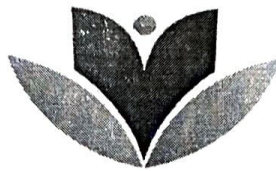


ENERGY, ENVIRONMENT & GREEN AUDIT – FOLLOW UP AUDIT

DETAILS OF THE CLIENT

**SRI KRISHNA COLLEGE OF
ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)**

Kuniamuthur, Coimbatore – 641 008, Tamil Nadu, India.



**SRI KRISHNA
INSTITUTIONS
COIMBATORE**

DATE OF AUDIT

03 JUNE 2024

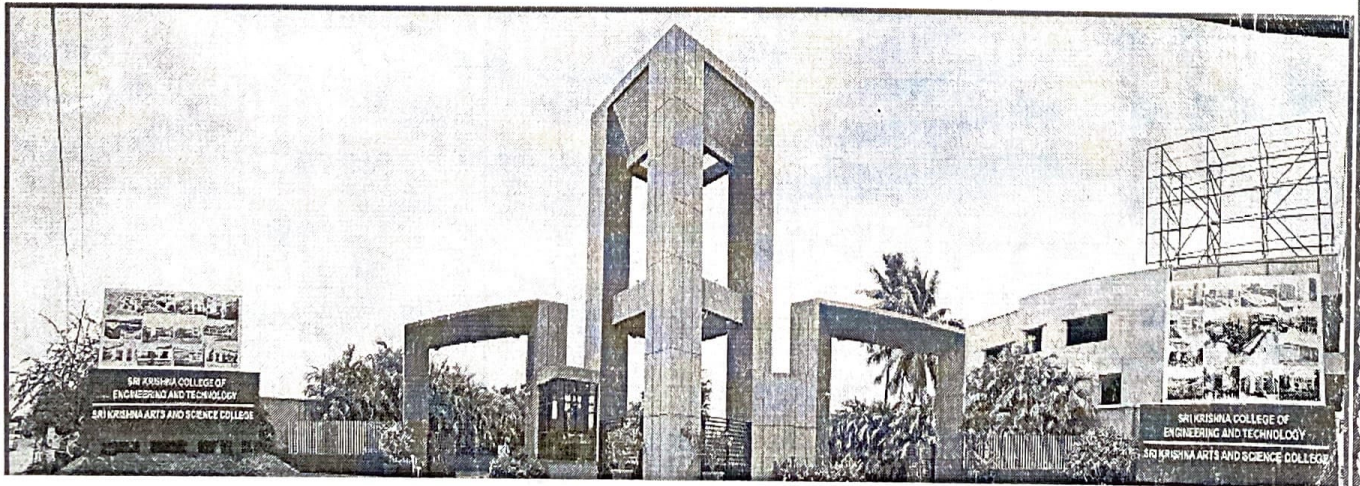
(Audited and Accounted from June 2023 to May 2024)

AUDIT CONDUCTED AND SUBMITTED BY

RAM-KALAM CENTRE FOR ENERGY CONSULTANCY AND TRAINING

(An ISO 9001 : 2025 Certified Company & Registered Under MSME, GoI)

Mobile: +91- 80567 19372, 99420 14544 (Whatsapp) E-mail: ramkalamcect@gmail.com



ENERGY, ENVIRONMENT & GREEN AUDIT – FOLLOW UP AUDIT

Details of the Client

SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

Kuniamuthur, Coimbatore – 641 008, Tamil Nadu, India.

1. ACKNOWLEDGEMENT

Energy Earns or Simply Burns: Choice is yours....

ACKNOWLEDGEMENT

RAM KALAM CENTRE FOR ENERGY CONSULTANCY AND TRAINING Coimbatore - 641 062 is thankful to the Management, Faculty and Technical team members of M/s. SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY, Kuniamuthur, Coimbatore - 641 008, Tamil Nadu, India for providing an opportunity to conduct the follow-up Energy, Environment and Green Audit for college promises.

It is our great pleasure which must be recorded here that the management of M/s. SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY all possible support and assistance resulting in expeditious completion of the audit process. The audit team appreciates the cooperation and guidance extended during course of site visit and measurements. We are also thankful to the all those who gave us the necessary inputs and information to carry out this very vital exercise of green audit.

Finally, we offer our sincere thanks to all the members in the engineering division/ technical/non-technical and office members who were directly and indirectly involved with us during collection of data and conducting field measurements.

<u>Management Team Members</u>	
Smt. S. MALARVIZHI	Chairperson and Managing Trustee
Sri. K. ADITHYA	Trustee
Dr. K. SUNDARARAMAN	Chief Executive Officer
Dr. S. SOPHIA	Principal
<u>Audit Team Member</u>	
Dr. S.R. SIVARASU	BEE Certified Energy Auditor (EA-27299) Lead Auditor-ISO-14001:2015 (EMS), IGBC AP, GRIHA CP Email: ramkalamcect@gmail.com Mobile: 80567 19372, 99420 29372

ENERGY, ENVIRONMENT & GREEN AUDIT – FOLLOW UP AUDIT

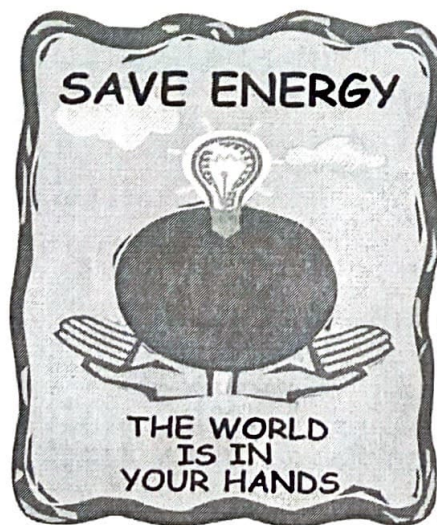
Details of the Client

SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

Kuniamuthur, Coimbatore – 641 008, Tamil Nadu, India.

