ST JOSEPH'S COLLEGE OF PHARMACY
CHERTHALA

2023-24

Executed by

OTTOTRACTIONS

ENVIRONMENT AUDIT REPORT

ST. JOSEPH'S COLLEGE OF PHARMACY

CHERTHALA

2023-24

OTTOTRACTIONS

Environment Audit Report
St. Joseph's College of Pharmacy, Cherthala
Report No: EA 1143
2023-24

Environment Audit Team

Ottotractions

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2	Er. B. Zachariah	Director, Ottotractions
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About OTTOTRACTIONS

***OTTOTRACTIONS** established in 2005, is an organization with proven track record and knowledge in the field of energy, engineering, and environmental services. They are the first Accredited Energy Auditor from Kerala for conducting Mandatory Energy Audits in Designated Consumers as per Energy Conservation Act-2001. Government of Kerala recognized and appreciated **OTTOTRACTIONS** by presenting its prestigious **"The Kerala State Energy Conservation Award 2009"** for the best performance as an Energy Auditor. Ottotractions is an ISO 9001-2015, ISO 17020-2012 and ISO 14001-2015 Certified organization, which ensures the quality of its services.*

Acknowledgement

We were privileged to work together with the administration and staff of St. Joseph's College of Pharmacy, Cherthala for their timely help extended to complete the audit and bringing out this report.

With gratitude, we acknowledge the diligent effort and commitments of all those who have helped to bring out this report.

We also take this opportunity to thank the bona-fide efforts of team OTTOTRACTIONS for unstinted support in carrying out this audit.

We thank our consultants, engineers and backup staff for their dedication to bring this report.

Thank you.

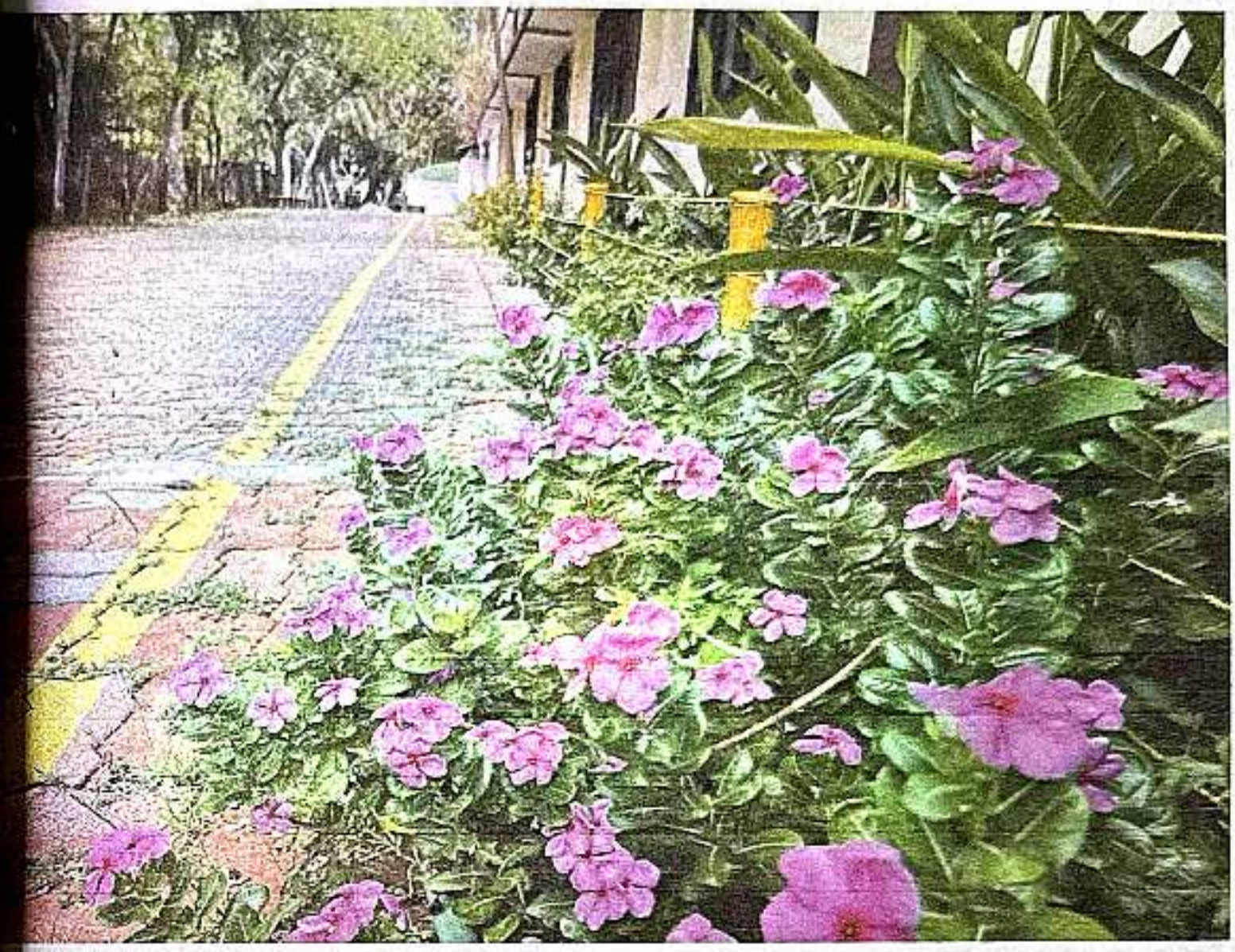
B V Suresh Babu
Accredited Energy Auditor
AEA 33, Bureau of Energy Efficiency

