

Larsen & Toubro Limited Leadership Development Academy Lonavla

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Head - Leadership Development Academy

Mr. Prakalp Gahankari
DGM - Administration

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Mr. Suresh Karge**
Team Members - Administration



Brief Introduction on Company/Unit

L&T Leadership Development Academy is a 24 acres learning campus at Lonavla near Mumbai which offers world class infrastructure and ambience for conducting corporate training programs

A state-of-the-art campus which offers a platform to interact across geographies and develop future leaders and global corporate entrepreneurs.



Rainwater Harvested
2735 CuM



Training Centre
Built-up Area-21,556.8 Sqm



Platinum Certification
IGBC



Renewable Solar Energy
Capacity 50 Kw
Generation 133 Mwh



Waste Management System

Biodiversity



Total Green cover
77.30%



39
species of native trees
900 Nos.



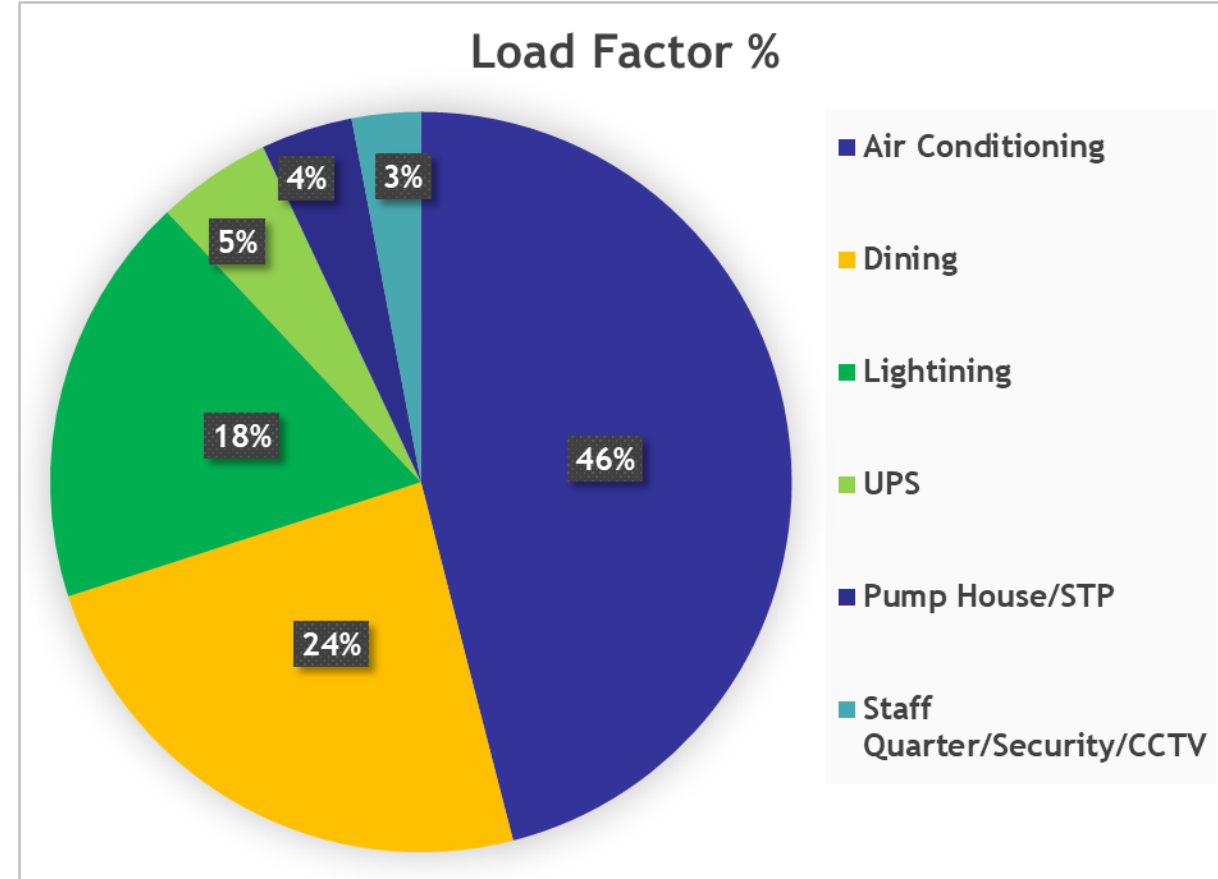
44
species of fauna



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Development
Academy

Architectural Design

Electrical Energy Consumption

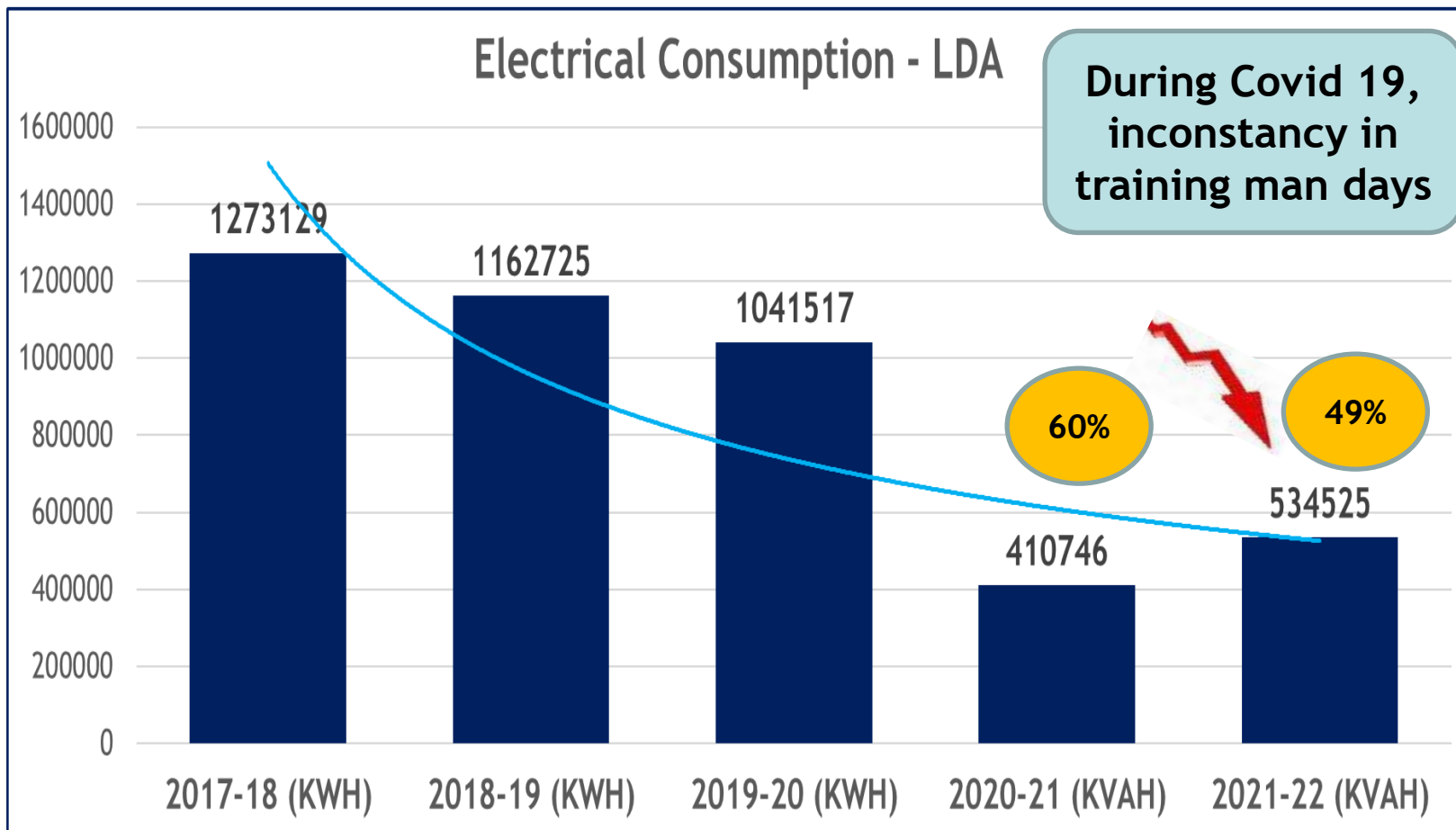


Energy efficient building envelope :

- Oriented for maximum exposure to sunlight and breeze
- Maximizing day lighting
- Reduces the heat load. It allows maximum daylight
- Use of double-glazing unit glass
- Sun control window film - To protect from direct sun rays & glare
- Open spaces for air circulation - Building corridors are non-air-conditioned
- The Indoor & Outdoor spaces are integrated along with Climate responsive & Structure aesthetics.



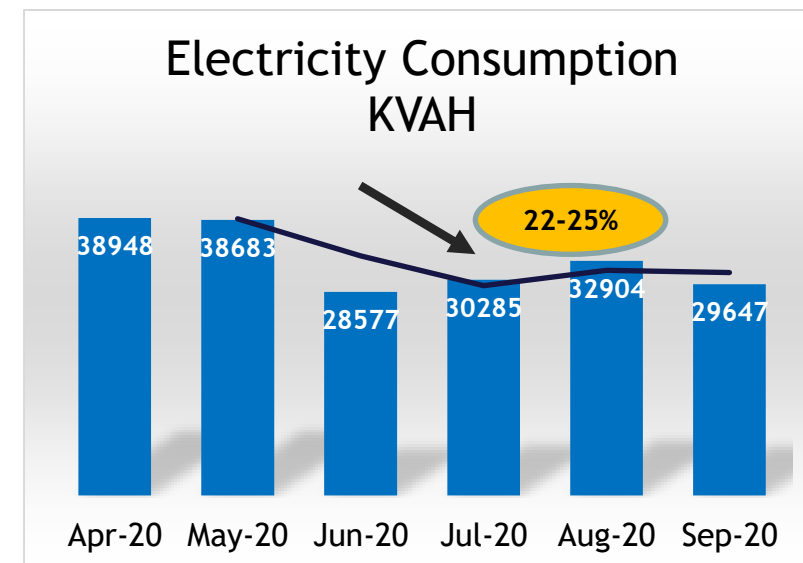
Energy Consumption Overview



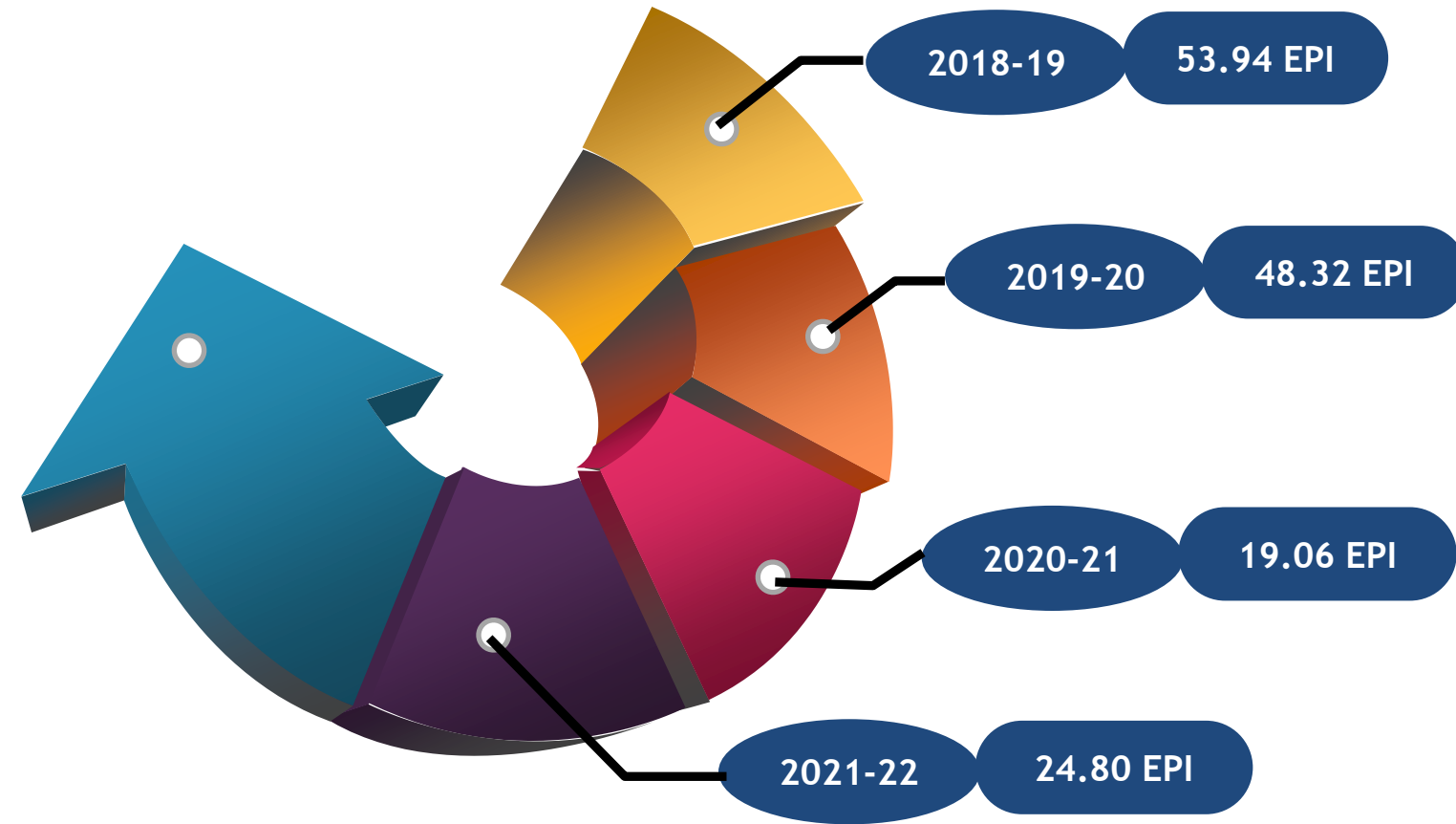
Due to uncertainty, EPI was identified and focused on fixed base load of the Facility.

