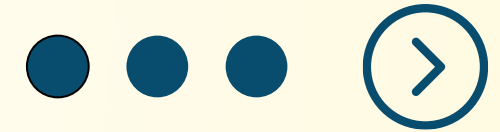




LuLu Mall,
Kochi



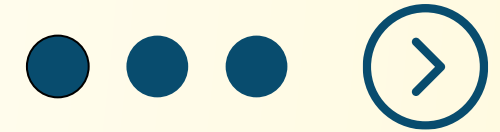
LULU INTERNATIONAL SHOPPING MALLS PVT. LTD.

34/1000, NH47, Edappally, Kochi, Kerala
(A division of Lulu Group)



Presented by
Prasad P
Senior Chief Engineer





COMPANAY PROFILE

Lulu Mall, Kochi is division of LuLu Group International headquartered in Abu Dhabi.

Spread over 34 countries, total retail space of Kochi Mall is 6,20,000 sq.ft with 225 outlets

It has one of the largest hypermarket in India owned by Lulu itself.

2,500-seater multi-cuisine food court

11 fine dining restaurants and 6 cafes.

Gold class 9-screen multiplex

South India's largest ice-skating rink, a trampoline park, amusement rides, and a 12-lane bowling alley.

Parking space for 3800 vehicles



BUILDING DESIGN



ORIENTATION : EAST - WEST



CLIMATE ZONE : WARM & HUMID



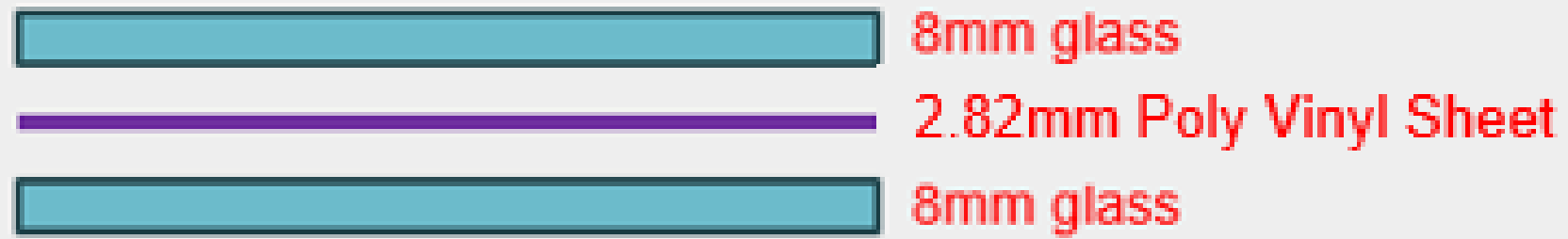
SOLAR REFLECTIVE INDEX OF PAINT – 109



BUILDING DESIGN



20% of roof area is covered with PVB Laminated toughened glass of Solar Heat Gain Coefficient 0.2579 which caters day light



Cross Sectional view

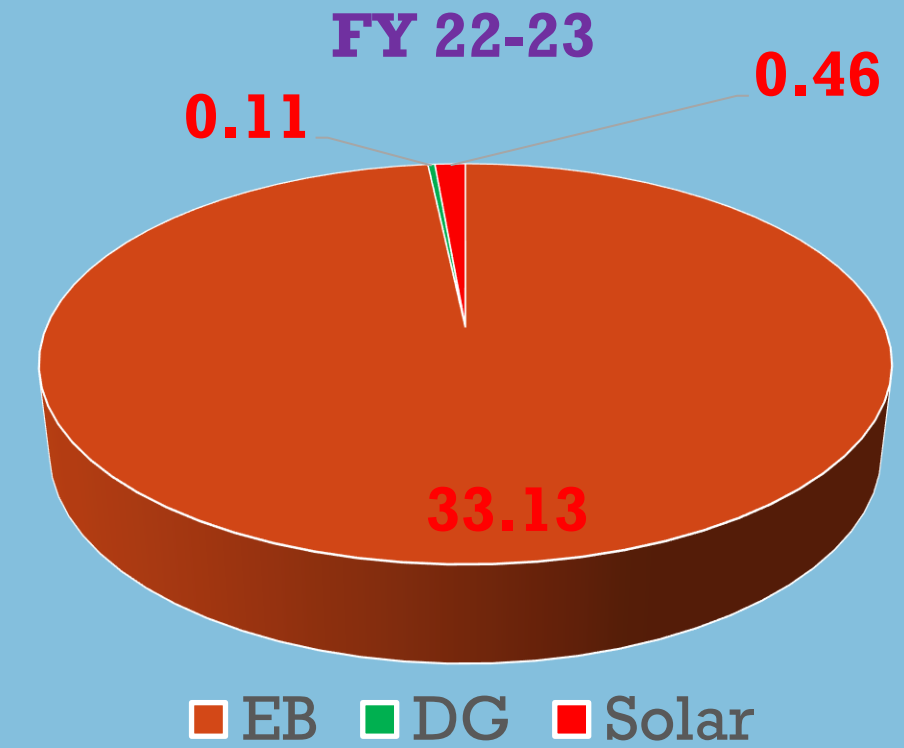
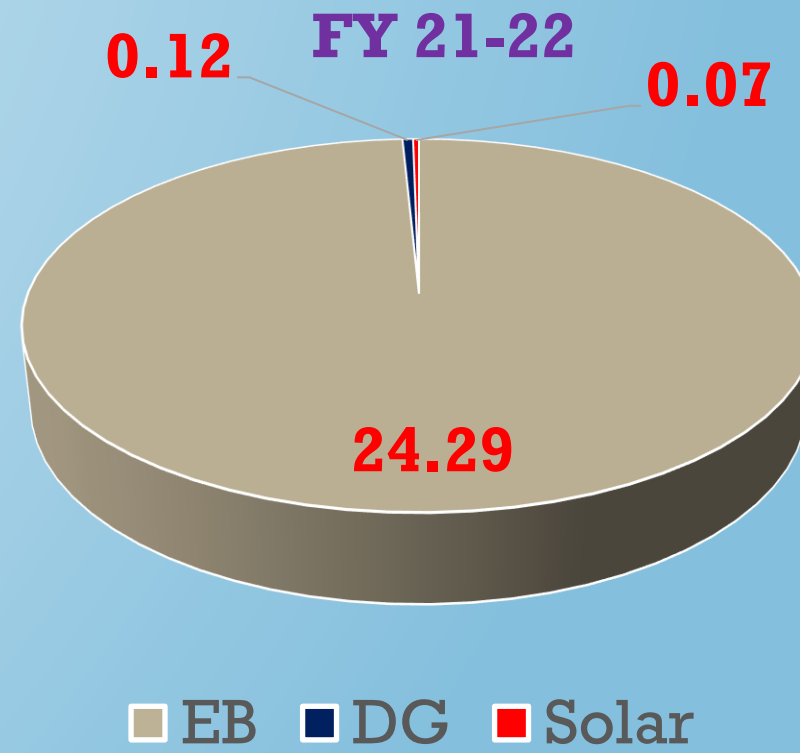
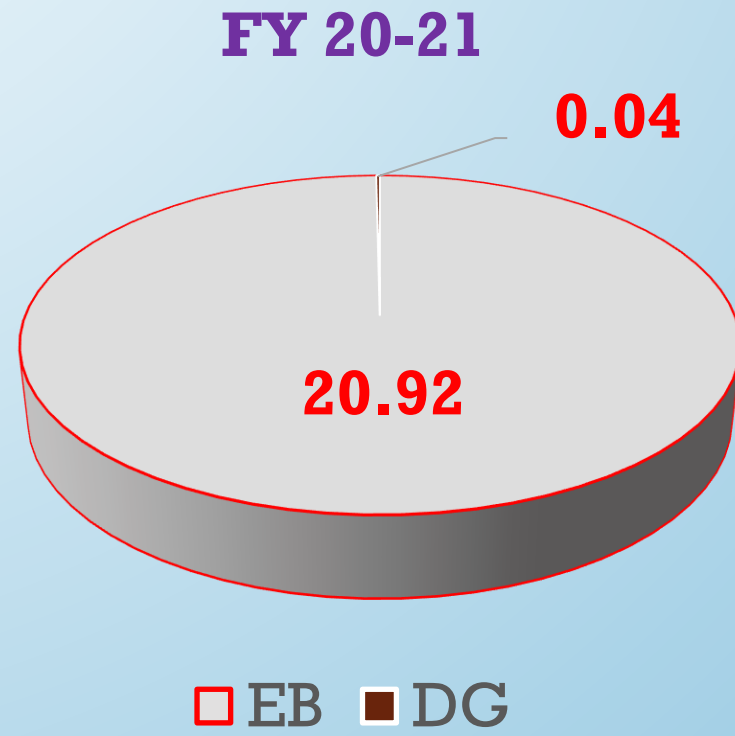