2. INTRODUCTION TO ENERGY-ENVIRONMENT-GREEN AUDIT PROCESS



2.1: Preface about the Institution:

- ➔ Sri Krishna College of Engineering and Technology is the most sought after Institution among the premier technical Institutions in South India. Since its establishment in the year 1998, the Institution has marched towards the pinnacle of glory through its remarkable achievements in the field of Engineering Education.
- ➔ It is an Autonomous Institution, Affiliated to Anna University with 7 programmes being accredited by NBA and it offers 11 UG programmes, 4 PG programmes, 1 integrated programme and 8 research programmes.
- ➔ The Institution offers an exciting academic environment with well qualified dedicated faculty members to inspire and nurture the student fraternity.
- ➔ With industry drafted Choice Based Credit System (CBCS) curriculum and syllabi, the Institution takes every effort to bring its students to the forefront of the society as skilful and responsible engineers.

2.2: Vision:

- To Produce Globally Competitive Engineers with High Ethical Values and Social Responsibilities.

2.3: Mission:

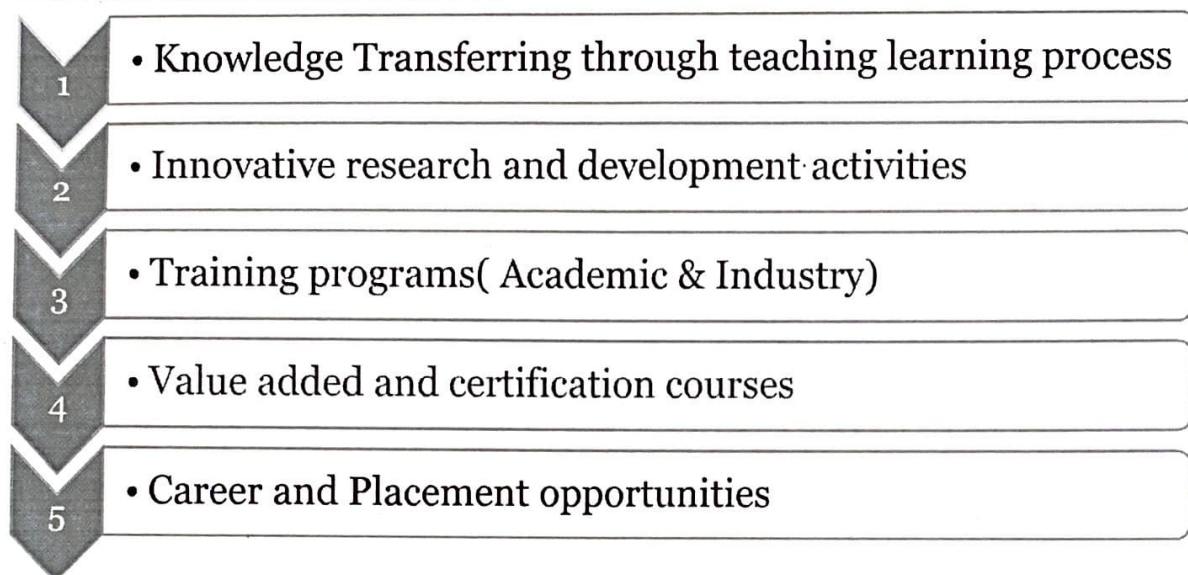
- To impart highest quality state-of-the-art technical education by providing impetus to innovation, Research and Development and empowering students with Entrepreneurship skills.
- To instil ethical values, imbibe a sense of social responsibility and strive for societal wellbeing.
- To identify needs of society and offer sustainable solutions through outreach programs.

2.4: Quality Policy:

We are committed to produce globally competitive and ethical Engineers through

- Innovative Teaching Learning Process
- Accelerated Research
- Industry Based Curriculum
- Practicing Moral and Ethical Values
- Continuous Process Improvement

