

# Energy Excellence Journey of Delhi International Airport Limited (DIAL)

2021





## Presenters

**Rekib Ahmed**

**Manager, Environment**

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**AGM (Specialist), Mechanical**

**Atul Kumar Singh**

**AGM (Specialist), Electrical**

## Focus area

- Energy Policy
- **Formation of Energy Management Cell**
- Master Energy plan & Energy Balance
- Energy review, Equipment Performance control Plan & Calibration
- **Procurement of Efficient equipment/services**
- **Benchmarking/Baseline**
- Deviation & Incident, Corrective Actions & Preventive Actions ( CAPA)
- Establishment of best maintenance practices in-lieu of equipment energy efficiency
- Audit & Review up to Top Management
- **Training & Stakeholder Engagement**

## Energy Policy

**DELHI** INDIRA GANDHI INTERNATIONAL AIRPORT **GAR**

### DIAL ENERGY POLICY

In pursuance of Group's Vision and Mission, we at Delhi International Airport Limited (DIAL) commit ourselves to continual improvement in our energy performance by optimizing all our processes, facilities and natural resources to protect environment.

The above shall be accomplished by:

- Adoption of energy management systems to identify, assess and efficiently manage all forms of energy complying with all applicable requirements.
- Ensuring availability of information & necessary resources to achieve objectives & targets.
- Providing education, training, motivation and direction to the employees, stakeholders, JV partners, suppliers and customers to develop more energy efficient processes.
- Executing effective processes to procure energy efficient, eco-friendly technologies, products, services and equipment to promote use of renewable energy wherever applicable.
- Ensuring energy considerations in all designs, developments, modifications and improvements for maximising efficiency.

**Roy Sebastian**  
Chief Projects & Engineering Officer

**Videh Kumar Jaipuria**  
Chief Executive Officer

## ENMS Certificate

**bsi.** By Royal Charter

### Certificate of Registration

ENERGY MANAGEMENT SYSTEM - ISO 50001:2018

This is to certify that: **Delhi International Airport Limited**  
New Udaan Bhawan, Terminal 3,  
Opp. ATS Complex, International Terminal  
IGI Airport  
Delhi 110 037  
India

Holds Certificate No: **ENMS 570813**  
and operates an Energy Management System which complies with the requirements of ISO 50001:2018 for the following scope:

The Operation and Maintenance of Domestic and International Passenger Terminals, Airside Operations of Indira Gandhi International Airport using electrical energy from state electricity board, use of Renewable energy, Generation of electricity through DG Sets, Generation of Chilled Water and use of HSD & CNG for transportation.

For and on behalf of BSI: **Chris Cheung, Head of Compliance & Risk - Asia Pacific**

Original Registration Date: 2011-09-05      Effective Date: 2017-09-01  
Latest Revision Date: 2019-09-28      Expiry Date: 2020-08-31

**ANAB** ACCREDITED  
MANAGEMENT SYSTEM CERTIFICATION BODY

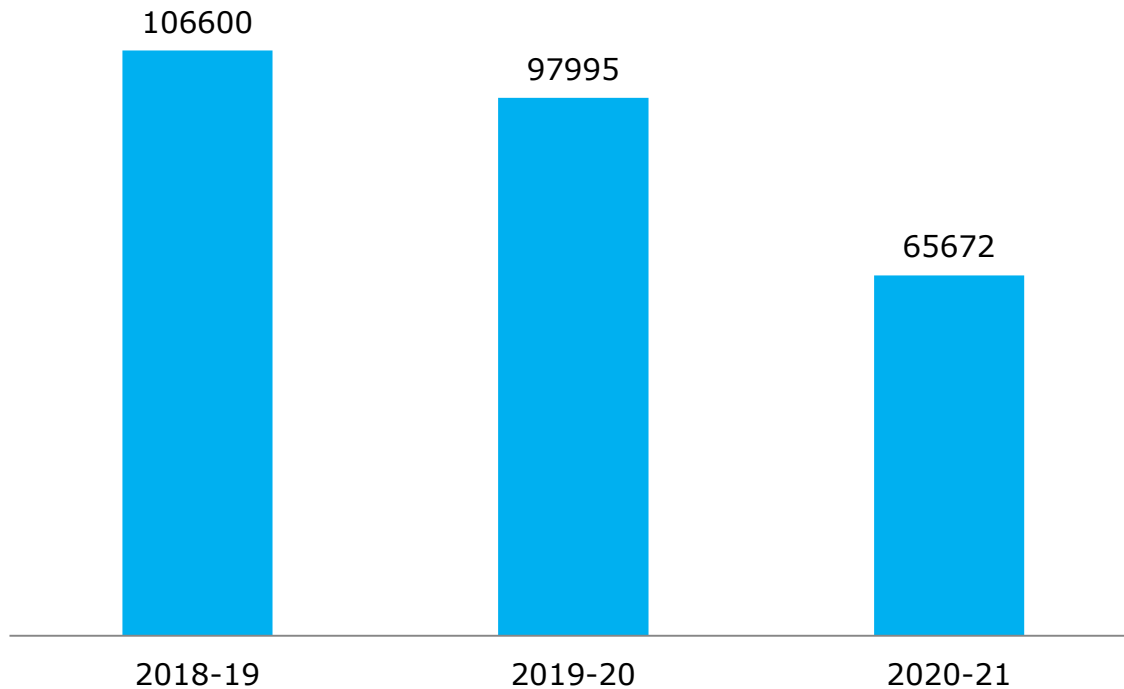
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...making excellence a habit™

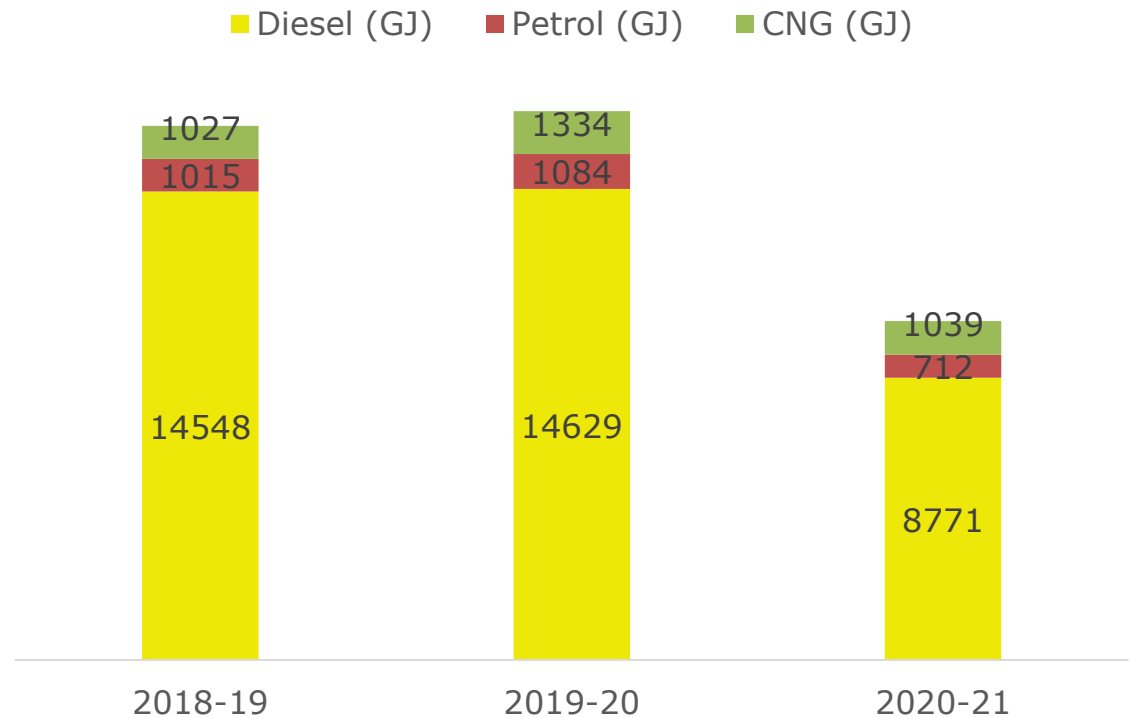
This certificate was issued electronically and remains the property of BSI and is bound by the conditions of contract. An electronic certificate can be authenticated at [www.bsi-global.com/CertDirectory](http://www.bsi-global.com/CertDirectory) or telephone +91 11 2692 9000. Further clarifications regarding the scope of this certificate and the applicability of ISO 50001:2018 requirements may be obtained by consulting the organization. This certificate is valid only if provided original copies are in complete set.