Contents

INTRODUCTION

St. Joseph's College of Pharmacy, Cherthala has entrusted Ottotractions to carry out an environment audit of their campus building.

Each section contains recommendations for improvements relating to environmental issues, which are consolidated in the action plan in section 4.



BACKGROUND

St. Joseph's College of Pharmacy is situated in Cherthala, the land of back waters amidst panoramic beauty in close proximity to Kumarakom, the renowned tourist spot and National Aquatic Bird Sanctuary. It is a unit of the Nirmala Province of the Medical Sisters of St. Joseph (MSJ Dharmagiri) Aluva, Kerala. The congregation of the Medical Sisters of St. Joseph is dedicated to the healing ministry and allied medical education, aiming to uplift the suffering humanity devoid of profit motive.

The College offers B.Pharm, M.Pharm, Pharm.D and D.Pharm programmes and i
pledged to provide advanced facilities to comply with technological advancements i
pharmaceutical sciences. The institute is highly research oriented and enjoys grea
Academic - Industrial interactions

Occupancy Details	
Particulars	2023-24
Total Students	413
Staffs	63
Total Occupancy of the college	476

Total student strength of the campus is 476. For calculating per capita carbon
emission estimation, the student strength is taken into account.

ENVIRONMENTAL ISSUES

This section is broken down into the following different areas: waste, water, energy, resource and materials use and procurement. A final 'other' section is also included for any additional issues.

1.1. Waste

The way communities generate and manage their waste plays an absolutely key role in their ability to use resources efficiently. All buildings contain bins for both general waste and mixed recyclables (plastic bottles, card, cans and paper). On averege each floor in the buildings areas has its own general waste bin and one recycling bin. When the bins are emptied by the cleaning staff. Bins are marked and kept in different colors for identification, however in some locations throughout the building it was unclear which bins were for which waste streams.

There are four basic ways in which campus can do **plastic** recycling **collection** services for **plastic** bottles and containers – curbside, drop-off, buy-back or deposit/refund programs. The first, and most widely accessible, **collection** method is curbside **collection** of recyclables. The campus is installed bins to collect plastic bottles and single use plastics. The college has given a proper awareness on plastic waste problems and they are discouraging the students or teachers to carry plastics to the campus.

The major concern of waste management will be focused on the solid waste produced by the campus. Solid wastes produced in the campus are mainly of three types, food waste, paper waste, and plastic waste. Food wastes produced in the campus are mainly by two means. The vegetable wastes produced in the kitchen during the food preparation. The food waste produced by the students and staffs of the campus after the consumption of meals. The degradable waste can treat in the biogas plant.

Degradable Waste Generation	
St. Joseph's College of Pharmacy	
Particulars	2023-24
Total Occupancy	476
Waste generated in kg /day	9.52
Waste generated in kg /Yr	2094.4

Burning plastics shall be strictly restricted inside the campus. **Burning plastic** and other wastes releases dangerous substances such as heavy metals, Persistent Organic Pollutants, and other toxics into the air and ash waste residues. Such pollutants contribute to the development of asthma, cancer, endocrine disruption, and the global burden of disease.