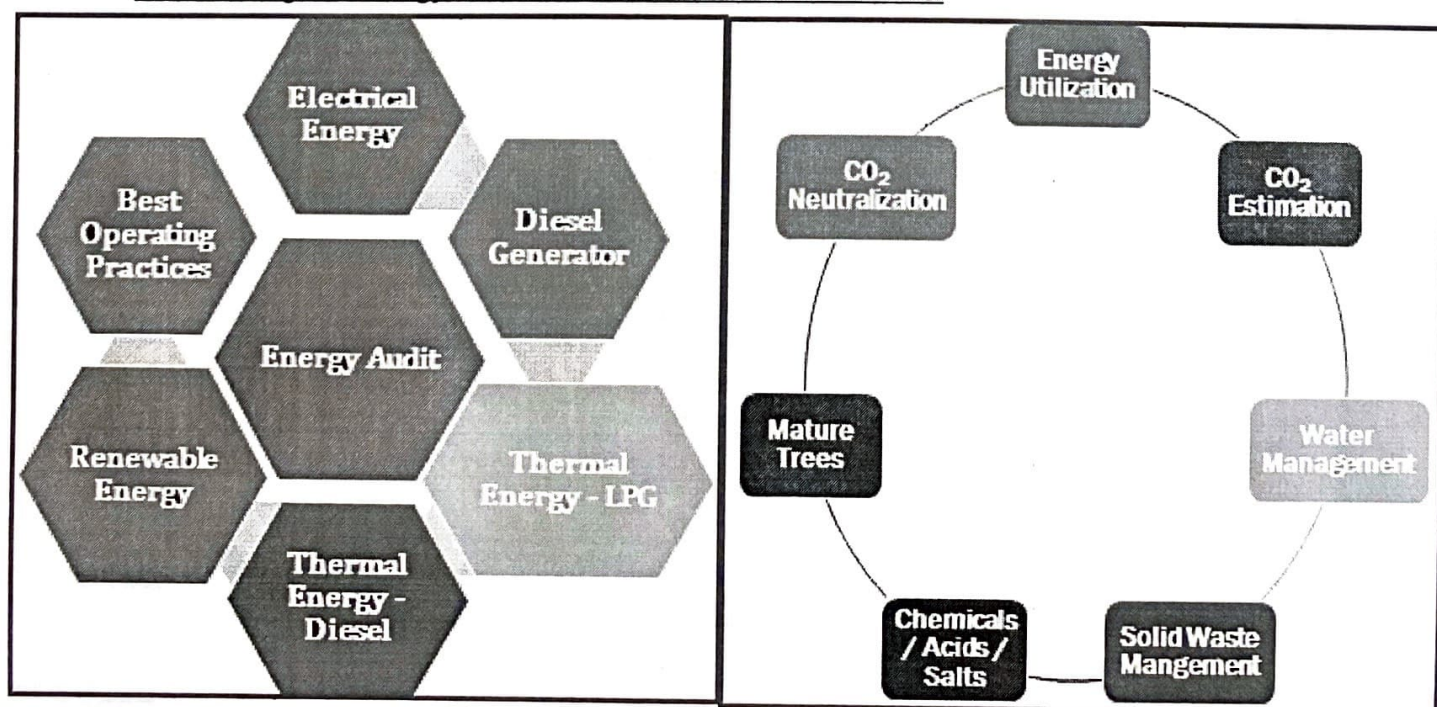
2.4: Major Activities in the Institution:



2.5: Scope of the Audit Process:

- **Energy Audit:** To conduct a detailed energy audit in the college campus with a main focus to identify judicious usage of electrical and thermal energy (where, when, why and how energy is being utilized).
- **Environmental Audit:** Identification of history of activities, present environmental practices followed, monitoring records and known sources of environmental issues inside the college.
- **Green Audit:** Assessment on Campus greenery in terms of mature trees, flowering shrubs, bushes, medicinal plants, adoption of green energy generation and utilization, reduction of CO₂ due to green energy system and identification of possible implementation and enhancement of current greenery practices.

2.6: Coverage in Energy, Environment & Green Audit Process:



ENERGY, ENVIRONMENT & GREEN AUDIT – FOLLOW UP AUDIT

Details of the Client

SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

Kuniamuthur, Coimbatore – 641 008, Tamil Nadu, India.

3. ESTIMATION OF CO₂ EMISSION & NEUTRALIZATION (CO₂ BALANCE SHEET)

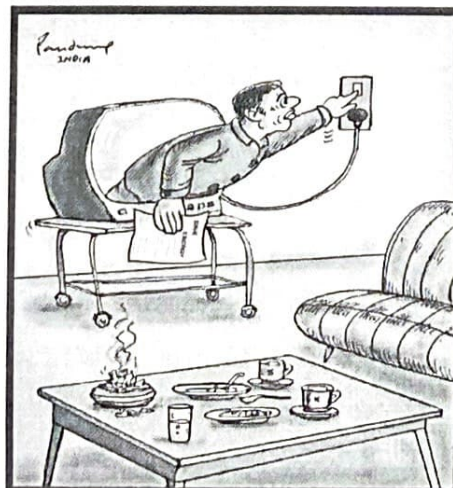


Table-1 shows the types of energy carriers used for their regular operation in the college campus along with application area and their source.

Table-1: Energy Carriers, Application area and their sources used for Colle

S. No.	Type of Energy Carrier	Application Area	Source of Procurement
1.	Electricity (HT Service)	Powering to all electrical / electronic / HVAC equipment's	From TANGEDCO
2.	Diesel	Transport vehicles and Diesel Generator (Captive Generation)	From authorised distributor
3.	Liquefied Petroleum Gas (LPG)	Used only for cooking	
4.	Mature Trees, Bushes & shrubs	The college has nearly 7,925 mature trees of different varieties which are more than 10 years old.	

