Carbon Reduction Target covering Scope I & II Emissions

Our University has set a goal to reduce carbon emissions by 70% by the year 2050. To reach this goal, Various greenhouse gas (GHG) emission reduction programs are followed by KARE to mitigate the environmental impact and promote sustainability to reduce Greenhouse gas emission. The institution has established a system for the management of various wastes produced in the campus, to provide a clean environment through the concept of Reduce, Recycle, Reuse which in turn creates wealth and also supports wellbeing of students, faculty and staff and to enhance the quality of life within the campus and to the society. Wherever possible, the institution is committed to recycling those materials.

Here are some common programs and initiatives followed by KARE:

1. KARE is cutting down greenhouse gas (GHG) emissions within **Scope 1** by using biogas for heating. They are also reducing the need for electricity in cooling by using common **ventilation systems**. To lower emissions from transportation, the university operates common bus facility for faculty and staffs along with public transportation. Additionally, vehicle traffic within the campus is carefully controlled. These efforts help to minimize **transportation-related greenhouse gas emissions**, contributing to a cleaner and more sustainable campus environment. Additionally, solar panels on campus provide some of the energy needed.

2. KARE is situated in an area where a large **solar power plant** supplies electricity. This means that while KARE benefits from solar energy in the region, the electricity it uses isn't entirely purchased, the renewable is still involved in generating a portion of it. **(Scope 2)**

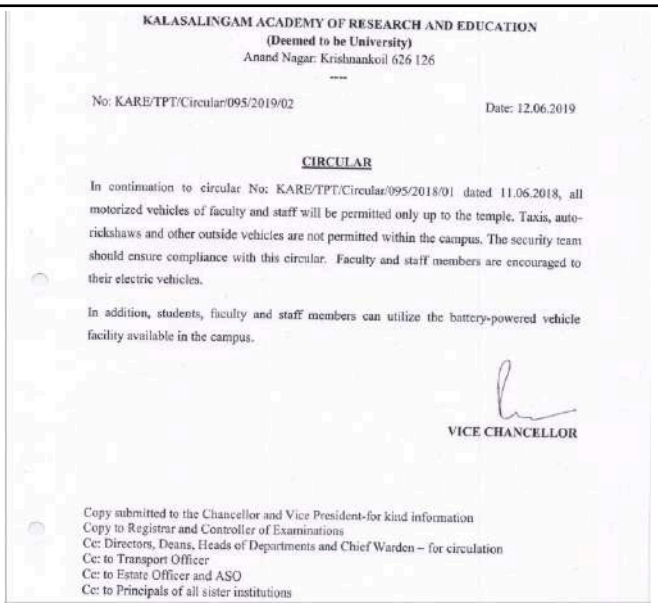
3. As part of the university's **zero waste program**, KARE aims to reduce emissions from solid waste. Through STP plan, the sewage water is utilized for garden irrigation and flushing the toilets. Through these initiatives, KARE is actively working to reduce its environmental impact and promote sustainability across various areas, including waste management, water usage, and transportation. **(Scope 3)**

Description:

Scope 1

1. KARE has established a public **transport policy** to facilitate the travel of students, staff using university operated vehicles. Two wheelers and 4 wheelers are prohibited from entering the campus except EV's to promote the use of bicycles or on foot at a short distance within the University to reduce fuel consumption and reduce carbon dioxide emissions.

https://kalasalingam.ac.in/wp-content/uploads/2021/11/Transportation-Policy.pdf



KALASALINGAM ACADEMY OF RESEARCH AND EDUCATION
(Deemed to be University)
Anand Nagar: Krishnankoil 626 126

No: KARE/TPT/Circular/095/2019/02 Date: 12.06.2019

CIRCULAR

In continuation to circular No: KARE/TPT/Circular/095/2018/01 dated 11.06.2018, all motorized vehicles of faculty and staff will be permitted only up to the temple. Taxis, auto-rickshaws and other outside vehicles are not permitted within the campus. The security team should ensure compliance with this circular. Faculty and staff members are encouraged to their electric vehicles.