ENERGY CONSUMPTION OVERVIEW

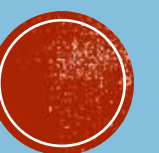
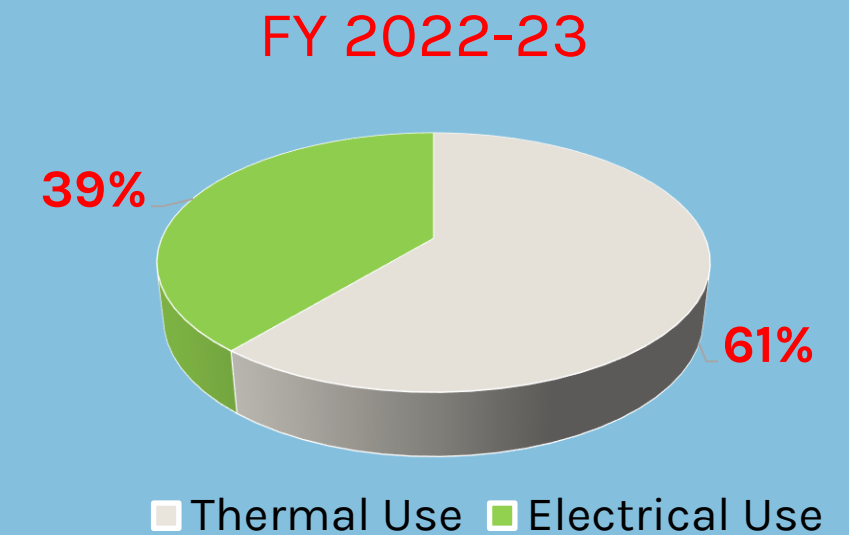


VALUES IN MILLION UNITS



YEAR	TOTAL KWH
FY 2020-21	2,09,64,085
FY 2021-22	2,44,12,534
FY 2022-23	3,32,31,948

ELECTRICAL & THERMAL USAGE





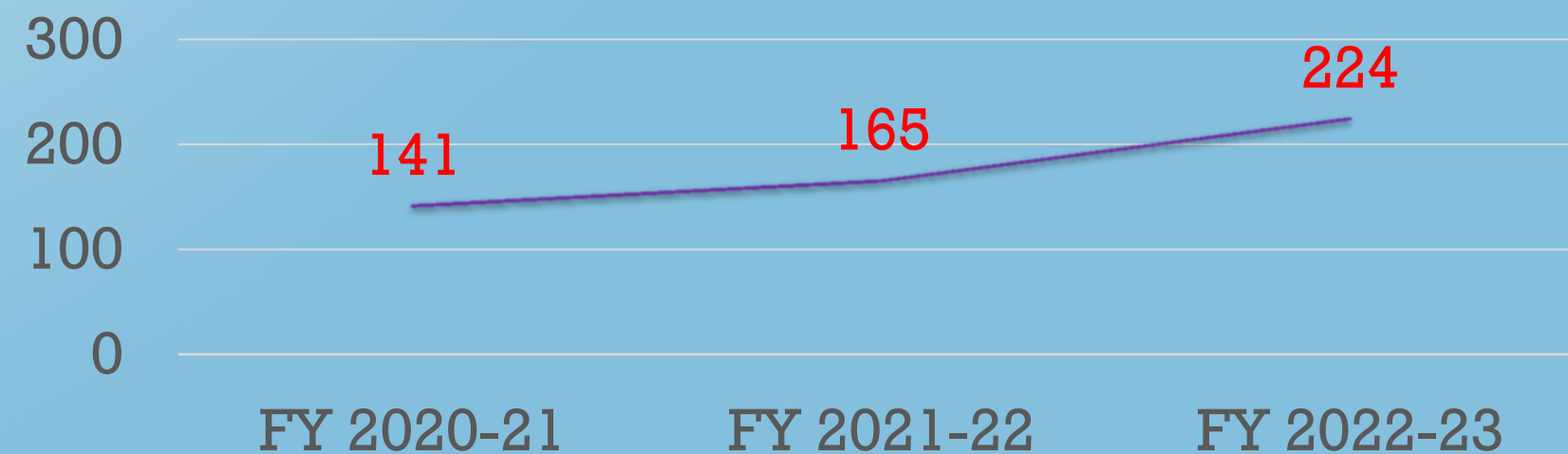
SPECIFIC ENERGY CONSUMPTION



Energy Performance Index			
Item	FY 2020-21	FY 2021-22	FY 2022-23
Total Power Consumption in kWh	2,09,64,085	2,44,12,534	3,32,31,948
Total Built up Area in Sq.m	1,48,219	1,48,219	1,48,219
Energy Performance Index	141	165	224

Reason for variation : Due to Covid, Mall operational days were less during FY 20-21 & 21-22. Thus, low EPI.