Solid non degradable Waste Generation	
St. Joseph's College of Pharmacy	
Particulars	2023-24
Total Occupancy	476
Waste paper generated in kg /day	0.0952
Waste plastic generated in kg /day	0.1428
Waste paper generated in kg /Yr	20.94
Waste plastic generated in kg /Yr	31.42

WASTE MINIMIZATION AND RECYCLING		
1	Does your institute generate any waste? If so, what are they?	Yes, Solid waste, Canteen Waste paper, plastic, Horticulture Waste etc.
2	What is the approximate amount of waste generated per day? (in Kilograms/) (approx.)	9.52
3	How is the waste generated in the institute managed? By	Reuse of one side printed Paper for internal communication. Kitchen waste can used to generate biogas Two types of Waste bins are provided at campus for biodegradable and non-biodegradable waste.

	1	Composting	In-house
	2	Recycling	In-house
	3	Reusing	In-house
	4	Others (specify)	
4	Do you use recycled paper in institute?		Yes
5	Do you use reused paper in institute?		Yes
6	How would you spread the message of recycling to others in the community? Have you taken any initiatives? If yes, please specify.		Awareness programs through Nature Club, Exhibition and NSS
7	Can you achieve zero garbage in your institute? If yes, how?		Yes

Green Cover Audit			
1	**Is there a garden in your institute?**	**Yes**	
2	Do students spend time in the garden?	Yes	
3	Total number of Plants in Campus	Plant type	Approx. number
		Trees	354
		Ornamental	Not estimated
4	Number of Tree Plantation Drives organized by School per annum. (If Any)	Yes, through Nature club plantation drives are organized.	
5	Number of Trees Planted in Last FY.	5	
	Survival Rate	100%	

All the activities including energy consumption and waste management have their equivalent carbon emission and they positively contribute to the carbon footprint of the campus. Carbon sequestration is the reverse process, at which the emitted carbon dioxide will get sequestrated according to the type of carbon sequestration employed. Even though there are many natural sequestration processes are involved in a campus, the major type of sequestration among them is the carbon sequestration by trees.

Trees sequestrate carbon dioxide through the biochemical process of photosynthesis and it is stored as carbon in their trunk, branches, leaves and roots. The amount of

carbon sequestrated by a tree can be calculated by different methods. In this study, the volumetric approach was taken into account, thus the details including CBH (Circumference at Breast Height), height, average age, and total number of the trees, are required. Detailed table is included in the technical supplement.

Carbon Sequestration	
Particulars	2023-24
Total No of Trees	354
Carbon sequestrated by trees in the campus (tCO2e)	2.43

Carbon sequestrated by a tree can be found out by using different methods. Since this study is employed the volumetric approach, the calculation consists of five processes.

- Determining the total weight of the tree
- Determining the dry weight of the tree
- Determining the weight of carbon in the tree
- Determining the weight of CO_2 sequestrated in the tree
- Determining the weight of CO_2 sequestrated in the tree per year

Carbon sequestrated by each species of trees in the campus compound is given in the Table. Detailed calculation results are listed out in the tables provided in the technical supplements of 'Carbon sequestration'.

3.1.1 ENERGY

a. Electricity

The total emission of the carbon dioxide per student is 146.36kg per year. Emission reduction plans were prepared to bring the existing per capita carbon footprint to zero or below so as to bring the campus a carbon neutral or carbon negative campus. All energy efficiency projects shall be implemented, So, the effective specific carbon emission per student is -51.08.kg of CO_2 per year only. This can be achieved in many ways but, every alternate plan must be in such a way that, it must fulfill the actual purpose of each activity that is considered.

Here, three major methods are taken in to account as the plans for reducing the carbon emission of the campus.

- Resource optimization
- Energy efficiency
- Renewable energy

Electricity Consumption

Electricity Connection Details		
St. Joseph's College of Pharmacy		
1	Name of the Consumer	St. Joseph's College of Pharmacy
2	Tariff	LT 6B Ndom
3	Consumer Numbers	1155127001836 1155127020395 1155127024177 1155121023494 1155127001759 1155120024402 1155126023569
4	Contract Demand (kVA)	65
5	Annual Electricity Consumption (kWh)	33499

Annual Electricity Consumption (kWh)		
Sl No	Consumer No	Annual Electricity Consumption (kWh)
1	1155127001836	792
2	1155127020395	8226
3	1155127024177	10000
4	1155121023494	11544
5	1155127001759	1262
6	1155120024402	940
7	1155126023569	364
8	1155127027553	371
Total		33499

RESOURCE OPTIMISATION

The effective use of resources can limit its unnecessary wastage. Optimal usage of the resources (such as fuels) can save the fuel and can also reduce the carbon emission due to its consumption. This technique can be effectively implemented in the 'transportation' and 'waste' sectors of the campus.

