
3	Evap Vacuum pump sealing water replaced with Secondary Condensate	23-24	0.3
4	Indirect heater Mill Water diverted recovery process cooling tower.	23-24	0.6
5	Secondary condensate water used in green liquor cooling	23-24	0.4
6	Saving of Fresh water in ETP	23-24	0.5
7	Usage of treated effluent in ETP	23-24	0.0
8	Propane cooling water recovery in BM-4	23-24	0.1
5	Use of clear filtrate for gland sealing in BM-5	23-24	0.6
6	Pulp mill & ClO2 sealing water recovery	23-24	0.3
9	Pulp Mill Water Consumption Reduction by logic modification	23-24	1.9
10	Hot water tank installation	23-24	1.7
	Total saving for year 2023-24		8.9

Energy saving projects Implemented (Last three years)

Year	Annualized Saving	Electrical Saving	Thermal Saving
2023-24	197 Million INR	81 Lakh KWH	76690 MkCal
2022-23	84 Million INR	58.5 Lakh KWH	10764 MkCal
2021-22	24 Million INR	107.3 Lakh KWH	--

Energy saving projects planned 24-25

- **Estimated savings 47 Million INR.**
- **Electrical savings 28 Lakh KWH.**
- **Thermal savings 12183 MkCal.**

Sl. No.	Description of energy efficiency improvement measure	Annual Electrical Saving (Lakh kWh)	Annual Thermal Saving (Million Kcal)	Savings (Rupees Rs Million) estimated	Investment (Rupees Rs Million) estimated	Pay back Months
1	VFD for Identified Equipment's	4.26		2.56	5.00	23
2	New centrifugal Compressor in place of screw compressor	6.475		3.89	24.00	74
3	Centralised refiner for Paper machines	9.4608		5.68	15.00	32
4	Steam reduction in digester by recovery of heat from BL to Evaporator	0	1048	2.60	2.00	9
5	Thermocompressor in BM-5	0	11135	27.61	9.00	4
6	Energy efficient Vacuum pump for BM 4	4.02		2.4	5.00	25
7	Replacement of old motors with energy efficient motors	1.608		1.0	1.70	21
8	ETP feed pumping system retrofit	2.13		1.3	1.50	14
		28.0	**12183.00**	**46.99**	**63.20**	**16**

Energy Saving Projects – Details (2023-24)

Total savings 197 Million INR.

Electrical savings 81 Lakh KWH.

Thermal savings 76690 MkCal.

Sl. No.	Description of energy efficiency improvement measure	Annual Electrical Saving kWh	Annual Thermal Saving (Million Kcal)	Savings (Rupees Rs Million)	Investment (Rupees Rs Million)	Pay back Months
1	Replacement of old motors with energy efficient motors	85200		0.51	0.75	18
2	Installed VFD in ETP pumps,Root blower & DMP pumps	1531600		9.20	5.50	7
3	PM 1 steam and condensate system retrofit (Power)	390000	8515	23.46	32.00	16
4	Replacement of Canal Pump with correct capacity pump	852000		5.11	0.00	0
5	Steam Consumption in Pulp mill reduced by modifying DDS cooler logic & max clean condensate utilization.	0	5240	13.00	0.00	0
6	Installed VFD for BCTMP Pump - BM 5	145854		0.88	0.8	11
7	Installed energy efficient Vacuum pump in PM 2	788400		4.73	15.80	40
8	Installed VFD & ORP meter in PM 2 filterate pump	145854		0.88	0.50	7
9	Thermal insulation coating on PM-1 & 2 Dryers end covers	0	379	0.64	0.57	11
10	Thermal insulation coating on BM-4 Dryers end covers	0	402	0.67	0.63	11
11	Reduction of 90 kwh/T power consumption in Uncoated grade by stopping broke refiner and one HW refiner.	1800000		10.80	0.00	0.0
12	Power saving of 80KW in BM-5 packing machines by incorporating the logic for reducing idle run	630720		3.78	0.00	0.0
13	Installed heat exchanger for heat recovery from evaporator secondary condensate. LP steam in Boiler Deaerators reduced by 60 TPD	0	13951.5	34.60	2.00	0.7
14	200 KWH/Hr power saving done in Compressor House through QIP project	1704000		10.22	0.00	0.0
15	Increased biomass firing in boiler	0	47218	74.42	0.00	0.0
16	Methanol firing in RLK	0	984	3.75	60.00	192
	Total	**8073628**	**76690**	**197**	**119**	**7**

Energy Saving Projects – Details (2022-23)

Total savings 84 Million INR.

Electrical savings 58.5 Lakh KWH.

Thermal savings 10764 MkCal.

S.N.	Title of Project	Annual Electrical Saving (kWh)	Annual Thermal Saving (Million Kcal)	Total Annual Savings (Rs million)	Investment Made (Rs million)	Payback (Months)
1	Energy saving from condensate line insulation.		2277	3.80	1.77	5.6
2	HP steam saving at 28MW and 18MW Aux. PRDS		3098	7.50	0.45	0.7
3	Replacement of old motors with energy efficient motors in PM1&2.	332000		2.04	4.00	23.6
4	Installed VFD in Mill water pump and reduced header Pressure.	554000		3.40	1.50	5.3
5	Installed VFD in WLP Process cooling tower pump for auto Pressure control.	673000		4.13	1.50	4.4
6	Installed VFD in WLP LMCD filter vacuum pump.	475000		2.91	0.50	2.1
7	Installed VFD in BCTMP pulper pump in BM5	363000		2.23	0.50	2.7
8	Power factor improved by adding capacitor banks in WLP& BM5 MCC.	356400		2.18	0.65	3.6
9	Replacement of Conventional Lights with LED lights in BM#4.	128000		0.78	0.15	2.3
10	Installed energy efficient Vacuum pump in PM1 .	712000		4.36	1.95	5.4
11	Highly efficient screen dilution pump in digester	198720		1.22	1.50	14.8
12	DC 8 Stock pump replaced with highly efficient pump in pulp mill	281520		1.73	1.00	7.0
13	Energy saved by stopping of Mill water pump to PM 1 & 2 after interconnection	876000		5.37	0.05	0.1
14	Energy saved by stopping of DM Water pump by using gravity flow	175200		1.07	0.01	0.1
15	Energy saved by stopping of Water recovery pump by using gravity flow	175200		1.07	0.01	0.1
16	Energy saved by running efficient refiner of PM#2 for PM#1 by inter connection	403200		2.47	0.05	0.2
17	Screw press in place of tail screen in Pulp mill	149040		0.91	0.60	7.9
18	Lime kiln Fuel optimisation through digitalisation		4410	35.20	2.46	0.8
19	Evaporator steam economy improvement through digitalization		962.65	1.30	0.09	0.8
20	E Auto for internal transportation		15.77	0.17	0.42	29.6
	Total	**5852280**	**10764**	**84**	**19.17**	

Energy Saving Projects – Details (2021-22)

Total savings 24 Million INR

Electrical savings 107 Lakh KWH

S.N.	Title of Project	Annual Electrical Saving (kWh)	Annual Thermal Saving (Million Kcal)	Total Annual Savings (Rs million)	Investment Made (Rs million)	Payback (Months)
1	Installation of Online EMS	188889		0.85	0.94	13.2
2	Installation of VFD Pump PM/C	81664		0.37	0.25	8.2
3	Installation of Highly Efficient Motor	67849		0.31	0.2	7.9
4	Replacement of Vacuum Pump Motors 200 KW	63072		0.28	0.06	2.5
5	Replacement of Vacuum Pump Motors 55 KW	19710		0.09	0.05	6.8
6	Replacement of Refiner Motor at PM1	551880		2.48	2	9.7
7	Stopping CFB#4 & TG#4 after Plant load optimization and taking partial load on GRID	9648000		19.30	0	0.0
8	Stopping of condensate transfer pump (Old plant to new) by gravity flow	62100		0.28	0.15	6.4
9	PM#2 fan pump RPM & discharge pressure control based on machine draw through VFD	46202		0.21	0	0.0
	Total	**10729366**	**0**	**24**	**3.65**	**55**

Innovative Project-1 :Reduction of Digester Cycle time

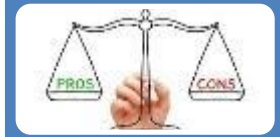
Opportunity
The Digester becoming bottle neck as it could not meet demand from machines.

Cause
The screening section ROP is the bottle neck in production ramp up.

Ideas
Increase the Temp of the cooking
Replace the steam sparger .
Modification in WL dosing
AE fan capacity enhancement

Break through finding
Cycle time higher than the design which reduced the number digester i.e 260mins @162temp..
This has reduced the number blows of digester.

Innovative Idea
Installation of Steam Sparger , Higher side AE fan installation & Accept Chip classification improved from 68% to 75% by optimizing the feed roll RPM.



Pros
Increased Production rate & reduction in Power cons.
Cons.
Discharge temp higher than 98 degree.

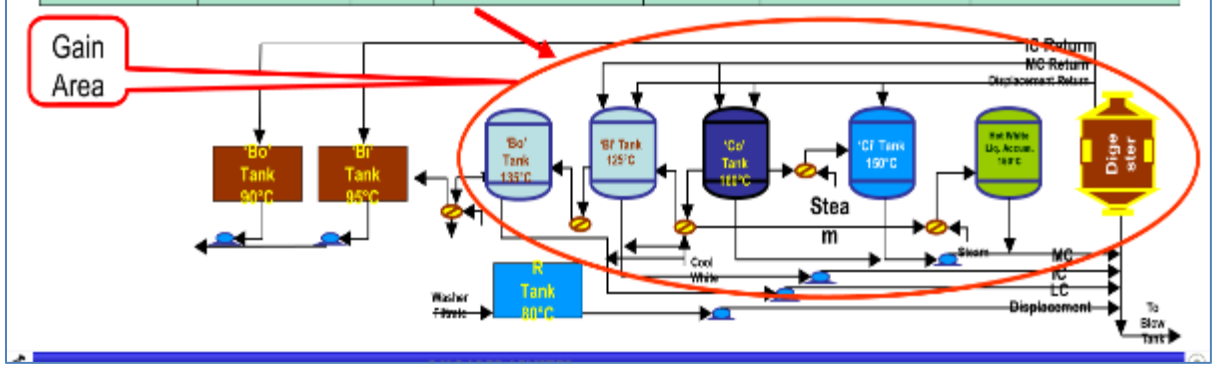
DDS CYCLE TIME

Before

Chip Fill	Initial Cooking 45 Min.	Middle Cooking 45Min.	Final Cooking	Displacement	Discharge	Total Cycle Time(Mins)
35	40	45	95	30	20	265

After

Chip Fill	Initial Cooking 45 Min.	Middle Cooking 45Min.	Final Cooking	Displacement	Discharge	Total Cycle Time(Mins)
25	40	42	90	30	20	247

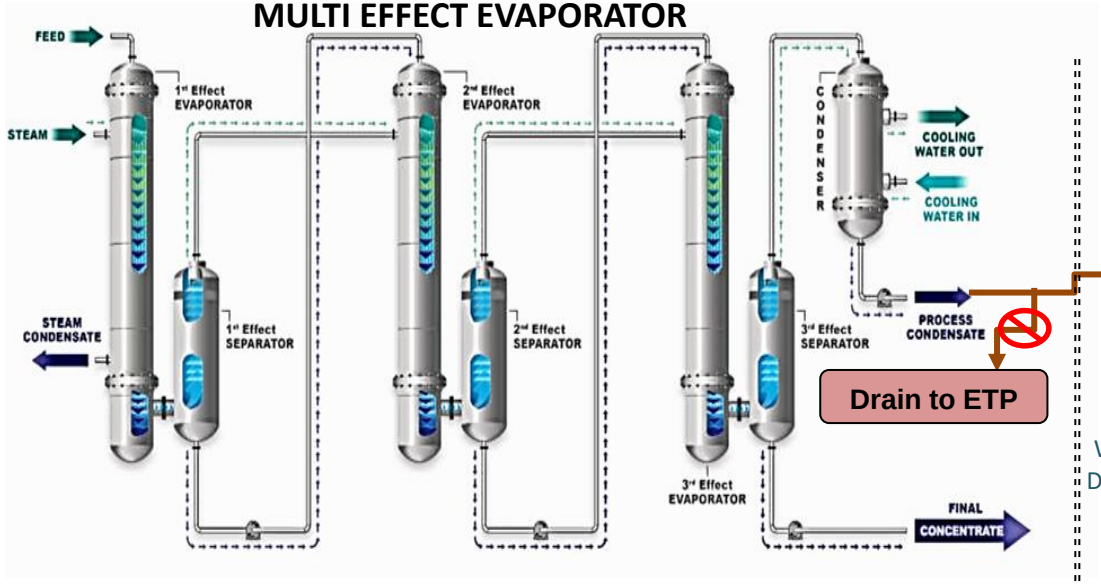


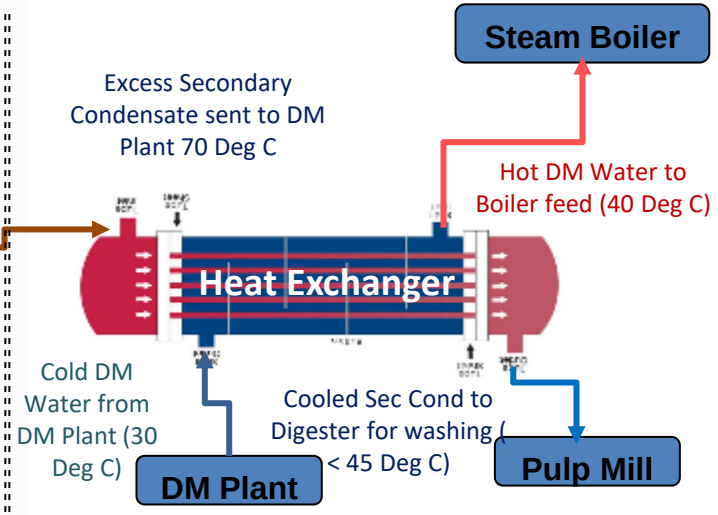
Results
Rate of production increased by 0.5TPH.
No significant impact in fibre loss.
Power saving of 13 kwh .
Financial Impact Rs 337 lacs/annum.