Table-2: Analysis of Annual Energy Consumption of all types of Fuels

S. No.	Month	Electricity Consumption (kWh)	LPG Consumed (kg)	Diesel Consumed (L)		
				DG	Transport	Total
1.	Jun-23	2,18,628	950	1,510	4,100	5,610
2.	Jul-23	2,19,657	1,140	2,270	4,220	6,490
3.	Aug-23	2,53,347	1,330	740	4,370	5,110
4.	Sep-23	2,31,401	1,235	4,500	4,300	8,800
5.	Oct-23	2,53,546	1,140	1,530	3,870	5,400
6.	Nov-22	2,30,488	1,235	1,740	4,150	5,890
7.	Dec-22	2,42,670	1,330	1,170	4,300	5,470
8.	Jan-24	2,14,607	1,330	2,520	4,370	6,890
9.	Feb-24	2,43,124	1,235	2,480	4,350	6,830
10.	Mar-24	2,99,361	1,235	2,310	4,260	6,570
11.	Apr-24	2,59,078	1,425	1,500	4,370	5,870
12.	May-24	1,67,312	570	1,050	4,100	5,150
Total		28,33,219	14,155	23,320	50,760	74,080

- The cost of the electricity is Rs. 11.40 /kWh.
- The cost of the LPG is Rs. 100.0/kg
- The average Unit Per Litre (UPL) of the DG is 3.1 kWh/Litre of Diesel.

3.2: Environmental System: CO₂ Balance Sheet (2022-23):

Table-3: CO₂ Balance Sheet Indicating its Emission and Neutralization

3.2: Environmental Systems

Table-3: CO₂ Balance Sheet Indicating its Emission and Neutralization

S. No.	Energy Consumption & CO ₂ Emission (Tons/Annum)			CO ₂ Neutralization (Tons/Annum)		
	Description	Parameters	CO ₂ Emission	Description	Parameters	CO ₂ Neutralized
1.	Electricity	28,33,219 kWh	2,323.2	Solar Thermal ¹	2,17,000 kWh	177.9
2.	Diesel	74,080 Litres	195.6	Mature Tree	7,925 Nos	172.8
3.	LPG	14155 kg	42.5	DG	70,832 kWh	58.1
Cumulative Emission			2,561.3	Cumulative Neutralized		408.8
Net amount of CO ₂ to be neutralized is 2,152.5 Tons/Annum						
(¹ Electrical equivalent is considered)						

3.3: Calculation Table:

For Electricity = $\left[\text{kWh} \times \frac{0.82 \text{ kg of CO}_2 \text{ emission}}{\text{kWh}} \right]$
For Diesel = $\left[\text{Diesel Consumption (Litre)} \times \frac{2.64 \text{ kg of CO}_2 \text{ emission}}{\text{Litre of Fuel Consumption}} \right]$
For LPG = $\left[\text{LPG Consumption (kg)} \times \frac{3.0 \text{ kg of CO}_2 \text{ emission}}{\text{kg of LPG Consumption}} \right]$
A mature tree is able to absorb nearly CO ₂ at a rate of 21.8 kg/annum; $\frac{(21.8 \times 7925)}{1,000} =$
172.8 $\frac{\text{Tons}}{\text{Annum}}$

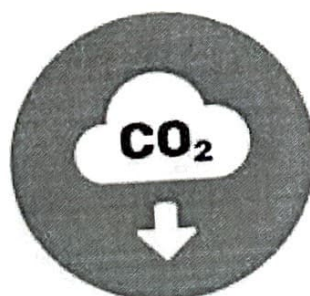
3.4: References:

¹ <https://ecoscore.be/en/info/ecoscore/co2>

³ <http://www.tenmilliontrees.org/trees/#:~:text=A%20mature%20tree%20absorbs%20carbon,t he%20average%20car's%20annual%20mileage>



CO₂ Emission:
2,561.3 Tons/Annum



CO₂ Reduction
408.8 Tons/Annum



CO₂ to be Neutralized
2,152.5 Tons/Annum

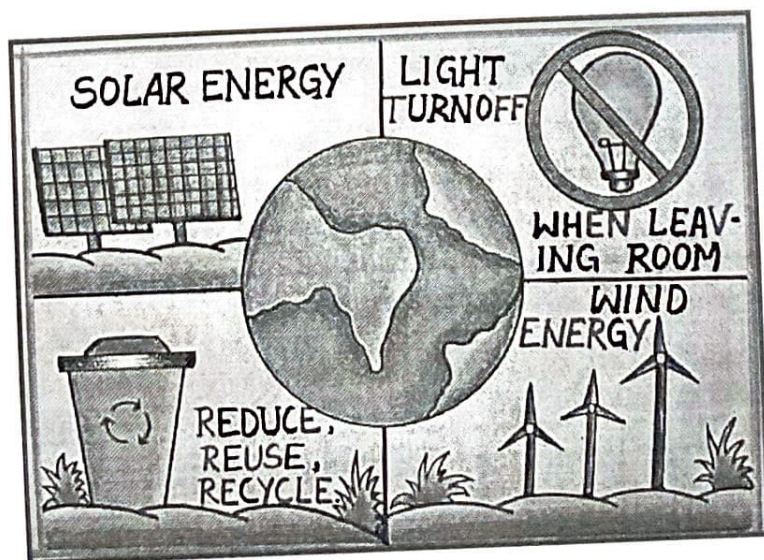
ENERGY, ENVIRONMENT & GREEN AUDIT - FOLLOW UP AUDIT

Details of the Client

SRI KRISHNA COLLEGE OF
ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

Kuniamuthur, Coimbatore - 641 008, Tamil Nadu, India.