EnPI 22-25 % improvement.

Energy Saving of @8500KWH per month



Sp. Energy Consumption in last 3 Years



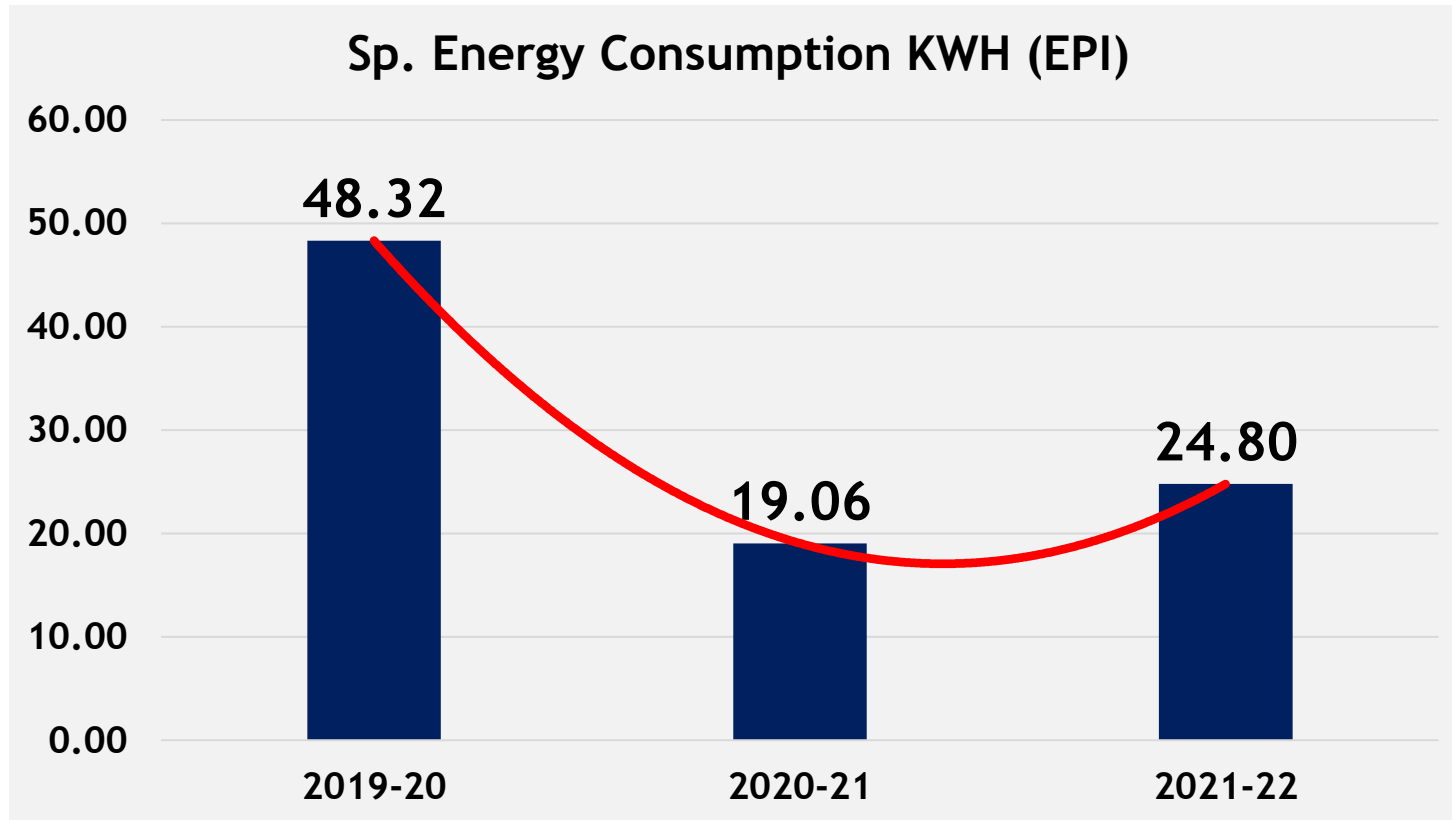
Leadership Development Academy (97124sqm) is training cum residential institute for conducting management development training programs.

During Covid 19 (FY 20-21 and 21-22), there was inconsistency in training man-days & are not fixed hence challenge to reduce Kwh/Mandays.