Innovative Project-2 – Secondary condensate heat and water recovery

Background

1. Utilisation of secondary condensate in DDS to reduce the freshwater consumption.
2. Reduction of secondary condensate temperature for using in DDS
3. Heat recovery from secondary condensate

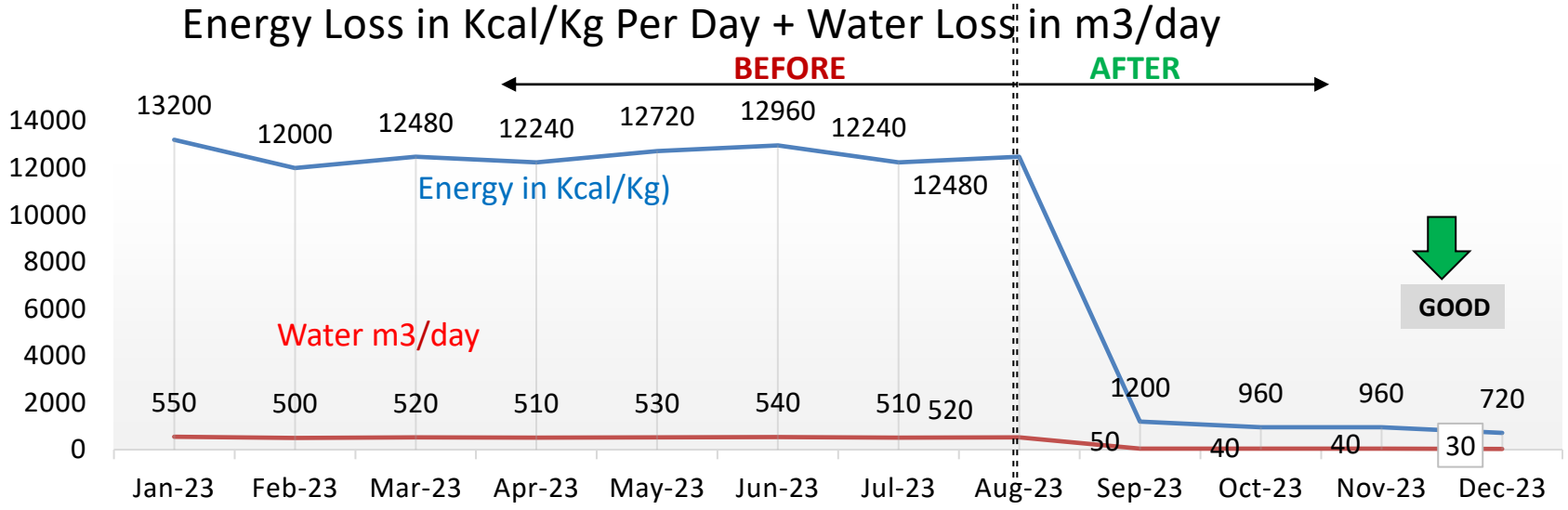




Water reduction by 500 M³/day

Steam reduction 14 TPD

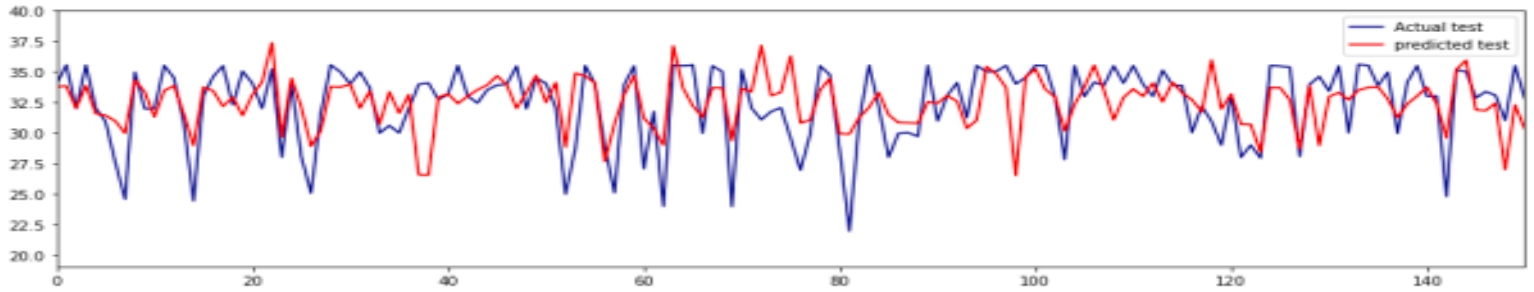
Financial gain Rs 138 lacs



Major Encon Project-1 : Evaporator steam economy improvement Slide 1/2

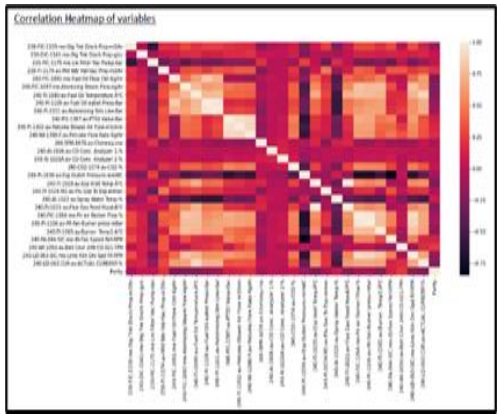
Background

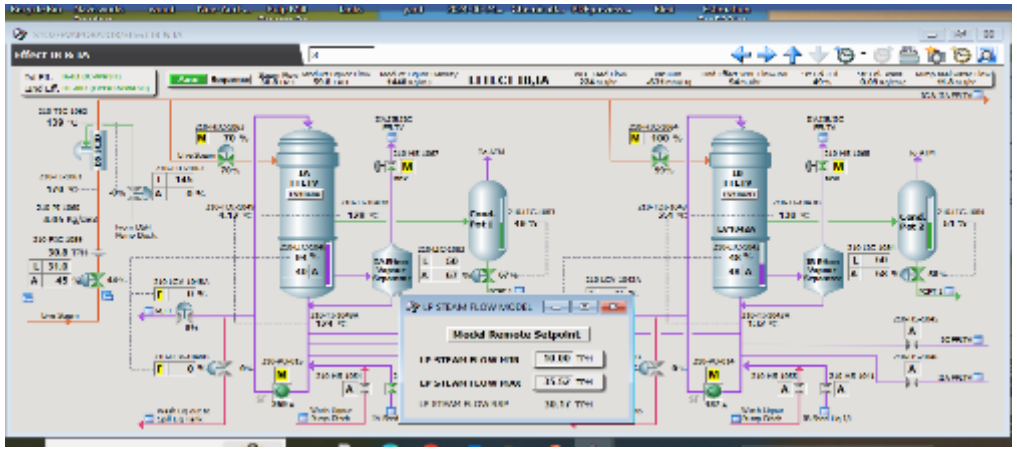
1. Optimizing steam economy in an evaporator involves minimizing the amount of steam required t evaporate the water
2. It is essential for reducing energy consumption, operational costs, and environmental impact, while also improving resource conservation, production efficiency, and overall sustainability

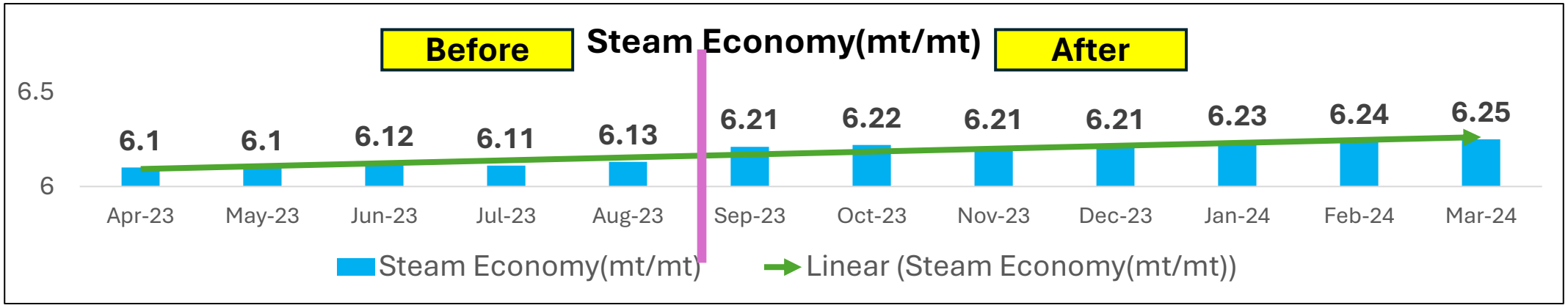


Need of En-Con

- Reduction in Steam
- HBL Solids % Consistency







Major Encon Project-2 : Bleaching chemical & power optimisation Slide 1/2

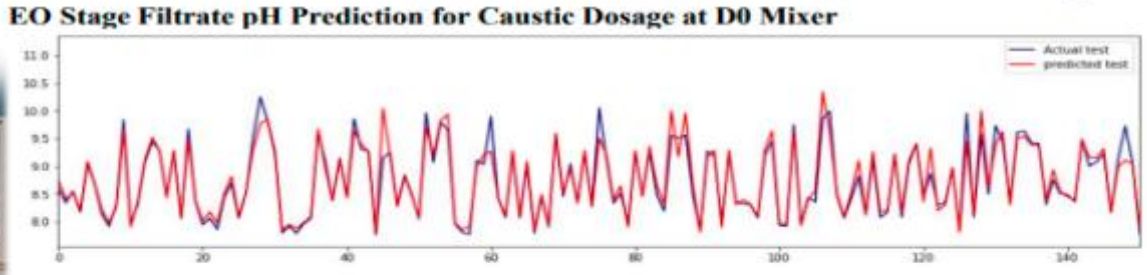
Background

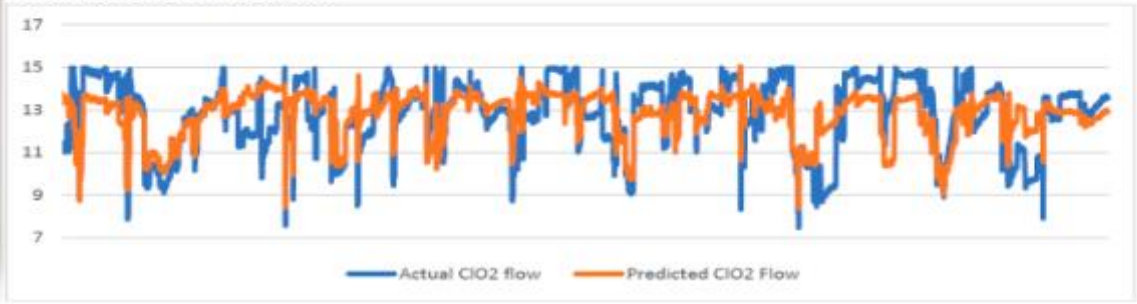
- We were facing the Brightness variation of pulp and causing excess chemical dosage
- After detail study we found that that loop between Ph, Brightness sensor ,Production rate was not there to optimize.
- After analyzing the correlation matrix of Pulp Brightness with various process parameter we found that it was impacting on the bleach chemical consumption.