Information and Contact: BSI, Kilnbank Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PR. Tel: +44 345 080 9000  
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A Member of the BSI Group of Companies.

Terminal Electricity Consumption (MWh)



Fuel Consumption (GJ)



What changed during the last 3 years ?

- Electricity consumption decreased **by 38%**
- Overall fuel consumption decreased by 37 %

# Architectural Feature of Terminal 3



High SRI roof material  
(more than 78)

High SR roof material  
(more than 0.8)

Heat Island reduction  
(shaded structure)

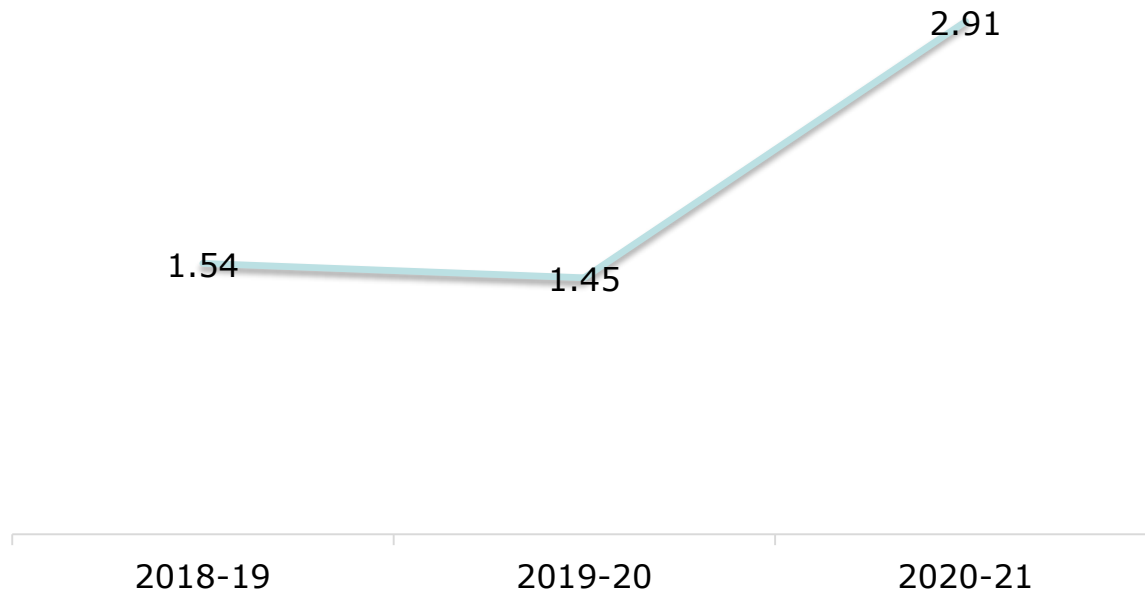
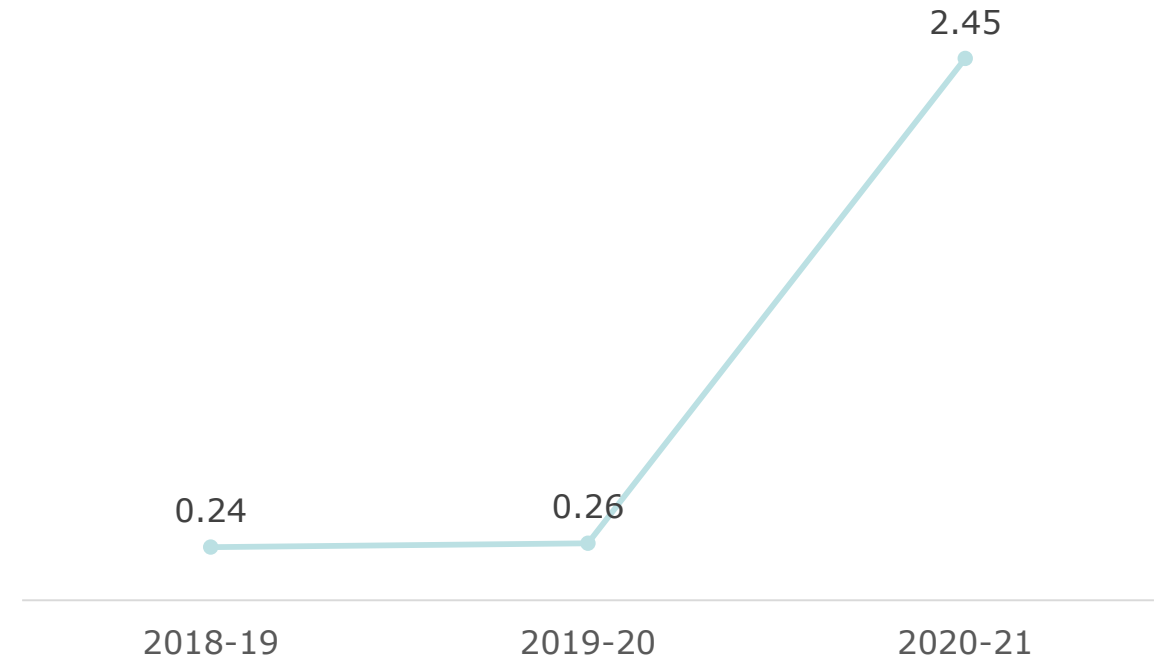
Roof insulation with low U-  
value of 0.261 W/m<sup>2</sup>-K