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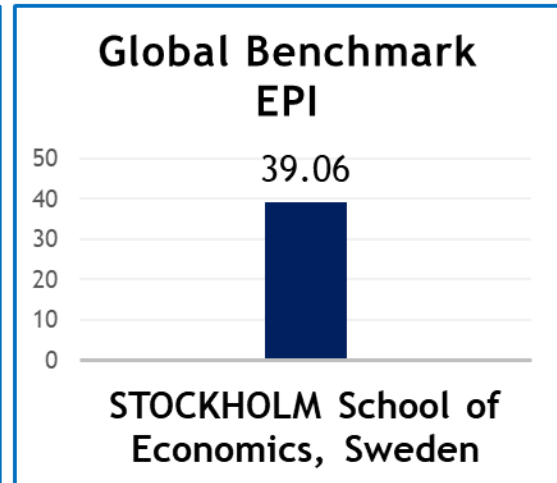
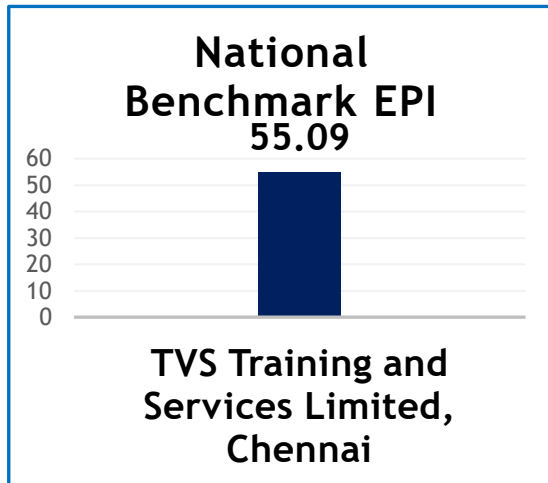
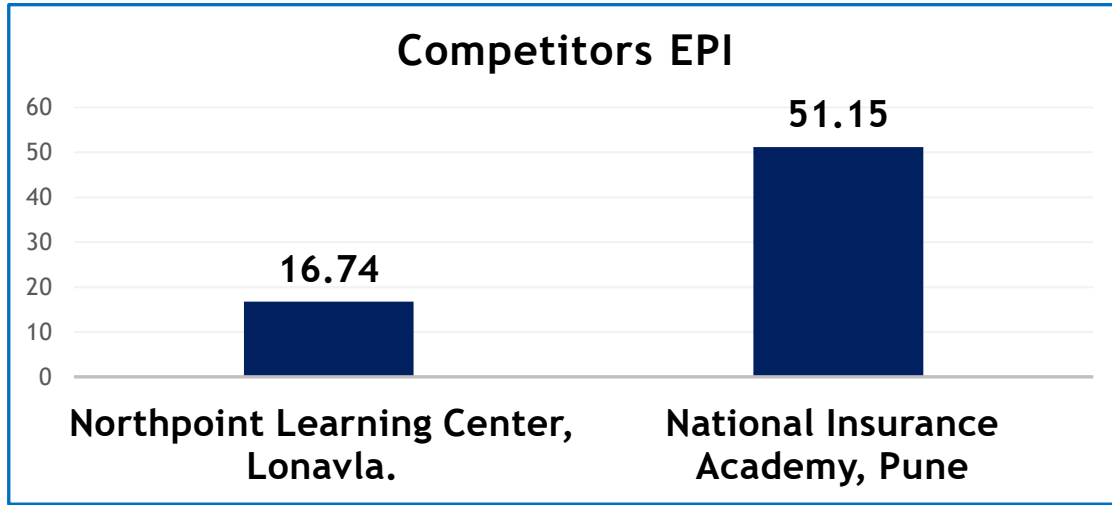
Sp. Energy Consumption in last 3 Years



- Retrofit in APFC panel
- Optimum utilization in kitchen equipment's (freezers and cold storage system)
- Timer-based lighting
- Daily monitoring on Energy Consumption pattern
- STP/centralized pump operations
- Switching off noncritical load



Competitors, National & Global Benchmark



Short Term Goal

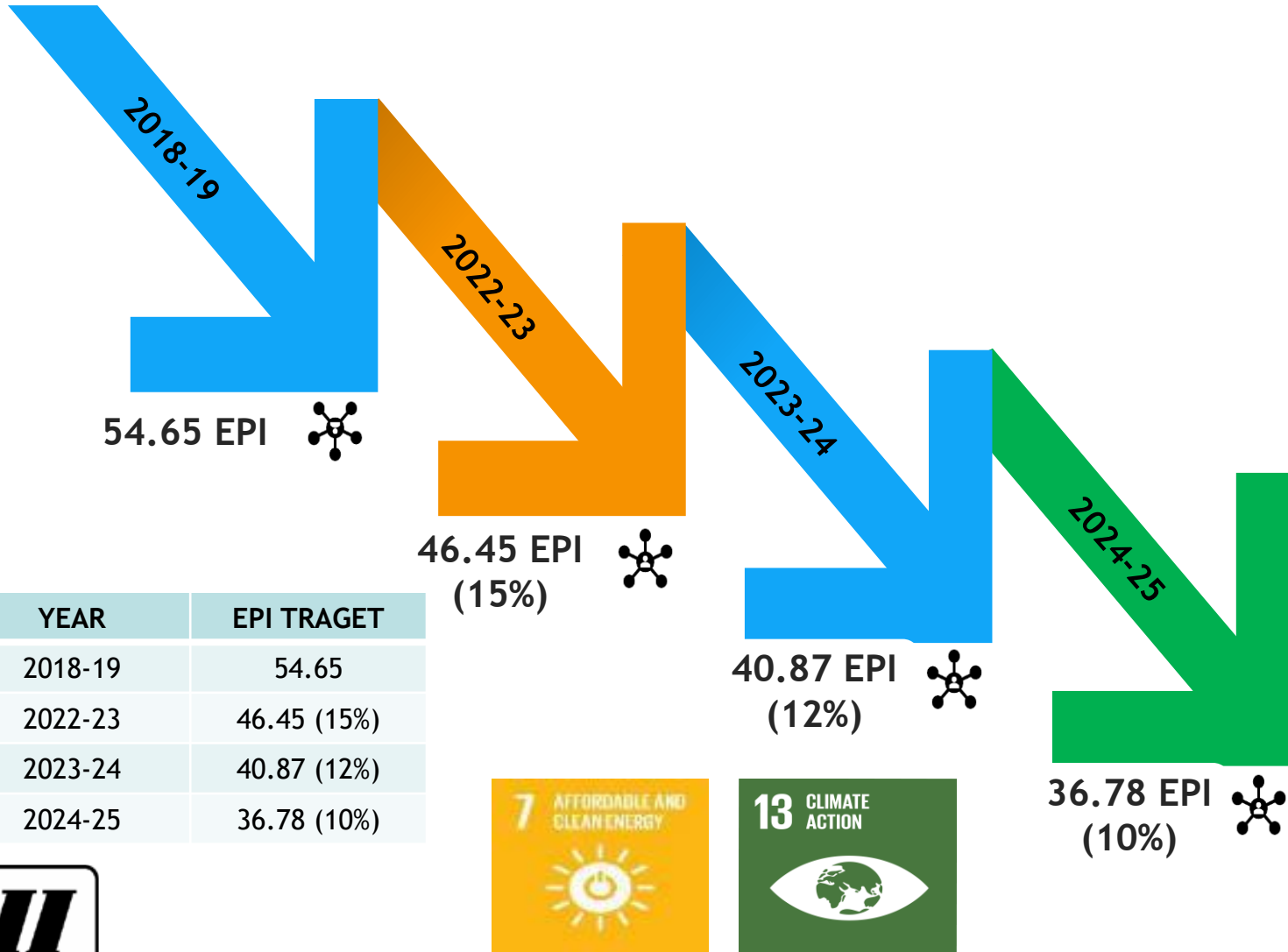
- Brainstorming / Awareness -Involving Management
- Energy savings as KRA for Team Members
- Improvement & sustain in Power Factor
- LEDs replacement
- Ducting Retrofit in Dining area

Long Term Goal

- Developing commercially viable technology - digital tools
- Adoption of renewable energy (10 Kw)
- Energy efficient Pumps
- UPS and smart Server Rack
- Retrofit in Air conditioning area
- Looking for power Purchase Agreement



Roadmap - To achieve National & Global Benchmark



Target

Focusing on various green energy initiatives

Target of Carbon neutrality by 2040.