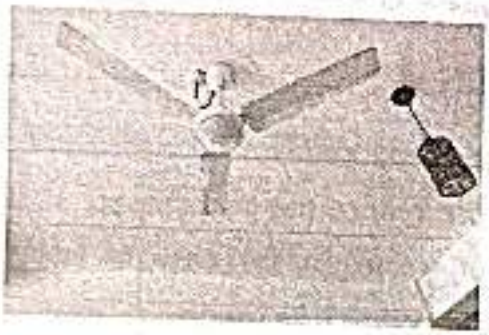
WASTE MINIMISATION

Optimal utilization of paper and plastic stationaries can reduce the frequency of purchase of items. This can reduce the unnecessary wastage of money as well as the excess production of waste. In the case of food, proper food habits and housekeeping practices can optimize its usage.

Currently, College is taking an appreciable effort to reduce the unnecessary production of wastes. But the campus still has opportunities to reduce the generation of waste and can improve much more. Resource optimization can be effectively implemented in all type of waste generated in the campus and the campus can expect about 50% reduction the total waste produced.

ENERGY EFFICIENCY

Energy efficiency is the practice of reducing the energy requirements while achievin the required energy output. Energy efficiency can be effectively implemented in a the sectors of the campus.



TRANSPORTATION

Energy efficiency of the transportation sector is mainly depended on the fuel efficiency of the vehicles used. Here mileage of the vehicle (kmpl - Kilometres per Litre) is calculated to assess the fuel efficiency of the vehicle. Percentage of closeness is the ratio of actual mileage of the vehicle to its expected mileage. If the percentage of closeness of mileages of each vehicle is greater than that of its average, then the efficiency status of the vehicle is considered as 'Above average' and else, it is considered as 'Below average'