Double glassed façade

Heat Island reduction  
with landscaping

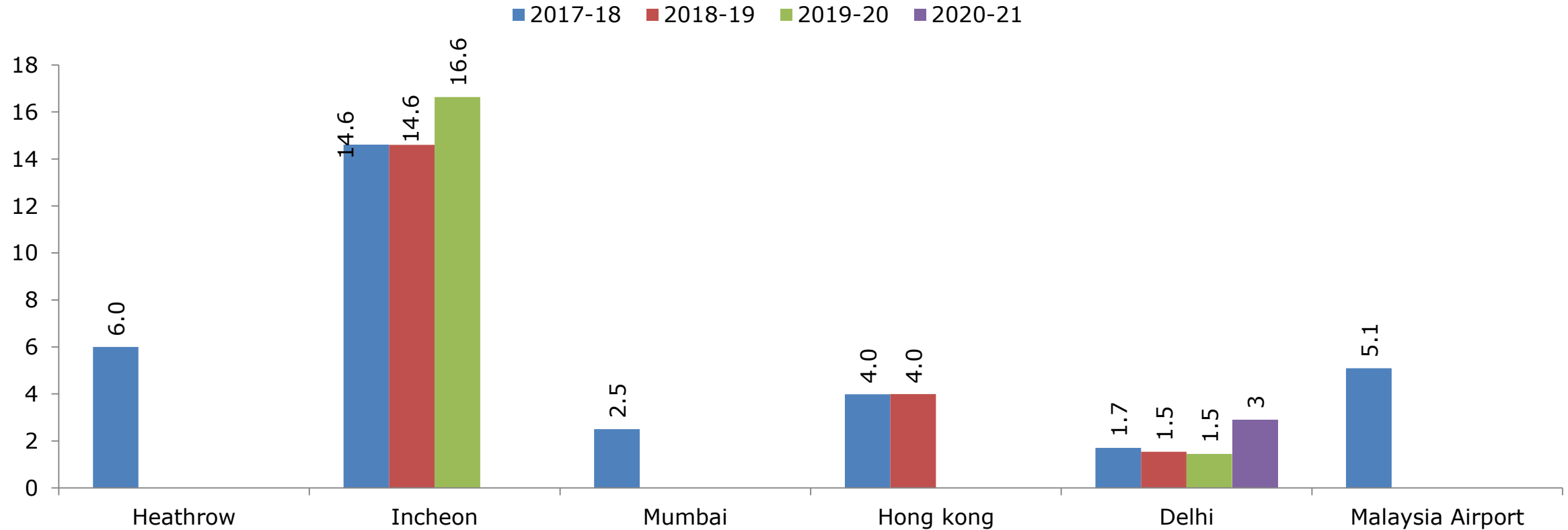
Use of daylighting  
concept



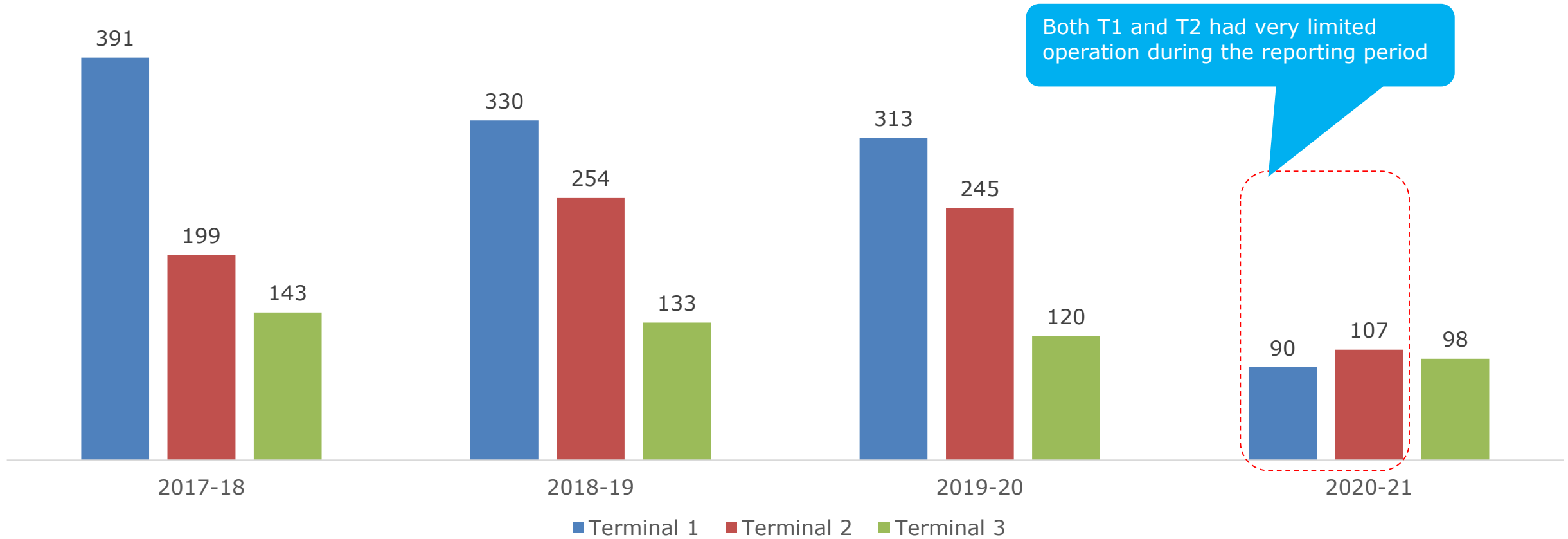
**Specific Electricity Consumption  
(kWh/Pax)****Specific Fuel Consumption (MJ/Pax)**

What changed during the last 3 years ?

- ↗ Specific electricity consumption (kWh/pax and MJ/Pax) has increased as passenger through put was very low
- ↗ Reduction in passenger throughput was 67% in 2020-21 as compared to 2018-19

**Benchmarking of Specific Energy Consumption (kWh/Pax)**

## Internal Benchmarking



Energy Consumption in terms of kWh/m2 of all the three Terminals are on a decreasing trend



# Energy saving project implemented in last 3 years



Energy saving project implemented in last 3 years					
Year	No. of energy saving projects	Investment (INR Million)	Electrical Saving (Million kWh)	Savings (INR Million)	Impact on SEC
FY 2018-19	4	77.8	4.1	38.5	SEC reduction of 10% realized.
FY 2019-20	4	160	7.8	72.1	SEC reduction of 5.84% realized.
FY 2020-21	5	41.7	2.6	24.2	-

**Project Description:** Relocation of AHU to reduced ducting length and minimized solar heat losses.

**Location:** Node D37

**Rational of the project:** Existing unit were installed at roof of the “Node” with open to ambient ducting length of 40 meter. The unit has been relocated under the ceiling with reduction in duct length of 40 meter.

Also, have selected Plug fan over belt driven fan with EC motor over old EFF2 motor to enhance the efficiency.