- Energy Audit, LEDs replacement, adoption of in Clean energy and Implementation of energy saving measures supported to SDG 7 & 13



LIST OF MAJOR ENCON PROJECTS PLANNED (2022- 2023)

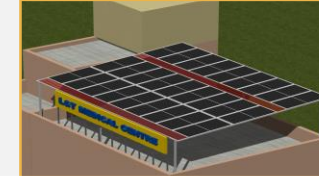
Small Wind Energy Solution 10KW

Installation of 10KW Wind energy model will increase - @18MW/Year
Reduce overall carbon footprint - @14.7Tonne



PV Online Grid Solar 15KW

Installation of 15KW PV Solar will increase - @20MW/Year.
Reduce overall carbon footprint - @16.4Tonne



Energy Efficient Pump for Swimming Pool

Replacement of old pumps by energy efficient pumps
Energy saving @ 2 MW / Year



APFC Panel Retrofit

Help to maintain/improve PF close to 0.999 or unity
Avid power factor surcharge



Smart rack & UPS for Server Room

Replacement of old server rack with Smart solution and UPS
Reduce space, energy, and operational cost with monitoring. (@30%)






40 Lac
Budget
FY22-23



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Energy Saving projects implemented in Last Three Years

Year	No of Energy Saving projects	Investment (INR Million)	Electrical Saving (Million Kwh)	Saving (INR Million)	Impact on SEC (Electrical)
FY 2019 - 20	7	4.08	0.0598	1.01	-2.7 
FY 2020 - 21	3	0.175	0.0799	1.357	-3.7 
FY 2021 - 22	3	0.4	0.01	0.17	-0.4 

10 Projects

Investment
INR 46.55 Lac

Saving
1.49 Lac KWH

Saving
INR 25.37 Lac

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Innovative Projects (Planned)

7 AFFORDABLE AND CLEAN ENERGY



- Project & Wind Feasibility study with software tool - Latitude & Longitude)
- Vendor assessment (MEDA Portal)
- Site visit for performance analysis Environmental and local wild life impact evaluation,
- ROI/Carbon Foot print / Noise / Pollution Examination



10 KW WIND TURBINE (GRID INTERACTIVE) GREEN POWER SYSTEM

- Lonavla location for good wind potential @ 6m/s annual average.
- Will produce as much as power generation during windy months (Monsoon) which will be lean period for Solar Power
- Environment Friendly
- No release of GHG Emission
- Robust, Reliable and user-friendly system



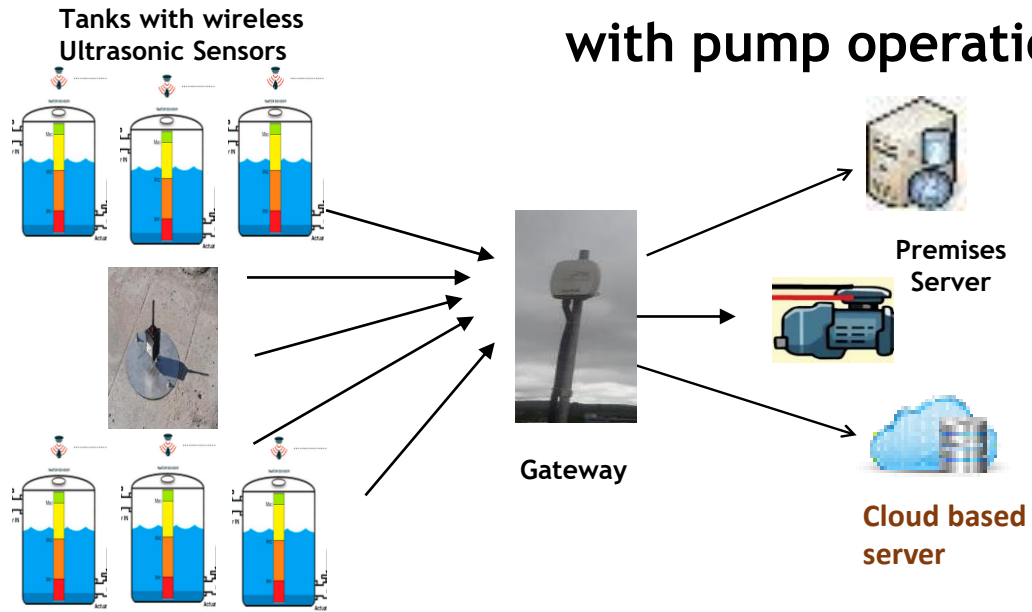
Capacity	Approximate Cost	Annual Power Generation	Carbon Footprint
10KW	14 Lac	18 MW	14 Tonne

This can be further replicated in other industries, various villages / gram panchayats etc.

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Innovative Projects Implemented

Water Level Monitoring System associated with pump operation Using IOT Implemented



Existing Condition:-

- Manual water level checking
- Pump operations was running by viewing water level
- Wastage/Loss of Energy

Implemented:-

- Innovative solution adopted
- Pilot run conducted
- Wireless ultrasonic sensors were installed on the Tanks.
- Pump operation decisions are made by viewing water levels of all the tanks in one go which resulted in Energy Saving.(Annually 3600 Kwh)
- High reliability as it produce accurate water flow graph.
- It's based on Lora WAN long range wireless network
- All sensors and gateway have IP68 protection
- Manual intervention to check water level physically avoided.

Annual Energy Saving 3600 Kwh)

No of wireless ultrasonic sensors	No of Gateway	Project Cost	Annual Water Saving	Annual Energy Saving
10	1	2.5 Lac	1500KL	3600 Kwh



This can be further replicated in other industries & societies.