Renewable Energy

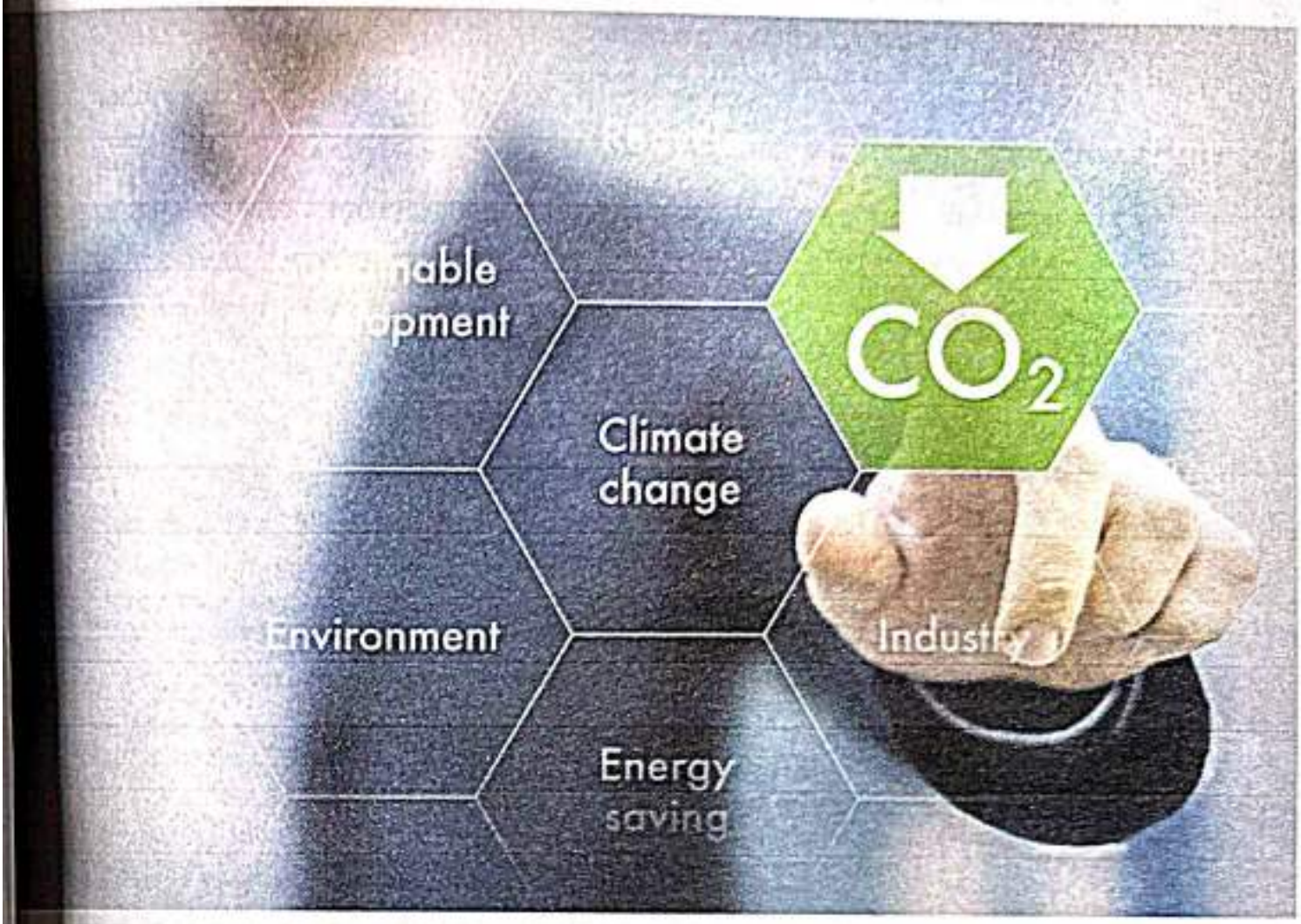
110kWp Solar power plant is installed in the campus which helps offsetting the carbon foot print. The details of these projects are given in the concerned chapters. After analyzing the historical and measured data the following projects are proposed to make the campus carbon neutral. The projects are from energy efficiency and renewable energy. The further additions in the green cover increase will also give positive impact in the carbon mitigation.

OTTOTRACTIONS- ENERGY AUDIT						
St. Joseph's College of Pharmacy						
Greenhouse Gas Mitigation through Major Energy Efficiency Projects						
Sl No	Projects proposed	Energy saved(Yearly)		Sustainability (Years)	First year ton of CO_2 miligated	Expected Tons of CO_2 miligated through out life
		(kWh)	MWh	Years		
1	Energy Saving in Lighting by replacing existing 50 No's T8 (40W) Lamps to 18W LED Tube	1320.00	1.32	10	0.96	9.6
2	Energy Saving by replacing existing 600 No's in-efficient ceiling fans with Energy Efficient Five star fans	21312	21.31	10	15.56	155.6
Total		**22632**	**23**	**10**	**16.5**	**165.2**

Water Conservation Activities	
List four uses of water in your institute	Basic use of water in campus: 1. Drinking – Ground Water 2. Gardening – Rain water 3. Kitchen and Toilets –Ground water 4. Others – Lab
How does your institute store water? Are there any water saving techniques followed in your institute?	Overhead Water Tanks and Sumps installed for storage of water. Rain Water Harvesting system in place
If there is water wastage, specify why and How can the wastage be prevented / stopped?	No water Wastage
Record water use from the institute water meter for six months (record at the same time of each day). At the end of the period, compile a table to show how many liters of water have been used.	No logbooks are available
Does your institute harvest rain water?	Yes
Is there any water recycling system?	Yes