4. ACTIVITIES COMPLETED & RECOMMENDATIONS

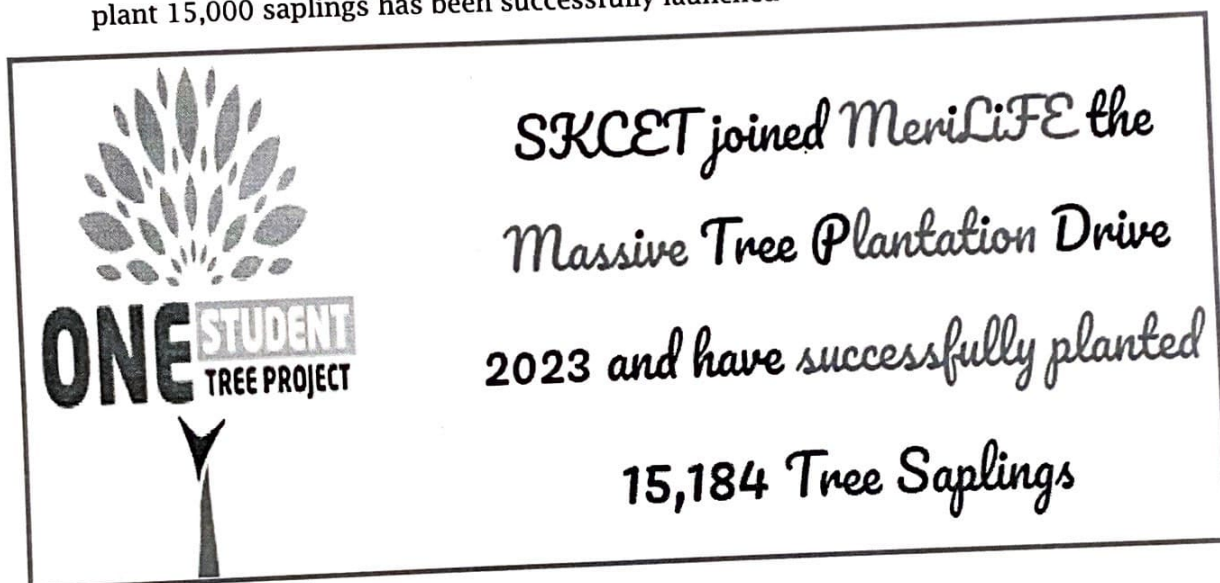


4.1: ACTIVITIES COMPLETED:

The audit team appreciates that the management of SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY has taken several measures to save energy and to protect the environment inside the college campus. The followings are the activities completed accounted for the last one year.

A. One Student - One Tree Campaign:

- ➔ Sapling plantation is not merely a symbolic gesture; it is a concrete step towards safeguarding the environment and ensuring a sustainable future. The significance of trees in maintaining ecological balance, mitigating climate change, and fostering biodiversity cannot be overstated.
- ➔ In line with the Hon'ble Prime Minister's idea of a green and healthy environment initiative the 'One student - One tree 2023' campaign, a mega plantation drive to plant 15,000 saplings has been successfully launched



B. Monitoring the growth of the plants via QR codes:

- Several new species of plants and trees are also planted to honor dignitaries who visit the campus. Go-Green certificates with QR codes are also given to the dignitaries to view and monitor the growth of the plant.

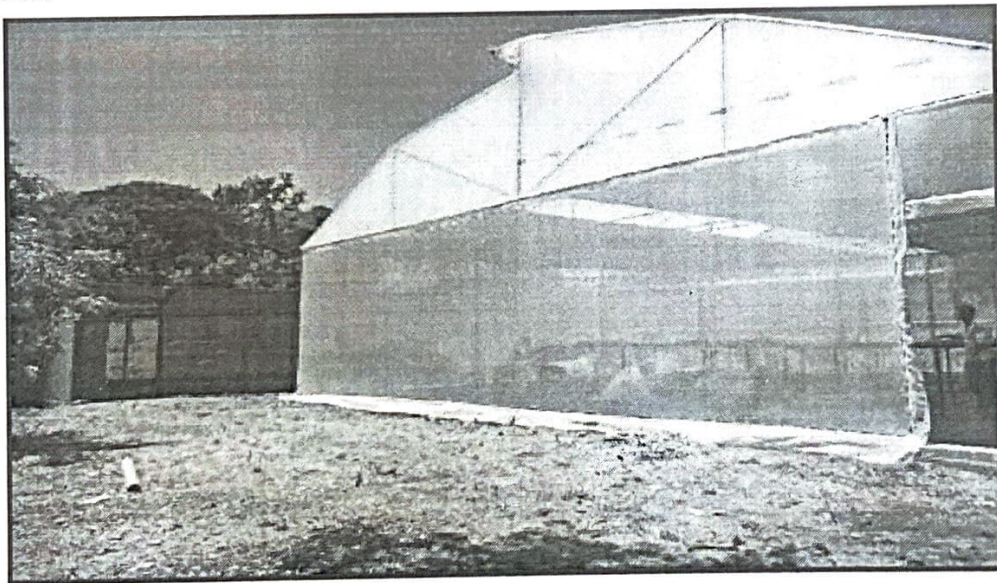
C. Greenhouse Crop Cultivation at SKCET:

- ✓ A 12 cent Smart polyhouse actively functioning at SKCET, serves as a wonderful place for students to learn the art of loving nature.
- ✓ Students are trained to do the cultivation, and students are actively involved in the monitoring of the growth of the plants.
- ✓ Crops like tomato and green chilly are cultivated in the smart polyhouse. Recently, 68 Kgs of Green Chilli harvested in two cycles was handed over to the public.
- ✓ Also around 400 Chilli and tomato plants have been handed over to the public and faculty of SKCET



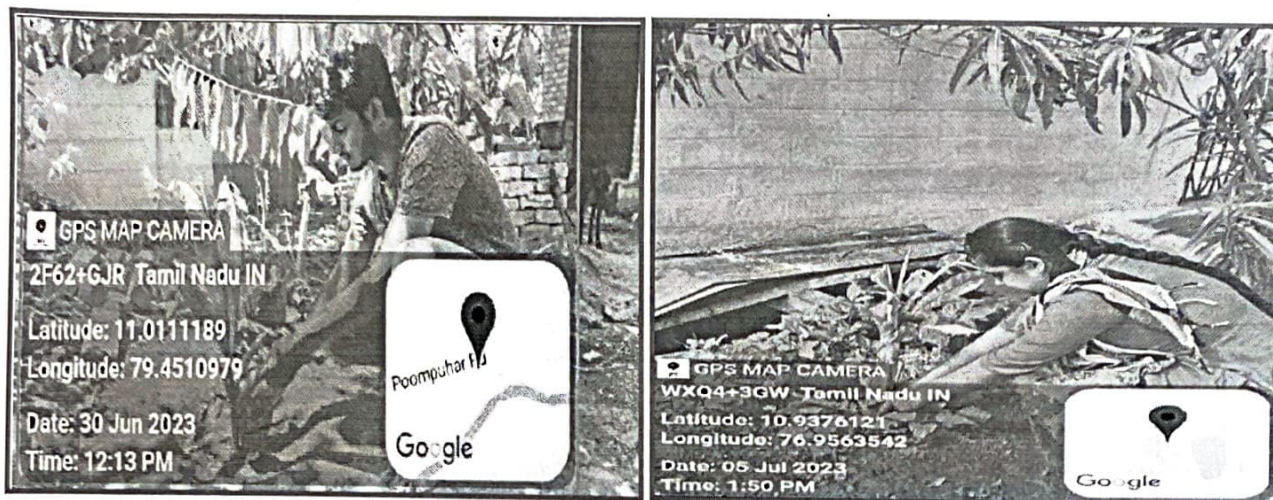
D. Greenhouse tree seedling Growing:

- A 5 cent greenhouse actively functioning at SKCET, cultivates healthy tree saplings which is then distributed to the nearby villages.
- In this this year around 2,000 tree saplings have been successfully grown and distributed to the nearby villages to promote afforestation and preserve mother earth.



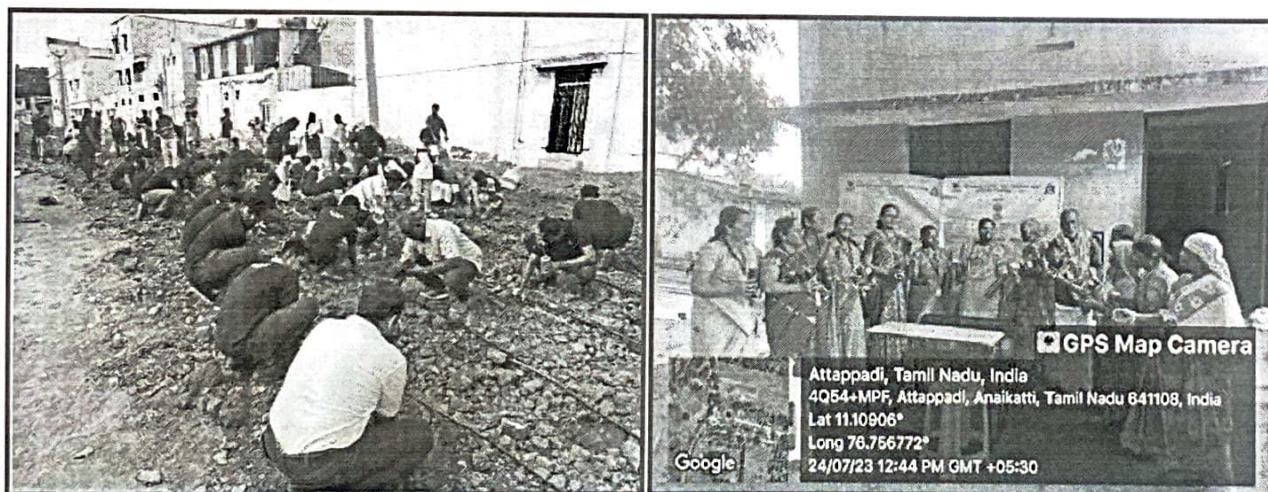
E. My earth - My responsibility- Students growing plants in their houses:

- Involving students in tree plantation projects not only benefits the environment but also nurtures a generation of environmentally responsible and conscious individuals who will contribute positively to society and the planet's future.
- Students of SKCET planted 4,032 saplings in their residence to combat desertification and drought and inspire others in the community to take action as well.