Utilization of Renewable Energy Sources

Year	Technology (Year)	Type of Energy	Onsite/ Offsite	Installed Capacity (MW)	Generation (Million Kwh)	% of overall Electrical Energy
FY 2018-19	TP315W - 72 - cell Multi- crystalline Solar Photovoltaic Module, TATA Power Solar, 32 Panel	Electrical	Onsite	0.01	0.0144	1.2
FY 2019-20	TP325W - 72 - cell Multi- crystalline Solar Photovoltaic Module, TATA Power Solar, 62 Panel	Electrical	Onsite	0.02	0.0288	2.4
FY 2021-22	TP70W - 36 - cell Multi- crystalline Solar Photovoltaic Module, TATA Power Solar, 150 Panel	Electrical	Onsite	0.01	0.0144	1.2
	TP435W - 144 - cell Mono- crystalline Solar Photovoltaic Module, TATA Power Solar, 22 Panel	Electrical	Onsite	0.01	0.0148	1.2



Utilization of Renewable Energy Sources



10KW



20KW



10KW



10KW

Since March 2019

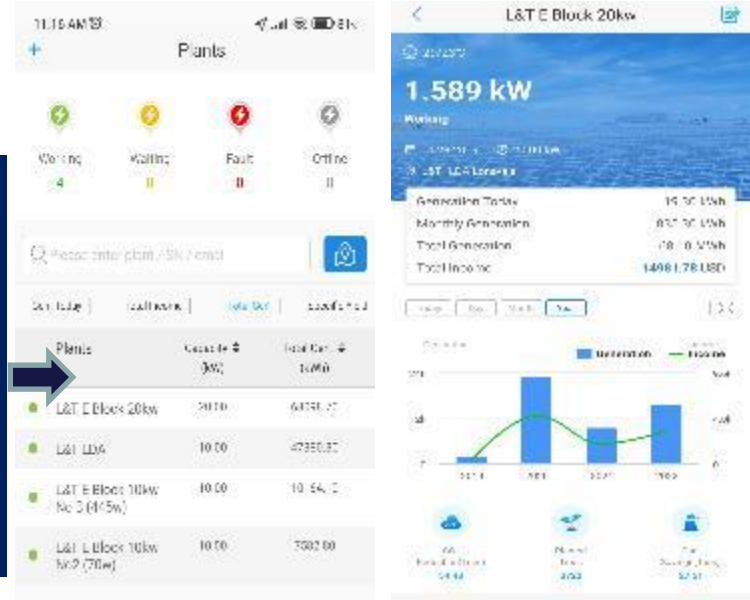
Onsite generation
133 Mwh

Investment -
30 LAC

110 tonnes of CO2
emissions reduced

Total Capacity
- 0.05MW

Online Monitoring
GODWEE



6 to 7% of Overall
Energy Consumption



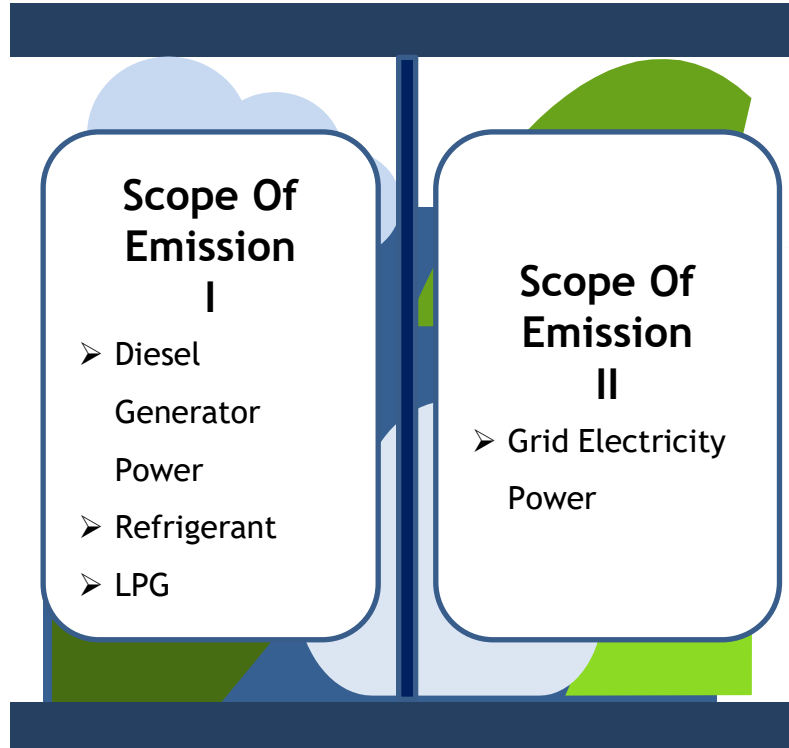
GHG Emission and Indoor Air Quality

Vision

Target of **Water neutrality** by 2035
and **Carbon neutrality** by 2040

Indoor Air
Quality
(NABL
Accredited
Testing)
O₂-20.9

Year	Scope 1 Emission	Scope 2 Emission	Ton of Co2 equivalent
2021-22	14.01	422.27	436.18
2020-21	7.65	324.49	972.59
2019-20	47.25	822.80	1501.3



Introducing remote operated BLDC fans in place of conventional Fans SDG 13

SHORT TERM

LED replacement in place of conventional lighting

Retrofit in Air conditioning area SDG 13

Aluminium coil Ac replaced with Copper Coil

Online monitoring of LPG gas consumption and timely replacement of Gas Burners SDG 13

Adoption of renewable energy (10 Kw)

Energy efficient Pumps placement SDG 7, 13

LONG TERM

Natural cooling technology to be adopted for training halls - SDG 15

Air pumping system for Gurukul with Underground ducting system SDG 15



Teamwork, Employee Involvement and Monitoring

Daily Monitoring through MIS, BMS, Solar Power Generation and IoT-based ultrasonic sensors & digital meters to monitor water level in tanks and water consumption and



Review meeting chaired by Admin Head

Kaizens

- Daily monitoring of base load electrical consumption patterns and takes necessary action on EC.
- Complete wiring carried out for Online grid 10 KW PV solar System.
- Program based timer operation for sports and outdoor lighting.
- Energy Meter installation, Capacitor replacement work to improve power factor
- Periodic level measurement and capacitor capacitance measurement

Unit level monthly review of energy conservation
Conferences, Attending seminars / exhibitions related to EC
Celebration of energy conservation week
Periodical technical webinars with the help of team members from reputed agencies for all L &T ties / stakeholders

Every year budgets are allocated for energy efficiency as corporate initiative. Any project below 3 to 5 years of payback qualify for it.