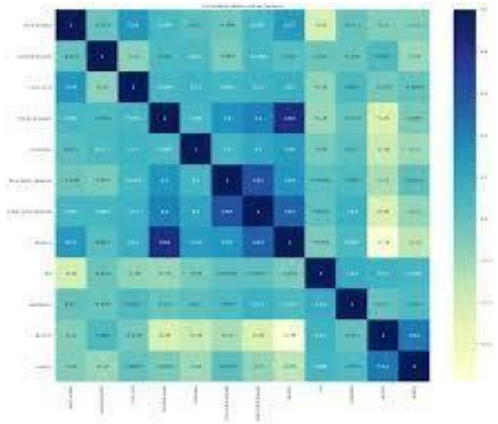
Need of En-Con

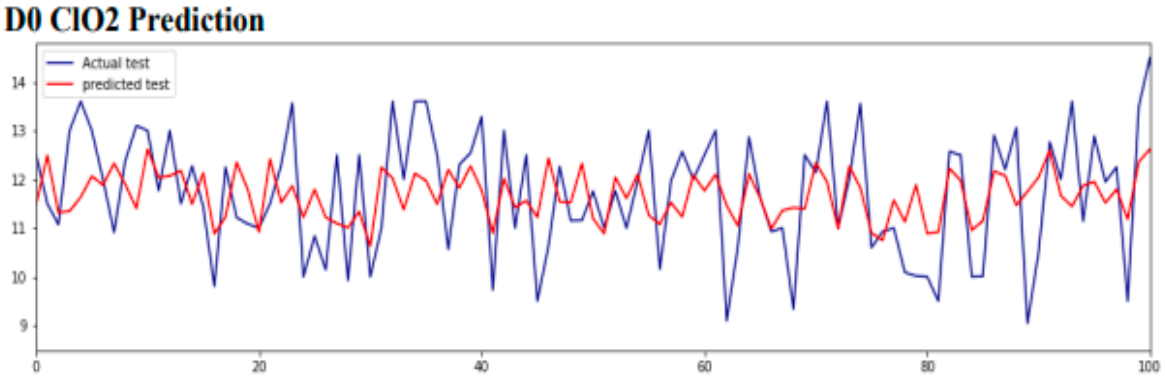
Paper Rejection reduction due to brightness variation

Chemical reduction





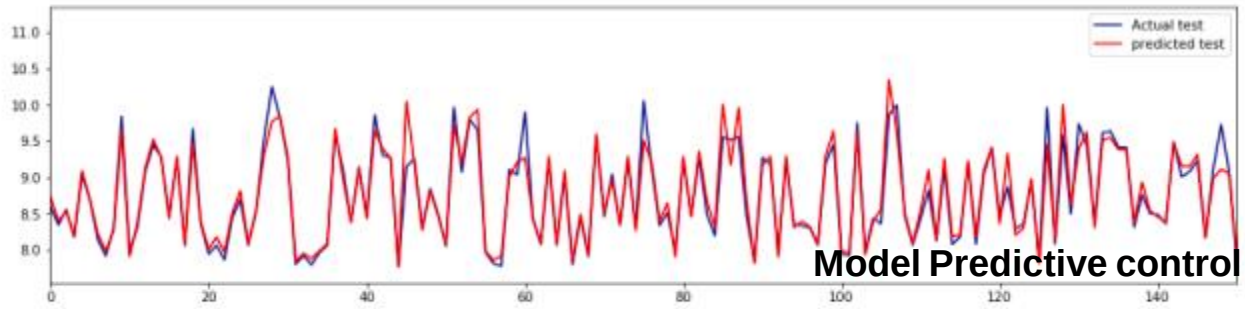




Major Encon Project-2 : Bleaching chemical & power optimisation Slide 2/2

Action Taken

Model Performance



Model Predictive control

- Study operator controlling pattern.
- Explore dependency.
- Develop Feed forward cascade Logic.

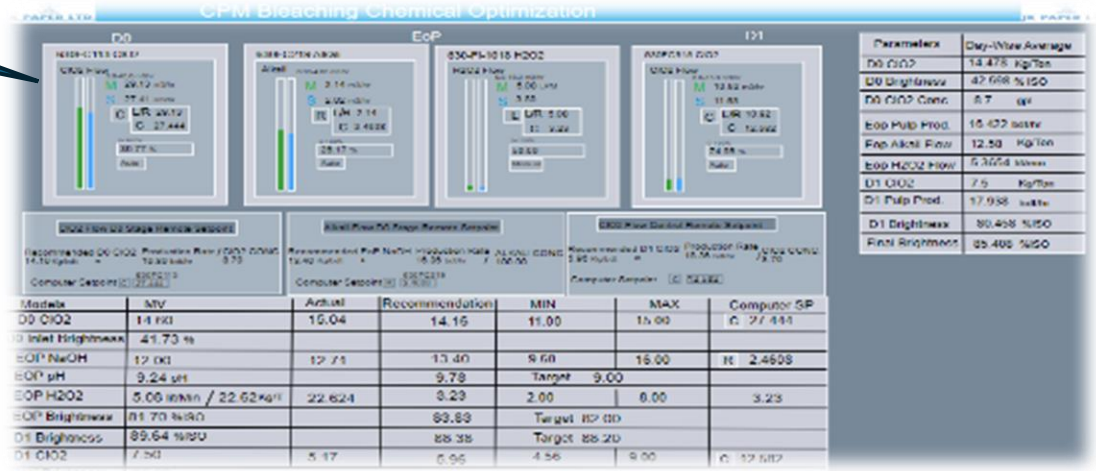
Model Building

```
In [147]: new_operating_data_os_lag_1_x = out_sample_data_1[xcols_lag].copy()
          new_operating_data_os_lag_1_y =out_sample_data_1[ycols].copy()
          new_operating_data_os_lag_1_x_t = scalerx.transform(new_operating_data_os_lag_1_x)
          rmse_min=1000
          r2_max=-10000
          comp=0
          for i in range(1,train_x.shape[1]+1):
              xgb_r2 = PLSRegression(n_components=i, scale=False)
              xgb_r2.fit(train_X_pls_scaled, train_y_pls_scaled)
              #xgb_r2.fit(train_X_pls_scaled, train_y_pls_scaled)
              pred = scalery.inverse_transform(xgb_r2.predict(new_operating_data_os_lag_1_x_t))
              # RMSE Computation
              rmse = np.sqrt(MSE(new_operating_data_os_lag_1_y, pred))
              r2 = r2_score(new_operating_data_os_lag_1_y, pred)
              if(rmse<rmse_min):
                  rmse_min = rmse
                  comp = i
              print(i,"RMSE : % f" %(rmse))
          print('min rmse',rmse_min, 'components',comp)
```

Model Predictive control

- 6 months data collection and cleaning.
- variance threshold & PLS Regression were used.
- Model Building and deployment.