**Capital Cost:** INR 8.17 lakh

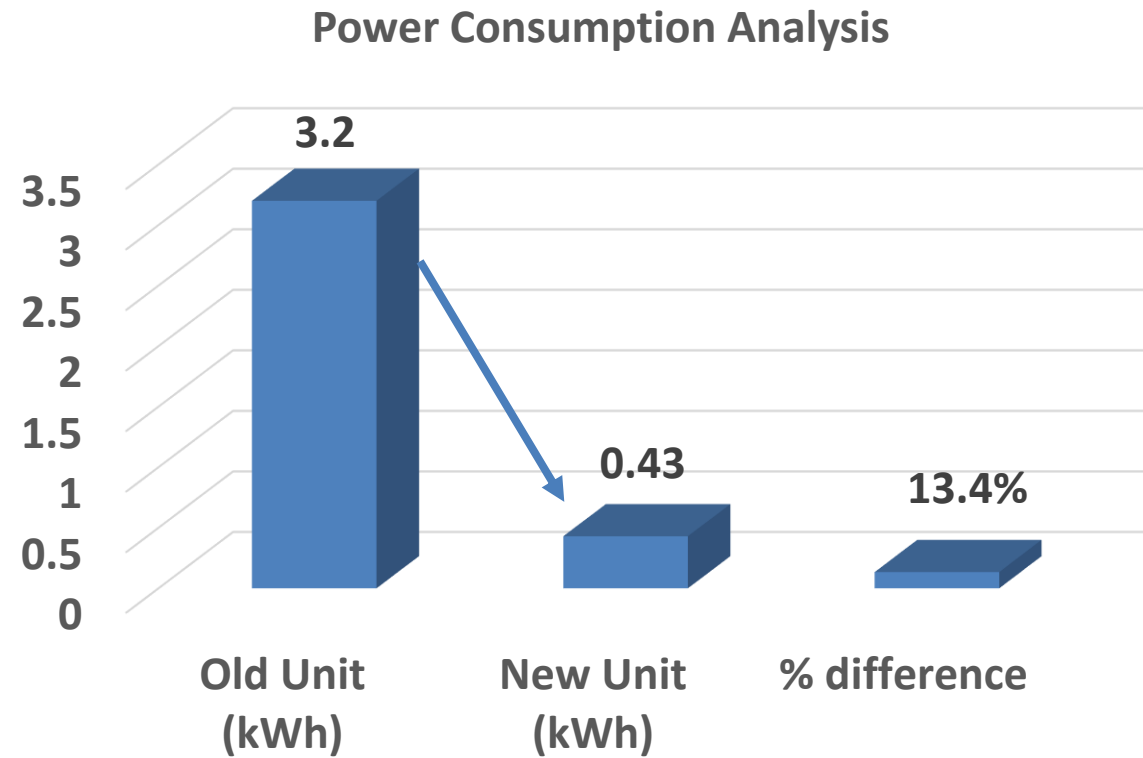
**Annual savings:** INR 1.7 lakh

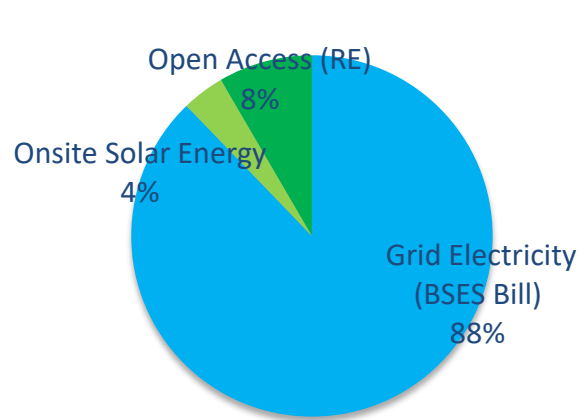


**Old Unit**



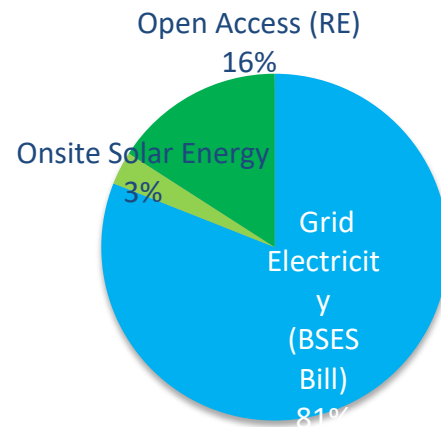
**New Unit**





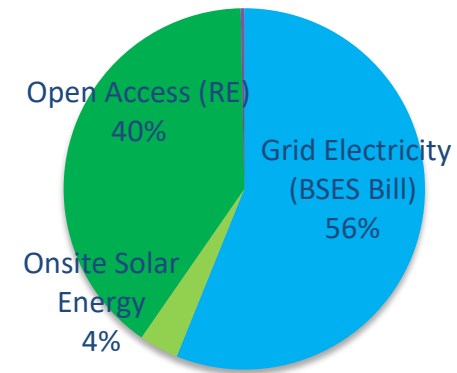
2017-18

CE 12%



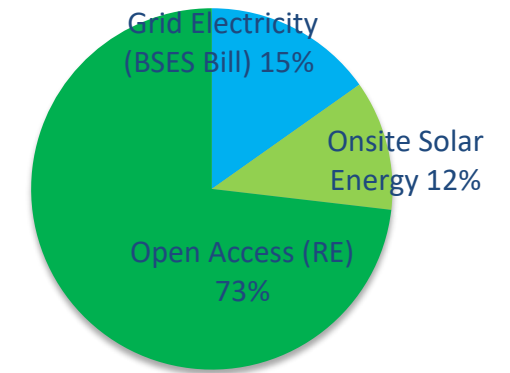
2018-19

CE 19%



2019-20

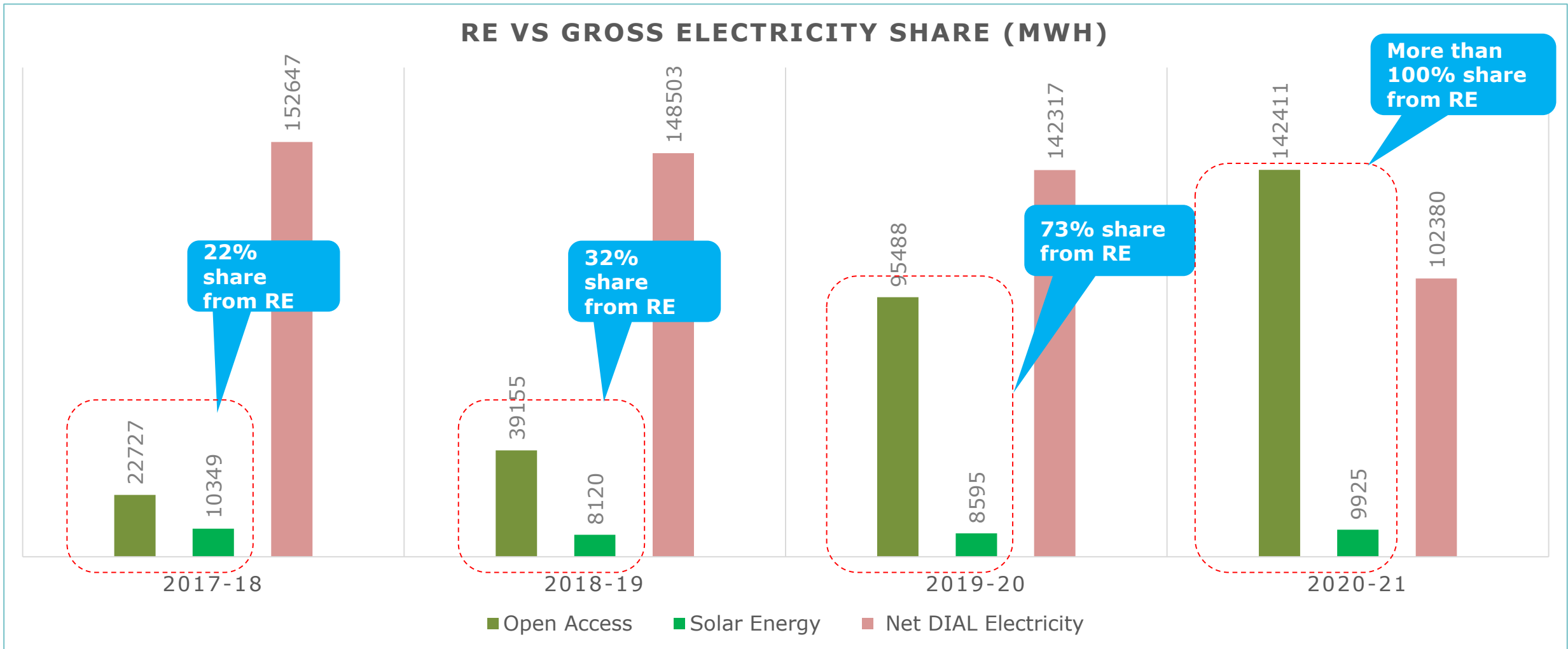
CE 44%



2020-21

CE 85%

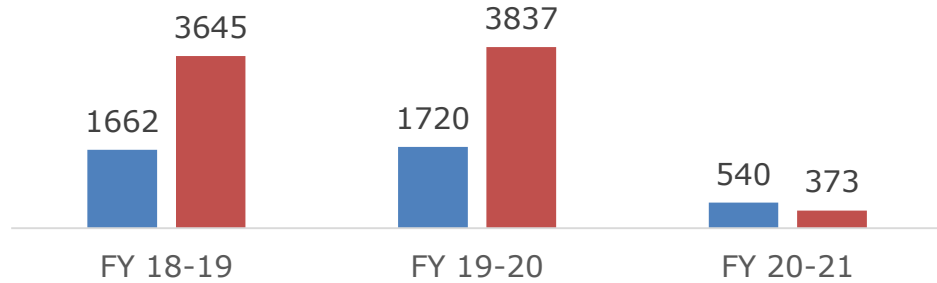
**DIAL is in the process of sourcing 100% of the electricity demand from Clean Sources**