2019 - 20 - 38 Lac

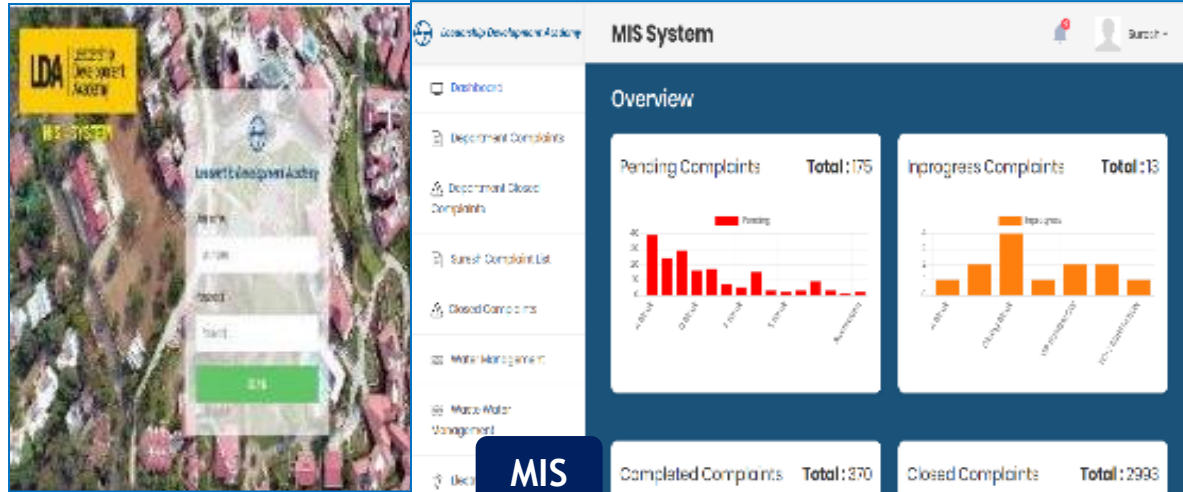
2020 - 21 - 0

2021 - 22 - 14 Lac

2022 - 23 - 35 Lac



Teamwork, Employee Involvement and Monitoring



Monitoring Systems



Digital Water Metering



Solar Power Generation



Wireless Tank water level Monitoring System



Implementation of IGBC Rating



**Energy Efficiency Unit in
20th National Award
Ceremony for Excellence in
Energy Management by CII**

For outstanding achievements and implementing new and innovative energy efficiency measures.



**1st Prize in 15th State Level
Award for Excellence
in Energy Conservation
and Management -
Commercial Building**

For extra efforts in Efficient Utilization, Management and Conservation of Energy.

Affirming L&T's commitment to sustainability and eco-efficiency, the Company's very own Leadership Development Academy (LDA) at Lonavla has earned the prestigious platinum rating for Green Campus from the Indian Green Building Council (IGBC).

**2.4% Investment of
energy saving projects
on total turnover of
the Company
FY 2021-22**



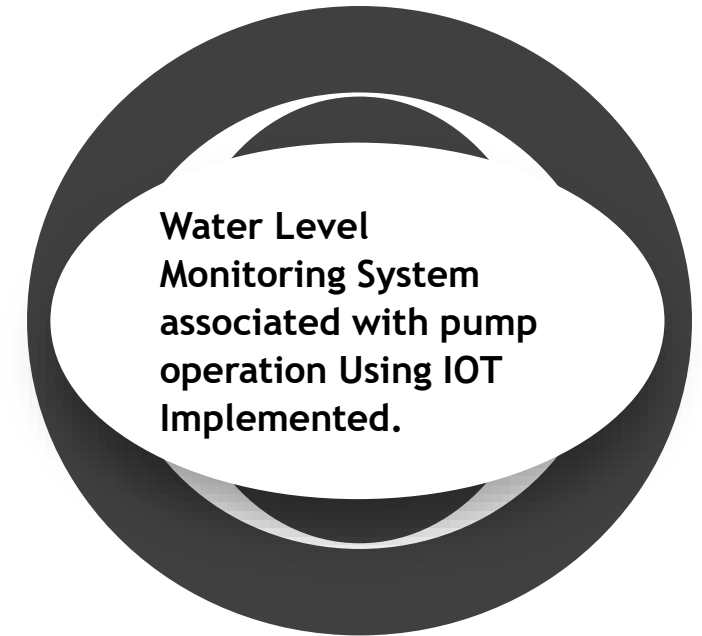
Learning from CII Energy Awards or other programs

Recognized the achievements of companies who have implemented ECON best practices and projects as well as capitalized on unique opportunities.

New technologies in Air conditioning, Innovative approach towards EC, Installation of energy efficient pumps, Importance of power factor, retrofit in APFC panel, Significance on EC, Effective Waste Management System, etc.

Conducted periodical technical webinars with the help of team members from reputed agencies **for all L &T ites / stakeholders like**

Smart and Energy efficient Data Center, Power Quality Enhancement - Overview, Renewable Energy Solar Power - The future, 2 Days Internal Auditor course on Energy Management Systems-ISO50001-2018, Electrical Safety- Low Voltage SPDs to Protect People & Equipment, Green Building - An Overview etc