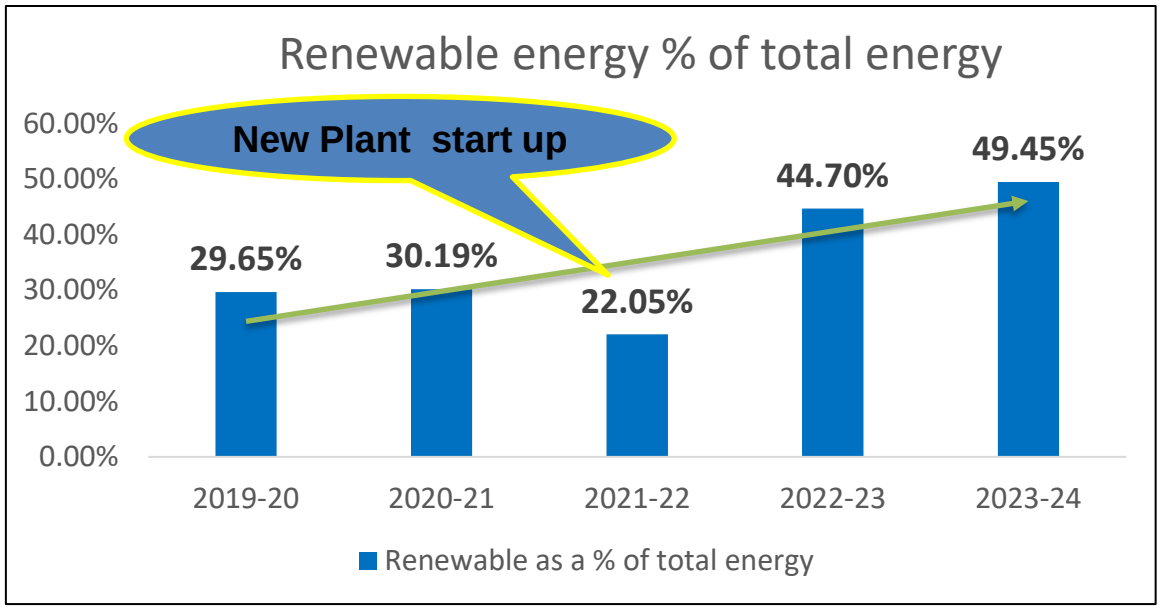
Dashboard

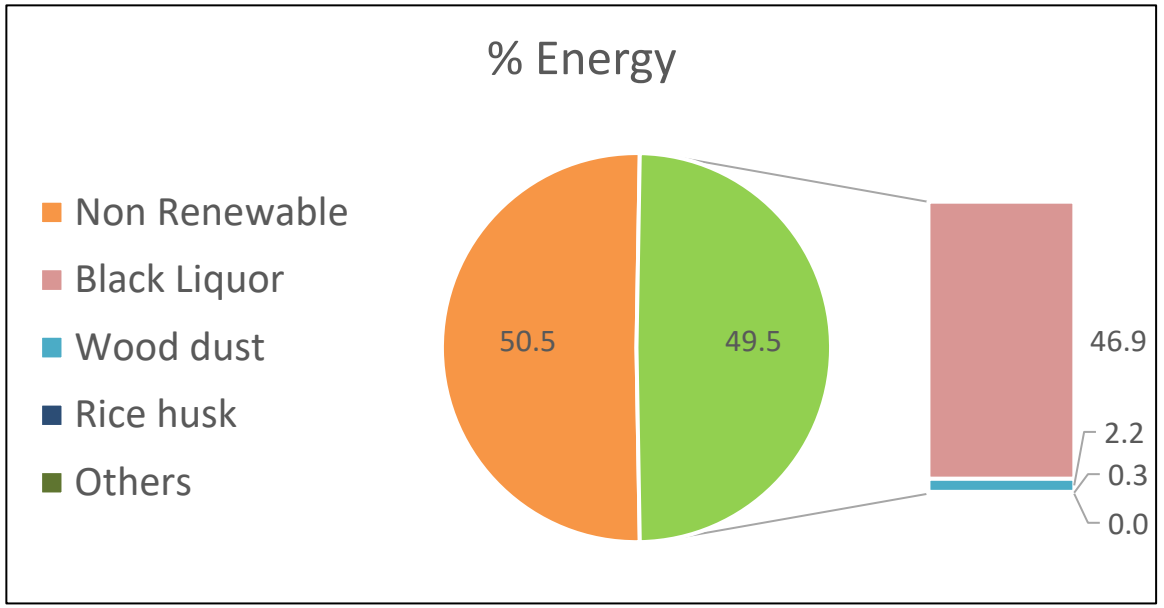


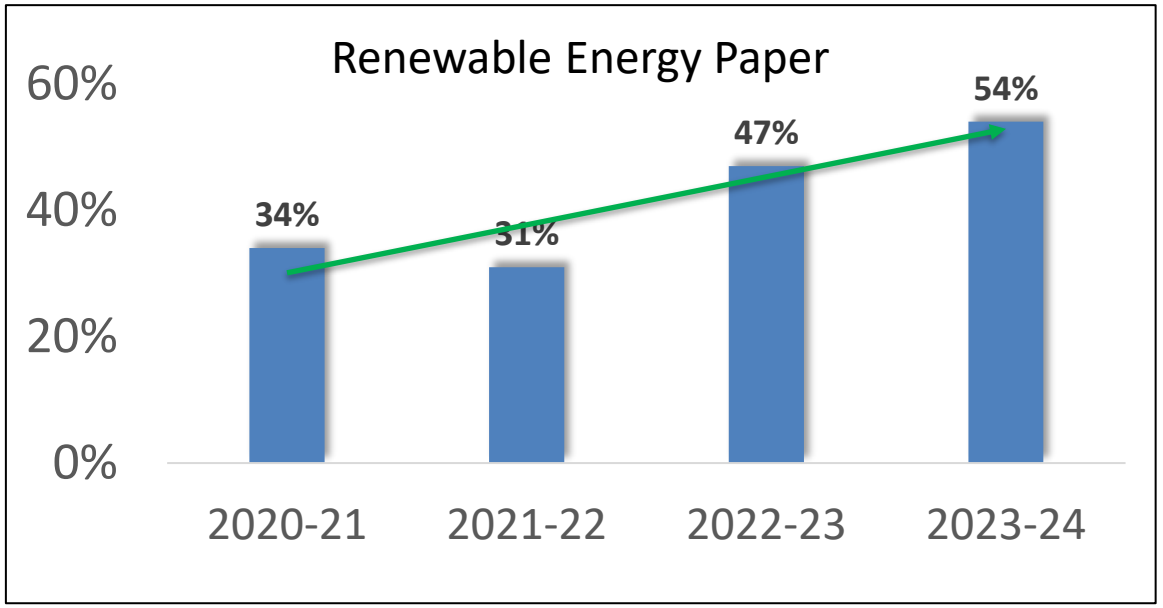
Savings & Benefits

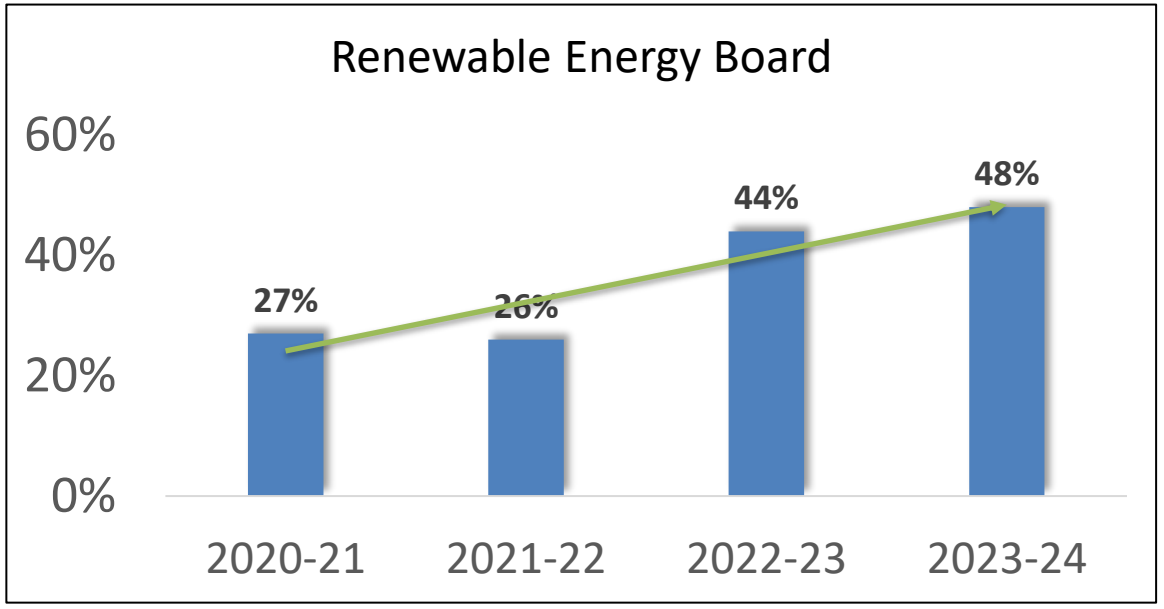
- **Chemical reduction by 14%**
- **Power reduction by 9%**

Renewable & Energy from Waste

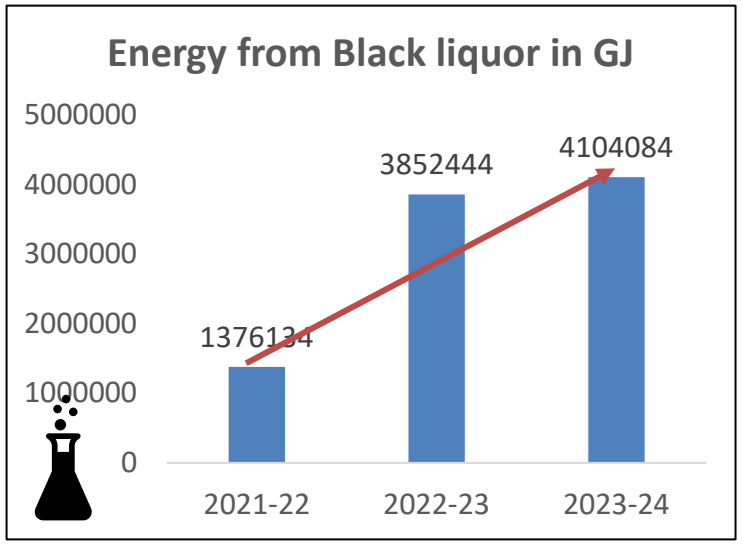


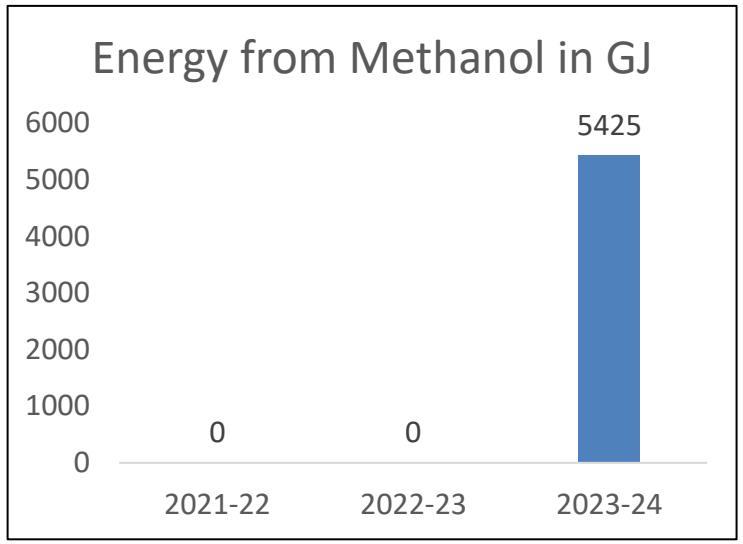


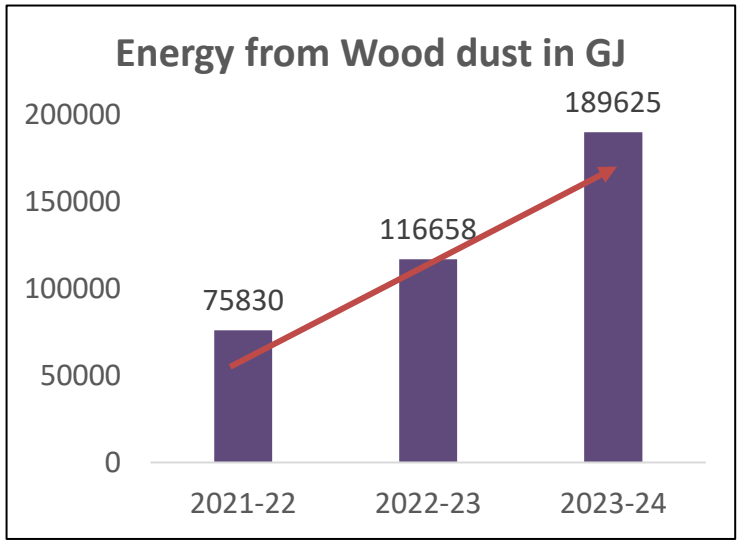




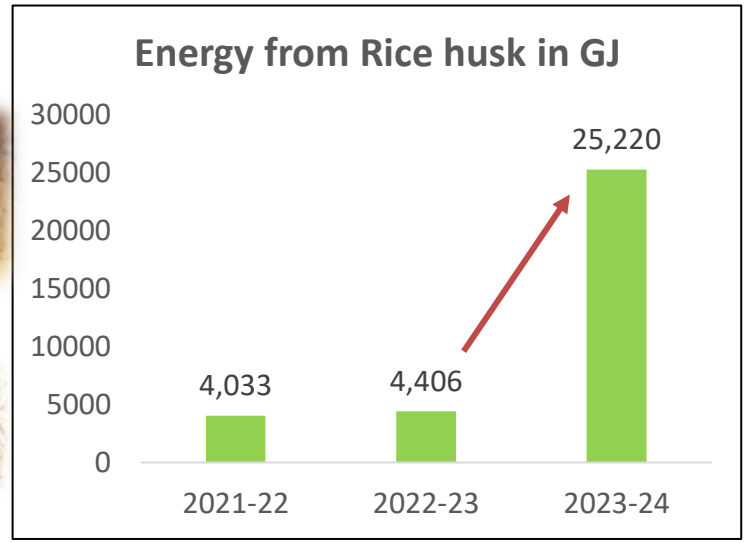
Renewable & Energy from Waste



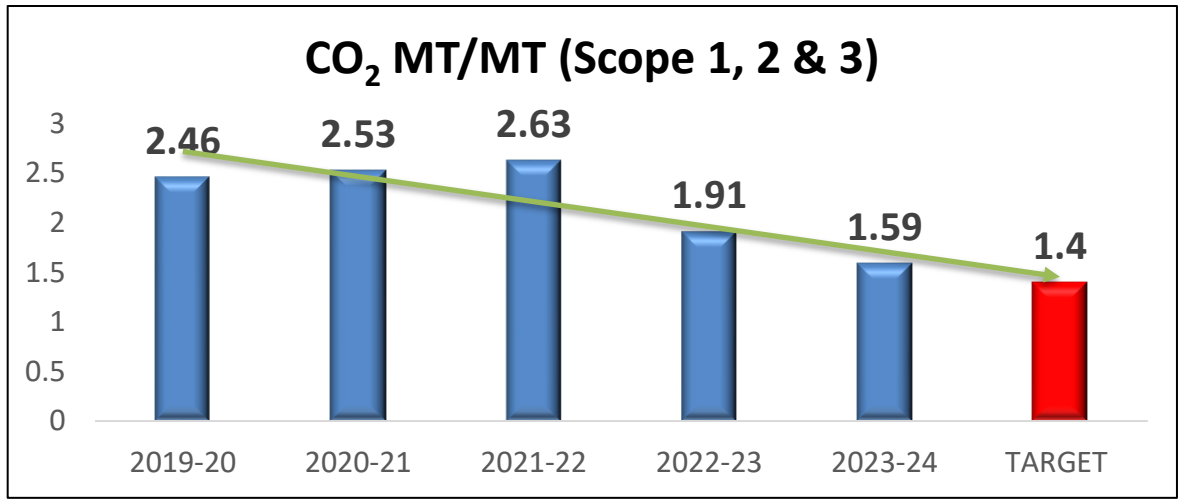




Year	Wood dust		Rice Husk	
	Qty	GCV	Qty	GCV
2021-22	7119	2544	326	2981
2022-23	10952	2420	337	3118
2023-24	19031	2380	1801	3345



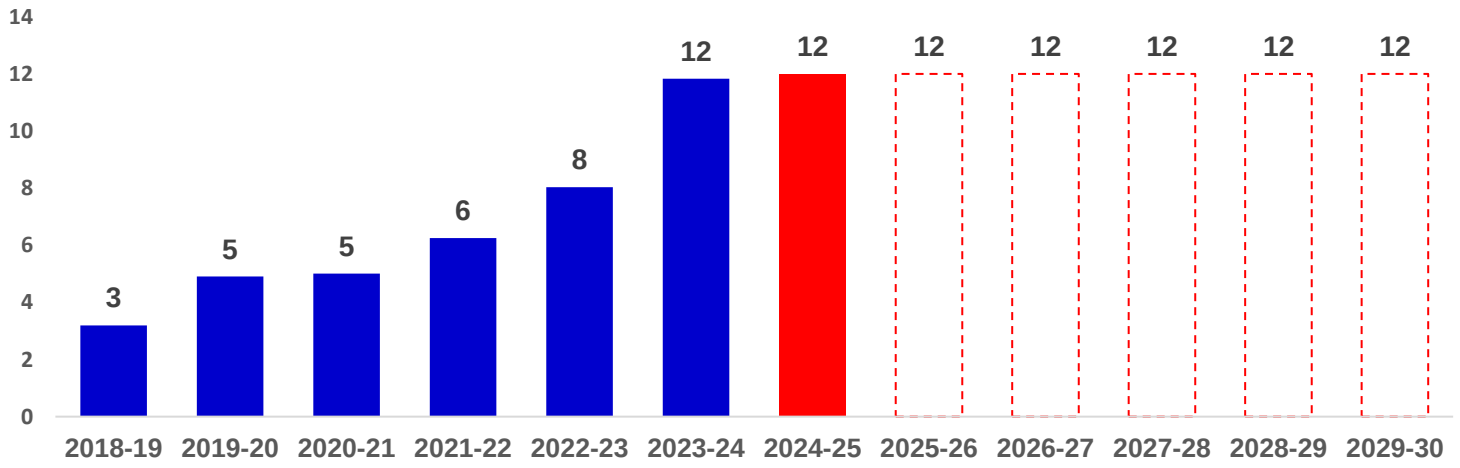
GHG- Emission intensity & reduction initiatives



Year	CO2 emission kg/MT			
	Scope 1	Scope 2	Scope 3	Total
2023-24	1335	22	235	**1592**
2022-23	1584	34	294	1912
2021-22	2469	18.9	146	2634
2020-21	2314	48.18	168	2530
2019-20	2250	28.28	184	2462
2018-19	2329	11.92	173	2514