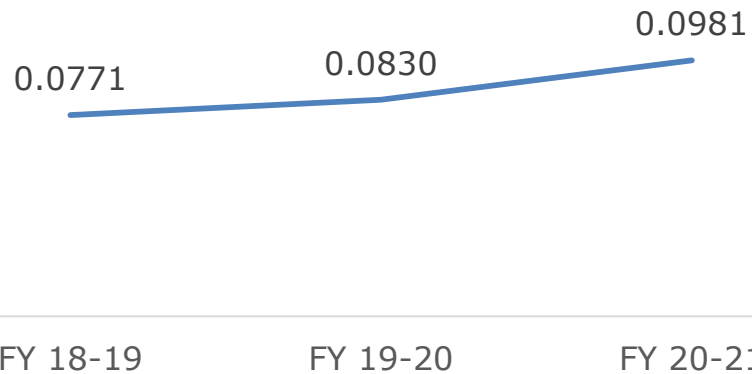
**In FY 2020-21, till now, 100% of DIAL's net electricity is RE based**

Waste Generation (Tonnes)

■ Biodegradable ■ Recycleable

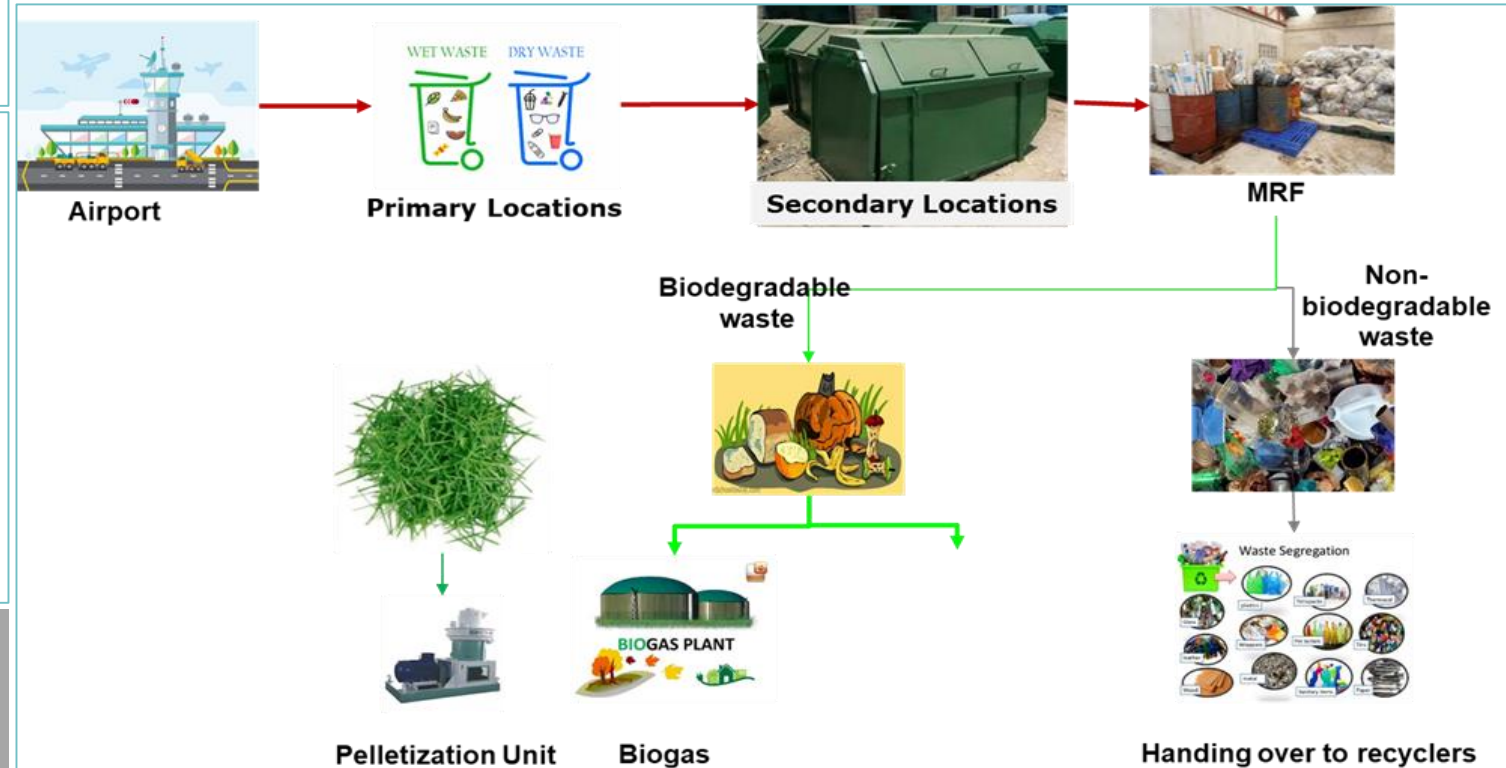


Waste generation (kg/Pax)



- Overall waste generation decreased by 83%
- Specific waste generation has increased by 27%

- 14 TPD Solid Waste Management Facility under implementation at IGIA
- Currently, waste collected, segregated and value recovery is ensured
- The wet waste is sent to waste to compost facility
- 16.6 MLD Zero Liquid Discharge Sewage Treatment Plant is currently operational at IGIA





### Direct Emission Scope 1

- Fuel emission from vehicles
- Fuel emission from DG set
- Fuel emission from Fire drill
- Emission from Fire extinguishers
- Emission from refrigerants
- Emission from fire crackers in airside



### Energy Indirect Emission Scope 2

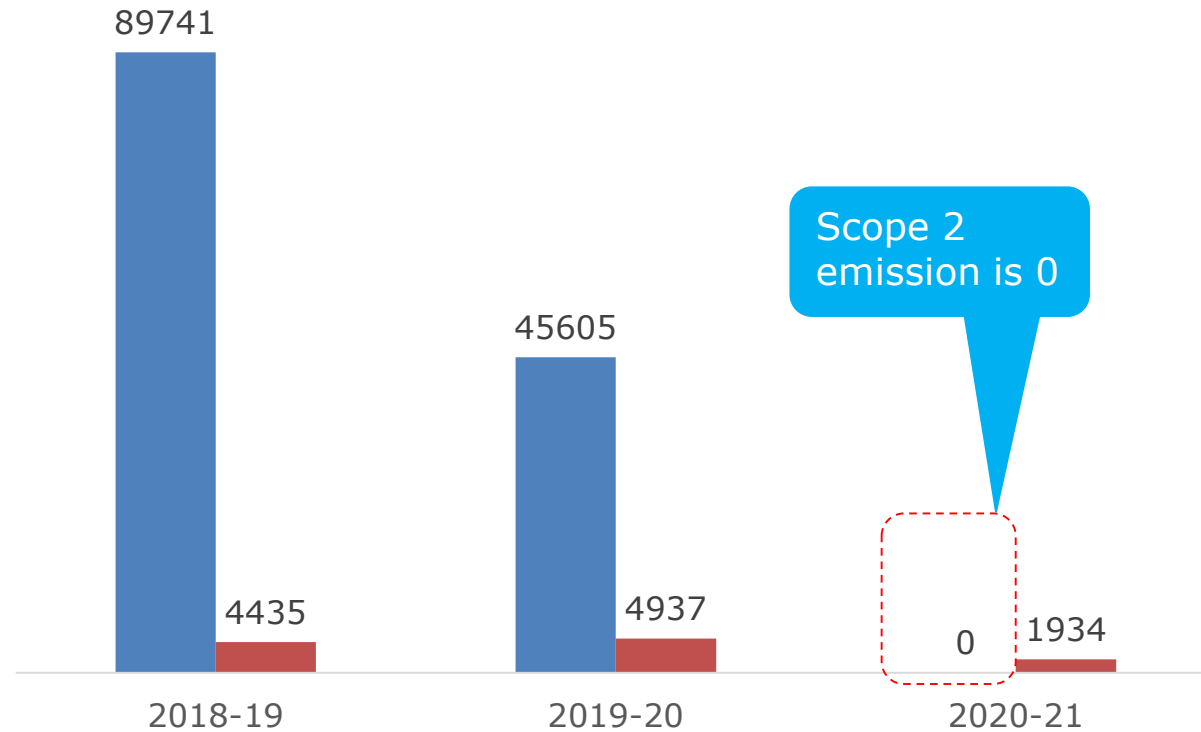
- Emission from Electricity usage
- Emission from RE (as per ACI guideline)