In addition, students, faculty and staff members can utilize the battery-powered vehicle facility available in the campus.

VICE CHANCELLOR

Copy submitted to the Chancellor and Vice President-for kind information
Copy to Registrar and Controller of Examinations
Cc: Directors, Deans, Heads of Departments and Chief Warden – for circulation
Cc: to Transport Officer
Cc: to Estate Officer and ASO
Cc: to Principals of all sister institutions

Circular for Restricted Entry of Vehicles inside the campus (Scope 1)

Vehicle Entry Restricted Barricade

2. **Explicit policy on energy management.**

   KARE sees the importance of energy, which the university has a **policy on energy management**, as well as providing training to educate people about energy management to personnel, including students, to be aware and to comply correctly according to the principles. As a result, the University started use renewable energies through **solar plant, solar street lights, biogas.**

3. A plan to set up solar energy generation and battery storage charging stations for electric vehicles on campus.

Scope 2:

1. Utilization of Solar Energy in KARE (Energy Conservation)

To conserve electrical energy and to utilize it effectively, KARE has installed solar PV panels to the tune of 1124 kW in building rooftops. Power from solar PV panels shares about 45% of the total power consumption of KARE. As of now solar PV Panels generates about 39,10,216 kWh of energy. 4357 tons of CO_2 emissions are stopped, because of the installation of solar PV panels.

In addition, the setting up of 32 solar street lights of 25 watts and 120 solar street lights of 74 watts are also provides an environmentally friendly atmosphere. The details of the energy consumption of these solar installations in the KARE campus are given as follows:

Rooftop Solar plant

Solar street lighting arrangement in KARE

Scope 3:

Solid Waste Recycling System

Solid waste generated in the campus, is collected at various points as degradable and non-degradable waste using separate bins for collection. Sufficient number of collection bins is present throughout the campus. They are collected and brought to a central location by designated workers using trucks.

Food and Agricultural Waste Management

- **Vermicomposting:** Degradable agricultural residues and food wastes are converted into fertilizer using vermicomposting technology and it is being used for agriculture purposes. On an average 1.1 tons of waste per day is being recycled resulting in about 12 tons of compost. The institution uses this compost in the agriculture farm and also sells to the farmers at a nominal cost.
- **Door Panel from Waste Materials:** Coconut sheath fibers are used in preparing composite materials that can be moulded to prepare door panels which can be a replacement for plywood.
- **Biogas Plant:** Part of the hostel kitchens waste are used to feed the biogas plants and the biogas produced is used in cooking conserving the use of LPG.

Wood Waste Management

Waste Wood Ash generated is being used as a carrier for microbial inoculants that are used as bio fertilizers. This work is supported by a project sanctioned by DST through DST-SEED-STI Hub.

Construction Waste Management

Fly ash, marble dust, granite dust, Ground Granulated Blast-furnace Slag (GGBS), paper burnt ash and sugarcane bagasse ash are used as source materials for the manufacture of eco-friendly construction products such as concrete bricks and paver blocks.

Paper Waste Management

KARE is also partnering in WoW (Well-being Out of Waste), a National Recycling Initiative, by the ITC Ltd, by contributing 21,110 kg of paper waste for the recycling project, amounting to saving of 464 trees in a year.

Sanitary Napkin Incinerators

Sanitary Napkin Incinerators are provided in girls' common rooms and hostel rest rooms. They help in disposing the used napkins in an eco-friendly manner.