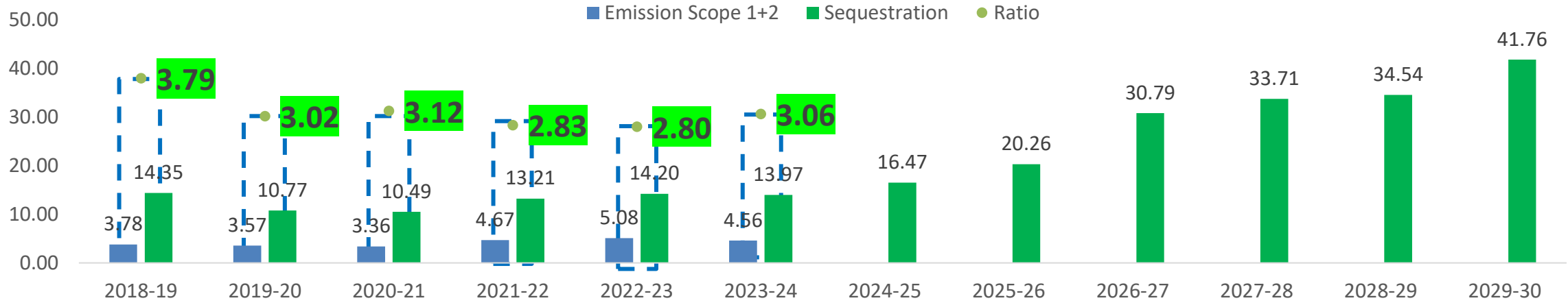
S.N.	Action plan (24-25)	Scope
1	1 MW roof top Solar plant	1
2	Grabber electrification	3
3	Increase Pulp & RB steam economy	1
4	Increase firing of rice husk/wood dust in CFB	1
5	Increase Local wood procurement	3
6	TMS(Transport management system)	3

Plantation Area covered (in 'Thousand Ha)



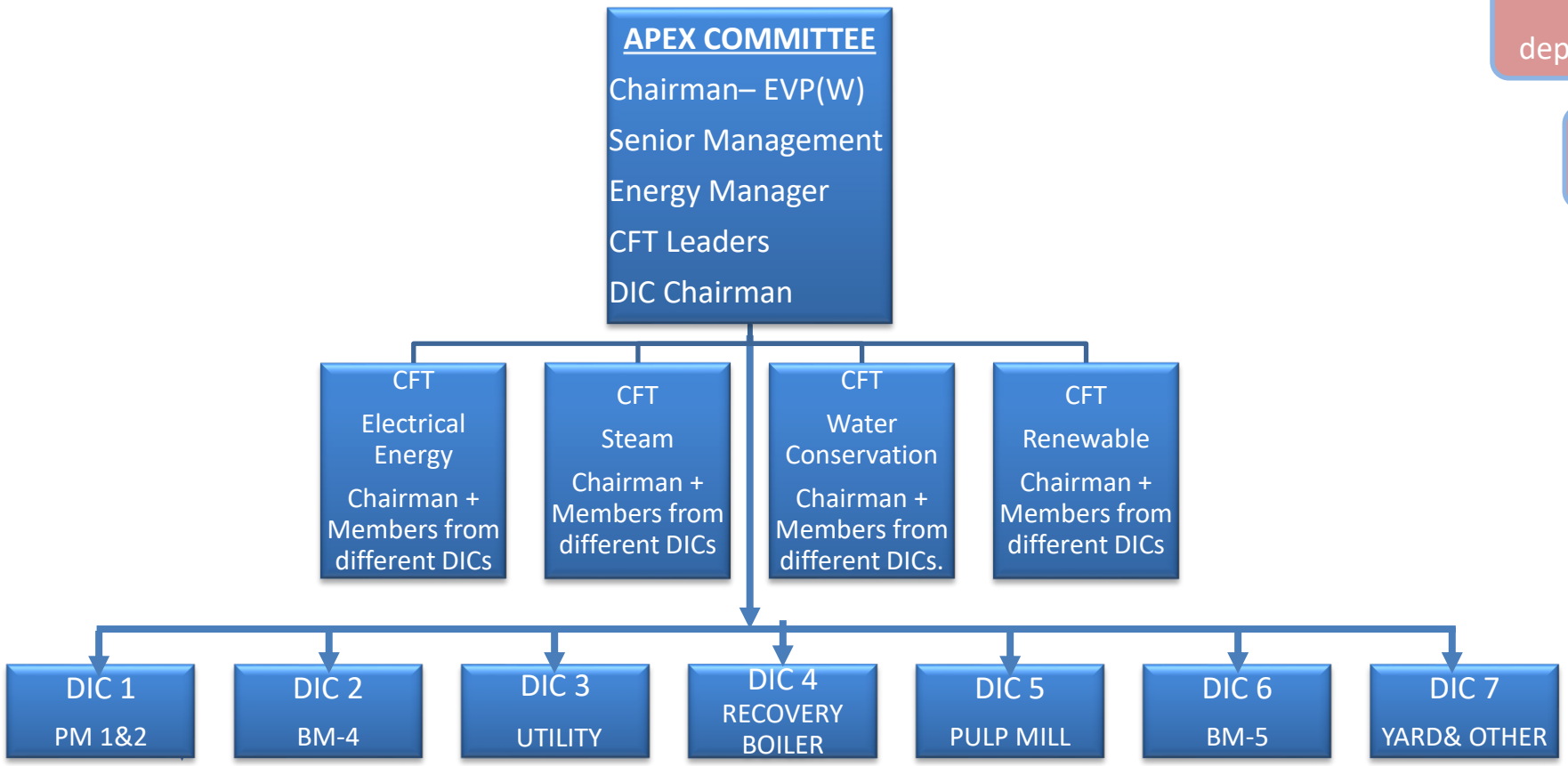
- 39235 Ha plantation from 2018 to 2024. **Highest in India among paper industries**
- 12000 Ha/yr Plantation is **5000 Ha higher** than harvesting area required for own use.
- World class R&D in plantation.
  - Developed High yield & Short rotation (18 Months) plants.
- 33 Cr plants distributed.
- Increase in income/ha for farmers

CO2 Emission and sequestration in lakh MT CO_2/Annum



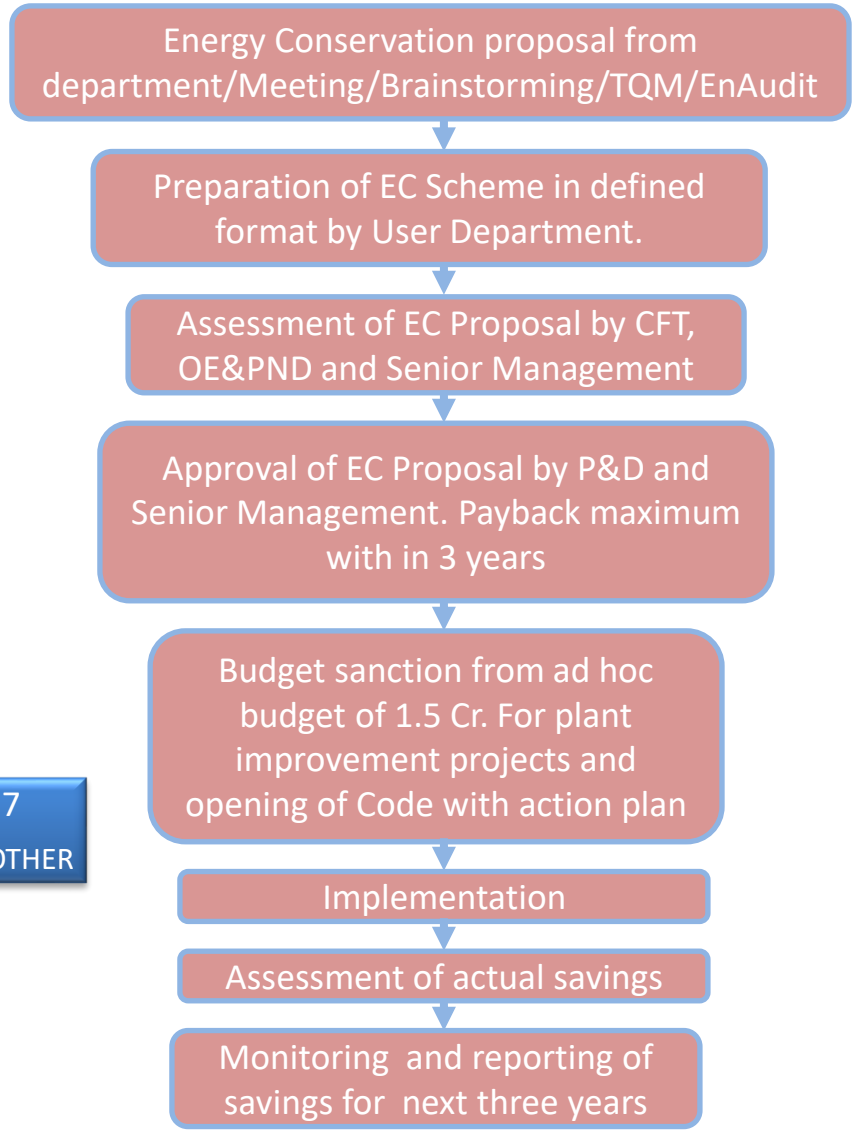
Energy Conservation Methodology

Energy Cell - Structure



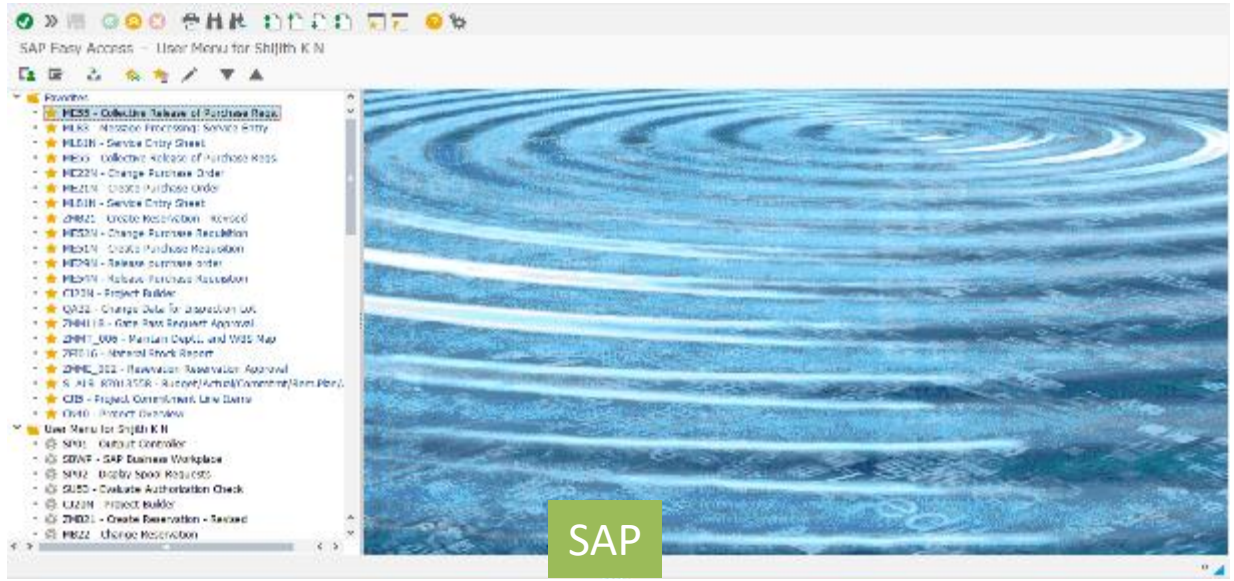
- **APEX and CFT review meetings are held monthly.**
- **Projects are reviewed weekly with OE team.**

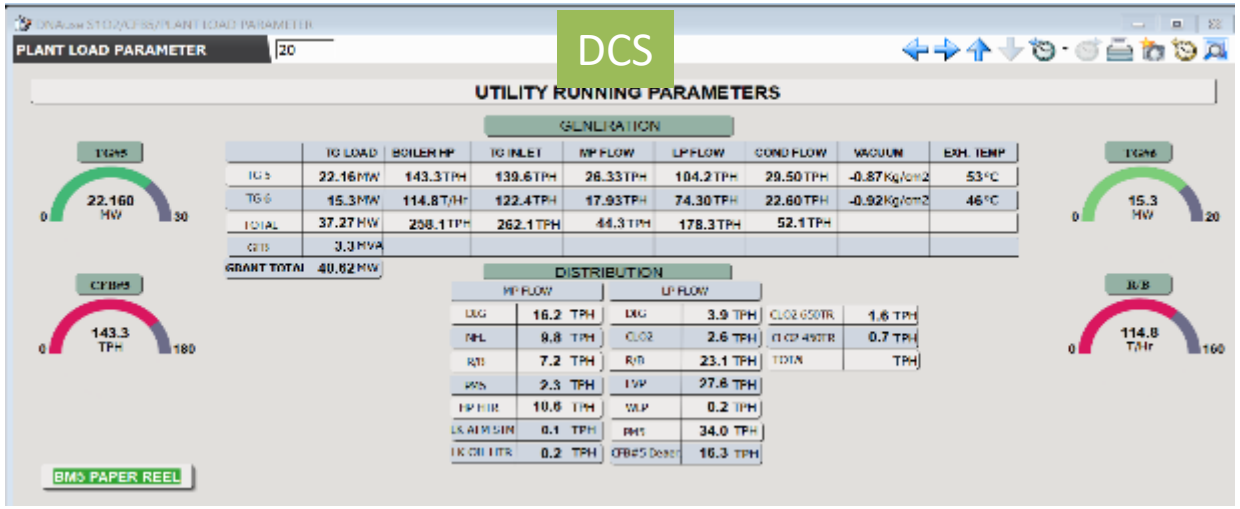
Steps -Encon Idea Implementation



Real Time Online Monitoring

- Mutually communicating online platforms, monitoring and digitally optimising plant performance.