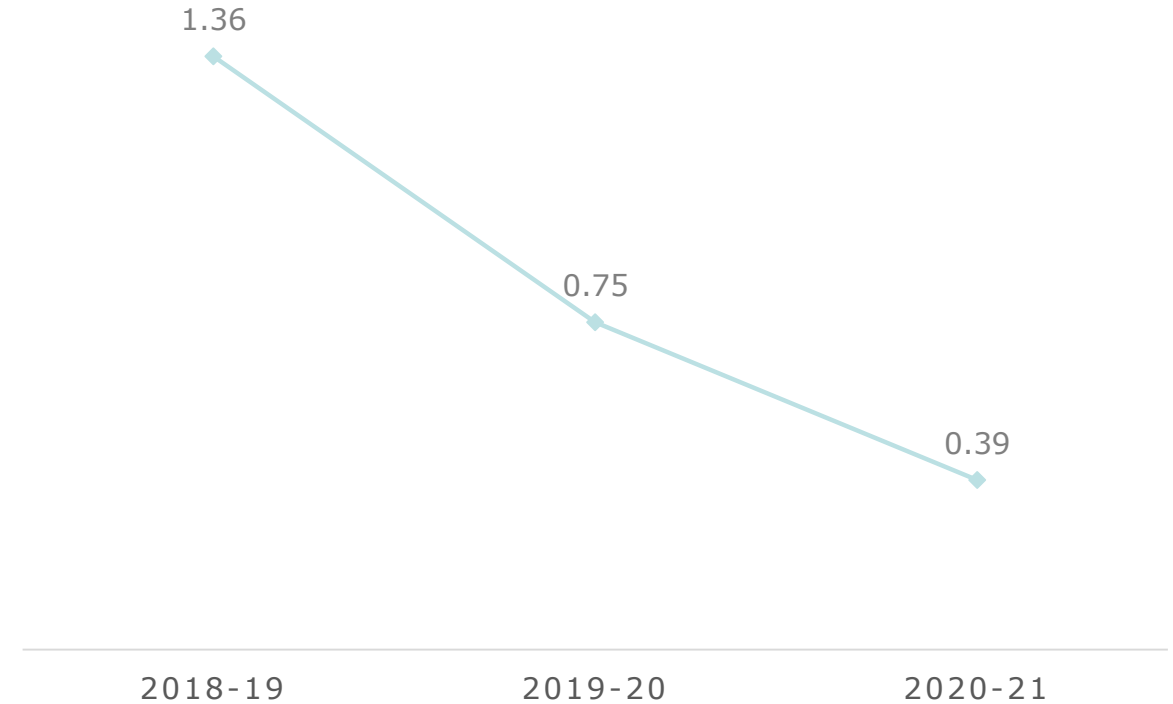
### Other Indirect Emission Scope 3

- Airlines emission (LTO, APU, Ground run up)
- Aircraft full flight emission
- Fuel emission from Ground handlers vehicle & equipment
- Emission from passengers airport access
- Emission from employee daily commute
- Emission from employee business travel
- CISF and other third party emission
- Electricity emission by concessionaires

Total Scope 1 &amp; 2 Emission



SPECIFIC GHG EMISSION (KGCO2/PAX)



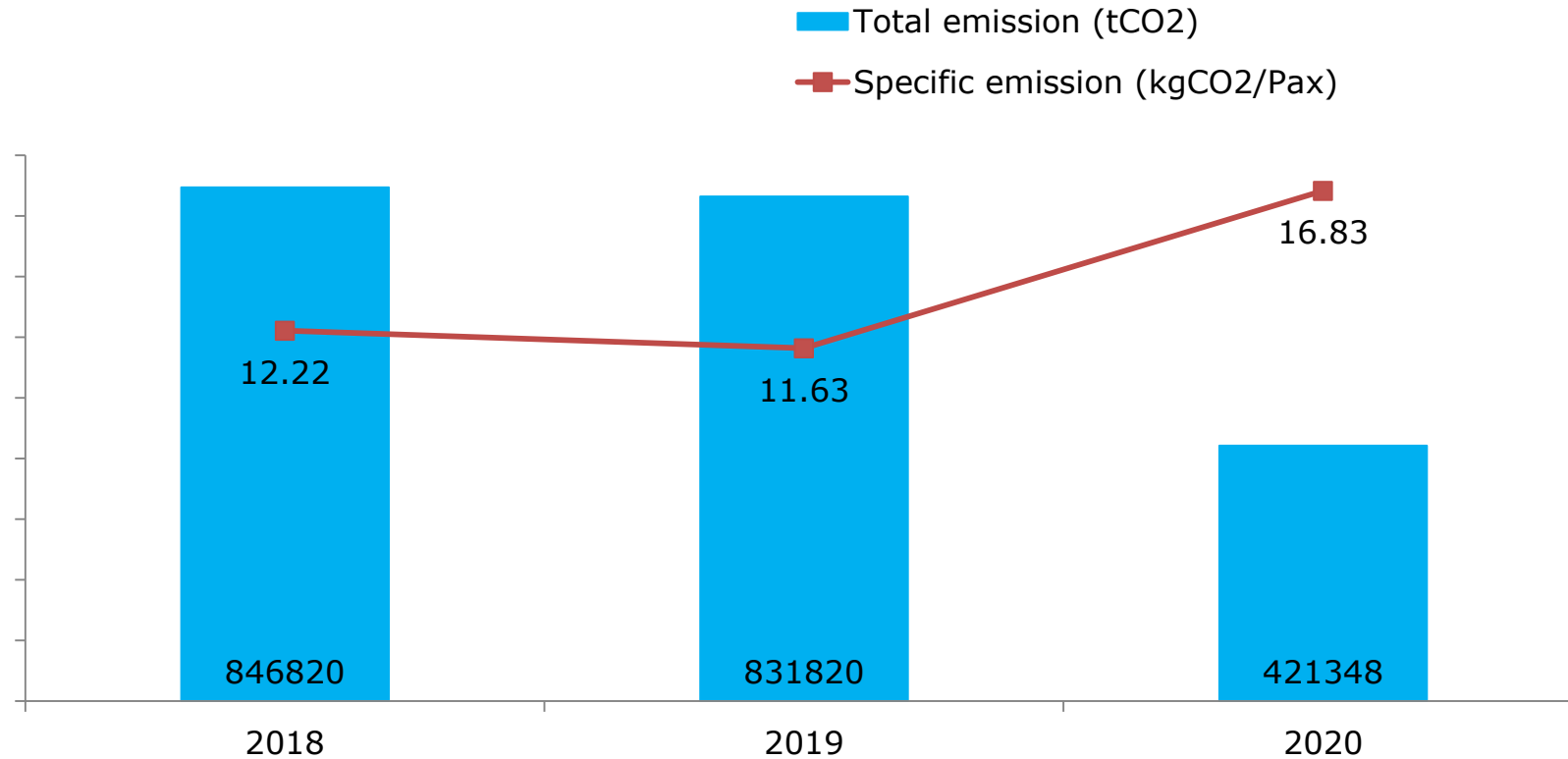
### What changed in 3 years ?