Vermicomposting

Biogas Plant

	
Side Door Panel Made from Waste Materials	Side Door Panel Made from Waste Materials Fixed in Door
	
Fermenter used to Produce Microbial Inoculants	Solid Biofertilizer
	
Geopolymer Intervention	Concrete Mixer

Concrete Paver Block Machine

Concrete Drop Weight Impact Testing Machine

Compression Testing Machine

Concrete Bricks in Different Models

NET

WOW
WELL BEING OUT OF WASTE

ITC
Enduring Value

WOW Enrolment / MOU

Having expressed willingness to join WOW – Well Being out of waste, A National Recycling Initiative by ITC Ltd – (Paperboards & Specialty Papers Division), whereas M/s Nish Elgha Technologies Private Ltd, renders operational /logistics support to team WOW. It is our privilege to associate with you on this recycling project from this 1st day of Sep 2018, initially for a period of one year, and extendable thereafter with mutual consent.

Whereas, M/s Kalasalingam University agreed to give away the "paper waste" generated from its offices in Chennai city to team WOW on a regular basis, for ensuring 'Recycling" at ITC's paper mills:

Name of the WOW Participant	M/s Kalasalingam University
Facility & Address	Anand Nagar , krishnankoil-626 126, Tamil Nadu, India.
Contact Person details	Dr.Pallikonda Rajasekaran - COE (94430 65795) Email - mp.raja@klu.ac.in
Contact person for waste pick up	Mr.K.Kalidoss (94433 44600)
Desired Pick up frequency	Monthly or as and when
Expected Quantity / month	
Agreed Value Payable	Rs. 8,000 PMT for Old Examination papers & Documents; (Condition: All Wastepaper must be + Dry fiberB Uncontaminated)
Desired Mode of Value payment(please choose)	Cheque
Contact person from WOW team	Contact Mr. R.Saravanan (98409 22432 / 044-2278 0899) for fixing collection schedules.

Team WOW Guarantees / Assures:

1. Our associate team from M/s Nish Elgha Technologies Private Ltd shall do periodical Pick up of wastepaper from your premises, duly weighing using electronic weighing scale.
2. Handing over collection challan mentioning quantity collected a basis document for Payments as above.
3. Collections & Payments shall be ensured by ITC's WOW associate M/s Nish Elgha Technologies Pvt Ltd
4. Shall provide "Destruction Certificate" issued by ITC Ltd as a proof of destruction for all sensitive documents/papers given strictly on case to case & as and when sought basis.
5. ITC Ltd (PSPD) shall issue annual "Recycling" certificate for the quantum of wastepaper you have enabled us to recycle mentioning Environment benefit you supported.
6. All the wastepaper given by a WOW client gets 100% recycled at ITC's own Paper/Paperboard Mill facility located at Coimbatore (Tamilnadu) & A.P State.

M/s Kalasalingam University to ensure that 'wastepaper' is given on scheduled collection day & not delay the Vehicle/Team unnecessarily causing severe cost burden on WOW project.

For TEAM WOW
9677330845

NISH ELGHA TECHNOLOGIES PVT LTD CHENNAI 600 073

AGREED & ACCEPTED
Dr. S. SARAVANASANKAR
Vice- Chancellor
Kalasalingam Academy of Research and Education
(Deemed to be University)
Anand Nagar, Krishnankoil – 626 126

6-E, Century Plaza, 560 Anna Salai, Teynampet, Chennai 600 018. Tel 044-2433 4640
Web: www.itcportal.com / www.itcppd.com
Operations at,651/3A, 14, Anjaneyar Kovil Street, Madampakkam, Chennai-600 073 Tel: 044-6521 3366

MoU copy on Paper waste management

Appreciation certificate for Recycling of Paper waste

	
Sanitary Napkin Incinerators	

following plans are suggested for Energy audit in our University campus:

Sl. No.	Phase	Activity	Tentative time	Responsibility
1.		Site visiting and data collection (various blocks, Hostels and central amenities)	Before the end of July 2025	EEE Faculty members, EEE students (II, III & IV years), Electrical Engineer & team
2.		Identification of possibility energy	Before the end of August 2025	EEE Faculty members, EEE

Sl. No.	Phase	Activity	Tentative time	Responsibility
		conservation in KARE		students (II, III & IV years), Electrical Engineer & team

3.		Draft report preparation	Before the end of September 2025	EEE Faculty members, EEE students (II, III & IV years), Electrical Engineer & team
4.		Action plan development	Before the end of October 2025	EEE Faculty members, Electrical Engineer & team, external body (if need)
5.		Budget submission for energy audit implementation in KARE campus	Before the end of November 2025	EEE Faculty members, Electrical Engineer & team, external body (if need)

IEEE Power and Energy Society Student Chapter, KARE organized **"AI Power 2025 – A Technical Conclave on AI for Sustainable Energy System"** during 29-30, March 2025. Around 75 participants attended this technical conclave.