General Environmental Awareness Questionnaire	
Are you aware of any environmental Laws pertaining to different aspects of environmental management?	Yes
Does your institute have any rules to protect the environment? List possible rules you could include.	Yes
Dose Environmental Ambient Air Quality Monitoring conducted by the Institute?	No
Dose Environmental Water and Wastewater Quality monitoring conducted by the Institute?	Yes
Dose stack monitoring of DG sets conducted by the Institute?	Yes
Is any warning notice, letter issued by state government bodies?	No
Dose any Hazardous waste generated by the Institute? If yes explain its category and disposal method	No
Are you aware of any environmental Laws pertaining to different aspects of environmental management?	Yes
Does your institute have any rules to protect the environment? List possible rules you could include.	Yes
Does housekeeping schedule in your campus?	Yes
Are students and faculties aware of environmental cleanliness ways? If Yes Explain	Yes
Does Important Days Like World Environment Day, Earth Day, and Ozone Day etc. eminent in Campus?	Yes
Does Institute participate in National and Local Environmental Protection Movement?	Yes
Does the institute have any Recognition/certification for environment friendliness?	Yes
Does the institute use renewable energy?	Yes
Does the Institution conduct a green/environmental audit of its campus?	Yes
Has the institution been audited / accredited by any other agency such as NABL, NABET, TQPM, NAAC etc.?	Yes (NAAC)

Best Practices and Initiatives	
Renewable Energy	Yes
Solar Power Plant	Yes
Energy Audit and Green Audit Conducted	Yes
Biogas Plant installed	Yes
Biodiversity Conservation	Yes
Green Cover	Yes
Tree Plantation Drives	Yes
ECO clubs	Yes
Groundwater Recharge	Yes
Rain Water Harvesting System.	Yes
Pollution Reduction Public Transportation	Yes
E Waste Management	Yes
Connected to authorized recycler	Yes
Solid Waste Management	Yes
Lifting of garbage from the campus on alternate days by the Municipal Corporation.	Yes
Adoption of Village	No
CSR	Yes
Water Conservation	Yes
Energy Conservation	Yes



RECOMMENDATIONS

1. Implement a utility monitoring program.
   - Allocate staff to carry out meter readings for electricity, waste and water on regular basis
   - Add monitoring data to spreadsheet so results can be viewed graphically
   - Compare with the utility bills meter readings in order to ensure accuracy;
2. Consider adopting and implementing a sustainable procurement policy which takes into account the whole life cycle of a product, and make sure environmental issues are written into tenders when contracting out.

3. Consider trialing recycled paper again – many recycled brands today, such as Evolve, are just as good as virgin paper.
4. Trial the use of re-manufactured (i.e., refilled) ink and toner cartridges rather than purchasing new ones.
5. Consider producing some designated 'environmental' pages on the intranet to make it easier for staff to find environmental information. If possible, a discussion forum could be set up to allow easy internal communications and staff to make suggestions for environmental improvements.
6. Environmental training could be formalized and carried out for all staff. It does not have to be too long or onerous, providing it covers key points, particularly in relation to waste so all staff are aware of the legal requirements. At the very least, environmental information should be included in the induction pack.
7. It is strongly recommended that environmental information is also given to students and staff during induction. It is particularly important for them to be aware of what waste they can dispose of on site and where they can dispose of it, and what waste streams they must take away with them.
8. Consider implementing an environmental management system to incorporate all improvements and monitoring requirements. It does not need to be a complex system certified to any particular standard, merely a way of ensuring that baselines are set and progress is measured. Formation of Environment Policy and communicated to all faculties and other staff.
9. Plan for Zero Waste Campus Project
10. E-waste monthly inventory be maintained at campus as per E waste rules 2016.
11. A Water Meter should be installed at the institute for monitoring of water consumption per capita.
12. Increase in Environmental promotional activities for spreading awareness at campus.
13. Environment/Green committee formation for regulating eco-friendly initiatives at campus premises and periphery.

CONCLUSION

This audit involved extensive consultation with all the campus team, interactions with key personnel on a wide range of issues related to Environmental aspects. The audit has identified several observations for making the campus premise more environmentally friendly. The recommendations are also mentioned with observations for St. Joseph's College of Pharmacy, Cherthala team to initiate actions.

Carbon Foot Print			
Sl. No.	Particulars	2023-24	tCO2e
1	Electricity (kWh)	142759	117.06
2	Diesel (L)	7914	25.32
3	LPG (kg)	532	0.80
4	Biogas (kg)	1320.00	1.848
5	Degradable Waste in kg/yr.	2094.4	1.32
6	Paper Waste in kg/yr	20.94	0.01
Total Carbon Foot Print tCO2e/yr			146.36

However, there is scope for further improvement, particularly in relation to waste minimization and energy monitoring. By implementing a basic environmental management system, current good practice can be formalized and a framework can be set up for monitoring, implementation of action plans and continual improvement.