EPI

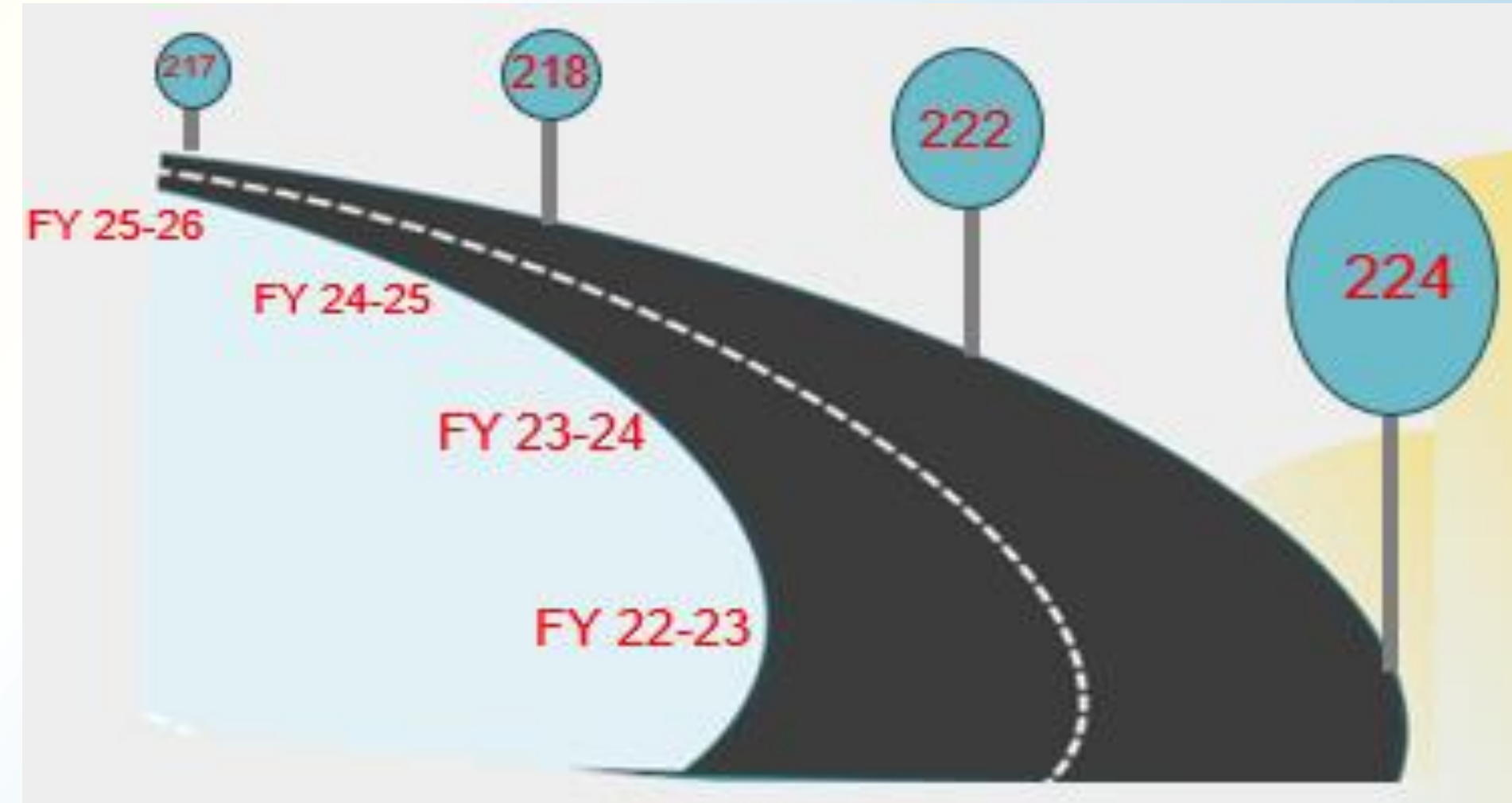
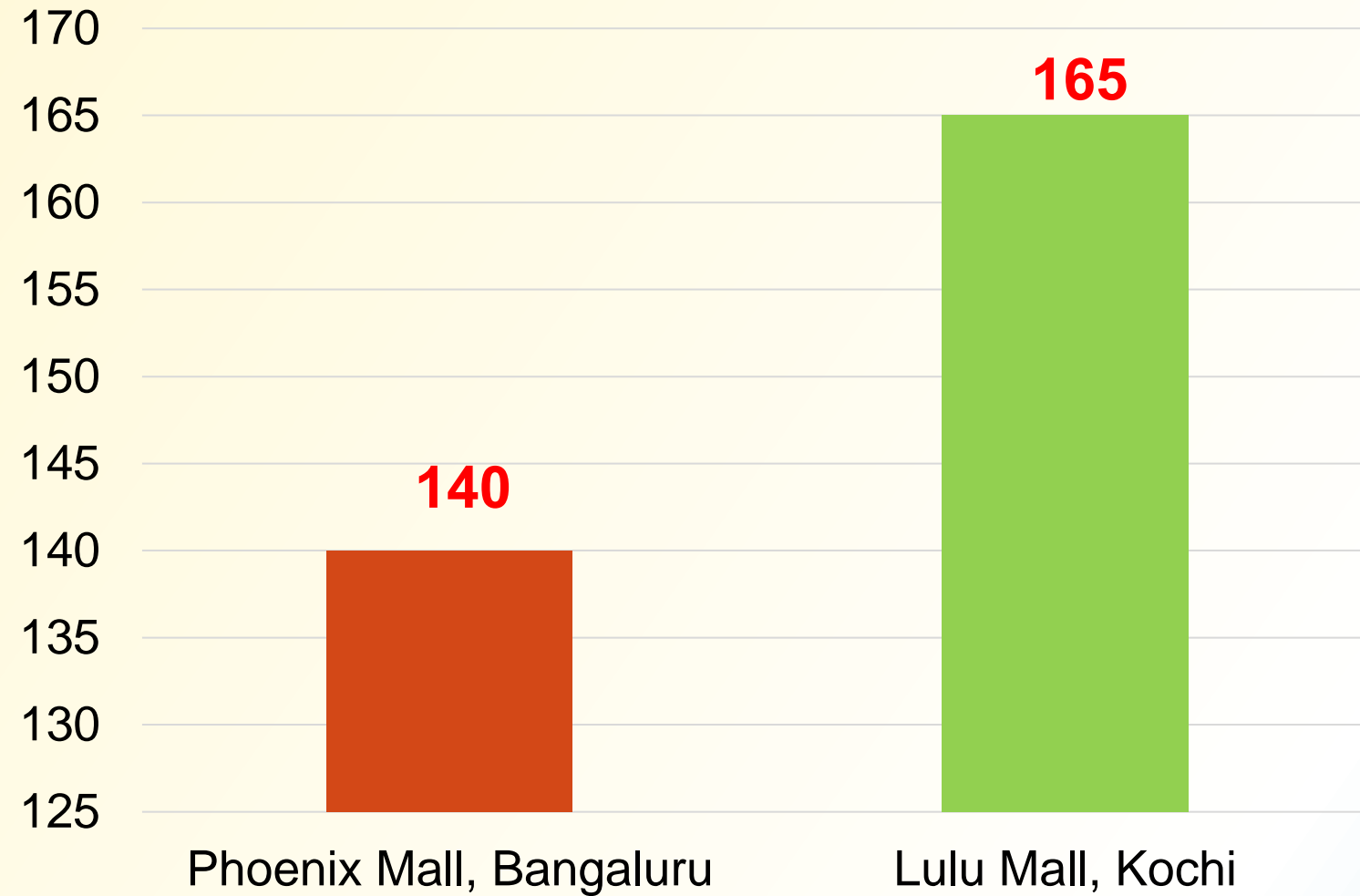




OUR BENCHMARK & ROAD MAP

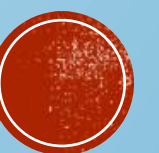


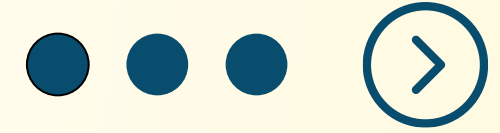
National Benchmark



Note: EPI is based on FY 2021-22 power consumption.

(Source: EPI of Phoenix Mall taken from CII Website)

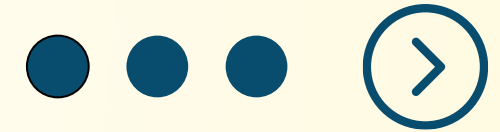




ENCON PROJECTS PLANNED

- Installation of EC fan in remaining AHUs or replacement of AHUs with plug fan.
- Replacement of MH spotlights with LED lights.
- Replacement of low efficiency pumps with new pumps.
- Rescheduling operational hours of chiller, AHU, lifts & escalators to optimize energy consumption.
- Quantity of common area lights will be optimized during ceiling renovation.

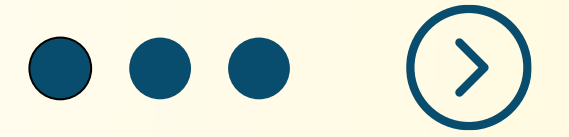




ENCON PROJECTS IMPLEMENTED

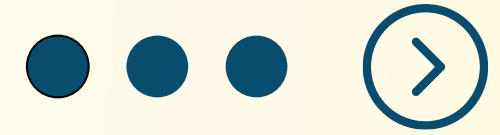
Year	No. of Energy Saving Projects	Investment (INR Million)	Electrical Savings (Million kWh)	Thermal Savings (Million kCal)	Total Savings (INR Million)	Payback period (in months)
FY 2020-21	1	4.34	0.30	0	3.0	17.36
FY 2021-22	2	2.91	1.10	0	11.39	3.06
FY 2022-23	2	0.83	0.03	0	0.27	36.88





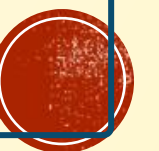
Year	Name of Energy Saving Projects	Investment (INR Million)	Electrical Savings (Million kWh)	Thermal Savings (Million kCal)	Total Savings (INR Million)	Payback period (in months)
FY 2020-21	Replacement of common area CFL with LED Lights	4.34	0.30	0	3.0	17.36
FY 2021-22	Replacement of common area MH lights & tube lights with LED Lights	2.56	1.07	0	11.06	2.77
FY 2021-22	Replacement of MH Hoarding lights with LED Lights	0.35	0.03	0	0.33	12.73
FY 2022-23	Replacement of Sodium vapor high bay lights at food court with LED lights	0.43	0.009	0	0.112	46.07
FY 2022-23	AHU retrofit and EC fan installation	0.4	0.015	0	0.16	30.00





ENERGY SAVINGS DUE TO DAY LIGHT HARVESTING

Year	Food Court high bay lights power rating (kW)	Qty of lights (Nos.)	Hours of Operation	Total Power consumed per year (kWh/year)	Savings due to day light (Rs.)
FY 2020-21	0.15	86	8	37,668	4,14,348
FY 2021-22	0.15	86	8	37,668	4,14,348
FY 2022-23	0.10	86	8	25,112	2,76,232





RENEWABLE ENERGY UTILISED(ON SITE)