Energy Monitoring & Reports

Auto generated EMS Report Daily/Monthly/Yearly

JK Paper Ltd. Unit: CPM
Energy Generation and Consumption Report

	From Date:	21/08/2024		To Date:	22/08/2024
	From Time:	06:00 AM		To Time:	06:00 AM
Sr. No.	Description	Generation kwh	Generation	Production	Tons
1	GEB import	54894.00	2287	PM-I	84.6
2	TG-3	0.00	0	PM-II	123
3	TG-4	0.00	0	BM-IV	335
4	TG-5	536320.00	22347	BM-V	735
5	TG-6	391072.00	16295	Pulp	465
6	Total Generation	982286.00	40929	Plant	kwh/MT
7	tal Consumption	962883.41	40120	PM-I	444
8	Difference	19402.59	808	PM-II	339
9	% Error	1.98	0	BM-IV	388
10	MF Error	1.02	0	BM-V	366

Sr. No.	Plant Name	Norms in KW	Actual in KW	Consmption (kWh) after error	Plant Consmption in kWh
1	CHIPPER (EXISTING)	14.00	0.00	0.00	0.00
2	PULP MILL (EXISTING	229.00	91.56	2198.00	2153.97
3	ODL (EXISTING)	0.00	0.00	0.00	0.00
4	EVAPORATOR (EXIST	0.00	0.00	0.00	0.00
5	RECOVERY BOILER (E	0.00	0.00	0.00	0.00
6	CAUSTICIZING (EXIS	80.00	2.39	58.00	56.13
7	PAPER M/C NO-1	1696.00	1566.22	37590.00	36846.72
8	PAPER M/C NO-2	1992.00	1738.23	41718.00	40893.60
9	STOCK-1	623.00	558.53	13405.00	13140.00
10	STOCK-2	969.00	785.69	18857.00	18484.13
11	CFB-1	0.00	0.00	0.00	0.00
12	CFB-2	3.00	0.00	0.00	0.00
13	CFB-3	700.00	41.30	992.00	971.57
14	COAL PLANT (CFB-3)	50.00	0.00	0.00	0.00
15	TG-DM (CFB-3)	50.00	0.00	0.00	0.00
16	CFB-4 AUXILIARY	1100.00	47.07	1130.00	1107.47
17	CFB-4 COAL PLANT	100.00	0.52	13.00	12.14
18	TG-4 DM PLANT	50.00	0.32	8.00	7.64
19	TG-4 AUXILIARY	300.00	17.66	424.00	415.49
20	MILL WATER (EXISTI	125.00	60.00	1440.00	1411.50
21	ETP (EXISTING)	368.00	0.00	0.00	0.00
22	CANAL	194.00	127.23	3054.00	2993.31
23	COLONY	250.00	253.19	6077.00	5956.50
24	TG-3 AUX	250.00	24.78	595.00	583.00
25	BM-4	5200.00	5418.08	130019.00	127465.53
26	LIME KILN (EXISTING	200.00	0.00	0.00	0.00
27	PG PLANT	30.00	0.00	0.00	0.00
28	SPCC	250.00	218.78	5251.00	5147.00
29	BM-5	9439.00	11203.10	268875.00	263563.42
30	CFB-5	2524.00	2384.56	57230.00	56098.96
31	TG (5 & 6) AUXILIARY	1171.00	747.30	17936.00	17581.00
32	RECOVERY BOILER	1623.00	1962.39	47098.00	46166.96
33	EVPORATOR	3084.00	2161.10	51867.00	50841.91
34	FIBER LINE	5821.00	5562.28	133495.00	130857.85
35	ETP	723.00	917.20	22013.00	21578.00
36	CHIPPER	511.00	478.99	11496.00	11268.61
37	CLO2	2715.00	3284.54	78830.00	77272.00
38	WTP	245.00	228.39	5482.00	5373.00
39	CFB-5 COAL PLANT	76.00	79.06	1898.00	1860.00
40	DM PLANT	113.00	87.82	2108.00	2066.00
41	LIME KILN		144.08	3458.00	3389.00
42	CASUTICSIZING		736.29	17671.00	17321.00
43	TOTAL COMPRESSOR	1300.00	1267.04	30409.00	30409.00
	TOTAL (1 TO 40)	40000.00	40928.58	982286.00	962883.41

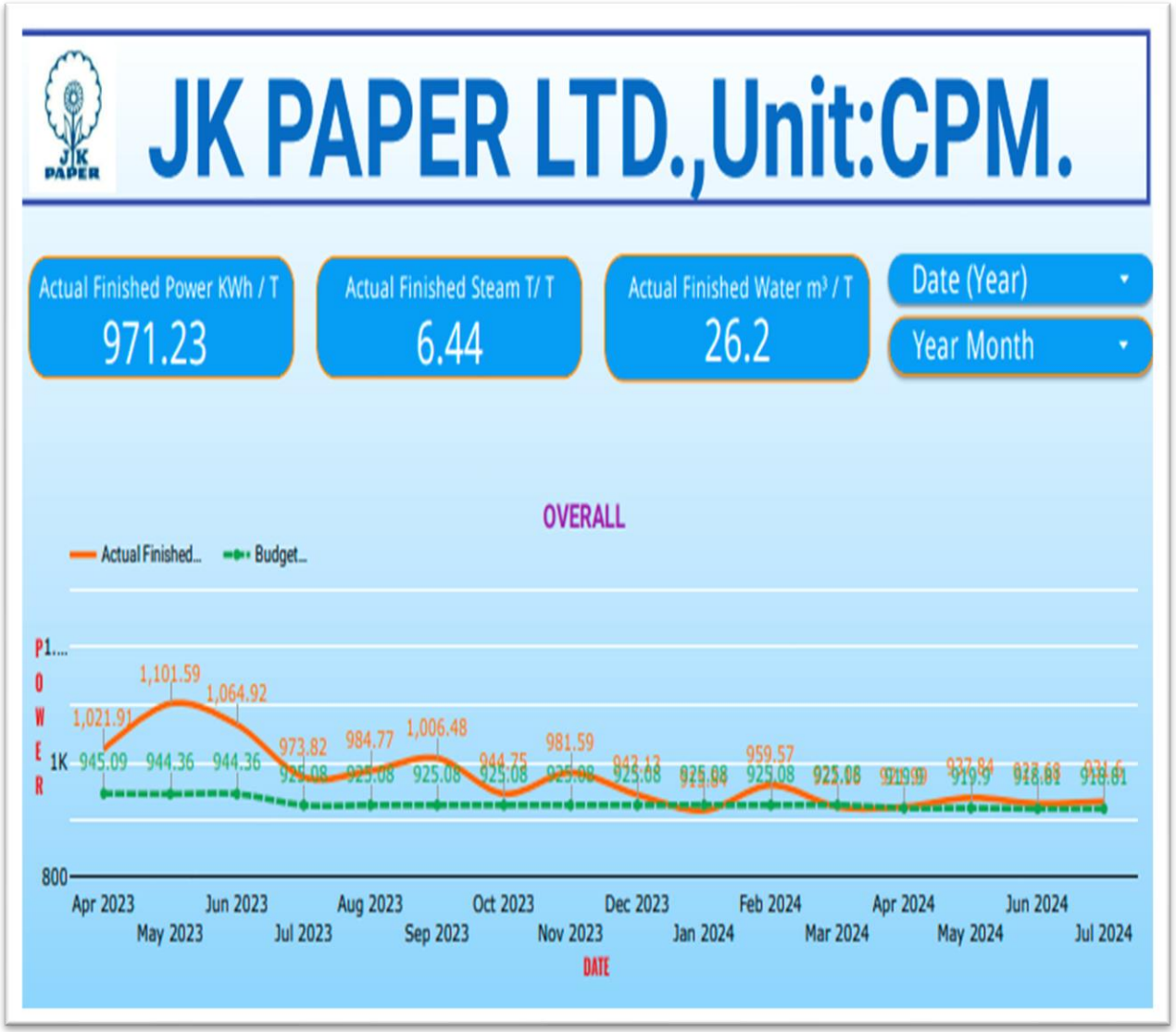
Power, Steam & Water report 10/20/Monthly/yearly

Sr. No.	Section	Unit	SECTIONWISE POWER CONSUMPTION (in KWH)							SECTIONWISE POWER CONSUMPTION (in KWH/T)							
			Total Power consumption			New Packaging Board	Packaging Board	Pulp transferred to Pkg.Board BM 4 & 5 + Mkt Pulp	Paper	New Packaging Board (BM -5)		Packaging Board (BM -4)		Pulp transferred to Pkg.Board BM 4 & 5 + Mkt Pulp +Screw Press Pulp		Paper	
			Old	New	Total	BM 5	BM 4			Norms	Actual	Norms	Actual	Norms	Actual	Norms	Actual
A	POWER CONSUMPTION FOR PROCESS																
1.1	Paper Machine No.I	KWH	1258668		1258668				1258668							471	531.54
1.2	Paper Machine No.2	KWH	1257446		1257446				1257446							363	406.94
1.3	Combined PM 1 & 2	KWH	2516114		2516114				2516114							406	461.00
2.1	Stock Preparation No.1	KWH	373608		373608				373608							119	157.78
2.2	Stock Preparation No.2	KWH	429526		429526				429526							169	139.01
2.3	Combined SP-1 & SP-2	KWH	803135		803135				803135							149	147.15
3.0	Board Plant (BM 4)	KWH	3818286		3818286		3818286					440	440.98				
4.0	New Board Machine (BM 5)	KWH		7635393	7635393	7635393				497	510.26						
5.1	Chipper House	KWH	0	355069	355069			254131	100938							23	26.40	18	18.49
5.2	Pulp Mill/ New Fiber line	KWH	77993	4256177	4334171			3102070	1232101							278	322.23	216	225.74
5.3	ODL	KWH	0		0			0	0							0	0.00	0	0.00
5.4	ClO2	KWH	0	1589671	1589671			1137766	451905							123	118.19	96	82.80
5.5	Sub Total Pulp Mill	KWH	77993	6200917	6278911			4493967	1784944							424	466.82	330	327.03

Sr. No	Particulars	Unit	SECTIONWISE STEAM CONSUMPTION (in MT)							SECTIONWISE STEAM CONSUMPTION (in T/ T)							
			Total Steam consumption			New Packaging Board	Packaging Board	Pulp transferred to Pkg.Board BM 4 & 5 + Mkt Pulp +Screw Press	Paper	New Packaging Board (BM 5)		Packaging Board (BM 4)		Pulp transferred to Pkg.Board BM 4 & 5 + Mkt Pulp +Screw Press Pulp Stock		Paper	
			Old	New	Total	BM 5	BM 4			Norms	Actual	Norms	Actual	Norms	Actual	Norms	Actual
A	STEAM CONSUMPTION FOR PROCESS																
1.0	Paper Machine No.1	MT	8354		8354				8354							3.42	3.53
2.0	Paper Machine No.2	MT	8253		8253				8253							2.72	2.67
3.0	Combined PM 1 + 2	MT	16607		16607				16607							3.00	3.04
4.0	Board Machine BM 4	MT	19336		19336		19336					2.15	2.23				
5.0	New Board Machine BM 5	MT		25817	25817	25817				1.70	1.73						
6.1	Digester	MT		8143	8143			5828	2315						0.61	0.53	0.42
6.2	New Fiber line	MT		7062	7062			5055	2007						0.53	0.48	0.37
6.3	ClO2 Plant	MT		1447	1447			1035	412						0.11	0.11	0.08
6.5	Pulp/RB HVAC Chiller	MT		1522	1522			1089	433						0.11		0.08
6.0	Sub Total Pulp Mill	MT	0	18174	18174			13007	5167					1.36	1.35	1.11	0.95
7.1	Recovery Boiler	MT		7426	7426			5222	2114						0.55	1.05	0.29