The audit team observed that the overall site is maintained well from an environmental perspective. There are no major observations but few things are important to initiate urgently are waste management records by monthly inventory of hazardous waste, rainwater harvesting recharge; water balance cycle and periodic inspection of buildings; environment policy and initiation of composting at campus.

Net Carbon Emission after implementing Energy Efficiency projects and Renewable Energy Projects Proposed		
1	Total Carbon Foot Print tCO2e/yr	146.36
2	Carbon Sequrested tCO2e/yr	2.43
3	Carbon mitigated by Renewable Energy tCO2e/yr (Installed)	148.51
4	Carbon mitigated by Renewable Energy tCO2e/yr (Proposed)	0.00
5	Carbon mitigated by Energy Efficiency (Proposed) tCO2e/yr	16.52
6	Effective Carbon footprint tCO2e/yr	-21.10
7	Total No of Students	413
8	Specific Carbon Footprint kg CO2e/Student/Yr	-51.08

References

- The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 – The Petroleum Rules: 2002
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor Vehicle
- Rules:1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control Of Pollution] Act – 1974 (Amended 1988) & the Water (Prevention & Control of Pollution) Rules – 1975
- The Water [Prevention & Control Of Pollution] Cess Act-1977 (Amended 2003) and Rules- 1978
- The Air [Prevention & Control Of Pollution] Act – 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules – 2016 (Replaces the Gas Cylinder Rules – 1981
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- Relevant Indian Standard Code practices