Fig-1: AI Power 2025 – A Technical Conclave on AI for Sustainable Energy System

Two Days Empowerment Programme for **“EXSEL-Sustainable Energy System”** is organized by Department of Electrical and Electronics Engineering during 22-23, March 2025. Around 450 students from various department participated.

Fig2: Two Days Empowerment Programme for “EXSEL-Sustainable Energy System”

3. Webinar on **"Electrical Equipment Selection for Oil and Gas Industry",** conducted by IEEE Student Branch at Department of Electrical and Electronics Engineering, KARE on 24.2.2025.

Fig-3: Webinar on "Electrical Equipment Selection for Oil and Gas Industry

4. Dr. V. Prakash, Professor, EEE, Kalasalingam Academy of Research and Education, for serving as an expert resource person on **"Energy Audit, Water Audit in Operation & Maintenance of CWSS/UGSS, Usage of Water Meters including**

Smart Water Meters." for Assistant Executive Engineers, Assistant Engineers, and Junior Engineers of TWAD Board, Madurai, on 14.02.2025.

Fig-4: Dr. V. Prakash delivered a talk

EXSEL-Sustainable Energy System (Vertical) – SDG 7:

The faculty members in the Department of Electrical and Electronics Engineering are earmarked and assigned to the **EXSEL-Sustainable Energy System Vertical (SDG-7).** Under the Sustainable Energy System vertical, the following Problem Statements are framed based on industry & community needs and EEE faculty expertise.

S. No.	Name of the Faculty member	Sustainable Energy System (SDG 7) – Problem statement
1	Dr. K. Vijayakumar, Asso. Prof. & Head / EEE	Electric Vehicle Integration (E-Mobility)
2	Dr. D. Devaraj, Sr. Prof. / EEE	Microgrid System
3	Dr. A. Ramkumar, Prof. / EEE	Wind Energy Conversion System
4	Dr. V. Prakash, Prof. / EEE	Energy Efficient Devices / Energy Efficiency Improvement (Energy Savings)
5	Dr. P. Aruna Jeyanthy, Asso. Prof. / EEE	Solar PV System
6	Dr. K. Rajesh, Asso. Prof. / EEE	Energy Storage System

7	Dr. M. Krishna Paramathma, Asso. Prof. / EEE	Smart Building Energy Management

S. No.	Name of the Faculty member	Sustainable Energy System (SDG 7) – Problem statement
8	Dr. M. Karuppasamy Pandian, Asso. Prof. / EEE	Solar Optimizer for Remote Off-Grid Areas
9	Dr. S. Rajendran, Asso. Prof. / EEE	Solar Thermal Systems
10	Mr. A. S. Kamaraja, Asst. Prof. / EEE	Battery Management Systems and Modeling

Around 500 students from II year (in the category of **Design Build**) and 500 students from III year (in the category of **Design Build Operate**) are choosing the Sustainable Energy System Vertical. **In, Phase-I: Design Build**, students undergo selected courses and develop unique ideas and objectives for the problem statement. **In Phase-II: Design Build Operate**, students apply innovative approaches to transform their ideas into practical solutions and final products.

Summary of Initiatives:

A. Lighting, Fan, and Air Conditioning Systems

1. ***Energy Savings by Control of Fan Operation***

- **Approach:** Use of temperature sensors to regulate fan speed.
- **Impact:** Reduction of unnecessary fan usage during moderate temperatures. *2.*

Optimal Control of Air Conditioners

- **Approach:** IoT-based temperature regulation to optimize AC usage. ○ **Impact:** Enhanced thermal comfort with minimal energy waste.