F. Distribution of Saplings and planting of sapling at Selvapuram, Attapadi, Anaikatti, Coimbatore:

- As a part of the **One Student - One Tree** campaign, World Environment Day was celebrated on 5th of June that encourages awareness and action for the protection of the environment.
- Our students actively participated and planted around **600 saplings** at Selvapuram and **1,000 saplings** in Attapadi, Anaikatti village.

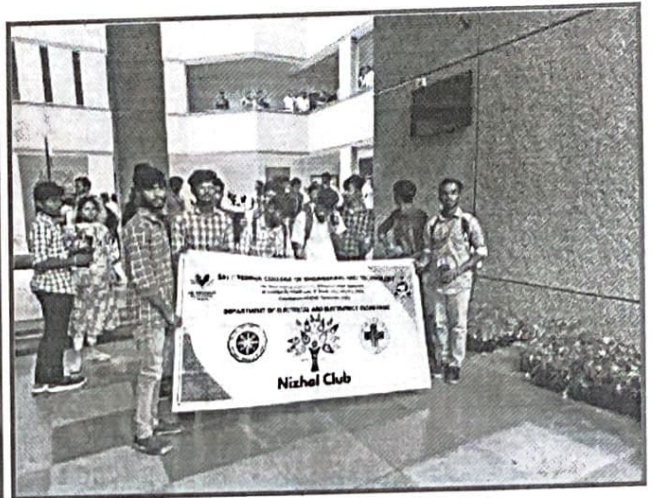


G. Awareness Campaign and Distribution of Saplings to school students:

- Around **500 Saplings** were distributed to the students of the Government school at Mayilkal, Coimbatore.

H. Awareness Campaign, Sapling distribution and plantation at Palathurai Village, Coimbatore:

Sri Krishna College of Engineering and Technology, Coimbatore under the National Service Scheme organized a tree plantation drive at Palathurai Village in Coimbatore and planted more than **400 trees** in and around the village.



I. Mega Tree Sapling Plantation:

- Around 6,000 tree saplings were planted by the students of SKCET in Maikkal to Sundarapuram near Pillayarapuram, Coimbatore using the Miyawaki Method.
- The Miyawaki Method of cultivation has been implemented to create dense forests with native plants. It gained popularity worldwide as a sustainable and effective way to restore degraded lands, create urban green spaces, combat climate change, and enhance biodiversity.
- It has been implemented in various countries and has shown promising results in terms of rapid growth and ecosystem restoration.



J: List of Trees:

- Criteria of Choice: Careful selection of trees for this mega plantation drive of 15,184 saplings was done based on their pollution tolerance level and ascorbic acid index with focus on minimum water consumption.
- The following trees which are helpful to mankind in several ways are selected and planted.
 - Kumil Tree
 - Magilam Tree
 - Nagalinga Tree

- Neem Tree
- Tamarind Tree
- Naval Tree
- Badam Tree
- Mahogany
- Silver Oak Tree
- Vengai Tree
- Peepal Tree
- Ashoka tree
- Poonga Oil Tree
- Poovarasam Tree
- Mullu Murungai Tree
- Kattu Nelikai Tree

K: Milestones towards a Greener Nation:

- ➔ 10,050 tree saplings planted in the mega plantation drive at SKCET yielded the “National Third Rank” for the One Student-One Tree Initiative 2019 Jal Shakti Abhiyan .
- ➔ SKCET was Conferred with Second National Rank in SWACHH Campus Rankings 2018 and in 2019 amongst the Higher Educational Institutions in the country by the Ministry of Human Resource Development, Government of India.





4.2: RECOMMENDATIONS:

- Prepare a schedule to clean the air filters of AC indoor units at regular intervals
- Measure the earth resistance at regular interval and maintain within the standard.
- Voltage drop at the load end can be improved by load end capacitors compensation
- Battery voltage of each UPS must be measured and monitored.
- Prepare and adhere a cleaning schedule for UPS
- Conduct awareness programmes on Energy Conservation to all the stake holders.
- Foot valve of all the submersible and open well pipes must be cleaned at regular intervals and this ensure i) free flow of water and ii) reduced power consumption.

Audit Conducted and Verified by,

S.R. Sivarasu

Dr. S.R. SIVARASU

BEE Certified Energy Auditor (EA-27299)

Lead Auditor – ISO 14001: EMS; IGBC AP, GRIHA CP

CII Certified Professional in SWM

ISO-14064: Implementor & Auditor - Carbon Footprint Management

COMPLETION OF THE REPORT

This report is prepared as a part of the Follow-Up Energy, Environment and Green Audit process conducted at M/s. SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS), Kuniamuthur, Coimbatore - 641 008, Tamil Nadu, India by RAM-KALAM CENTRE FOR ENERGY CONSULTANCY AND TRAINING, Coimbatore-641 062, Tamilnadu, India.

**ENERGY, ENVIRONMENT &
GREEN AUDIT – FOLLOW UP AUDIT**

Details of the Client

**SRI KRISHNA COLLEGE OF
ENGINEERING AND TECHNOLOGY**

(AUTONOMOUS)

Kuniamuthur, Coimbatore – 641 008, Tamil Nadu, India.