98% reduction in absolute GHG emission

71% reduction in Specific GHG emission



## Scope 3 Emission Trend



## What changed in 3 years ?

49% decrease in absolute scope 3 emission

45% increase in Specific Scope 3 emission

First Level 4+ Airport in Asia Pacific, 2020

Only the Second Airport globally to achieve this Level

Level 4+ achievement demonstrates DIAL's emission reduction target in line the **IPCC 1.5°C pathways**.  
Announcement by ACI on 13<sup>th</sup> Nov, 2020.



Achieve “zero carbon emission Airport” by 2030 and Continue Level 4+ (Transition) Accreditation under ACI’s Airport Carbon Accreditation program

**Energy Conservation & Efficiency**

**Develop Green Infrastructures**

**Use of renewable energy**

**Operational Excellence**

**Airlines Programs**

**Low Carbon Transport**

**Increased Sink**

**GHG Management and Airport Carbon Accreditation**

# Certifications



ISO 50001:2018



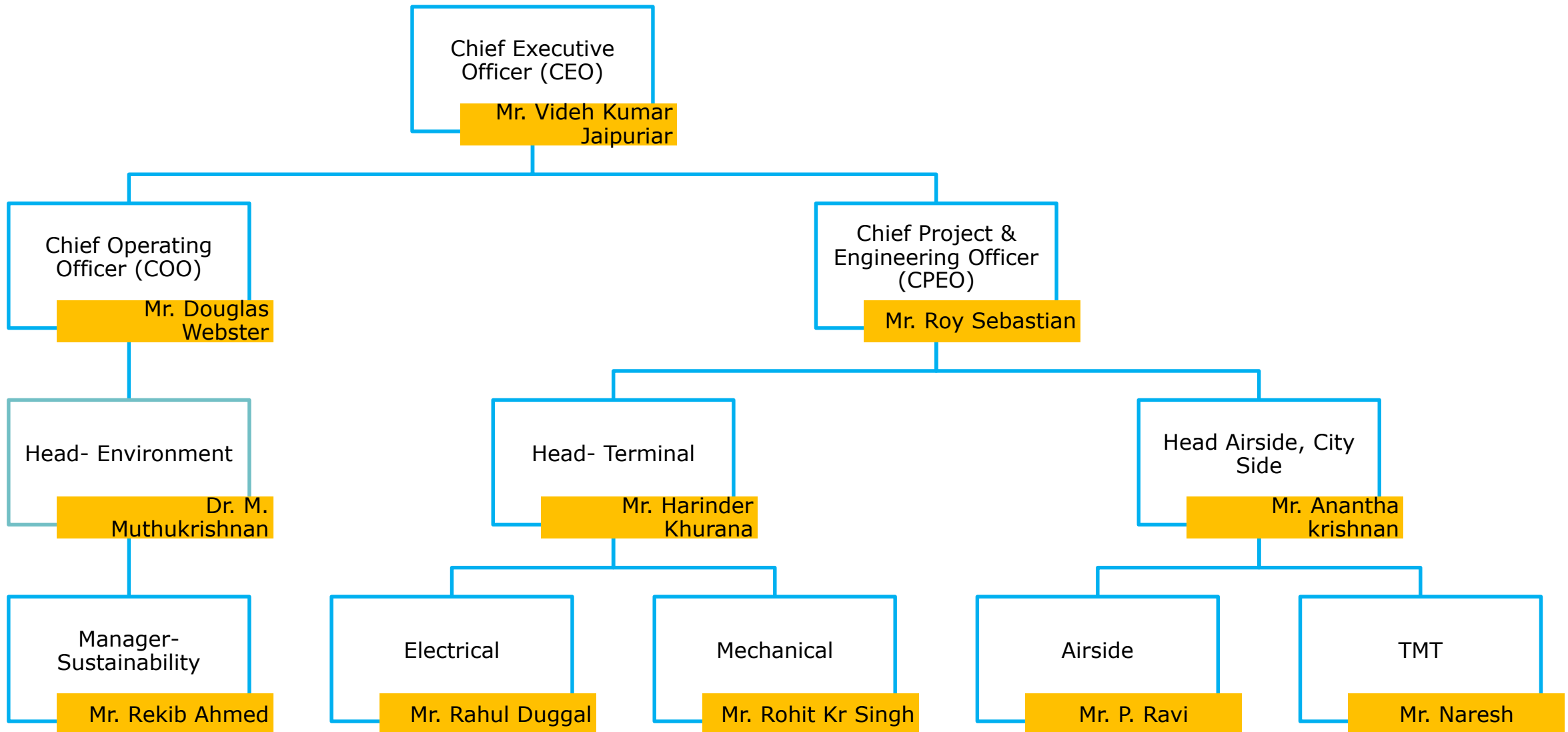
GreenCo Platinum



IGBC Platinum



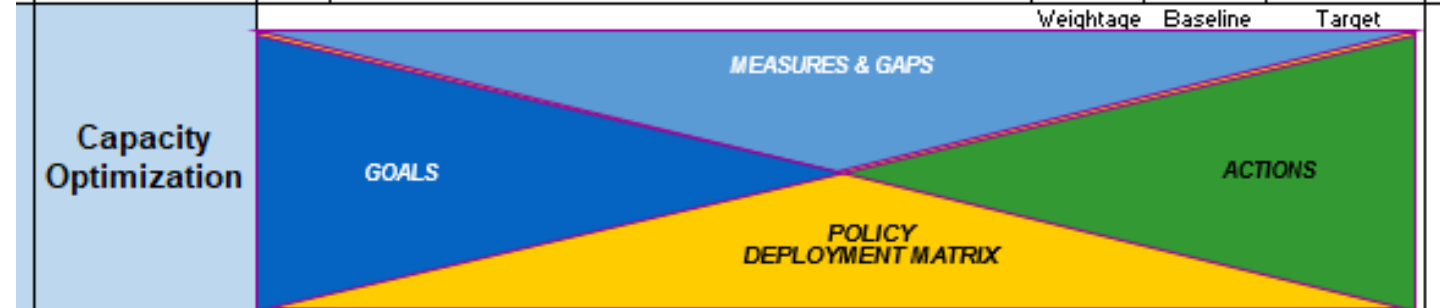
# CFT for Energy & Emission Management



# Goal Sheet of Top Management- CPEO

## CPEO PDM (FY 20)

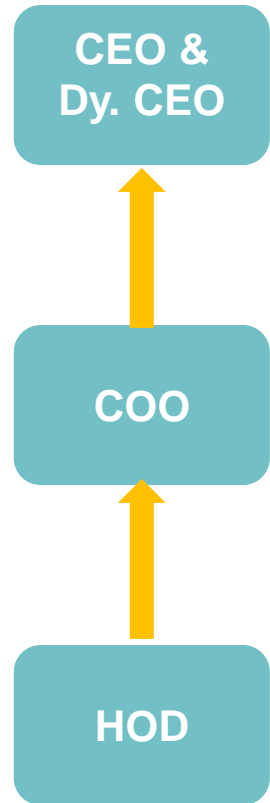
●	9	ASQ/ Skytrax Score	5%	4.999/ 59	4.999/ Top 30
○	8	BE Score	5%	592	615
○	7	Succession Planning (%)	5%	100	100
○	6	GPTW Score/ CSAT Score	10%	65% /4.21	65%+5% / 4.25
●	5	Implementation of initiatives on Cost Optimization (3 Nos) / Zero Tolerance Schemes(2 Nos) (%)	10%	100	100
●	4	Timely completion of parking stands L1-L2 & T2 Apron area ( 3 Code E + 7 Code C stands)	10%	100	100%
●	3	Special Initiatives (5 Nos)	20%	-	100%
○	2	Operating Expense (Rs. Cr)	20%	316	293.91*
●	1	Number Of Unplanned Disruptions impacting passengers	20%	0	0