3. ***Smart Lighting Systems***

- **Approach:** Occupancy-based lighting control using motion sensors. ○ **Impact:** Automatic shutdown of lights and fans in unoccupied rooms.

B. Academic Time Table Optimization

4. ***Weather Adaptive Time Table***

- **Approach:** Use AI-based weather prediction to align class schedules with peak renewable energy availability.
- **Impact:** Encourages maximum utilization of solar power during sunny hours. *5.*

Relating Time Table with Energy Usage

- **Approach:** Correlating classroom energy consumption with scheduling patterns.
- **Impact:** Identifies peak usage trends and proposes optimizations for cost savings.

C. Pump Systems

6. ***Energy Savings Using Variable Frequency Drives (VFD)***

- **Approach:** VFD-based control for cooling system pumps.
- **Impact:** Adjusts pump speed based on actual cooling requirements.

7. ***Time-Based Pump Operation***

- **Approach:** Automation to shift pump operation from peak to off-peak hours.
- **Impact:** Cost reduction through demand-side management.

D. Other Appliances

8. ***IoT-based Washing Machine Automation***

- **Approach:** Schedules operation during low-tariff periods.
- **Impact:** Reduces electricity bills and enhances energy awareness.

9. ***Induction Motor Efficiency Improvement***

- **Approach:** Switch from Delta to Star operation under low load conditions.
- **Impact:** Minimizes energy waste in lightly loaded motors.

4. Quantitative and Qualitative Outcomes:

- Real-time data collection for energy consumption monitoring.
- Increased awareness and involvement of students in sustainability practices.
- Prototype systems ready for deployment in other blocks or departments.
- Framework created for cost-benefit analysis of energy-saving technologies.

5. Conclusion and Future Scope:

The EXSEL student project initiatives represent a grassroots approach to achieving SDG 7 targets through hands-on engineering solutions. These interventions serve as both technical demonstrations and educational tools that promote sustainable practices. Future plans include integrating AI-based analytics, expanding IoT coverage, and sharing these models across the university campus for widespread energy savings.


KALASALINGAM
ACADEMY OF RESEARCH AND EDUCATION
(DEEMED TO BE UNIVERSITY)
VINTRA
Oct 18 & 19, 2024
School of Mechanical, Aero, Auto and Civil Engineering
Department of Civil Engineering
Contest on Carbon Neutral
"Turn Ideas Into Action for Cleaner Planet."
7 K
Event Description
Round wise Description
Event Venue and Time
For Registration

Objective:
The aim of the event is to encourage students to bring innovative solution for carbon related problems which is practical cost effective, viable and scalable.

Materials Provided:

Stationary items as per need

Event Details:

Number of Participants: 22
Number of Groups: 10
Carbon-neutral contest is to encourage individuals or organizations to reduce their carbon emissions to achieve a net-zero carbon footprint
Each team comprises maximum of three members. The students registered and attended from various branches such as Biotechnology, Civil, Mechanical, Electronics and Communication Engineering, Electrical and Electronics Engineering. Totally 10 teams are participated the event. As per instruction given in the brochure, the team brought the proto type model and presented the challenges related to carbon emission, carbon reduction and carbon capture. Dr.Naresh Kumar Sharma, Associate Professor from Biotechnology evaluated the concept, design of proto type model implementation, practical feasibility and innovation.

Conclusion
A carbon-neutral contest promotes environmental sustainability by encouraging participants to reduce their carbon emissions and adopt energy-efficient practices, which directly mitigates climate change. It cultivates innovation by motivating the development of new, scalable green technologies, while raising public awareness about the importance of carbon reduction. Additionally, the contest enhances the reputation of businesses or individuals committed to sustainability, encourage collaboration, and can influence positive policy changes, leading to a broader societal shift toward a low-carbon future.