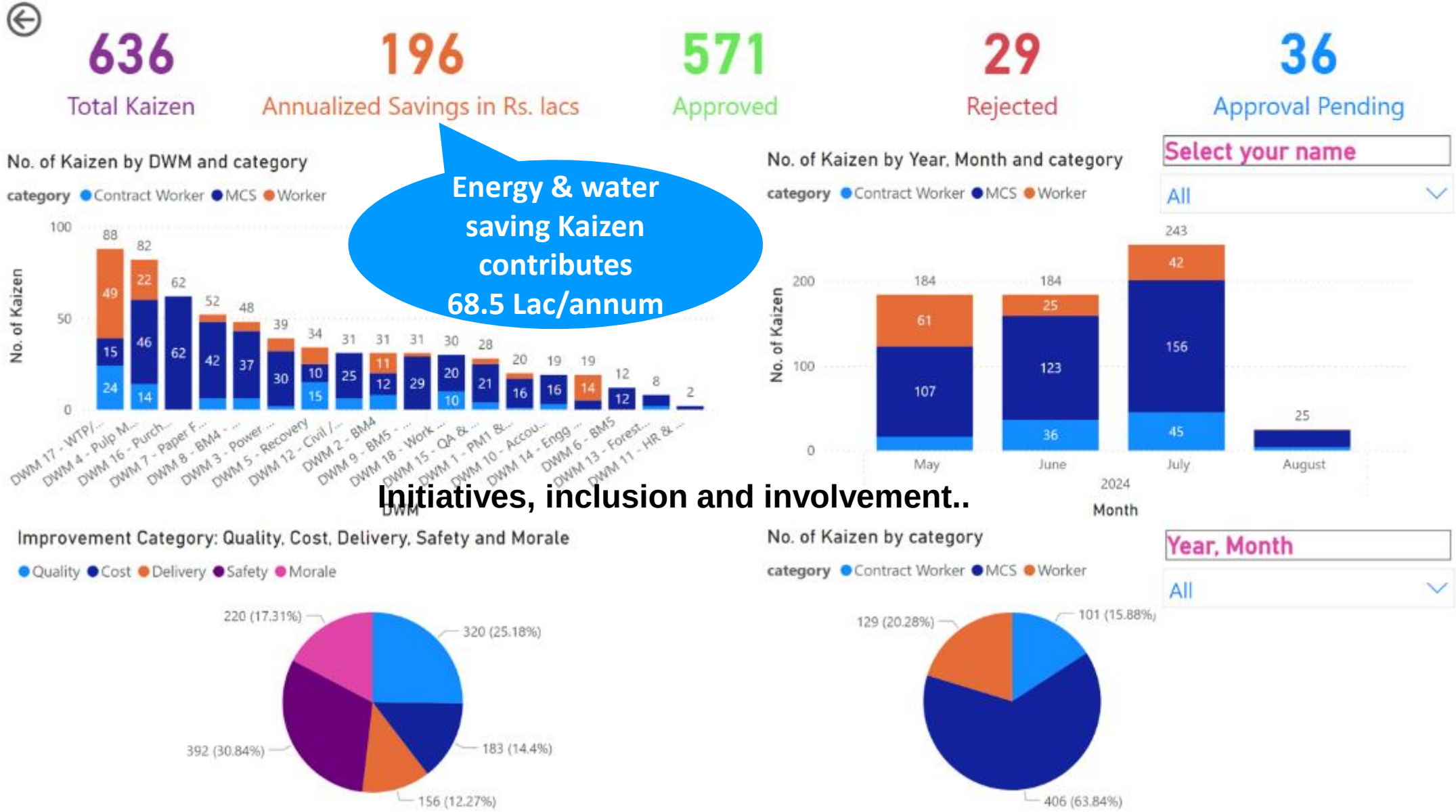
Sr. No	Particulars	Unit	SECTIONWISE WATER CONSUMPTION (in M3)							SECTIONWISE WATER CONSUMPTION (in M3/T)							
			Total Water consumption			New Packaging Board	Packaging Board	Pulp transferred to Pkg.Board BM 4 & 5 + Mkt Pulp	Paper	New Packaging Board (BM 5)		Packaging Board (BM 4)		Pulp transferred to Pkg.Board BM 4 & 5 + Mkt Pulp +Screw Press		Paper	
			Old	New	Total	BM 5	BM 4			Norms	Actual	Norms	Actual	Norms	Actual	Norms	Actual
1.0	Stock Preparation & Paper M/c 1	M3	48717		48717				48717	--	--	--	--	--	--	25.00	20.57
2.0	Stock Preparation & Paper M/c 2	M3	31934		31934				31934	--	--	--	--	--	--	13.00	10.33
3.0	Combined Stock Prepn & PM-1 &2	M3	80651	0	80651				80651	--	--	--	--	--	--	17.76	14.78
4.0	Board Machine BM- 4	M3	50089		50089		50089					4.80	5.78	--	--	--	--
5.0	New Board Machine BM-5	M3		101283	101283	101283				8.00	6.77						
6.0	Pulp Mill	M3	31875	163815	195690	--	--	140060	55630	--	--	--	--	20.0	14.55	18.00	10.19
7.0	Recovery	M3	1277	120551	121828	--	--	87195	34633	--	--	--	--	4.0	9.06	3.75	6.35
8.0	Power House (DM water)	M3		81958	81958	15105	7470	33893	25490	0.80	1.01	0.50	0.86	3.0	3.52	3.00	4.67
9.0	CFBs,TGs and Cooling Tower	M3		20871	20871	3847	1902	8631	6491	0.35	0.26	0.20	0.22	3.0	0.90	3.00	1.19
10.0	Colony	M3		70383	70383	12972	6415	29106	21890	0.85	0.87	0.50	0.74	2.0	3.02	3.00	4.01
11.0	TOTAL Incl. Colony	M3	163892	558861	722753	133207	65877	298885	224785	10.00	8.90	6.00	7.61	32.0	31.05	48.51	41.18

Online platform for energy performance analysis



Overview of whole plant in One Dashboard

Energy conservation - Kaizen portal for online submission



Energy conservation – Initiatives, inclusion and involvement.

- ✓ Energy conservation week observed with various Competitions - poster , slogan,speech, quiz ,debate, etc. for employees, their family and students.
- ✓ Conducted Energy conservation awareness sessions in nearby villages, plant & colony.

Encon week- Poster competition

Encon week –Debate
Topic - Is Electric Vehicle Environment friendly

Encon week- Society

Environment – Initiatives, Inclusion and involvement

- ✓ Environment week, earth day celebrated with - poster , slogan, quiz ,rally, etc. for employees, their family and students.
- ✓ Plantation and land restoration drive initiated.
- ✓ Conducted awareness sessions in nearby villages, plant & colony.

Waste management

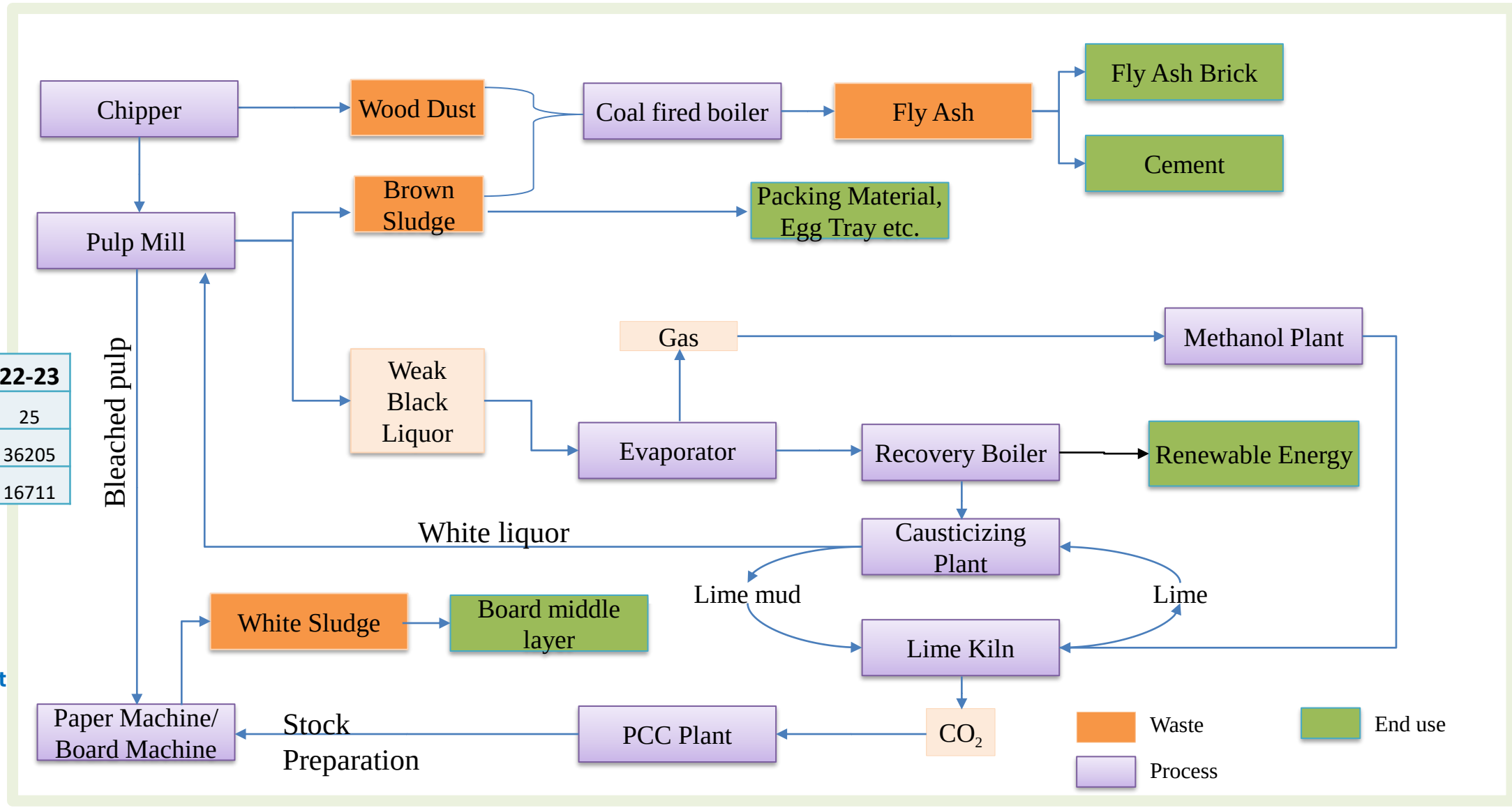
Raw-Material
Wood

IN

Finished Product
Paper /Board

OUT

Description	23-24	22-23
Used oil waste(MT)	17	25
Fly ash waste (MT)	55297	36205
ETP Sludge (MT)	22640	16711



Plastic replacement

Coated Cup stock Paper of 140 to 210 gsm for making High-end **Tea & Coffee Cup** making application and Soft Pillow Pack Food product.

Eco sip Paper for Paper Straw Application

EcoStic Paper for **Lollipop / Ear Bud** Application

This helped to Replace Plastic Product

167164 MT

Hazardous carcinogenic gas emission is minimized.
Mt CO2e gas emission @ 2.94 T / Ton

4.9 Lac MT

OGR (Oil & Grease Resistance) Paper for Food grade wrapping application

JK Carry Paper for **Carry Bag** application

Beyond the boundaries

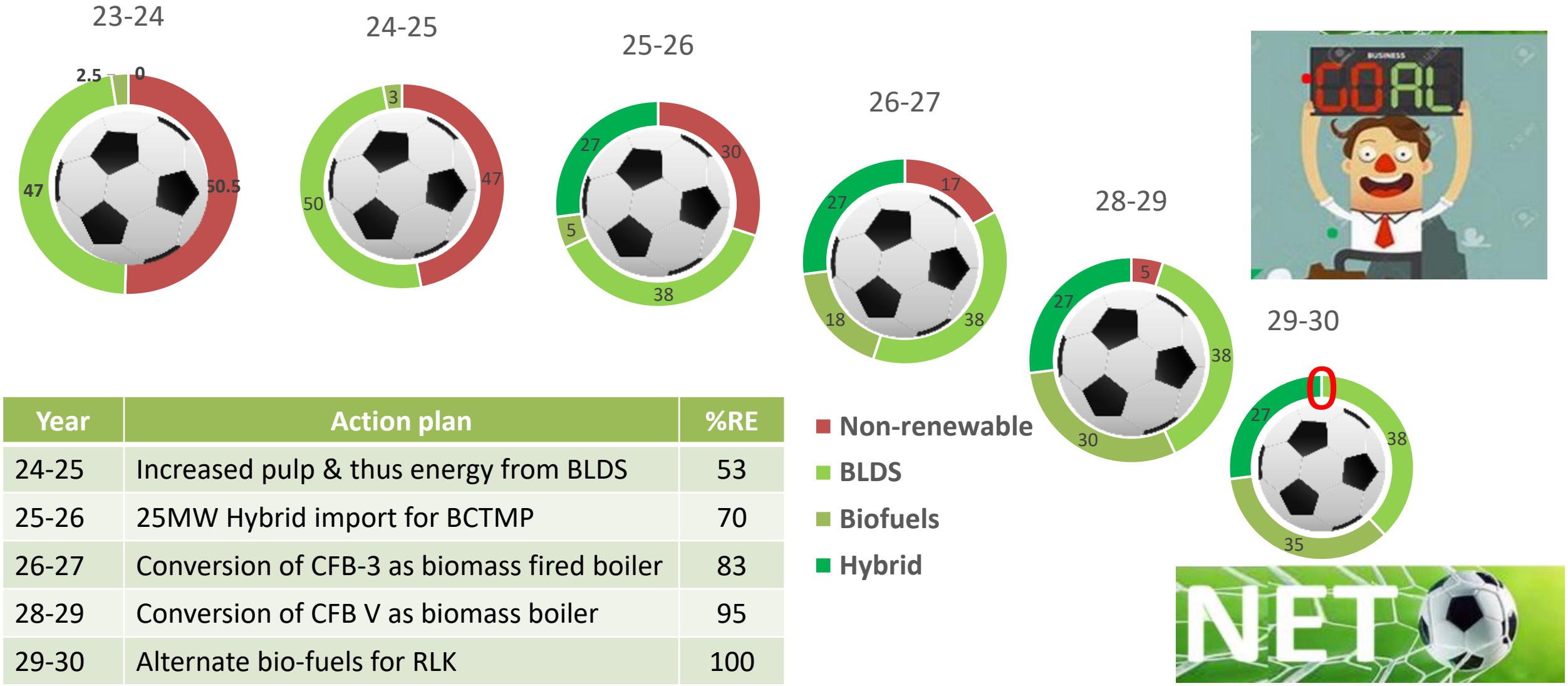
- ✓ Infrastructure development of Renewable energy and water conservation in near by community

- ✓ Rallies, programs, competitions in community for creating awareness on energy and environment

- ✓ Carbon credit program

- Executed agreement with third party in Nov'23 for carbon credit project for Farmers.
- Area coverage -10000 Hectare
- Farmers- 5000 (Gujarat, MH & MP.)
- Estimated carbon credit – 6 Lac to the farmers
- Financial - 25 Crores rupees. As additional income to the farmer apart from his wood sale.