**ANNEXURE:
AUTHORISED CERTIFICATES OF THE AUDITOR**

A Thing which Burns Never Returns....

CERTIFICATE

The Certification Body
of TÜV SÜD South Asia Private Limited
certifies that



**M/S RAMKALAM CENTRE FOR ENERGY
CONSULTANCY & TRAINING**
No.8, VPK Garden, Velanaipatti, Coimbatore – 641 062, India

has implemented Quality Management System
in accordance with **ISO 9001:2015**
for the scope of

**Providing Energy, Environment, Green audits to industry,
Academic institutions and organizations**

The certificate is valid from **2023-11-22** until **2026-11-21**

Subject to successful completion of annual periodic audits

The present status of this certificate can be obtained through TÜV SÜD website by scanning below QR code and by entering the certificate number (without spaces) on web page. Further clarifications regarding the status & scope of this certificate may be obtained by consulting the certification body at info.in@tuvsud.com

Certificate Registration No. **99 100 23573**

Date of Initial certification: **2023-11-22**

Issue Date: **2023-11-22 Rev. 00**



Rahul Kale
Head of Certification Body
of TÜV SÜD South Asia Private Limited,
Mumbai
Member of TÜV SÜD Group



Reg No.: EA-27299



Certificate No.: 9645/19

National Productivity Council
(National Certifying Agency)
PROVISIONAL CERTIFICATE

This is to certify that **SIVARASU SULUR RATHINAVELU**
P RATHINAVELU
son / daughter of Mr. has passed the National certification
Examination for Energy Auditors held in September 2018, conducted on behalf of the Bureau of Energy Efficiency,
Ministry of Power, Government of India. He / She is qualified as **Certified Energy Manager** as well as
Certified Energy Auditor.

He / She shall be entitled to practice as Energy Auditor under the Energy Conservation Act 2001, subject to the fulfillment
of qualifications for Accredited Energy Auditor and issuance of certificate of Accreditation by the Bureau of Energy
Efficiency under the said Act.

This certificate is valid till the Bureau of Energy Efficiency issues an official certificate.

Place : Chennai, India
Date : 22nd April, 2019

Digitally Signed by K V R RAJU
Mon Apr 22 16:22:42 IST 2019
Controller of Examination, NPC AIP Chennai

Controller of Examination



**ISO 14001:2015 Lead Auditor
(Environmental Management Systems)
Training course**

It is hereby certified that

Dr. S. R. Sivarasu

has successfully completed the above mentioned course and examination

08th - 12th December 2017

Coimbatore, India

Certificate No. 3521 2982 02
Delegate No. 71958

for TÜV NORD CERT GmbH

Essen, 2018-01-11

Course 18125 is certified by CQI/IRCA and meets the training requirements for those seeking certification under the
IRCA EMS auditor certification scheme.

TÜV NORD CERT GmbH

Langemarckstraße 20

45141 Essen

www.tuev-nord-cert.com





Confederation of Indian Industry

The Indian Green Building Council

hereby certifies that

Sivarasu S R

has successfully demonstrated knowledge on the Green Building Design & Construction, Building Standards & Codes, IGBC Resources & Processes and Green Design Strategies & their Impacts, required to be awarded the title of

IGBC Accredited Professional


K S Venkatagiri
Executive Director
CII-Godrej GBC


V Suresh
Chairman
Indian Green Building Council


Gurmit Singh Arora
Vice-Chairman
Indian Green Building Council

200239

20 June 2020



GREEN RATING FOR INTEGRATED HABITAT ASSESSMENT

GRIHA CERTIFIED PROFESSIONAL CERTIFICATE


This is to certify that

Sivarasu sr

has qualified as a **GRIHA** Certified Professional For V. 2015

Date of issue: 18th September 2020

Note : This certification is valid only for GRIHA version 2015.


Chief Executive Officer
GRIHA Council



Confederation of Indian Industry

This is to certify that

SIVARASU S R

is a

CII Certified Professional in Sustainable Waste Management


K S Venkatagiri
Executive Director
CII - Godrej GBC


Pradeep Bhargava
Chairman
CII GreenCo Council



Issued by CII Solazab Godrej Green Business Centre

Issued on 9 June 2021

CGBC-SMM-0621-295

**HSSERisk
Academy**

CERTIFICATE OF APPRECIATION

THIS CERTIFICATE IS AWARDED TO

Sivarasu Rathinavelu

FOR SUCCESSFUL COMPLETION OF TRAINING COURSE ON

ISO 14064-1:2018
ISO 14064-2:2019
ISO 14064-3:2019
ISO 14066:2011
ISO 14067:2018

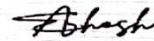
AND CERTIFY HIM/ HER AS

**IMPLEMENTOR & AUDITOR
CARBON FOOTPRINT MANAGEMENT**

This certificate is awarded for successful completion of Global Virtual Training course conducted from August 27, 2021 to September 01, 2021. It serves as a proof of his/her knowledge, competence and ability to implement, verify and validate carbon footprint as per above mentioned standards and methods. This certificate was awarded on August 01, 2021.

01.09.21

DATE



SIGNATURE

010920211006

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