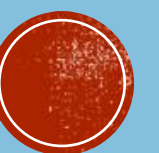
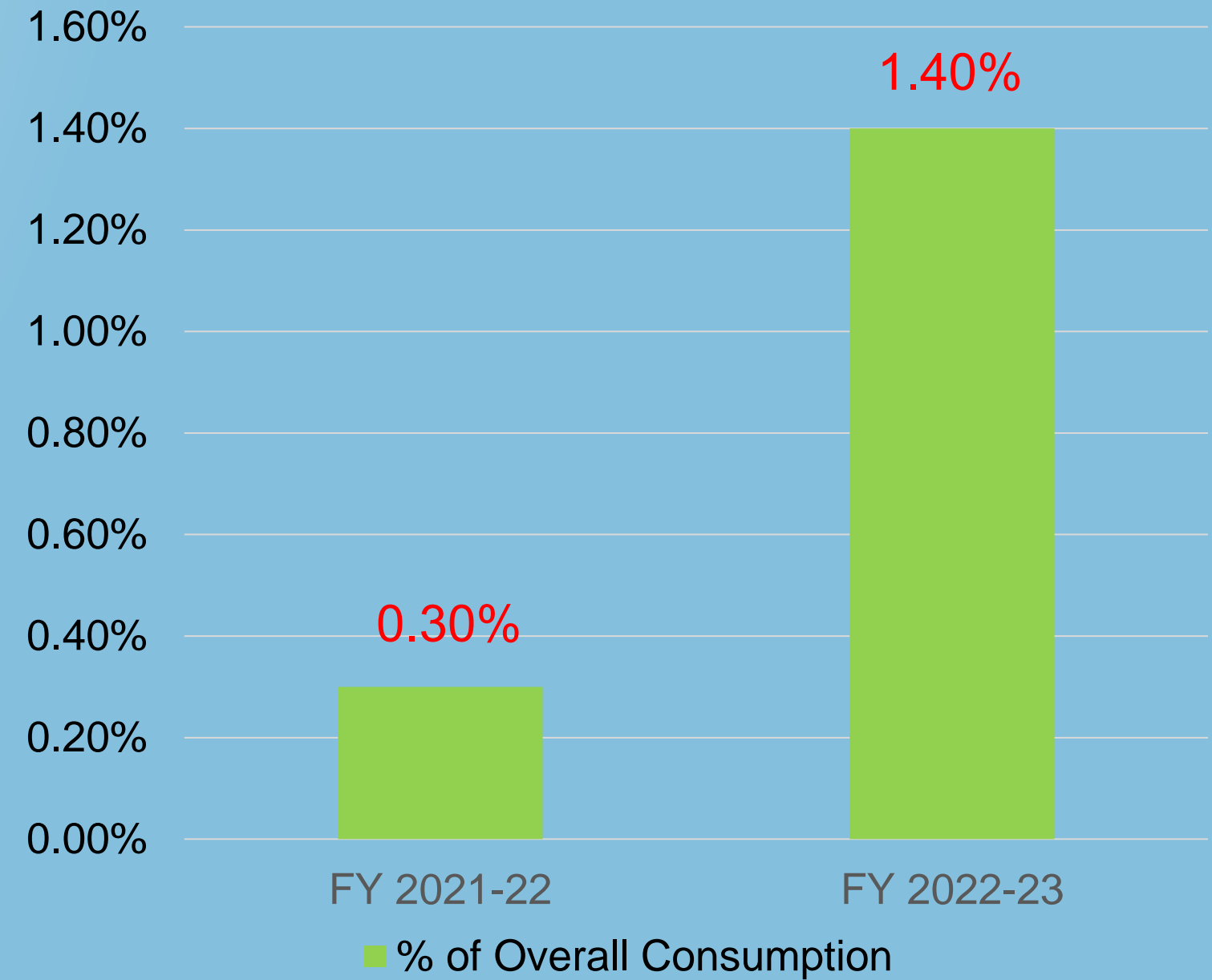
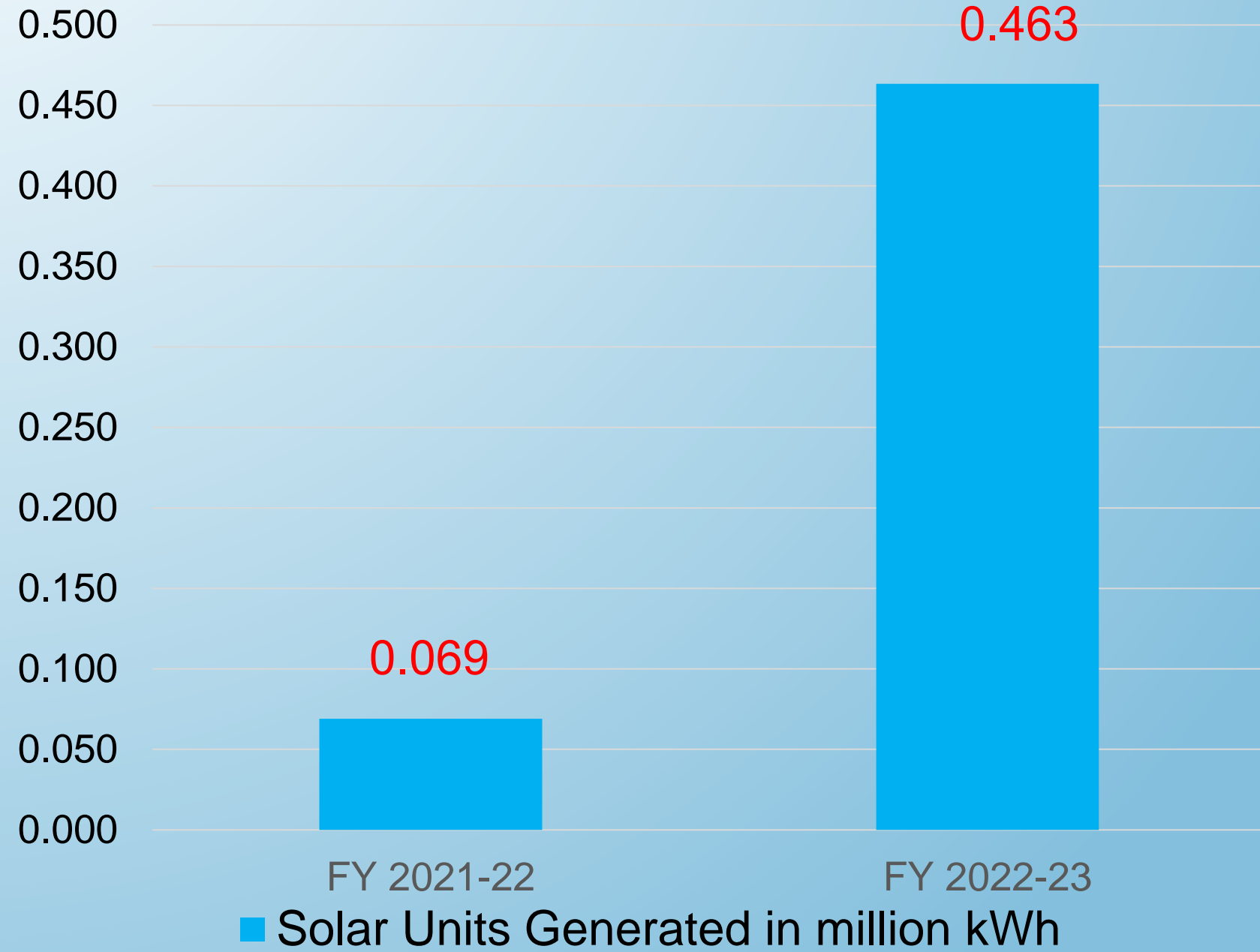


- ROOFTOP SOLAR POWER GENERATION SYSTEM OF CAPACITY 383KW
- Commissioned in Nov 2021
- Investment cost – 2.75 Crores





RENEWABLE ENERGY UTILISED(ON SITE)