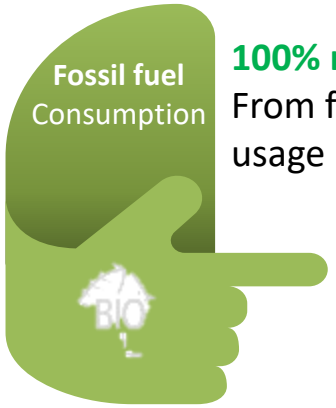
Net Zero road map



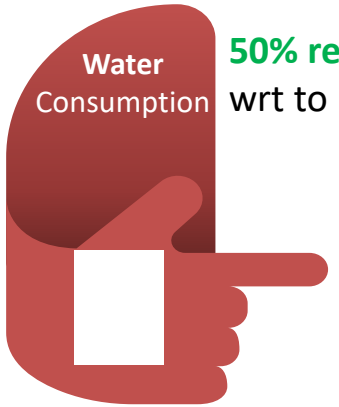
Year	Action plan	%RE
24-25	Increased pulp & thus energy from BLDS	53
25-26	25MW Hybrid import for BCTMP	70
26-27	Conversion of CFB-3 as biomass fired boiler	83
28-29	Conversion of CFB V as biomass boiler	95
29-30	Alternate bio-fuels for RLK	100

"NET^0 ,that is the only mantra of sustainability today, we put 'zero' as super script to indicate how each degree of temperature raise going to impact us. And mathematically any number with exponent '0' gives a sustainable result 1"

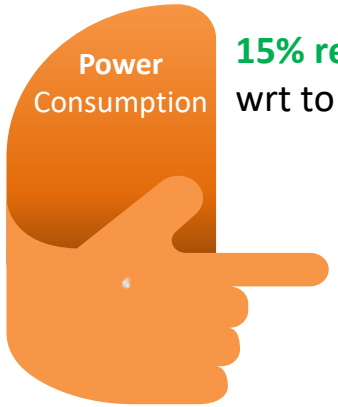
Targets taken for 2030



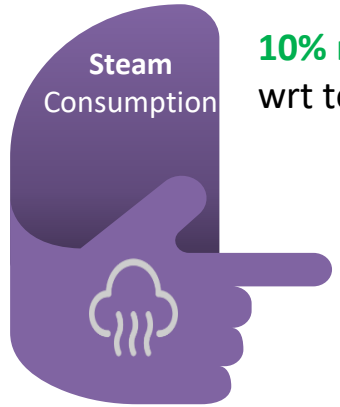
100% reduction
From fossil fuel usage



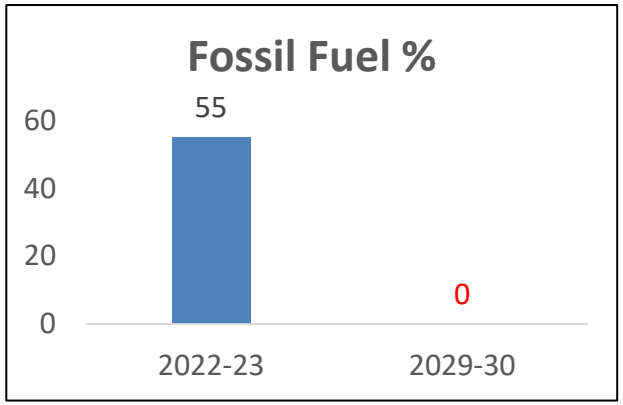
50% reduction
wrt to FY23

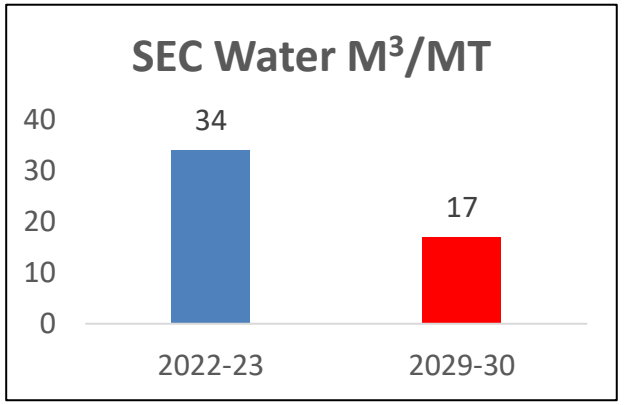


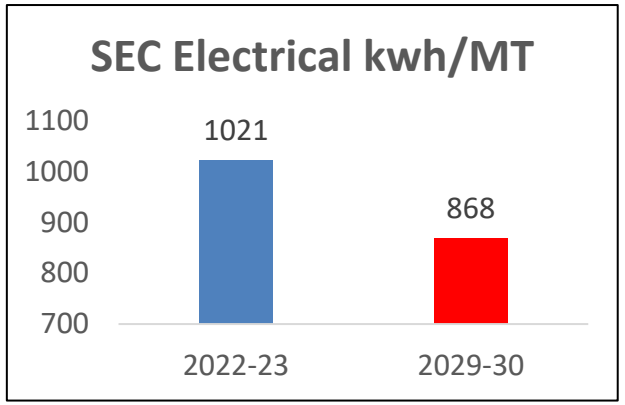
15% reduction
wrt to FY23

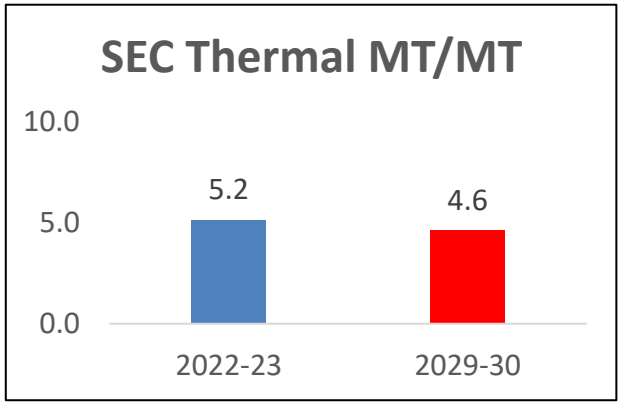


10% reduction
wrt to FY23

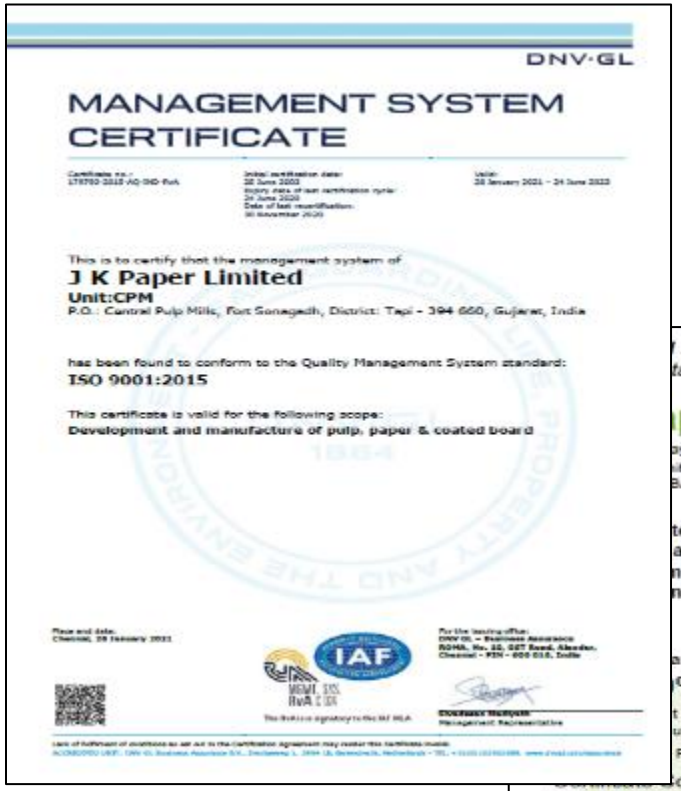








Certifications

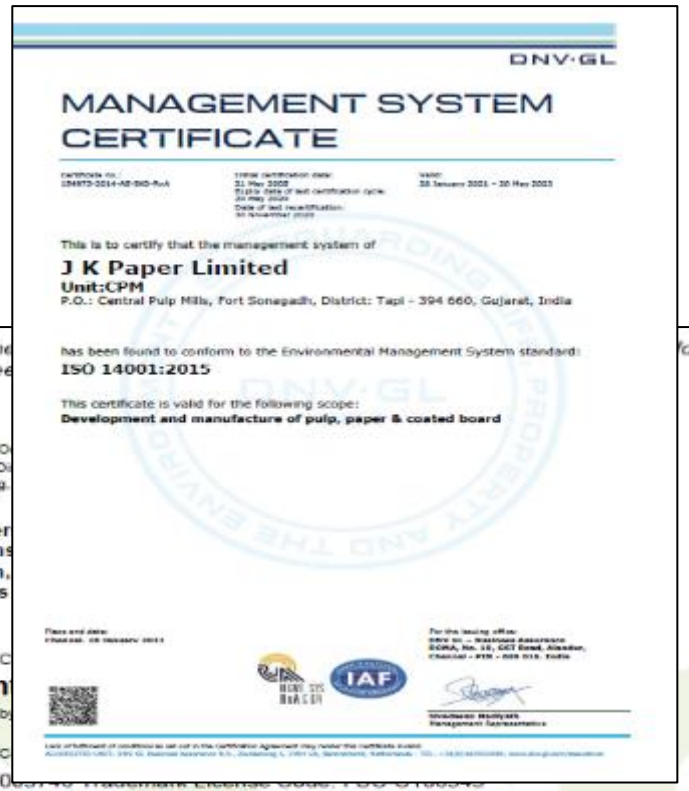

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of
J K Paper Limited
Unit:CPM
P.O.: Central Pulp Mills, Fort Sonagadh, District: Tapi - 394 660, Gujarat, India

has been found to conform to the Quality Management System standard:
ISO 9001:2015

This certificate is valid for the following scope:
Development and manufacture of pulp, paper & coated board


DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of
J K Paper Limited
Unit:CPM
P.O.: Central Pulp Mills, Fort Sonagadh, District: Tapi - 394 660, Gujarat, India

has been found to conform to the Environmental Management System standard:
ISO 14001:2015

This certificate is valid for the following scope:
Development and manufacture of pulp, paper & coated board


DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of
J K Paper Limited Unit:CPM
P.O.: Central Pulp Mills, Fort Sonagadh,District: Tapi - 394 660, Gujarat, India

has been found to conform to the Occupational Health and Safety Management System standard:
ISO 45001:2018

This certificate is valid for the following scope:
Development & manufacture of pulp, paper & coated board.

CW Code: SCS-CW-003746
Valid from: 21 June 2021 Expiry date: 20 June 2026

SCSglobal SERVICES

Maggie Schwartz, Director, Chain of Custody
SCS Global Services
2000 Powell Street, Ste. 600, Emeryville, CA 94608 USA

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RESPONSIBLE FORESTRY
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SCS GLOBAL SERVICES

Initiated ISO-50001 & ISO 14064 certification process initiated, targeting final audit in Mar-25

Awards

Industry 4.0 Award from FICCI

National Award for Excellence in Water Management from CII

Energy Efficient unit Award-2023 from CII

Supply Chain and Logistic Excellence Award (SCALE) from CII

Learnings from CII Award Functions

New Technologies and its suppliers

Interaction and comparison with other industries in the same sector

Interaction and comparison with industries in other sector

Started online specific energy monitoring of significant energy consuming equipments

IOT based energy management system installed

Horizontal deployment of encon. projects


Make sustainable choices
Thank you