# Goal Sheet of Top Management- COO



KPIs FY 20-21							
Sn	Strategic Objectives - OPS	KPIs	KPI lead	Baseline(FY19-20)	Target FY20-21	Metrics	Target
31	Sustain Profitability	Waste Recycle (Solid waste)	Muthu	3962 tonnes (100% dry waste recycled)	100% of dry waste	%	Mar, 2021
32	Stakeholder Engagement	Tenants inspected for environment compliance per hundred tenants	Muthu	All tenants are covered under all environmental compliance	100% All tenants to be covered through virtual engagement	%	Mar, 2021
33	Operational excellence	Clean fuel vehicles at the airport	Muthu	Vehicle Operation by Diesel and Petrol No Electric Vehicle	Minimum one vehicles to be Electric	Number	Mar, 2021
34	Operational excellence	Carbon footprint	Muthu	0.76 kgCO2/Pax	0.72 kgCO2/Pax	KgCO2/Pax	Mar, 2021
35	Operational excellence	Noise Study and Actions for Runway 11/29	Muthu	Compliance to Noise Mitigations	100 % Compliance to Noise Mitigation	%	Mar, 2021
36	Operational excellence	Environment violations- Number of NOVs	Muthu	Compliance to all environmental regulations	100 % Compliance to all regulations	%	Mar, 2021
37	Operational excellence	Environmental certifications	Muthu	Compliance to all certifications received	Compliance to Certificates - ISO 14001, ISO 14064, ACI-ACA, CAP 2 Degree	number	Mar, 2021
38	Sustain Profitability	Waste to Energy Plant	Muthu	70% of awarding contract is complete	100%	number	Mar, 2021
39	Sustain Profitability	Water Consumption	Muthu	30 litre/pax	30 Litre/Pax	number	Mar, 2021
40	Sustain Profitability	Environmental License Compliance	Muthu	100%	100%	%	Mar, 2021



Year	Training
2020-21	<ul style="list-style-type: none"> <li>❑ Training Program on Sustainability Management by CII-CESD</li> <li>❑ Knowledge sharing session with Stakeholders involving international aviation and sustainability experts</li> </ul>
2019-20	<ul style="list-style-type: none"> <li>❑ Knowledge sharing with AAI on Airport Carbon Accreditation &amp; Sustainability</li> <li>❑ Training on Environment Protection &amp; Sustainable Development in GMR Aviation Academy</li> <li>❑ Training on ISO 50001 Internal Auditor</li> <li>❑ Training on Energy Efficiency best practices</li> </ul>
2018-19	<ul style="list-style-type: none"> <li>❑ Training on LEEDOAI</li> <li>❑ Training on ISO 14001:2015 Lead Auditor</li> <li>❑ Training on ISO 50001:2018 Internal Auditor</li> <li>❑ Training on GHG Management</li> <li>❑ Training on Energy Efficiency Improvement</li> <li>❑ Knowledge sharing session with DLF Mall of India</li> </ul>







Excellent Energy Efficient Unit  
– 3<sup>rd</sup> year consecutively

National Energy Leader  
in Building sector



Dear Colleagues,

I am pleased to share that Delhi International Airport Limited has won the prestigious “**Excellent Energy Efficient Unit**” award at the National Awards for Excellence in Energy Management by CII – Green Business Centre (GBC).

It also received the “**National Energy Leader Award**” for the year 2020 which was the outcome of its consistent performance for the past three years.

The announcement was made by CII – GBC during a virtual Energy Award event for 2020 held on August 28, 2020.

The event was graced by Sri Ajay Misra, IAS, Special Chief Secretary, Department of Energy, Telangana State, Shri Abhay Bakre, Director General, Bureau of Energy Efficiency (BEE), Government of India and Mr Ravi Chandran Purushothaman, Chairman Energy Efficiency Council, CII-GBC & President Danfoss India.

The objective of this award is to recognize excellent energy-efficient companies and instill a sense of competition to motivate Indian industries to achieve energy excellence and promote sustainable development.

DIAL presented key energy-saving and emission reduction initiatives, innovative projects, and other environmental aspects such as waste and water management, climate change adaptation strategies, Oxygen Optimizer, UV Lamps in Re-circulated Air Handling Units and Customized Variable Frequency Drive integration with AHU without CMS. These initiatives were highly appreciated by all the jury members.

Along with DIAL, 52 other companies participated in the competition, out of which 27 companies were shortlisted for the presentation to the jury based on screening of initial applications. Among these shortlisted companies, DIAL was one of the few to receive the prestigious “**Excellent Energy Efficient Unit**” and “**National Energy Leader**” award.

Best Wishes

Vidheh Kumar Jaipuria  
CEO – DIAL



Excellent energy efficient unit 2018



Excellent energy efficient unit 2019



# CII 2019 – National Award for Excellence in Water Management



# Reward & Recognition for GMR Group & DIAL



**Green build Leadership Award by USGBC (2020)**



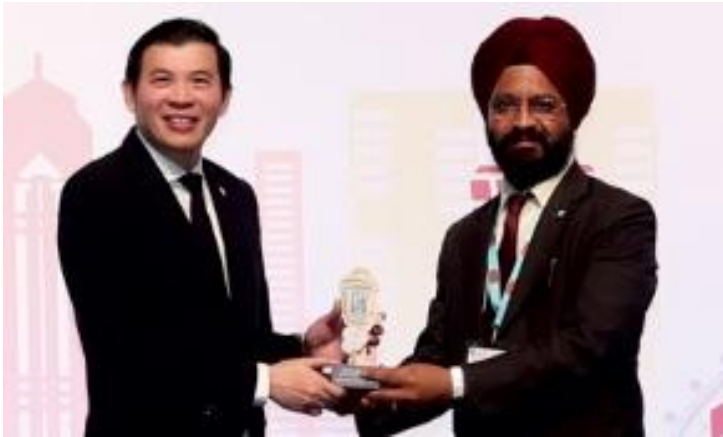
**ACI Asia Pacific Green Airport Recognition- Gold Level (2020)**



**"Climate Oriented" Company under "CAP 2.0" Program by CII (2019)**



**Most Innovative Project in CII National Award for Excellence in Energy Management (2019)**



**ACI Asia Pacific Green Airport Recognition- Platinum Level (2019)**



**ACI Asia Pacific Green Airport Recognition- Silver Level (2018)**

# Reward & Recognition for GMR Group & DIAL



**Wings India Award for 'Most Sustainable and Green Airport' (2018)**



**First Airport in the world to adopt Green Building Performance Monitoring Platform - ARC (2017)**



**First Carbon Neutral Airport in Asia Pacific Region (2016)**



**ACI Asia Pacific Green Airport Recognition- Gold Level (2017)**



**Green Company Platinum Level by CII-GBC (2016)**



**Indian Green Building Council (IGBC) Platinum Rating for Terminal 3 (2016)**



**Thank you**