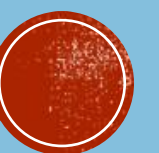
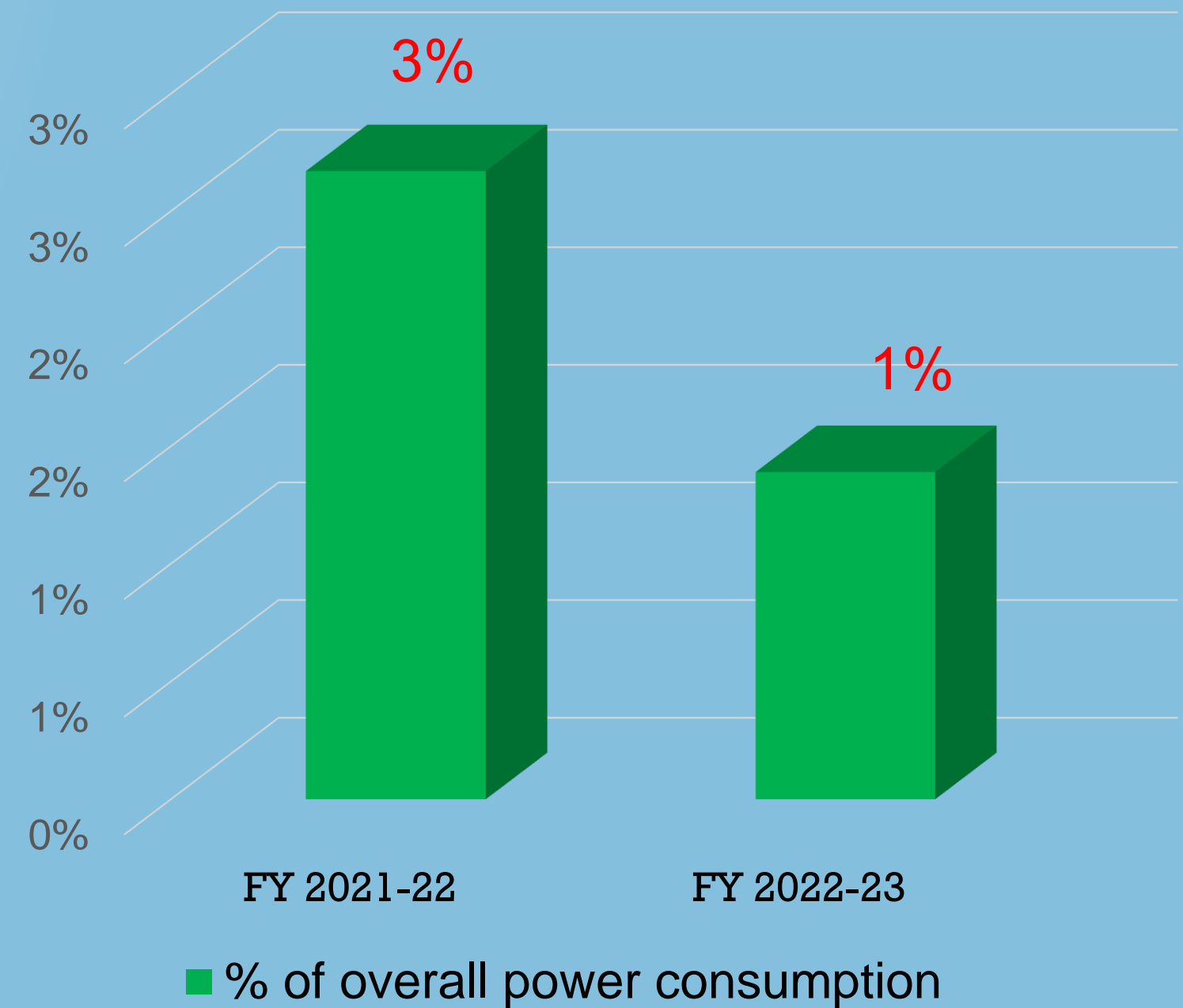
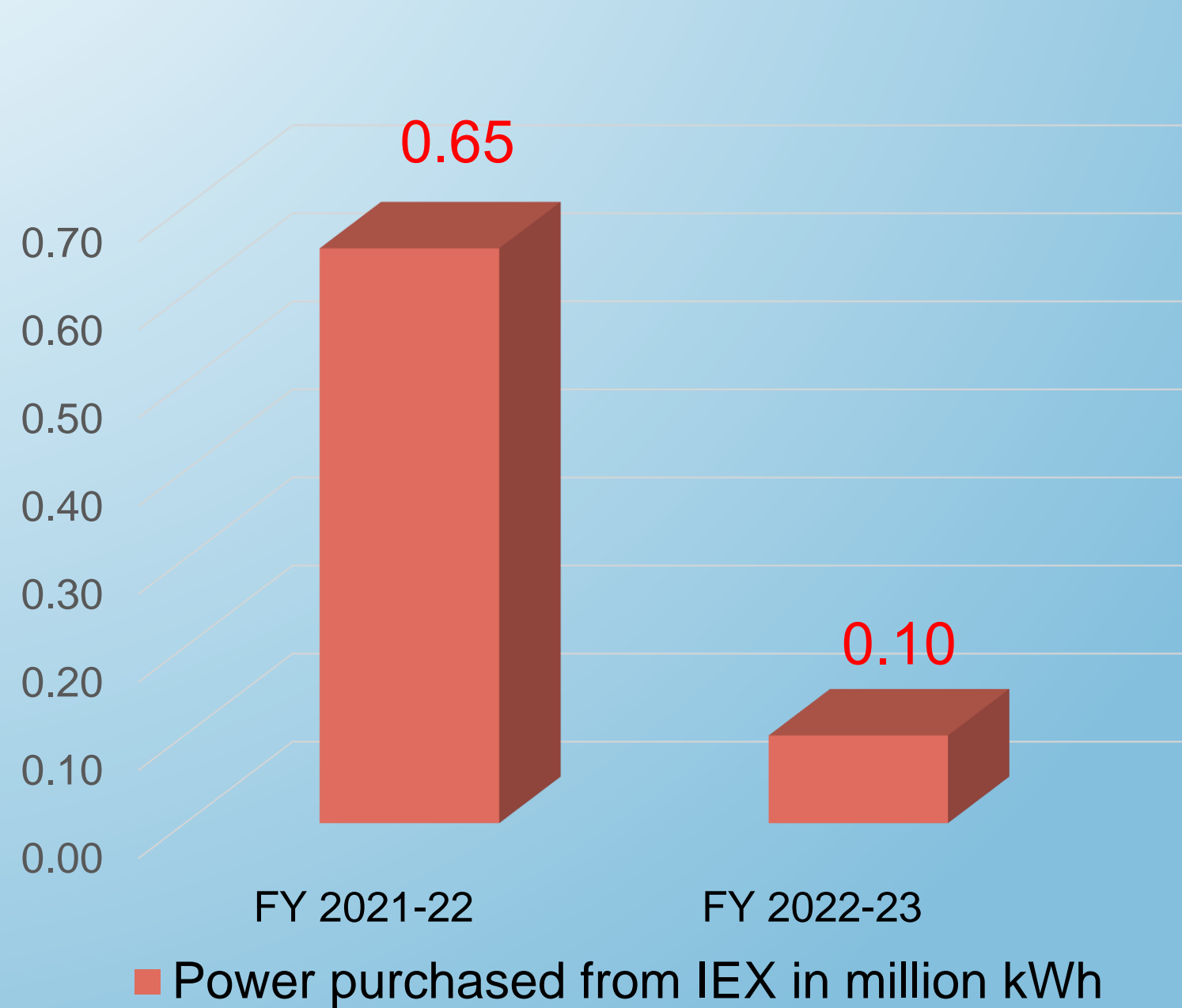




RENEWABLE ENERGY UTILISED(OFF SITE)