TECHNICAL SUPPLEMENTS

OTTOTRACTIONS

Technical Supplements

Form 5

Sl No	Name of the tree	Circumference (cm)	Radius (cm)	Radius (m)	Height (m)	Trunk volume (m^3)	Trunk Biomass (Ton)	Root biomass (Ton)	Total biomass (Ton)	Tree dry weight (Ton)	Carbon content of the tree (Ton)	Carbondioxide Sequestered (Ton)	No of Similar trees	Carbondioxide Sequestered (Ton) for all similar trees	Age of the tree (Years)	Carbon sequestered per year (Ton)
1	COCONUT TREE	28	4.14	0.04	2.43	0.01	0.01	0.00	0.01	0.01	0.00	0.01	55	1.46	2	0.73
2	JACK FRUIT TREE	15	0.57	0.00	1.90	0.02	0.01	0.01	0.02	0.01	0.01	0.02	2	0.04	5	0.01
3	SPANISH CHERRY (LANDI)	14	0.41	0.00	3.06	0.04	0.02	0.01	0.03	0.02	0.01	0.04	2	0.08	5	0.02
4	MANGO TREE	29	4.62	0.05	4.00	0.03	0.01	0.01	0.02	0.02	0.01	0.03	22	0.66	3	0.22
5	TEAK	16	2.55	0.03	5.20	0.01	0.01	0.00	0.01	0.01	0.00	0.01	1	0.01	7	0.00
6	MAHOGONY TREE	30	4.78	0.05	5.30	0.04	0.02	0.01	0.03	0.02	0.01	0.04	50	2.52	7	0.36
7	POOVA TREE(POOVARASH)	18	2.87	0.03	7.10	0.02	0.01	0.01	0.02	0.01	0.01	0.02	1	0.02	6	0.00
8	ACACIA	12	1.91	0.02	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.01	31	0.16	5	0.03
9	INDIAN BAEL (KOOVALAM)	23	3.66	0.04	3.10	0.01	0.01	0.00	0.01	0.01	0.00	0.01	1	0.01	2	0.01
10	ASHOKA TREE	69	10.99	0.11	8.01	0.25	0.13	0.08	0.21	0.15	0.08	0.28	1	0.28	8	0.03
11	GUVA	35	5.57	0.06	3.23	0.03	0.02	0.01	0.03	0.02	0.01	0.04	30	1.06	12	0.09
12	INDIAN GOOSEBERRY	31	5.25	0.05	4.20	0.04	0.02	0.01	0.03	0.02	0.01	0.04	2	0.08	6	0.01
13	NEEM	25	3.24	0.03	3.30	0.01	0.01	0.00	0.01	0.01	0.00	0.01	1	0.01	8	0.00
14	LEMON	24	4.45	0.04	4.30	0.02	0.01	0.01	0.02	0.02	0.01	0.03	3	0.08	4	0.02
15	LARGE GARLIC PEAR (NEERMATHALAM)	25	3.98	0.04	3.00	0.01	0.01	0.00	0.01	0.01	0.00	0.02	1	0.02	3	0.01
16	DWARF WHITE ORCHID (MANDHARARAM)	26	4.14	0.04	3.70	0.02	0.01	0.01	0.02	0.01	0.01	0.02	5	0.11	6	0.02
17	SPEAR TREE (EETTI)	32	5.10	0.05	6.30	0.06	0.03	0.02	0.05	0.03	0.02	0.06	5	0.31	3	0.10
18	SAMBHAR (KUMBIL)	19	3.03	0.03	6.20	0.02	0.01	0.01	0.01	0.01	0.01	0.02	3	0.06	4	0.01
19	INDIAN ASH TREE (UZHI)	22	3.50	0.04	5.00	0.02	0.01	0.01	0.02	0.01	0.01	0.02	3	0.07	12	0.01
20	INDIAN ALMOND (THALI (MARAM)	27	4.30	0.04	6.20	0.04	0.02	0.01	0.03	0.02	0.01	0.04	2	0.08	8	0.01
21	BANYAN TREE (AALMARAM)	33	5.10	0.05	5.80	0.05	0.02	0.01	0.04	0.03	0.01	0.05	1	0.05	3	0.02
22	YELLOW PALM	33	5.10	0.05	3.06	0.03	0.02	0.01	0.03	0.02	0.01	0.04	37	1.32	3	0.44
23	RED PALM	33	5.25	0.05	3.80	0.03	0.02	0.01	0.03	0.02	0.01	0.04	21	0.75	5	0.15
24	BAMBOO PALM	22	3.50	0.04	4.80	0.02	0.01	0.01	0.02	0.01	0.01	0.02	10	0.20	4	0.05
25	MALABAR IRON WOOD (THAMBAVAM)	27	4.30	0.04	5.30	0.03	0.02	0.01	0.03	0.02	0.01	0.03	2	0.07	8	0.01
26	REDMANDAL(WOODFRAXTWACHANDHANAM)	31	4.93	0.05	6.10	0.04	0.02	0.01	0.03	0.02	0.01	0.04	1	0.04	14	0.00
27	MALABAR TURMERIC (KUDAMPULI)	18	2.87	0.03	3.06	0.01	0.01	0.00	0.01	0.01	0.00	0.01	2	0.02	14	0.00
28	INDIAN COFFEE PLUM (CLUB)	27	4.30	0.04	3.15	0.02	0.01	0.01	0.01	0.01	0.01	0.02	1	0.02	14	0.00
29	ANKA(CHERUPUNNA)	33	4.94	0.05	8.60	0.05	0.03	0.02	0.04	0.03	0.02	0.08	1	0.08	8	0.01
Total						0.98	0.52	0.29	0.82	0.58	0.30	1.09	354	10	6	2.43

Details of the trees having diameter more than 15cm and having heights above 150cm from ground level is taken for the study

LIST OF TREES

Sl No	Name of Trees	No. of Trees
1	COCONUT TREE	95
2	JACK FRUIT TREE	2
3	SPANISH CHERRY (ILANJI)	2
4	MANGO TREE	29
5	TEAK	1
6	MAHOGONY TREE	60
7	PORITA TREE(POOVARASI)	1
8	ACACIA	31
9	INDIAN BAEL (KOOVALAM)	1
10	ASHOKA TREE	1
11	GUVA	30
12	INDIAN GOOSEBERRY	2
13	NEEM	1
14	LEMON	3
15	LARGE GARLIC PEAR (NEERMATHALAM)	1
16	DWARF WHITE ORCHID(MANDHAARAM)	5
17	SPEAR TREE (EETTI)	5
18	GAMHAR (KUMBIL)	3
19	INDIAN ASH TREE (UDHI)	3
20	INDIAN ALMOND (THALLI MARAM)	2
21	BANYAN TREE (AALMARAM)	1
22	YELLOW PALM	37
23	RED PALM	21
24	BAMBOO PALM	10
25	MALABAR IRON WOOD (THAMBAKAM)	2
26	RED SANDALWOOD (RAKTHA CHANDHANAM)	1
27	MALABAR TURMERIND (KUDAMPULI)	2
28	INDIAN COFFEE PLUM (LUBI)	1
29	ARKA (CHERUPUNNA)	1