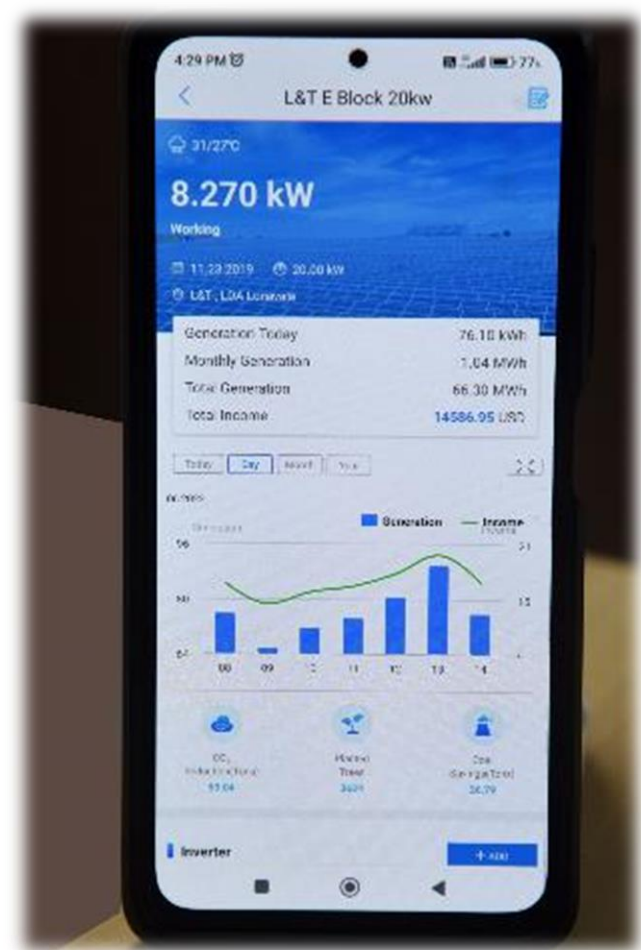
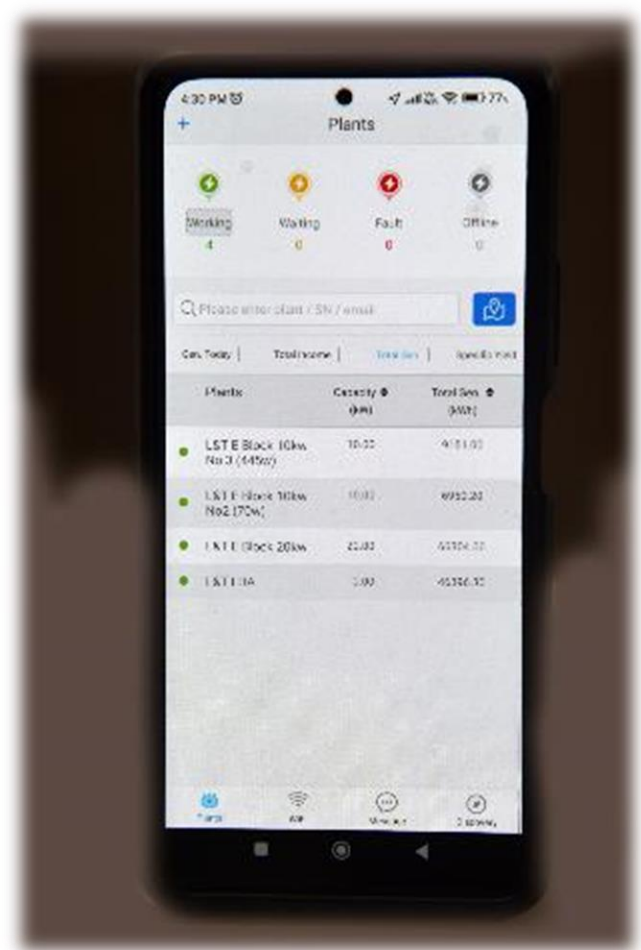
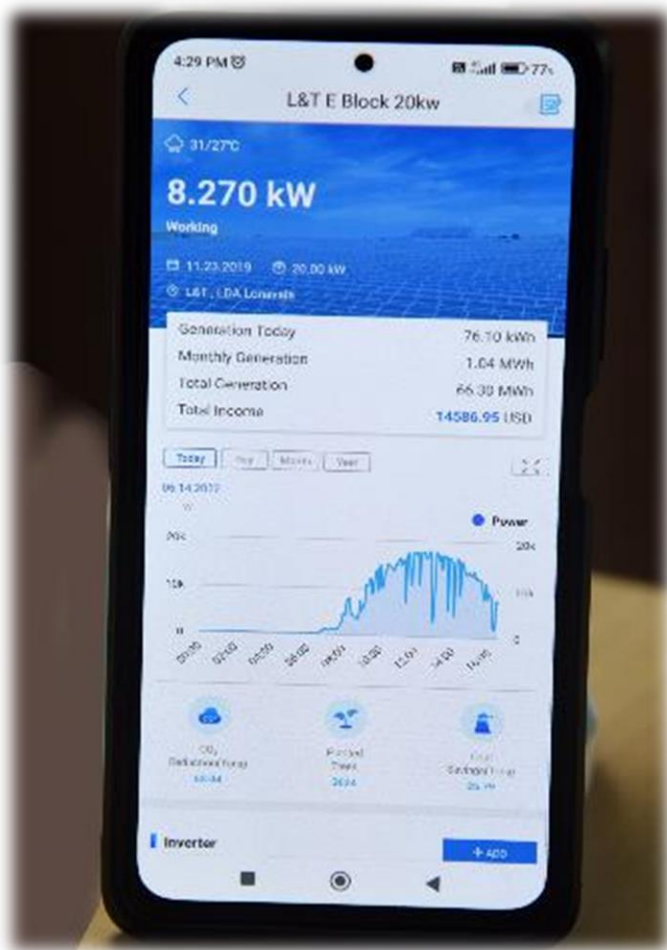
Sustainability at LDA



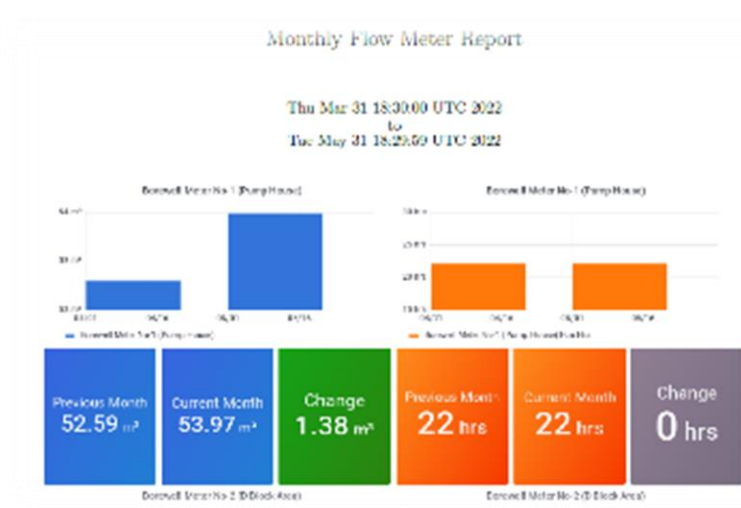
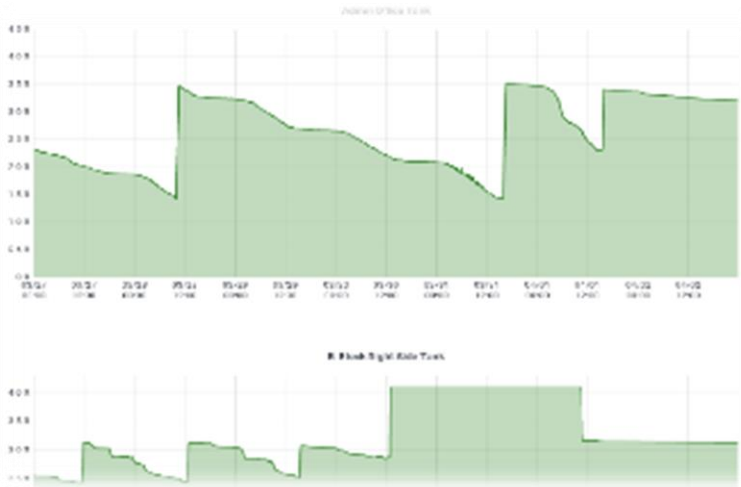


Let there be light....





Digital monitoring of solar power



Digital water metering

Rainwater harvesting





Aerators, Green cards for rooms, Green chemicals, water stations for learning halls



Biodiversity





Waste Management







Renewing a Pledge...



Energy Conservation & Environment Day Celebration