Green Energy procured from Indian Energy Exchange

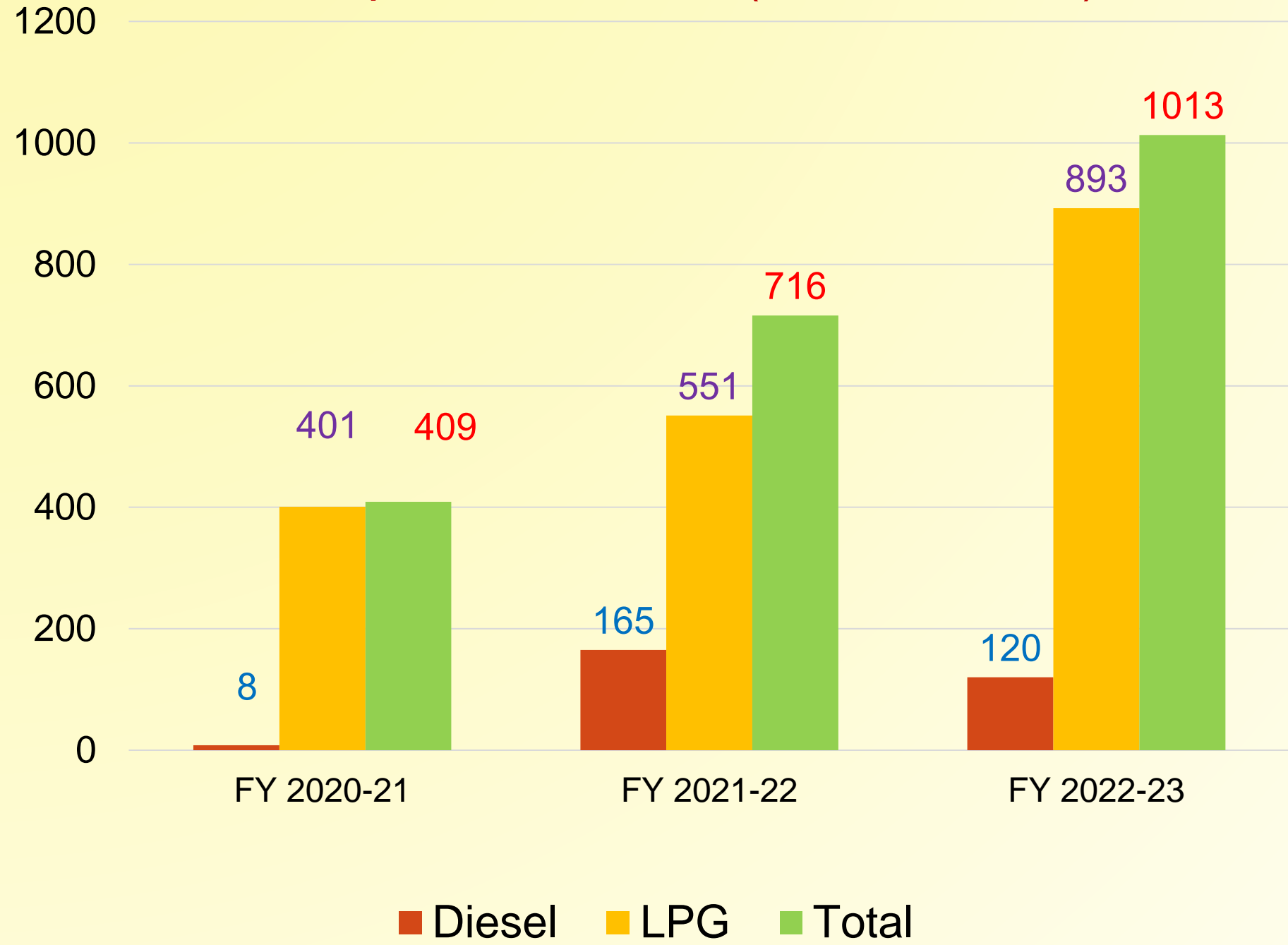




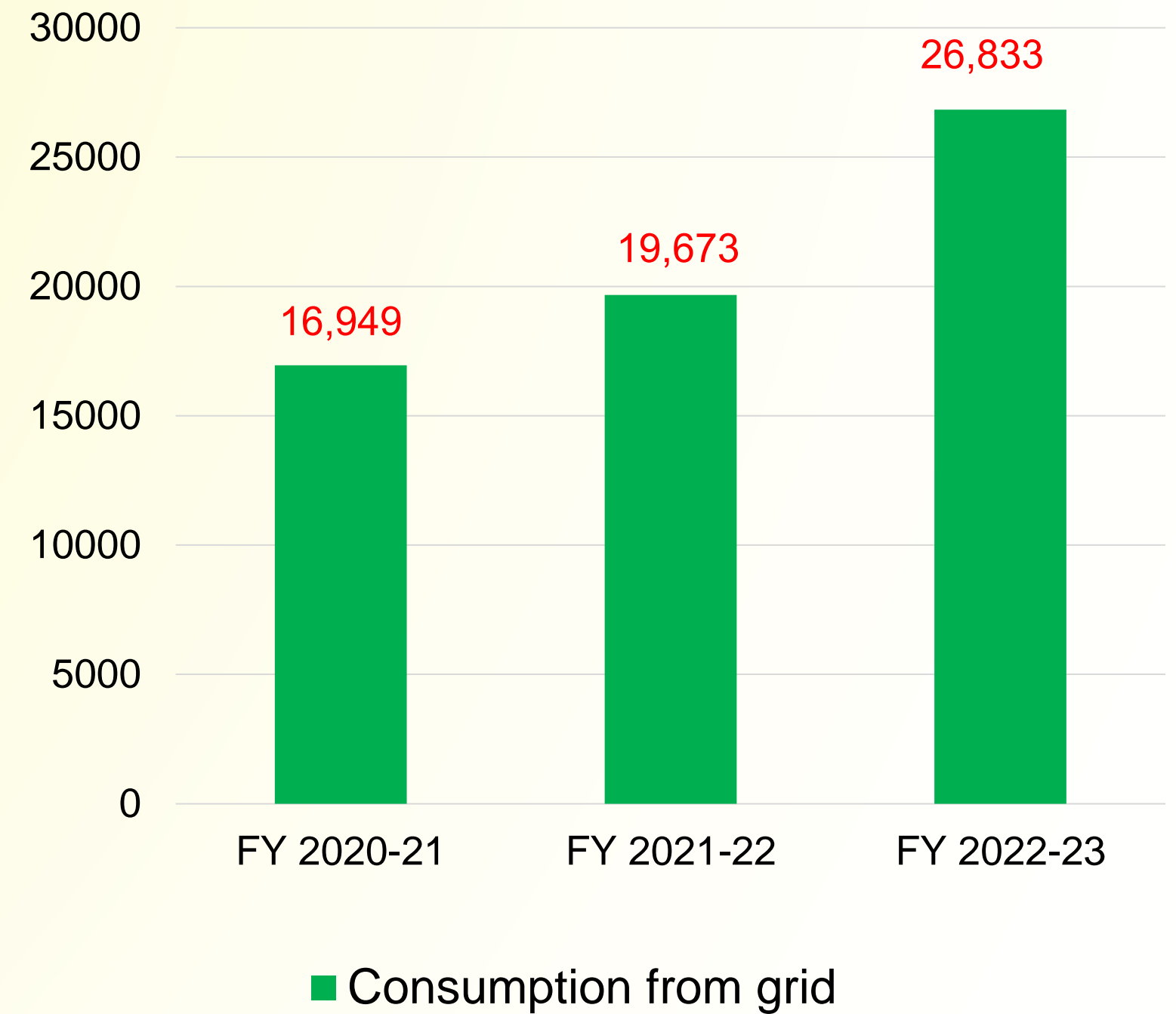
GREEN HOUSE GAS EMISSION



Scope 01 Emission (in Ton of CO2)



Scope 02 Emission (in Ton of CO2)