List of Participants:

S. No	Reg. No.	Student Name	Department	Year
1	9923009004	Jonnalagadda Rishi Srinivas	Mechanical	II Year
2	9922003021	CK. Partha Saradhi	Civil	III Year
3	9923009056	Pallem Sridhar	Mechanical	I Year
4	9923009023	Kolisetty venkata sai manikanta chaitanya	Mechanical	II Year
5	9923009003	Bandreddy Gangadhar	Mechanical	II Year
6	9921005263	Tellabati Abhinav	ECE	IV Year

7	9922001064	Patil susmitha	Biotechnology	III Year
8	9922001113	B. Sreechandana	Biotechnology	III Year
9	9921005320	Ansel Tom orathel	ECE	IV Year
10	9921005310	Ganji Sankeerth	ECE	IV Year

11	9921005319	Venkat Ramanjaneyulu Indlacheruvu	ECE	IV Year
12	9922009030	D.Kishore Pandi	MECHANICAL	III Year
13	9921005243	Gopala Krishna Bathula	ECE	IV Year
14	9922005377	Puneeth Kumar P	ECE	III Year
15	9922005378	P.Ramanjaneyulu	ECE	III Year
16	9921006017	Sravan Kumar Marri	EEE	IV Year
17	9921005303	Syamakuri Viswanath Reddy	ECE	IV Year
18	9822003001	K.Yogeshwaran	Civil	IV Year
19	9921003002	Kiruthickraja B	Civil	IV Year
20	9522003010	Jeyasurya D	Civil	IV Year
21	9922001062	Neelam Veera Venkata Ratna Sai Prasad	Biotechnology	III Year
22	9922001102	P.Bhavana Reddy	Biotechnology	III Year

Winners

S. No	Reg. No.	Student Name	Department	Year	Winner Position	Prize Amount
1	9921006017	Sravan Kumar Marri	EEE	IV Year	**I**	3000
1	9921005263	Tellabati Abhinav	ECE			
2	9923009004	Jonnalagadda Rishi Srinivas	Mechanical	II Year	**II**	2500
2	9923009056	Pallem Sridhar	Mechanical			
2	9923009023	Kolisetty venkata sai manikanta chaitanya	Mechanical			
3	9922003021	CK. Partha Saradhi	Civil	III Year	**III**	1500
3	9922001102	P.Bhavana Reddy	Biotechnology			

1. Registered for Contest on Carbon Neutral

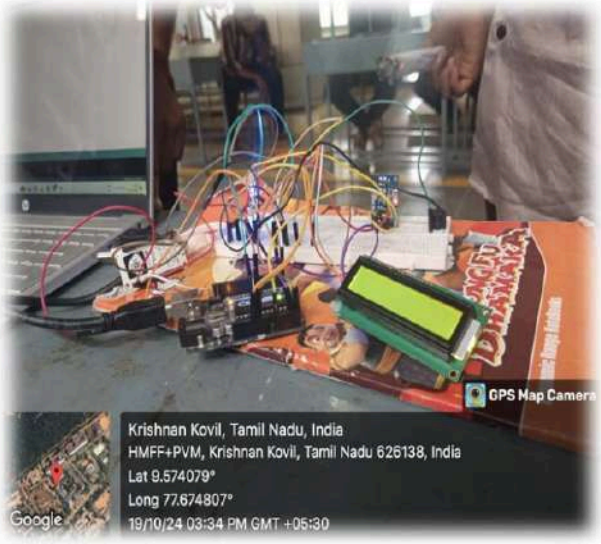
2. Demonstrating a biogas digester model

3. Prototype of biogas

4. Prototype of CO_2 Sensor detector

Photos (Non Geo-tag Photos)

1. Prototype of CO_2 Sensor detector



2. Demonstration of Dhoop from Flower Waste

3. Prototype of Pine apple peel wood

4. Demonstration of Replaced wood