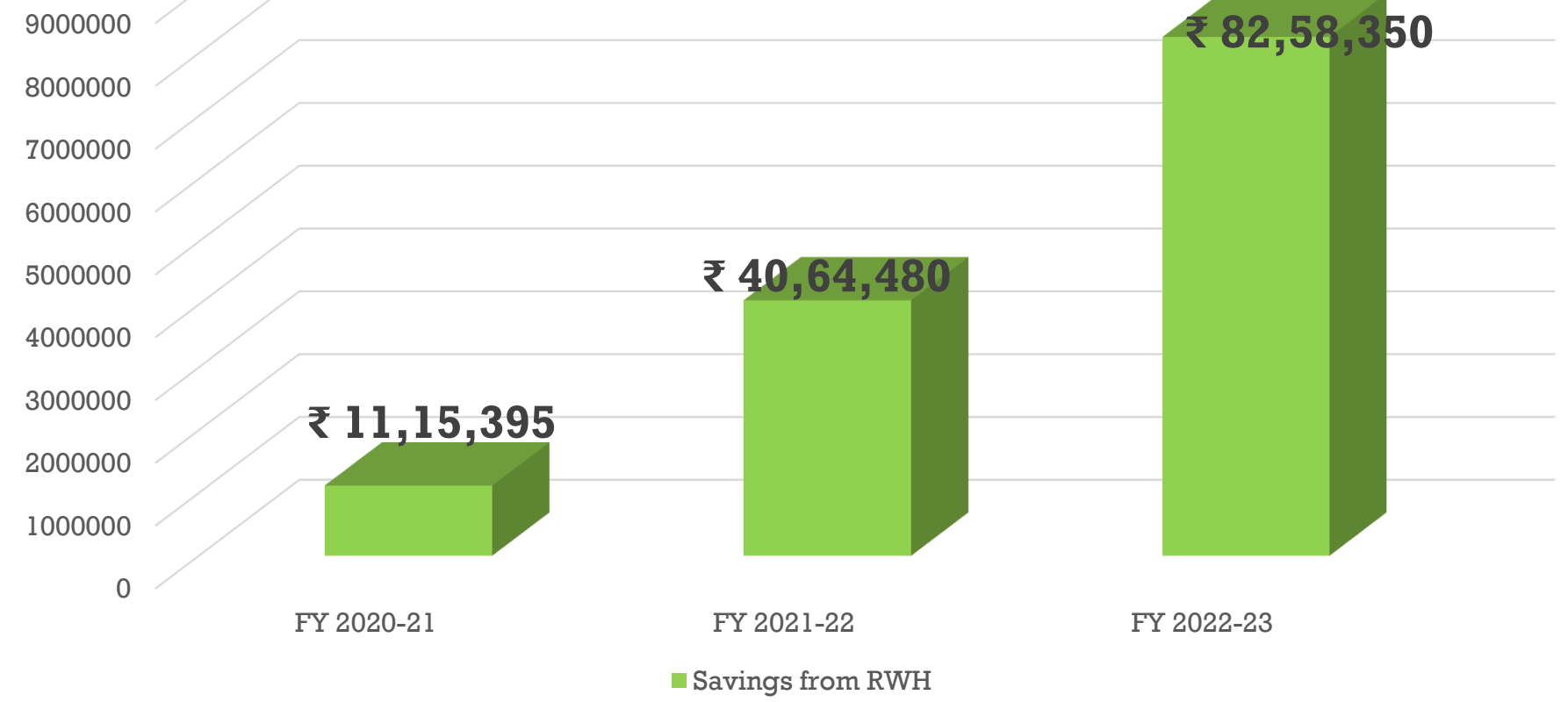
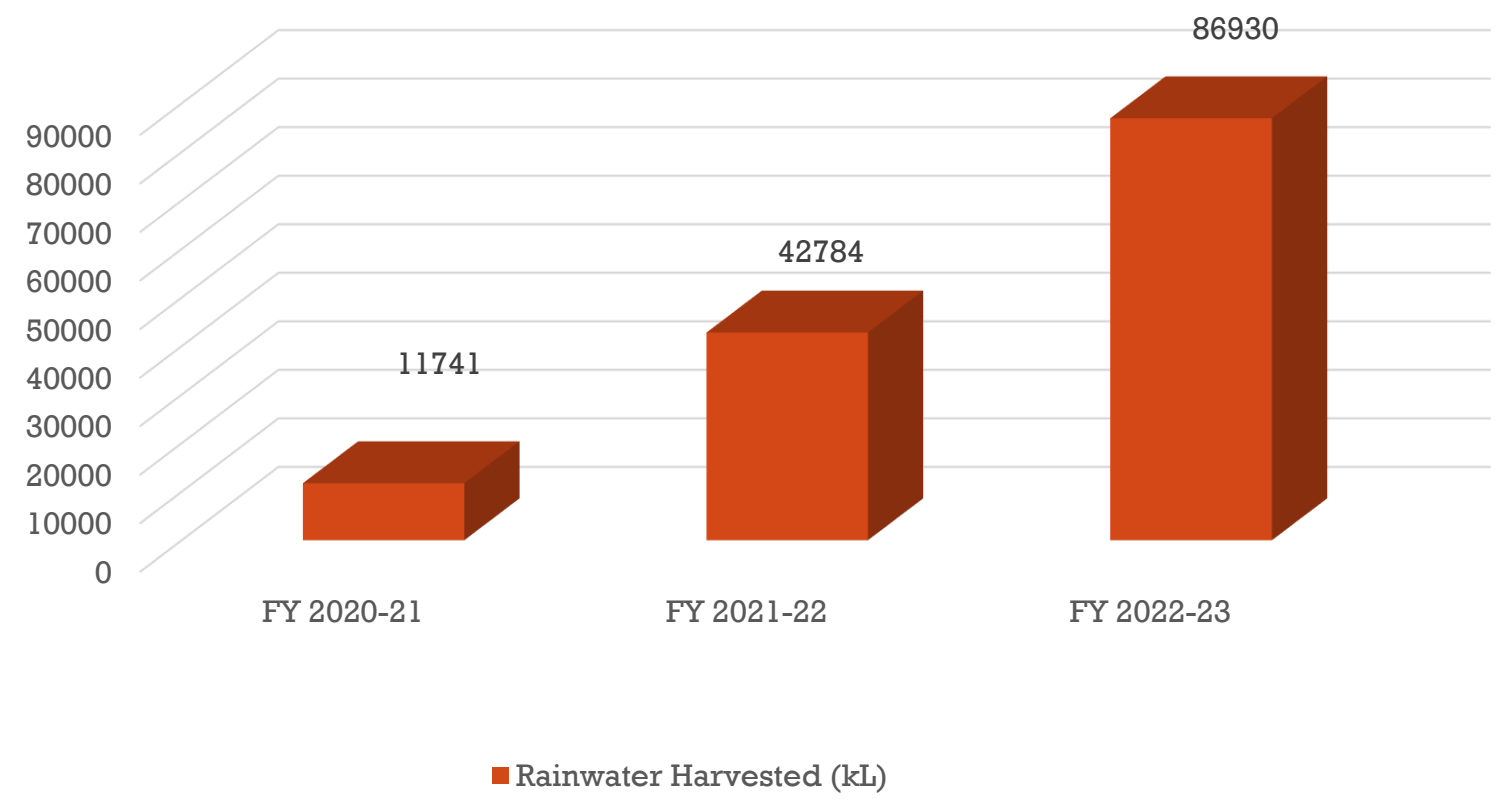
INITIATIVES TO REDUCE GREEN HOUSE GAS EMISSION



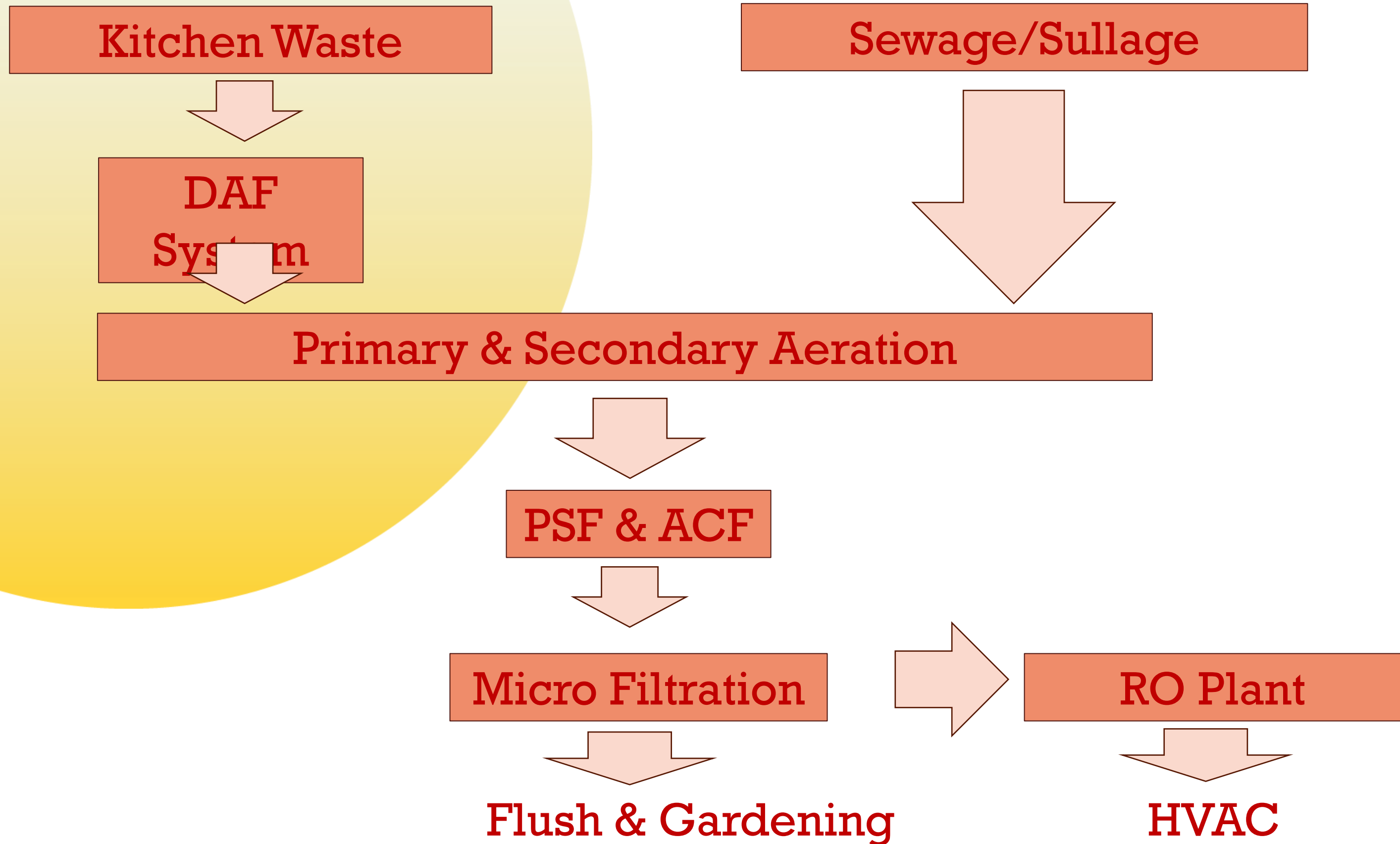
- Transportation facility provided for employees.
- EV Charging facility
- Mall connected to nearby Metro Station though a bridge to encourage public to use public transport



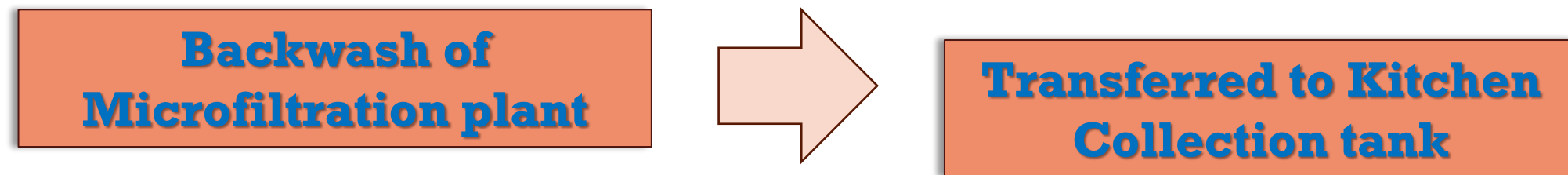
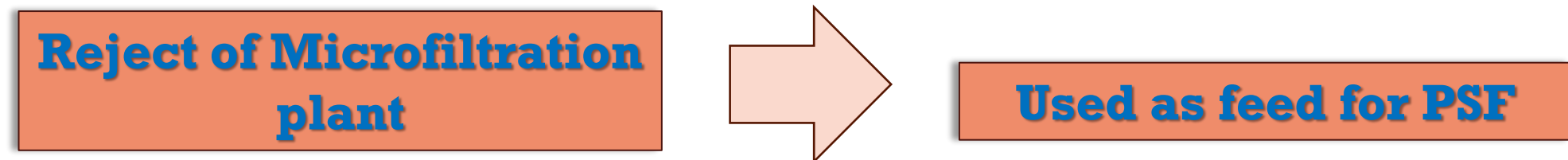
RAINWATER HARVESTING SYSTEM



SEWAGE TREATMENT PLANT (PROCESS OVERVIEW)



STEPS TO ENSURE ZERO DISCHARGE



Cost Savings per day		
Water	Approx qty kL	Savings in Rs
RO Plant Reject	120	15,900
MF Plant Reject	160	Reuse ensures NIL discharge
MF Backwash	70	





OTHER RELEVANT INFORMATION



- 1000kLD MBBR based STP, efficiently treats Sewage, Sullage and Kitchen wastes with Micro filtration and RO plant meets our requirement for flushing and HVAC application thereby limiting usage of fresh water for domestic purpose only.
- Dissolved Air Floatation (**DAF**) system plays a major role in treating kitchen waste. Sludge generated post treatment is processed using sludge compactor which is used as manure
- **Rainwater harvesting system** with storage capacity of 400kL meets domestic water demand during rainy season.

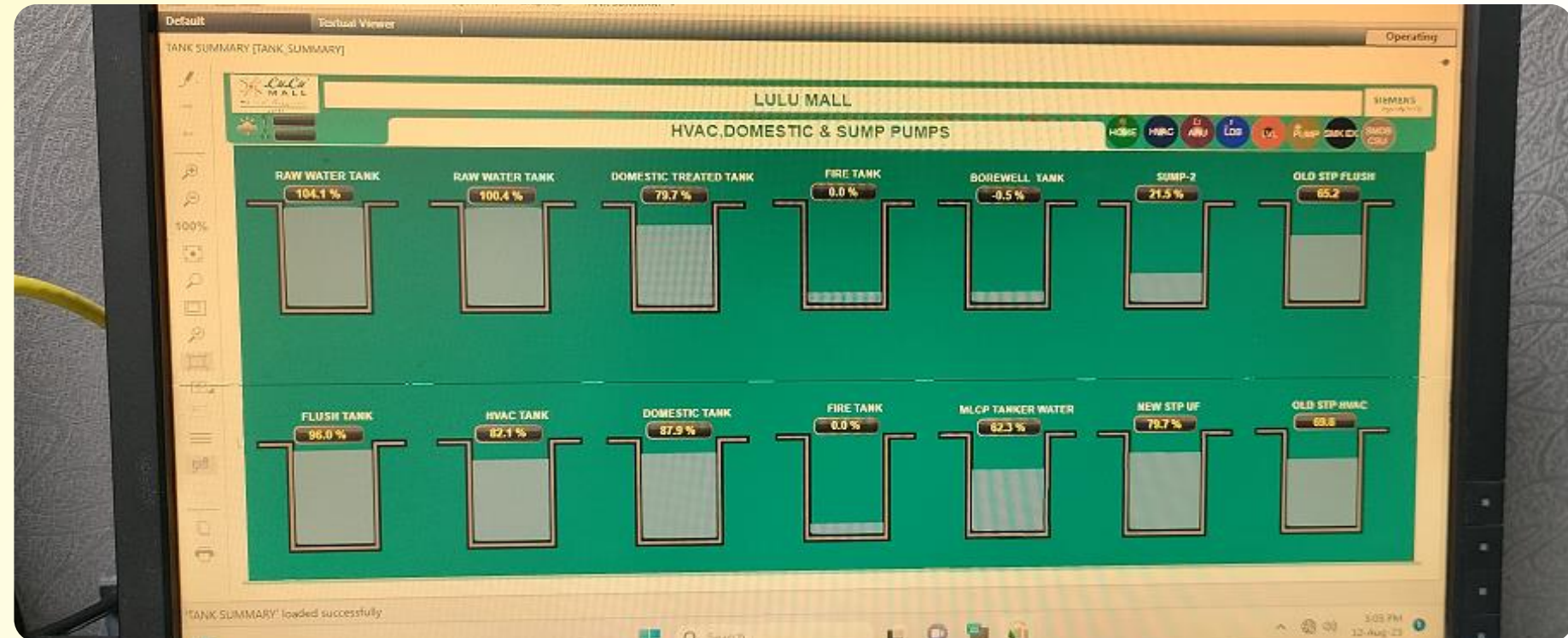




BMS /CERTIFICATION

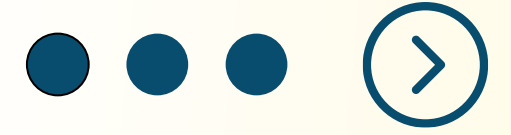
BMS Features :

- Monitoring of water tank levels.
- Operation of pumps, AHUs and Lights.
- We have applied for IGBC Certification 2023.
(Registration Id: GEB231265)





LuLu Mall,
Kochi



THANK YOU

Prasad P

Senior Chief Engineer

Lulu International Shopping Malls Pvt. Ltd.

Kochi, Kerala

Email id: prasadp@luluindia.com